



Mt Buller and Mt Stirling Alpine Resort
Management Board
Mt Buller Sustainable Water Security Project - Off-stream
Storage
Landscape & Visual Impact Assessment

July 2016

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Glossary of Terms and Abbreviations

Term	Definition
Background view	Landscape visible in distance (6 km to 20 km) where textures are no longer visible, but mountain and valley forms, skylines and ridgelines are important.
Foreground	0 to 1 km is the visual zone where colour contrast and textural detail are most clearly perceived.
Footprint	An outline or indentation left by the project on the surface.
Landscape feature	A component, part or feature of the landscape that is prominent or eye-catching, e.g. hills, buildings, vegetation
Landscape quality	Largely subjective judgement based on particular characteristics that influence the way in which the environment is experienced, including special interests such as cultural associations or heritage interests, the presence and/or type of elements and condition
Landscape sensitivity	The extent to which landscape can accept a change of a particular type and scale without unacceptable adverse impacts on its character
Landscape value	Areas of formally designated landscape that through national or local consensus, reflect the value placed by society on particular environments and/or their features
Middle ground view	1 km - 6 km – different elements in the landscape are visually apparent
Mitigation	Measures, including any process, activity or design to avoid, reduce, remedy or compensate for adverse landscape and visual impacts of a development project
Sensitive visual receptor	Person and/or viewer group that would experience an impact
Viewing locations	Viewing locations are used in this report to typify the views experienced by sensitive visual receptors throughout the visual catchment of the project. Viewing locations in this report often represent a viewing area, rather than one exact point.
Visual amenity	The value of a particular area or view in terms of what is seen
Visual impact	Changes in the appearance of the landscape or in the composition of available views as a result of development, to people's responses to these changes, and to the overall impacts in regard to visual amenity. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction).
Visual catchment	Extent of potential visibility to or from a specific area, feature or project
LVIA	Landscape and Visual Impact Assessment

1. Introduction

1.1 Purpose of this report

GHD Pty Ltd has been engaged by Mt Buller and Mt Stirling Alpine Resort Management Board (RMB) to provide a landscape and visual impact assessment to be used as part of the planning permit application in relation to the development of an Off-Stream Storage facility and an associated upgrade of the resort water supply and treatment infrastructure.

1.2 Basis of this Advice

The RMB is responsible for the management of the Mt Buller and Mt Stirling Alpine Resorts. These Resorts cover an area of 5,000 hectares in North East Victoria. The RMB has a series of performance obligations and objectives associated with its management of Mt Buller and Mt Stirling. One of these objectives is the provision of a safe and reliable water supply.

The RMB has established the Mt Buller Sustainable Water Security Project which encompasses a series of projects designed to assist it in meeting its obligation to provide a safe and reliable water supply to Mt Buller Resort (the 'Resort') for both now and into the future.

One component of the project is the development of an Off-Stream Storage facility (the 'Project') and an associated upgrade of the Resort water supply and treatment infrastructure. Based on a number of previous investigations, assessments and reviews, the RMB have determined that a 100 ML on-mountain storage is required to assist it in meeting current and future water supply demands.

In late 2013 the RMB engaged GHD to undertake detailed investigations into the potential siting and design of a 100 ML storage and the ancillary infrastructure required to service this asset.

The advice contained within this report is based on the following investigations:

- Site visit; and
- Review of the provisions of the Alpine Resorts Planning Scheme.

1.3 Study Area

This report relates to the Control Centre site. The study area was defined as the potential visual catchment which was approximately 3 km surrounding the site. Refer to Figure 4 for zone of theoretical visibility (ZTV).

1.4 Scope and limitations

This report has been prepared by GHD for the Mt Buller and Mt Stirling Alpine Resort Management Board (RMB) and may only be used and relied on by the RMB for the purpose agreed between GHD and the RMB as set out in section 1 and 2 of this report.

GHD otherwise disclaims responsibility to any person other than the RMB arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1 and 2 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by the RMB and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

There are a number of assumptions and limitations associated with this assessment, as follows:

- There is no guidance on the assessment of landscape and visual impacts specific to Australia. However, the industry typically refers to Guidance for Landscape and Visual Impact Assessment (2013) published jointly by The Landscape Institute and the Institute for Environmental Management and Assessment (UK).
- The assessment process aims to be objective and describe any changes factually. Potential changes as a result of the project have been defined, however the significance of these changes requires qualitative (subjective) judgements to be made. The conclusions to this assessment therefore combine objective measurement and professional interpretation. This assessment has attempted to be objective, however it is recognised that visual assessment can be highly subjective and individuals are likely to associate different visual experiences to the study area.
- The assessment is based on the information provided to GHD at the time of writing.
- Baseline conditions were assessed in the field in May 2014.

1.5 Assumptions

A number of assumptions have been made for this assessment, as outlined below.

- All construction areas would be rehabilitated post construction through revegetation with species appropriate to the local context and all applicable legislation;
- No site lighting would be used on construction sites outside of daylight hours;
- Project mitigation measures are addressed on a site wide basis (section 6).
- Site survey was undertaken in conditions of good site visibility. It should be noted however that the site in subject is frequent periods of cloud cover which reduces visibility from the surrounding area.

2. Methodology

2.1 Introduction

The term 'Landscape' describes a range of environmental topics including landscape character, landscape context, views and prospects, historical landscapes and anthropogenic landscapes.

Landscape and visual impact assessment (LVIA) is a combination of two separate but closely related aspects. The first is impact on the character of the landscape, that is, responses that are felt towards the combined effects of the new development. The second is visual impact that is the extent to which new developments can be seen.

The central purpose of an LVIA is to identify potentially significant adverse impacts and to propose measures to mitigate or ameliorate such impacts.

2.2 Basis for the Landscape and Visual Impact Assessment

The methodology for the LVIA has been set out to respond to particular project requirements and constraints including the scale and nature of the project.

This assessment draws on the *Guidelines for Landscape and Visual Impact Assessment, Third Edition*, published by the Landscape Institute and Institute of Environmental Management and Assessment (2013), *Visual Landscape Planning in Western Australia* document produced by the Western Australian Planning Commission (2007), and the Forest Practice Board of Tasmania's, *A Manual for Forest Landscape Management (2006)*.

2.3 Purpose and Structure

In terms of structure, this report includes descriptions of the existing environment, the project and the likely significant impacts and mitigation measures. Further breakdown of these descriptions is as follows.

- Analysis of the existing environment by:
 - Defining, describing and classifying the study area (visual catchment) into landscape character types;
 - Identifying representative viewing locations and sensitive receptors that may have a fixed or transient view of the proposed project.
- Undertaking an assessment of the likely landscape and visual impacts by:
 - Undertaking GIS viewshed analysis, assisting in the aid of understanding the visual exposure of the proposed works from these viewing locations.
 - Identifying the sources of potential landscape and visual impacts associated with the project works;
 - Providing a description of landscape and visual impacts for each landscape character types and identified viewing locations, having regard to criteria such as scenic quality, visual and landscape sensitivity, and the significance of likely impacts;
- Proposing mitigation measures to avoid, reduce, remedy or offset negative visual impacts resulting from the project.

2.4 Establishment of the Baseline Landscape Characterisation

It is proposed that systematic, accurate and comprehensive descriptions of the following conditions will be included in the assessment. The methodology for the identification of the existing environment, surrounding landscape character and the identification of the viewing locations is detailed below.

2.4.1 Defining the Visual Catchment

An indicative visual catchment within which the project may be seen has been defined based on a worst case scenario based on the investigation corridor. This has been determined through a desktop study examining aerial photographs and topographic maps where landform and land cover (screening) were considered in tandem. Also taken into consideration was the potential maximum visibility for this type of development. For LVIA, the visual catchment becomes the study area.

This preliminary visual catchment is then used to identify sensitive receptors with potential views of the project. More detailed visual catchments (Zones of Theoretical Visibility) are then calculated around each of these locations using topographical data. This is discussed further in section 2.4.3.

2.4.2 Site Survey

A site survey was undertaken by two Landscape Architects to verify the desktop study findings, allow characterisation of the landscape, identify sensitive receptors and observe how receptors might view the landscape. The site visit was conducted in May 2014 during conditions of good visibility.

During the site survey, the Landscape Architects traversed the study area and viewed the investigation corridor from publicly accessible viewpoints. At each location a photographic record of landscape features, key views and receptors was obtained along with coordinates, bearings, field notes and sketches.

2.4.3 Zone of Theoretical visibility

A Zone of Theoretical Visibility is the area around a designated point in the landscape from which that point is visible. It is calculated using elevation data such as a Digital Elevation Model (DEM) and does not take account of buildings or vegetation screening, therefore representing a worst case. The ZTV generated for this assessment are based on 10 m contour intervals and an observer eye height level of 1.65 m.

2.4.4 Description of Existing Conditions

The description of existing landscape and visual environment establishes a baseline against which the project is assessed. The principal document and data sources used have been set out in the bibliography, referenced within relevant sections of the text.

2.4.5 Defining the Landscape Character Areas

Landscape character considers common landscape types (defined by typical features and characteristics) and highlights any principal landscape features. A description of the landscape character differentiates between subjective assessments and objective description and is provided from both within the study area, and from the wider landscape.

The factors that have been considered in categorising the landscape character areas include landform, vegetation and intensity and character of land. The categorising was informed through a review of the information assembled in the desk study and the site survey described in section

2.4.2. The assessment also included a comprehensive review of the Interim Biogeographic Regionalisation for Australia regions and subregions (DEH 2005). This national data set which classifies the land surface of Australia was derived by using specialist ecological knowledge and the assessment of climate, geomorphology, landform, lithology, and characteristic flora and fauna (DEH 2005). These attributes are common to some of the attributes used to define landscape character.

2.4.6 Selection of Receptor Viewpoints

Representative publicly accessible and private viewpoints have been identified in a range of locations and are identified in section 4.2. These have been recorded and photographed. Photographs of viewpoints within section 4.2 represent a range of typical views possible from that locality to the project. Viewpoints are selected in order to:

- Represent views of particular landscape and /or visual features of importance.
- Represent views from key visual receptors that spend extended amounts of time and other locations from which fixed or transient views would be possible, but where the time of stay is shorter. These include residents, road and recreational receptors.

2.5 Assessment of Landscape Impacts

Landscape is defined as features (such as vegetation, built elements, topography, etc.) either within the project boundary or on land adjacent. The features of the landscape are considered as an integral part of the landscape and visual context that contribute to the overall character of the environment.

Assessment of changes to the landscape includes identification of:

- The nature of the change, (that is the degree of contrast, or integration) of, any new features with existing features;
- Context and quality of the views including the extent to which the project would be visible in the wider landscape (with consideration of the presence of intervening vegetation or features);
- The scale or degree of change (i.e. obvious / imperceptible with respect to loss or addition of features); and
- The nature of the impact (adverse or beneficial).

The significance of the landscape character unit is described in Table 2-1. For the purposes of this assessment, the definition of impacts relate to the relative capacity of the landscape to accommodate changes to the physical landscape of the type and scale proposed that would occur as a direct result of the project. These are defined in Table 2-2.

Table 2-1 Landscape Sensitivity

Landscape Sensitivity	Definition
High	Landscapes of international designation that are highly valued, particularly near or distinctive and susceptible to small change
Medium	Landscape of regional designation that are valued more locally and tolerant of moderate levels of change
Low	Landscapes of local designation that are more commonplace and potentially tolerant of noticeable change or are undergoing substantial development, such that their character is one of change.

Table 2-2 Landscape capacity to accommodate change

Landscape capacity	Definition
Low potential capacity	The landscape has high sensitivity to the type of development proposed which could have a detrimental effect on the landscape character or value. Mitigation measure unlikely to reduce the impacts of the change.
Medium potential capacity	The landscape has medium sensitivity to the type of development proposed. Any change caused by the proposed development would be unlikely to have a significant adverse effect on the landscape character or value that could not be mitigated against.
High potential capacity	The landscape would have low sensitivity to this type of development and few constraints imposed by landscape elements. Development of this type is very unlikely to have an adverse effect on the landscape character. Mitigation measures would be effective in neutralising adverse effects and / or may improve the landscape character.

2.6 Assessment of Visual Impacts

2.6.1 Introduction

People are mobile and therefore could potentially experience views of the project from many different locations. In order to undertake an assessment of visual impacts, a series of key viewing locations have been selected to represent the points from which the project is likely to be viewed by the greatest number of visual receptors and from where the most sensitive visual receptors are likely to perceive the project.

Project impacts can be evaluated on the basis of a combination of two factors that inform the level significance of impact:

- Visual modification, and
- Visual sensitivity.

Both are defined in sections 2.6.2 and 2.6.3 respectively, and their use in identifying severity of the impacts outlined.

2.6.2 Visual Modification

Visual impacts arise from changes in available views of the landscape that occur as a result of the project. Visual impact is determined through the subjective assessment of sensitivity of the visual receptors and the magnitude (scale) of the change in view. Sensitivity is dependent upon receptors' location; the importance of their view; their activity; expectations; available view; and the extent of screening of this view.

Factors that have been considered in assessing the response to changes in the visual amenity include:

- Interest in the visual environment and their distance/angle of view to the source of the impact;
- The extent of screening/filtering of the view;
- Magnitude of change in the view (i.e. loss/addition of features that change the view's composition);
- Quality of the impact as detailed in Table 2-6;
- Integration of changes within the existing view (form, mass, height, colour and texture);
- Duration of the effect as detailed in Table 2-5;
- Effectiveness of the proposed mitigation.

Table 2-3 Visual Modification Definitions / Magnitude of landscape impacts

Landscape Impact	Definition
Large	A substantial / obvious change to the landscape due to total loss of, or change to, elements, features or characteristics of the landscape. Would cause a landscape to be permanently changed and its quality diminished.
Moderate	Discernible changes in the landscape due to partial loss of, or change to the elements, features or characteristics of the landscape. May be partly mitigated. The change would be out of scale with the landscape, and at odds with the local pattern and landform and would leave an adverse impact on the landscape.
Small	Minor loss or alteration to one or more key landscape elements, features, or characteristics, or the introduction of elements that may be visible but may not be uncharacteristic within the existing landscape.
Negligible	Almost imperceptible or no change in the view as there is little or no loss of / or change to the elements, features or characteristics of the landscape.

2.6.3 Visual Sensitivity

Visual sensitivity refers to visual receptors and their sensitivity to their visual environment. Visual sensitivity is defined as the perception of viewers.

For the purposes of this assessment, key visual receptors users of public recreation areas and all have differing sensitivities to their visual environment. Generally, sensitivity is derived from a combination of factors including:

- Receptors' interest in the visual environment (i.e. high, medium or low interest in their everyday visual environment, and the duration of the effect);
- Receptors' duration and viewing opportunity (i.e. prolonged, regular viewing opportunities);
- Number of viewers and their distance / angle of view from the source of the effect, extent of screening / filtering of the view, where relevant.

For the purposes of this assessment, the terminology set out in Table 2-4 has been used to describe visual sensitivity.

Table 2-4 Assessment of receptor sensitivity

Sensitivity	Definition
High	Occupiers of residential properties with long viewing periods, within close proximity to the proposed development. Communities that place value upon the landscape and enjoyment of views of their setting.
Medium	Outdoor workers who have a key focus on their work that may also have intermittent views of the project area. Viewers at schools, or similar, when outdoor play and recreation areas are located within close proximity but viewing periods are limited. Occupiers of residential properties with long viewing periods, at a distance from or screened from the project area.
Low	Road users in motor vehicles, or on transport routes that are passing through or adjacent to the study area and therefore have short term views. Viewers indoor at their place of work, schools or similar.
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short. Road users in motor vehicles, or on transport routes that are passing through/adjacent to the study area and have partially screened views and short viewing times.

2.6.4 Duration of Impact

The duration of impact has been defined for the purposes of this assessment as outlined in Table 2-5.

Table 2-5 Duration of impacts

Duration	Definition
Temporary	Impacts lasting one year or less
Short Term	Impacts lasting one to seven years
Medium Term	Impacts lasting seven to fifteen years
Long Term	Impacts lasting fifteen to sixty years
Permanent	Impacts lasting over sixty years

2.6.5 Impact Type

The definition for 'quality of impact' as used in this assessment has been outlined in Table 2-6.

Table 2-6 Quality of the impact

Quality	Definition
Neutral	A neutral impact would neither enhance nor detract from the landscape character or viewpoint.
Positive	A positive impact would improve or enhance the landscape character or viewpoint.
Negative	A negative impact would reduce or have an adverse effect on the existing landscape character or viewpoint.

2.6.6 Significance of Impact

Only impacts of major or high significance in the context of this assessment have been considered. These impacts would require further refinement through mitigation or detailed design.

The definition used to identify significance of impacts for this assessment has been outlined in Table 2-7.

Table 2-7 Significance of Impact

		Landscape Impact			
		Large	Moderate	Small	Negligible
Visual Sensitivity	High	Major Significance	High Significance	Moderate Significance	Minor Significance
	Medium	High Significance	Moderate Significance	Minor Significance	Not Significant
	Low	Moderate Significance	Minor Significance	Not Significant	Not Significant
	Negligible	Minor Significance	Not Significant	Not Significant	Not Significant

3. Legislative Context

3.1 Alpine Resorts (Management) Act 1997

The RMB is a statutory authority established by the Alpine Resorts (Management) Act 1997. The site is located within the Mt. Buller Resort area which is managed by the RMB, and subject to the provisions of the Alpine Resort planning scheme. The key provisions in relation to Landscape and visual impact assessment are identified below.

3.2 Approvals

The Minister for Planning is the Responsible Authority for the Alpine Resort Planning scheme. The Alpine Planning Unit administers the planning scheme on behalf of the Minister. Accordingly, this planning permit application has been prepared for submission to the Alpine Planning Unit of the Department of Transport, Planning and Local Infrastructure for approval.

3.3 Alpine Resorts Planning Scheme

The following sections from the Alpine Resorts Planning Scheme are considered to be relevant to the project.

3.3.1 State Planning Policy Framework

12.04 Significant environments and landscapes

12.04-2 Landscapes	
Objective	To protect landscapes and significant open spaces that contribute to character, identity and sustainable environments.
Strategies	Ensure sensitive landscape areas such as the bays and coastlines are protected and that new development does not detract from their natural quality.
	Improve the landscape qualities, open space linkages and environmental performance in green wedges and conservation areas and non-urban areas.
	Recognise the natural landscape for its aesthetic value and as a fully functioning system.
	Ensure natural key features are protected and enhanced.

3.3.2 Local Planning Policy Framework

The following sections from the Local Planning Policy Framework are considered to be relevant to the project.

21.05 Mt. Buller Resort Strategic Statement

21.05-2 Vision – Strategic Framework

Mt. Buller Resort Management Corporate Plan – 2009-12

Environmental and Landscape Values	
	To conserve and protect the natural environmental systems and landscape values within and adjacent to the Mt Buller Alpine Resort so as to minimise disturbance to flora and fauna communities and to areas of high scenic quality or visual sensitivity.

21.05-3 Objectives – Strategies – Implementation

Environmental and Landscape Values	
Objective 1	To maintain, preserve and enhance the natural environmental features of the Resort.
Strategies	Promote the principle of net gain in native vegetation associated with the further development of land within the Resort, in accordance with the Native Vegetation Management Framework.
	Retain native vegetation, including trees, shrubs and ground cover.
	Encourage revegetation of disturbed areas with indigenous species applying the principles of net gain.
	Ensure that all development and use of land is undertaken in a manner that minimises impacts on significant native vegetation, fauna and environmental resources.
	Establish the environmental values existing within the Resort, including the identification of species and communities of conservation significance and the defining of habitat types in consultation with the Department of Sustainability and Environment.
Objective 3	To ensure that use and development minimises environmental impact through sensitive siting and implementation of sound construction and management techniques.
Strategies	Ensure that all development and use of land minimises any off-site adverse effects on the environment.
	Monitor environmental impacts associated with Resort development and encourage research into best practice environmental management techniques
	Develop management requirements for the protection, maintenance and enhancement of nominated areas or sites of conservation significance within the Resort.
	Minimise the likely environmental impacts for all proposed development within the Comprehensive Development Zone as part of the preparation of an application for permit. Potential off-site effects of development and land use including noise would be considered in the assessment of applications.
	Ensure development is respectful of areas of high scenic quality and visual sensitivity and complements the natural features of the Resort.

Infrastructure

Objective 3	To ensure that service and infrastructure is provided in a manner that minimises impacts on existing natural, built, cultural and environmental values of the Resort.
Strategies	Ensure that physical infrastructure and services are appropriately designed and located to minimise their environmental and visual impact.

3.4 Mt Buller and Mt Stirling Alpine Resorts: Environmental Management Plan (March 2007)

The Environmental Management Plan describes specific environmental objectives for the Resorts. Environmental issues addressed within the Plan include sustainable management of visual amenity. The objectives considered in relation to this assessment are:

- To maintain and enhance the aesthetic environment and landscape values of the Resorts.
- To ensure that existing and future development and activities do not compromise the visual amenity of the surrounding Alpine National Park.

3.4.1 Background

Mt Buller and Mt Stirling are outlying peaks at the south-western end of the Victorian Alps. Vistas from the summit of both mountains are generally of high scenic quality due to the high quality of undisturbed scenery.

Mt Buller and to a lesser degree Mt Stirling are prominent in views from the Alpine National Park.

Developments and activities within the Mt Buller Alpine Resort may provide a focus of activity to views from Mt Stirling, or from the Australian Alpine Walking Track.

3.4.2 Actions

The RMB would:

Apply the design objectives of Design and Development Overlay 1 (DDO1) to the assessment of all development applications within the Mt Buller Village.

Consider the requirements of DDO3 for the assessment of all applications within the Mt Buller ski field.

Where appropriate, assess proposed developments and activities within the Resorts for their potential impact on views from the surrounding Alpine National Park and State Forest, particularly the significant viewing areas of the Bluff, Mt Howitt and the Australian Alps Walking Track.

4. Existing Visual Character

The following section provides an overview of the landscape character in the vicinity of the project area.

4.1 Landscape Character Units

As there are a variety of land uses and landscape typologies in close proximity to the project area. The study area has been divided into Landscape Character Units (LCUs) to identify those areas that share common landscape features and visual characteristics.

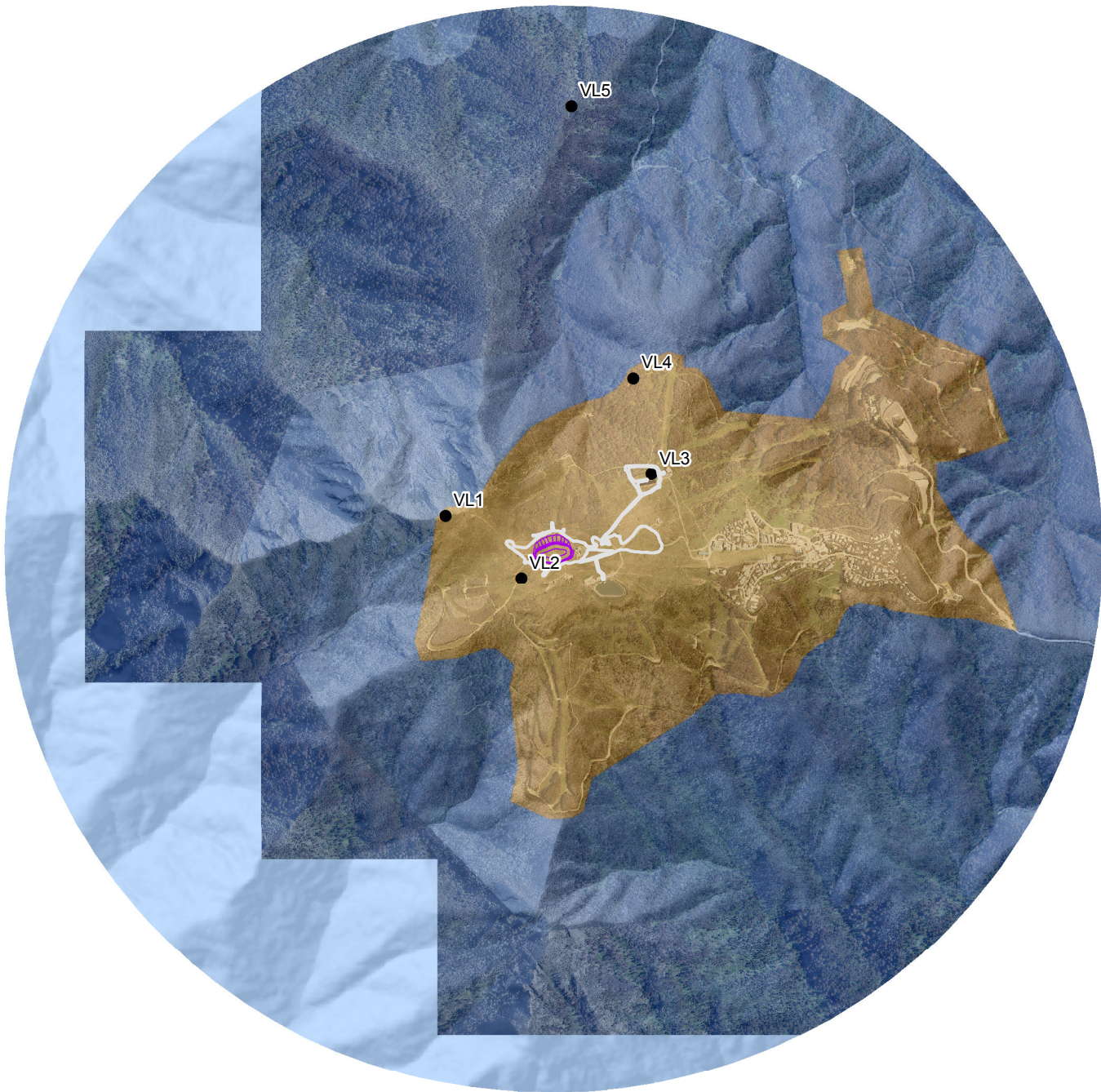
Whilst in reality the landscape and views surrounding the project vary continuously by way of land use, orientation and degree of visual exposure, this categorisation allows a number of general descriptions to be applied to these landscape types. This in turn allows for categorisation into areas of differing sensitivity on which the project would have differing impacts.

The elements that contribute to the identification of LCUs include landform, vegetation, water form, land use, significant features and views of the area.

The LCUs recognised for this assessment are:

- LCU 1 – Managed Landscape - Mt Buller Resort
- LCU 2 – Natural Landscape - Alpine National Park

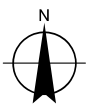
The LCUs are shown in Figure 1 and described below.



LEGEND

- Sensitive Receptors
- Control Centre Storage Option
- Project Construction Footprint
- LCU1: Managed Landscape - Mt Buller Resort
- LCU2: Natural Landscape - Alpine National Park

Paper Size A4
 0 0.25 0.5 0.75 1
 Kilometres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



Mt Buller & Mt Stirling Resort Management	Job Number	31-30733
Mt Buller Sustainable Water Security Project	Revision	B
	Date	08 Aug 2016

Landscape Character Units **Figure 1**

4.1.1 LCU 1 – Managed Landscape - Mt Buller Resort

This is the area that is defined around Mt Buller Village and Ski Fields. It is the area east of Mt Buller peak. The landscape consists of rolling mountains with large areas of Alpine meadow dotted with copses of Snow Gums. The summit of Mt Buller is at an elevation of 1,805 metres. Its elevation and openness give a feeling of ‘wide-open’ landscape with wide views of the Alpine region extending for very long distances in all directions. The extensive open views of the Alpine National Park in the middle ground and background dwarf the individual and the specific landscape features within it.

In the foreground the view is dominated by ski related infrastructure. This includes buildings scattered at different orientations, ski lifts (consisting of loading stations, support poles, cables and seats) running at different angles, water storage dams and snow fences. There are also cleared areas for roads and ski runs which make up the ski areas. The only population centre within the study area is Mt. Buller village.



Photo 1 View of LCU 1 from the summit of Mt Buller



Photo 2 View of LCU 1 from the Mt Buller ski areas

4.1.2 LCU 2 – Natural Landscape - Alpine National Park

LCU 2 which is defined by the natural landscape which consists majoritively of the Alpine National Park surrounding LCU 1. This is a varied landscape characterised by forested mountains with ridges and valleys. In some areas of relatively high elevation, there are long views towards the horizon. The landscape has very strong visual characteristics of natural vegetation cover. Many of the views from within this LCU are restricted due to dense tall vegetation present.

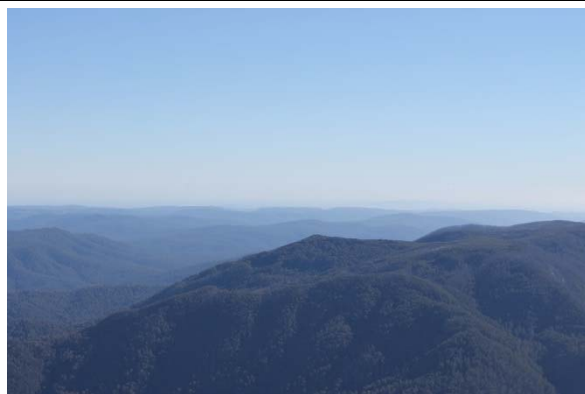


Photo 3 View from summit of Mt Buller of LCU 1



Photo 4 View from Thank Christ Corner on The Klingsporn Bridal Track of typical vegetation within LCU2

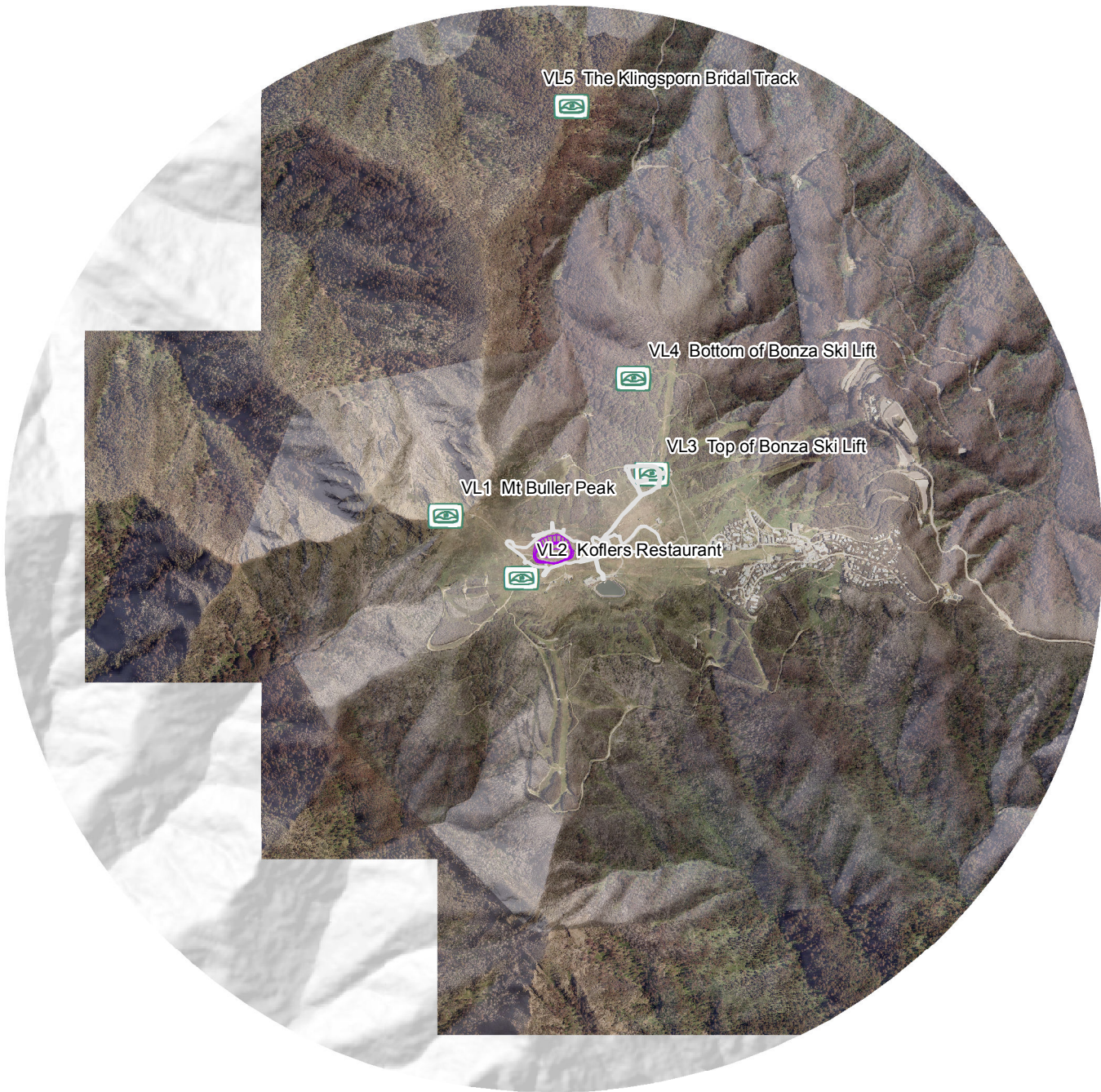
4.2 Sensitive Receptors viewing locations

In order to undertake an assessment of visual impacts, a series of key sensitivity receptor viewing locations have been selected to represent the points from which the project is likely to be viewed by the greatest number of visual receptors and /or from where the most sensitive visual receptors are likely to perceive the project. The viewing locations are areas where full or screened views of the project would be possible and human activity would be undertaken. This activity may include residential, business, or recreation. In addition, sensitivity receptor viewing locations would also include areas where the only views are transient such as cyclist, walkers and cross country skiers using trails. The viewpoints are focused to the north end of the study area. This is as a result of the higher topography which blocks views to the proposed development from the south.

The representative sensitivity receptor viewing locations that have been identified and assessed in this report are:

- VL1 Mt Buller Peak
- VL2 Koflers Restaurant
- VL3 Top of Bonza Ski Lift
- VL4 Bottom of Bonza Ski Lift
- VL5 The Klingsporn Bridal Track

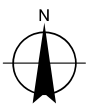
The viewing locations are shown on Figure 2



LEGEND

- Control Centre Storage Option
- Project Construction Footprint
- Sensitive Receptors

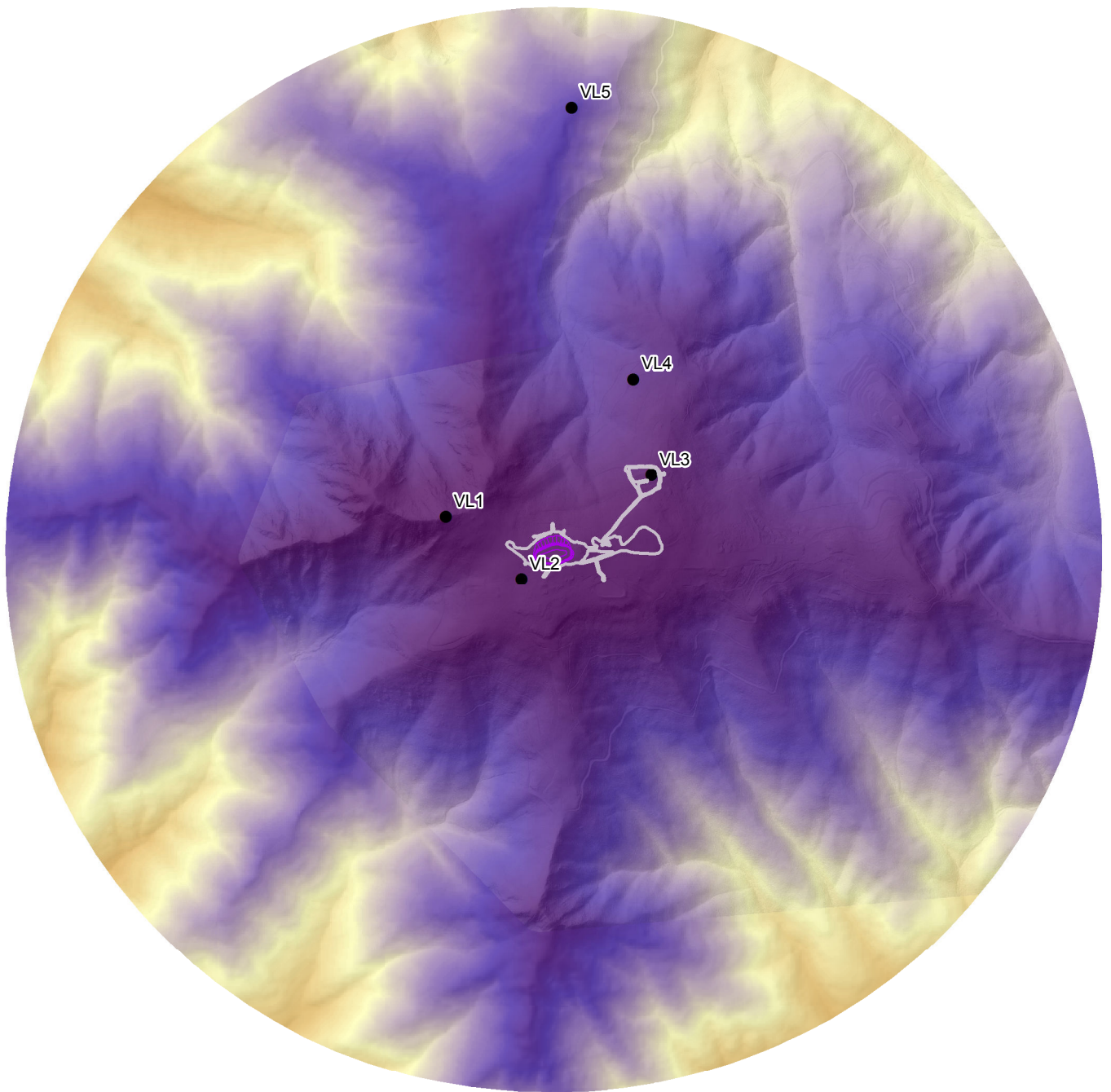
Paper Size A4
 0 0.25 0.5 0.75 1
 Kilometres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



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Sensitive Receptor
Viewing Locations

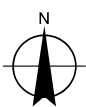
Figure 2



LEGEND

- Sensitive Receptors
 - Control Centre Storage Option
 - Project Construction Footprint
- Elevation
 High : 1803
 Low : 302.249

Paper Size A4
 0 0.25 0.5 0.75 1
 Kilometres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



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Topography

Figure 3

4.2.1 Viewing Location 1 – Mt Buller Peak

The Mt Buller summit is located to the west of the Mt Buller ski area. The existing visual context from this location is described below.



Photo 5 View east from the peak of Mt Buller

Landform	Rolling Mountains with plateaux
Vegetation	Alpine meadow with cleared ski runs and scattered copses of Snow Gums
Land Use	Recreation – ski areas (winter), hiking, mountain biking (summer)
Visual Context	<p>The visual landscape when viewed from the Mt Buller Summit is directed towards the long distance sweeping mountainous landscape which is visible in a 360 degrees view. The Mt Buller Alpine Village is visible in the immediate foreground of views to the east. This is viewed as a layered landscape with the ski area and its managed landscape in the foreground with long distance views of the mountains framing the background. The background is comprised of the 'natural' landscape of the steep mountains which have a distinct colour difference because of dark green carpet overstorey over the majority mountain range.</p> <p>Views from this viewpoint are experienced by:</p> <ul style="list-style-type: none">• Recreational users of Mt Buller; and• Workers within the ski areas.

4.2.2 Viewing Location 2 – Koflers Restaurant

Koflers Restaurant is located to the south of the proposed development. The existing visual context from Koflers Restaurant is described below.



Photo 6 View north towards site from decking at Koflers Restaurant

Landform	Rolling Mountain
Vegetation	Alpine meadow
Land Use	Recreation – ski areas (winter), hiking, mountain biking (summer)
Visual Context	Recreational users of the ski area would have a limited visual outlook to the north due to undulating local topography. Views from this viewpoint are experienced by: <ul style="list-style-type: none">• Recreational users of mountain in summer and winter; and• Workers within the ski areas.

4.2.3 Viewing Location 3 – Top of Bonza Ski Lift

This location is a natural gathering point in the winter months as it is a flat area at the top of the Bonza ski lift and the launch point to several ski runs. The Northside Spur Lookout is located to the immediate east and would have similar views to the northeast. The existing visual context from the top of the Bonza ski lift is described below.

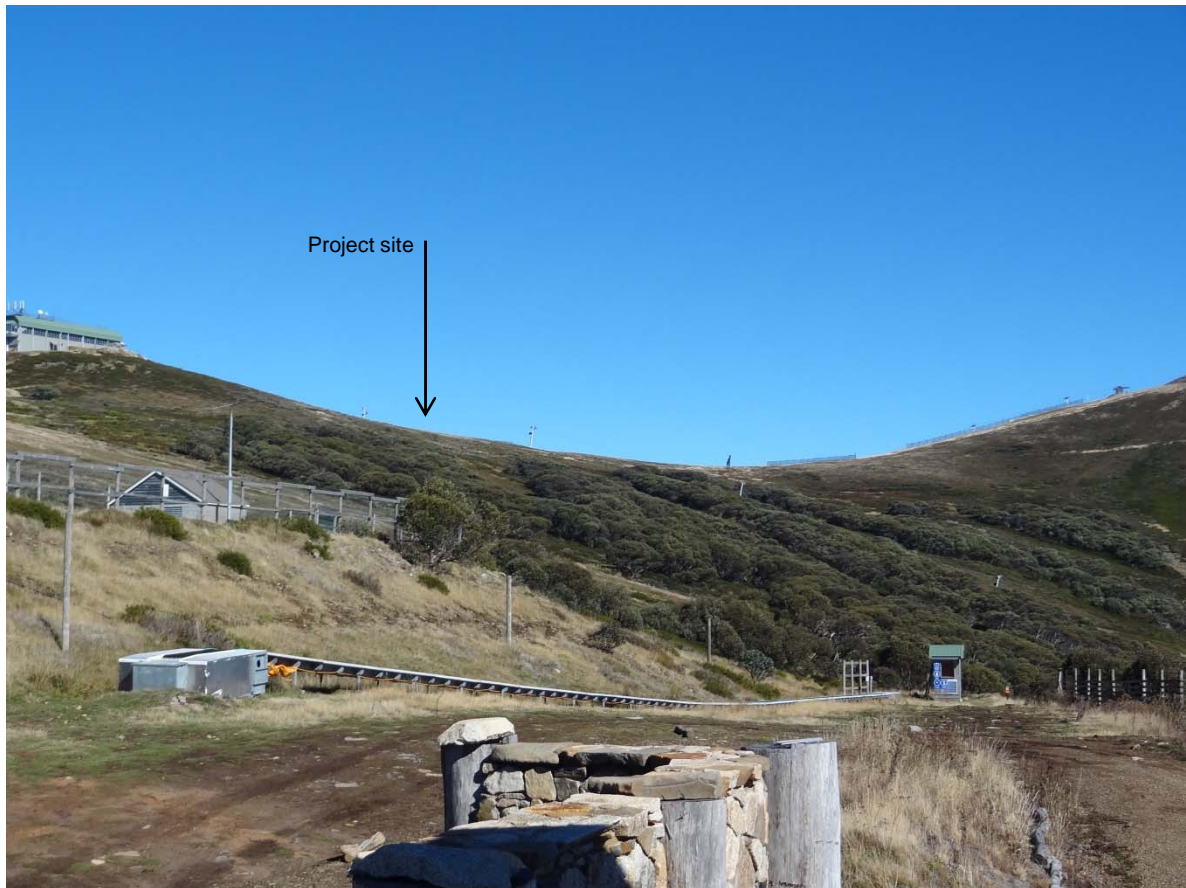


Photo 7 View southwest from areas at top of Bonza Ski Lift

Landform	Rolling Mountain
Vegetation	Alpine meadow with cleared ski runs and scattered copses of Snow Gums
Land Use	Recreation – ski areas (winter), hiking, mountain biking (summer)
Visual Context	<p>The prominent views experienced by the recreational users of this area are views to the north down towards the valley and beyond across the mountainous Alpine National Park. Views to the south are up towards the main ski area with its distinct saddle ridge and towards the summit of Mt Buller. Views from this viewpoint are experienced by:</p> <ul style="list-style-type: none">• Recreational users of mountain in summer and winter; and• Workers within the ski areas.

4.2.4 Viewing Location 4 – Bottom of Bonza Ski Lift

This location is a natural gathering point in the winter months as it is a flat area at the bottom of the Bonza ski lift and the end point to several ski runs. The existing visual context from the bottom of the Bonza ski lift is described below.



Photo 8 View southwest from areas at bottom of Bonza Ski Lift

Landform	Rolling Mountain
Vegetation	Consistent coverage of Snow Gums with understorey. Cleared areas for ski run.
Land Use	Recreation – ski areas (winter), hiking, mountain biking (summer)
Visual Context	<p>Recreational users of the ski area would have a limited visual outlook to the north in the vicinity due to undulating local topography and dense vegetation canopy. There are some open views up hill to the south. Views from this viewpoint are experienced by:</p> <ul style="list-style-type: none"> • Recreational users of mountain in summer and winter; and • Workers within the ski areas.

4.2.5 Viewing Location 5 – The Klingsporn Bridal Track

The Klingsporn Bridal Track is a walking and mountain bike trail that runs from Mt Buller to Mirimbah. The section from Mt Buller to Thank Christ Corner was assessed as part of this study. The existing visual context is described below.



Photo 9 View from south from The Klingsporn Bridal Track at Thank Christ Corner

Landform	Rolling Mountain
Vegetation	Alpine forest
Land Use	Recreation of the Klingsporn Bridal Track including downhill mountain bikers, cross-country skiers and hikers.
Visual Context	Recreational users of the track would have a limited visual outlook to the south in the vicinity of the project due to undulating local topography and heavy vegetation cover. Views from this viewpoint are experienced by: <ul style="list-style-type: none">• Recreational users of the track.

5. Landscape and Visual Impact Assessment

5.1 Introduction

The potential landscape and visual impacts are considered in the context of the sensitivity of the surrounding visual environment and the potential for viewing of the areas that would have changes to their visual outlook due to project works. The assessment of potential landscape and visual impacts of this project focuses on the visibility of both the construction and operation phases of the project.

5.2 Potential impacts

Potential landscape and visual impacts of the project are summarised below, with reference to the representative viewing locations identified in Figure 2. An assessment of the potential visual impacts during construction and operation is provided for each viewing location.

The current concept design has been developed to identify key functional requirements and achieve primary understanding of the likely bulk and scale of the proposed development. This has enabled identification of key visual impacts at a conceptual level. A description of the project and an overview of construction methods are outlined in section 5.3. Refer to the project description document for a full description of the design and construction methodology. The key impacts would be in relation to:

- Vegetation clearing;
- Excavation and construction of dam and site infrastructure;
- Temporary storage of stockpile materials; and
- Remediation.

5.3 Project Components - description

5.3.1 Storage Dam

The storage dam is to consist of

- Earthfill embankments;
- Gravel access track circling the crest;
- Network of drainage within the storage to catch groundwater and feed it external of all embankments;
- Landscaping of the external embankment;
- Maximum vertical height of embankment of 10 m;
- Maximum vertical depth of cut of 10 m;
- Security fence around internal crest, expected height 2.5 m;
- Snow fence to modern design along south eastern corner and southern embankment, expected height in order of 3 to 4 m;
- Pump station building at northern toe of building. Building dimensions approximately 4 x 6 m; and
- Sand filled seepage pit located upslope from adjacent alpine bog.

5.3.2 Raw water 150 kL capacity break tank

The break tank is expected to be approximately 8 m diameter and 3 m in height. This tank is to be located downslope of Burnt Hut Reservoir, and cut into the slope. It is to be located directly adjacent to the existing pipeline from Boggy Creek.

It is currently expected that this tank would be concrete with a small (3 m x 3 m) pump station at its base.

The tank is to be cut into the slope.

5.3.3 10 kL potable water break tank

The break tank is expected to be approximately 2 m diameter and 3.5 m in height. This tank is to be located upslope of Burnt Hut Reservoir.

This small tank is to be completely buried.

5.3.4 Ancillary Infrastructure

The pipeline and pump stations below the proposed 150 kL break tank are to remain and are not proposed to be upgraded.

A new access road is required to the south of the storage. This would become a permanent access for the summit carpark.

5.3.5 Decommissioning of Infrastructure

The current location of the dam is within the area of the top load station of the Boggy Creek T Bar and several lift towers. This lift is to be decommissioned as a component of this project.

This would involve the decommissioning and removal of a diesel underground tank located at the top lift station.

5.4 Construction Methodology

In this section the construction methodology as it relates to the Landscape and Visual Impacts is outlined in brief.

5.4.1 General

The project would involve major earthworks, including the movement of 140,000 m³ of soil within a significant environmental location.

The methodology would be required to minimise environmental impact, and would need to have a well prepared and reviewed environmental management and risk management plan.

5.4.2 Site Establishment

Site establishment includes mobilisation of equipment, set up of site sheds, connections of electrical and sewer to site sheds etc. and installation of a site fences surrounding the site.

5.4.3 Preliminary works

The preliminary works Mt Buller incorporate relocation of both the Koflers water pipe and the Telstra cable. These would be relocated to the new access track location. The preliminary works also include the salvage and temporary relocation of sods of native vegetation. It is expected that at some of this vegetation would be stored at the Koflers Stockpile site for later revegetation.

5.4.4 Relocation of haul road

Prior to commencement works on the dam, the new haul road would need to be constructed to ensure that traffic access can be maintained.

The construction of the haul road, later to become the new access road would involve stripping vegetation and topsoil to a width of 10 m to expose the clay sub base material. Crushed rock is then placed on this clay and the gravel pavement is built up to design level.

At the completion of construction it is likely that the track would need to be resurfaced.

5.4.5 Storage Dam construction

The general methodology for the construction of the dam would comprise

- Stripping all topsoil within the limits of the dam foot print and placement at Koflers Stockpile;
- Stockpiling of filter materials;
- Excavation of dam foot print to Shakey Knees stock pile;
- After the base of the dam is reached, commencement of placement of engineered material in the north western bank is to commence;.
- Construction of gravel track around the dam circumference;
- Placement of waste material and excess spoil, including rocks, to a landscape architects design to minimize visual impacts; and
- Revegetation of embankments with grasses and small shrubs (no trees).

5.4.6 Stockpile areas

At this stage it is envisaged that all stockpile areas would need to be slashed at the outset. The next stage would be to install catchment drains in the lower sections of the sites to catch and filter any site runoff.

A geofabric is planned to be laid across the entire stockpile site, and embankment stockpile materials placed above this.

Post removal of all material stored in the stockpile, the geofabric would be lifted and disposed of to waste, and the ground surface reseeded.

It is envisaged that the:

- Shakey Knees stockpile would be the main stockpile, utilised to store all embankment materials. This stockpile would be constantly utilised with daily placement of excavated suitable embankment materials, and the removal of this material once mixed for placement in the construction of the embankments. This stockpile would need to be a minimum of 3 m high and would reach a length of approximately 200 m
- Koflers Stockpile would be used to store topsoil. The topsoil would be stripped from the dam location at the start of construction, and replaced on embankments on completion of the majority of the earthworks. This stockpile would be no more than 3 m in height.
- Carpark stockpile is planned to be used for site sheds and potentially for oversize material stockpiling and laydown areas. Some gravel sheeting maybe required to ensure this area is trafficable. This stockpile would be approximately 2 m in height.

5.4.7 Pipeworks

Construction of the new pipeworks from Burnt Hut to the storage site, and from the Storage Site to Sun Valley would involve:

- Stripping of the entire pipeline routes of topsoil to a width of approximately 8 m;
- Excavation of the pipe trench by excavation and dumping at the side of the cleared area / track;
- Placement of pipework and supporting gravel and sand;
- Completion of pipe construction;
- Resurface area with topsoil and gravel for long term access track; and
- Revegetation.

It is currently envisaged that the pipe construction would commence at Burnt Hut and progress to the storage site. This allows for the embankment and outlet works to be completed prior to the pipe trench reaching this area.

5.4.8 Break tank and Booster Tank

Construction of these tanks is expected to be completed using the following methodology:

- Clearing of a larger area than the nominated tank sizes would be cleared to allow for stockpiling of suitable backfill materials, over excavation and traffic access;
- Excavation of the tank area with 35 degree cut batters;
- Construction of pipeworks;
- Construction of concrete base / foundation;
- Construction of tank;
- Backfill of void around tank using hand compaction equipment;
- Movement of all remaining spoil to Shakey Knees Stockpile Site;
- Replacement of topsoil; and
- Revegetation.

5.5 Assessment of Landscape and Visual Impacts at Viewing Locations

The landscape and visual impacts of the project on the Viewing Locations described in section 4.2 have been assessed for both the construction and operational phases of the project. These impacts are addressed in the following tables. As discussed in section 4.2 these viewing locations are representative of the landscape and visual issues within the study area. This is not intended to be a summary of every potential landscape and visual issue associated with the construction and operation of the project, but rather a representation of the various issues that may arise at different locations.

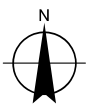
A ZTV from the dam is shown in Figure 4. The potential visibility of the proposed development is highlighted. It is calculated using elevation data that does not take account of buildings or vegetation screening and therefore represents a worst case scenario.



LEGEND

- Sensitive Receptors
- ▭ Project Construction Footprint
- ▭ Not Visible
- ▭ Visible
- Control Centre Storage Option

Paper Size A4
 0 0.25 0.5 0.75 1
 Kilometres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



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Zone of Theoretically Visibility

Figure 4

5.5.1 Viewing Location 1 - Mt Buller Summit

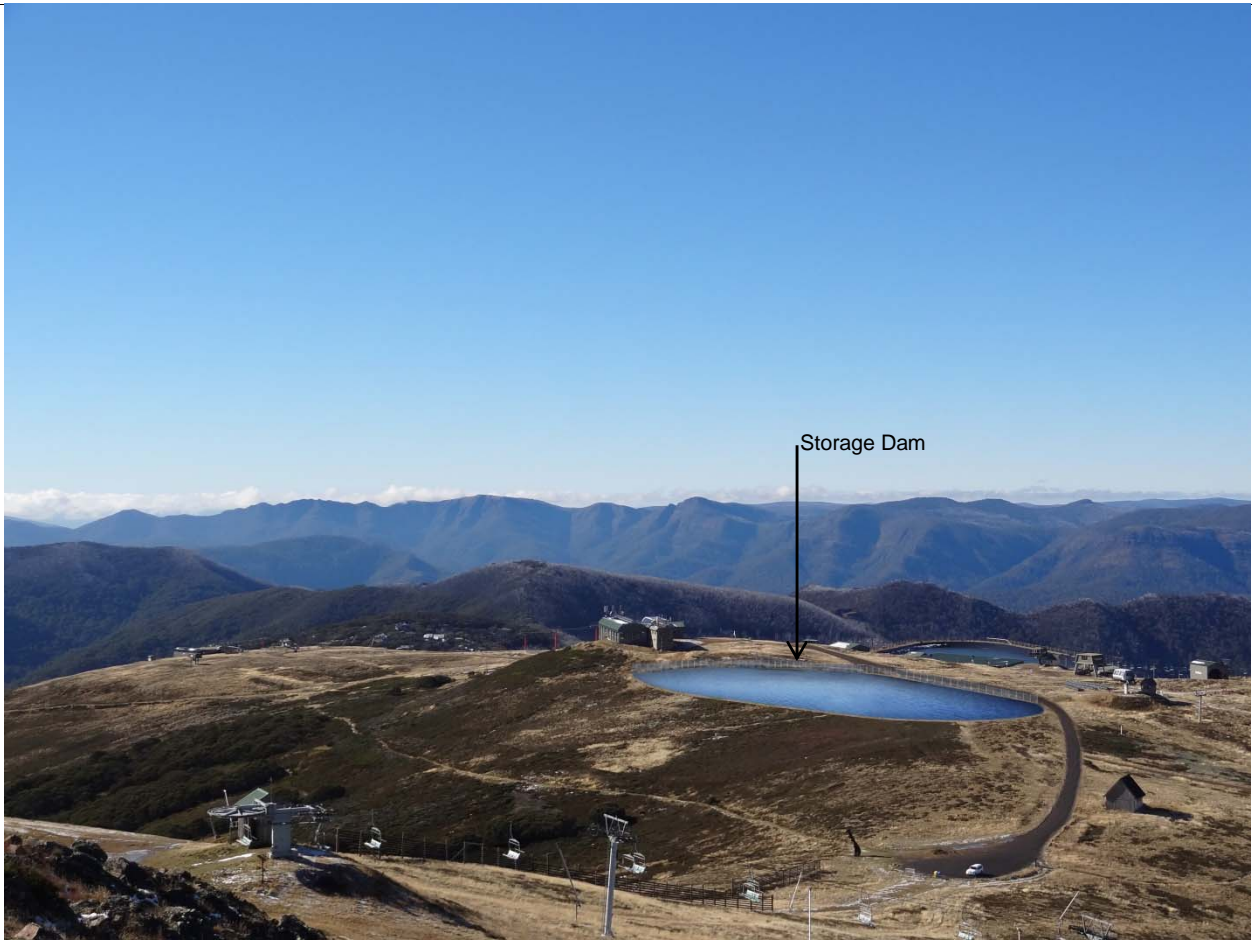


Photo 10 Photomontage 1 :View east from the peak of Mt Buller

Visible Project Elements

Construction

- Removal of vegetation
- Construction machinery
- Constructing hoarding
- Construction zone at Storage Dam
- Stockpile areas at Carpark and Koflers

Operation

- Storage Dam
- Safety fencing
- Landscaping remediation / revegetation on site

Landscape and Visual Impacts - Construction Phase

The prominent vista when standing on the summit is the 360 degree long distance view to the mountainous landscape receding towards the horizon. The Mt. Buller Resort is visible in the immediate foreground of views to the east. This is viewed as a layered landscape with the resort and its managed landscape in the foreground.

The construction works would be visible from the summit. During the construction phase, the activities would be associated with the removal of existing vegetation, stockpiles and construction of the new storage dam and associated infrastructure.

The area viewed from Location 1 is described in section 4.1 above as LCU 1. It has a *medium landscape sensitivity* due to the modified (ski area and associated infrastructure) nature, and a *medium potential capacity* to absorb change due to

the nature of the project set within an existing modified landscape (i.e. existing water storage dams and modified landscape of the ski area). Overall it is assessed as having a *moderate landscape impact* due to construction activities and stockpiles being openly visible.

It is expected that the duration of effects would be *temporary* and the quality of the impacts would be *negative*.

It has been assessed that potential receptors would have *high sensitivity* to visual impacts due to the value placed upon surrounding landscape and enjoyment of views of the setting experienced from this location.

It is assessed that the impact on landscape and visual significance from this viewing location during the construction phase would be of *high significance*.

Landscape and Visual Impacts - Operation Phase

Following construction of the project, it is expected that the appropriate remedial mitigation measures as discussed in section 6 would be implemented.

The views to the east towards the proposed development site would include the addition of the storage dam. This would be viewed in the context of the surrounding managed recreational area.

It is expected that the duration of effects would be *permanent* and the quality of the impacts would be *negative*.

Impacts upon both the landscape character of the site and the visual amenity of recreational users would be of *small landscape impact* during the operational phase as this is a managed landscape with existing water storage dams within the same viewshed.

It has been assessed that potential receptors would have *high sensitivity* to visual impacts due to the value placed upon surrounding landscape and enjoyment of views of the setting experienced from this location.

It is assessed that the impact on Landscape and Visual significance from this viewing location during the operational phase would be of *moderate significance*.

5.5.2 Viewing Location 2 - Koflers Restaurant

Visible Project Elements	<p>Construction</p> <ul style="list-style-type: none"> • Removal of vegetation • Removal of buildings • Construction machinery • Constructing hoarding • Construction zone at storage dam • Stockpile areas at Carpark and Koflers <p>Operation</p> <ul style="list-style-type: none"> • Safety fencing • Landscaping remediation / revegetation on site
Landscape and Visual Impacts - Construction Phase	<p>The visual landscape when viewed from Koflers Restaurant is directed towards the long distance sweeping mountainous landscape which is visible in views to the west and south.</p> <p>Views up hill to the northwest and northeast towards the project are restricted due to local undulating topography. The views in this direction are short in distance.</p> <p>Some of the construction works may be visible from this area including the temporary stockpiles at the summit carpark and Koflers.</p> <p>The area viewed from Location 2 is described in section 4.1 above as LCU 1. It has a <i>medium sensitivity</i> due to the modified (ski area and associated infrastructure) nature, and a <i>medium potential capacity</i> to absorb change due to the nature of the project set within an existing modified landscape (i.e. existing water storage dams and modified landscape of the ski area).</p> <p>As Koflers Restaurant is only opened in the winter ski season and construction activities are proposed to take place during the non-snow season, impacts on sensitive receptors would be <i>negligible</i> during the construction phase.</p> <p>It is assessed that the impact on Landscape and Visual significance from this viewing location during the construction phase would be <i>not significant</i>.</p>
Landscape and Visual Impacts - Operation Phase	<p>Following construction of the project, it is expected that the appropriate remedial mitigation measures as discussed in section 6 would be implemented.</p> <p>The views to the north towards the proposed storage dam would be very limited due to localised elevated topography. There may be some limited views of the safety fencing and limited views of the earthworks.</p> <p>It is expected that the duration of effects would be <i>permanent</i> and the quality of the impacts from this location would be <i>neutral</i>.</p> <p>Impacts upon both the landscape character of the site and the visual amenity of recreational users would have a <i>negligible</i> impact during the operational phase as this is a managed landscape with very limited views towards the proposed development.</p> <p>It has been assessed that potential receptors would have <i>medium sensitivity</i> to visual impacts due to the managed nature of the landscape and the recreational nature of the ski areas.</p> <p>It is assessed that the impact on Landscape and Visual significance of effect from this viewing location during the operational phase would be <i>not significant</i>.</p>

5.5.3 Viewing Location 3 – Top of Bonza Ski Lift



Photo 11 Photomontage 2 : View southwest from areas at top of Bonza Ski Lift

Visible Project Elements

Construction

- Removal of vegetation
- Construction machinery
- Constructing hoarding
- Construction zone at storage dam

Operation

- Storage Dam
- Raw water 150 kL capacity break tank downslope of Burnt Hut Reservoir
- Safety fencing
- Landscaping remediation / revegetation on site

Landscape and Visual Impacts - Construction Phase

There would be open views of the earth works associated with the storage dam from this location.

During the construction phase which is scheduled to take place during the non-snow season, the activities would be associated with the removal of existing vegetation and construction of new storage dam and associated infrastructure.

The area viewed from Location 3 is described in section 4.1 above as LCU 1. It has a *medium sensitivity* due to the modified (ski area and associated infrastructure) nature, and a *medium potential capacity* to absorb change due to the nature of the project set within an existing modified landscape. Overall it is assessed as having a *moderate landscape impact* due to construction activities being openly visible.

It is expected that the duration of effects would be *temporary* and the quality of the impacts would be *negative*.

It has been assessed that potential receptors would have *medium sensitivity* to visual impacts as this is a location where recreational users would be transient moving on to either the start of the trails or ski routes.

It is assessed that the impact on Landscape and Visual significance from this viewing location during the construction phase would be of *moderate significance*.

Landscape and Visual Impacts - Operation Phase

During and post construction of the project, it is expected that the appropriate remedial mitigation measures as discussed in section 6 would be implemented.

The views to the south towards the proposed development site would have the addition of the storage dam. From this location the symmetry of the saddle ridgeline would be altered to include the dam. This is illustrated in the photomontage (Photo 11 and Appendix A).

It is expected that the duration of effects would be *permanent* and the quality of the impacts from this location would be *negative*.

The scale of the landscape would not be overly compromised. As such, landscape sensitivity and capacity to absorb change would remain the same as that described above in construction phase.

Impacts would reduce over time as vegetation matures and the elements become part of the view.

Impacts upon both the landscape character of the site and the visual amenity of park users and residents would be of *moderate landscape impact* during the operational phase.

It has been assessed that potential receptors would have *medium sensitivity to visual impacts*.

It is assessed that the impact on Landscape and Visual significance of effect from this viewing location during the operational phase would be of *moderate significance*.

5.5.4 Viewing Location 4 – Bottom of Bonza Ski Lift

Visible Project Elements	<p>Construction</p> <ul style="list-style-type: none"> • Removal of vegetation • Construction machinery • Constructing hoarding • Construction zone at Storage Dam <p>Operation</p> <ul style="list-style-type: none"> • Storage Dam • Raw water 150 kL capacity break tank downslope of Burnt Hut Reservoir • Safety fencing • Landscaping remediation / revegetation on site
Landscape and Visual Impacts - Construction Phase	<p>There would be open views of the earth works associated with the storage dam from this location.</p> <p>During the construction phase which is scheduled to take place during the non-snow season, the activities would be associated with the removal of existing vegetation and construction of the new storage dam and associated infrastructure.</p> <p>The area viewed from Location 4 is described in section 4.1 above as LCU 1. It has a <i>medium sensitivity</i> due to the modified (ski area and associated infrastructure) nature, and a <i>medium potential capacity</i> to absorb change due to the nature of the project set within an existing modified landscape. Overall it is assessed as having a <i>moderate landscape impact</i> due to construction activities being openly visible.</p> <p>It is expected that the duration of effects would be <i>temporary</i> and the quality of the impacts would be <i>negative</i>.</p> <p>It has been assessed that potential receptors would have <i>medium sensitivity</i> to visual impacts as this is a location where recreational users would be transient moving on to either the start of the trails or ski routes.</p> <p>It is assessed that the impact on Landscape and Visual significance from this viewing location during the construction phase would be of <i>moderate significance</i>.</p>
Landscape and Visual Impacts - Operation Phase	<p>During and post construction of the project, it is expected that the appropriate remedial mitigation measures as discussed in section 6 would be implemented.</p> <p>The views to the south towards the proposed development site would have the addition of the storage dam. From this location the symmetry of the saddle ridgeline would be altered to include the dam.</p> <p>It is expected that the duration of effects would be <i>permanent</i> and the quality of the impacts from this location would be <i>negative</i>.</p> <p>The scale of the landscape would not be overly compromised. As such, landscape sensitivity and capacity to absorb change would remain the same as that described above in construction phase.</p> <p>Impacts would reduce over time as vegetation matures and the elements become part of the view.</p> <p>Impacts upon both the landscape character of the site and the visual amenity of park users and residents would be of <i>moderate landscape impact</i> during the operational phase. It has been assessed that potential receptors would have <i>medium sensitivity to visual impacts</i>.</p> <p>It is assessed that the impact on Landscape and Visual significance of effect from this viewing location during the operational phase would be of <i>moderate</i></p>

significance.

5.5.5 Viewing Location 5 – The Klingsporn Bridal Track

Visible Project
Elements

No visible elements

Landscape and Visual
Impacts - Construction
Phase

The construction works would be not visible from the Klingsporn Bridal Track due to local topography and the presence of dense tall vegetation.

There would be no change to the landscape character.

It is assessed that the impact on Landscape and Visual significance from this viewing location during the construction phase would be *not significant*.

Landscape and Visual
Impacts - Operation
Phase

It is expected that there would be no views of the site from this view location

It is assessed that the impact on Landscape and Visual significance of effect from this viewing location during the operational phase would be *not significant*.

6. Mitigation

The management of the adverse landscape and visual impacts is to be addressed according to the hierarchy of avoidance, reduction and remedy throughout an iterative design process, construction and operation phases of the project.

6.1 Construction

General mitigation measures that would reduce and manage adverse impacts of construction work upon landscape and visual amenity may include:

- Any existing vegetation to be retained should be protected prior to construction commencement.
- Temporary hoardings, barriers, traffic management and signage to be removed when no longer required.
- Upon completion of construction, all remaining spoil, large rocks and construction materials would be re-used on site or removed to a more suitable location.

6.2 Landscape Masterplan

6.2.1 General

The landscape masterplan (refer Appendix B) aims to visually integrate the new water storage facility into the existing landscape. It is recognised that the current landscape is not a pristine wilderness but rather a well-used recreational environment and as such the masterplan does not seek to 'hide' the development but rather help ensure it sits comfortably with the current level of infrastructure that exists near the Mt Buller summit. The landscape masterplan illustrated graphically the proposed mitigation measures on drawing 31-30733-L001 attached to this report.

A key strategy to help achieve this aim is to propose design ideas that allow the newly constructed components of the facility, such as the earthworks, fencing and infrastructure to be incorporated into new recreational opportunities that complement existing recreation uses on the mountain. The masterplan divides the surrounding local area into two loosely defined zones (refer dwg. 31-30733-L005 Appendix B), natural and recreational that reflect the existing adjacent character and land uses. These help inform how the new landscape is integrated and material and fencing selections are determined.

6.2.2 Visual Mitigation Strategy

To help ensure that the new water storage dam blends in visually with the surrounding landscape and the associated level of activity / village development, the following landscape design measures are proposed;

1. Revegetation to all new topsoil areas on the proposed storage berm with locally indigenous species. Species mix, density and seed provenance details are to be defined in the Detailed Design stage of the project.
2. Re-use of any rock found during excavation and construction to be placed at or near the surface of the new berm. This should include any large floaters to help provide a semblance of natural variation to the new surface level of the berm, as well as an opportunity to secure localised pockets of deeper topsoil to establish small shrubs and provide new habitat opportunities for local fauna.

3. Variation to the topography of the berm surface through the introduction of recreational features such as small earthen moguls and jumps. This variation would visually break up the otherwise constant design grade of the new berm. The majority of the mounding and variation to the berm is proposed along the western edge of the storage dam as it is in the forefront of the vista when viewed from the adjacent summit.
4. The fencing type used is broken into three different types to ensure they complement the specific local landscape context. More detail is provided in section 6.3 of this report.

6.2.3 Recreation Integration Strategy

A key method in which to assist the new facility to visually integrate with its surrounding context would be to incorporate new recreation opportunities in the construction. This is especially relevant along the margins of the berm which would experience a reasonably high level of public interface. Some suggestions on the masterplan to achieve this are:

1. Installation of a small, partially covered timber viewing deck. This structure would be sited to face north to maximise solar access and afford the relatively unique views over water to the valley and mountains beyond. The form of the structure is to be typical of the simple alpine huts found in the region and constructed from untreated Australian hardwood (refer dwg. 31-30733-L002 Appendix B). The placement of this structure along the berm would provide a small visual focal point in the new development and help take away focus on the new works as a whole.
2. The siting of small moguls or jumps along the western edge of the berm to provide recreation opportunities in both winter and the warmer months on the alternative desire line between the base of the summit and the Boggy Creek run. These formations would be formed out of soil reclaimed from the new dam excavation and planted with local indigenous revegetation species that would help to blur the line of the large new earthen berm required for the storage (refer dwg. 31-30733-L005 Appendix B).
3. The installation of concentrated clusters of rocks for obstacles to be negotiated by bicycles/walkers in the warmer months (refer dwg. 31-30733-L005 Appendix B).

6.3 Perimeter Fence

6.3.1 General

The role of fencing in this project is to act as a safety barrier between people moving through area and the new water storage. It is assumed that the fence is to impede and discourage movement towards the water rather provide a high level of security that would impede anyone intent on entering the dam. The fence must provide a continual perimeter to the water storage with gated access for maintenance vehicles and snowmobiles.

6.3.2 Fence Dimensions

As the fence is to act as a deterrent and not necessarily a high security barrier, the height is suggested to be 1.5 m above a potential two metre snow depth. This means the size of the fence would appear very different depending on summer or winter viewing. In summer the full height would appear as a 3.5 m high fence, whilst in winter any snow could start to reduce the height.

6.3.3 Fence Siting

There are three options available in which to locate the perimeter fence in relation to the water storage dam, these are (refer dwg. 31-30733-L004 Appendix B);

1. Along the ridgeline of the new berm that also acts as a maintenance vehicle access track.
2. Below the ridgeline on the water side of the maintenance access track.
3. Below the ridgeline of the new berm on the slope opposite to the water.

Option 3 is seen as ideal as the fence would not be as visually prominent as the ridgeline option and would also be further away from the water, which is seen as desirable for safety and operational reasons.

6.3.4 Fence Types

The perimeter fence would be approximately 450 m long and pass through two different and broadly defined zones. The first zone, (recreation) (refer dwg. 31-30733-L005 Appendix B) generally refers to the southern, eastern and western edges of the storage berm which are located in close proximity to areas easily accessible to recreational visitors in summer and winter on a relatively low berm. The character of this area is defined by the relatively large amount of recreational infrastructure also in close proximity.

The second zone, (natural) (refer dwg. 31-30733-L005 Appendix B) forms the northern edge of the storage berm in an area less frequented by recreational visitors and would be much further away from areas accessible by the public due to the large scale of the berm in this location. The character of this area is defined more by the adjacent Snow Gum copses and other remnant vegetation in close proximity.

These two different zones allow for the following different fencing typologies to be considered that reflect the immediate local character;

Fence Type A (refer dwg. 31-30733-L004 Appendix B)

- To be a strong but visually light structure such as a black powdercoated galvanised steel post with galvanised cyclone mesh infill coated in black PVC. This type of fencing recedes visually into the landscape when viewed from a distance. It would become almost invisible in the landscape when viewed from locations such as the top of the Bonza chairlift and glimpses from further afield, such as on approach along the Klingsporn Trail.

The steel posts would be galvanised and then powder coated black with the cyclone mesh infill to be coated in black plastic to reduce reflection and aid the ability of the fence to visually recede into the landscape. This type of fencing would be used predominantly in zone 2.

Fence Type B (refer dwg. 31-30733-L004 Appendix B)

- To match the 3.5 m tall timber post and horizontal synthetic slat snow collection and crash barrier that is prevalent in the area. This type of fence is currently installed in various locations around the summit and would not look out of place in this location. This type of fence is also a safe design for occasional skier impact which could occur given the proximity to highly trafficked ski areas.

The materials selected to use for this fence would be untreated White Cypress Pine, suitable for external, in ground applications.

Fence Type C (refer dwg. 31-30733-L004 Appendix B)

- This feature fencing aimed at helping guide visitors through the narrow pass between the eastern edge of the new water storage berm and the existing building to the east. This is an opportunity to incorporate some visitor wayfinding and visual interest into the new perimeter fence.

It is proposed that the feature fence be constructed using the same dimension or similar posts used in Fence Type B, for visual consistency and continuity. However it should be a priority to source recycled timbers if practicable. This would ensure the timbers are suitably weathered and seasoned and provide visual interest at the pedestrian scale. These posts are to be installed at varying heights and angles, while maintaining a minimum height of 3.5 m, to accentuate the curves to the local path, topography and edge of berm. There is also an opportunity to incorporate coloured LED lighting to a key section of this feature fence that could help to identify the access of the existing building to the east and add to the aesthetic appeal in low light conditions. This type of fence would be located in a relatively small section in zone 2.

7. Summary and Conclusions

The landscape masterplan proposes a number of design opportunities that would allow the sustainable water security project and associated infrastructure to not only visually integrate with the local landscape character but also integrate with the existing year round recreational uses surrounding the site. The local landscape immediately surrounding the site is characterised by Alpine Meadow with managed recreational infrastructure quite prevalent. The more pristine wilderness views are further from the site and generally start at the next adjacent mountain, receding into the horizon. Given the context, the proposed new water storage dam, with recreational opportunities integrated, such as moguls, viewing structures, halfpipes and boulders would not seem out of place within this setting. A careful choice of materials, vegetation used in revegetation and alignment of fencing would help assist the new development visually blend in with the managed recreational landscape character.

The overall landscape and visual impacts of the project are assessed as being of varying significance throughout the study area ranging from *moderate* to *not significant*. Due to the nature of the project there would be a permanent impact on the visual landscape and amenity from some viewing locations.

The focus of mitigation measures should be on enhancing the quality of the landscape within the site and planting of native species that are suitable to the site in accordance with the Project Flora and Fauna Assessment also proposed for the project and reviewed during detailed design.

The landscape and visual impacts of the project would occur both during the construction and operation phases and measures to minimise these impact need to be undertaken for both stages. While there would be impacts during the construction phase, these would be temporary during the non- snow season. The landscape within the ski area was assessed as having a *medium potential capacity to accommodate charged* of the type that would occur as part of this project. The following summarises the impacts.

Table 7-1 Summary of Impacts during construction and operation phases

View Location	Project Phase	Visual Sensitivity	Landscape Impact	Significance of Impact
VL1 Mt Buller Peak	Construction	<i>high</i>	<i>moderate</i>	<i>high significance</i>
	Operation	<i>high</i>	<i>small</i>	<i>moderate significance</i>
VL2 Koflers Restaurant	Construction	<i>negligible</i>	<i>negligible</i>	<i>not significant</i>
	Operation	<i>medium</i>	<i>negligible</i>	<i>not significant</i>
VL3 Top of Bonza Ski Lift	Construction	<i>medium</i>	<i>moderate</i>	<i>moderate significance</i>
	Operation	<i>medium</i>	<i>moderate</i>	<i>moderate significance</i>
VL4 Bottom of Bonza Ski Lift	Construction	<i>medium</i>	<i>moderate</i>	<i>moderate significance</i>
	Operation	<i>medium</i>	<i>moderate</i>	<i>moderate significance</i>
VL5 The Klingsporn Bridal Track	Construction	<i>negligible</i>	<i>negligible</i>	<i>not significant</i>
	Operation	<i>negligible</i>	<i>negligible</i>	<i>not significant</i>

8. References

1. Department for Planning and Infrastructure (2007), *Visual Landscape Planning in Western Australia – A Manual for Evaluation, Assessment, Siting and Design*, Environment and Sustainability Directorate.
2. Forest Practice Board Tasmania (2006) *A Manual for Forest Landscape Management*
3. Landscape Institute and Institute for Environmental Management and Assessment (2013) *Guidance for Landscape and Visual Impact Assessment*. Routledge Press 3rd Edition
4. Scottish Natural Heritage, (2006), commissioned supplementary report to the above mentioned report: *Visual Representation of Windfarms Good Practice Guidance*.
5. United States Forest Service (1974) *National Forest Landscape Management Agriculture Handbook Number 462, Chapter 1 – The Visual Management System*. United States Department of Agriculture
6. University of Newcastle (2002), *Visual Assessment of Windfarms Best Practice*. Scottish Natural Heritage Commissioned Report, Edinburgh, Scotland.

Appendices

Appendix A - Photomontages

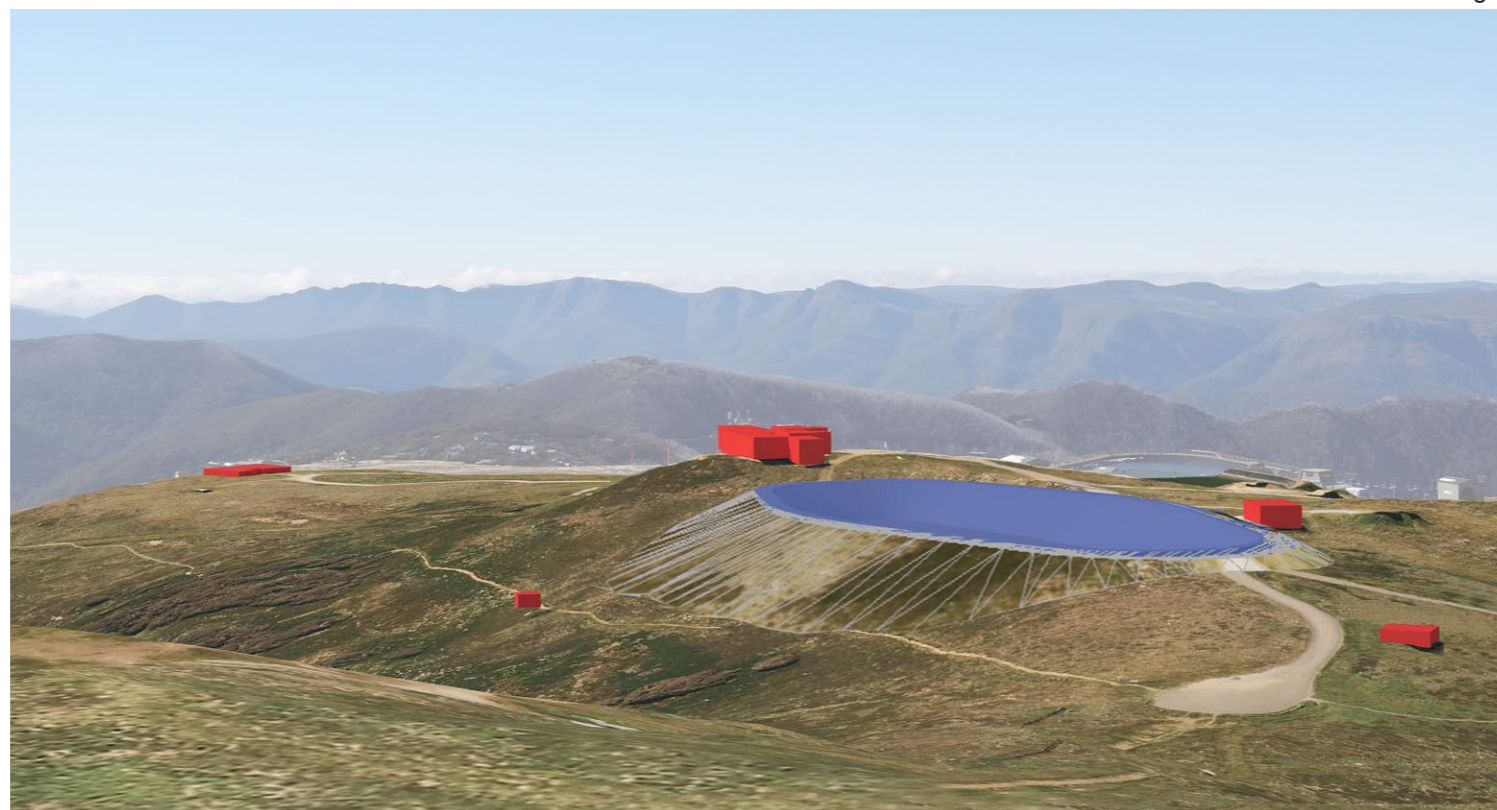
Photomontage 1

Photomontage 2

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Photomontage



3D model camera view

VIEWPOINT LOCATION MAP



EXISTING CONDITIONS



TECHNICAL INFORMATION

For indicative purposes only:
 Viewpoint Location: 449055 E 5888964 N
 Approximate direction of view: 105°
 Coordinate System: MGA55 1994

rev	description	drawn	job manager	date
B	Revised Issue	AL	GJ	02.07.14
A	Issue for approval	AL	GJ	19.05.14

Mt Buller and Mt Stirling Alpine Resort Management Board
 Mt Buller Sustainable Water Security Project – Off Stream Storage

Photomontage
Location 01 - From Mt Buller Summit

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sheet size	A3	job no.	313073309
date	19.05.14	rev no.	B
approved (PD)			SK001

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Photomontage



3D model camera view

VIEWPOINT LOCATION MAP



EXISTING CONDITIONS



TECHNICAL INFORMATION

For indicative purposes only:
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 Approximate direction of view: 238°
 Coordinate System: MGA55 1994

rev	description	drawn	job manager	date
B	Revised Issue	AL	GJ	02.07.14
A	Issue for approval	AL	GJ	19.05.14

Mt Buller and Mt Stirling Alpine Resort Management Board
 Mt Buller Sustainable Water Security Project – Off Stream Storage

Photomontage
 Location 02 - Top of Bonza Chair Lift

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sheet size	A3	job no.	313073309
date	02.07.14	rev no.	B
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Appendix B - Landscape Masterplan

31-30733-L001 - Landscape master Plan

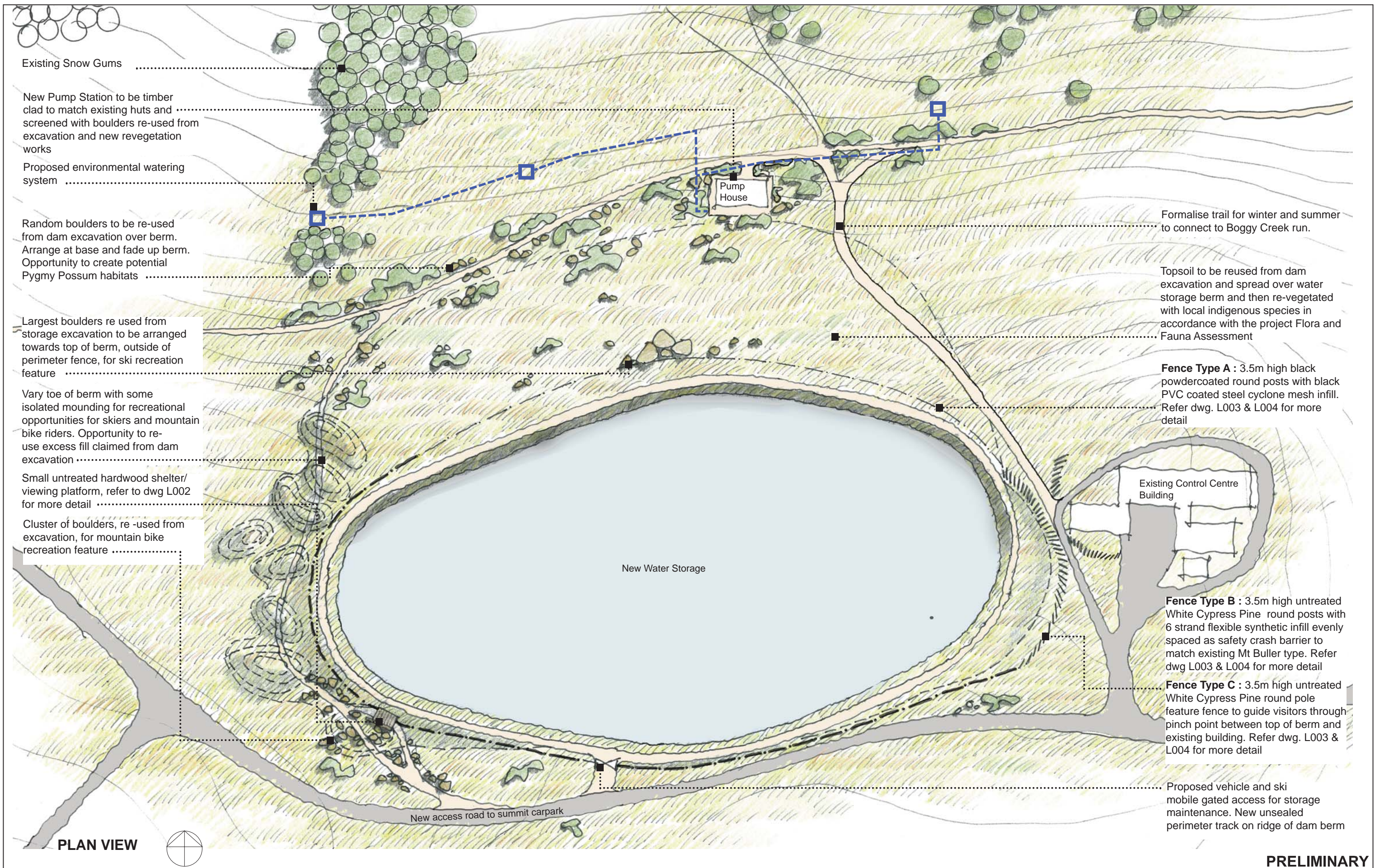
31-30733-L002 - Shelter and Viewing Deck

31-30733-L003 - Fence Type Locations

31-30733-L004 - Fence Concepts

31-30733-L005 - Mounding and Rock Placing Strategy

31-30733-L006 – Artists Impression



PRELIMINARY

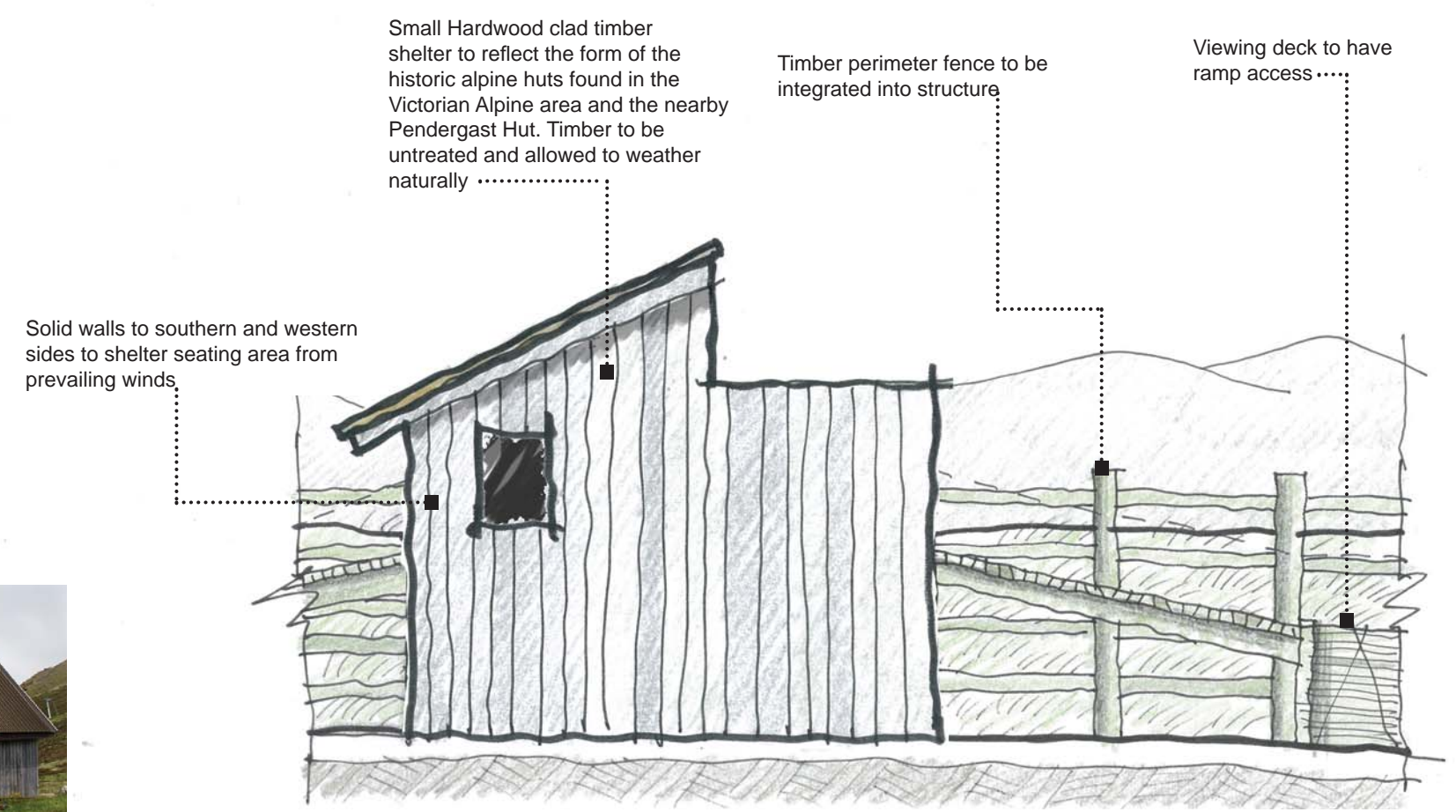
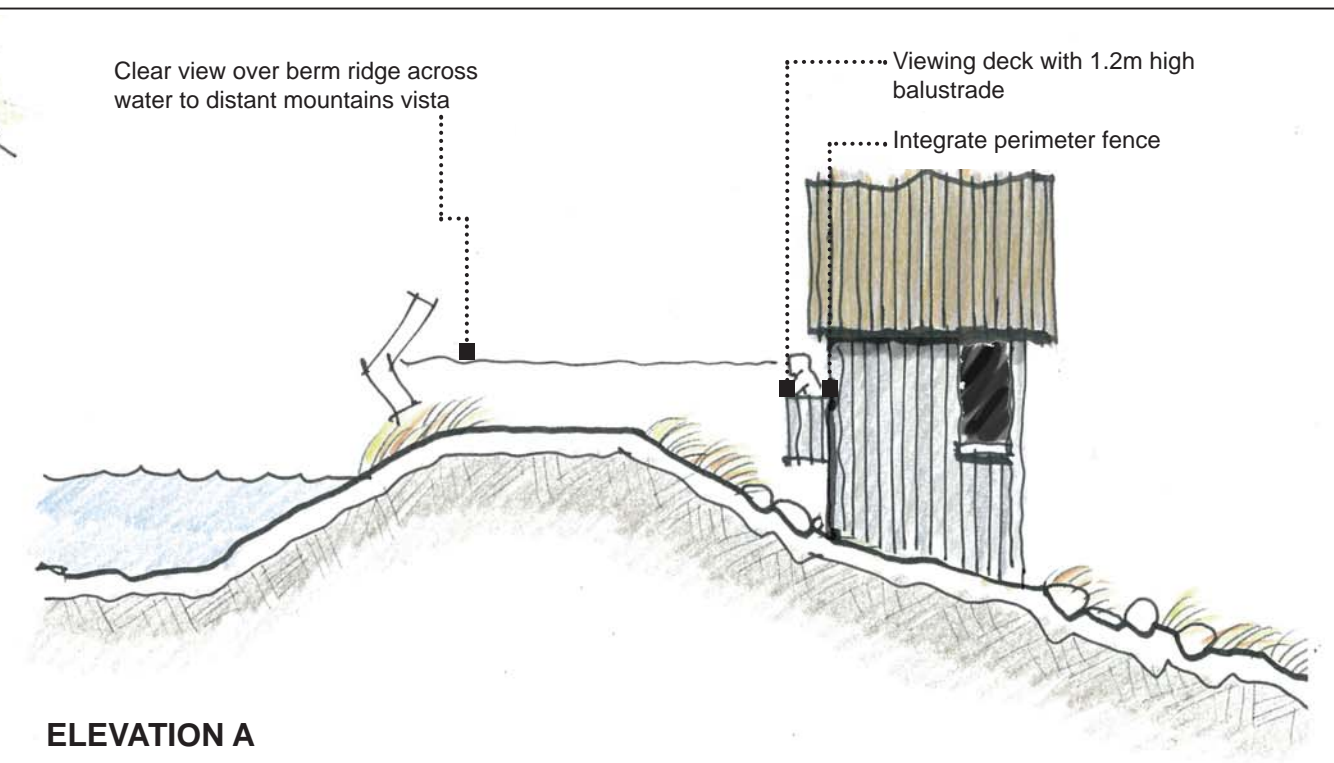
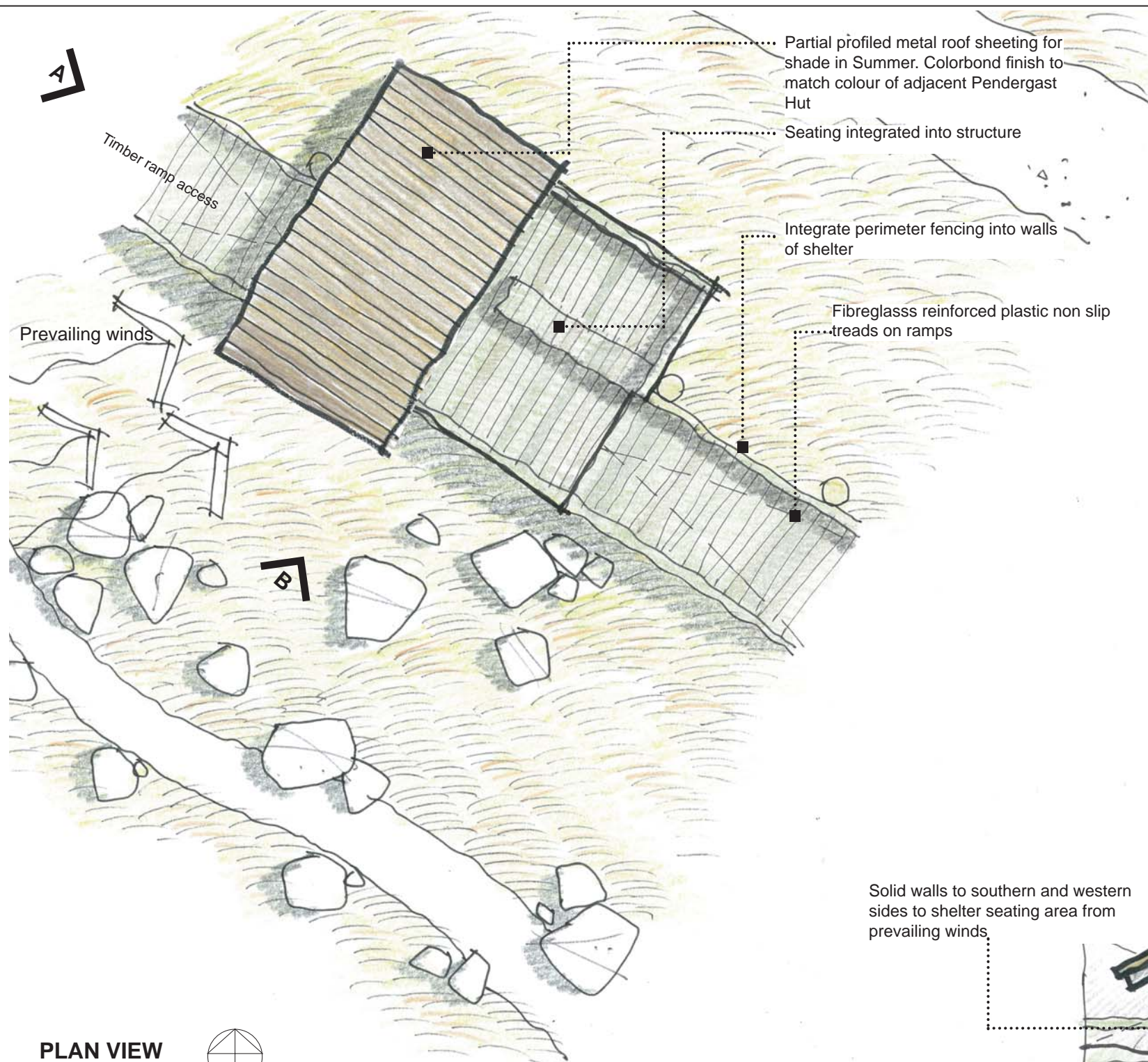
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A		Issue for Information	SH	GJ	DE	11.06.14

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	Approved (Project Director) Date	
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Title	LANDSCAPE MASTERPLAN
Original Size	A3
Drawing No:	31-30733-L001
Rev:	B

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Client	Project	Title	Original Size
MT BULLER AND MT STIRLING ALPINE RESORT MANAGEMENT BOARD	MT BULLER SUSTAINABLE WATER SECURITY PROJECT - OFF STREAM STORAGE	SHELTER & VIEWING DECK	A3
Drawing No: 31-30733-L002			Rev: B

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DRAWING LEGEND

TYPE A █

MATERIALS: 3.5m high galvanised and black powdercoated posts with black PVC coated steel cyclone mesh infill.

DESIGN INTENT: To provide a barrier against public access to the new dam. All fencing of this type to be located down slope of the new berm's ridge. This will allow approximately half of the height of the fence to be visually hidden against the berm.

The black colour finish to all materials helps the fence to become less visually obtrusive when viewed at a distance and avoid reflections in direct sunlight.

ALPINE SUITABILITY: Powdercoated and galvanised steel is suitable for alpine conditions.

PVC coating over galvanised chain mesh fence will perform the same as it would closer to sea level.

TYPE B █

MATERIALS: 3.5m high untreated White Cypress Pine round posts with 6 strand flexible synthetic infill evenly spaced as safety crash barrier to match existing Mt Buller type.

DESIGN INTENT: To provide a barrier against public access to the new dam while providing a safe and proven crash barrier for skiers and cyclists.

This fence is used where there is a surface gradient sloping towards the dam.

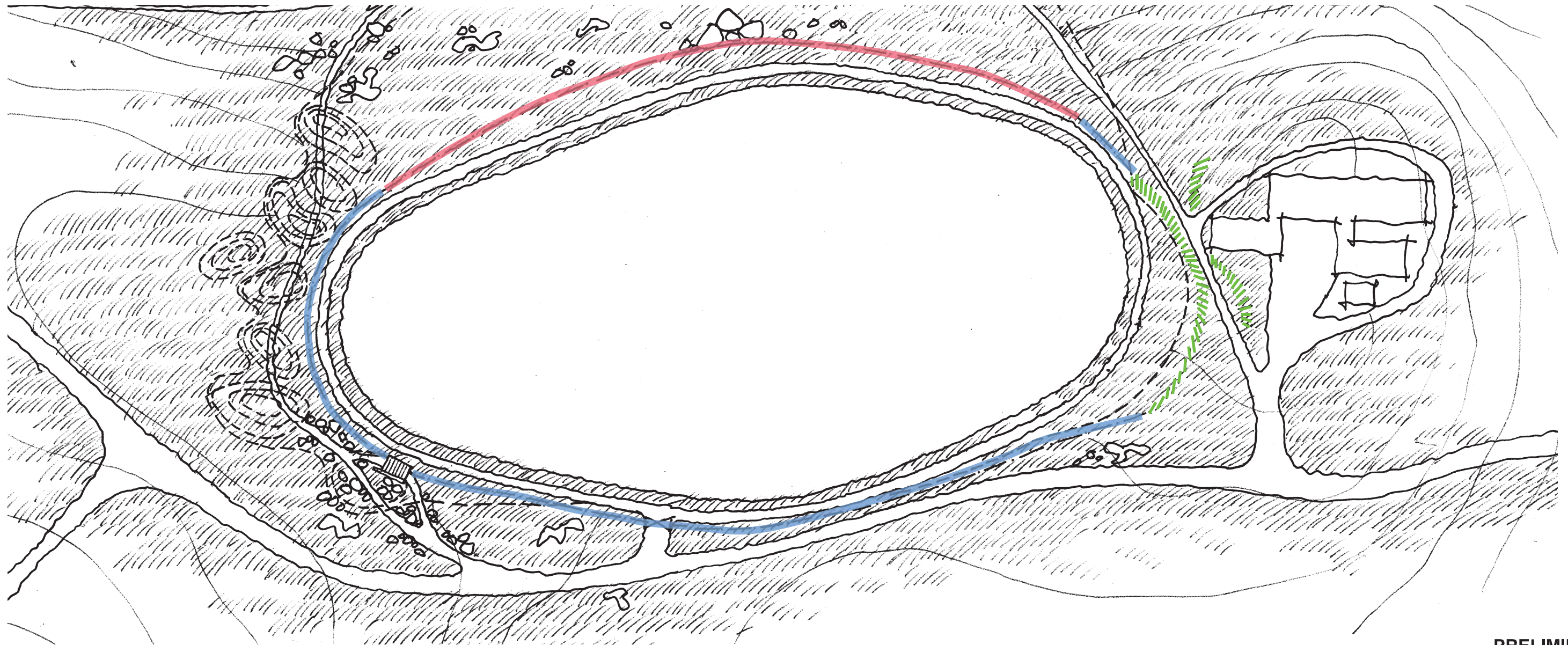
ALPINE SUITABILITY: This type of fencing/ crash barrier is currently used in a number of locations on Mt Buller and the detailed design of this barrier would seek to replicate this existing detail.

TYPE C █

MATERIALS: 3.5m high untreated White Cypress Pine round pole feature fence to guide visitors through pinch point between top of berm and existing building.

DESIGN INTENT: To provide a barrier against public access to the new dam while providing a visually interesting 'gateway' from the main track/road to the ski runs below. Some of the poles could be highlighted with external grade LED lighting for safety in overcast conditions.

ALPINE SUITABILITY: White Cypress Pine is a highly durable Australian softwood- able to last in ground for 15-25 years and above ground more than 40 years. No chemical treatment or impregnation of timber is proposed in order to avoid leaching into nearby sensitive soils and bogs.



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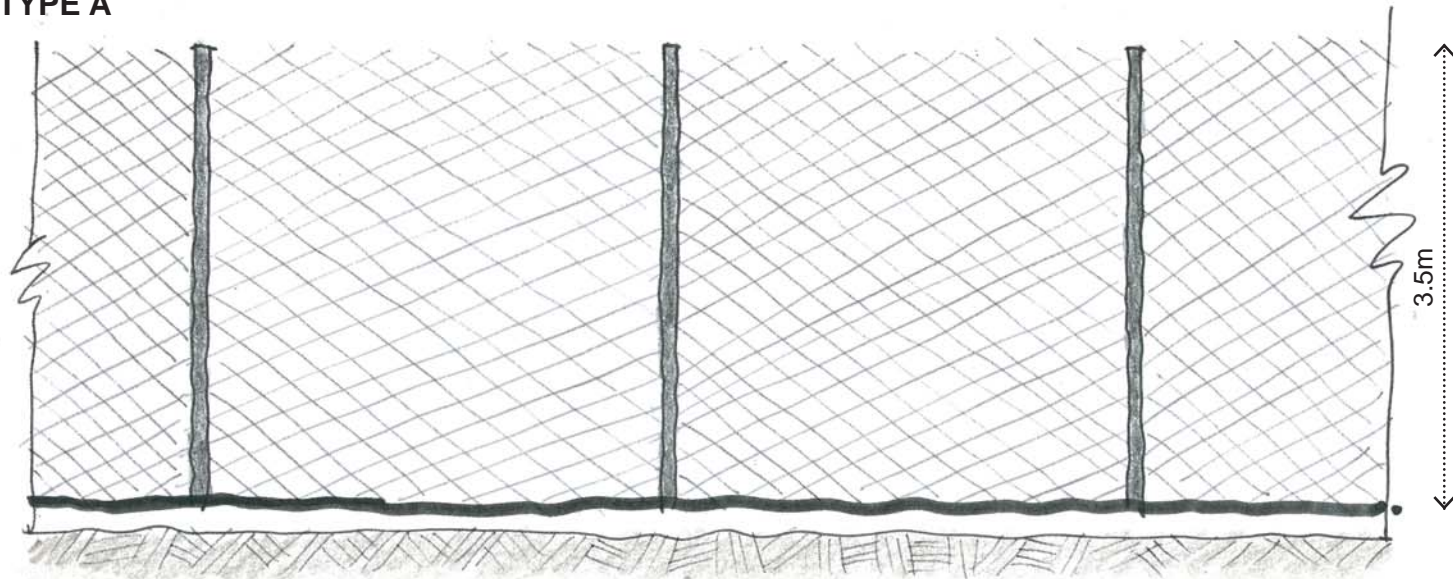
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Client	MT BULLER AND MT STIRLING ALPINE RESORT MANAGEMENT BOARD		
Project	MT BULLER SUSTAINABLE WATER SECURITY PROJECT - OFF STREAM STORAGE		
Title	FENCE TYPE LOCATIONS		
Original Size	A3		
Drawing No:	31-30733-L003		Rev: B

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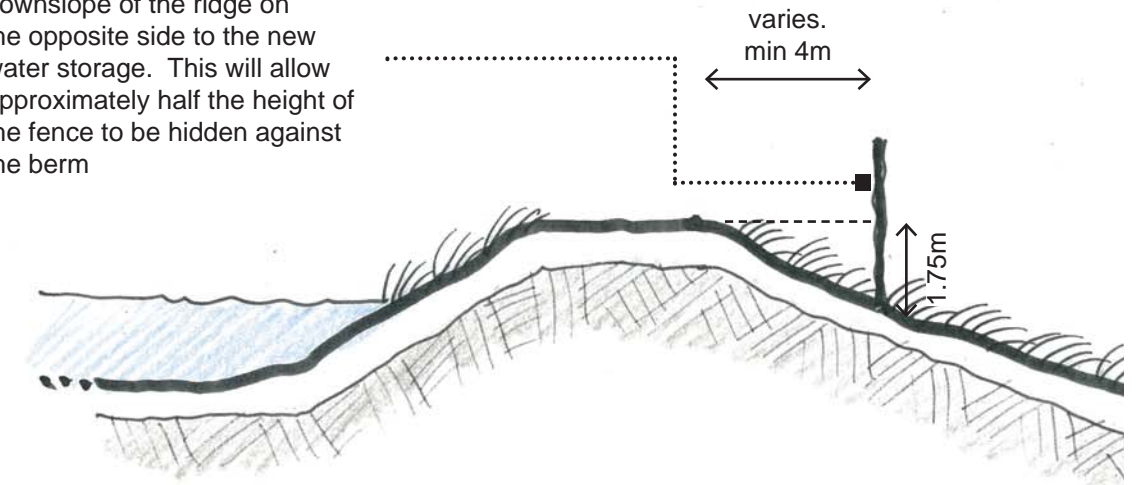
TYPE A



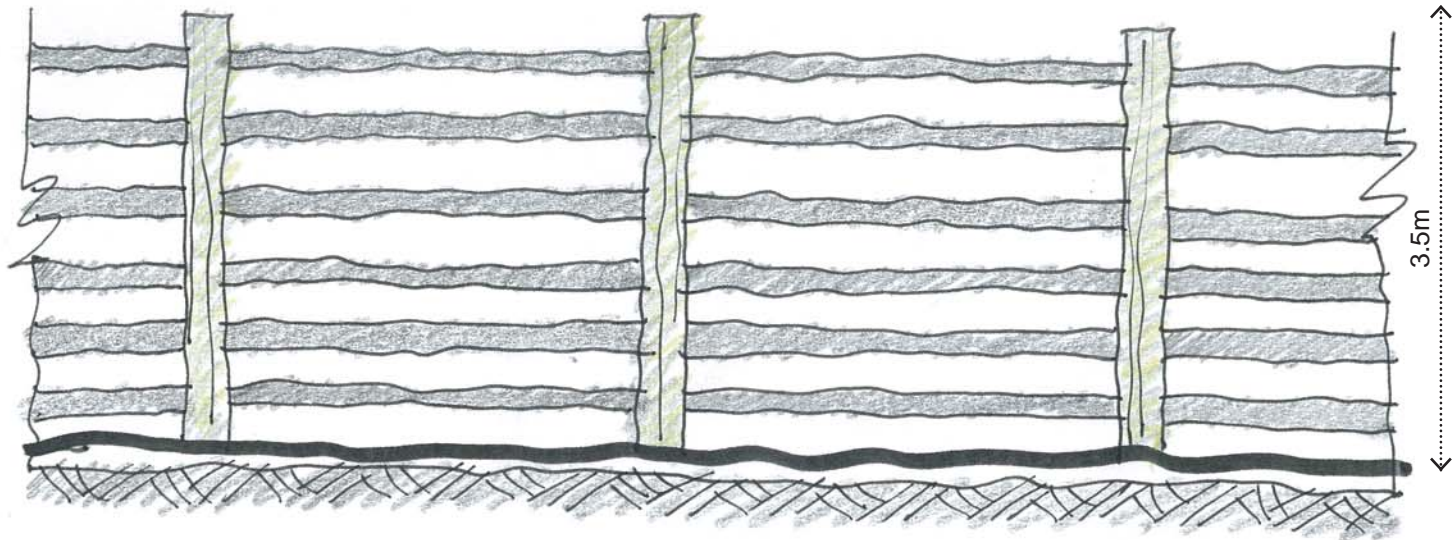
Type A: PVC coated galvanized cyclone fencing in between circular steel post powdercoated in black.

This type of fence is visually unobtrusive when viewed at a distance.

All fencing to be located downslope of the ridge on the opposite side to the new water storage. This will allow approximately half the height of the fence to be hidden against the berm

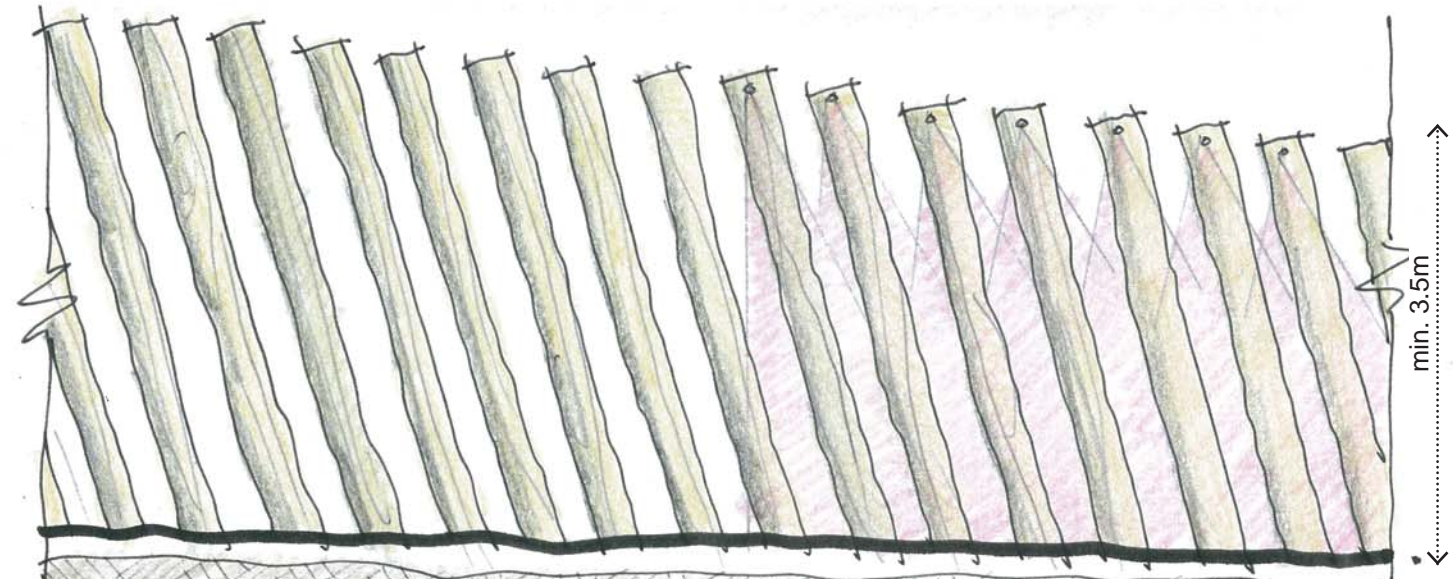


TYPE B



Type B: Untreated White Cypress Pine round timber posts with synthetic infill to match existing crash barriers already on the mountain.

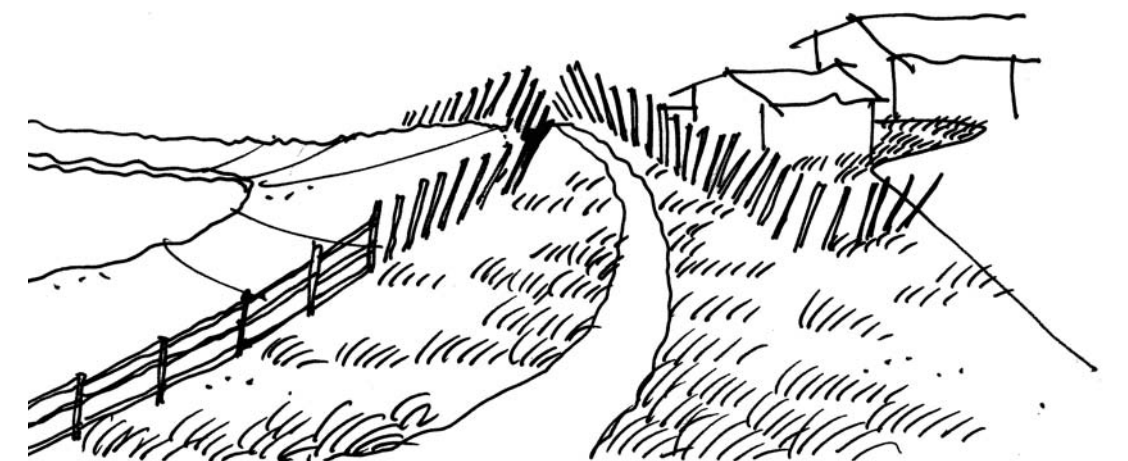
TYPE C



Type C: Untreated White Cypress Pine round posts installed at varying heights and angles to create a sense of entry to top of informal run that connects to the Boggy Creek run.

Opportunity to incorporate coloured LED lighting into small section of feature fence at the narrowest point for safety in overcast conditions.

SKETCH VIEW OF TYPE C FENCING



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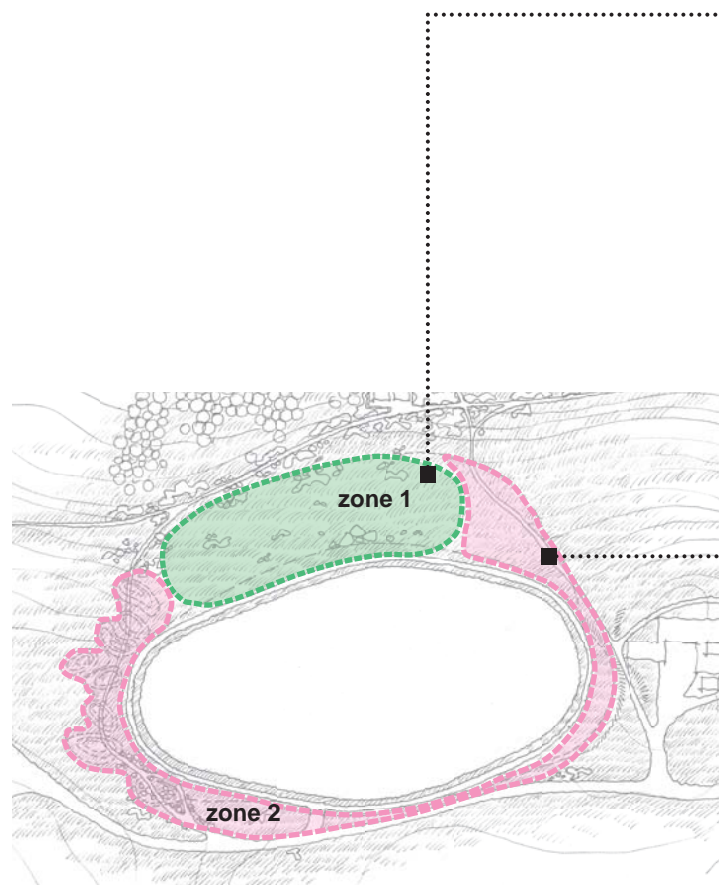
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Scale	N.T.S.		

Client	MT BULLER AND MT STIRLING ALPINE RESORT MANAGEMENT BOARD		
Project	MT BULLER SUSTAINABLE WATER SECURITY PROJECT - OFF STREAM STORAGE		
Title	FENCE CONCEPTS		
Original Size	A3	Drawing No:	31-30733-L004
Rev:	B		

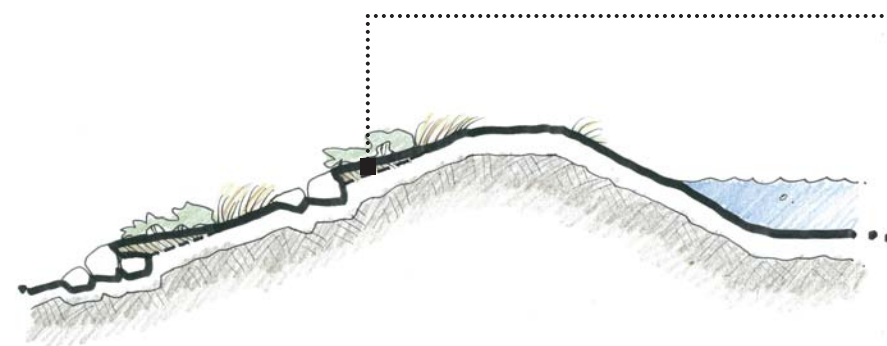
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Zone 1: Natural Zone - due to proximity to remnant Snow Gum overstorey. This area to be treated with indigenous revegetation and random large rocks for Pygmy Possum habitat opportunities.

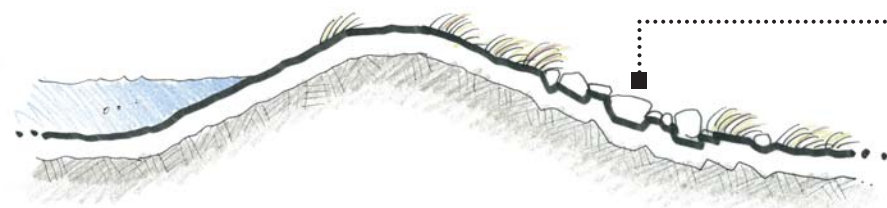
Zone 2: Fill Re-Use + Recreation Zone - due to proximity to existing recreation infrastructure. There is an opportunity to re-use fill from the new dam excavation for construction of the new berm and create additional recreational activities in the area such as moguls for skiers and mountain bike riders.

KEY PLAN



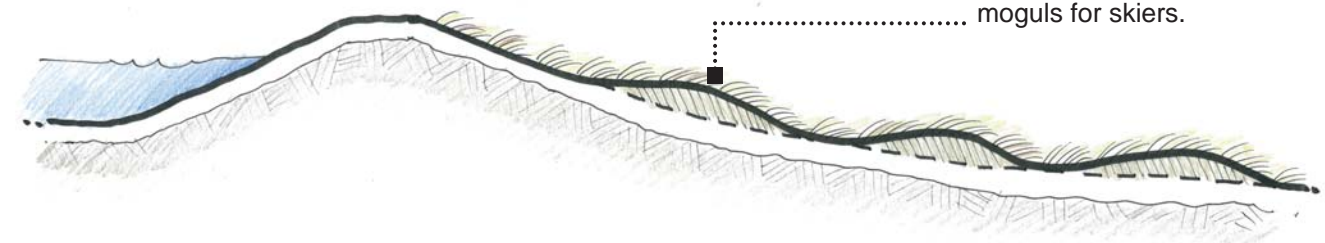
TYPICAL SECTION 1

Randomly placed large rocks, retrieved from storage excavation, to allow localised pockets of soil to establish indigenous vegetation. Rocks are also an opportunity for establishing new Pygmy Possum habitat.



TYPICAL SECTION 2

Concentrated placement of large rocks, retrieved from dam excavation, to provide obstacles for mountain bike riders.



TYPICAL SECTION 3

Distinct soil & rock mounds or mountain bike obstacles or moguls for skiers.

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Project	MT BULLER SUSTAINABLE WATER SECURITY PROJECT – OFF STREAM STORAGE
Title	MOUNDING AND ROCK PLACING STRATEGY
Original Size	A3
Drawing No:	31-30733-L005
Rev:	B

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VIEW FROM SUMMIT

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Project	MT BULLER SUSTAINABLE WATER SECURITY PROJECT – OFF STREAM STORAGE		
Title	ARTISTS IMPRESSION		
Original Size	A3	Drawing No:	31-30733-L006
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		Name	Signature	Name	Signature	Date
A	L Farrell	L. Farrell		B. George	*	04/06/2014
0	L Farrell	B. George		G Jones		09/07/2014
1	S Hansen	L Farrell		G Jones		27/07/2016

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