Change of Use Request: Application to Murrindindi Shire Council

Application Rationale

Mt Cathedral Holdings has withdrawn from its initial plan to construct Bunkhouse style accommodation purposes elsewhere on the property for reasons of defendable space and biodiversity loss.

The proposed Bunkhouse location is now an **existing machinery shed** sited at the old dwelling site that existed prior to the 2009 bushfires.

Master Plan for 140 Granite Park Place BUXTON

As background, the property has planning consent for a dwelling to be built on the ridgeline close to the terminus of Granite Park Place.

When the property was purchased, the property owner gave notice to Council of its intentions for use of the land in a letter dated March 10th 2015:

> *I have enclosed some background information on a proposed philanthropically funded community initiative we wish to establish in Murrindindi. Our hope is that we can engage constructively with Council on negotiating how this new piece of social infrastructure can be established in such a way that it meets all regulatory requirements and be an economic stimulus for the region.*

Two years from that letter being supplied, the project is being funded and supported by Ronald McDonald House, Sanitarium Health and Wellbeing, the RACV and the Royal Children's Hospital and construction will commence shortly for the dwelling with planning consent under the supervision and management of builder [redacted]

A 30 year lease is now in place between the property holder and charity Chapter Seven Limited. The charity conducts a range of activities at the site, including planning for the Fun Mudder event proposed for October 22nd 2017.

More information about The Retreat and its objectives is available at www.theretreat.org.au. Recent media about The Retreat has also appeared in the Alexandra Standard, reproduced here at **Exhibit A**.

Past Australian of the Year Simon McKeon will conduct a groundbreaking ceremony at the site for The Retreat on June 20th at 10am. We expect construction will be completed for the main dwelling in late 2018.

To support the functions and objectives of the main dwelling, a second dwelling is required to house volunteers, staff and other guests who may attend the property. This second dwelling is proposed as the Bunkhouse.

Present Use

140 Granite Park Place is a currently a workplace for volunteers and contractors conducting planning and conservation works who access the shed on a weekly basis

for machinery, equipment, tools, smoko, repairs to equipment and site meetings in bad weather. This activity is in keeping with the masterplan for the site.

The fitting observed by the building department as a kitchen are in fact is storage for tools, batteries, chargers, first aid equipment, spare parts and tea and coffee supplies. The cold water washbasin is used for worker hygiene and tools clean up and the gas ring for hot water, lunch meals for workers and other amenities.

The existing shed lining was undertaken in order to hang tools and equipment. There is insulation behind the ply plates to help regulate the extreme high and low temperatures we experience in the region. In July and August, temperatures at site can stay at 2-3 degrees so the lining was undertaken so that staff and volunteers have reasonable amenity in the machinery shed as they undertake their duties.

The building owner and Chapter Seven Ltd, the charity that manages the site, does not have the insurance coverage, interest or permission to use the shed as accommodation in its current form, particularly given the absence of bed, bathroom and toilet facilities.

Requested Information
Council requirements for this change of use request are shown below.

1. **Completed and Signed Planning Permit**

Please find the application attached to the email this document has been sent with.

2. **Permit Application Fee**

The fee will be paid when the plan is lodged.

3. **Full copy of title and title plan, produced in the last 3 months**

Please find the title attached at **Exhibit B.**

4. **How the Dwelling has been Designed and Sited on the Land and Neighboring Property**

- **Ongoing Agricultural Activity**

The Bunkhouse supports the co-location of agriculture. On a block that is dominated by native bushland and slopes, the location is one of few that can be easily accessed by farming equipment and farm labourers. There is evidence of small scale agricultural activity prior to the 2009 bushfires. Further activity will be undertaken in the coming years as a kitchen garden and fruit trees are established to support The Retreat's objectives.

- **Native vegetation**

A bio-diversity report is shown at **Exhibit C** which addresses the loss of vegetation in order to establish defendable space. The area around the existing shed has been maintained for many years given it was the dwelling for the property prior to the 2009 bushfires.

- **Water courses and drainage lines**

The closest water course, Stockton Creek has been dammed by the neighbors immediately upstream from 140 Granite Park Place and the location of the dwelling will have no impact on the flow or the passage of the creek. Located on the western side of the Stringybark Ridge, rainwater flows past the existing shed and drainage lines that were installed in 2015 divert water flow around the 11m length shed.

- **The rural landscape**

The rural landscape will remain unchanged as a result of the change of use application. The Bunkhouse is situated on the pre-2009 house site for 140 Granite Park Place. There are no neighboring properties impacted by the change of use: the State Park is located at the northern boundary and to the south, neighbours are over 1km away and not in sight of the property. Visibility of the shed from South Cathedral Lane is shielded by tree growth, as shown in the photograph below taken from the edge of the road facing east towards the bunkhouse site.

How the Land is Managed and What the Land is Being Used For

According to refuse materials and other evidence found on site (plumbing and irrigation lines and disturbed soil) and the accounts of neighbours, prior to the 2009 bushfires the land had small scale agricultural activity that was managed for leisure purposes.

The land is currently being used for firewood harvest to supply The Retreat dwelling on the ridgeline of the property for which there is Planning Consent. There are plans to use cleared and managed parts of the land for the primary production of cherries and other kitchen garden supplies that will be used at The Retreat dwelling and for onsale to local farmers markets and Melbourne based restaurants under the brand name "Produce from The Retreat at Mt Cathedral". Supply arrangements have been established with two such Melbourne establishments: Uncommon in Chapel St Prahran and Colombos in Whitehorse Rd Balwyn should these plan be developed further.

This activity will not require the removal of vegetation beyond the defendable space.

Why Accommodation is Required for the Ongoing Management of the Land
To support the proposed and required agricultural activity and the services and needs of The Retreat, the Bunkhouse will be a source of accommodation for volunteers and staff who work at The Retreat and manage the agricultural, grounds and visitor experience. The bunkhouse will also be a source of accommodation for events and for large groups who cannot stay at The Retreat when the main dwelling is booked out. The bunkhouse will be leased by people more inclined to outdoor pursuits who are visiting the Mt Cathedral Range and the Buxton Trout Farm and Mountain Bike Park.

How the Accommodation will be Provided with:

- **Power**

Given the rustic style of accommodation proposed, there will be low requirements for power at The Bunkhouse. Four 300w solar panels, a 1.5kw system and a lithium storage battery will be fitted in order to provide LED lighting to the dwelling. A single 240V charging point will be a further feature of the power system.

- **Water**

The existing machinery shed has a 22,500l water tank connected to the roofing. Fresh water will be sourced from this tank. A further 22,500l water tank will be installed to provide water supply for effluent disposal and firefighting purposes.

- **Effluent Disposal**

A sewer system will be installed at the site that will meet council requirements.

- **Road and Driveway Access**

The Bunkhouse will utilise existing roadway access to South Cathedral Lane. This is a 394m all weather gravel road that was constructed by Keaths Excavations in early 2016. A passing lane has been installed on this road to meet CFA requirements. An alternative road access suitable for both 2WD and 4WD vehicles lies in an easterly direction from the existing shed to Granite Park Place.

5. Bushfire Management Statement

The BMS for this application has been prepared by John Bourke and is shown at **Exhibit D**.

6. Site plan showing boundaries, setbacks, location and type of existing and proposed buildings, drainage, native vegetation, easements, watercourses, access points, location of septic tank and effluent disposal fields

Please refer to **Exhibit E** for further details. The map details the set backs from the property boundaries, South Cathedral Lane to the west and the State Park to the north. Existing drainage is in place that picks up the existing machinery shed.

Further details regarding native vegetation are shown in the bio-diversity offset

report.

There are no applicable easements. There are no water courses relevant to the change of use. The access points are shown on the map, with the proposed location for the septic tank and disposal fields.

7. Plans showing major elevations, floor plan, details of materials.

In this change of use application, existing materials of the machinery shed will be used. The machinery shed is built from structural steel and tin cladding with a 5 degree pitch roof. The shed measures 11m x 6m and is lined with insulation and 12mm plywood in order to provide for use by existing site staff and volunteers in extreme weather conditions.

As shown at **Exhibit E**, a 4m x 4m bathroom area will be added to the north of the existing shed at its present roofing envelope.

the retreat
at Mt Cathedral

[redacted]
Senior Planner
Murrindindi Shire Council
Via email

May 1st 2017

Dear [redacted]

Response to Further Information Request 2017/58

Thankyou for the opportunity to respond to the matters raised in your request for further information. Please find the details you have requested below.

1. Plans of the proposed bunkhouse and extension showing:

a. Floor plan
The floor plan for the dwelling is attached at **Exhibit A**.

b. Major elevations
The major elevations are included in the architectural drawings at **Exhibit A**.

c. Details of cladding including materials and colours of main external surfaces
The bathroom/wet area extension will use the same materials as the existing design and tin shed structure, colourbond colours **RIVERSAND** and **WOODLAND GREY**.

2. An amended site plan showing:

a. Dimensions and area
The dimensions and area are shown at **Exhibit B**, site plan. The scale of the building is shown at **Exhibit A**.

b. Vegetation to be removed and distance from bunkhouse
There will be vegetation management and seasonal trimming of bracken and small shrubs conducted as part of this application but no removal of mature trees. The vegetation management will be consistent with the defendable space requirements

of the CFA. The report from Biota notes that the area is managed space. There are numerous tracks and roads in the area and these have reduced the extent of bio-diversity loss. ***Partial clearing*** by mechanical means, and no mature trees given all the existing trees within the required clearance area do not impact the thermal management considerations of the BAL-29 assessment. The Retreat will purchase the required biodiversity offset documented by the Biota report.

The area of removal will not extend past the 50m defendable space requirement and will work around existing roads and tracks for the remainder of the space.

3. Provide details of the proposed effluent treatment system including type of system proposed and area (m²) of absorption field.

The proposed effluent treatment system is a 3200L pump and gravity fed A&A Poly Tank suitable for a two bedroom home with an absorption area of 50m (L) x 0.7m (W) x 0.4m (D) of sub surface trenching. We will confirm the final field requirements with a Geotechnical Engineer's report prior to installation.

Please contact me on [redacted] if I can assist further with your requirements.

Sincerely

[redacted]

the retreat
at Mt Cathedral

[redacted]
Senior Planner
Murrindindi Shire Council
Via email

May 5th 2017

Dear [redacted]

Amendment to Planning Permit 2017/58

Can we please have the following two items included in the plan on foot per the attached site plan.

1. **Signage**

We propose that Core 10 steel signs be placed at the two entrances to the property similar to the example shown overleaf. These signs will measure 1m x 1.5m each and will display the logo and name The Retreat. At the Granite Park Pl entry, the sign will be located on a 1.5m high, 8m long block wall which acts as the fenceline with Parks Victoria. At the South Cathedral Ln entry, the sign will be located on a 1.5m high and 3m long block wall 10m inside the property boundary and adjacent to the entry road.

2. **Carport**

In order to store and protect mechanical equipment used to manage the site (trailers, a 4WD and tractor), a carport is required with dimensions 6m wide, 9m in length and 3m in height with a pitch of 5 degrees. The carport will be constructed with 125mm x 125mm hardwood posts, structural wood framing and a colourbond roof in colour DUNE.

The proposed carport location is opposite the CFA passing bay to allow for turning and parking space and is a desirable location given that it is in a low lying area topographically and will not be visually distracting to landowners opposite the property and Mr Jones.

Please contact me on [redacted] if I can assist further with your requirements.

Sincerely

[redacted]

[redacted]

the retreat
at Mt Cathedral

[redacted]
[redacted] Planner
Murrindindi Shire Council
Via email

June 6th 2017

Dear [redacted]

Amendment to Planning Permit 2017/58

My apologies for the delay in providing this update to you.

I have encountered changed circumstances as a result of unexpected serious illness in our family.

We would like to rearrange the sequence of our development plans at 140 Granite Park Place needs with your advice and consent. Is it possible to prioritise this application to allow accommodation at the site? The reasons for this are:

- The fundraising for The Retreat building on the ridgeline where there is planning approval for a dwelling still has $400k to run and I imagine in light of the changed circumstances, it may be a further 1-2 years until that money is secured. This is disappointing and is a significant delay to our plans
- Income from selling accommodation at The Bunkhouse in the short term will be used to fund The Retreat dwelling
- When we commence construction for The Retreat dwelling, we will need some overnighting of tradesmen and volunteers

Separately, can we please have the following two items included in the plan on foot per the attached site plan.

1. **Signage**

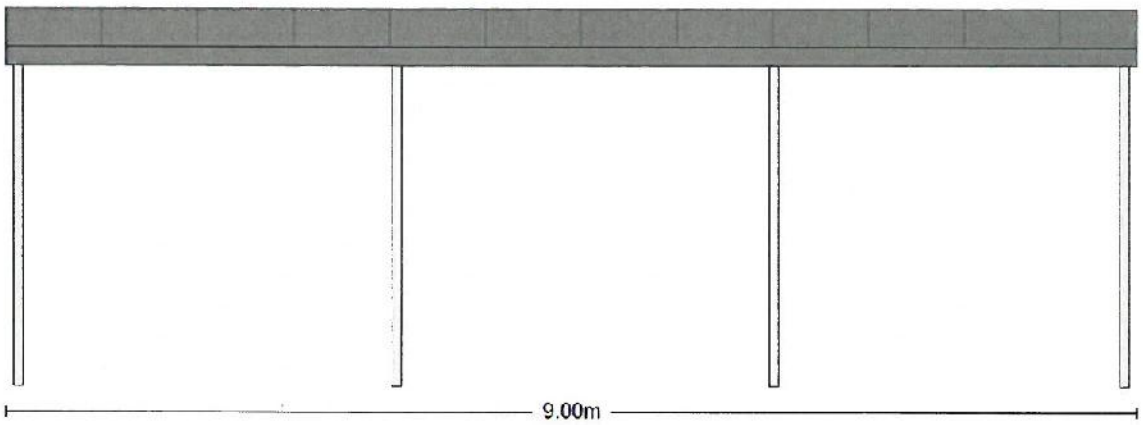
We propose that Core 10 steel signs be placed at the two entrances to the property similar to the example shown on p4. The actual logo is not shown as the design is being updated to reflect the specific nature of the Mt Cathedral area.

These logos will measure no more than 1m x 1m each and will display the logo and name The Retreat. At the Granite Park Pl entry, the sign will be located on a 1.5m high, 4m bessa block wall as located at **Sign Location A** on the site plan. At the South Cathedral Ln entry, the sign will be located on a 1.5m high, 4m long bessa

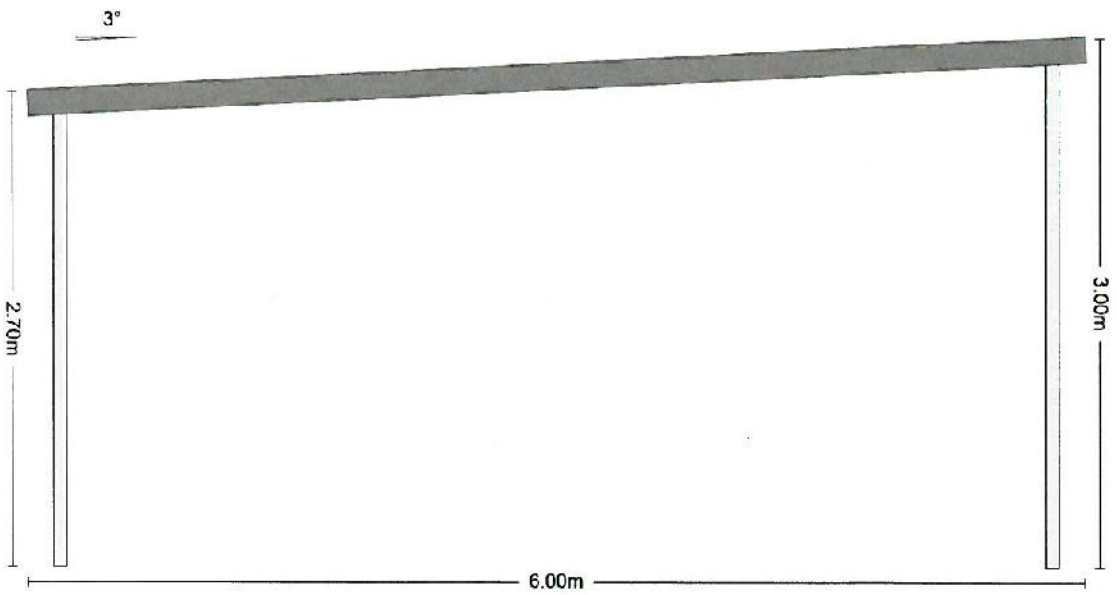
block wall 10m inside the property boundary and adjacent to the entry road as located at **Sign Location B** on the site plan.

2. Carport

In order to store and protect mechanical equipment used to manage the site (trailers, a 4WD and tractor), a carport is required with dimensions 6m wide, 9m in length and 3m in height with a pitch of 3 degrees. The carport will be constructed in steel with colour bond colour DUNE as shown below.



Side View



Front View

Specifications Summary	
Wind Design Speed	
Wind Region	Region: A, Terrain Category: 2.5, Importance Level: 2
Wind Multipliers	Md: 1.00, Mz: 0.87, Ms: 1.00, Mt: 1.00
Design Speed	39 m/s
Columns, Beams and Rafters	
Columns	75 x 75 x 2.5mm RHS
Beams	C15015
Rafters	C15010
Knee Braces	No
Bays	
Bay Count	3
Bay Sizes	3.00m, 3.00m, 3.00m
Rain Goods	
Gutter	Quad Gutter - Colour: Basalt
Down Pipe	Downpipe: Rect 100 x 75 x 2.4m - Colour: Basalt

The proposed carport location is opposite the CFA **Passing Bay 2** to allow for turning and parking space and is a desirable location given that it is in a low lying area topographically and will not be visually distracting to landowners opposite the property and to [redacted]

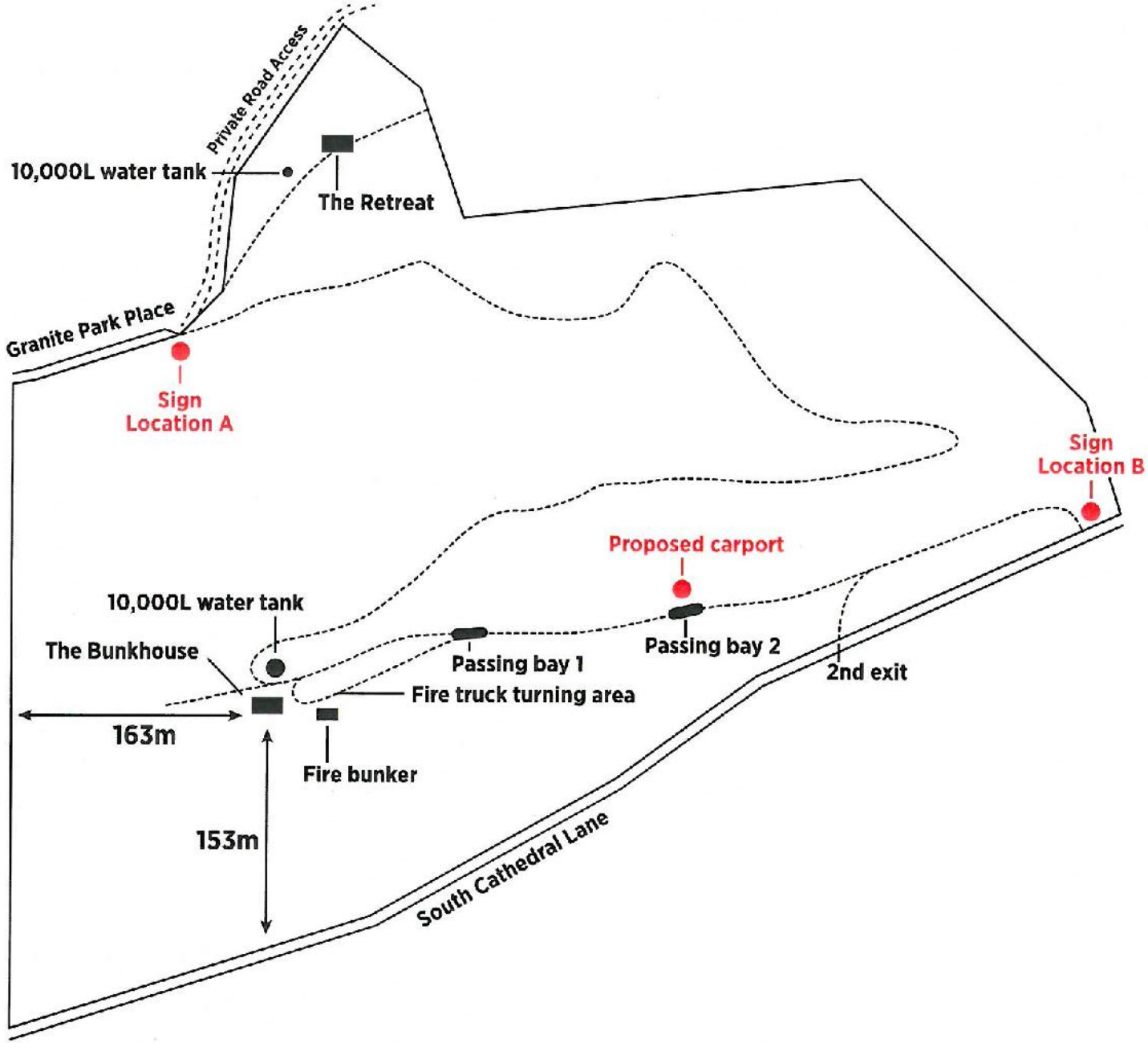
Please contact me on [redacted] if I can assist further with your requirements.

Sincerely

[redacted]

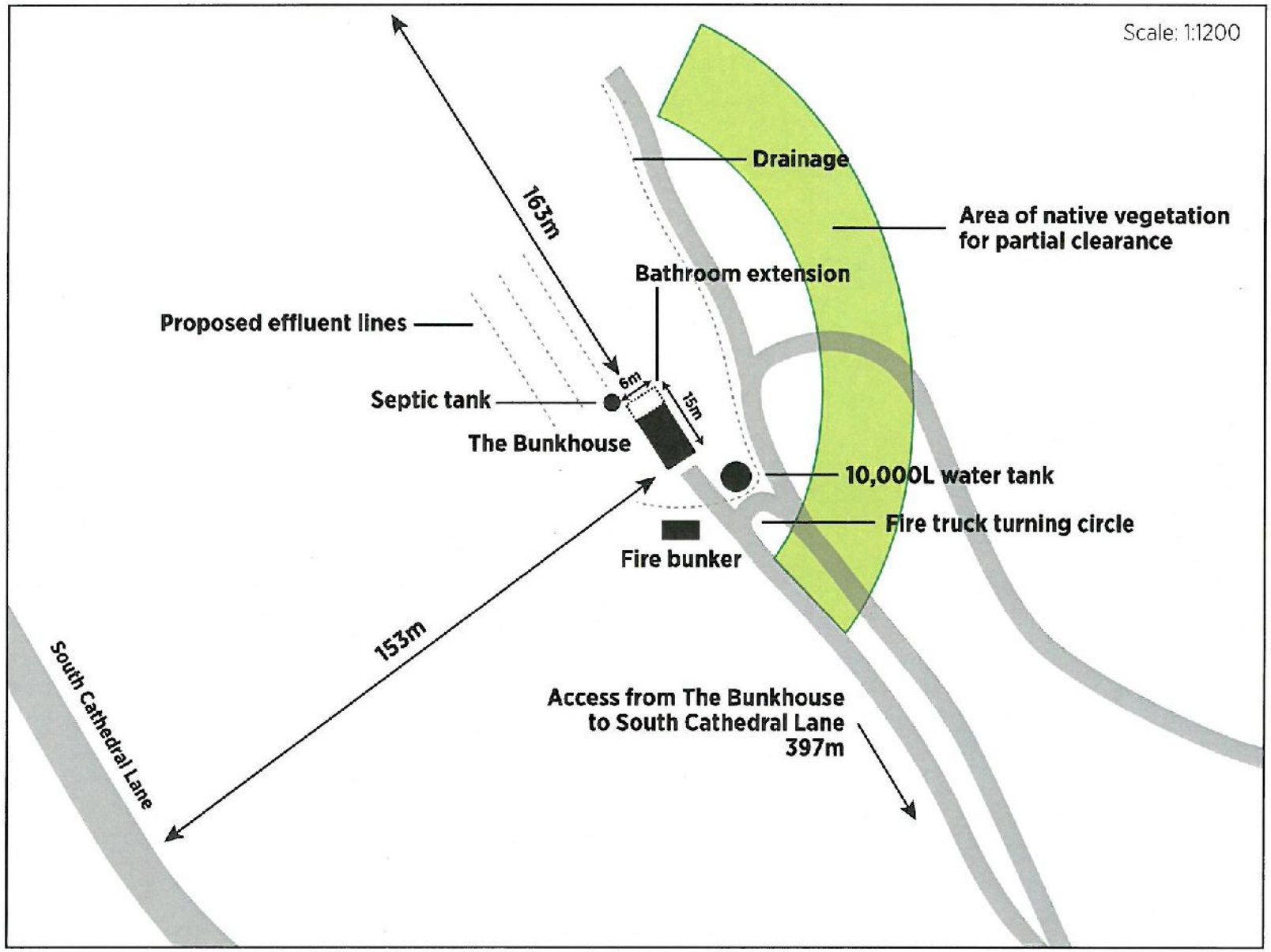
THE
GROVE
502-546

140 Granite Park Place, Buxton

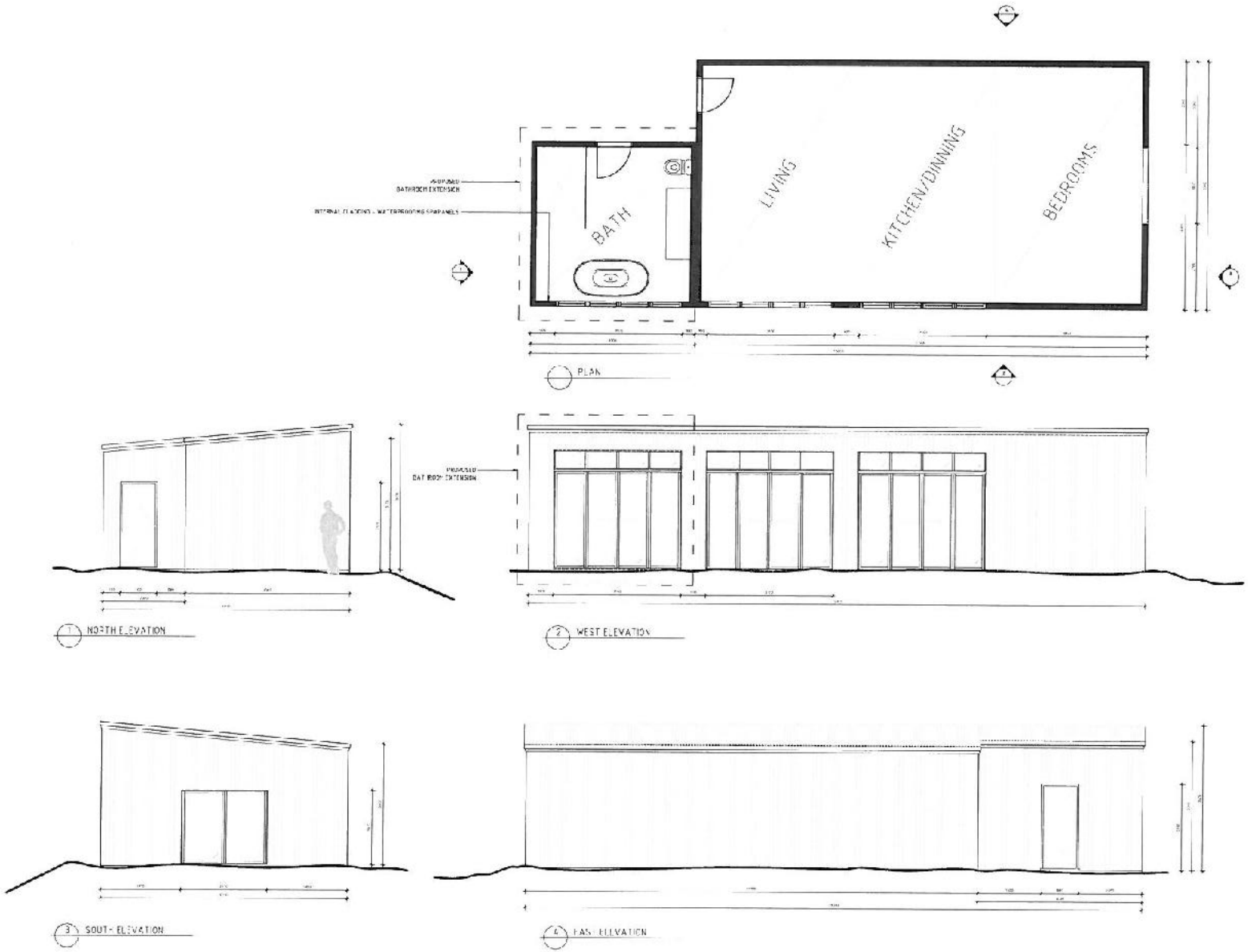


the retreat
at Mt Cathedral

Change of use request: The Bunkhouse



the retreat
at Mt Cathedral



CLIENT
MR K & K BOL D

PROJECT:
PROPOSED SHED/CABIN
'69 GRANITE PARK PLACE, BUXTON VICTORIA, 37'

DRAWING NAME:
SHED DRAWING PACKAGE
PROPOSED SHED

ORIENTATION:

SCALE @ A1:
1:100

ISSUE:
30TH APRIL 2017

COPYRIGHT ©

CIVIL TEST PTY LTD
ABN 91 006 855 689
SOIL TESTING & GEOTECHNICAL CONSULTANTS
ACN 006 855 689

LAND CAPABILITY ASSESSMENT REPORT

FOR THE PROPERTY AT

140 GRANITE PARK PLACE BUXTON

REPORT NUMBER: 2170499-2

[redacted]

TABLE OF CONTENTS

1. INTRODUCTION: **3**
2. SITE KEY FEATURES: **4**
2.1 Locality Plan 5
2.2 Table - Site Features 7
3. SOIL ASSESSMENT AND CONSTRAINTS: **7**
3.1 Published Soils Information 7
3.2 Site Exposure 7
3.3 Soil Assessment 8
4. FIELD ASSESSED PERMEABILITY: **9**
5. LAND CAPABILITY ASSESSMENT MATRIX: **10**
6. THE MANAGEMENT PROGRAM: **13**
6.1 Treatment System 13
6.1.1 Option 1 13
6.1.2 Option 2 13
6.2 Land Applications Areas 13
6.2.1 Water Balance (Appendix B) 13
6.3 Siting and Configuration 14
6.4 Buffer Distances 14
6.5 Monitoring, Operation and Maintenance 14
6.6 Storm Water Management 15
7. CONCLUSIONS: **16**
8. REFERENCES: **16**

APPENDIX A
SOIL PROFILE AND CONDITION

APPENDIX B
WATER BALANCE

CLIENT	:	The Retreat 140 Granite Park Place BUXTON VIC 3711
PROJECT ADDRESS	:	The Bunker 140 Granite Park Place BUXTON
REPORT NUMBER	:	2170499-2
TESTING DATE	:	22 August 2017

1. INTRODUCTION:

Civiltest Pty Ltd (Civiltest) have been engaged to undertake a Land Capability Assessment (LCA) for an approximately 22 hectare site at 140 Granite Park Place BUXTON. It has been proposed to construct a bunker at the lower end of the allotment that is to accommodate six persons.

This report will address:

- The capability of the site to sustainably manage wastewater within the allotment boundaries;
- A management program that should be put into place to minimise health and environmental impacts of on-site wastewater management, including the impact on surface water and groundwater (EPA, 2003a); and
- Information about the site and soil conditions.

2. SITE KEY FEATURES:

Site Address	140 Granite Park Place BUXTON
Owner/Applicant	The Retreat
Local Council	Murrindindi Shire Council
Total Land Area	Approximately 22 hectare
Domestic Water Supply	Tank
Anticipated wastewater loads (Litres/day) [1] [2]	Accommodation for six people. 1. Standard water reduction facilities – EPA number of persons (6) x 180 = 1080L/day Assume 1080L/day
Organic Material Loading Design Rates	BOD / 60g per person, total is number of bedrooms plus one, therefore 6 x 60g = 360g
Availability of sewer	Sewer is not available to this site and is not expected to become available in the future
Groundwater Quality	Groundwater is classified as A2 potable TDS 501-1000mg/L www.dpi.vic.gov.au/vro

[1] Note WELS rated water reduction fixtures and fittings – minimum 4 stars dual flush toilets, shower flow restrictions, aerator taps and a minimum of 3 stars for appliances.

[2] The daily wastewater loads are estimated by multiplying the potential occupancy which is based on the number of persons multiplied by the minimum wastewater loads in Table 4 EPA 891.3 Feb 2013.

2.1 Locality Plan

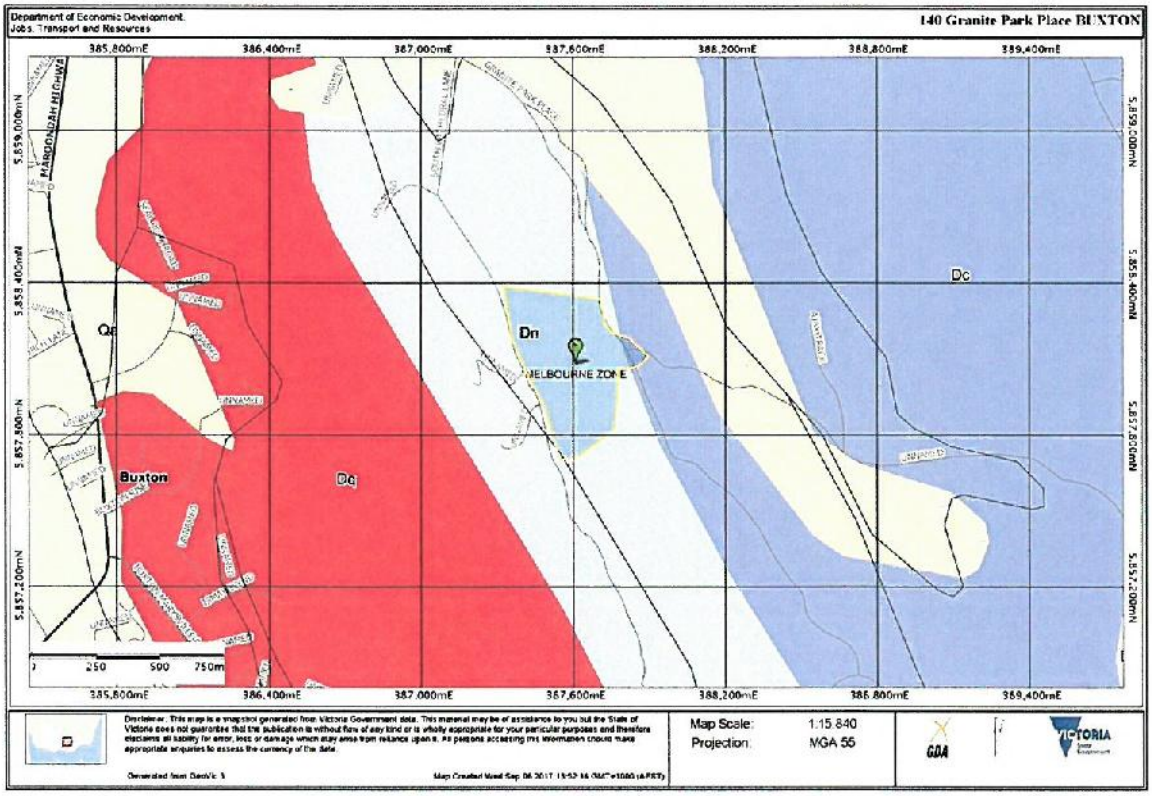
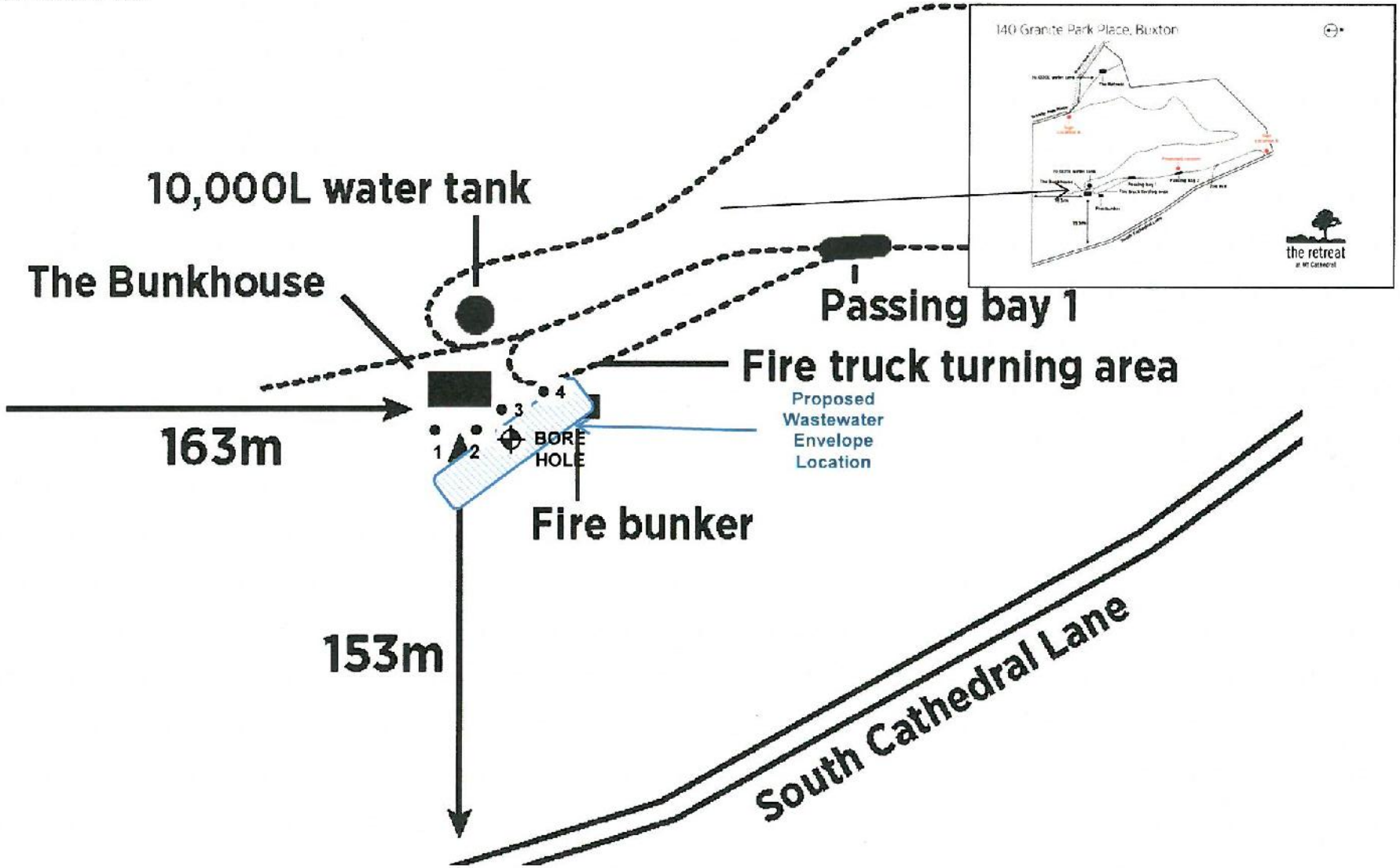


Figure 1 – Site Locality (Including local geology) www.dpi.vic.gov.au

Figure 2 – Site Plan



SITE FEATURES	
Climate	Average rainfall is 1030mm per year
Flood Potential	Site is not prone to flooding
Vegetation	Pasture grasses and native trees
Water Table	No ground water was intercepted within the deep borehole.
Exposure	Site is relatively open however has some protection from the adjacent hills
Slope	3%
Landform	Hills relative relief 90-300mm
Approximation to water course	A creek is located near the propped wastewater field and test area. However this is located greater than the required 60 metre buffer distance
Erosion Potential	Low erosion potential due to good ground cover and a gentle fall
Surface Drainage	Poor surface drainage, site receives significant runoff from up slopes
Land Area	Approximately 22 hectares
Rocks and Rock Outcrop	Nil
Geology	Quaternary Alluvium - SANDS, SILTS and CLAYS

2.2 Table - Site Features

There are no critical issues identified above.

3. SOIL ASSESSMENT AND CONSTRAINTS:

3.1 Published Soils Information

The local soils are derived from sediments washed down from upslope and from the nearby creek.

3.2 Site Exposure

A general assessment of the site exposure is as follows:

The site is protected from the winds. The proposed effluent disposal area is generally exposed to sun and wind all year round.

3.3 Soil Assessment

BORE HOLE	SAMPLE DEPTH: 300mm	
SOIL ASSESSMENT (AS1547-2012)	SOIL HORIZON: A	
Soil Colour	Pale grey	
Soil Texture	Clay loam	
Coarse Fragments (%)	2%	
Soil Structure	-	
Soil Dispersion	Slake 2	
Soil Permeability	0.12-0.5m/d	
Soil Category	4	
Design Irrigation Rate	3.5mm/d	
pH 1:5 Ratio Electronic Method	7.22	
Electrical Conductivity	20µS/cm	/1000 = 0.020dS/m
Salinity Hazard	Non saline – Class 1	

BORE HOLE	SAMPLE DEPTH: 800mm	
SOIL ASSESSMENT (AS1547-2012)	SOIL HORIZON: B	
Soil Colour	Orange pale orange	
Soil Texture	Light clay	
Coarse Fragments (%)	Nil	
Soil Structure	-	
Soil Dispersion	Slake 3	
Soil Permeability	0.12-0.5m/d	
Soil Category	4	
Design Loading Rate	5mm/d	
pH 1:5 Ratio Electronic Method	7.16	
Electrical Conductivity	20µS/cm	/1000 = 0.020dS/m
Salinity Hazard	Non saline – Class 1	

4. FIELD ASSESSED PERMEABILITY:

An investigation on the soil profile was assessed in-situ and permeability testing conducted as outlined in AS 1547-2012 using the constant-head test method. The constant-head test was conducted in four locations across the site (see plan, Figure 2). The field assessed permeability was calculated using the Talsma-Hallam constantly maintained head of water equation identified in AS 1547-2012.

$$K_{sat} = \frac{4.4\ Q\ [0.5\sinh^{-1}(H/2r) - \sqrt{\{(r/H)^2 + 0.25\}} + r/H]}{2\pi H^2}$$

Where:
K_{sat} = saturated hydraulic conductivity of the soil in cm/min
4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation
Q = rate of loss of water from the reservoir in cm^3/min
H = depth of water in the test hole in cm
r = radius of the test hole in cm.

CONSTANT HEAD PERMEABILITY	
Rate of loss of water from reservoir (Q)	9.06cm^3/min
Saturated hydraulic conductivity (K_{sat})	0.0049cm^3/min
Indicative permeability (K_{sat})	0.07m/day

Note: The results in the table above are based on average readings taken from the test holes.

The corresponding K_{sat} value of 0.07m/day in EPA Onsite Wastewater Management – Code of Practice Publication No. 891.4 July 2016 Appendix A Table 9 is category 5 (light clay soil). Therefore a maximum Design Irrigation Rate of 3mm/day and Design Loading Rate of 5mm/day has been adopted.

5. LAND CAPABILITY ASSESSMENT MATRIX:

The table below is a Land Capability Assessment (LCA) from The Victorian Land Capability Assessment Framework (2nd Edition 2014). The LCA has been developed for the whole site, however soils information relates to soils within the vicinity of the building envelope.

Table 3: Risk Assessment of Site Characteristics

Characteristic	Level of Constraint			Assessed Level of Constraint for Site
	Nil or Minor	Moderate	Major	
Aspect (affects solar radiation received)	North / North-East / North-West	East / West / South-East / South-West	South	Minor
Climate (difference between annual rainfall and pan evaporation)	Excess of evaporation over rainfall in the wettest months	Rainfall approximates to evaporation	Excess of rainfall over evaporation in the wettest months	Nil
Erosion (or potential for erosion)	Nil or minor	Moderate	Severe	Minor
Exposure to sun and wind	Full sun and/or high wind or minimal shading	Dappled light	Limited patches of light and little wind to heavily shaded all day	Minor
Fill (imported)	No fill or minimal fill, or fill is good quality topsoil	Moderate coverage and fill is good quality	Extensive poor quality fill and variable quality fill	Nil
Flood frequency (ARI)	Less than 1 in 100 years	Between 100 and 20 years	More than 1 in 20 years	Minor
Groundwater bores	No bores onsite or on neighbouring properties	Setback distance from bore complies with requirements in EPA Code of Practice 891.3 (as amended)	Setback distance from bore does not comply with requirements in EPA Code of Practice 891.3 (as amended)	Nil
Land area available for LAA	Exceeds LAA and duplicate LAA and buffer distance requirements	Meets LAA and duplicate LAA and buffer distance requirements	Insufficient area for LAA	Nil
Landslip (or landslip potential)	Nil	Minor to moderate	High or Severe	Nil
Rock outcrops (% of surface)	<10%	10-20%	>20%	Nil
Slope Form (affects water shedding ability)	Convex or divergent side-slopes	Straight side-slopes	Concave or convergent side-slopes	Nil
Slope gradient (%)				
(a) for absorption trenches and beds	<6%	6-15%	>15%	Nil
(b) for surface irrigation	<6%	6-10%	>10%	Nil
(c) for subsurface irrigation	<10%	10-30%	>30%	Nil

Table 3: Risk Assessment of Site Characteristics						
Characteristic	**Level of Constraint**					**Assessed Level of Constraint for Site**
	Nil or Minor		**Moderate**	**Major**		
Soil Drainage (qualitative)	No visible signs or likelihood of dampness, even in wet season		Some signs or likelihood of dampness	Wet soil, moisture-loving plants, standing water in pit; water ponding on surface, soil pit fills with water		Nil
Stormwater run-on	Low likelihood of stormwater run-on			High likelihood of inundation by stormwater run-on		Nil
Surface waters - setback distance (m)	Setback distance complies with requirements in EPA Code of Practice 891.3 (as amended)			Setback distance does not comply with requirements in EPA Code of Practice 891.3 (as amended)		Nil
Vegetation coverage over the site	Plentiful vegetation with healthy growth and good potential for nutrient uptake		Limited variety of vegetation	Sparse vegetation or no vegetation		Minor
Characteristic	**Level of Constraint**					**Assessed Level of Constraint for Site**
	Nil or Minor		**Moderate**	**Major**		
Soil Drainage (Field Handbook definitions)	Rapidly drained. Water removed from soil rapidly in relation to supply, excess water flows downward rapidly. No horizon remains wet for more than a few hours after addition	Well drained. Water removed from the soil readily, excess flows downward. Some horizons may remain wet for several days after addition	Moderately well drained. Water removed somewhat slowly in relation to supply, some horizons may remain wet for a week or more after addition	Imperfectly drained. Water removed very slowly in relation to supply, seasonal ponding, all horizons wet for periods of several months, some mottling	Poorly/Very poorly drained. Water remains at or near the surface for most of the year, strong greying. All horizons wet for several months	Minor

Legend:

- Nil or Minor: If all constraints are minor, conventional/standard designs are generally satisfactory.
- Moderate: For each moderate constraint an appropriate design modification over and above that of a standard design, should be outlined.
- Major: Any major constraint might prove an impediment to successful on-site wastewater management, or alternatively will require in-depth investigation and incorporation of sophisticated mitigation measures in the design to permit compliant onsite wastewater management.

The above risk assessment indicates conventional/standard designs are satisfactory at this site

The table below is a Land Capability Assessment of general and soil characteristics of the site.

Land Features	Land Capability Class Rating					Site Rating	Comments
	Very Good (1)	Good (2)	Fair (3)	Poor (4)	Very Poor (5)		
Groundwater table (m) seasonal watertable depth	>5.0	2.5 – 5.0	2.0 – 2.5	1.5 – 2.0	<1.5	1†	-
Exposure	High sun and wind exposure		Moderate	Low sun and wind exposure		3	Site open however surrounded by hills and trees
Vegetation Type (land application area)	Turf or pasture				Dense Forest	1	Lawn grasses
Rainfall (mm/yr)[2]	<450	450 - 650	650 – 750	750 - 1000	>1000	1	1030 mm/yr
Pan evaporation (mm/yr)[3]	>1500	1250 - 1500	1000 – 1250	-	<1000	1	1278 mm/yr
Profile depth	>2.0m	1.5–2.0m	-	1.0–1.5m	<1.0m	1	Deep soil profile
Shrinkage* (%)	Low <4%	Moderate 4-12%	High 12-20%	Very High >20%		2	Medium plastic clay soils
Permeability* (m/d)	0.15–0.30	0.08–0.15 0.30-0.60	0.06-0.08 0.60-1.50	- 1.50-2.00	<0.06 >2.00	3	0.07m/d constant head method
Soil Permeability Category [1]	2 and 3	4		5	1 and 6	4	Soil category 5
Emerson Test* (dispersion / slaking)	4,6,8	5	7	2,3	1	-	-
Electrical Conductivity (Ece) (dS/m)	<0.3	0.3-0.8	0.8-2.0	2.0-4.0	>4.0	1	Non saline soils
pH	6-8		4.5-6		<4.5, >8	1	Relatively neutral soils

[1] Source: AS1547-2012
[2] Source BOM station – Buxton
[3] Source BOM station – Lake Eildon
* Relevant to soil layer(s) associated with wastewater application
† No water table was encountered while drilling the Bore Hole (see engineering log).

6. THE MANAGEMENT PROGRAM:

The following sections provide an overview of our preferred systems and the sizing and design considerations that are involved with these systems. Based on the land capability assessment, either of the two following systems are recommended at this site. These are:

1) Primary treatment and absorption trenches or

2) Aerated wastewater treatment and subsurface drip irrigation (AWTS).

6.1 Treatment System

6.1.1 Option 1

Primary treatment (Septic tank or similar). Dispose to land via trenches based on water balance calculations.

Note: Due to the evaporation exceeding the rainfall for each month a water balance model has been used to assess the design to the various input and output characteristics. This is to ensure the right size area is used to ensure the soil is not saturated if area is too small and there is not poor disposal over the area when times are dry.

6.1.2 Option 2

Primary septic treatment plus secondary treatment, of all wastewaters by either aerated wastewater treatment system, sand filter or similar. Dispose to land via subsurface drip irrigation.

6.2 Land Applications Areas

6.2.1 Water Balance (Appendix B)

The MAV requires a model water balance to be undertaken when sizing irrigation systems. Appendix B contains excel spreadsheets for subsurface drip irrigation.

The local climate conditions are based on the weather station at Buxton which observes monthly rainfall data. A daily wastewater output of 1080L/day was assumed.

Therefore the following wastewater envelopes are required with regard to the two options:

Option 1: Absorption Trenches based on Design Loading Rate of 5mm/day

1. 200 lineal metres at 1.0 metre width

Option 2: Subsurface Irrigation based on Design Irrigation Rate (DIR) of 3mm/day.

676m^2 of subsurface irrigation

6.3 Siting and Configuration

Civiltest Pty. Ltd. considers the wastewater envelope area marked on **Figure 2=– Site Plan** to be suitable for wastewater disposal. Set back requirements (see **6.4 Buffer Distances**) must be taken into consideration.

6.4 Buffer Distances

The effluent disposal field should be located so that it is no less than:

1. *3.0 metres on the low side of any building or 6 .0metres on the high side of the boundary of any allotment*
2. *3.0 metres from any water supply pipe, gas pipe or other similar service line which is not part of the system or from tree canopies*
3. *6.0 metres from any storm water drain*
4. *6.0 metres on the high side of any adjacent lot or 3.0 metres on the low side of the boundary of any allotment*
5. *6.0 metres from the high side of a swimming pool*
6. *15 metres from any cutting or escarpment at which the effluent is likely to emerge*
7. *15 metres from any underground water tank and 20 metres from any bore or well which is used for domestic or non-domestic supply*
8. *60 metres from any waterway or wetland (continuous or ephemeral, non-potable)*

The buffer distances recommended above can be reduced by 50% where secondary treatment is adopted, based on the quality of wastewater.

6.5 Monitoring, Operation and Maintenance

Option 1: Requirements

The requirements of Certificate of Approval No. CA001.2/3 should be adopted and followed. This requires:

- The septic tank is de-sludged every 3 years.

Option 2: Requirements

To ensure the AWTS system functions adequately residents must:

- Have a suitably qualified maintenance contractor service the AWTS every three months, as required by Council under the approval to operate.

The requirements of Certificate of Approval No. CA035/93 should be adopted and followed. This requires:

- The wastewater quality meets:
  - BOD 20mg/L
  - Suspended Solids 30mg/L
  - Faecal Coliforms organisms /100ml <10
  - Free residual chlorine <2mg/L
- A recycled water sample must be analysed for the above indicators to demonstrate the wastewater is being adequately treated. Sample results should be submitted to council on a yearly basis
- The irrigation area must be a permanent dedicated area within the premises
- The dedicated irrigation area must be cultivated to a depth 100mm, either planted with grasses or salt tolerant plants or mulched

The irrigation lines may be laid around existing vegetation however lines must be buried a minimum of 150mm with quality topsoil.

To ensure the treatment systems function adequately, residents must:

- Use household cleaning products sparingly and check that they are suitable for septic tanks.
- Keep as much fat and oil out of the system as possible; and
- Conserve water

6.6 Storm Water Management

All stormwater must be disposed of to the legal point of discharge.

Note: An agricultural (AG) drain must be installed on the high side of the wastewater envelope. The drain is to be installed a minimum of 100mm into the naturally occurring clay soils and allow sufficient fall to intercept and drain all overland and subsurface run-off to a legal point of discharge. If a legal point of discharge cannot be obtained, the drainage line may discharge directly to the surface soils, a minimum distance of 10 metres beyond the wastewater disposal area.

7. CONCLUSIONS:

From this investigation it is concluded that the use of an on-site wastewater treatment and disposal system is environmentally sustainable if the recommendations made in this report are followed.

The following should also be noted:

- Installation of 3 star rated water fixtures to reduce water use and wastewater loadings.
- Use of low phosphorus and low sodium (liquid) detergents to improve effluent quality and maintain beneficial uses of groundwater.
- Operation and maintenance of treatment and disposal systems in accordance with the manufacturer's recommendations and the recommendations made in this report.

8. REFERENCES:

- Environmental Protection Authority – Guidelines for Environmental Management Code of Practice – Onsite Wastewater Management, July 2016 ~ Publication 891.4
- Municipal Association Victoria (MAV) 2006, Model Land Capability Assessment Report
- The Victorian Land Capability Assessment Framework (2nd Edition 2014)
- Australian/New Zealand Standard AS/NZS 1547-2012 – On-site domestic wastewater management.
- Civiltest Pty Ltd - Field and Laboratory data (where applicable) collected and recorded.
- Environmental Protection Authority - "Code of Practice - Septic Tanks", March 1996" ~ Publication 451.
- Environmental Protection Authority, Information Bulletin- "Land Capability Assessment for onsite Domestic Wastewater Management", March 2003 ~ Publication 746.1.
- Standards Australia 2008, AS/NZS 1546.1: *On-site domestic wastewater treatment units – Part 1: Septic Tanks.*
- Standards Australia 2008, AS/NZS 1546.3: *On-site domestic wastewater treatment units – Part 3: Aerated wastewater treatment systems.*

This report consists of nineteen pages, including two appendices.

[redacted]

Civiltest Pty Ltd

Ref: SH/mg
06 September 2017

APPENDIX A

SOIL PROFILE AND CONDITION

The natural soil profile in the bore hole consisted of brown SILT overlying pale brown yellow clayey SILT followed by orange yellow grey silty CLAY. Underlying this is red brown silty gravelly CLAY.

The table below represents the engineering log of the bore hole obtained during mechanical augering at the approximate location as shown on the attached plan.

Bore Hole Depth (m)	Classification	Shear Vane Strength kPa	Engineering Log
0.400			SILT Brown Moist Medium dense
0.800			SILT, clayey Pale brown yellow Wet Medium dense Trace of gravel present
1.600			CLAY, silty Orange yellow grey Moist Very stiff
3.000			CLAY, silty gravelly Red brown Moist to wet Stiff
			END OF BORE (22-08-17)

APPENDIX B

WATER BALANCE

BUXTON Evap.data **LAKE EILDON**

Long term Average Rainfall (B. Met. Data)

AS1547 - Table G1 (Prepared by R.A. Patterson, Lanfax Labs. Armidale April 202)

Void space in drainfield = 30%

1			2	3	4	5	6	7	8	9
Month	Days per month	daily pan Eo (B.Met)	Pan Eo	Et +Cf*Eo	Rainfall P	Retained Rainfall Re=(1-r)P	LTAR*N 5.48	Disposal rate/month (Et-Re)+ LTAR*N	Effluent applied per month 1080	Size of area (8)/(7)
		mm	mm	mm	mm	mm	mm	mm	L	m2
Jan	31	5.3	164.3	115	57.3	40.1	169.88	244.8	33480	137
Feb	28	5.0	140.0	98	46.6	32.6	153.44	218.8	30240	138
Mar	31	3.6	111.6	78	51.3	35.9	169.88	212.1	33480	158
Apr	30	1.9	57.0	40	71	49.7	164.4	154.6	32400	210
May	31	1.0	31.0	22	99.7	69.8	169.88	121.8	33480	275
Jun	30	0.6	18.0	13	107.6	75.3	164.4	101.7	32400	319
Jul	31	0.6	18.6	13	125.5	87.9	169.88	95.1	33480	352
Aug	31	0.9	27.9	20	131.2	91.8	169.88	97.6	33480	343
Sep	30	1.7	51.0	36	109.2	76.4	164.4	123.7	32400	262
Oct	31	2.7	83.7	59	89.8	62.9	169.88	165.6	33480	202
Nov	30	3.8	114.0	80	74.3	52.0	164.4	192.2	32400	169
Dec	31	4.9	151.9	106	66.4	46.5	169.88	229.7	33480	146
			969	Total P	**1029.9**					

TABLE G2 - Depth of stored effluent First trial - choose from col.9 table above

1	2	3	4	5	6	7				
month	first trial area (m2)	application rate (8)*/(2)	Disposal rate per month (above)'	(3)-(4)	Increase depth of stored effluent (5)/0.3	Depth effluent for month	increase depth effluent +(6)	computed depth effluent (X)	reset if Et deficit <0	
Dec								0.0		
Jan	340	98	245	-146	-488	0	-488	-488	0	
Feb		89	219	-130	-433	0	-433	-433	0	
Mar		98	212	-114	-379	0	-379	-379	0	
Apr		95	155	-59	-198	0	-198	-198	0	
May		98	122	-23	-78	0	-78	-78	0	
Jun		95	102	-6	-21	0	-21	-21	0	
Jul		98	95	3	11	0	11	11	11	
Aug		98	98	1	3	11	3	14	14	
Sep		95	124	-28	-95	14	-95	-80	0	
Oct		98	166	-67	-224	0	-224	-224	0	
Nov		95	192	-97	-323	0	-323	-323	0	
Dec		98	230	-131	-438	0	-438	-438	0	
Jan		98	245	-146	-488	0	-488	-488	0	
Feb		89	219	-130	-433	0	-433	-433	0	
Mar		98	212	-114	-379	0	-379	-379	0	
Apr		95	155	-59	-198	0	-198	-198	0	
May		98	122	-23	-78	0	-78	-78	0	

From calculations in tables above for optimised drainfield area, using Appendix G AS1547-1994

Variables Table

Change as required

Runoff Coeff =	**0.3**	**percentage runoff**
Crop Factor =	**0.7**	**crop transpiration rate**
DLR =	**5**	**mm/d**
FLOWS=	**1080**	**L/day**

Estimated area of effluent drainfield = 340 square metres

Maximum depth of stored effluent = 14 mm depth

Trench dimensions (mm) width = 1000 mm depth = 450 mm

Length of trench required = 200 metres

NOTES:

As a model, the best results are only ESTIMATES of performance.

A model is used to assess SENSITIVITY to changes in the variables and the effect upon application area

Table 2 is run for 16 months to ensure system returns to ZERO at some stage

Nominated Area Water Balance & Storage Calculations for Subsurface Irrigation

Owner/Applicant: The Bunker
Site Address: 140 Granite Prk Place BUXTON
Notes: *Based on MAV & DSE Model LCA Feb 2006*

Date: 22 August 2017

INPUT DATA				NOTES
Design Wastewater Flow	Q	1080	L/day	Based on wastewater design flows as per Section 4.8 & Table 4.5 of the Septic Tanks Code of Practice 2003.
Design DIR	DIR	21	mm/week	Assumes xxx topsoils with xxxx drainage, DIR taken from Table 4.2A4 in AS/NZS 1547:2000
Daily DIR		3.0	mm/day	
Nominated Land Application Area	L	1030	m sq	Used for iterative purposes (if desired) to determine storage requirements for nominated areas
Crop Factor	C	0.7-0.8	unitless	Estimates evapotranspiration as a fraction of pan evaporation; varies with season and crop type
Retained Rainfall	Rf	0.5	unitless	Proportion of rainfall that remains on-site and infiltrates, allowing for any runoff.
Rainfall Data	Buxton		mean monthly	
Evaporation Data	Lake Eildon		mean monthly	

Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days in month	D	\	days	31	28	31	30	31	30	31	31	30	31	30	31	365
Rainfall (mean)	R	\	mm/month	57.3	46.6	51.3	71	99.7	107.6	125.5	131.2	109.2	89.8	74.3	66.4	1030
Evaporation (mean)	E	\	mm/month	164	140	112	57	31	18	19	28	51	84	114	152	969
Crop Factor	C			0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	
OUTPUTS																
Evapotranspiration	ET	E*C	mm/month	131	112	89	40	22	13	13	20	36	67	91	122	755
Percolation	B	(DIR/7)*D	mm/month	93.0	84.0	93.0	90.0	93.0	90.0	93.0	93.0	90.0	93.0	90.0	93.0	1095
Outputs		ET+B	mm/month	224	196	182	130	115	103	106	113	126	160	181	215	1850
INPUTS																
Retained Rainfall	RR	R*Rf	mm/month	25.79	20.97	23.09	31.95	44.87	48.42	56.48	59.04	49.14	40.41	33.44	29.88	463
Effluent Irrigation	W	(Q*D)/L	mm/month	32.5	29.4	32.5	31.5	32.5	31.5	32.5	32.5	31.5	32.5	31.5	32.5	383
Inputs		RR+W	mm/month	58.3	50.3	55.6	63.4	77.4	79.9	89.0	91.5	80.6	72.9	64.9	62.4	846
STORAGE CALCULATION																
Storage remaining from previous month			mm/month	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Storage for the month	S	(RR+W)-(ET+B)	mm/month	-166.2	-145.7	-126.7	-66.5	-37.3	-22.7	-17.0	-21.0	-45.1	-87.0	-116.3	-152.1	
Cumulative storage	M		mm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Maximum storage for Nominated Area	N		mm	0.0												
Total volume of storage	V	N*L	L	0												
LAND AREA REQUIRED FOR ZERO STORAGE		Q*D/(ET-RR+B)	m2	169	173	210	331	479	598	676	626	423	280	219	181	

MINIMUM AREA REQUIRED FOR ZERO STORAGE (m2): 676

This is based on the worst month of the year, so the balance overestimates the area/storage requirements and is hence conservative for all the other months

BAL Assessments
3/1021 Toorak Road
Camberwell VIC 3124
John@BAL.net.au
0417 885 747

27 February 2017

[redacted]
[redacted]@gmail.com

Dear [redacted]

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

This report has been prepared as a Bushfire Management Statement to meet the objectives, requirements and standards of clauses 13.05, 44.06 and 52.47 of the Victorian Planning Provisions a change of use application from a shed to "Other Accommodation" for a building shown on the enclosed Site Plan as the Bunkhouse.

This report successfully addresses all three Application Requirements of cl. 52.47 being:

1 *A Bushfire Hazard Site Assessment*
2 *A Bushfire Hazard Landscape Assessment*
3 *A Bushfire Management Statement (BMS)*

and also includes:

4 *A Bushfire Management Plan (BMP)*

A pre-application meeting was held with council and the CFA onsite on 20 July 2017 and there has been considerable correspondence with CFA on this issue. CFA's final position is set out in their letter of 12 September 2016 which is enclosed in this report.

In summary this letter from CFA proposed a BAL-29 construction with 50m of defendable space except to the west where a buffer zone of 30m from the centerline of the creek shall remain. While we disagree with CFA arbitrarily determining a defendable space distance significantly in excess of the Australian Standard, the client needs to move on and finish this development.

A Wildfire Protection 12 person accredited Bushfire Shelter is also proposed as part of the application for the Bunkhouse.

The accommodation will close in days of extreme and code red fire conditions.

Use of The Bunkhouse; the accommodation is purposed for outdoor enthusiasts such as mountain bikers, hikers and climbers visiting the area to access the Mt Cathedral State Park and Mt Margaret. Guests will generally by highly active people who are 15-65 years of age. These people will be competent and quick should an evacuation be required. They will be supported by the property hosts who are located 180m away by quad bike. Guests will have their own vehicles and will be instructed on evacuation arrangements on their arrival.

The vegetation in the area is classed as Forest under AS3959 and the land slopes up generally to the North and East with a downslope to the South, West and North-West. To the West is Stirling Creek and then the land slopes up to the road and beyond.

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

There will be two buildings onsite. The main building called the "Retreat" on the attached Site Plans is classed as a Dwelling and is being built under an existing Planning Consent and does not concern the BMO.

To comply with the Victorian Planning Provisions an application must demonstrate that all fire protection requirements for: **i)** "*Defendable Space*" **ii)** "*Construction Standards*" **iii)** "*Water Supply*" and **iv)** "*Access*" have been considered and incorporated.

In regard to **i)** *Defendable Space*; the vegetation around the building must be maintained to the distances and standards set out in this report.

In regard to item **ii)** *Construction Standards* we have submitted this report using VPP clause 52.47 Alternative Measure 3.6.

We believe it would be appropriate for a relevant authority to rate this application at:
Granite Park Place 140, Buxton at: BAL–29

Your Planning Permit application for this work should include this report and before submission to council your building plans and drawings must include a site layout drawing which clearly shows the size and location of the required **iii)** *Water Supply* and **iv)** Vehicle *Access* requirements as set-out in this report. Note the water tank is to be made from non-combustible material such as concrete or steel.

Your Planning Permit application must state that it is for "change of use to Other Accommodation and removal of vegetation".

The State Planning Policy Framework (SPPF) states at clause 13.05-1, Bushfire planning strategies and principles; that the overarching strategy is to "Prioritise the protection of human life *over other policy considerations* in planning and decision-making in areas at risk from bushfire." We understand this to mean that more weight will be given to the requirements of the BMO vegetation management rather than environmental or vegetation protection overlays that may be also on the site.

The proposed works shall be designed and constructed to meet the requirements of AS3959-2009 "Construction of buildings in bushfire-prone areas".

The BAL rating applied to your property sets minimum standards for design and construction. However we would always recommend that you should endeavor to comply with high levels of protection. Ember protection should always be a priority.

Note that there is a clause about "Shielding" (AS3959 clause 3.5) where you can drop one BAL level (to a minimum of BAL-12.5) on building faces not exposed to the source of bushfire attack. Shielding will not apply to this application.

Note that Building Regulation 811 requires the Relevant Building Surveyor to accept the BAL level applied to the property on the Planning Permit. Therefore a further assessment in accordance with AS3959-2009 is not required for your Building Permit.

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

As far as practical, could you please check the basic information upon which this report is based and notify us if you find any discrepancies.

Should you require further information or have any questions with regard to any of the enclosed information please contact John on 0417 885 747.

Yours Sincerely

[redacted]

BAL Assessments

in association with [redacted]

Attachments: CFA letter 12 Sept 2016 / Planning and Property Information / Bushfire Management Plan - Defendable Space / Bushfire Management Plan – Permit Conditions / Bushfire Management Statement / BAL Description / Site Photos / Site Maps / Bushfire Hazard Landscape Assessment / Site Layout / Bushfire Hazard Site Assessment

For more information regarding our methodology please visit www.BAL.net.au
We work all over Victoria and specialize in:

*Simplified Procedure for determining the BAL - **Method 1***
Bushfire Prone Areas up to 20 degrees slope
*Detailed Method for determining the BAL - **Method 2** (Appendix B)*
(Method 2 is a complex methodology and can be used for steeper sites)
*Bushfire Management Overlay (**BMO**) – Site and Vegetation assessments*

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Patron: The Honourable Linda Dessau AM, Governor of Victoria

Fire Safety Referrals
Fire & Emergency Management
Email: firesafetyreferrals@cfa.vic.gov.au
Telephone: 03 9262 8576

Our Ref: **12000-57903-65581**

12th September 2016

[redacted]
BAL Assessments
[redacted]

Dear [redacted]

PRE APPLICATION ADVICE

Site address: 140 Granite Park Place, Buxton
Proposal: Convert existing shed to "other Accomodation' in the BMO

Thank you for your correspondence dated 19th August 2016.

CFA have reviewed your correspondence and provide the following comments:

The following comments are provided in response to your letter dated 19th August 2016.

It should be noted a full bushfire management statement addressing all the requirements of Clause 52.47 has not been submitted.

To progress this application and for a definitive response from CFA, as a Recommending Referral Authority under Clause 44.06 – Bushfire Management Overlay to convert an existing shed into an "Other Accommodation" as defined under the BMO, a bushfire management statement developed in accordance with Clause 52.47 would need to be prepared and submitted to the Responsible Authority.

Following initial advice provided, CFA have undertaken an extensive fire behaviour modelling investigation using Phoenix RapidFire to assess the potential impact on the site using four different weather scenarios:

1. Extreme FDR (FFDI 100) No wind change
2. Extreme FDR (FFDI 100) with wind change
3. Severe FDR (FFDI 74) No wind change
4. Severe FDR (FFDI 74) with wind change

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

60 plus fire ignitions (1500 metres apart) were analysed across a surrounding area of 144 km^2 (12 km x 12 km ignition grid).

The following assumptions have been built into the modelling:

- Fuel history layer turned off
  - The area was subject to the February 2009 bushfires, BMO requires steady state or natural state vegetation to be assessed.
- Fire started automatically once FFDI reached 24
- Drought Factor assumed to be 10
- Curing set at 100%
- No suppression activities modelled
- Modelling output resolution set to 180m

It is the opinion of CFA, the landscape in this instance due to the surrounding terrain, orientation and vegetation structure could provide conditions that would exceed the design fire AS3959-2009 is based on and therefore the distances provided in Table 2 to Clause 52.47-3 need to be enhanced.

CFA's guideline "Applying the Bushfire Hazard Landscape Assessment in a BMO" provides guidance on how the effects of the landscape need to be considered in Type three and four landscapes.

CFA has not "required a Bushfire Shelter and closing the facility on extreme / Code Red Fire Danger Rated days" as stated in your letter. These two additional bushfire safety mitigation measures may have been suggested as a potential way of addressing the broader landscape fire amongst other potential safety measures. Ultimately they have been proposed by the applicant to assist in meeting Alternative Measure (AltM) 3.6 and potentially Approved Measure (AM) 2.1.

AM 3.2 cannot be fully met due to a 30 metre buffer distance from the creek not allowing vegetation management (defendable space in accordance with Table 3 to Clause 52.47-3 and construction to BAL 12.5 therefore the use of AltM 3.6 must be used.

AltM 3.6 requires an integrated approach to risk management that potentially allows for less defendable space and a higher construction standard that is appropriate having regard to the bushfire hazard landscape assessment.

CFA have considered and support the proposal by the applicant to provide a Private Bushfire Shelter (assumed to be installed in accordance with the Building Regulations) and the Bushfire Emergency Management Plan (partial - additional information would need to be incorporated into any bushfire emergency management plan) that proposes closure on days of Code Red or Extreme FDR as an appropriate response given the extreme landscape risk the site is situated within to allow AltM3.6 requirements to be met.

The need for defendable space as a "safety zone" around the building to better protect life increases as the landscape risk intensifies. This means ensuring the building will not be subject to flame impingement and radiant heat not to exceed 29 kW/m^2. This is particularly important when the use of a Private Bushfire Shelter is considered (further advice on the use of Private Bushfire Shelters is available on the CFA website) to provide a degree of safety

for people that make a "late run" to the shelter or unfamiliar with potential extreme bushfire behaviours. The total reliance on the Private Bushfire Shelter does not take into account the complex nature of human behaviour and decision making under pressure.

CFA provided advice previously that it would accept reduced defendable space to the west (due to the proximity of a watercourse and a restriction on managing vegetation within 30 metres of the watercourse) based on detailed analysis of the site, effective slopes, vegetation arrangement, length of effective downslope run.

CFA is satisfied defendable space from the building to within the 30 metre buffer area from the creek (this needs to be validated exactly where this the 30 metres is calculated from. CFA have assumed and mapped a 30 metre buffer from the centre line of the watercourse). If this distance or calculation differs based on specific advice from the Catchment Authority, CFA may have to review this position.

Given the reliance on human behaviours and applying the precautionary approach principle required under Clause 13.05 to prioritise human life safety, CFA consider 50 metres defendable space will provide the necessary "safety zone" around the building and the proposed Private Bushfire Shelter.

In summary, CFA is of the opinion the provision of a minimum 50m defendable space managed in accordance with the standard CFA requirements combined with a minimum BAL 29 construction and the additional measures proposed by the applicant will meet the overall objective of prioritising human life.

If you wish to discuss this matter in more detail, please do not hesitate to contact either [redacted] or [redacted]

Yours sincerely

[redacted]
Fire Safety Officer
FIRE & EMERGENCY MANAGEMENT

[redacted]
Fire Safety Coordinator
FIRE & EMERGENCY MANAGEMENT

cc: [redacted] Murrindindi Shire Council
[redacted]@murrindindi.vic.gov.au

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Planning and Property Information

Approx. Land size: 21.5ha

Address: 140 GRANITE PARK PLACE BUXTON 3711
Lot and Plan Number: Lot 1 LP148241
Standard Parcel Identifier (SPI): 1\LP148241
Local Government (Council): MURRINDINDI **Council Property Number:** 2807
Directory Reference: VicRoads 62 D8

Planning Zone Summary

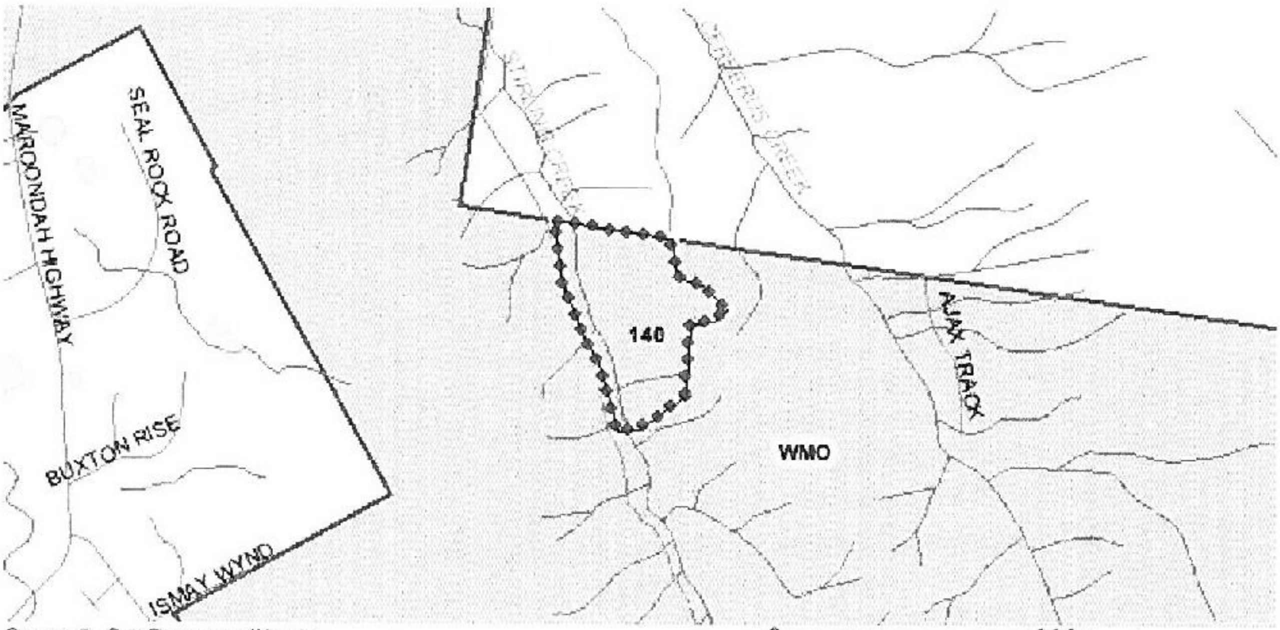
Planning Zone: FARMING ZONE (FZ)
SCHEDULE TO THE FARMING ZONE

Planning Overlays: BUSHFIRE MANAGEMENT OVERLAY (BMO OR WMO)
SIGNIFICANT LANDSCAPE OVERLAY (SLO)
SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 1 (SLO1)

Areas of Aboriginal Cultural Heritage Sensitivity:

This property is within, or affected by, one or more areas of cultural heritage sensitivity

BUSHFIRE MANAGEMENT OVERLAY (BMO OR WMO)



Copyright © - State Government of Victoria

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

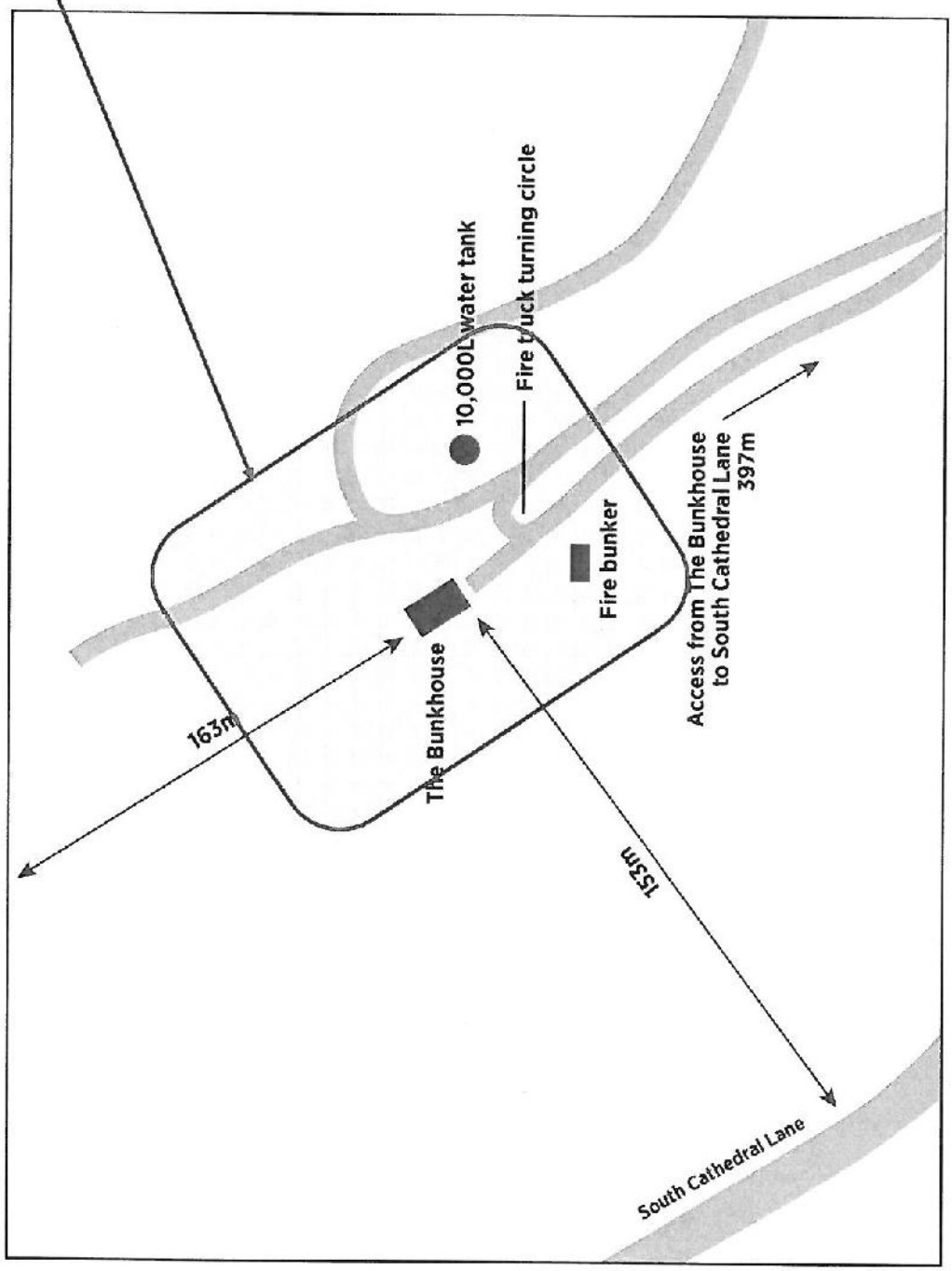
Bushfire Management Plan - Defendable Space Distances

The building(s) will be designed and constructed to BAL-29

the retreat
at Mt Cathedral

Defendable space and vegetation management to a distance of 50m around the building, except to the West where a buffer zone of 30m from the centreline of Stirling Creek shall remain.

BMO Partial Site Plan: The Bunkhouse



Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Plan – Planning Permit conditions

The bushfire mitigation measures forming part of this permit or shown on the endorsed plans, including those relating to construction standards, defendable space, water supply and access, must be maintained to the satisfaction of the responsible authority and the relevant fire authority on a continuing basis. This condition continues to have force and effect after the development authorized by this permit has been completed.

1. Defendable Space

Defendable space *to a distance of 50m around the building, except to the West where a buffer zone of 30m from the centreline of Stirling Creek shall remain,* where vegetation (and other flammable materials) will be modified and managed in accordance with the following requirements:

- 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 5 metres.
- Trees must not overhang or touch any elements of the building.
- The canopy of trees must be separated by at least 5 metres.
- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

2. Construction standards

The building(s) will be designed and constructed to BAL-29.

3. Water Supply

10,000 litres of effective water supply for fire fighting purposes which meets the following requirements:

- Is stored in an above ground water tank constructed of concrete or metal.
- All fixed above-ground water pipes and fittings required for fire fighting purposes must be made of corrosive resistant metal.
- The water supply must also –
    - Incorporate a ball or gate valve (British Standard Pipe (BSP) 65mm) and coupling (64 mm CFA 3 thread per inch male fitting).
    - The outlet/s of the water tank must be within 4m of the accessway and be unobstructed.
    - Be readily identifiable from the building or appropriate identification signage to the satisfaction of CFA must be provided.
    - Any pipework and fittings must be a minimum of 65 mm (excluding the CFA coupling).

4. Access

Access for fire fighting purposes which meets the following requirements:

- Curves must have a minimum inner radius of 10m.
- The average grade must be no more than 1 in 7 (14.4 per cent) (8.1 degrees) with a maximum of no more than 1 in 5 (20 per cent) (11.3 degrees) for no more than 50m.
- Have a minimum trafficable width of 3.5m of all weather construction.
- Be clear of encroachments for at least 0.5m on each side and 4m above the accessway.
- Dips must have no more than a 1 in 8 (12.5 per cent) (7.1 degrees) entry and exit angle.
- Incorporate a turning area for fire fighting vehicles close to the building
- Incorporate passing bays at least every 200m which must be at least 20m long and have a minimum trafficable width of 6m.

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

Pursuant to the *Bushfire Management Overlay*; clause 52.47 of the Victorian Planning provisions requires that development is only permitted if the risk to life, property and community infrastructure can be reduced to and acceptable level. Clause 52.47 contains various Objectives, Approved Measure (AM), Alternative Measures (AltM) and Decisions Guidelines.

The following table demonstrates how the requirements have been achieved and complied with:

REQUIREMENTS	*COMPLIANCE*
52.47-1 Dwellings in Existing Settlements – Bushfire Protection objective	
To specify bushfire design and construction measures for a single dwelling or alteration and extension to an existing dwelling that reduces the risk to life and property to an acceptable level.	*Not Applicable*
Approved Measure 1.1	
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.	*Not Applicable*
Approved Measure 1.2	
A building provides the defendable space in accordance with Column A, B, C, D or E of Table 1 to Clause 52.47-3. 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. A building is constructed to the bushfire attack level: • That corresponds to the defendable space provided in accordance with Table 1 to Clause 52.47-3, or • The next lower bushfire attack level that corresponds to the defendable space provided in accordance with Table 1 to Clause 52.47-3 where all of the following apply: ▪ A private bushfire shelter (a Class 10c building within the meaning of the Building Regulations 2006) is constructed on the same land as the dwelling. ▪ A minimum bushfire attack level of BAL12.5 is provided in all circumstances.	*Not Applicable* *Not Applicable* *Not Applicable*

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

Approved Measure 1.3	
A building is provided with: • A static water supply for fire fighting and property protection purposes specified in Table 4 to Clause 52.47-3. 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. • Vehicle access that is designed and constructed as specified in Table 5 to Clause 52.47-3.	*Not Applicable* *Not Applicable*
52.47-2 Bushfire Protection objectives	
52.47-2.1 Landscape, Siting and Design objectives	
Development is appropriate having regard to the nature of the bushfire risk arising from the surrounding landscape. Development is sited to minimise the risk from bushfire. Development is sited to provide safe access for vehicles, including emergency vehicles. Building design minimises vulnerability to bushfire attack.	*As demonstrated by the compliance with all applicable Approved Measures or Alternative Measure it can be shown that this development has reduced the Bushfire risk to an acceptable level.*
Approved Measure 2.1	
The bushfire risk to the development from the landscape beyond the site can be mitigated to an acceptable level.	*The landscape risk in this area is high and the CFA have determined that the defendable space allowed for in this report along with the provision of a Bushfire Shelter and closing the facility on extreme and code red days is adequate*
Approved Measure 2.2	
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.	*Alternative siting of the building would not improve fire protection.* *Access to the building is easily available on an internal access track >3.5m wide with no grade exceeding approx 8 degrees. Suitable turning bays and passing bays will be provided.* *This application will comply with the requirement as contained in* Table 5 to Clause 52.47-3.
Approved Measure 2.3	
A building is designed to reduce the accumulation of debris and entry of embers.	*The design of the building to the appropriate BAL level will reduce the risk of entry of embers as far as practical.* *The risk of accumulation of debris has been reduced by the adoption of the appropriate vegetation modifications and management standards.* *The building is rectangular with no re-entrant corners and with a simple roof line with no valley gutters.*

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

52.47-2.2 Defendable space and construction objectives	
Defendable space and building construction mitigate the effect of flame contact, radiant heat and embers on buildings	*As demonstrated by the compliance with all applicable Approved Measures and/or Alternative Measures it can be shown that this development has reduced the Bushfire risk to an acceptable level.*
Approved Measure 3.1	
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: • Column A, B or C of Table 2 to Clause 52.47-3 wholly within the title boundaries of the land; or • If there are significant siting constraints, Column D of Table 2 to Clause 52.47-3.	*Not Applicable*
The building is constructed to the bushfire attack level that corresponds to the defendable space provided in accordance with Table 2 to Clause 52.47-3.	*Not Applicable*
Approved Measure 3.2	
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: • Provided with defendable space in accordance with Table 3 to Clause 52.47-3 wholly within the title boundaries of the land. • Constructed to a bushfire attack level of BAL12.5.	*Refer to Alternative Measure 3.6*
Alternative Measure 3.3	
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.	*Not Applicable*
Alternative Measure 3.4	
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.	*Not Applicable*

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

Alternative Measure 3.5	
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: • The lot has access to urban, township or other areas where: ▪ 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. This alternative measure only applies where the requirements of AM 3.1 cannot be met.	*Not Applicable*
Alternative Measure 3.6	
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 Column A, B or C of Table 2 to Clause 52.47-3 where it can be demonstrated that: • An integrated approach to risk management has been adopted that considers: ▪ 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.	*The building will be brought up to BAL-29* *The accommodation is purposed for outdoor enthusiasts such as mountain bikers, hikers and climbers visiting the area to access the Mt Cathedral State Park and Mt Margaret. Guests will generally by highly active people who are 15-65 years of age. These people will be competent and quick should an evacuation be required. They will be supported by the property hosts who are located 180m away by quad bike. Guests will have their own vehicles and will be instructed on evacuation arrangements on their arrival.* *It is expected that there will be customers at The Bunkhouse for 50% of available booking days. There will be a maximum of six people in shared bunk style accommodation.* *There will be a bushfire shelter located adjacent to the dwelling. The accommodation will close in days of extreme and code red fire conditions* *The landscape risk in this area is high and the CFA have determined that the defendable space allowed for in this report along with the provision of a Bushfire Shelter and closing the facility on extreme and code red days is adequate*
Other unspecified Alternative Measures	
	Not Applicable

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

52.47-2.3 Water supply and access objectives	
A static water supply is provided to assist in protecting property. Vehicle access is designed and constructed to enhance safety in the event of a bushfire.	*As demonstrated by the compliance with all applicable Approved Measures it can be shown that this development has reduced the Bushfire risk to an acceptable level.*
Approved Measure 4.1	
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: • A static water supply for fire fighting and property protection purposes specified in Table 4 to Clause 52.47-3. • Vehicle access that is designed and constructed as specified in Table 5 to Clause 52.47-3. 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.	*Not Applicable.* *Not Applicable*
Approved Measure 4.2	
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: • 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 52.47-3. • 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. 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.	*A 10,000L (minimum) water tank is proposed to the side of the building for fire fighting purposes. The tank will be positioned so that a fire brigade vehicle can get to within 4m of the tank takeoff.* *This application will comply with the requirement as contained in* Table 5 to Clause 52.47-3. *A suitable turning area and passing bays must be provided.* *There will be a bushfire shelter located adjacent to the dwelling. The accommodation will close in days of extreme and code red fire conditions*
Other unspecified Alternative Measures	
	Not Applicable

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

52.47-2.4 Subdivision objectives	
To provide lots that are capable of being developed in accordance with the objectives of Clause 52.47. To specify at the subdivision stage bushfire protection measures to develop a lot with a single dwelling on land zoned for residential or rural residential purposes	*Not Applicable*
Approved Measure 5.1	
An application to subdivide land, other than where AM 5.2 applies, demonstrates that each proposed lot is capable of meeting: • The defendable space in accordance with Column A, B or C of Table 2 to Clause 52.47-3. • The approved measures in Clause 52.47-2.1 and Clause 52.47-2.3.	*Not Applicable*
Approved Measure 5.2	
An application to subdivide land zoned for residential or rural residential purposes must be accompanied by a plan that shows: • A building envelope for a single dwelling on each lot that complies with AM 2.2 and provides defendable space in accordance with: ▪ Columns A or B of Table 2 to Clause 52.47-3 for a subdivision that creates 10 or more lots; or ▪ Columns A, B or C of Table 2 to Clause 52.47-3 for a subdivision that creates less than 10 lots. • Defendable space wholly contained within the boundaries of the proposed subdivision. Defendable space may be shared between lots within the subdivision. Defendable space for a lot may utilse communal areas, such as roads, where that land can meet the requirements for defendable space. • Vegetation management requirements, including inner zone standards (as appropriate), to implement and maintain the defendable space required under this approved measure. • Water supply and vehicle access that complies with AM 4.1.	*Not Applicable*
Approved Measure 5.3	
An application to subdivide land to create 10 or more lots provides a perimeter road adjoining the hazardous vegetation to support fire fighting.	*Not Applicable*

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Bushfire Management Statement

Approved Measure 5.4	
A subdivision manages the bushfire risk to future development from existing or proposed landscaping, public open space and communal areas.	*Not Applicable*
Alternative Measure 5.5	
A building envelope for a subdivision that creates 10 or more lots required under AM 5.2 may show defendable space in accordance with Column C of Table 2 to Clause 52.47-3 where it can be demonstrated that: • All other requirements of AM 5.2 have been met. • Less defendable space and a higher construction standard is appropriate having regard to the bushfire hazard landscape assessment.	*Not Applicable*
Other unspecified Alternative Measures	
	Not Applicable

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

BAL-29

(a basic summary extracted from AS 3959-2009)

For 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 not greater than 29 kW/m2

Appropriate Construction Requirements for BAL 29

Subfloor Supports
Enclosure by external wall or by steel, bronze or aluminium mesh, non-combustible supports where the subfloor is unenclosed or naturally fire resistant timber stumps.

Floors
Concrete slab on ground or enclosure by external wall, metal mesh as above or flooring less than 400 mm above ground level to be non-combustible, naturally fire resistant timber or protected on the underside with sarking or mineral wool insulation.

External Walls
Non-combustible material (masonry, brick veneer, mud brick, aerated concrete, concrete), timber framed, steel framed walls sarked on the outside and clad with 6 mm fibre cement sheeting or steel sheeting or bushfire resistant timber.

External Windows
5 mm toughened glass with openable portion screened and frame of metal or metal reinforced PVC-U, or bushfire resisting timber and portion within 400 mm of ground, deck etc screened.

External Doors
Protected by bushfire shutter, or screened with steel, bronze or aluminium mesh or noncombustible, or 35 mm solid timber for 400 mm above threshold or 6 mm toughened glass. Metal or bushfire resisting timber framed tight-fitting with weather strips at base.

Roofs
Non-combustible covering. Roof/wall junction sealed. Openings fitted with non-combustible ember guards. **Roof to be fully sarked.**

Verandas Decks etc
Enclosed sub-floor space or non-combustible or bushfire resistant timber supports. Decking to be non-combustible or bush-fire resistant timber.

Bushfire Resistant Timber – Tested Species:

Standard Trade Name	Botanical Name
Ash, Silvertop	Eucalyptus sieberi
Blackbutt	Eucalyptus pilularis
Gum, Red, River	Eucalyptus camaldulensis
Gum, Spotted	Corymbia maculata
	Corymbia henryi
	Corymbia citriodora
Ironbark, Red	Eucalyptus sideroxylon
Kwila (Merbau)	Intsia bijuga
Turpentine	Syncarpia glomulifera

Foreword from AS 3959-2009
"It should be borne in mind that the measures contained in this Standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behavior of fire, and extreme weather conditions."

Specialist advice should be obtained regarding complying with all BAL levels and the requirements of the construction elements.
The above is for general information only and should not be used for design or construction. Please refer to AS3959-2009 for full details.

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Site Photographs

≈ North of proposed works

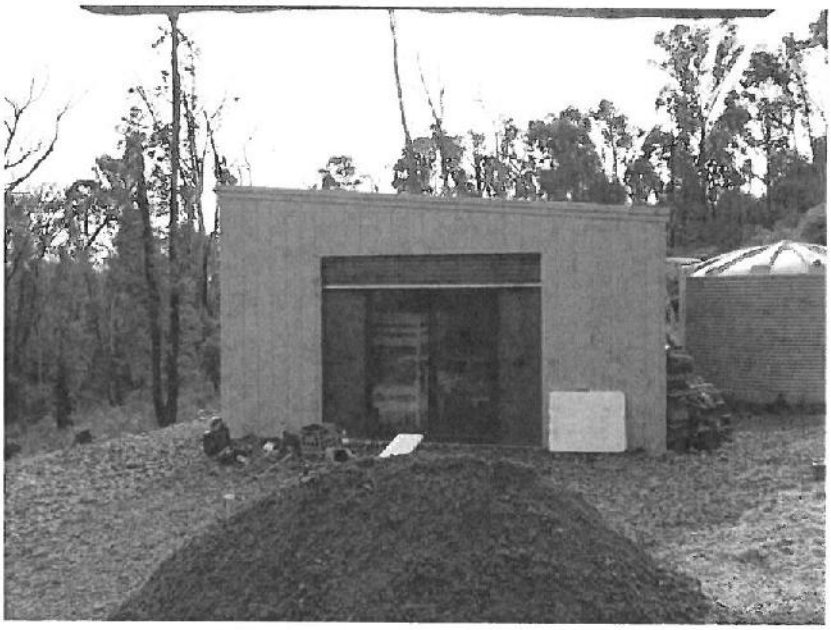
≈ East of proposed works

≈ South of proposed works

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Site Photographs

≈ West of proposed works

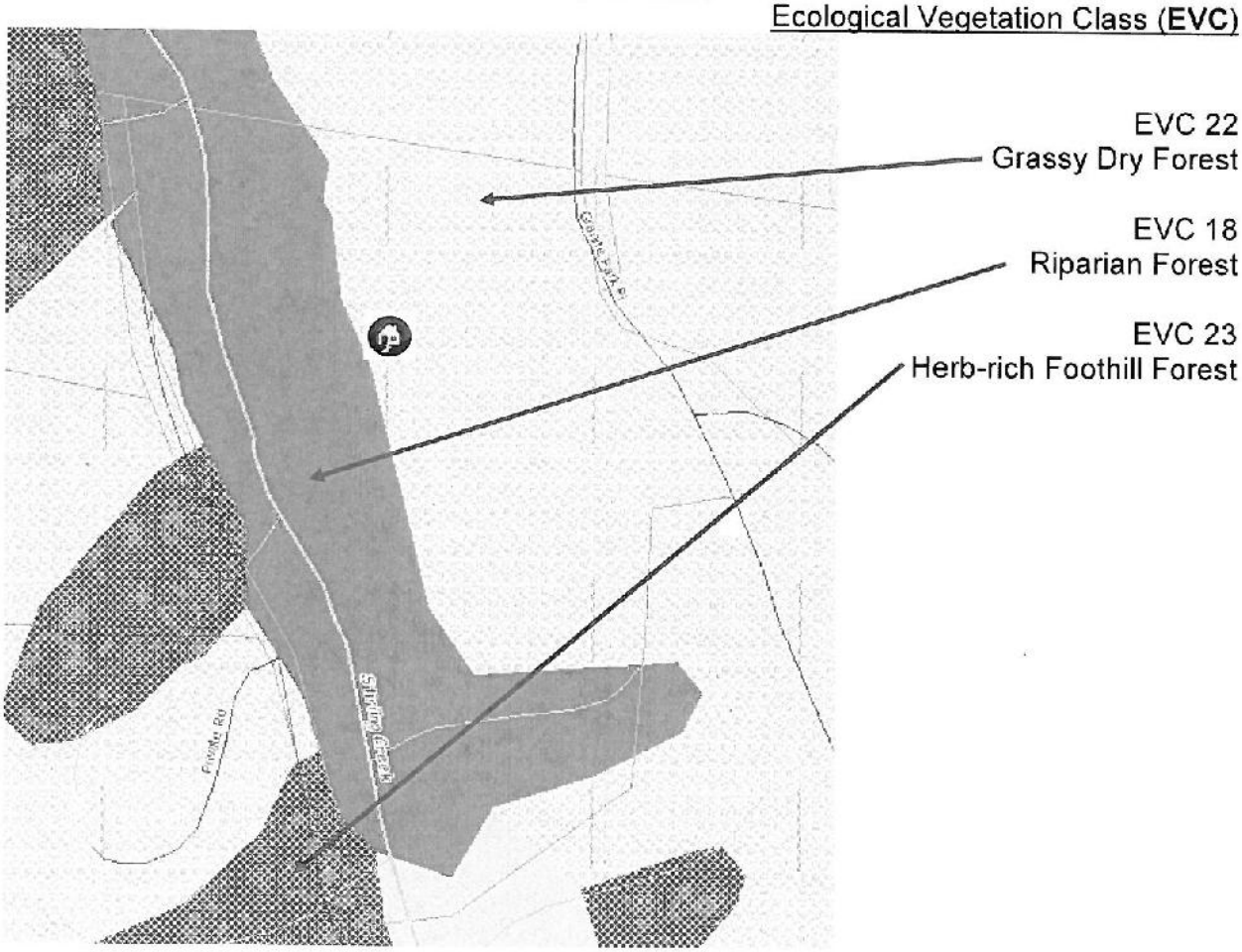


The Bunkhouse

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Site Maps

Ecological Vegetation Class (**EVC**)



Contour Map

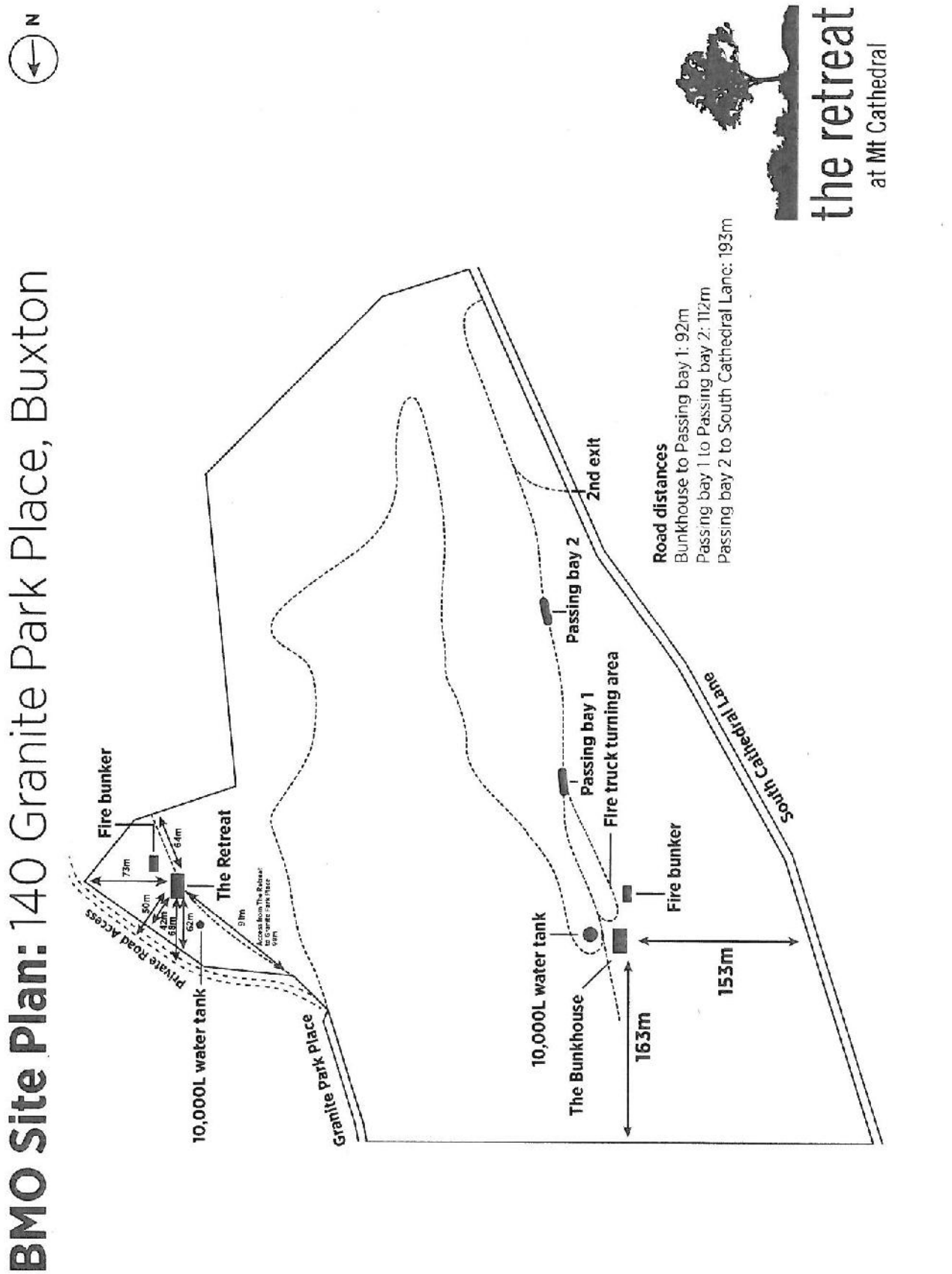
Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Site Maps – Bushfire Hazard Landscape Assessment

The landscape risk in this area is high and the CFA have determined that the defendable space allowed for in this report along with the provision of a Bushfire Shelter and closing the facility on extreme and code red days is adequate

Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Site Layout



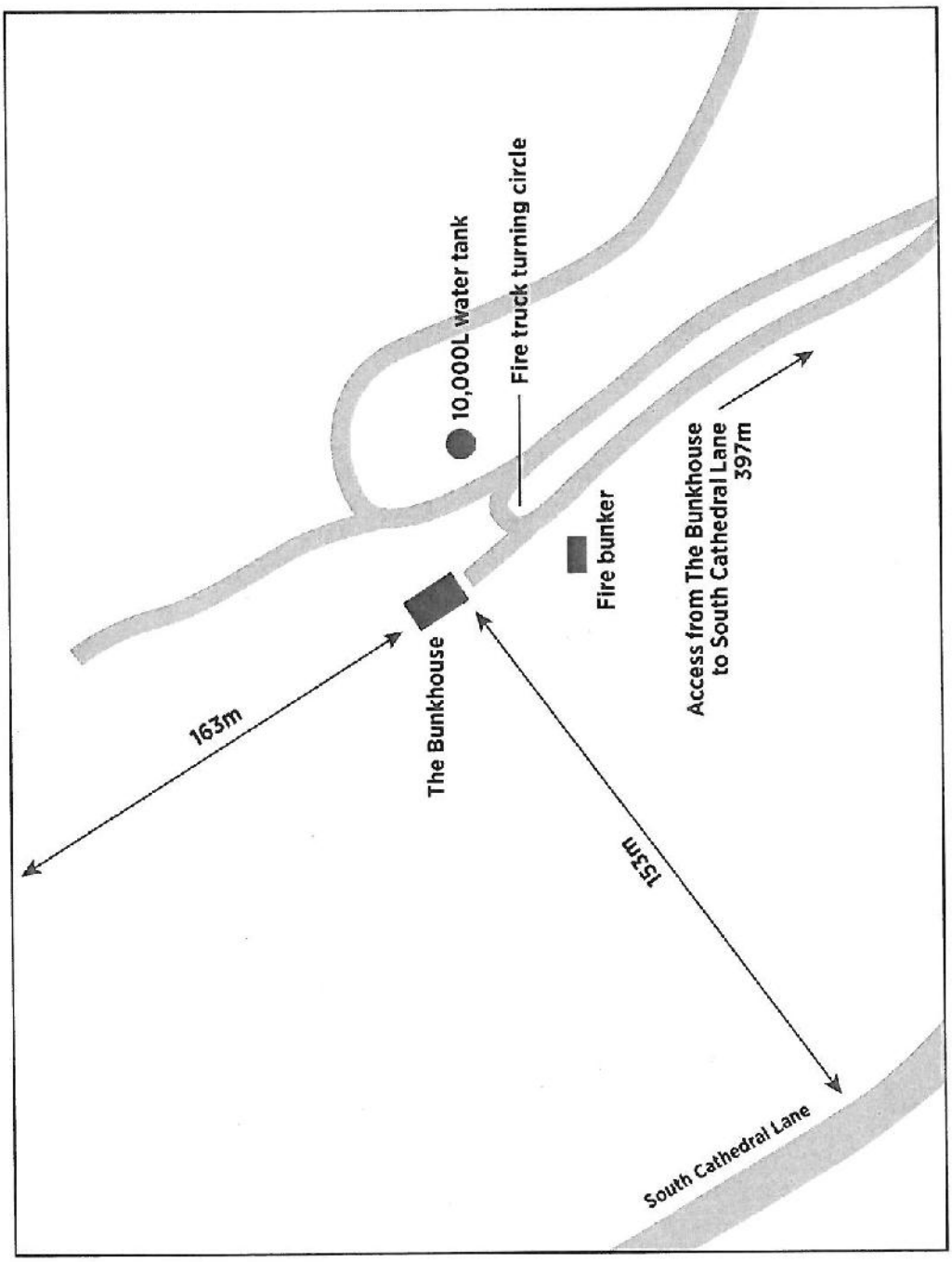
Bushfire Management Overlay Assessment: Granite Park Place 140, Buxton

Site Layout

N

the retreat
at Mt Cathedral

BMO Partial Site Plan: The Bunkhouse



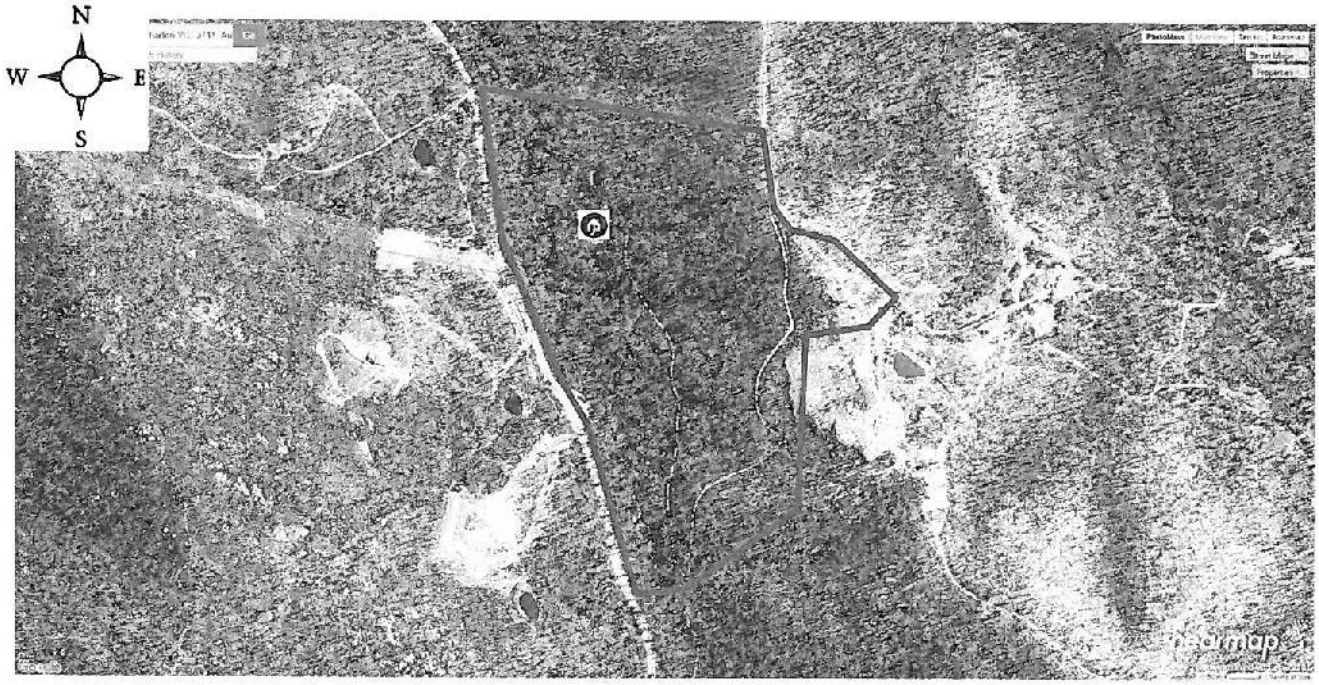
BAL Assessments

www.BAL.net.au

[redacted]

In accordance with Australian Standard AS3959-2009

Site Address:	Granite Park Place 140, Buxton	Lat. South:	-37.416238
		Long. East:	145.728484
Name:	[redacted]	Tel:	
		Mobile:	[redacted]



Bushfire Hazard

Site Assessment: *(B2)* **FDI:** 100 = Location of proposed works

	(B3) **Vegetation Class** *(01 to 28 Fig. 2.3)*	*(B5)* **Slope θ to Veg. (+/-)**	*(B6)* **Distance to Veg.**	*(B4)* **Slope θ UNDER Veg. (+/-)**	*(B8)* **Veg. Width (W_t)**	*(TB2)* Veg. Ht (Class 10 to 15)	*(FB1)* Ht (*h*) of Receiver	**BAL**
≈N	Forest	Upslope	50m*1	Upslope	100m	n/a	3m	**29**
≈E	Forest	Upslope	50m*1	Upslope	100m	n/a	3m	**29**
≈S	Forest	<-5 θ	50m*1	<-5 θ	100m	n/a	3m	**29**
≈W	Forest	-10 θ	50m*1 *2	Upslope *3	100m	n/a	3m	**29**
≈NW	Forest	-8 θ	50m*1	-8 θ	100m	n/a	3m	**29**

Notes:
*1 The defendable space distance has been determined by CFA
*2 A buffer zone of 30m from the centerline of Stirling Creek shall remain
*3 Upslope on the far side of Stirling Creek

Site BAL: 29

Assessor(s): [redacted] Signed: [redacted] Date: 3 / 06 / 2016