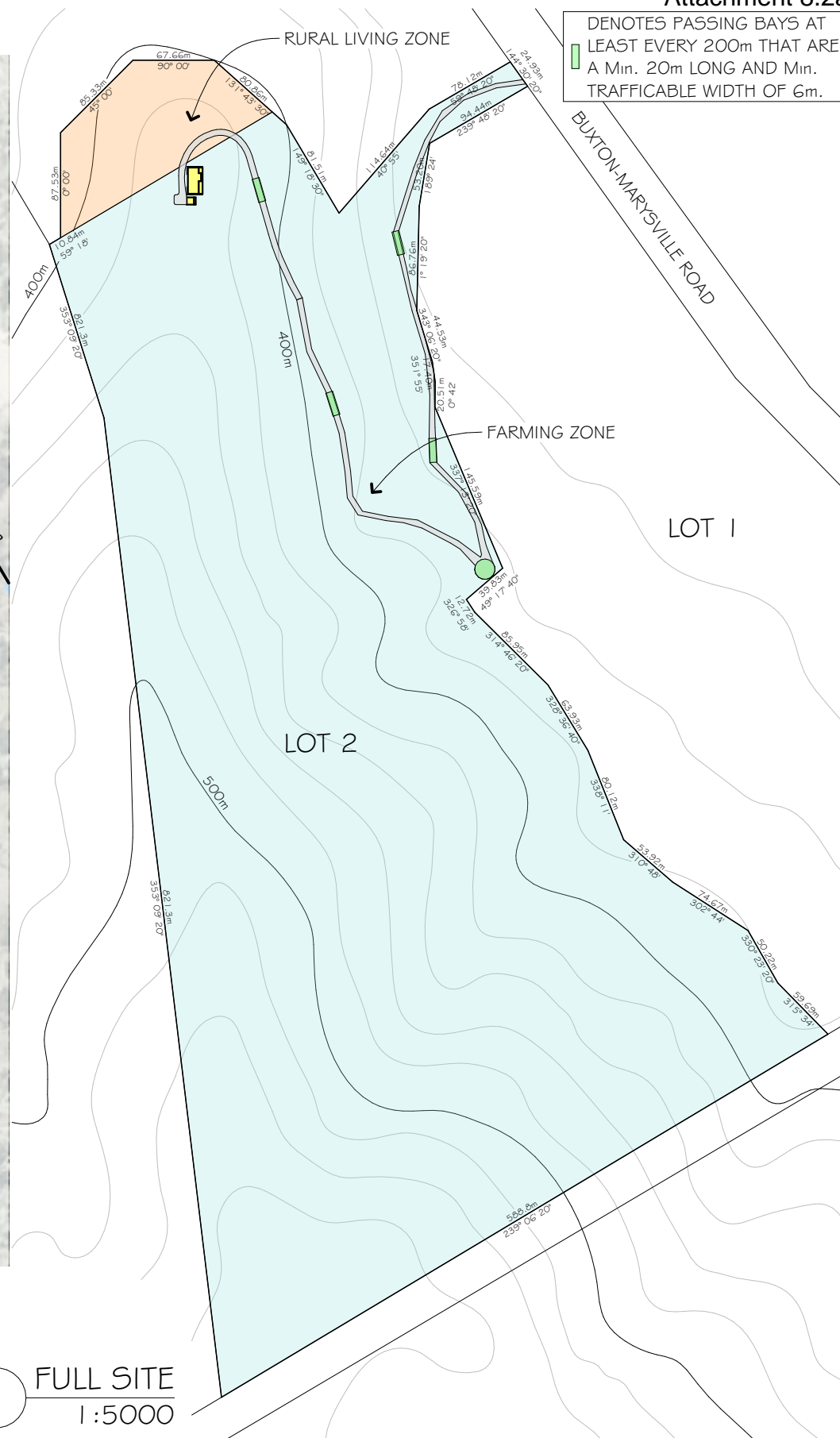
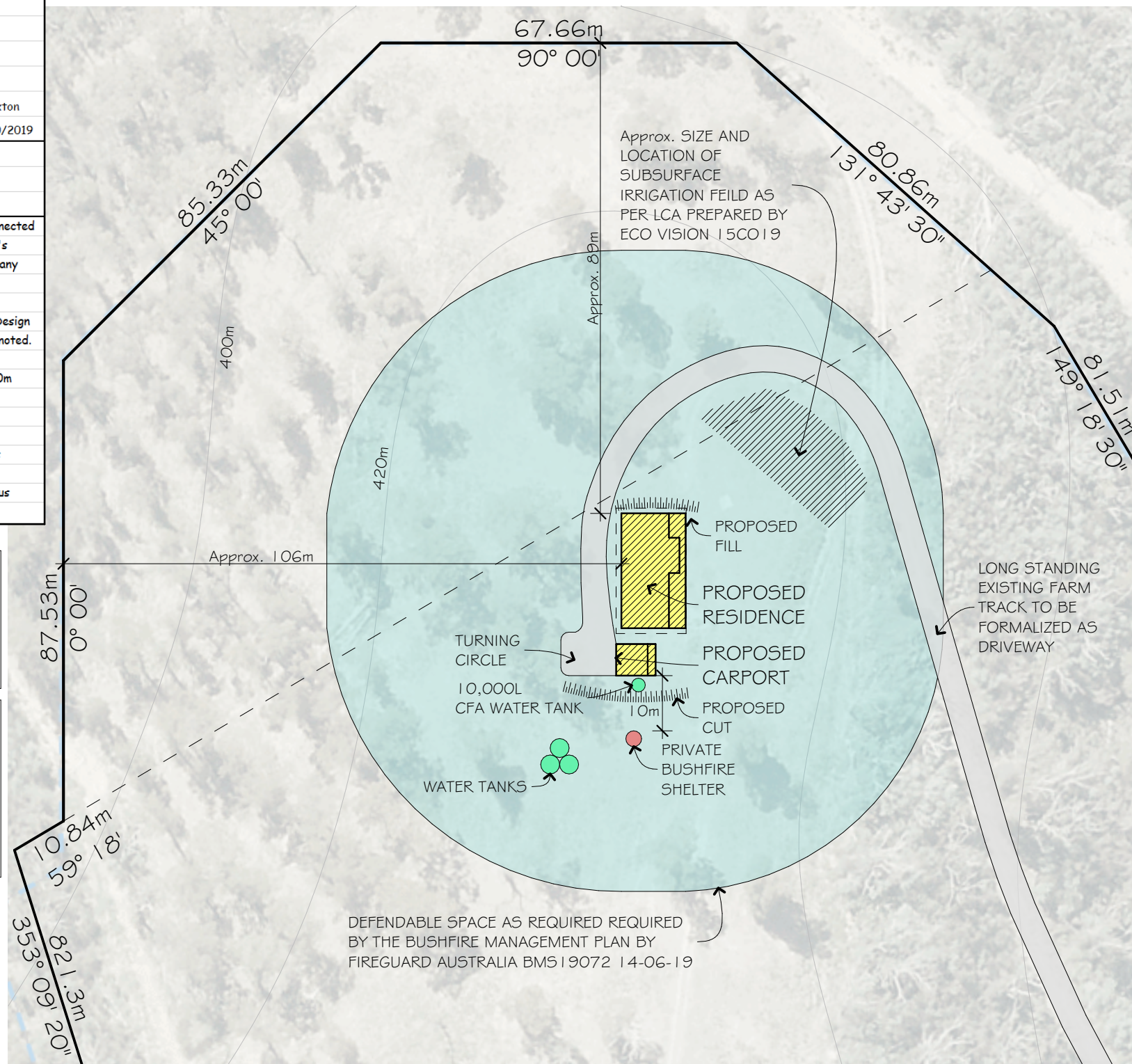


NO NATIVE VEGETATION TO BE REMOVED AS THE HOUSE LOCATION IS ALREADY CLEARED AS PER PAGE 12 OF THE LAND MANAGEMENT PLAN PREPARED BY SUE ABLITT OF NORTH EAST ECOLOGY.

5 METER CANOPY SEPARATION CAN BE ACHIVED ONLY THROUGH LOPPING OF TREES WITHIN THE DEFENDABLE SPACE, NO TREES FOR REMOVAL AS PER PAGE 13 OF THE LAND MANAGEMENT PLAN PREPARED BY SUE ABLITT OF NORTH EAST ECOLOGY.



TOWN PLANNING DRAWINGS


Not For Construction




© Copyright

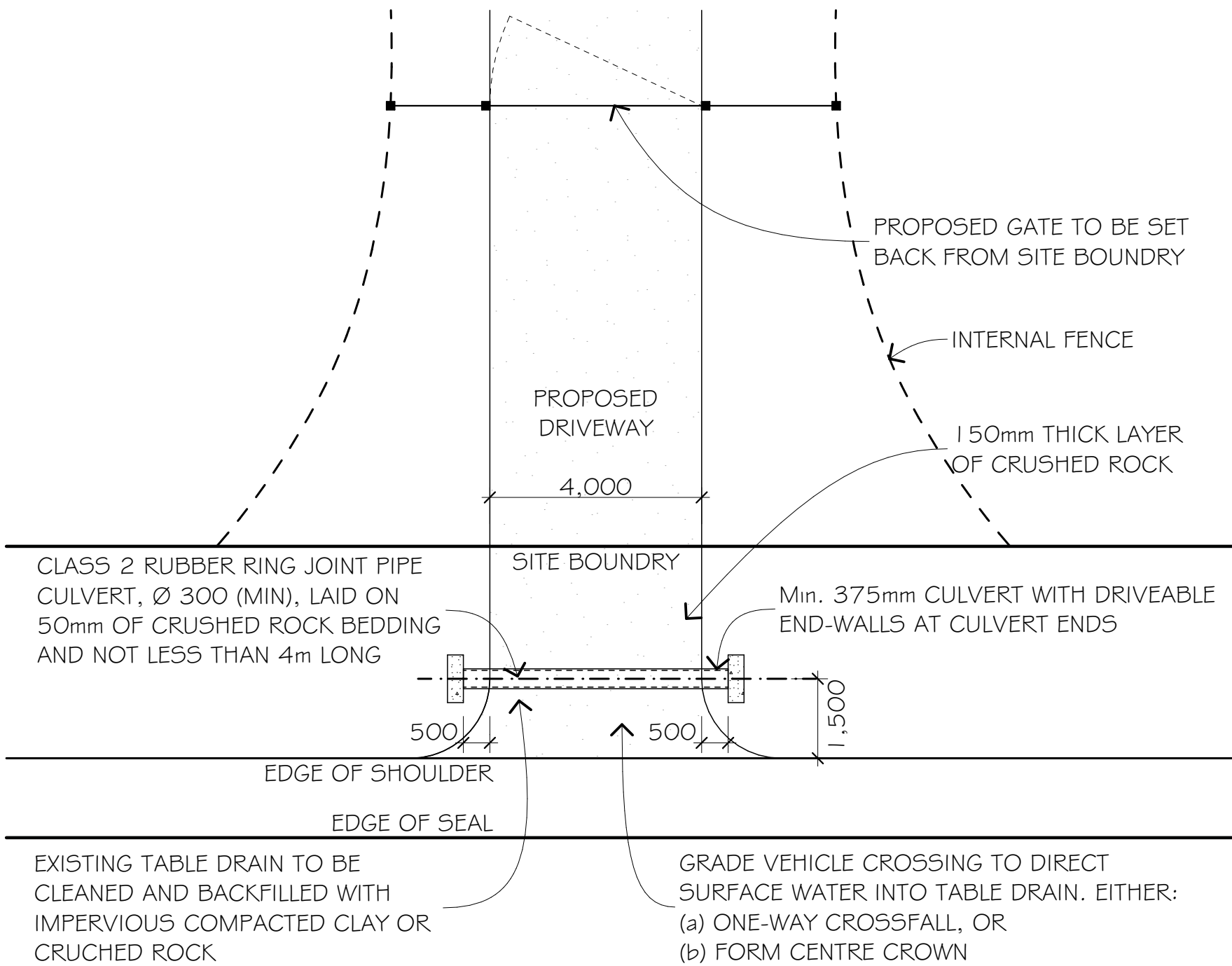
Reproduction of plans in

Whole or part prohibited

 SITE PLAN
1:1000

 FULL SITE
1:5000

 <p>Belgraphik BUILDING DESIGN</p> <p>1680 Burwood Highway, Belgrave 3160 Ph. (03) 9754 7464 Fax. (03) 9754 7063 Trading as Pegasus Australia Pty Ltd ACN 117 603 933</p>	 <p>bdav Building Designers Association Victoria</p>	<p>Contractor or owner-builder to check all dimensions on site prior to ordering and commencement of work and obtain clarification of any discrepancies from building designer.</p>	<p>No. Revisions</p> <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>																	<p>Date</p> <table border="1"> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> </table>									 <p>NORTH</p>	<p>PROJECT PROPOSED DWELLING</p> <p>SITE ADDRESS 630 Buxton-Marysville Road Buxton 3911</p> <p>CLIENT Sherryn & Paul Doherty</p>	<p>Title SITE PLAN</p>	
<p>Scale 1:1000, 1:5000, 1:10000</p>	<p>Date 100 NOV 2019</p>																															
<p>Original paper size. A3</p>	<p>Rev B</p>																															
<p>Drawn Peter</p>	<p>Dwg No. TP1 of 06</p>																															
<p>© Copyright. Reproduction of plans in whole or part prohibited</p>		<p>Proj No. B19-034</p>																														



ROAD CROSS OVER PLAN
1:100

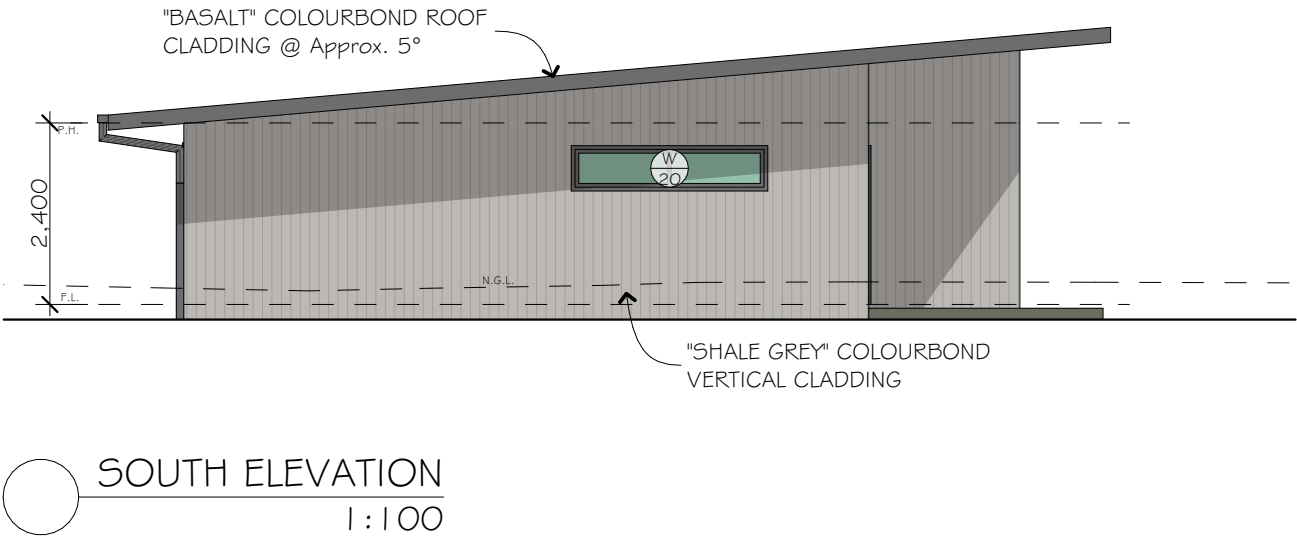
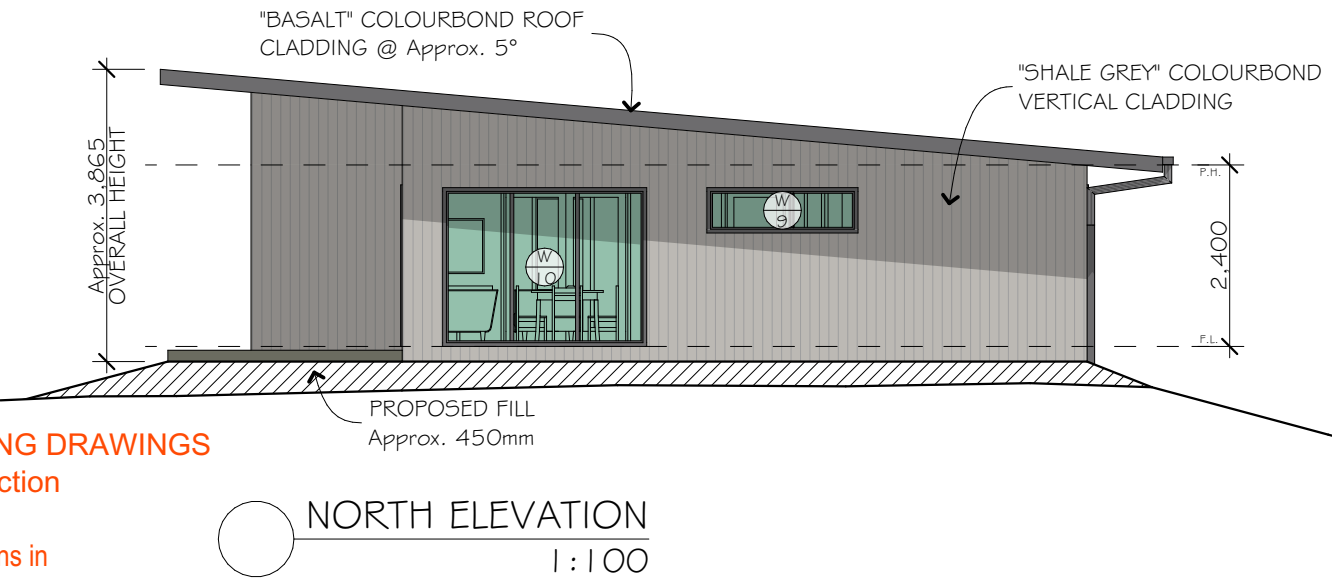
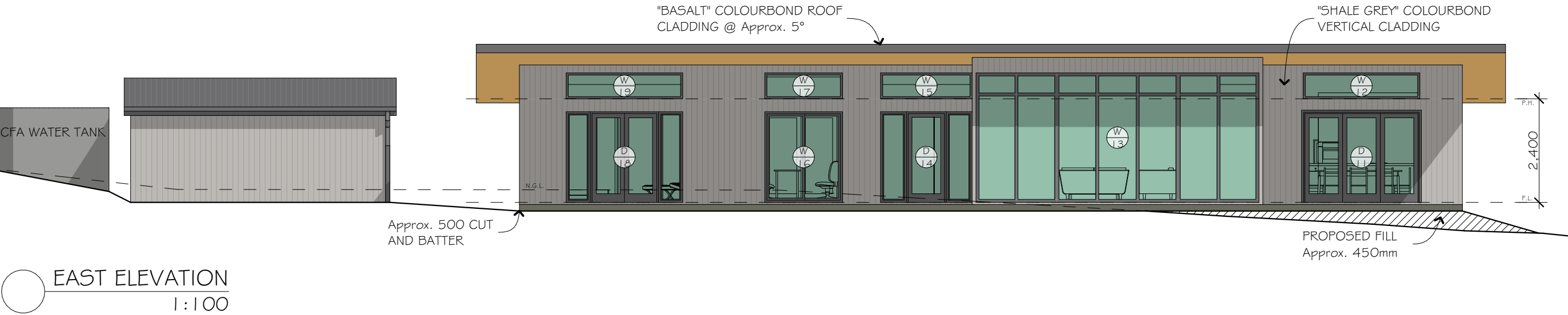
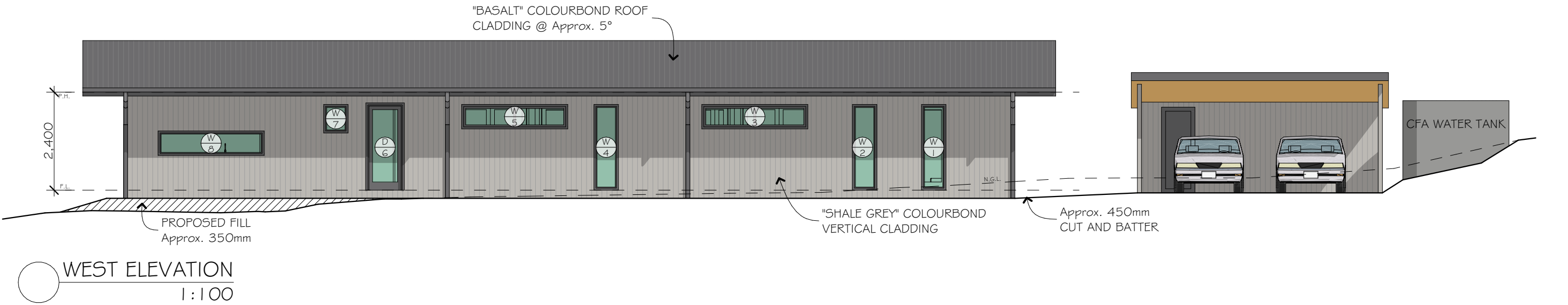
TOWN PLANNING DRAWINGS
Not For Construction
© Copyright
Reproduction of plans in
Whole or part prohibited

<div><div><div><div>Belgraphik</div><div>BUILDING DESIGN</div></div><div>1680 Burwood Highway, Belgrave 3160 Ph. (03) 9754 7464 Fax. (03) 9754 7063 Trading as Pegasus Australia Pty Ltd ACN 117 603 933</div></div><div><div><div>bdcv</div><div>Building Designers Association Victoria</div></div><div><div>REGISTERED</div><div>Building Practitioner</div></div></div></div>		Contractor or owner-builder to check all dimensions on site prior to ordering and commencement of work and obtain clarification of any discrepancies from building designer.		<table><tr><th>No.</th><th>Revisions</th><th>Date</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>	No.	Revisions	Date																						<div><div><div><div></div><div></div><div></div></div><div>NORTH</div></div></div>	<div>PROJECT PROPOSED DWELLING</div> <div>SITE ADDRESS 630 Buxton-Marysville Road Buxton 3911</div> <div>CLIENT Sherryn & Paul Doherty</div>	<table><tr><td colspan="2">Title ROAD CROSS OVER PLAN</td></tr><tr><td>Scale 1:100</td><td>UNO</td></tr><tr><td>Date NOV 2019</td><td></td></tr><tr><td>Original paper size. A3</td><td>Rev'n B</td></tr><tr><td>Drawn Peter</td><td>Dwg No. TP2 of 06</td></tr><tr><td colspan="2">© Copyright. Reproduction of plans in whole or part prohibited</td></tr><tr><td>Proj No. B19-034</td><td></td></tr></table>	Title ROAD CROSS OVER PLAN		Scale 1:100	UNO	Date NOV 2019		Original paper size. A3	Rev'n B	Drawn Peter	Dwg No. TP2 of 06	© Copyright. Reproduction of plans in whole or part prohibited		Proj No. B19-034	
No.	Revisions	Date																																											
Title ROAD CROSS OVER PLAN																																													
Scale 1:100	UNO																																												
Date NOV 2019																																													
Original paper size. A3	Rev'n B																																												
Drawn Peter	Dwg No. TP2 of 06																																												
© Copyright. Reproduction of plans in whole or part prohibited																																													
Proj No. B19-034																																													



TOWN PLANNING DRAWINGS
Not For Construction
© Copyright
Reproduction of plans in
Whole or part prohibited

<div><div><div><div>Belgraphik</div><div>BUILDING DESIGN</div></div><div>1680 Burwood Highway, Belgrave 3160 Ph. (03) 9754 7464 Fax. (03) 9754 7063 Trading as Pegasus Australia Pty Ltd ACN 117 603 933</div></div><div><div><div>bdcv</div><div>Building Designers Association Victoria</div></div><div><div><div>REGISTERED</div><div>Building Practitioner</div></div></div></div></div>	<div>Contractor or owner-builder to check all dimensions on site prior to ordering and commencement of work and obtain clarification of any discrepancies from building designer.</div>	<div>No.</div>	<div>Revisions</div>	<div>Date</div>	<div><div><div><div></div><div></div></div><div>NORTH</div></div><div>PROJECT PROPOSED DWELLING SITE ADDRESS 630 Buxton-Marysville Road Buxton 3911 CLIENT Sherryn & Paul Doherty</div></div>	<div>Title</div> <div>GROUND FLOOR PLAN</div>	
						<div>Scale</div> <div>1:100 UNO</div>	<div>Date</div> <div>NOV 2019</div>
						<div>Original paper size.</div> <div>A3</div>	<div>Revn</div> <div>B</div>
						<div>Drawn</div> <div>Peter</div>	<div>Dwg No.</div> <div>TP3 of 06</div>
						<div>© Copyright.</div> <div>Reproduction of plans in whole or part prohibited</div>	<div>Proj No.</div> <div>B19-034</div>



TOWN PLANNING DRAWINGS
Not For Construction
© Copyright
Reproduction of plans in
Whole or part prohibited

Belgraphik

BUILDING DESIGN

1680 Burwood Highway, Belgrave 3160 Ph. (03) 9754 7464 Fax. (03) 9754 7063
Trading as Pegasus Australia Pty Ltd ACN 117 603 933

bdcv

Building Designers
Association Victoria

REGISTERED

Building Practitioner

Contractor or owner-builder to check all dimensions on site prior to ordering and commencement of work and obtain clarification of any discrepancies from building designer.

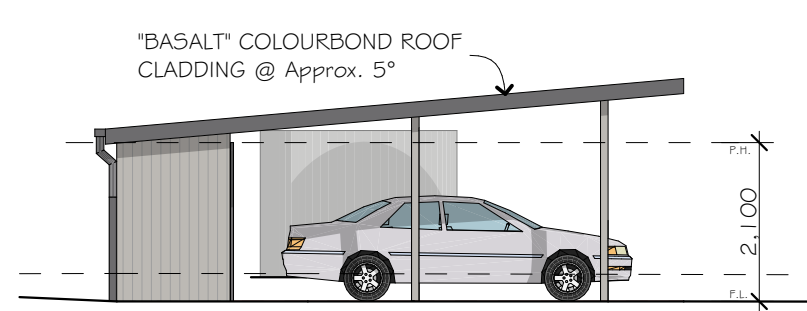
No.	Revisions	Date

PROJECT
PROPOSED DWELLING

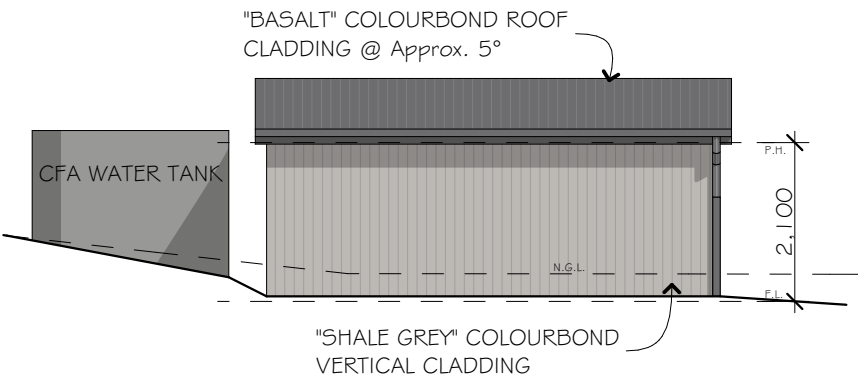
SITE ADDRESS
630 Buxton-Marysville Road
Buxton 3911

CLIENT
Sherryn & Paul Doherty

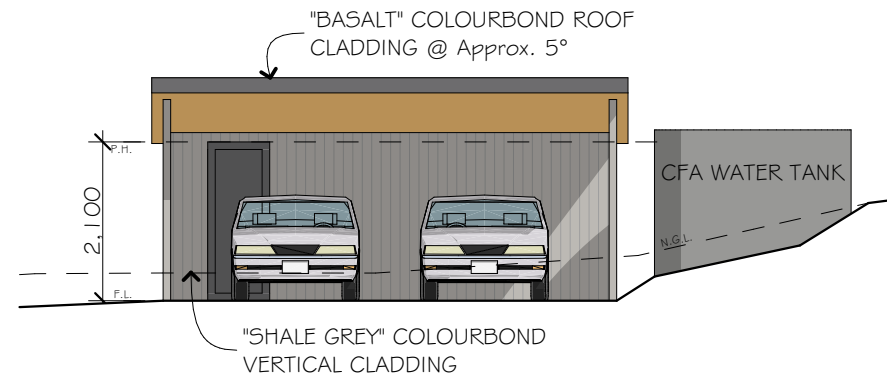
ELEVATIONS			
Scale	1:100	UNO	Date NOV 2019
Original paper size.	A3	Rev'n	B
Drawn	Peter	Dwg No.	TP4 of 06
© Copyright. Reproduction of plans in whole or part prohibited		Proj No.	B19-034



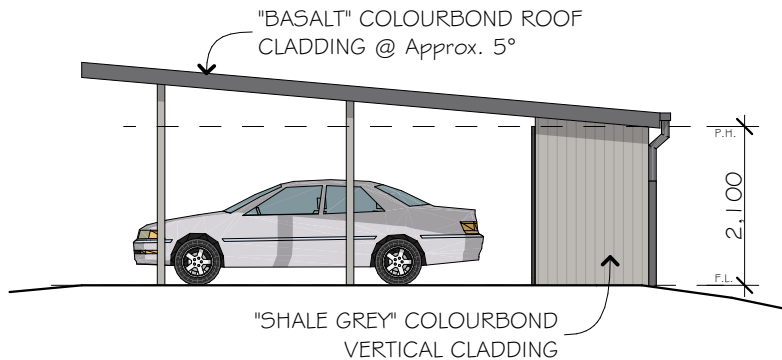
 NORTH ELEVATION
1:100



 EAST ELEVATION
1:100






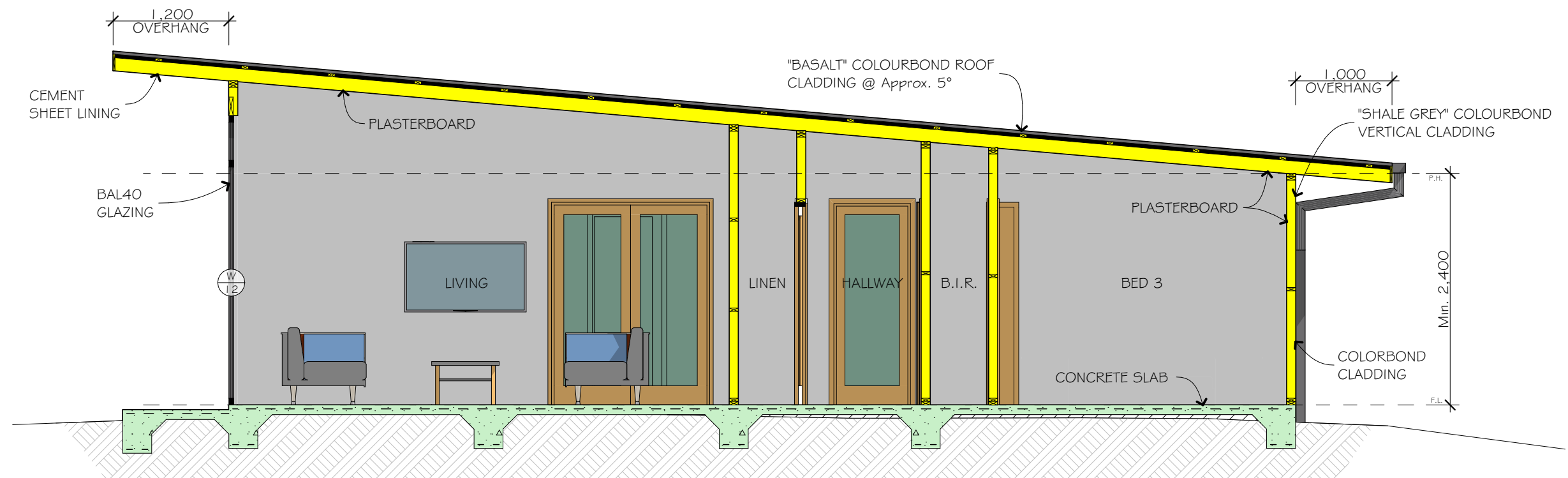
 WEST ELEVATION
1:100



 SOUTH ELEVATION
1:100




TOWN PLANNING DRAWINGS
Not For Construction
© Copyright
Reproduction of plans in
Whole or part prohibited

 1680 Burwood Highway, Belgrave 3160 Ph. (03) 9754 7464 Fax. (03) 9754 7063 Trading as Pegasus Australia Pty Ltd ACN 117 603 933		 	Contractor or owner-builder to check all dimensions on site prior to ordering and commencement of work and obtain clarification of any discrepancies from building designer.	No.	Revisions	Date	PROJECT PROPOSED DWELLING SITE ADDRESS 630 Buxton-Marysville Road Buxton 3911 CLIENT Sherryn & Paul Doherty		Title CARPORT ELEVATIONS	
							Scale 1:100 UNO		Date NOV 2019	
							Original paper size. A3		Rev'n B	
							Drawn Peter		Dwg No. TP5	of 06
							© Copyright. Reproduction of plans in whole or part prohibited		Proj No. B19-034	



SECTION AA
1:50

TOWN PLANNING DRAWINGS
Not For Construction
© Copyright
Reproduction of plans in
Whole or part prohibited

<div><p>Belgraphik BUILDING DESIGN</p><p>1680 Burwood Highway, Belgrave 3160 Ph. (03) 9754 7464 Fax. (03) 9754 7063 Trading as Pegasus Australia Pty Ltd ACN 117 603 933</p></div>		<div><p>bdav Building Designers Association Victoria</p></div> <div><p>REGISTERED Building Practitioner</p></div>	Contractor or owner-builder to check all dimensions on site prior to ordering and commencement of work and obtain clarification of any discrepancies from building designer.	<table><tr><th>No.</th><th>Revisions</th><th>Date</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>	No.	Revisions	Date																						<div>PROJECT PROPOSED DWELLING</div> <div>SITE ADDRESS 630 Buxton-Marysville Road Buxton 3911</div> <div>CLIENT Sherryn & Paul Doherty</div>	<table><tr><td colspan="2">Title SECTION AA</td></tr><tr><td>Scale 1:50</td><td>UNO Date NOV 2019</td></tr><tr><td>Original paper size. A3</td><td>Rev'n B</td></tr><tr><td>Drawn Peter</td><td>Dwg No. TP6 of 06</td></tr><tr><td colspan="2">© Copyright. Reproduction of plans in whole or part prohibited</td></tr><tr><td colspan="2">Proj No. B19-034</td></tr></table>	Title SECTION AA		Scale 1:50	UNO Date NOV 2019	Original paper size. A3	Rev'n B	Drawn Peter	Dwg No. TP6 of 06	© Copyright. Reproduction of plans in whole or part prohibited		Proj No. B19-034	
No.	Revisions	Date																																								
Title SECTION AA																																										
Scale 1:50	UNO Date NOV 2019																																									
Original paper size. A3	Rev'n B																																									
Drawn Peter	Dwg No. TP6 of 06																																									
© Copyright. Reproduction of plans in whole or part prohibited																																										
Proj No. B19-034																																										



BMS19072

630 Buxton-Marysville Road BUXTON

14-Jun-2019

BMS19072

www.**Fireguard**AUSTRALIA.com.au

BUSHFIRE MANAGEMENT STATEMENT

Information Table

Application Pathway	Pathway 2 Bushfire Protection Objectives
Document ID	BMS19072
Property Address	630 Buxton-Marysville Road BUXTON
Lot & Plan Number	Lot 2 PS616706
Area	35.08ha
Council	Murrindindi
Applicant	
Name	Sherryn Doherty
Phone	
Email	
Address	-
Agent	
Company	
Contact	
Phone	
Email	
Address	
Fireguard Australia	
Consultant	David Heath
Mobile	0439 393 712
Email	david@heathdesign.com.au
Postal	PO Box 5020 HEATHWOOD Ringwood 3134

Revision	Date	Details
A	2-Feb-2019	First Issue
B	14-Jun-2019	Edited plan submission

Fireguard Australia is a subsidiary of HEATH DESIGN GROUP PTY LTD

FPAA Membership Number 31580 | FPAA Accredited Practitioner BPAD30269 - BPAD Level 3



Copyright © 2019 Heath Design Group Pty. Ltd. All Rights Reserved 2 OF 48



Table of Contents

Bushfire Management Statement (BMS)	2
<i>Information Table</i>	
1. Introduction	6
1.1 Preparation of this report	6
1.2 Notes pertaining to the compilation of this report	6
2. Project Outline	6
2.1 Project Description	6
3. Site Details	7
3.1 Council Details	7
3.2 Zoning Details	7
4. Project Proposal Drawings	7
4.1 Drawing Register	7
5. Reference VPPs	7
6. Application Pathway and relevant Clause 53.02 objectives and measures	8
7. Information Required for Application Submission	8
8. Clause 53.02-4: Bushfire protection objectives	9
8.1 Clause 53.02-4.1: Landscape, siting and design objectives	
8.1.1 Approved Measure - AM2.1 Landscape bushfire risk	9
8.1.2 Approved Measure - AM2.2 Siting of Building	10
8.1.3 Approved Measure - AM2.3 Building Design	11
8.2 Clause 53.02-4.2: Defendable space and construction objective	
8.2.1 Approved Measure - AM3.1 Defendable space	12
8.2.2 BAL Calculations: Method 1 - Defendable Space & Construction Rating	13
8.2.3 Approved Measure - AM3.2 Defendable space	15
8.2.4 Alternative Measure - AltM 3.3 Defendable space on adjoining land	15
8.2.5 Alternative Measure	
- AltM 3.4 Method 2, AS 3959 for Defendable Space & BAL	16
8.2.6 Calculations: Method 2 - Defendable Space & Construction BAL Rating	17
8.2.7 Calculations: Method 2 - BAL Calculator	18
8.2.8 Alternative Measure	
- AltM 3.5 Defendable space to site boundary and BAL of FZ	20
8.2.9 Assessment of Defendable Space Working Diagram	21
8.2.10 Alternative Measure - AltM 3.6 Integrated Risk Management	22
8.3 Clause 53.02-4.3: Water Supply and Access objectives	
8.3.1 Approved Measures	23
- AM4.1 Water Supply as specified in Table 4 to clause 53.02-5	
Inserted Appendix	
8.3.2 Approved Measures	24
- AM4.1 Continued (Fittings Diagram)	
8.3.3 Approved Measures	25
- AM4.1 Vehicle Access as specified in Table 5 to clause 53.02-5	
8.3.4 Approved Measures - AM4.2 Water supply and access objectives	26
9. Conclusions	27
9.1. Private Bushfire Shelter	28
10. Appendix 1.0: Bushfire Management Plan	30
11. Appendix 2.0: Client's proposed development drawings	31

Bushfire Hazard Site Assessment (BHSA)	32
1. Site Assessment Area	32
1.1 Description of Site	32
1.2 Site Aerial	32
1.3 Site Dimensions	32
1.4 Existing Vehicle Access	32
1.5 Nearest Fire Hydrant	33
1.6 Features relevant to bushfire	33
2. Directional Site Assessment Photo's: Vegetation & Topography	34
2.1 North of Site	34
2.2 West of Site	35
2.3 South of Site	36
2.4 East of Site	37
2.5 Access of Site & Main Threat	38
3. Vegetation Exclusions	39
AS3959-2009 cl 2.2.3.2 - Determining the Bushfire Attack Level (BAL)	
Low threat Vegetation and non-vegetation areas	
3.1 Modified Vegetation	40
3.2 Vegetation Details for Method 2 Calculations	41
4. 150m Site Assessment Plan (SAP)	43
Bushfire Hazard Landscape Assessment (BHLA)	44
1. Reason for Site requiring a BHLA	44
2. Landscape Around Site	44
2.1 Locality Map	44
2.2 Description of Locality	44
3. Bushfire History	45
3.1 Past Bushfire Events	45
3.2 Possible Direction of Bushfire	46
3.3 Likely Bushfire scenarios	46
4. Local Prevention and Bushfire Management	46
4.1 Fire Authority Locations	46
4.2 Proximity to urban areas and towns and other areas of protection	46
4.3 Other Measures	46
5. Features relevant to bushfire protection	47
5.1 Adjoining Land	47
5.2 Access to Areas of safety	47
5.3 Constraints on implementation of appropriate Defendable space	47
6. Landscape Typology	47
6.1 Landscape Type	47
6.2 Recommendations for Safety and proceeding with development	47





Bushfire Management Statement (BMS)

1. Introduction

This Bushfire Management Statement has been prepared in response to the requirements of Clause 44.06-2 – Bushfire Management Overlay, and in accordance with the application requirements of Clause 53.02 – Bushfire Planning

This is a Pathway 2 application - Bushfire Protection Objectives.

1.1 Preparation of this report

This report was prepared by:	David Heath
------------------------------	-------------

Accredited Practitioner	BPAD3
-------------------------	-------

FPA Australia Accreditation No:	BPAD30269
---------------------------------	-----------

1.2 Notes pertaining to the compilation of this report

The site assessment was conducted on: **18.01.2019**

The owner was: _____ at the site.

2. Project Outline

2.1 Project Description

New 30 x 12m Dwelling on 35.08ha site. (Client prospective to buy based on achieved Building Permit, site location & BAL rating)

3. Site Details

3.1 Council Details

<i>Name</i>	Murrindindi	
<i>Postal</i>	PO Box 138 ALEXANDRA VIC 3714	
<i>Address</i>	28 Perkins St, Alexandra	
<i>Telephone</i>	(03) 5772 0333	
<i>Email</i>	msc@murrindindi.vic.gov.au	

3.2 Zoning Details

<i>Note</i>	In addition to the Bushfire Management Overlay (BMO) this site is subject to the following planning zone:
<i>Overlay and Zone Classification</i>	FARMING ZONE (FZ)
<i>Special Condition</i>	

4. Project Proposal Drawings

The Client has provided: 1 Plan drawings of the proposed construction.
The Client has provided: 1 Plan drawings of the site.

4.1 Drawing Register

Title	Date	Revision
Hand Sketch	10-Jan-2019	
Plan of Subdivision	1-Dec-2009	v3

5. Reference VPPs

Clause 44.06 Bushfire Management Overlay

Clause 53.02 Bushfire Planning

6. Application Pathway and relevant Clause 53.02 objectives and measures

For the purposes of addressing clause 53.02, clause 53.02-2 applies which is for all other applications where:

The checklist below identifies those objective and approved measures that have been addressed, and are applicable to the Bushfire Management Statement for this proposal.

This is a Pathway 2 application - Bushfire Protection Objectives

Approved Measure/ Alternative Measure	Applicable	Relevant Table and Clause
---------------------------------------	------------	---------------------------

CI 53.02 -4.1: Landscape siting and design objectives

AM 2.1 Bushfire risk to the development	YES	NIL
AM 2.2 Siting of Building	YES	maximum separation, public road proximity & Access by emergency services
AM 2.3 Design of Building	YES	NIL

CI 53.02 -4.2: Defendable space and construction objective

AM 3.1 Defendable space for a dwelling (including an extension or alteration to a dwelling), a dependant person's unit, industry, office or retail premises	YES	Column A, B, C, or if siting constraints, D of Table 2 of cl 53.02-5
AM3.2 Defendable space for accommodation other than a Dwelling	NO	Table 3 of cl 53.02-5

Alternative Measures

AltM 3.3 Defendable space includes adjoining land	NO	Table 2 of cl 53.02-5
AltM 3.4 Method 2 of AS3959	YES	AS3959: 2009
AltM 3.5 A dwelling assessed to be high Risk site &/or FZ	NO	Table 2 of cl 53.02-5 Only applies if AM3.1 cannot be met
AltM 3.6 Accommodation & integrated Fire Management	NO	Table 3 of cl 53.02-5

Approved Measure/ Alternative Measure (Continued)	Applicable	Relevant Table and Clause
CI 53.02 -4.3: Water supply and access objectives		
AM 4.1 : Water and access for Dwelling	YES	Water - Table 4; Access - Table 5 of cl 53.02-5
AM 4.2: Water, access & risk management for accommodation	NO	Water - cl 53.02-4 : AM4.2; Access- Table 5 of cl 53.02-5
7. Information Required for Application Submission		
In consideration of the BMO and Clause 53.02, the report comprises of 2 parts;		
BMS Bushfire Managment Statement, including		
Appendix 1: Bushfire Management Plan		
BHSA: Bushfire Hazard Site Assessment		
Appendix 2: Client Proposal Development Drawings		
NIL		
NIL		

Below Banner displayed onsite during site assessment

"Safeguard where you live and work"




0417 728 845
Bushfire, Drone, CAD + Mngt. Services

Site Assessment in Progress



0439 393 712
Fire Protection Reports and Services

"Safeguard where you live and work"




0439 393 712
Fire Protection Reports and Services

8. Clause 53.02-4: Bushfire protection objectives

8.1 Clause 53.02-4.1: Landscape, siting and design objectives

8.1.1 Approved Measure - AM2.1 Landscape bushfire risk

Clause 53.02 -4.1: Landscape, siting and design objectives

Objective	Development is appropriate having regard to the nature of the Bushfire risk arising from the surrounding landscape. Development is sited to minimise the risk of bushfire. Development is sited to provide safe access for vehicles, including emergency vehicles. Building design minimises vulnerability to bushfire attack.
-----------	---

Approved Measure - AM2.1 Landscape bushfire risk

Requirements	The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.
Response	<p>The landscape has a extreme bushfire risk due to the terrain and vegetation which gives potential for bushfires of massive destructive power that can destroy the landscape and infrastructure.</p> <p>The Site has an extended access and egress through forested land that is a risk to travel during a fire event and there is a need for a bushfire plan that includes as a priority the determination to leave early if possible.</p> <p>The risk to the development is mitigated by;</p> <ul style="list-style-type: none">* Building to a BAL that mitigates against ember attack.* The installation of a Private Bushfire Shelter which should only be used should evacuation or leaving early not be an option.* The proximity of fire fighting resources in the region, mainly to the south* The proximity of established residences that may act as a buffer and towns to the south that provide safety from bushfire. <p>The development, in consideration of the existence of the townships of Marysville and Alexandra and the implementation of all the risk mitigation measures can proceed.</p>

Conclusion

Satisfies Approved Measure.

8.1.2 Approved Measure - AM2.2 Siting of Building

Clause 53.02 -4.1: Landscape, siting and design objectives

Approved Measure - AM2.2 Siting of Building

Requirements

A building is sited to ensure the site best achieves the following;

- The maximum separation distance between the building and the bushfire hazard.
- The building is in close proximity to a public road.
- Access can be provided to the building for emergency service vehicles.

Response

The building has inadequate separation from the main hazard which is close by. There are no better positions on the site and the one proposed is the best that can be found. The configuration of the site and the proximity of the hazards makes siting an extremely difficult aspect to achieve and the planned location on the site is as good as the site can provide.

The building is not in close proximity to the passing road. The onsite access is long and requires ascent over rising ground.

Access to the planned location can be provided to the building with good design and extensive works however it is highly unlikely that any emergency vehicles would visit the building during a fire event.

The siting is generally constrained and not suitable and an alternative and innovative measure to adequately mitigate the risk is needed.

Conclusion

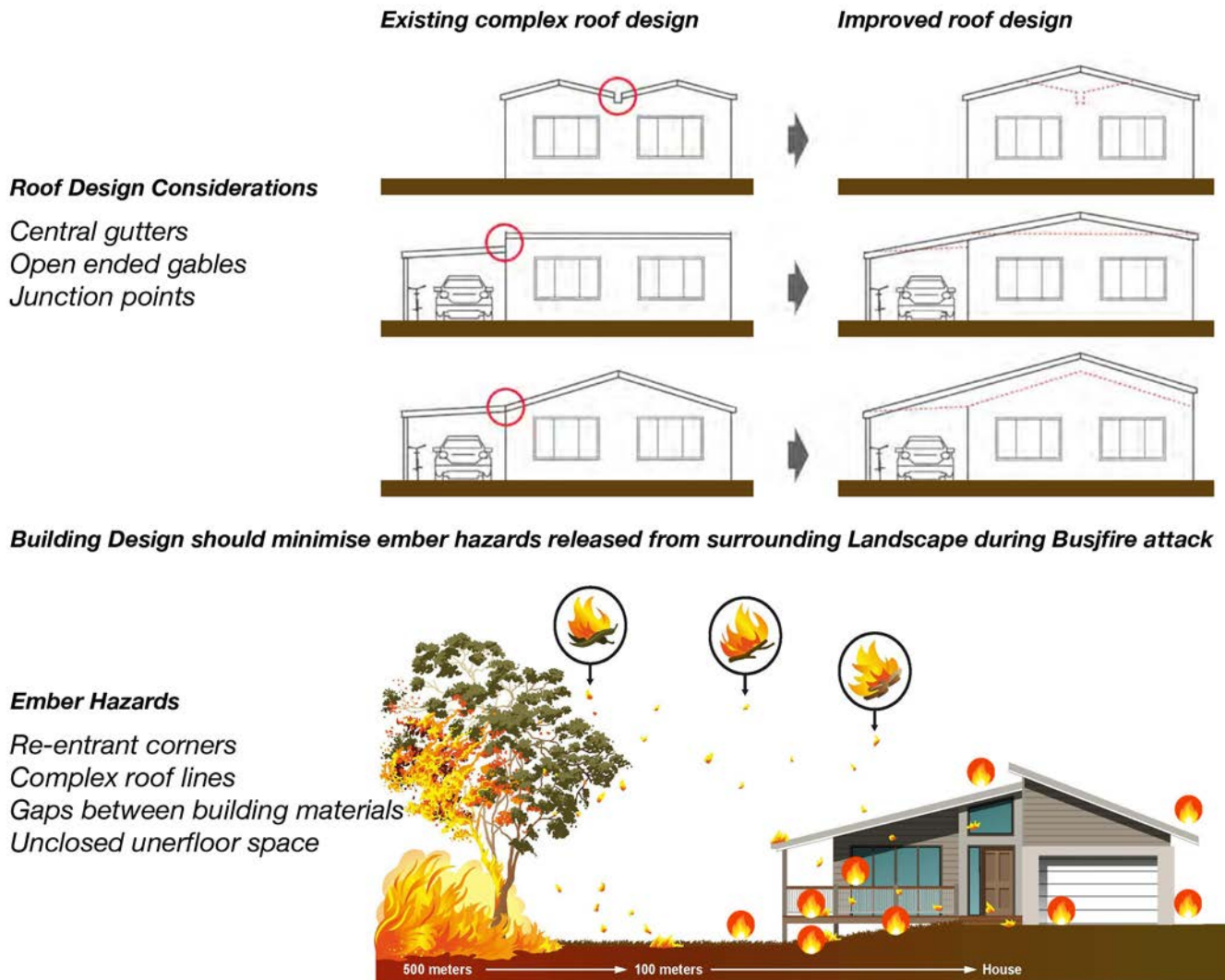
Does not satisfy Approved Measure. Requires an innovative measure to mitigate the risk.

8.1.3 Approved Measure - AM2.3 Building Design

Clause 53.02 -4.1: Landscape, siting and design objectives

Approved Measure - AM2.3 Building Design

Requirements	A building is designed to be responsive to the landscape risk and reduce the impact of bushfire on the building.
Response	The building is to be designed where possible to minimise ember entry - i.e. avoid re-entrant corners, complex roof lines. Refer to diagrams below:



Conclusion

Satisfies Approved Measure.



8.2.1 Approved Measure - AM3.1 Defendable space

Clause 53.02 -4.2: Defendable space and construction objective

Objective	Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on buildings.
-----------	--

Approved Measure - AM3.1 Defendable space

Requirements	<p>A building used for a dwelling (including an extension or alteration to a dwelling), a dependant person's unit, industry, office or retail premises is provided with defendable space in accordance with:</p> <ul style="list-style-type: none"> Table 2 Columns A, B or C and Table 6 to Clause 53.02-4 wholly within the title boundaries of the land; or If there are significant siting constraints, Table 2 Column D and Table 6 to Clause 53.02-5. <p>The building is constructed to the bushfire attack level that corresponds to the defendable space provided in accordance with Table 2 to Clause 53.02-5.</p>
Response	<p>The site has downslope >20 degrees on it adjacent to the planned location to the west and requires Method 2 BAL Calculations - refer to AltM3.4 on pages 16 to 19</p> <p>The defendable space is wholly within the title boundaries of the land;</p> <p>For the north and south directions the defendable space is in accordance to Table 2 column D (ie BAL40) and Table 6 to clause 53.02-5.</p> <p>To the west and east the defendable space is in accordance to the M2 calculations based on a BAL40 construction rating. Refer to pages 16 to 19.</p>

Conclusion

Satisfies Approved Measure.



8.2.2 BAL Calculations: Method 1 - Defendable Space & Construction Rating

METHOD 1

Step 1	Determine the assessment area and the defendable space standard that applies.			
Note	The assessment area comprises an area of 150 metres around the selected site. The site refers to the proposed building envelop or works.			
Step 2	Classify the vegetation, distance and slope.			
Step 3	Determine your defendable space and corresponding BAL.			
	North	West	South	East
Vegetation Type A	Grassland	Grassland	Grassland	Grassland
Exclusions				
Distance from the site boundary to vegetation	0	0	0	0
Flat/Upslope or Downslope	>10°-15°	>5°-10°	Flat/Upslope	>5°-10°
Vegetation Type B	Forest	Grassland	Forest	Forest
Exclusions				
Distance from the site boundary to vegetation	80	45	175	25
Flat/Upslope or Downslope	>15°-20°	>15°-20°	Flat/Upslope	>15°-20°
Vegetation Type C	-	Forest	-	-
Exclusions				
Distance from the site boundary to vegetation		60		
Flat/Upslope or Downslope	-	>20°	-	-
Combined	North	West	South	East
BAL	19	(see M2)	12.5	(FZ)

The highest BAL and associated defendable space is recorded below:

METHOD 1

BAL

BAL40

**Defendable
Zone**

see below

Metres

Summary

For the north and south directions the BAL rating is in accordance to CI 53.02-5, Table 2 Column D.

For the west and east directions and for a BAL40 rating the defendable space has been determined by BAL Calculator;

Refer to Method 2 Calculations on pages 16 - 19.

M2 calculations as per AltM3.4.

In summary, the defendable space is:

North: 50m

West: 56m

South: 50m

(note: the Table requires 19m but for practical reasons make same as for north. This allows for the installation of the Water tank and PBS)

East: 49m



8.2.3 Approved Measure - AM3.2 Defendable space

Clause 53.02 -4.2: Defendable space and construction objective

Approved Measure - AM3.2 Defendable space

Requirements	<p>A building used for accommodation (other than a dwelling or dependent person's unit), a child care centre, an education centre, a hospital, leisure and recreation or a place of assembly is:</p> <ul style="list-style-type: none"> • Provided with defendable space in accordance with Table 3 and Table 6 to Clause 53.02-5 wholly within the title boundaries of the land. • Constructed to a bushfire attack level of BAL12.5.
Response	Not applicable to this application

Conclusion

Satisfies Approved Measure.

8.2.4 Alternative Measure - AltM 3.3 Defendable space on adjoining land

Clause 53.02 -4.2: Defendable space and construction objective

Alternative Measures - AltM 3.3 Defendable space on adjoining land

Requirements	<p>Adjoining land may be included as defendable space where there is a reasonable assurance that the land will remain or continue to be managed in that condition as part of the defendable space.</p>
Response	Not applicable to this application


Conclusion

Satisfies Approved Measure.

8.2.5 Alternative Measure - AltM 3.4 Method 2, AS 3959 for Defendable Space & BAL

Clause 53.02 -4.2: Defendable space and construction objective

Alternative Measures - AltM 3.4 Method 2 - Defendable space & BAL

Requirements	A Defendable space and the bushfire attack level is determined using Method 2 of AS3959:2009 Construction of buildings in bushfire prone areas (Standards Australia) subject to any guidance published by the relevant fire authority.
Response	<p>To the west of the planned location there is a steep slope covered in forest with a downslope of about 21 deg. The distance to the forest is 60m. The slope of the ground between the building to the forest is about 10 degrees down for 25m , increasing to about 18 degrees at 45m and then 21 at 60m.</p> <p>Assume an average slope over the ground of 15 degrees to the forest. The parameters used for the M2 calculations are the standard parameters as in AS3959-2009.</p> 

Conclusion

A BAL40 and corresponding Defendable Space is determined by M2 Calculations in both the west and east directions. Refer to pages 16 to 19

8.2.6 Calculations: Method 2 - Defendable Space & Construction BAL Rating

METHOD 2 - Detailed Scientific Procedure (Refer AS3959-2009 Appendix B)

Step 1 The relevant FDI or windspeed in accordance with Paragraph B2.

Re Cl 2.2.2	Table 2.1	Measured Vegetation Type 1	FDI	100
		Measured Vegetation Type 2	FDI	100

Step 2 The vegetation classification, fuel loads and vegetation height in accordance with Paragraph B3.

Re Table 2.3	Type 1 Vegetation is:	Forest	Type 2 Vegetation is:	
	Type 1 Surface fuel load (w)	25	Type 2 Surface fuel load (w)	
	Type 1 Overall fuel load (w)	35	Type 2 Overall fuel load (w)	
	Type 1 Vegetation height (m)	NA	Type 2 Vegetation height (m)	

	North	West	South	East
Step 3 - Type 1 Effective slope under the classified vegetation		21 deg down		18 deg down
Step 3 - Type 2 Effective slope under the classified vegetation				
Step 4 - Type 1 Slope of the land between the site and the classified vegetation		15 deg down		10 deg down
Step 4 - Type 2 Slope of the land between the site and the classified vegetation				
Step 5 - Type 1 Distance from the site boundary to vegetation		60m (actual)		25m (actual)
Step 5 - Type 2 Distance from the site boundary to vegetation				

Method 2 BAL Calculator introduction notes

- Using the above figures, the Method 2 BAL Calculator uses algorithms generated from appendix B of AS3959-2009. See next page.
- The results are the quantification for Heat Flux and subsequent BAL rating for the given parameters.

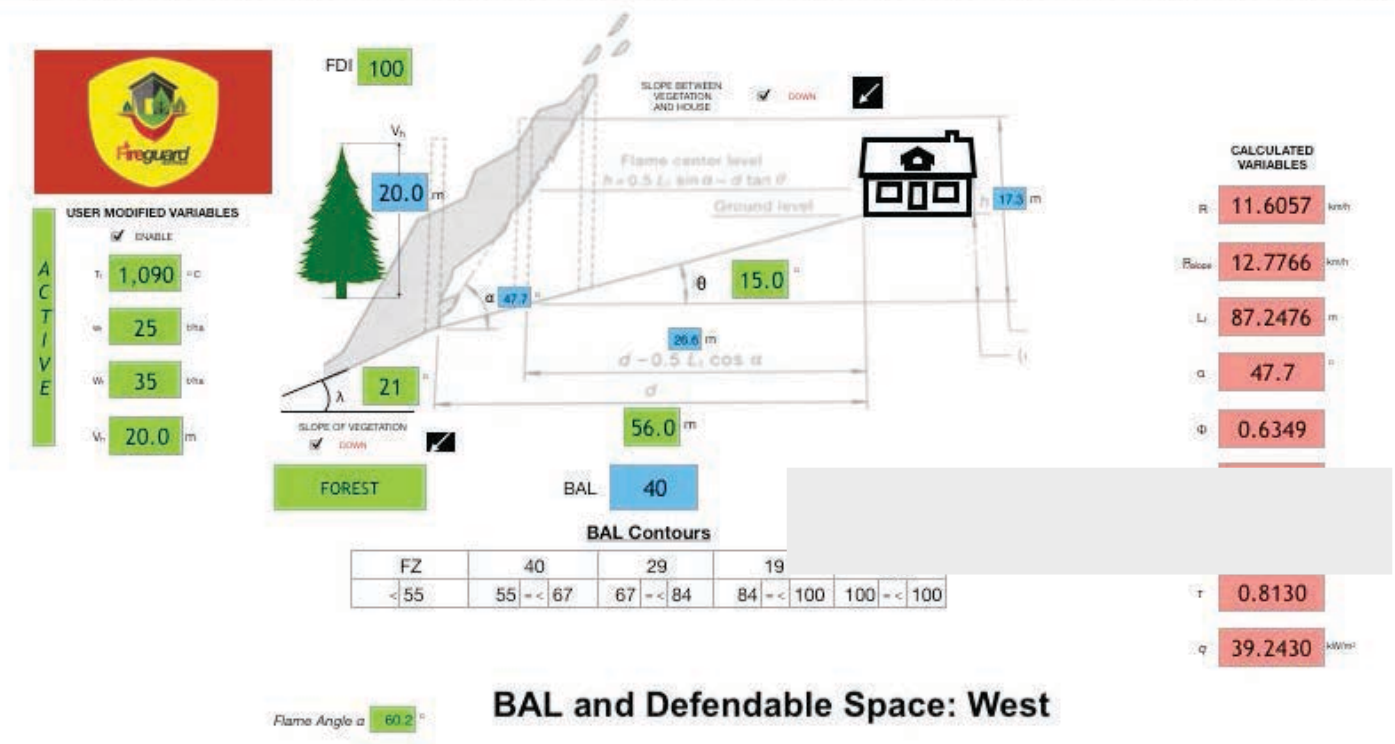
8.2.7 Calculations: Method 2 - Defendable Space & Construction BAL Rating

METHOD 2 - BAL Calculator

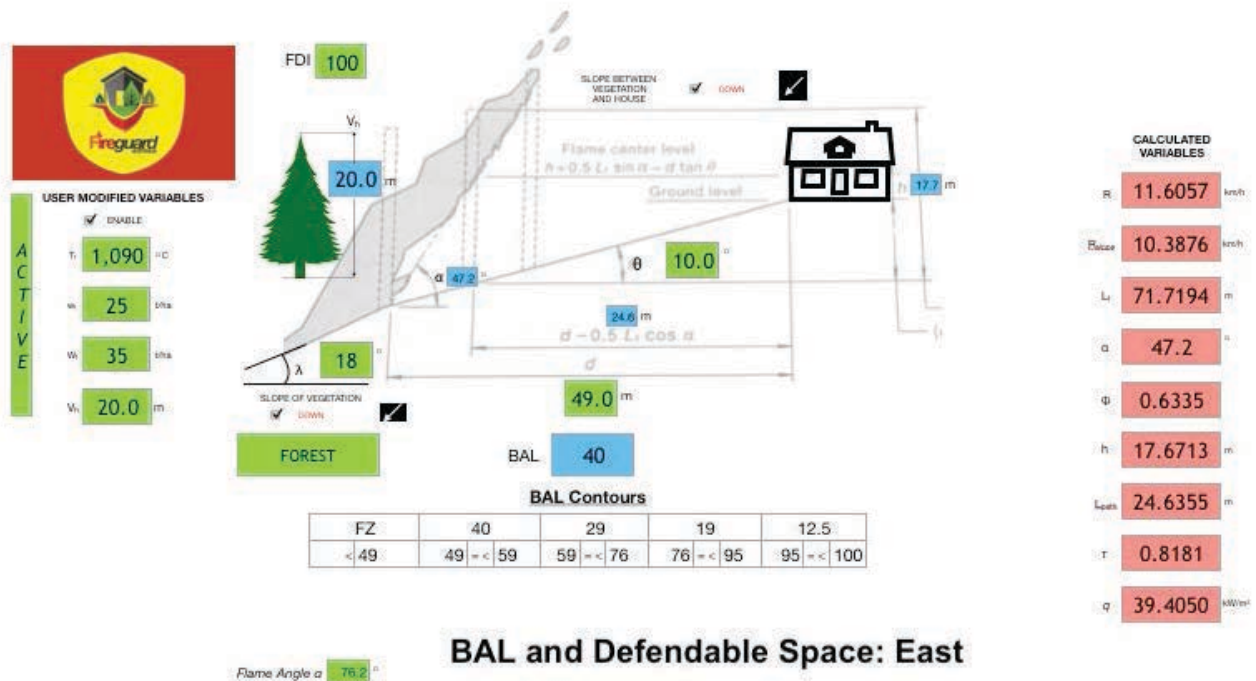
	Measured Vegetation - West	Measured Vegetation - East	These calculations determine the following Defendable Space requirements at the planned location:	
FDI	100	100		
Vegetation Classification	Forest	Forest		
Surface Fuel Load (t/ha)	25	25	Defendable Space requirements: BAL rating	
Overall Fuel Load (t/ha)	35	35		
Effective slope under the classified vegetation (degrees)	21	18	West: 40	56m
Slope between the site and classified vegetation	15	10	East: 40	47m
Distance of the site from classified vegetation (m)	56m	49m	Summary	
Flame Width (m)	100	100		
Flame Temperature (K)	1090	1090	<p>In these calculations the separation distance is adjusted until the BAL = 40.</p> <p>The distance this occurs at is the required defendable space for BAL40 in the particular direction.</p> <p>Refer to the Results User Interface for the West direction and East direction on the next page.</p>	
Flame Emissivity	0.95	0.95		
Ambient Temperature (K)	308	308		
Relative humidity	25%	25%		
Direction	west	east		
Rate of spread	11.61 Km/Hr	11.61 Km/hr		
Slope ROS	12.77 Km/Hr	10.38 Km/hr		
Flame angle	48 deg	47 deg		
View Factor	0.63	0.63		
Flame Length	87.2m	71.7m		
Path length	26.6m	24.2m		
Atmospheric Transmissivity	0.81	0.82		
Radiant heat flu	39.24 Kw/m2	39.41 Kw/m2		
Bushfire Attack Level	40	40		

8.2.7 Calculations: Method 2 - Defendable Space & Construction BAL Rating

METHOD 2 - BAL Calculator



For the west direction the required defendable space to achieve a BAL rating of 40 is 56m.



For the east direction the required defendable space to achieve a BAL rating of 40 is 49m.

8.2.8 Alternative Measure - AltM 3.5 Defendable space to site boundary and BAL of FZ

Clause 53.02 -4.2: Defendable space and construction objective

Alternative Measures - AltM 3.5 Defendable space to site boundary and BAL of FZ

Requirements	<p>A building used for a dwelling (including an extension or alteration to a dwelling) may provide defendable space to the property boundary where it can be demonstrated that:</p> <ul style="list-style-type: none"> The lot has access to urban, township or other areas where: <ul style="list-style-type: none"> Protection can be provided from the impact of extreme bushfire behaviour. Fuel is managed in a minimum fuel condition. There is sufficient distance or shielding to protect people from direct flame contact or harmful levels of radiant heat. Less defendable space and a higher construction standard is appropriate having regard to the bushfire hazard landscape assessment. The dwelling is constructed to a bushfire attack level of BAL FZ. <p>This alternative measure only applies where the requirements of AM 3.1 cannot be met.</p>
Response	Not applicable to this site

Conclusion

Satisfies Approved Measure.



Defendable Space Working Diagram



GENERAL NOTE:
Drawings are copyright under the Copyright Act 1968.
All rights reserved.
No drawings are to be reproduced, in part or in full, except for the specific purpose for which they are intended, without the written consent from Health Design Group Pty Ltd.
All reproduced drawings, in part or in full, must retain the Freignal Australia & BPAC3 Butfire Consultant Logo(s) as per above.



Health Design Group Pty Ltd, traders as Freiguard Australia, Freiguard Western Australia, Health Design + Project Management & Drone Director, are an accredited BPAD3 practitioner in both VIC & WA - BPAD30249.

Contact Laurie in 0437 728 845 for more information.
 Visit our websites for more details
www.heatdesign.com.au
www.fireguardsouthafrica.com.au

Rev	Description	Date
A	FIRST SUBMISSION - REV A PLAN	31/01/19

STATUS: BUILDING PERMIT

Client: SHERRYN DOHERTY

DEFENDABLE SPACE WORKING
DIAGRAM

PROJECT:
NEW SINGLE STORY DWELLING
630 BUXTON-MARYSVILLE ROAD
BUXTON

NORTH: 	DRAWING: LH	DATE: 31.01.19
	CHECKED: DH	SCALE & AS: AS SHOWN
PROJECT NO:	DRAWING NO:	REVISION:



1 DEFENDABLE SPACE WORKING DIAGRAM
102 1 : 1000

8.2.10 Alternative Measure - AltM 3.6 Integrated Risk Management

Clause 53.02 -4.2: Defendable space and construction objective

Alternative Measures - AltM 3.6 Integrated Risk Management

Requirements	<p>A building used for a dwelling (including an extension or alteration to a building used for accommodation (other than a dwelling or dependent person's unit), child care centre, education centre, hospital, leisure and recreation or place of assembly may provide defendable space in accordance with Table 2 Columns A, B or C and Table 6 to Clause 53.02-5 where it can be demonstrated that:</p> <ul style="list-style-type: none">• An integrated approach to risk management has been adopted that considers:<ul style="list-style-type: none">- The characteristics of the likely future occupants including their age, mobility and capacity to evacuate during a bushfire emergency.- The intended frequency and nature of occupation.- The effectiveness of proposed emergency management arrangements, including a mechanism to secure implementation.• Less defendable space and a higher construction standard is appropriate having regard to the bushfire hazard landscape assessment.
Response	Not applicable to this submission.
Conclusion	
Satisfies Approved Measure.	

8.3.1 Approved Measures - AM4.1 Water Supply (as specified in Table 4 to clause 53.02-5) and Access Objectives

Clause 53.02 -4.3: Water supply and access objectives

Approved Measure - AM4.1 Water supply & access objectives

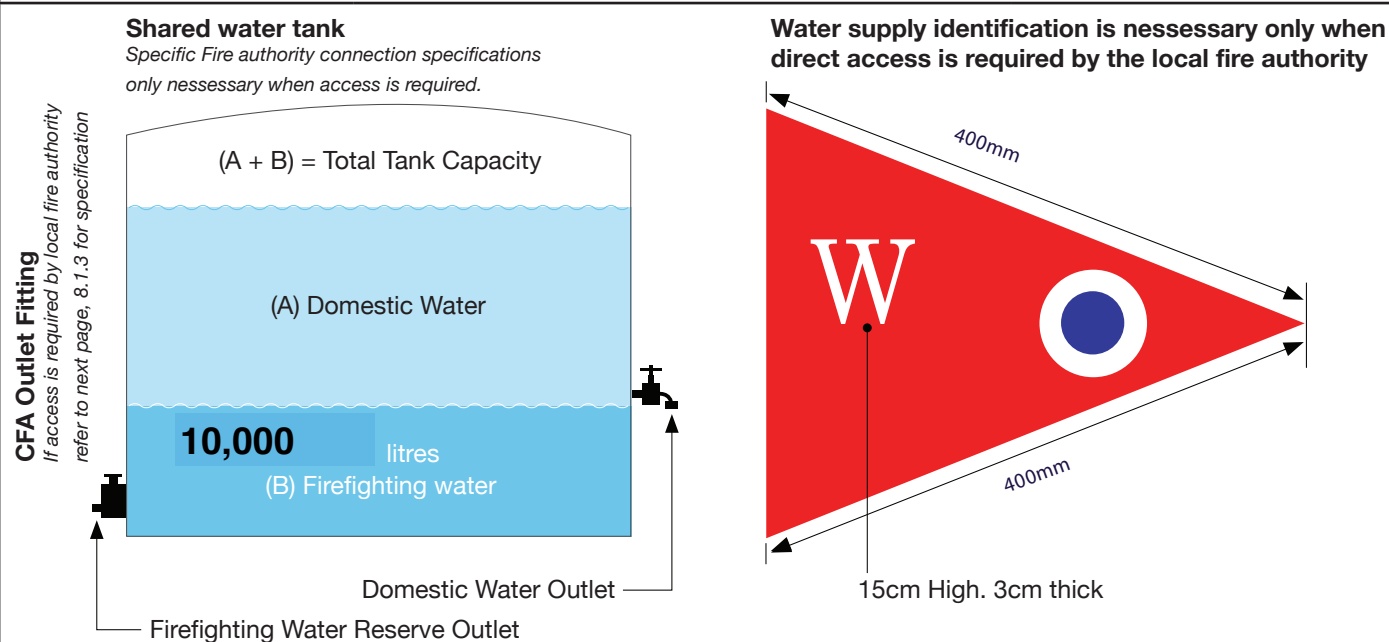
Response: Table 4 Water supply requirements for proposed Dwelling

Lot Sizes (Square metres)	Hydrant available	Capacity (litres)	Fire authority fittings and access required
1,001 and above	Not applicable	10,000	Yes

Water Supply Requirement Details & Diagram

The water supply if required should be identified with a marker flag;

No FP available. Size of site is 35.08Ha



For all water tank capacities the following requirements apply:

- be stored in an above ground water tank constructed of concrete or metal
- have all fixed above ground water pipes and fittings required for firefighting purposes made of corrosive material, and
- include a separate outlet for occupant use.
- the water supply must be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.



8.3.2 Approved Measures - AM4.1 Water Supply (as specified in Table 4 to clause 53.02-5) and Access objectives

Clause 53.02 -4.3: Water supply and access objectives

Approved Measure - AM4.1 Water supply and access objectives

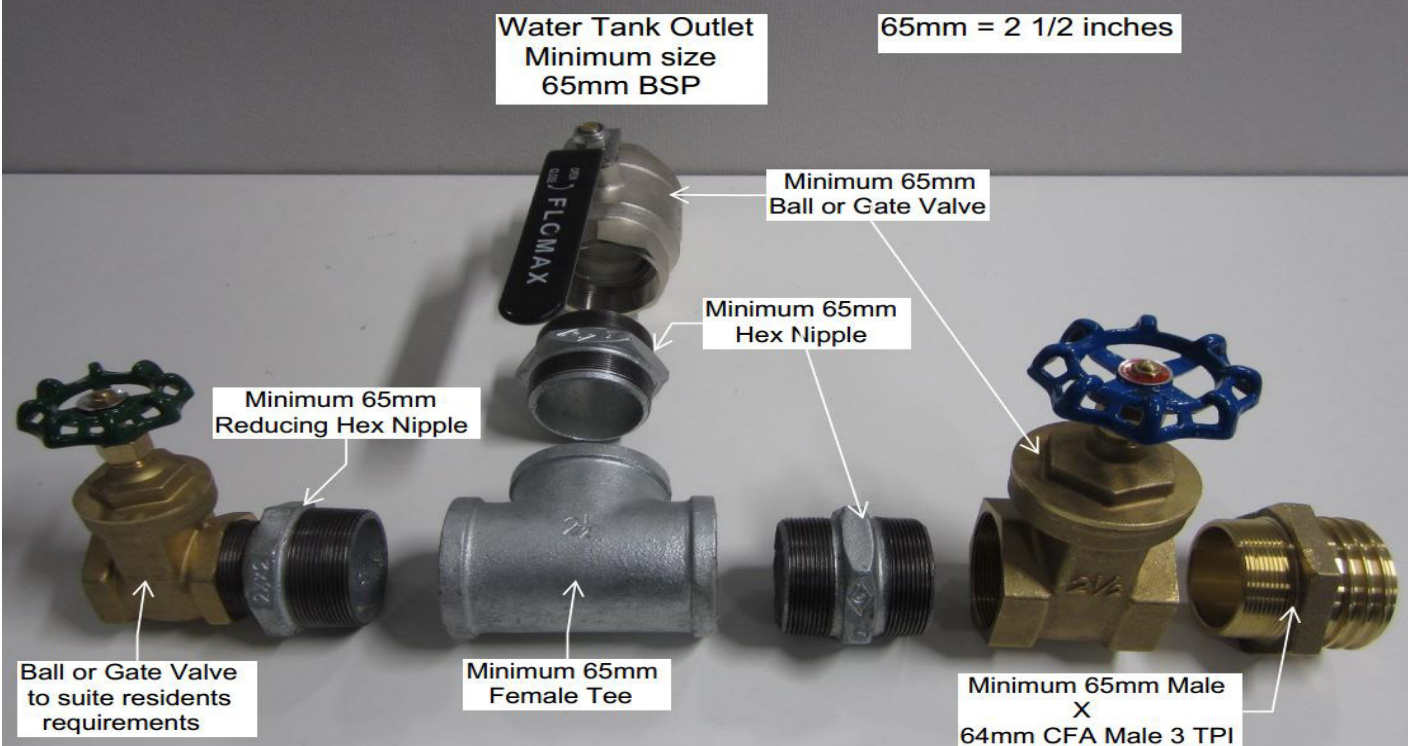
Requirements

Tank size at or greater than 10,000L - requirements below ARE APPLICABLE

Where a 10,000 & greater litre water supply is required the following fire authority fittings apply:

- The water supply must be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank must be within 4 metres of the access-way and unobstructed.
- The water supply must incorporate a separate ball or gate valve British Standard Pipe (BSP 65 millimetre) and coupling (64 millimetre CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).

Requirement Diagram - Fittings.



If access is required, what is the length of access?

>900m. It is highly unlikely the CFA will enter the site and defend the dwelling when under threat of Bushfire due to the long length of access/egress through forested and steep sloping ground.

8.3.3 Approved Measures - AM4.1 Vehicle Access as specified in Table 5 to clause 53.02-5.

Clause 53.02 -4.3: Water supply and access objectives

Approved Measure - AM4.1 Water supply and access objectives

Requirements	<ul style="list-style-type: none"> Vehicle access that is designed and constructed as specified in Table 5 to clause 53.02-5 Fire authority access to the water supply required? Yes. Refer below
--------------	---

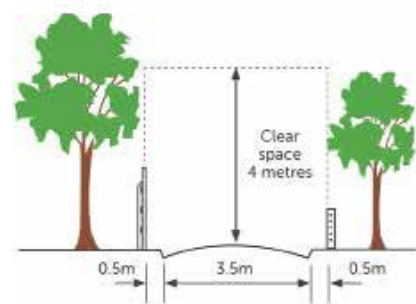
If access is required, the following Design and Construction requirements apply:

1. All-weather construction.
2. A load limit of at least 15 tonnes.
3. Provide a minimum trafficable width of 3.5 metres.
4. Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically.
5. Curves must have a minimum inner radius of 10 metres.
6. The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres.
7. Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.
8. Incorporate a turning area for fire fighting vehicles close to the building.
9. Passing bays at least every 200 m that are a minimum 20 m long and a minimum trafficable width of 6 m.

Diagram requirement samples from Table 5 to clause 53.02-5

Refer to the BMP for more detail

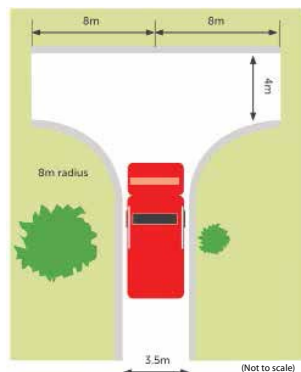
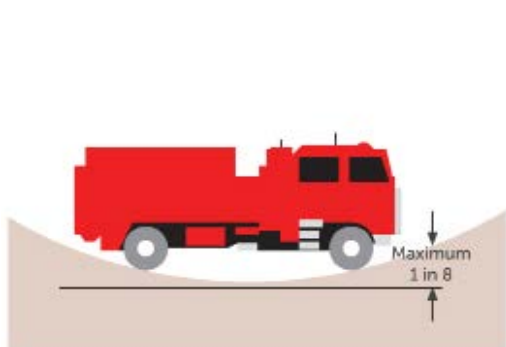
Encroachments for >30m



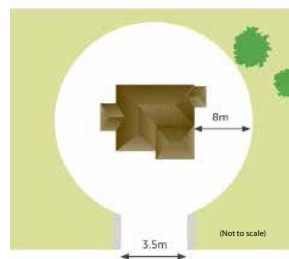
Width for >30m



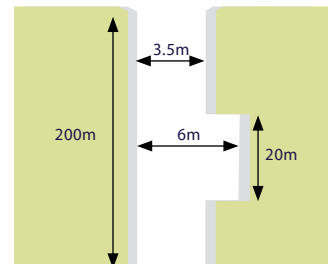
Dips & Gradients >30m



For >100m



For >100m



For >200m

Conclusion

Satisfies Approved Measure.

8.3.4 Approved Measures - AM4.2 Water supply and access objectives

Clause 53.02 -4.3: Water supply and access objectives

Approved Measure - AM4.2 Water supply and access objectives

Requirements	<p>A building used for accommodation (other than a dwelling or dependent person's unit), child care centre, education centre, hospital, leisure and recreation or place of assembly is provided with: The lot has access to urban, township or other areas where:</p> <ul style="list-style-type: none">- A static water supply for fire fighting and property protection purposes of 10,000 litres per 1,500 square metres of floor space up to 40,000 litres.- Vehicle access that is designed and constructed as specified in Table 5 to Clause 53.02-5.- An integrated approach to risk management that ensures the water supply and access arrangements will be effective based on the characteristics of the likely future occupants including their age, mobility and capacity to evacuate during a bushfire emergency. <p>The water supply may be in the same tank as other water supplies provided that a separate outlet is reserved for fire fighting water supplies.</p>
--------------	--

Response	Not applicable to this submission.
----------	------------------------------------

Conclusion

Satisfies Approved Measure.

9. Conclusions

9.1 Main Conclusion

1. Analysis	The site has an extreme bushfire risk from the hazards on and within close proximity to the site and due to the landscape. Onsite access is long and through forested country. To mitigate the risk it is necessary to implement all the protection measures. The prime measure is to leave early however if that is not possible to include the installation of a Private Bushfire Shelter (PBS). Refer to pages 28 to 29 on details of a typical PBS.
2. BAL rating	The BAL rating for the proposal is BAL40
3. Defendable Space	The Defendable Space is a compound configuration. The distances are: north - 50m, west - 56m, South - 50m, east - 49m. Refer to the Defendable Space Working Diagram on page 21
4. Water Tank Requirements	A 10,000L Water Tank made of non-combustible material is required to be installed onsite and maybe provided in the same water tank as other supplies provided they are separated with different outlets. The tank is to be fitted with CFA fittings and the CFA require access to within 4m of the tank outlets. It is to be identified with markings.
5. Access Requirements	Normally, access is required to the building to enable the CFA to get within 4m of the water tank outlet. However, due to the long access route in extreme risk country it is unlikely the CFA will attend a fire at the site. However design and construction requirements apply.
6. Activity Requirements	Particular activities need to be undertaken in order for the building to meet the objectives of cl. 44.06 and cl 53.02. These address the; <ul style="list-style-type: none"> • Implementation of defendable space, • construction of the building, • installation of the water supplies, • and access.

Refer to the BUSHFIRE MANAGEMNT PLAN for details on all these items.

Note	<ul style="list-style-type: none"> • This report is based on information supplied by the client • Other...
------	--



Fireguard Australia is a subsidiary of HEATH DESIGN GROUP PTY LTD

FPAA Membership Number 31580 | FPAA Accredited Practitioner BPAD30269 - BPAD Level 3



9.1. Private Bushfire Shelter

The use of a private bushfire shelter (PBS) is not without risk and needs to be part of an overall bushfire plan. A PBS may form a back up plan when it is too late to safely leave the area but is never an alternative to leaving early and is never a stand alone solution. A PBS provides a measured degree of protection to people with nowhere else to go.

The PBS must conform to the Building Regulations 2006 and have an accredited design (see example below). The BCA covers all classes of building, classes 1 to 10.

Reference: Private bushfire shelters in Victoria. A guide fro siting, landscaping and use. CFA December 2016

For the installation of a PBS, it must be ensured that:

- The shelter is built to meet the Regulations and performance requirements stated in the CFA reference.
- A building permit is obtained prior to construction.
- The shelter is sited (installation location) appropriately.
- The surrounding space is managed to provide appropriate separation distance from the fire hazards to improve safety when entering and exiting the shelter, before and after the passage of the fire front.
- The shelter is properly equipped and maintained to ensure it is in optimal condition.
- Dwelling occupants are physically and mentally prepared to use a shelter during a fire event.

Refer next page for Victorian Building Regulations, performance standards and permit requirements before constructing a private bushfire shelter.



A PBS must be designed and constructed to provide a tenable environment for occupants during the passage of untenable conditions arising from a bushfire event.

Victorian Building Regulations, performance standards and permit requirements you need to know before constructing a private bushfire shelter

In Victoria there are design, siting and construction regulations for private bushfire shelters:

- They must comply with the *Victorian Building Regulations 2006* (Regulations) and the National Construction Code (NCC) performance requirements.
 - The Australian Building Codes Board (ABCB) *Performance Standard for Private Bushfire Shelters* provides guidance for shelter designers and builders to meet the NCC performance requirements. The Performance Standard can be viewed on the ABCB website abcb.gov.au.
 - The Performance Standard provides objectives around what needs to be considered and achieved when designing a shelter, but is not a guide for how to build one.
 - If planning to construct a non-accredited shelter, do not rely solely on information within the Performance Standard. You must seek professional advice from a registered building practitioner, such as a fire safety engineer or a structural engineer.
- You must obtain a building permit prior to construction as a part of the Regulations. Installation of a shelter without a valid building permit is illegal. Building permits can be obtained from your local council building department or from a private building surveyor.
- To comply with building permit requirements, the homeowner must either:
 - buy a shelter which has been accredited by the Building Regulations Advisory Committee (BRAC) as meeting the Regulations. Accredited products include both in-ground and above-ground shelters
 - apply to the Building Appeals Board (BAB) for a determination that the design of a non-accredited shelter complies with the Regulations, or
 - obtain a certificate of compliance from a registered fire safety engineer who did not design the shelter, to satisfy a building surveyor that the non-accredited shelter meets the Regulations.

See the Victorian Building Authority (VBA) website vba.vic.gov.au for a list of BRAC accredited products, information about the BAB process, and to find a registered fire safety engineer.

- In some instances, councils may also require a planning permit. It is important to check with your local council for permit requirements. Find your local council contact details at dtpli.vic.gov.au.
- In high bushfire risk areas, you may not need a permit to clear vegetation and trees from around your home. However, it is important to check with your local council. Different rules apply in different council areas and tough penalties can apply.
- **Warning:**
 - Products used as bushfire shelters that are not built to the Regulations and building permit requirements (eg shipping containers, storage units, etc.) can be potential death traps.
 - A shelter made of fireproof materials is only one level of protection. Bushfire shelters built to meet the Regulations and performance requirements include other safety elements such as:
 - constructed to withstand conditions that can be experienced during extreme bushfire events
 - airtight when sealed (vents and door closed) to stop smoke entering and to maintain breathable air for a specified period of time
 - designed so that the inside temperature can be kept at survivable levels for a specified period of time.
 - The VBA warns Victorians against buying non-accredited private bushfire shelters or using storage units as shelter in the event of a bushfire. This includes models by companies that have not been approved by the BRAC. Bushfire shelters that are not accredited must be thoroughly assessed for compliance with the NCC as part of obtaining a building permit (VBA Media Release, 3 February 2016).
- **Note:**
 - CFA does not test or endorse private bushfire shelters as complying with the Regulations and NCC performance requirements.
 - CFA recommends that you request a copy of the shelter certificate of compliance from the shelter designer or manufacturer. Either a certificate of accreditation from the BRAC, a determination from the BAB, or a certification of compliance from an independent fire safety engineer who did not design the shelter.

10. Appendix 1.0: Bushfire Management Plan

Note: Reduced BMP Only. Please refer to the Full-size A3 Copy



GENERAL NOTE:
Drawings are copyright under the Copyright Act 1968.
No drawings are to be reproduced, in part or in whole, without the written consent of Heath Design Group Pty Ltd.
All reproduced drawings, in part or in full, must retain the Freguard Australia & BPAD3 Bushfire Consultant logos as per above.



Heath Design Group Pty Ltd. is an Australian Registered Design & Engineering Company. We are an accredited BPAD3 practitioner in both Fire Protection & Fire Safety.
Contact us on 0817 720 848 for more information.
Visit our website for more details:
www.heathdesigngroup.com.au
bushfire@heathdesigngroup.com.au

Rev	Description	Date
A	PART SUBMISSION - REV A PLAN	02/02/19

STATUS:	BUILDING PERMIT
---------	-----------------

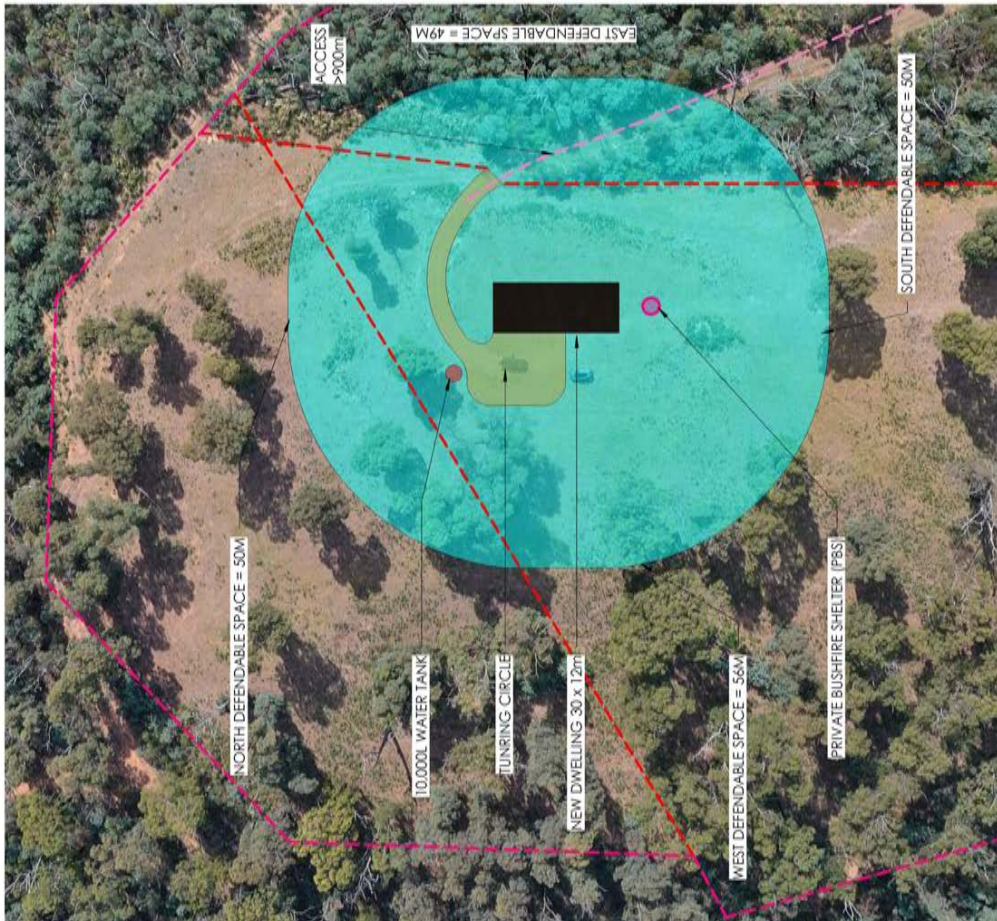
CLIENT:	SHERRYN DOHERTY
---------	-----------------

TITLE:	BUSHFIRE MANAGEMENT PLAN
--------	--------------------------

PROJECT:	NEW SINGLE STORY DWELLING 630 BUXTON-MARYSVILLE ROAD BUXTON
----------	---

NOTES:	DRAWN: LH DATE: 01.02.19 CHECKED: DH SCALE: AS SHOWN PROJECT NO: 190072 DRAWING NO: 101 REVISION:
--------	---

- Bushfire Mitigation Measures**
- a) Defendable Space**
Defendable space is provided for a distance to the: **North 50m, West 50m, South 50m & East 49m** around the building and managed in accordance with the following:
- Grass must be short cropped and maintained during the declared fire danger period.
 - All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
 - Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
 - Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
 - Shrubs must not be located under the canopy of trees.
 - Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5metres.
 - Trees must not overhang or touch any elements of the building.
 - The canopy of trees must be separated by at least 3m
 - There must be a clearance of at least 2 metres between the lowest tree branches and ground level.
- b) Construction Standard**
The Building must be designed and constructed to a minimum Bushfire Attack Level of **BAL-40**
- A Private Bushfire Shelter accredited to the Victorian Building Regulations by the Building Regulations Advisory Committee (BRAC) must be installed in accordance to the CFA reference December 2016: Private Bushfire Shelters in Victoria.
- c) Water Supply**
A static water tank dedicated solely for firefighting must be provided and must meet the following requirements:
- An effective capacity of 10,000L.
 - Be stored in an above ground water tank constructed of concrete or metal.
 - Have all fixed above ground water pipes and fittings required for firefighting purposes made of corrosion resistant metal
 - Include a separate outlet for occupant use.
 - Be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.
 - Be located within 60 metres of the outer edge of the approved building.
 - The outlet/s of the water tank must be within 4 metres of the accessibility and unobstructed.
 - Incorporate a separate ball or gate valve (British Standard Pipe [BSP 65 millimetre] and coupling [64 millimetre CFA 3 thread per inch male fitting]).
 - Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).
- d) Access**
Vehicle access to the dwelling and CFA water supply outlet must meet the following design and construction requirements:
- All-weather construction.
 - A load limit of at least 15 tonnes.
 - Provide a minimum trafficable width of 3.5 metres.
 - Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically.
 - Curves must have a minimum inner radius of 10 metres.
 - The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres.
 - Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.
 - If Driveway longer than 100m - incorporate a turning area for fire fighting vehicles close to the building by one of the following:
 - A turning circles with a minimum radius of eight metres.
 - A driveway encircling the building
 - The provision of vehicle turning heads - such as a T or Y head - which meets the specification of Austroads Design for an 8.8metre Service Vehicle
 - If driveway longer than 200 metres - incorporate passing bays at least every 200 m that are a minimum 20m long and a minimum trafficable width of 6 m.

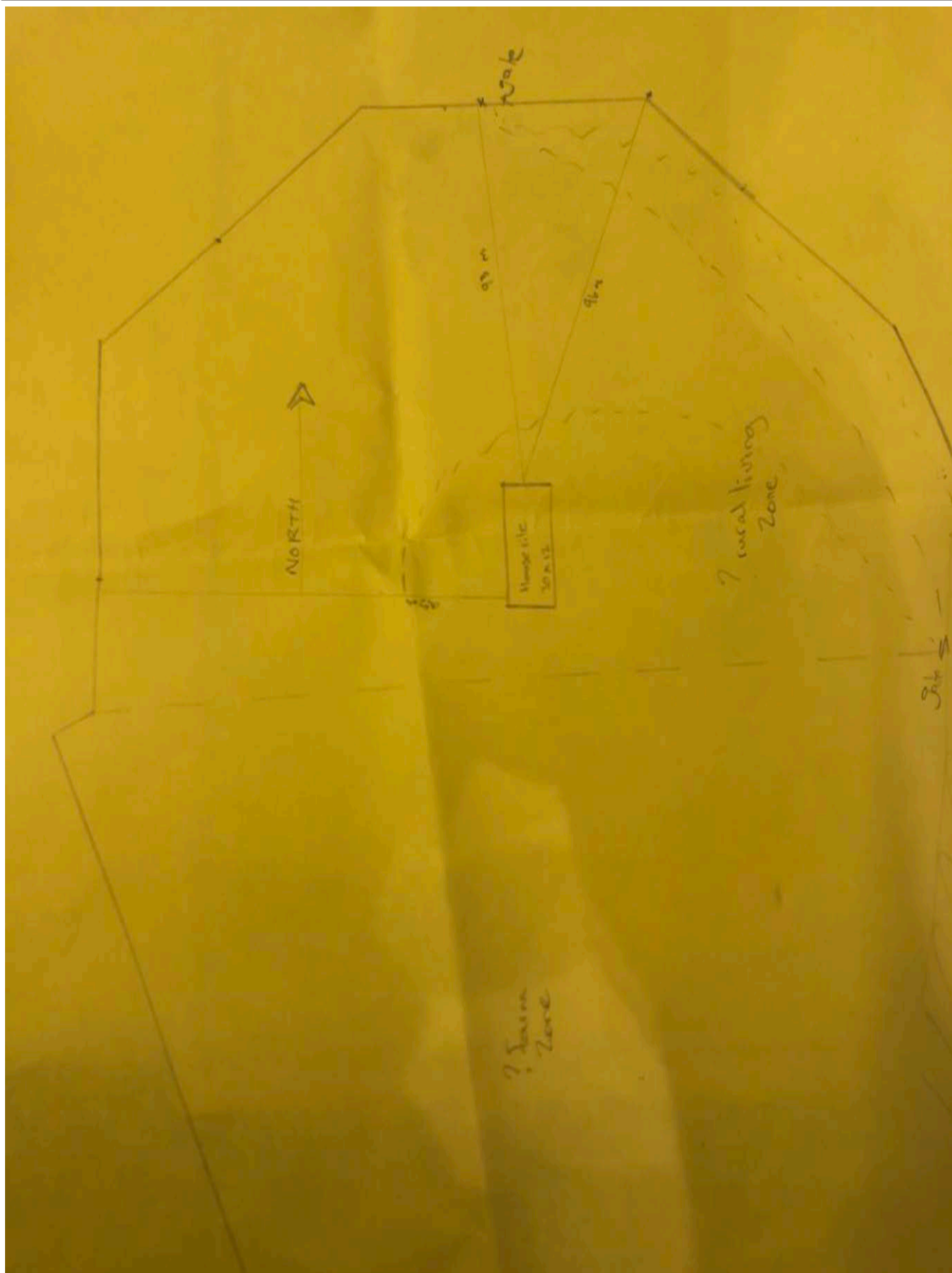


Construction BAL Rating = 40

1 BUSHFIRE MANAGEMENT PLAN
101 1 : 1000

11. Appendix 2.0: Client's proposed development drawings

Note: Refer to 4. Project Proposed Drawing & the associated 4.1 Drawing Register on page 6





Bushfire Hazard Site Assessment (BHSA)



1. Site Assessment Area

1.1 Description of Site

35.08ha predominately Farm Zoned property with >20 degree downslopes starting within 40 metres of the proposed site location to the West & East.

There is a portion of Rural Living Zone that covers the northern pocket of the property, starting approximately 24m north of the proposed siting. The proposed siting is within Farm Zone.

1.2 Site Aerial



1.3 Site Dimensions

35.08ha

1.4 Existing Vehicle Access

Existing is >900m from main road entry to proposed site.
Current cut access driveway gradient and tight 1x U-turning are non-complaint.

1.5 Nearest Fire Hydrant

N/A

1.6 Features relevant to bushfire

1. Analysis	The site has an extreme bushfire hazard. There is forest on the site, and on the boundaries on most sides with a steep slope. There is no alternative siting to the proposed location and to avoid an FZ rating the defendable space needs to lie on steep ground. To mitigate the risk of being onsite during a fire event there is a need to install a Private Bushfire Shelter.
2. CFA Brigade Locations within:	<ul style="list-style-type: none"> • Marysville • Buxton • Narbethong • Taggerty

Relevant Features to Bushfire Diagram

The risk of bushfire in the area of the site is extreme.

There is a Neighbourhood Safer Place at Marysville about 4.5kms to the south.

Travel on the roads during a fire event can be highly dangerous.

The main hazard is the forest that is on the site and surrounds the site on all boundaries, all of which is on a steep downslope .

The large areas of forest may generate ember attack resulting in spot fires, particularly if the prevailing winds are southerly onshore winds.

Spot fires can start, move quickly and come from many directions and maybe uncontrollable.



2. Directional Site Assessment Photographs: Vegetation & Topography

2.1 North of Site



Figure 1 North Grassland

View Position Drone 15m

Above Figure relevant to 'Vegetation Type B' within the BAL Assessment Report Table on page 13

Approximately 80m to the property fenceline. Singular trees scatter foreground, with >5m separation



Figure 1.1 North Forest

View Position Drone 120+

Above Figure relevant to 'Vegetation Type A' within the BAL Assessment Report Table on page 13

At a distance of 80m Forest beyond with downslope >15

2.2 West of Site



Figure 2 West Grassland

View Position Drone 15

Above Figure relevant to 'Vegetation Type A' within the BAL Assessment Report Table on page 13

A rolling hill-face with increasing downslope from 8 degrees to >23 degrees for 45-60m.



Figure 2.1 West Forest

View Position Drone 120+

Above Figure relevant to 'Vegetation Type B' within the BAL Assessment Report Table on page 13

Large forest with majority of slope underneath downslope at 21 degrees and 60m from the building location

2.3 South of Site



Figure 3 South Grassland

View Position Drone 15

Above Figure relevant to 'Vegetation Type A' within the BAL Assessment Report Table on page 13

Upslope for about 180m. Either side of the ridge the slope is down at 15 - 20 degrees to forest.



Figure 3.1 South Forest

View Position

Drone 120+

Above Figure relevant to 'Vegetation Type B' within the BAL Assessment Report Table on page 13

Upslope Due south along ridge for 200+m, with 15->20 degrees downslope to both East & West for longer than 100+ metres

Copyright © 2019 Heath Design Group Pty. Ltd. All Rights Reserved 36 OF 48

2.4 East of Site



Figure 4 East Grassland **View Position** Ground

Above Figure relevant to 'Vegetation Type A' within the BAL Assessment Report Table on page 13

Rolling slope increasing to 15-20 degrees downslope to vegetation and beyond - over >20 downslope in parts beyond 80m from site. Slope of the land towards the forest is 10 degrees down and the forest is 25m away.



Figure 4.1 East Forest **View Position** Drone 120+

Above Figure relevant to 'Vegetation Type B' within the BAL Assessment Report Table on page 13

Forest on variable downslope of 15 to 20 degrees, some parts 80m from the site appear to be greater that 20 degrees downslope.

2.5 Access of Site



Figure 5 Access Forest **View Position** Drone 120+

Above Figure relevant to 'Vegetation Type B' within the BAL Assessment Report Table on page 13

The majority of the access driveway is surrounded by Forest, 700+m of a 900 metre distance total.



Figure 5.1 Main Threat Forest **View Position** Drone 80

Above Figure relevant to 'Vegetation Type B' within the BAL Assessment Report Table on page 13

In all directions, Forest surrounds the property at variable distances. East & West >20 degrees downslope. North is 15-20 degrees downslope while the southern ridge is upslope at 10-15 degrees. Main threat is from West around North to East and consists of forest on steep ground. the locality is also subject to ember attack.

3. Vegetation Exclusions

AS3959-2009 cl 2.2.3.2 - Determining the Bushfire Attack Level (BAL)
Low threat Vegetation and non-vegetation areas

Vegetation Classification	Direction from Building	Separation Distance (m)	Description
None observed			

3.1 Modified Vegetation

None observed for this site.

3.2 Vegetation Detail - Method 2 Calculation



The forest vegetation in this photo is typical of the forests that are on the site and throughout the locality.

3.2 Vegetation Detail - Method 2 Calculation - Continued



Siting Markers

North Photo:
North East Corner marker
62.5m from identified tree



West Photo
South West Corner marker
27.5m from identified tree



South Photo
South East Corner marker
42m from identified tree

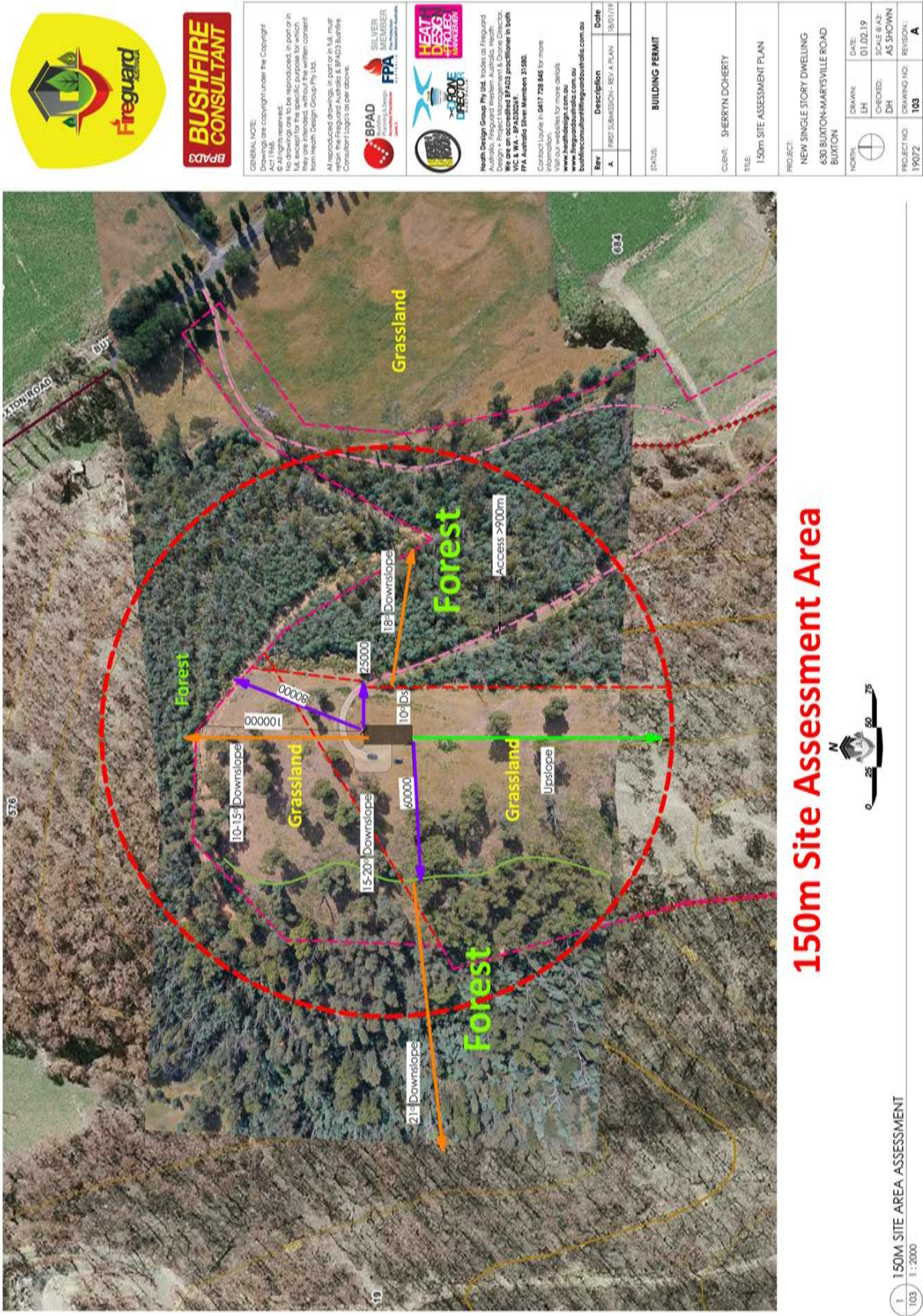


East Photo
North East Corner marker
40m from identified tree

Note: House runs parallel to nearest east fence.
The above setout provides a 30m x 12m
building envelop as per BMP & DS Diagram.

4. 150m Site Assessment Plan (SAP)

Refer to scale on diagram





Bushfire Hazard Landscape Assessment (BHLA)

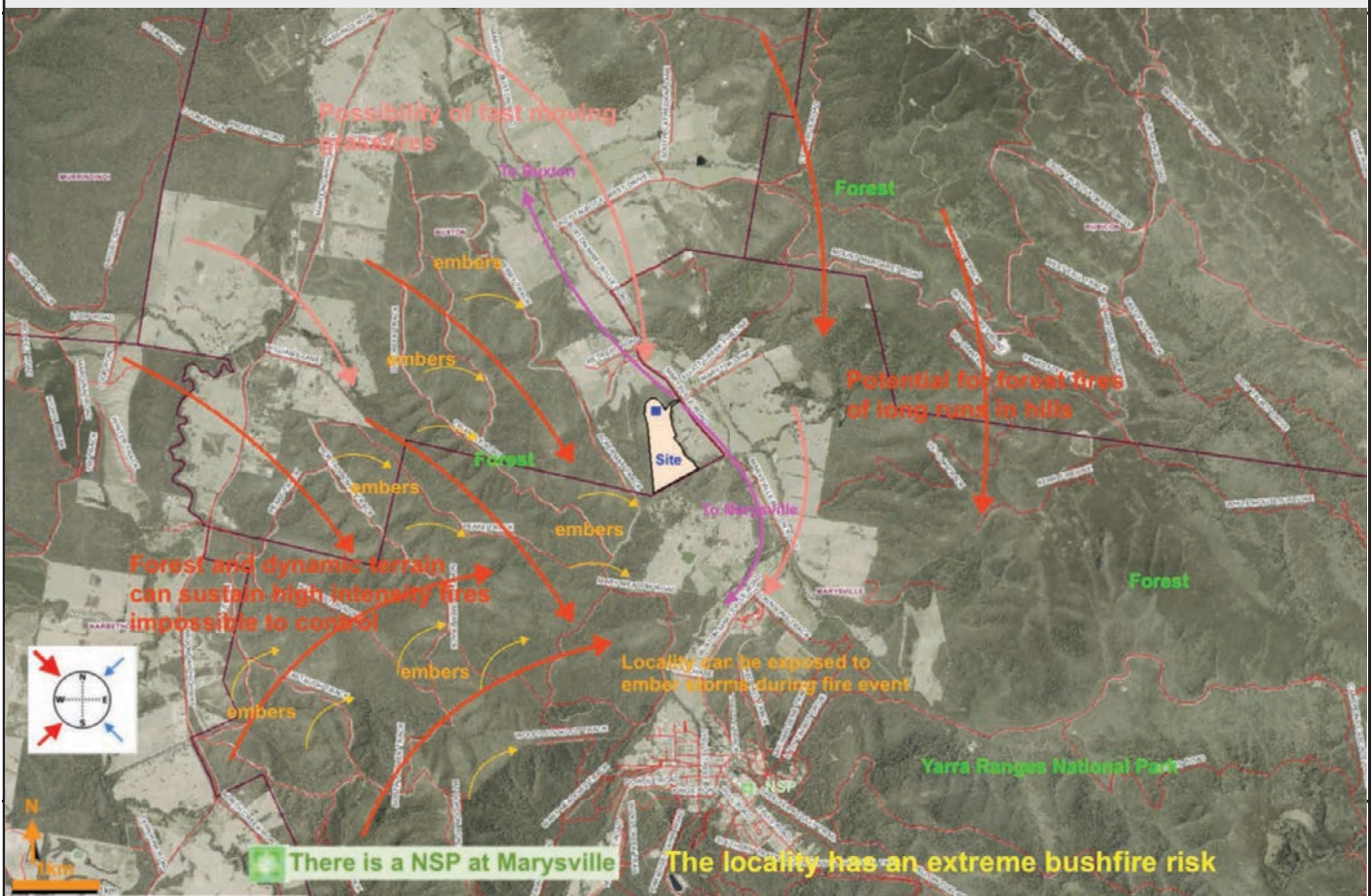


1. Reason for Site requiring a BHLA

This application is be considered under clause 53.02-4 due to the zoning of the land and slope of the land and vegetation in proximity being >20 degrees down.

2. Landscape Around Site

2.1 Locality Map

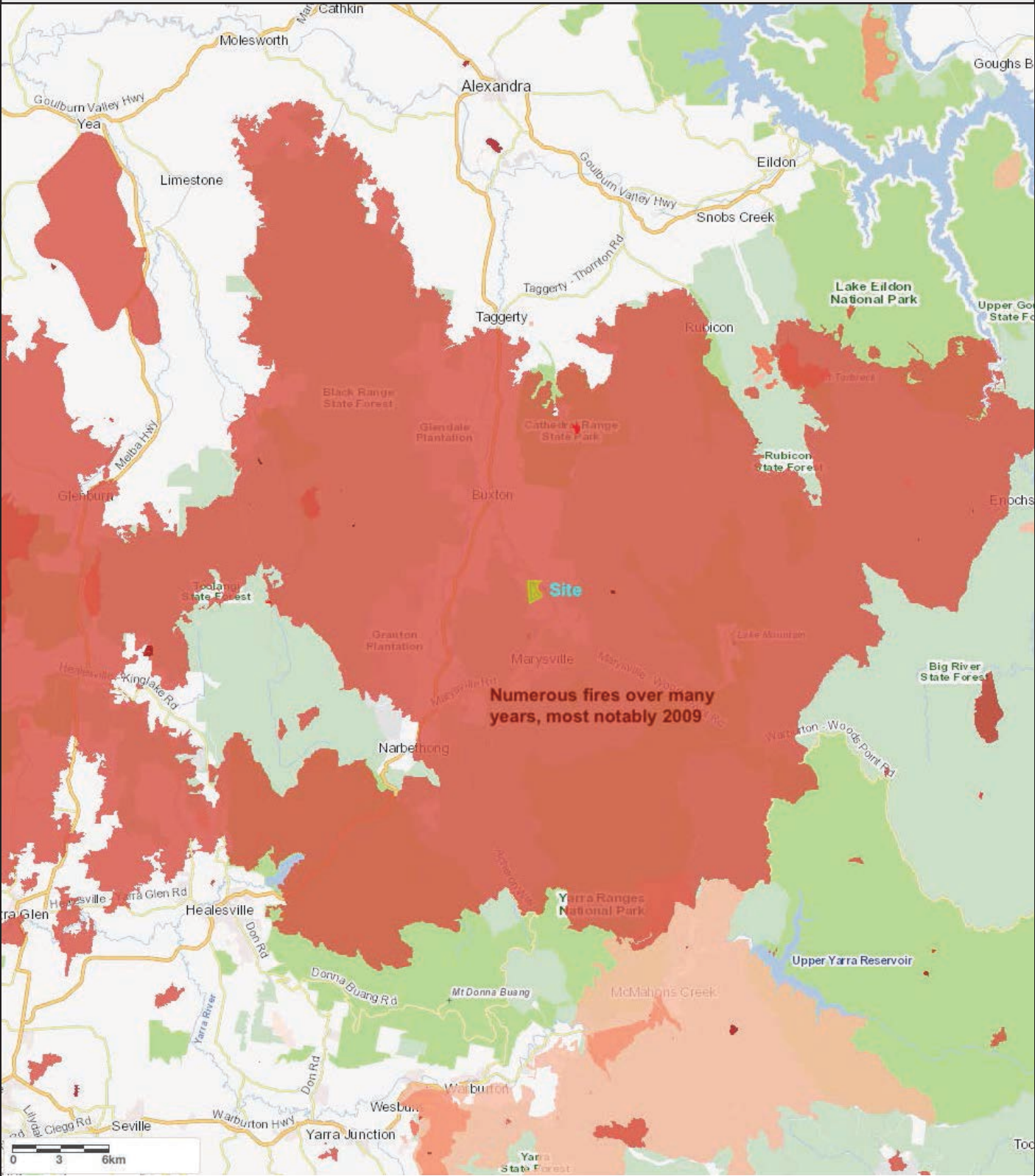


2.2 Description of Locality

The locality has steep hills and ravines covered in forests. Within the foothills and valleys of the ranges are rivers with pasture. There are few roads apart from the main Buxton - Marysville road and side roads and local tracks are generally unsealed, winding and flanked by forests. The locality has an extreme bushfire risk

3. Bushfire History

3.1 Past Bushfire Events



Many fires over many decades have burnt the area. The most recent and biggest for the area being 2009.

3.2 Possible Direction of Bushfire

The bushfire risk is extreme and bushfires can come from any direction. The prevailing winds are from the NW and SW and can bring ember attack from those directions however fire may come to the site from any direction due to the terrain and forest vegetation which covers the landscape.

3.3 Likely Bushfire scenarios

Due to the very steep terrain and high fuel load of the forests fires can be of extreme destructive power and impossible to control.

4. Local Prevention and Bushfire Management

4.1 Fire Authority Locations

There are a number of Fire Stations in the region; these are at Marysville, Buxton, Narbethong and Taggerty

4.2 Proximity to urban areas and towns and other areas of protection

Safety can be found at Marysville (5km to the south) and Buxton (8.5km to the NNW), via the Buxton-Marysville road. Other places of safety are Narbethong, 13.5kms to the SW, Healesville, 30kms to the SW and Alexandra - 35kms to the north.

4.3 Other Measures

It is imperative to monitor the bushfire activity in the region on a continuous basis during the fire season to ensure the plan of leaving early is available and is the least risk to do so. Due to the long site access passing through forested areas with steep slope there is the high risk that a bushfire warning will not be early enough to evacuate or that the road to safety is obstructed as the threat could come from any direction and obstruct egress to safety. It is therefore essential to further mitigate the risk by installing a Private Bushfire Shelter (PBS) close to the building as a last resort.

5. Features relevant to bushfire protection

5.1 Adjoining Land

The adjoining land is steep and covered in forest for at least 400m in all directions. The land to the east is also very steep with forest leveling out to grassland.

5.2 Access to Areas of safety

The main road leading north-south to safety is the Buxton - Marysville Road which passes 800m to the east of the site.

5.3 Constraints on implementation of appropriate Defendable space

The adjoining land is steep and most of it covered in forest. Some of it may not be suitable for inclusion as defendable space due to the impracticality of maintaining the vegetation.

6. Landscape Typology

6.1 Landscape Type

The landscape type is type 4. Of this landscape the following can be stated:

- * The type of vegetation and topography of the land will result in neighbourhood destruction in the event of a major fire event.
- * There is a history over many years of major bushfires in the region
- * Bushfire can approach from more than one direction.
- * Places of safety are by only one road leading either north or south.

The bushfire risk from such a landscape is extreme.

6.2 Recommendations for Safety and proceeding with development

In order for the development to proceed there should be a firm plan to leave early, and a bushfire plan must be in place and all bushfire measures must be implemented. To mitigate the risk of being caught on the site, which has a long access/egress through forested terrain, during a fire event, a Private Bushfire Shelter should be installed to provide a last resort contingency.

Plan and prepare for bushfire and monitor the situation with a firm commitment to leave early.



Fireguard Australia is a subsidiary of HEATH DESIGN GROUP PTY LTD

FPAA Membership Number 31580 | FPAA Accredited Practitioner BPAD30269 - BPAD Level 3



www. 

.com.au



SILVER MEMBER
Fire Protection Association Australia

Provider of Choice

Fireguard Australia operate in Victoria and Western Australia providing Fire Protection Reports and Services.

We provide BPAD3 accredited bushfire risk solutions, aerial drone site analysis, detailed surveying and CAD documentation.

We consult Councils, Architects, Builders & home owners from site planning to authority submission.



Visit

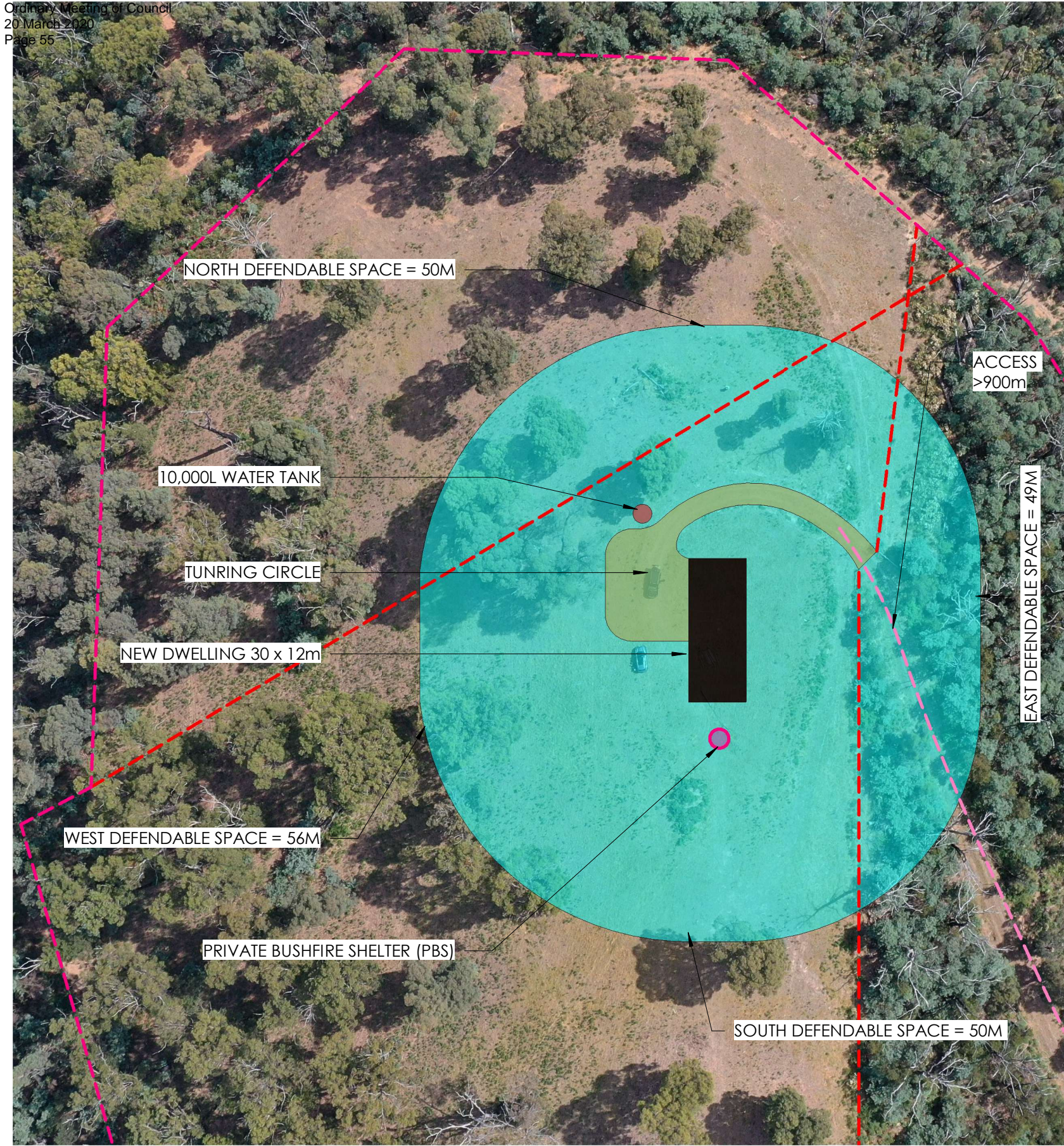
www.fpaa.com.au

www.fireguardaustralia.com.au

www.heathdesign.com.au

for more information





Construction BAL Rating = 40



Bushfire Mitigation Measures

a) Defendable Space

Defendable space is provided for a distance to the: **North 50m, West 56m, South 50m & East 49m** around the building and managed in accordance with the following:

- Grass must be short cropped and maintained during the declared fire danger period.
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.
- Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.
- Shrubs must not be located under the canopy of trees.
- Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5m
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

b) Construction Standard

The Building must be designed and constructed to a minimum Bushfire Attack Level of **BAL – 40**

- A Private Bushfire Shelter accredited to the Victorian Building regulations by the Building Regulations Advisory Committee (BRAC) must be installed in accordance to the CFA reference December 2016: Private Bushfire Shelters in Victoria.

c) Water Supply

A static water tank dedicated solely for firefighting must be provided and must meet the following requirements:

- An effective capacity of. 10,000L
- Be stored in an above ground water tank constructed of concrete or metal.
- Have all fixed above ground water pipes and fittings required for firefighting purposes made of corrosive resistant metal
- Include a separate outlet for occupant use.
- Be readily identifiable from the building or appropriate identification signage to the satisfaction of the relevant fire authority.
- Be located within 60 metres of the outer edge of the approved building.
- The outlet/s of the water tank must be within 4 metres of the accessway and unobstructed.
- Incorporate a separate ball or gate valve (British Standard Pipe (BSP 65 millimetre) and coupling (64 millimetre CFA 3 thread per inch male fitting).
- Any pipework and fittings must be a minimum of 65 millimetres (excluding the CFA coupling).

d) Access

Vehicle access to the dwelling and CFA water supply outlet must meet the following design and construction requirements:

- All-weather construction.
- A load limit of at least 15 tonnes.
- Provide a minimum trafficable width of 3.5 metres.
- Be clear of encroachments for at least 0.5 metres on each side and at least 4 metres vertically.
- Curves must have a minimum inner radius of 10 metres.
- The average grade must be no more than 1 in 7 (14.4%) (8.1°) with a maximum grade of no more than 1 in 5 (20%) (11.3°) for no more than 50 metres.
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.
- If Driveway longer than 100m - incorporate a turning area for fire fighting vehicles close to the building by one of the following;
 - A turning circles with a minimum radius of eight metres.
 - A driveway encircling the building
- The provision of vehicle turning heads - such as a T or Y head - which meets the specification of Austroad Design for an 8.8metre Service Vehicle
- If driveway longer than 200 metres - incorporate passing bays at least every 200 m that are a minimum 20m long and a minimum trafficable width of 6 m.



GENERAL NOTE:
Drawings are copyright under the Copyright Act 1968.
© All rights reserved.
No drawings are to be reproduced, in part or in full, except for the specific purpose for which they are intended, without the written consent from Heath Design Group Pty Ltd.

All reproduced drawings, in part or in full, must retain the Fireguard Australia & BPAD3 Bushfire Consultant Logo's as per above.



Heath Design Group Pty Ltd. trades as Fireguard Australia, Fireguard Western Australia, Heath Design + Project Management & Drone Director. We are an accredited BPAD3 practitioner in both VIC & WA - BPAD30269. FPA Australia Silver Members 31580.

Contact Laurie in 0417 728 845 for more information.
Visit our websites for more details
www.heathdesign.com.au
www.fireguardaustralia.com.au
bushfireconsultant@fireguardaustralia.com.au

Rev	Description	Date
A	FIRST SUBMISSION - REV A PLAN	02/02/19

STATUS: **BUILDING PERMIT**

CLIENT: SHERRYN DOHERTY

TITLE:
BUSHFIRE MANAGEMENT PLAN

PROJECT:
NEW SINGLE STORY DWELLING
630 BUXTON-MARYSVILLE ROAD
BUXTON

NORTH: 	DRAWN: LH	DATE: 01.02.19
	CHECKED: DH	SCALE @ A3: AS SHOWN
PROJECT NO: 19072	DRAWING NO: 101	REVISION : Page 55 of 55