

Wharehuanui Landscape Study

DISCUSSION DOCUMENT



Prepared for Millbrook Country Club Limited By Baxter Design Group

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1.0 Introduction

Population within the Queenstown Lakes District is projected to grow by 2.2 percent annually over the next 25 years. Pressure to develop the District's resources will undoubtedly increase. Responding to these projections, the Queenstown Lakes District Council (QLDC) is currently undergoing a District Plan Review with the stated intent of delivering a more transparent and accessible District Plan which enables better integrated planning and better articulates a strategic direction for the District.²

The study in front of you was commissioned by Millbrook Country Club Limited (Millbrook) to better understand the specific and general landscape values of the surrounding landscape. This study identifies the qualities and values within a specific Study Area with particular regard to the landscape's biophysical ,cultural and visual resources.

As part of the District Plan review, QLDC commissioned Read Landscapes to assess the landscape character of the Wakatipu Basin against its ability to absorb further change, with particular regard to the cumulative effects of development. Read's Landscape report focuses on the Wakatipu Basin comprehensively while the information contained within The Wharehuanui Landscape Study provides survey, analysis and recommendations for a smaller area within the Wakatipu Basin.

- Statistics New Zealand http://www.stats.govt.nz/browse_for_stats/population/estimates_and_ projections/projections-overview/subnat-pop-proj.aspx
- QLDC Council, 17 April 2014 Report for Agenda Item.

Figure 1 : The Wakatipu Basin as viewed from Coronet Peak

The Study Area is dubbed the 'Wharehuanui'. This study area is part of the wider Wakatipu Basin and generally contains the lands north of Lake Hayes, east of Hunters Road south of the slopes of Coronet Peak and west of Arrowtown.

The Wharehuanui area embodies many of the values that make the Wakatipu Basin a desirable place to live and visit. These values include access to open areas which offer broad views to distant and dramatic mountains. Elements within this area that embody the values of the Wakatipu include the presence of grazing animals within open pastoral lands, mature rows and patches of exotic trees, rural character buildings and landforms that display glacial formative processes.

Development of the Wakatipu Basin needs to be strategic, directed and specific to protect the values that give the District landscape resource its unique character. This study dissects the Study Area in terms of character and provides recommendations on how the landscape can best be managed so future development will not degrade and may enhance the landscape's values and quality.



2.0 Executive Summary

Landscape is a resource. Progressive approaches to identifying and assessing this resource extend beyond the visual quality to include the biophysical and cultural values. As the Queenstown Lakes District is projected to steadily increase in population, the landscape, which is considered to be the Districts most valuable resource, is experiencing pressure from residential development. QLDC is at present reviewing the District Plan and it is understood that the status quo assessment criteria for development will be amended to address the landscape more holistically.

This report assesses and evaluates a large portion of land within the Wakatipu Basin to identify the landscape's existing character and ability to absorb change. The Study Area takes in most of the land between Arrowtown, Hunter Road and Lake Hayes. This land is considered to contain three separate landscapes; the Mill Creek Catchment, the Whaehuanui Hills and the Speargrass Flats.

The line between the landscapes can often be obvious, such as the top of a ridge or base of a slope. Other times these landscapes can overlap as the land form, cover and/or use, gradually changes over distance.

The bulk of the Study Area contains a strong rural character, with mostly pastoral lands surrounding residential settlements which in turn reflect the rural character. The dramatic topographic features, such as the highest hills and escarpment faces embody a more natural character. Within the resort zones, pastures are often replaced by golfing activities which continue the openness of the landscape. Residential development is often set against slopes and within pockets where the visibility of the built form is best absorbed by the land form.

Continued change is anticipated within the Study Area and this study identifies areas in which the landscape can best absorb change. This study finds:

- The elevated plateaus near Mooney Road (the Wharehuanui Plateau) can visually contain development as viewed from most public places and has a high ability to absorb further appropriate change so long as it is sympathetic to the rural character.
- Further appropriate development can also be contained within the elevated foothills adjacent to the ONL slopes.
- Escarpment faces often offer a high level of visual absorption capacity and appropriate
 development can occur at the base of several escarpments. However the quality of some
 escarpments, especially those in the Speargrass Valley can be adversely effected by
 inappropriate development.
- The hummocks and plateaus west of Millbrook have been to date unaffected by residential development and have capacity to absorb some appropriate development.
- Much of the land south of Arrowtown along the Arrowtown Lake Hayes Road is near its
 threshold to absorb change. Appropriate development within much of this land including
 the land north of Speargrass Flat Road should be discrete.
- Several areas are found to have a low ability to absorb change. These include the escarpment faces and hill slopes as well as an area of open space which breaks the spread of development between the Lake Hayes residential areas and Arrowtown.

The Wharehuanui Area has a high level of amenity, including historical, ecological and visual values. While this amenity translates to a desirable place to live, an increase in residential activity has the potential to diminish the landscape character and quality. Maintaining the value of the landscape resource requires a strategic, directed and holistic approach. This study provides a base understanding of these values and an evaluation of how and where change could occur.

3.0 Methodology

This report follows the assessment guidelines set out by The RMA Quality Planning Resource (RMA-QPR) for 'Area-based' landscape studies. The RMA-QPR is a website where content is contributed by a partnership of interested professional organisations. The Ministry of the Environment owns and funds the website while the New Zealand Planning Institute is responsible for the site's administration.

The RMA-QPR guidelines breaks the assessment of a landscape resource into the following three components:



Landscape Description/Inventory, Landscape Characterisation, Landscape Evaluation.

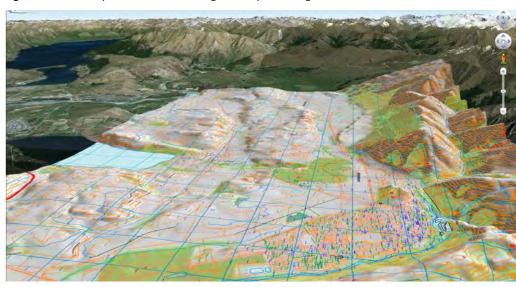
The landscape description and inventory is a research component which collects existing data of biophysical and cultural layers. These layers include physical attributes such as geology and ecology as well and cultural attributes such as history, zoning and existing and consented development.

Initial data was collected for the study through repeated site visits and desktop analysis using Quickmaps, Google Earth, and QLDC Webmaps. Once a Study Area was identified other professional consultants were engaged. Ecological data was provided by the Davis Consulting Group. Royden Thomson provided geological information. John Edmonds and Associates provided planning advice. Heritage consultation was provided by Jackie Gillies & Associates. This information was collated and formed the base on which landscape characterization and evaluations studies could occur.

An analysis of the landscape's character follows the Description and Inventory stage. The Wharehuanui was determined to contain three landscapes which display different characteristics. Each of these landscapes were then broken up further into smaller landscape units. The qualities that make these more manageable units was assessed. This assessment formed the basis for discussion on each landscape's land form, land cover and land use.

Following on from the landscape characterisation study, each landscape unit was evaluated. This evaluation included identifying the issues and opportunities of each unit, potential landscape management strategies and an assessment of the lands ability to absorb change. The end result of this evaluations is graphically represented through a series of tables, plans and photos.

Figure 2: Initial desktop studies of the area using Quickmaps and Google Earth.





4.0 Wharehuanui Study Area

The Wharehuanui Study Area is considered to be the area of land north of Slope Hill and Lake Hayes and south of the Coronet Peak Mountains and Arrowtown. The name 'Wharehuanui' appears on topographic maps within the Study Area and the name has been adopted for the whole of the Study Area.

Several site visits were undertaken to determine the boundaries between the landscapes of this area. The Wharehuanui is considered to be composed of three landscapes which are defined by physical boundaries such as topography, vegetation and human made features such as Arrowtown's urban edge.

This Study Area comprises several unique landscape features but does not contain any of the Outstanding Natural Landscapes (ONL) or Features of the District including the lakes, rivers or mountains. The Study Area encompasses the elevated hummocky lands that contain the Mooney Road area and the steep topography that exists on this feature's escarpments. The bulk of the Study Area is currently in pastoral or residential land use and contains all of the existing Millbrook Resort.

The line between landscapes is not always obvious. The values that make each landscape distinct can overlap for some distance.³ The Study Area's boundaries were determined through repeated site visits and assessment of the particular landscape qualities, be they visual or experiential.

Where a line is drawn on a map, it is accepted that the line is subject to interpretation and that often the exact boundary between landscapes can be obscure.

http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape/landscape-assessment

Figure 3: Aerial looking west across the Speargrass flats from above Hogns Gully.

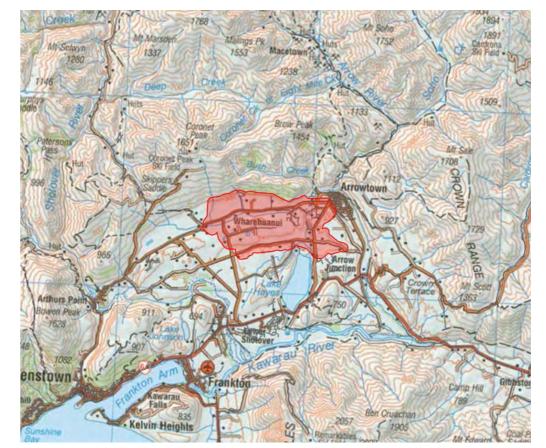


Figure 4: Location Plan - Scale - 1:100,000 @ A3



The Eastern Boundary: To the east is the urban edge of Arrowtown. This urban landscape meets a rise in the land which runs perpendicular to McDonnell Road. This rise visually separates the land to the east from the land to the west and crosses The Hills Golf Course. The land east of this rise is considered to be more associated with the McDonnell Road area. The Study Area boundary generally follows the westernmost contour of this rise as it continues away from Arrowtown to the south into the area known as Hogans Gully.

The Southern Boundary: To the south an escarpment separates the Hogans Gully area from the upper terrace landscape of the Bendemeer Hills. This escarpment eventually meets the edge of Lake Hayes near the junction of Speargrass Flat Road and the Arrowtown – Lake Hayes Road. The level of domestication that has occurred north of Lake Hayes includes swathes of mature vegetation which visually separates the Study Area from the beaches and park-like lands which are directly associated with Lake Hayes.

Continuing west along Speargrass Flats Road the Study Area takes in the Speargrass north facing escarpment. Eventually the Study Area's boundary overlaps with the Hawthorn area to the southwest.

The Western Boundary: The Study Area takes in the western slopes of the hills running adjacent to Hunter Road. This landscape overlaps with the adjoining landscapes but Hunter Road and the watercourse that runs to the west of the road provide a logical separation of landscapes.

As the hills succeed to the flatter lands towards Malaghans Road and Millers Flat, the experiential qualities of the landscape best defines it's boundaries. As users of Malaghans Road round a bend near Coronet Peak Station Road, they begin to experience a change in landscape character.

The Northern Boundary: To the north are the ONL slopes leading down from Coronet Peak. The base of these slopes clearly indicates a change in landscapes.

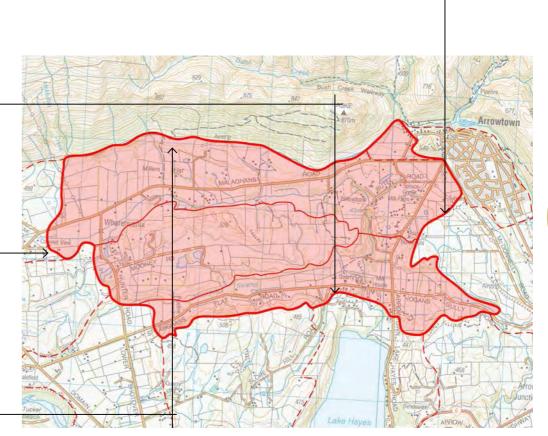


Figure 5: The Study Area and surrounding landscape.

5.0 Discussion

5.1 History

Pre-human

The Wakatipu Glacier originated from the western Southern Alps and at one point extended to the east to Nevis Bluff and to the south to near present day Athol. This glacier and associated geologic activity is largely responsible for the landforms that shape the Wakatipu Basin including its roche moutonnée features, kettle lakes, terraces and moraines.

As the glacier retreated the deposited moraine began to build with vegetation. There is evidence that at one time beech and broadleaf/podocarp forests may have covered most of the basin. Large fires burnt throughout New Zealand around 1200 AD and the closed forest that once cloaked 85-90% of New Zealand deteriorated.

It is understood that at the time the first European Settlers arrived in the Wakatipu Basin, much of the basin was covered in a diverse mix of grey scrub-land vegetation on the hill slopes with grasslands on the flooded river terraces and frost prone valley floors. Patches of remnant beech forests continue to thrive in pockets and gullies.

'Finding the journey difficult, encountering the various natural hazards of Central Otago – speargrass, wild spaniard, and matagouri tore their pant legs to shreds and filled their boots with blood. ... Eventually to their delight they discovered what Rees described as 'The magnificent panorama of open country. Not perfectly level but broken by small hills and terraces, whilst a large lake stretched away in the distance as far as the eye could see.

- Wakatipu - William Rees and Von Tunzlemann 1860

Tangata Whenua

DESCRIPTION

Evidence of Ngatimamoe settlement has been found throughout the District. These people would have traveled between the Wakatipu and surrounding areas in search of food and greenstone. Access between the Wakatipu and other areas would have been along the river corridors of the Kawarau, Mataura, Greenstone and Mararoa. The Ngatimamoe abandoned the area in the 18th century.

The origin of the name Wharehuanui is unknown. However the Maori word can be dissected as whare-huanui or house-path.

Settlement

The first recorded Europeans to visit the Wakatipu were Nathaniel Chalmers who arrived in 1853. However the first to settle the area were William Gilbert Rees and Nicholas Von Tunzlemann who arrived in early 1860. These men established sheep stations on the lands surrounding the lake. Rees's homestead was established near what is present day Queenstown.

Gold was discovered in 1862 in the Shotover River and the region quickly grew in population which in turn established a community. As the gold boom settled the Wakatipu's ability to support agriculture began to be exploited and flour mills were established, most relevant to this report, Peter and John Butel established a flour Mill on the land currently occupied by Millbrook Resort.

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5.2 Cultural Landscape

During the first century of settlement in the Wakatipu, much of the native vegetation was stripped and/or burnt in favour of establishing agricultural activities. The agriculturalists, especially pastoral farmers brought with them traditional European farming techniques. The landscape quickly changed from its more natural state into a mostly pastoral landscape.

Large stretches of open lands became covered in exotic pasture grasses. Shelter belts of large exotic trees and swathes amenity trees were planted. This settlement vegetation continues to thrive in the Wakatipu and several trees and lines of trees are protected.

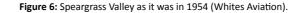
Many of the roads established during the last century continue to be used. These roads historically linked the established towns of Queenstown and Arrowtown with Cromwell and Wanaka

Historical homesteads, farm sheds, cottages and other rural character structures such as walls form part of the cultural heritage of the landscape.

These elements combine to create a cultural landscape that dominates over the more natural underlying character.

'Scenery is not scenery – it is "country" – if it is good for sheep it is beautiful, magnificent and all the rest of it; if not, it is not worth looking at.'

-Samuel Butel





Architectural Heritage 5.3

Several heritage listed buildings exist within the study area. Most notably the buildings within the Millbrook Resort Village associated with the Butel family settlement and buildings on the Speargrass Flats associated with the Patterson family settlement. These buildings exhibit many of the forms and details which are typical of their era including small windows, massive stone wall and corrugated iron roofs.

In the vicinity of the heritage buildings are large mature trees. These trees include poplars, sequoias, elms, ash, oaks and walnuts. These trees are arranged as shelterbelts, avenue trees and feature trees. Some of the oldest trees in the District existing near these heritage buildings. It is understood that many of the trees, especially the poplars may be nearing an age where they are risk of being felled by high winds.



Figure 7: An avenue of trees leading to the Patterson Homestead on Ayrburn Farm.

5.4 **Tenure and Zoning** (refer to Appendix C and D)

Aside from roads a Council owned sports field at Millbrook corner and some of the land adjacent to Mill Creek as it passes through Speargrass Flat, the Wharehuanui Study Area is almost exclusively held in private ownership. The cadastral pattern (showing lot boundaries) can be seen in several of the Appendices to this study. Larger lots outside of the resorts tend to be farmed, although rarely intensively. Mid-sized lots are often associated with peri-urban 'lifestyle properties'. The smallest lots are mostly in the residential enclaves within the Millbrook Resort.

The zoning map in Appendix D shows that the western half of the Study Area is covered by the Rural General Zone, where residential development is discretionary and is rigorously assessed against landscape criteria. A south eastern portion of the Study Area, to the north of Lake Hayes, is covered by the Rural Residential and Rural Lifestyle Zones, where rural-residential development to certain densities is anticipated. To the north east the Resort Zone has enabled golf course development intermingled with residential housing on relatively small lots within Millbrook. Waterfall Park also sits within the Resort Zone, but to date has not been developed.

Appendix C shows those distribution of existing houses and Rural Building Platforms consented in the Rural Zones. Rural Building Platforms are a prelude to development of houses. Once Rural Building Platforms are approved via resource consent, there are normally various consent conditions that need to be implemented. When Council is satisfied that those conditions have been given effect to, the Rural Building Platform is usually registered on the title and often reflected in the subdivision pattern. Once registered they reflect an ongoing right to develop.

When considering what additional development may appropriately be built in the Wharehuanui Resource Area, it is appropriate to assess:

- Existing development;
- further realistic development that can certainly occur under existing zoning; and
- approved Rural Building Platforms.

DESCRIPTION

5.5 Geology (refer to Appendix E and F)

Geologically speaking the Wharehuanui is part of a glacially sculpted valley and ridge complex west of Arrowtown. It consists of two valleys bisected by steep banks which lead up to elevated plateaus. The floodplain valleys are in part mantled by alluvial fans constructed by ephemeral tributary streams leading in to the valleys from the slopes of Coronet Peak and the associated central plateau refereed to in this report as the Wharehuanui Hills.

The Study Area is composed of schist outcrops, glacial till, river alluvium, stream fans and flood plains.

The Mill Creek Catchment and its associated floodplains exist in the northern portions of the Study Area. This is a permanent stream with identified flood potential. Schist outcrops separate the he central plateau from the Mill Creek Catchment. The plateau itself is composed of schist basement rock with a prominent cover deposit of glacial till. The south facing slopes leading down from the Wharehuanui Hills are similar in geologic form to the Plateau itself and gradually descend to the Speargrass Flats.

The Speargrass Flats are again, a floodplain dominated valley floors, however smaller is scale than the Mill Creek Catchment.

Several geologic hazards have been identified in the areas. These hazards are shown in the Geologic Hazards map in *Appendix F*.



Figure 8: A distinct geologic feature near Malaghans Road



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5.6 Hydrology (refer to Appendix G)

Several surface waters exist within the Study Area (Appendix G). The most prominent is Mill Creek which drains a large catchment between the Wharehuanui Hills and the slopes of Coronet Peak. Several tributaries drain into this catchment, some spring fed.

Atop the Wharehuanui Plateau the wetland areas have been enhanced to create several amenity ponds within rural lifestyle blocks.

Also of particular note, the Arrow Irrigation Scheme passes through the area. This irrigation scheme diverts water from the upper Arrow River to properties across the Wakatipu Basin. The scheme enters the subject area as a surface water trench and is pumped up the north facing escarpment through a pipe. Once atop the plateau the scheme is channeled again as surface water before it meets the south facing escarpment that drops down to Speargrass Flat. The scheme is pumped across Speargrass Flat and again becomes surface water once atop the Slope Hill landscape.

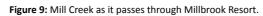
5.7 Ecology (refer to Appendix H)

Pasture grass is the predominate vegetation cover of the Study Area and forms the overall texture and colour of much of the landscape. Large patches of exotic hardwood forest including sycamore, willows, larch, firs, gums and pines pepper the landscape in the form of shelterbelts and amenity trees.

A large forestry block exists to the north of the site and the encroachment of these wilding conifers onto adjoining properties is evident. Willows line much of the Mill Creek riparian areas. A large patch of mature exotics lines the southern flanks of Malaghans Road within the Rural Resort area. The Waterfall Park area hosts a dense, diverse mix of mostly mature exotic and native plants.

Dense scrub-land is also present within the Study Area. While some of this scrub-land contains native grey scrub-land species, these patches have in many cases been inundated with invasive briar, gorse and broom. Native bracken fern exists in small isolated patches.

The bulk of indigenous vegetation within the Study Area exists as amenity plantings within private properties. Evidence of struggling indigenous vegetation exists in some of the gullies, mostly those on the slopes that descend from the Wharehuanui Plateau towards Speargrass Flat.





5.8 Visibility (refer to Appendix I)

The Study Area is surrounded by more dramatic landforms including Slope Hill, Morven Hill, Cornet Peak, the Crown Terrace and Crown Range. Much of the Study Area is visible from these elevated lands.

As the Wharehuanui Study Area is visible form much of the surrounding Wakatipu Basin, for the purpose of this study five places have been identified as key points from outside the area where the Wharehuanui can be viewed. They are:

- The Lake Hayes Pavilion
- Entrance to the Lake Hayes recreation area from the Lake Hayes Arrowtown Road
- The summit of Feeley Hill
- Cotter Road Arrowtow
- Cornet Peak Base Building.

The Lake Hayes Pavilion (Fig 10) is approximately 3.5km in distance from the southern edge of the Wharehuanui area. Lake Hayes itself forms the foreground of this northerly view while the Rural Residential - North Lake Hayes Zone is visible in the mid-ground. Behind this area, the slopes leading up the Wharehuanui Hills and Rural Resort are moderately visible before the ONL slopes dominate the background.

The entrance to the Lake Hayes recreation area (Fig 11) is approximately 800m from the southern edge of the Wharehuanui. From here the Upper Hills are visible as are much of the Speargrass South Facing Escarpment and the edge of the Rural Resort area. Much of the Speargrass Valley is obscured from view by mature vegetation.

Feeley Hill (Fig 12) is immediately north of the Wharehuanui area and is considered to be an ONL. From the summit of Feeley Hill much of the study are is visible including most of the Mill Creek Catchment, potions of the Wharehuanui Hills and limited parts of the Speargrass Flats.

Cotter Ave (Fig 13) is a residential street atop a terrace in Arrowtown. Much of the rise that separates the Mill Creek Catchment from the McDonnell Road area is heavily vegetated and this vegetation obscures views into much of the Study Area. Small portion of the Mill Creek Catchment are visible as are the uppermost portions of the Wharehuanui Hills

Coronet Peak Base Building (Fig 14) offers views across most of the Wakatipu Basin, ranging from Gorge Road to the far eastern edge of the Wharehuanui. A ridge that separates the Base Building from the area know as Rocky Gully obscures views to the more northeasterly portions of the Wakatipu.

There are other, more distant places from which the Study Area can be viewed including the Remarkables Road, Tobins Track and the Crown Range Road. any visual effects identified in the above five areas would be replicated to a lesser degree from these more elevated , distant locations. Similar to views from Coronet Peak the scope of wider visibility will render the Wharehuanui indistinguishable from the wider landscape pattern.

Figure 10: View north from near the Lake Hayes Pavilion.



Figure 11: View north from the entrance to the Lake Hayes recreation area.



Figure 12: View southwest from the summit of Feeley Hill.



DESCRIPTION & INVENTORY

Figure 13: View West from Cotter Ave.



Figure 14: View south from the Coronet Peak Base Building.



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6.0 Landscape Character

Landscape is most often associated with and characterised by its visual values. This emphasis on the visual is a remnant of the 'picturesque' aesthetic which originated in 15th century England. This aesthetic presents the landscape as something that should appear as a painting and be susceptible to the same analysis and critique. This dated interpretive response does not incorporate the ecological and emotion values of place which significantly contribute to the landscape's character

Progressive approaches to landscape characterisation originating from Europe provide an alternative to understanding and interpreting the values of landscapes. These approaches attempt to escape the emphasis on the visual and instead focus on the 'action or interaction of natural and/or human factors'.⁴

The Queenstown Lakes District Plan is (the Plan) is strongly rooted in the picturesque aesthetic. However the revaluation of the Plan presents and opportunity to adopt progressive approaches to understanding and assessing landscape character, beyond the visual. That is to say that the landscape is not only a visual resource, but also a biophysical and cultural resource.

The following Landscape Character portion of this report will reference the Description and Inventory section to inform the assessment of landscape character. The Wharehuanui Study Area composes a large area of land on which, after extensive site visits and studies, it is determined three landscapes exist within. For the purpose of this study these landscapes are called the:

- Mill Creek Catchment.
- Wharehuanui Hills.
- Speargrass Flats.

CHARACTER

Each landscape has within it separate units which in turn have distinct landscape values, be they cultural or biophysical. By breaking the Study Area up into smaller landscape units and assessing the character of each unit it is possible to dissect the attributes that make each landscape distinct. The culmination of this information then paints a more informed picture of the landscape's character as a whole.

The following portion of this study will identify the landscape character elements within each landscape unit and assess the character of the landscapes as a whole. The RMA-QPR methodology suggests landscape character studies should break the assessment into three categories:

- Land Form
- Land Cover
- Land Use.

4 (http://conventions.coe.int/Treaty/EN/Treaties/Html/176.htm).

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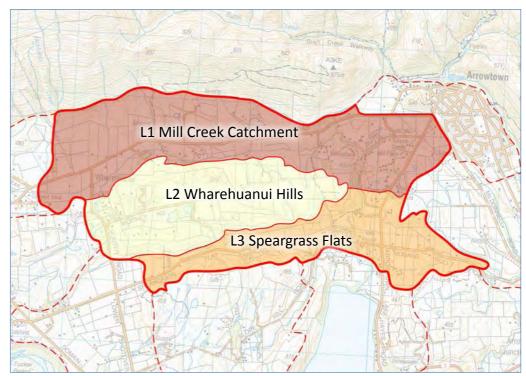
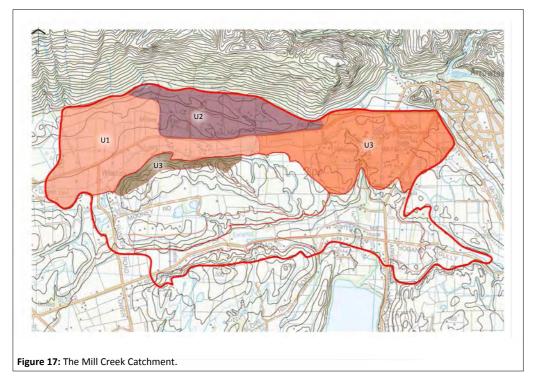


Figure 15: The three landscapes of the Study Area.

Figure 16: Table of landscapes and landscape units.

Wharehuanui Study Area		
Landscapes	U#	Landscape Units
Mill Creek Catchment	1	Millers Flat
	2	The Foothills
	3	Rural Resort
	4	Malaghans North Facing Escarpment
Wharehuanui Hills	5	Wharehuanui Plateau
	6	The Upper Hills
Speargrass Flats	7	Speargrass South Facing Escarpments
	8	Speargrass North Facing Escarpment
	9	West Speargrass Valley
	10	Waterfall Park
	11	East Speargrass Valley
	12	Lake Hayes Rural Residential
	13	Hogans Gully



6.1 Mill Creek Catchment

The Mill Creek Catchment is a landscape between the steep slopes of the ONL mountains and the upper parts of the Wharehuanui Hills. Malaghans Road runs through this mostly linear landscape linking the westerly Coronet Peak Amenity Area with the urban areas of Arrowtown. Mill Creek flows west to east through this landscape before diverting to the south and dropping down through Waterfall Park into the Speargrass Flats.

The Mill Creek Catchment is dominated mainly by the steep walls that enclose the otherwise relatively flat landscape. To the north these walls are defined by the vegetated ONL slopes. To the south the landscape's walls are defined by the often craggy escarpment that leads from the valley floor to the upper Wharehuanui Hills.

Aside from the escarpment faces, much of the Mill Creek Catchment is either rolling hummocky hills or flatland with the occasional variation of schist outcrops and river terraces.

There are considered to be four landscape units that make up the Mill Creek Catchment. They are:

U1 Millers Flat
 U2 The Foothills
 U3 Rural Resort
 U4 Malaghans North Facing Escarpment

Land form

The Mill Creek catchment is predominately a floodplain flanked by steep sides. The headwaters of Mill Creek to the west flow into Millers Flat, which is so named for is moderate topography. It is not entirely flat and in fact descends gradually from the toe of Coronet Peak eastwards. To the north of Millers Flat the Malaghans North Facing Escarpment poignantly mark the edge of the Mill Creek Catchment. These escarpment faces are often craggy and steep with a distinct ridge and apex which falls back to the south to the Wharehuanui Plateau.

To the northeast of Millers Flat are The Foothills, a rolling hills landscape where plateaus and gullies exist between slopes and summits. To the north, this unit meets the steeper and more consistently graded ONL slopes. The Foothills extend to the east and south until meeting similar rolling hill features of the Rural Resort area.

The Rural Resort area is composed of floodplains and rolling hills between the Wharehuanui Hills and Arrowtown. Mill Creek passes through the Rural Resort area and the floodplains around that watercourse are generally flatter. Subtle terraces lead up to the south and west of Mill Creek and the topography gradually increases until the boundaries between the Wharehuanui Hills and Rural Resort areas overlap. The northern and eastern portions of the Rural Resort area are significantly flatter with one obvious schist intrusion adjacent to Malaghans Road and the ONL slopes.

Land cover

The Mill Creek Catchment, like most of the Wakatipu Basin is predominantly covered in pasture grasses. Within the Rural Resort area the mown grasses of golf surfaces compete with pasture grass as the predominant land cover.

The flat, pastoral lands of Millers Flat contain linear plantings of exotic trees which stretch across the landscape, generally running north-south and following cadastral boundaries and/ or access-ways. A prominent band of mixed exotic trees exists to the south of Malaghans Road across much of the Rural Resort area. Along the margin of Mill Creek, willows are the prevalent vegetation interspersed with native grasses.

The steep slopes of the Malaghans North Facing Escarpment as well as the gullies that lead through the foothills host indigenous grey scrub-land species including kowhai, mingimingi and matgouri, which in many cases are being overrun by exotic weeds including hawthorn, briar and wilding conifers.

Other vegetation that exists within the Mill Creek Catchment includes amenity plantings of native and exotic species within the more residential portion of this landscape.

Land use

The Mill Creek Catchment is diverse in terms of its land uses which range between recreational, medium density residential and pastoral. The residential density and subsequent domestic character gradually increases from west to east and south to north towards Arrowtown. Three District Plan Zones cover the Mill Creek Catchment; the Rural General, Rural Residential and Resort zones.

The Miller Flat landscape unit is predominantly agricultural with large plots of productive lands covering most of the flatlands.

The Flight Park Café exists within The Foothill and allows commercial and independent paraglider and hang glider pilots to land on site.

Lands adjacent to Malaghans North Facing Escarpment support a higher density of residential activity as these faces allow development to be better visually absorbed.

Within the Rural Resort unit, development has occurred according to the Millbrook Structure Plan which designates land use and activities. The two dominate land uses within this Resort Zone area Golf/Open Space and Residential. Much of the residential development with the Rural Resort area has occurred in clusters surrounded by more open lands.

CHARACTER





U1 Millers Flat

The western most portion of the Study Area is Millers Flat which exists adjacent to and is inextricably linked to the Coronet Peak Amenity Landscape to the west.





Landscape Unit Character:

Millers Flat is so named for is moderate topography set amongst more dramatic features. Millers Flat is mostly agricultural with large areas of open lands broken by the occasional shelterbelt. Residential dwellings are generally set back from roads and adjacent to the steeper faces which enclose the flats. The overall character of Millers Flat is pastoral with a linear pocket of a rural residential character near Mill Creek itself and the north facing escarpment.





CHARACTER

U2 The Foothills

The Foothills contain rolling hummocky hills, gullies and plateaus that lead to the steeper faces of the ONL slopes.



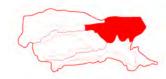


Landscape Unit Character:

The Foothills are a rolling hill landscape. They are distinctly separate from the ONL slopes and from the flatter lands to the west. While pasture grasses dominant much of The Foothills, patches of exotic weeds and grey scrub-land are present. Shelter belts are present but not as prevalent as they are within the adjoining lands. Parts of The Foothills contain residential activities, especially in the vicinity of Dennison Road. These residential activities also introduce a high level of amenity trees, including exotic and native plantings. A large agroforestry block forms The Foothill's northern edge.







U3 The Rural Resort Area:

The Rural Resort area contains the more open lands south and west of the urban boundaries of Arrowtown. The Rural Resort areas is so called as it contains the Millbrook Resort and portions of the Hills Golf Course.









has, to a large degree occurred within this structural planting.

Landscape Unit Character:



The Rural Resort area maintains much of the surrounding landscape character in terms of

openness and vegetation. However golf courses take the place of pastures and clusters of

homes take the places of large homestead blocks. Residential density is higher within pockets

of this unit. Mature exotic trees form the structure of the landscape and existing development

Steep and craggy faces bookend the Mill Creek Catchment. The cragginess of the escarpment faces is not as pronounced throughout the landscape unit. The slopes that lead down to the

valley floor adjacent to the cliff faces generally display a dense vegetation pattern of mostly

exotic weeds intermixed with occasional grey scrub-land species. The escarpment faces form

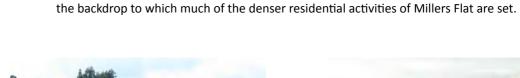


U4 Malaghans North Facing Escarpment:

These craggy faces form the walls that separate the Mill Creek Catchment from the Wharehuanui Hills.



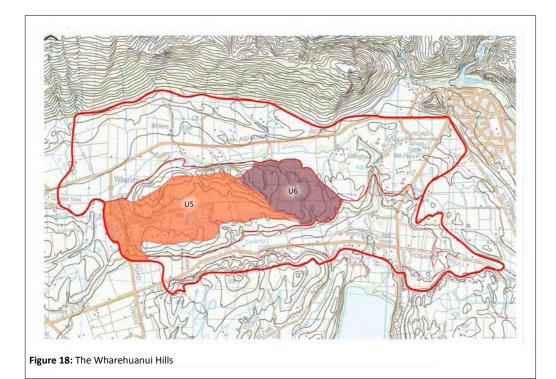




Landscape Unit Character:







Wharehuanui Hills

The Wharehuanui Hills is a remnant moraine landscape similar to an esker land form. Steep, craggy escarpments define the north and south facing edge of this landscape. Atop it are plateaus and remnants of kettle lakes which have been enhanced to create large amenity ponds for private land owners. The more eastern part of this landscape rolls gently down across hummocks and plateaus to meet the flatter landscapes of the Mill Creek Catchment. The more western part of this landscape is sunk between the north and south facing escarpments.

The Wharehuanui Hills are considered to contain two landscape units. They are:

- U5 The Wharehuanui Plateau
- U6 The Upper Hills

CHARACTER

Land Form

The Upper Hills are part of a schist outcrop with deposited glacial till. The landscape is considered to be the area of land between the north and south facing slopes that lead down into the flatter landscapes of Speargrass Flat and the Mill Creek Catchment. Within the Wharehuanui Basin the land displays varying characteristics of hummocky hills intermixed with plateaus that sink into areas of surface water.

To the east of the Wharehuanui Basin, the Upper Hills rise more dramatically and create the high point of the Study Area (529m). These hummocks and plateaus continue to gently fall to the east and eventually overlap with the Rural Resort landscape unit.

Land Cover

The Wharehuanui Hills are mostly covered in pasture grasses interrupted only by rare shelterbelts. Within the Wharehuanui Basin the vegetation cover is significantly more dense and diverse with substantial plantings in lifestyle blocks. These planting include lineal plantings of exotic trees as shelter belts, patches of exotic trees with a park-like character and riparian plantings, often containing native species.

Land Use

Rural Residential development has occurred on the large lifestyle sections across the Wharehuanui Plateau. This residential density is higher in the western portions of the plateau and the density thins to the east. Large lifestyle blocks extend across the more westerly lands. These lifestyle blocks still retain a level of productive use but in many ways this use is dominated by the more domestic amenity features within the landscape. Limited residential activity is present to the east of the uppermost hills.

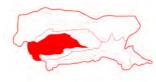


Figure 19: A rural Lifestyle development within the Wharehuanui Plateaus.



CHARACTER

U5 The Wharehuanui Plateau



The Wharehuanui Basin exist on the elevate moraine terrace between Malaghans Road and Speargrass Flat Road. Malaghans North Facing Escarpment forms the northern boundary of this unit while the southerly boundary is defined by the Speargrass South Facing Escarpment. A high point on the hills separates the Wharehuanui Plateau from the Upper Hills landscape unit.

Landscape Unit Character:

The Wharehuanui Plateau has a strong rural lifestyle character with generally large plots of land in agricultural use. Set within the rural character are generally large dwellings, farm buildings , amenity gardens and ponds. The wetlands of this area are remnant kettle lakes which have been enhanced and planted.









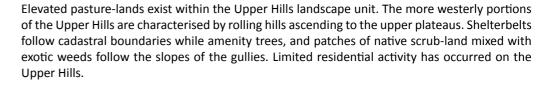


U6 The Upper Hills:



The Upper Hills exist to the east of the Wharehuanui Plateau. They contain the highest point (529) to the elevated moraine between Speargrass Flat Road and Malaghans Road. The northern and eastern boundary of the Upper Hills and Rural Resort landscape units overlap.







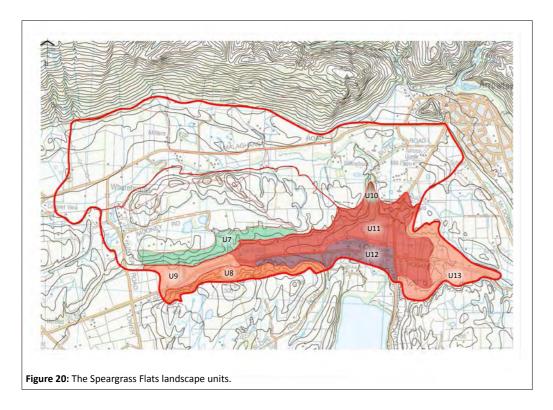












6.3 Speargrass Flats

The Speargrass Flats landscape is located between the Wharehuanui Hills and Slope Hill/Lake Hayes landscapes. It is a mostly linear, corridor landscape. It is distinctly separate from the more elevated lands to the north and south. It is remotely connected to the Lake Hayes landscape however separated visually from the lake by existing development including buildings and plantings. The Speargrass Flat landscape extends past the Lake Hayes Arrowtown Road into the area known as Hogan's Gully which is a similar corridor with steep sides.

The Speargrass Flats are considered to contain 7 landscape units. They are:

U7 Mooney's South Facing Escarpment

U8 Mooney's North Facing Escarpment

U9 West Speargrass Valley

U10 Waterfall Park

U11 East Speargrass Valley

U12 Lake Hayes Rural Residential Area

U13 Hogans Gully.

Figure 21: View from the Bendemeer Hills looking west across the Speargrass Flats.



Land form

Floodplains, terraces and escarpments give form to the Speargrass Flats. Similar to the landscape unit of Malaghans North Facing Escarpment , Speargrass North Facing Escarpment displays steep craggy schist faces with distinct apexes. Speargrass's South Facing Escarpment has a more gradual slope weaving in and out of rounded gully and spur features. Between and below these two escarpments is the West Speargrass Valley Mooney valley, a relatively flat, narrow valley that distinguishes the Speargrass Flats fro the Hawthorn Landscape farther west.

The Speargrass Flats valleys, Hogans Gully and the Lake Hayes Rural Residential area all have similar characteristics in terms of form. Surface waters flow through the floodplains from the west, north and east. Mill Creek drops down dramatically from the Rural Resort through Waterfall park into the Speargrass Flats. Waterfall Park displays distinctly different character than the surrounding valleys with more dramatic relief.

Land Cover

Similar to the other landscapes in this Study Area, the predominant vegetation cover is pasture grass. Again, this cover is often broken by mature shelter belts of exotic trees and patches of mixed scrub-land in gullies. Amenity planting has taken place, most notably within the Lake Hayes Rural Residential Area. Here the density of trees, especially those to the south of Speargrass Flat Road create the boundary of the Study Area from the Lake Hayes Landscape.

Recent consent has been granted to much of the lands that occupy the Speargrass South Facing Escarpment for the planting of mixed exotic forests (Ayrburn Station). When mature, these plantings will significantly change the appearance of the land cover from pastoral to forested.

Land use

Much of the land within this landscape is zoned Rural General, although a finger of the Resort Zone extends into Waterfall Park and the Rural Residential - North Lake Hayes zone form as part of the landscape's southern boundary.

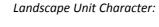
Existing commercial activity within the Speargrass Flats landscape is limited to the Walnut Cottage Café and a few visitor accommodation units. Existing consents allows for further residential and commercial activities to occur within the Waterfall Park landscape unit.





U7 **Speargrass South Facing Escarpment**

This escarpment forms the southern edge of the Wharehuanui Hills and northern edge of the Speargrass Flats.



This escarpment face is generally less steep than the other escarpments in this Study Area. It is mostly pastoral in character with little sign of domestic activities. The slopes ascend gently towards the Wharehuanui Hills. Vegetation includes large and mature shelterbelts. Recently consented planting includes swathes of exotic amenity tress which in the near future will change the colour and texture of much of the south facing escarpment.







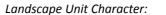


CHARACTER



U8 **Speargrass North Facing Escarpment**

This escarpment is significantly steeper than the south facing escarpment and forms a large portion of the southern boundary of the Speargrass Flat Landscape. The top of this landscape unit contains the Slope Hill landscape.



Steep craggy schist faces break the otherwise moderately graded slopes of pasture grasses, mixed exotic and native vegetation. The topography and vegetation of this landscape unit provide a higher degree of naturalness than the surrounding landscape.









U9 West Speargrass Valley

This is a narrow valley between the escarpment faces. The West Speargrass Valley's boundaries overlap with the Lake Hayes Rural Residential and the East Speargrass Valley to the east and the Hawthorne Landscape to the west.





Landscape Unit Character:

The West Speargrass Valley is a corridor landscape. It is composed generally of the flatter lands between the north and south facing escarpments. The character of the West Speargrass Valley is inextricably linked to the escarpment faces. Vegetation patterns of open pastures, shelter belts and patches of rural amenity trees extend throughout. Some residential activity has occurred against the north facing escarpment.





CHARACTER

U10 Waterfall Park:

This is a small landscape unit. It's a densely vegetated park-like pocket of land dominated by a waterfall. This waterfall is part of Mill Creek and descends from the Rural Resort landscape unit into the Speargrass Flats.







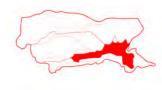
Landscape Unit Character:

Waterfall Park is a pocket landscape unit defined by the dramatic relief that encloses the gorge. A water cascade descends down the escarpment face. Dense mature vegetation shrouds the gorge walls and provides a lush, vegetative character. The vegetation doesn't allow much sun into the gorge and the Waterfall Park landscape unit has a distinct micro-climate, somewhat tropical in summer months and colder and bleaker that the Basin floor in winter months. There is an existing Structure Plan which permits significant development within this unit.



CHARACTER

U11 East Speargrass Valley:



This landscape unit forms much of the foreground to the Upper Hills and Rural Resort Areas. It consists predominantly of flat pastoral lands leading to the toe of the Wharehuanui Hills.







Landscape Unit Character:

The East Speargrass Valley is a mostly rural landscape unit existing in the foreground to the Rural Resort area. The level of residential activity within the East Speargrass Valley is higher than within the adjacent Hogans Gully unit and West Speargrass Valley. This more domestic character is a response to the landscape unit's adjacency to the more densely zoned residential activities of the Rural Residential - North Lake Hayes Area. While residential activities are present, this unit still maintains a high level of rural character.





U12 The Lake Hayes Rural Residential Area:

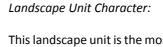


This landscape is located to the south of the more pastoral East Speargrass Valley. The Rural Residential Zoning continues to the shores of Lake Hayes. However the lands in this Zone, which are more associated to the open pastures are considered part of the Speargrass Flats Landscape while the lands to the south are considered to be part of the Lake Hayes Landscape.









This landscape unit is the most domestic of all the units in the Study Area. The pastoral elements that surround this unit are generally void inside it. Instead this landscape unit hosts domestic activities set within the otherwise rural character. Vegetation within the Lake Hayes Rural Residential Area is more domestic. Patches of amenity trees are set amongst mown pastures. Avenue trees extend along sinuous driveways and access residential units. The density of residential development is higher here as a result of the Rural Residential zoning.









U13 Hogans Gully:

This landscape unit is composed of more elevated hills leading up to the east. These valleys are closely associated to the pastoral valleys below.







Landscape Unit Character:

Hogans Gully offers a high level of rural character with limited visible residential development. Mature trees extend across the lands as shelterbelts. The land is enclosed by terraces to the north and south and rolling pastoral hills descend from these terraces towards the Speargrass Flats. Portion of the terraces within Hogan Gully display a moderate level of naturalness. Residential activity occurs to the south against the escarpment face that leads up to the Bendemeer Hills.





7.0 Evaluation

The previous sections of this study identified three landscapes within the Study Area and the smaller landscape units within them. Elements of each landscape unit was identified and their values in terms of land form, land cover and land use were defined. The boundaries between landscapes were found to often overlap. While the maps associated with this study clearly indicate a line between landscape units, it is often the case that landscapes are folded into each other and the boundaries between them can be obscure.

The following portion of this study summaries the character of each landscape unit identified in the previous section and evaluates it's resource potential. This evaluation determines:

- Areas in which appropriate development can occur without degrading the landscape.
- Areas in which inappropriate development may degrade the landscape.
- Effective ways to manage the landscape to ensure the existing values and quality are retained or enhanced.

For ease of reference, the findings of the character study is summarised in table format in terms of the landscape unit's:

- Visibility
- Land Form
- Land Cover
- Land Use.

EVALUATION

Following on from this character summary, an evaluation and recommendations for each landscape unit is provided in terms of its:

- Ability to Absorb Change
- Development Issues and Opportunities
- Landscape Management Strategies.

Ability to Absorb Change (refer to Appendix J)

The Wharehuanui Study Area is a rich landscape resource with a distinct quality and a high level of natural, cultural and visual values. The biophysical and cultural resources of the landscape are considered to bare an equal weight as the visual resource. However the ability for landscapes to absorb change is traditionally associated with the visual effects of change.

Visual absorption capacity can be defined as the landscape's ability to absorb physical changes without transformation in its visual character and quality.⁵ This definition suggests that in order for a landscape to absorb development there should be no adverse change in the landscape's character or quality.

A scale which describes the landscape's ability to absorb change is useful in determining how and where development may occur. This evaluation uses the following scale and considers the ability of the landscape to absorb change **over and above what is existing and permitted.**

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Ability to Absorb Change:

- 1 High Appropriate development will not adversely effect the landscape.
- 2 Moderate to High Appropriate development may occur in areas where the landscape can best absorb it.
- Moderate Appropriate development should be strategic, managed and sympathetic to the landscape.
- 4 Moderate to Low The landscape is near the threshold where further change may adversely effect it and change should be discrete.
- 5 Low inappropriate change would adversely effect the landscape's character and quality

The higher the ability for a landscape to absorb change the more likely it is that development can occur without degrading the landscape's character and quality. The lower the landscape unit's ability to absorb change, the less likely it is that development can occur without adversely affecting the landscape unit's character and quality.

Development Issues and Opportunities

Each landscape unit has its own distinct features which define it. These features often provide clues to how change can occur in ways which appropriately maintain the quality and character of the landscape. Whilst a landscape unit may have a low ability to absorb change, if change is approached in an appropriate, strategic and directed manner, its effects can be minimised and the landscape character and quality maintained, and in some cases, enhanced.

Landscape Management Strategies

Management of the landscape is essential to the continuation of the landscape's quality and values. Within the District, management of lands has generally been left to the responsibility of private land owners, under the direction and supervision of the Council. An emphasis on the 'picturesque' aesthetic has elevated visual values at the expense of other landscape values, especially ecological. However as detailed int the Description and Inventory portion of this report, a progressive understanding of the landscape and it's values is slowly moving away from an emphasis on the visual and towards an understanding of the landscape as a holistic resource in its own right.

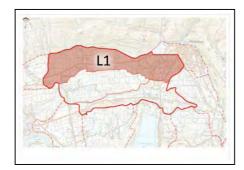
The landscape management strategies contained in this study this sub-heading examine strategies which not only preserve and enhance the landscape's visual values and quality, but also it's cultural, ecological and natural values.



Figure 22: An aerial view east across the Mill Creek Catchment and Speargrass Flats.

Amir, S. and Gidalizon, E. 1988, Expert-based Method for the Evaluation of Visual Absorption Capacity of the Landscape.

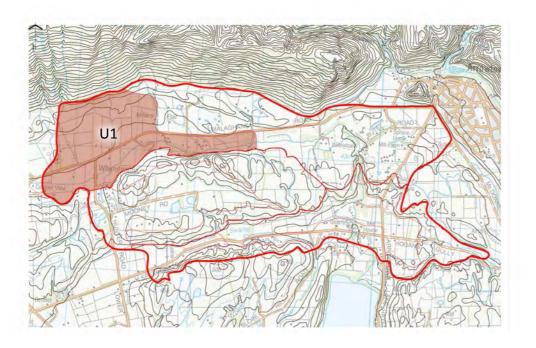
L1 The Mill Creek Catchment



U1 Millers Flat Landscape Unit



Figure 23: Near Hunter Road looking northeast across Millers Flat.

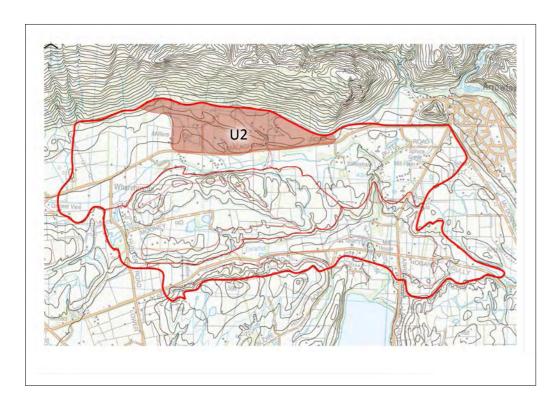


SUMMARY OF LANDSCAPE VALUES	MILLERS FLAT LANDSCAPE UNIT
Visibility	 Highly visible from portions of Malaghans Road and Hunter Road. Moderately visible from Coronet Peak due to distance.
Land Form	 Generally flat. Mill Creek flows through the unit to the east. Steep topography marks the northern and southern edges.
Land Cover	 Mostly improved pasture grass. Shelterbelts, avenues and swathes of exotic and native plants. Rural character buildings and limited visible residential development.
Land Use	Pastoral farming.Low density residential.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	 4 - Moderate to Low potential to absorb development within the visible broader flatlands. 3 - Moderate potential to absorb further development at base of north facing escarpment.
Development Issues and Opportunities	 Strong rural character susceptible to degradation within the flatlands. Flat open land provides distinct views across them to the more dramatic mountains of the District. North facing escarpment allows development at it's base to be better absorbed.
Landscape Management Strategies	 Development potential on the flat, open lands is limited and should be subject to the scale of open space retention. Planting which could impede views across the wider landscape should be restricted. Continued and accelerated management of wilding species.

U2 The Foothills Landscape Unit



Figure 24: Near Malaghans Road looking north-northeast towards Flight Park.



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EVALUATION

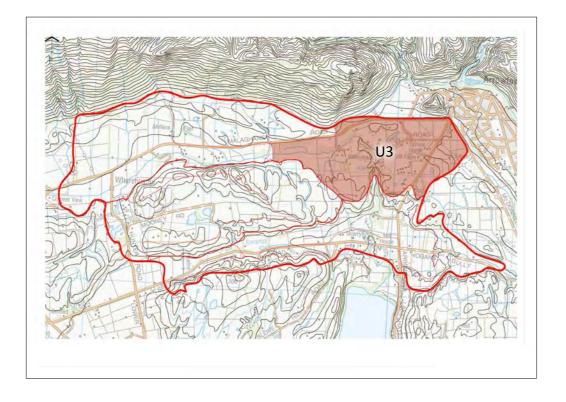
Wharehuanui Landscape Study

SUMMARY OF LANDSCAPE VALUES	THE FOOTHILLS LANDSCAPE UNIT
Visibility	 The south facing slopes are highly visible from Malaghans Road. Upper portions of land have a very low level of visibility from other places within the basin.
Land Form	 Rolling slopes extend towards the foot of ONL slopes. Plateaus exist atop The Foothills. Occasional gullies cut through The Foothills towards Malaghans Road.
Land Cover	 Mostly improved pasture grass. Dense patches of exotic trees. Native gray scrub-land species mixed with exotic weeds exists on some slopes and gullies.
Land Use	 Pastoral farming. Rural living. Business (Flight Park).
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	 5 - Low ability to absorb change on the south facing slopes, including the gullies have. 2 - Moderate to High ability to absorb further development, so long as it has a low visual impact on Malaghans Road or against ridges or skylines.
Development Issues and Opportunities	 A higher density of ecological planting could enhance the ecological values of the gullies. Exotic weed management is vital to the retention of open spaces. Residential density located within the visually isolated plateaus could increase without significant degradation to the landscape. Integrity of existing skylines and ridge-lines should be maintained.
Landscape Management Strategies	 Continued productive use, especially on the south facing slopes. Ecological planting within the gullies and areas of existing native patches. Continued and accelerated management of wilding species.

U3 Rural Resort Landscape Unit



Figure 25: From Malaghans Road looking south across the Rural Resort area.

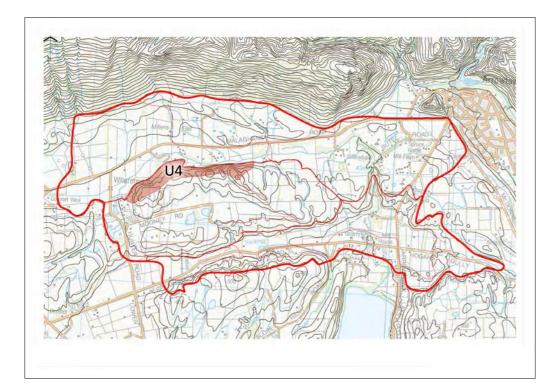


SUMMARY OF	THE RURAL RESORT LANDSCAPE UNIT
Visibility	 Visibility into the unit is often limited along Malaghans Road due to existing trees. Much of the unit is visible from Feeley's Knob, Cotter Ave, Tobins Track and the Lake Hayes - Arrowtown Road.
Land Form	 Mill Creek's floodplains form the flatter, lower portions. More elevated, rolling hills exist in the southern portions of this unit.
Land Cover	 Mown pasture grasses and golf surfaces are the dominant land cover. Dense patches of mature exotic trees extend along roads and waterways. Swathes of exotic and native plantings exist within the Rural Resort residential amenity areas. Suburban housing and infrastructure.
Land Use	 Rural Resort Living. Recreation. Pastoral farming. Business (Millbrook Resort). Visitor Accommodation.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change Note: The Millbrook Structure Plan allows for further development. This evaluation considers further development beyond what is permitted.	 4 - Moderate to low ability to absorb further appropriate development within pockets of the more easterly portions of the unit. 3 - Moderate ability to absorb further appropriate development adjacent to Mill Creek and the north facing escarpment/slopes.
Development Issues and Opportunities	 Residential activity set back from Malaghans Road. Ecological plantings around waterways. Retention of appropriate scale of open space.
Landscape Management Strategies	 Pastoral lands with active grazing animals can act as a 'rural' buffer between public roads and visible residential development. Enhanced ecological planting could occur along riparian areas. Continued and accelerated management of wilding species.

Malaghans North Facing Escarpment Landscape Unit U4



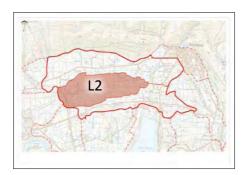
Figure 26: From Malaghans Road looking southeast.



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SUMMARY OF LANDSCAPE VALUES	MALAGHANS NORTH FACING ESCARPMENT LANDSCAPE UNIT
Visibility	 Highly visible from Malaghans Road. Moderately visible from Coronet Peak.
Land Form	 Schist walls form much of the dramatic slope that compose the north facing escapement. Subtle gullies flow between the more dominant schist outcrops. Glacial till and alluvium mantels the stone outcrops.
Land Cover	 Small pockets of native and mixed exotic grey scrub-land. Exotic shrubs provide much of the structural vegetation, colour and texture on the escarpment. Unimproved pasture grass is the underlying vegetation.
Land Use	Limited pastoral farming.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	• 5 - Low potential to absorb development on the escarpment face itself.
Development Issues and Opportunities	 The more natural character of these faces leave them susceptible to degradation. Pastoral farming is limited to portions of the escarpment faces. Integrity of existing skylines and ridge-lines should be maintained.
Landscape Management Strategies	 Continued and accelerated management of wilding species. Nurture re-vegetation, especially within the gullies. Protection and enhancement of existing native vegetation.

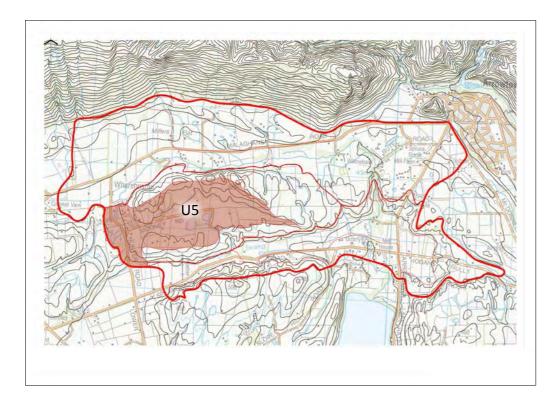
L2 The Wharehuanui Hills



U5 The Wharehuanui Plateau Landscape Unit



Figure 27: Near Mooney Road looking south across the Wherahuanui Plateau.

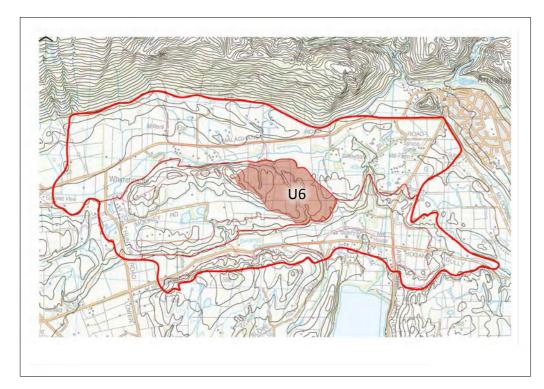


SUMMARY OF LANDSCAPE VALUES	Wharehuanui Plateau
Visibility	 Moderately visible from Coronet Peak The escarpment screens views into the Mooney Road valley. Only development in the vicinity of the upper escapement faces is potentially visible from Malaghans Road, Speargrass Flat Road and Mooney Road.
Land Form	 Schist bedrock lies underneath large deposits of glacial till. A reoccurring pattern of plateaus and hummocks occur throughout the unit. Naturally occurring and human-made wetlands exist on the floor of the Mooney Valley.
Land Cover	 Mown pasture grasses and surface waters are the primary cover. Dense patches of mature exotic trees pepper the landscape, more commonly in the lower western portions. Swathes of exotic and native plantings exist with the rural lifestyle properties ,especially prevalent along the edges of surface waters. Farm and residential buildings.
Land Use	Rural living. Pastoral farming.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	 1 - High ability to absorb further appropriate development on the lower portions of the Wharehuanui Plateau. 3 - Moderate potential to absorb further development on the more elevated portions of the unit.
Development Issues and Opportunities	 Avoid any adverse visual effects of development on the surrounding public roads, especially Malaghans Road and Speargrass Flat Road. Enhance ecological corridors on the margins of riparian areas. Residential development should maintain existing rural character.
Landscape Management Strategies	 Rural residential living densities could increase in appropriate locations Existing rural elements should be repeated. Continued and accelerated management of wilding species.

The Upper Hills Landscape Unit



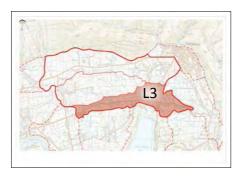
Figure 28: From within the Upper Hills looking northeast.



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SUMMARY OF LANDSCAPE VALUES	THE UPPER HILLS LANDSCAPE UNIT
Visibility	 Moderate visibility from distant views such as Cotter Ave, Feeley Knoll and the entrance to the Lake Hayes recreation Area. Limited visibility from Malaghans Road and the Speargrass Flats.
Land Form	 Upper rolling hills forming the apex of the Wharehuanui Hills. Higher more pronounced hill forms to the east of the unit. Plateaus and gullies exist between hummocky forms.
Land Cover	 Mown pasture grass is the dominant land cover. Patches of mature exotic shelter belt trees. Patches of rural amenity plantings. Bracken fern in localized patches. Limited farm buildings and dwellings.
Land Use	Pastoral farming. Rural residential.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	 3 - Moderate ability to absorb further appropriate development especially within the lower hills and plateaus. 5 - Low ability to absorb change on the uppermost hills and ridges.
Development Issues and Opportunities	 Development potential on the plateaus between hummocks. Integrity of existing skylines and ridge-lines should be maintained as viewed from public roads Retention of appropriate open space. Ecological plantings around waterways and gullies.
Landscape Management Strategies	 Staged residential density from the Rural Resort Unit to the Upper Hills Unit. Retention of appropriate open space. Retention of rural character. Retention of prominent hummocky features.

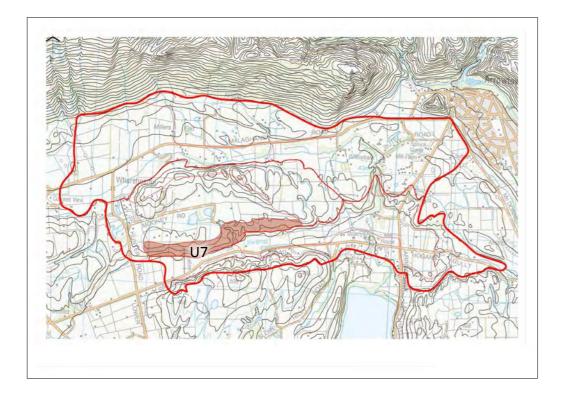
L3 Speargrass Flats



U7 Speargrass South Facing Escarpment Landscape Unit



Figure 29: From Speargrass Flat Road looking north towards the Speargrass South Facing Escarpment.

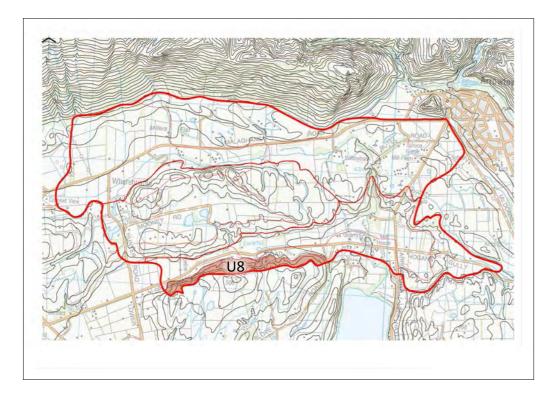


SUMMARY OF LANDSCAPE VALUES	SPEARGRASS SOUTH FACING ESCARPMENT LANDSCAPE UNIT
Visibility	Highly visible from Speargrass Flat Road, Hunter Road and Lower Shotover Road.
Land Form	 Rolling slopes and gullies leading up the Wharehuanui Hills. Landscape unit provides one wall of the Speargrass Valley corridor.
Land Cover	 Mostly improved pasture grass. Shelterbelts and avenues of exotic trees. Swathes of rural amenity trees.
Land Use	Pastoral farming.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	• 5 - Low potential to absorb further development.
Development Issues and Opportunities	 Natural character can be strengthened especially in gullies. Only agricultural buildings would be appropriate for future development in most of this unit. Integrity of existing skylines and ridge-lines should be maintained.
Landscape Management Strategies	 Continued productive use. Native planting within the gullies could enhance ecological values. Maintain open views by avoiding roadside planting.

U8 Speargrass North Facing Escarpment Landscape Unit



 $\textbf{Figure 30:} \ \ \text{Near Speargrass Flat Road looking southwest towards the north facing escarpment.}$



Wharehuanui Landscape Study

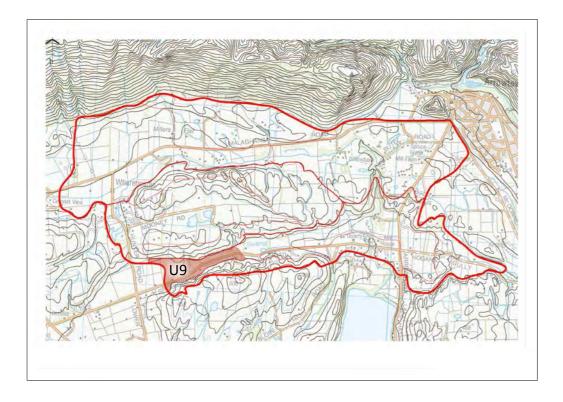
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SUMMARY OF LANDSCAPE VALUES	SPEARGRASS NORTH FACING ESCARPMENT LANDSCAPE UNIT
Visibility	Highly visible from Speargrass Flat Road, Hunter Road and Lower Shotover Road.
Land Form	 Schist walls form much of the dramatic face that compose the north facing escapement. Subtle gullies flow between the more dominant schist outcrops. Glacial till and alluvium mantels the stone outcrops.
Land Cover	 Unimproved pasture grass is the dominant land cover. Patches of exotic trees pepper the landscape. Some native grey scrub-land species are present.
Land Use	 Infrastructural (Arrow Irrigation Scheme). Pastoral farming Rural Residential
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	• 5 - Low potential to absorb further development.
Development Issues and Opportunities	 Opportunities to enhance natural character. Ecological plantings around waterways. Integrity of existing skylines and ridge-lines should be maintained.
Landscape Management Strategies	 Continued and accelerated management of wilding species. Re-vegetation especially within the gullies. Protection and enhancement of existing native vegetation.

U9 West Speargrass Valley Landscape Unit



Figure 31: Speargrass Flat Road looking west across the West Speargrass Valley.

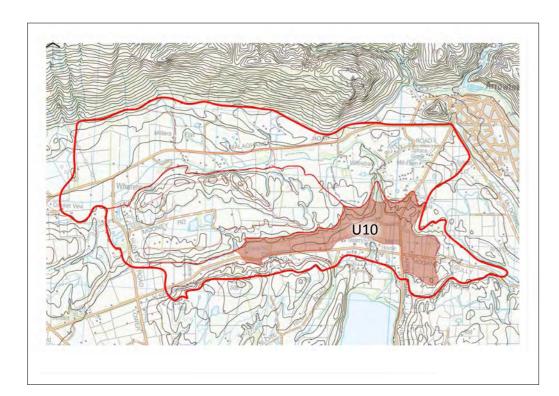


SUMMARY OF LANDSCAPE VALUES	WEST SPEARGRASS VALLEY LANDSCAPE UNIT
Visibility	Visibility is limited to Speargrass Flat Road due to the corridor nature of the valley.
Land Form	The flatter floodplains that exist between the more elevated Wharehuanui Hills and upper Slope Hill area.
Land Cover	 Improved pasture grass is the dominant land cover. Mature exotic shelterbelt trees cut across the landscape unit. Rural character buildings including farm buildings and dwellings.
Land Use	Pastoral farming.Rural Residential.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	4 - Moderate to low ability to absorb further appropriate development.
Development Issues and Opportunities	Housing should be set back from Speargrass Flat Road against the north facing escarpment.
Landscape Management Strategies	 Open land leading to the south facing slopes should remain open and productive. All elements within this landscape should perpetuate the existing rural character or highlight the natural character of the adjoining escarpments. Continued and accelerated management of wilding species.

U10 East Speargrass Flat Landscape Unit



 $\textbf{Figure 32:}\ \ \text{View from the Bendemeer Hills looking west towards East Speargrass Flat.}$



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EVALUATION

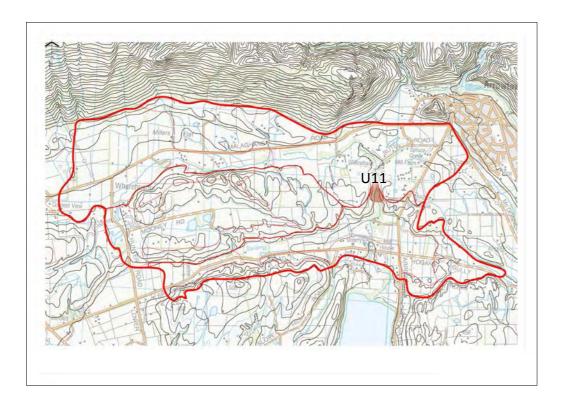
Wharehuanui Landscape Study

SUMMARY OF LANDSCAPE VALUES	EAST SPEARGRASS FLAT LANDSCAPE UNIT
Visibility	Moderate to high visibility from the Lake Hayes / Arrowtown Road, Hogans Gully Road, and Speargrass Flats Road.
Land Form	Moderately undulating landscape of floodplains transitioning from the Upper Hills and Rural Resort Units to the north to the Lake Hayes Rural Residential Area to the south.
Land Cover	 Improved pasture grass is the dominant land cover. Swathes of exotic and native plantings exist within the more residential portions of this unit. Rural dwellings and farm buildings.
Land Use	 Rural Residential Living Recreation Pastoral farming
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	4 - Moderate to low ability to absorb further appropriate development within discrete pockets of land.
Development Issues and Opportunities	 Housing clusters set back from Speargrass Flat Road amongst existing vegetation. Open pastoral lands to remain. Ecological plantings around surface waters.
Landscape Management Strategies	 Pastoral, rural elements to be retained and enhanced. Enhance ecological planting along riparian areas. Continued and accelerated management of wilding species.

U11 Waterfall Park Landscape Unit



Figure 31: The waterfall in Waterfall Park.



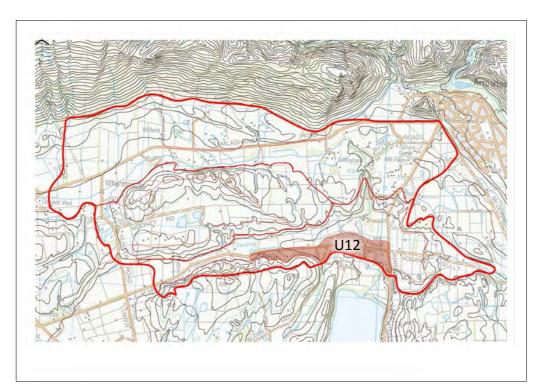
SUMMARY OF LANDSCAPE VALUES	WATERFALL PARK LANDSCAPE UNIT			
Visibility	Visibility into the unit is extremely limited due to existing trees and surrounding topography.			
Land Form	 Mill Creek cascades down a rocky terrace face in this distinct gorge. Steep wall surround the east, west and north walls of this landscape unit, which then opens to the south. 			
Land Cover	 Thick, mostly exotic and naturalized plants. Evidence of previously existing and struggling native vegetation. Residential and visitor facilities. 			
Land Use	Rural residential Historical event facility.			
EVALUATION AND RECOMMENDATIONS				
Ability to Absorb Change Note: The Waterfall Park Structure Plan allows for further development. This evaluation considers further development beyond what is permitted.	4 - Moderate to Low ability to absorb further appropriate development.			
Development Issues and Opportunities	 Visually cut off from the rest of the valley. Natural character is stronger than rural character. Flooding potential 			
Landscape Management Strategies	 Clearance of selected wilding exotics. Highlight distinct heritage. Retention and enhancement of natural values. 			

EVALUATION

U12 Lake Hayes Rural Residential Landscape Unit



Figure 32: Letterboxes off Speargrass Flat Road.



Wharehuanui Landscape Study

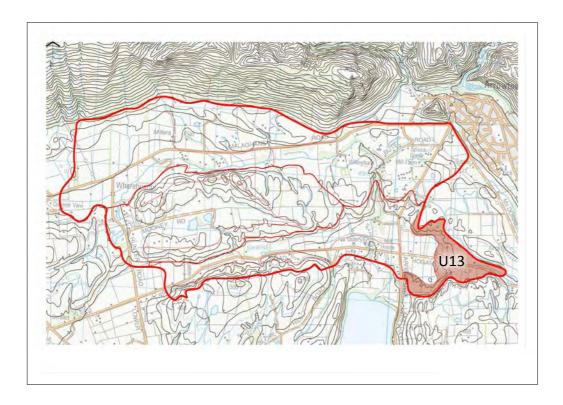
EVALUATION

SUMMARY OF LANDSCAPE VALUES	THE LAKE HAYES RURAL RESIDENTIAL LANDSCAPE UNIT
Visibility	 Visibility into the site is often limited due to existing trees. Properties that adjoining Speargrass Flat Road are highly visible.
Land Form	Undulating and descending landforms extend from the Speargrass Flats towards Lake Hayes.
Land Cover	 Mown pasture grasses and lawns are the dominant land cover. Dense patches of mature exotic trees extend along roads and waterways. Swathes of exotic and native amenity planting exist in the vicinity of residential dwellings. Suburban/rural dwellings.
Land Use	 Rural residential living Limited pastoral farming Business (Walnut Cottage) Visitor Accommodation.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	2 - Moderate to high ability to absorb further appropriate development.
Development Issues and Opportunities	 Housing clusters set back from Speargrass Flat Road. Continuation of rural and pastoral character elements. Ecological plantings around waterways.
Landscape Management Strategies	 Setback from Speargrass Flat Road to be in excess of 10m. Building and landscape design should take cues from the surrounding rural and natural elements. Continued and accelerated management of wilding species.

U13 Hogans Gully Landscape Unit



Figure 33: Near Hogans Gully Road looking north across the Hogans Gully Unit



SUMMARY OF LANDSCAPE VALUES	HOGANS GULLY LANDSCAPE UNIT
Visibility	Visibility into the site is limited to the vicinity of Hogans Gully Road and the Lake Hayes/ Arrowtown Road intersection.
Land Form	 A gully land-form descends between two terraces. The western Hogans Gully unit overlaps with the Eastern Speargrass Flats Unit.
Land Cover	 Improved pasture grass is the dominant land cover. Mature shelter belts extend across the flatter lands. Swathes of exotic and native plantings exist in the vicinity of rural residential developments. Rural residential and rural character buildings.
Land Use	Pastoral farmingRural residential living.
EVALUATION AND RECOMMENDATIONS	
Ability to Absorb Change	 2 - Moderate to high ability to absorb change along the base of the north facing escarpment. 4 - Moderate to low ability to absorb further appropriate change. Existing zoning allows for future subdivision on or near the south facing slopes. 5 - Low ability to absorb change on the open flatlands near the Junction of Speargrass Flat and Hogans Gully Roads.
Development Issues and Opportunities	 Ecological plantings on terrace escarpment faces can enhance natural character. Appropriate residential development is limited to the southern portions of the unit. Retention of flat, open lands by the intersection of Speargrass Flat Road and Hogans Gully Road.
Landscape Management Strategies	 Pastoral lands to remain mostly in active productive use. Upper portions of gully highly susceptible to degradation Further appropriate development against the north facing terrace face can occur under existing zoning. Enhance ecological planting along escarpment faces Continued and accelerated management of wilding species.

EVALUATION

8.0 Recommendations and Conclusions

8.1 Summary

A significant portion of the Wakatipu Basin was the subject of this study. The area, dubbed the Wharehuanui, exists generally between Arrowtown, Lake Hayes and Hunter Road. This area was considered to be composed of three landscapes; the Mill Creek Catchment, the Wharehuanui Hills and the Speargrass Flats.

Each landscape is considered to be composed of separate landscape units. These landscape units were determined by repeated site visits and studies of the available and applicable information including ecology, geology and tenure. These attributes were then analysed to define each unit's land form, land cover and land use. Overall this analysis determined the landscape units overall character.

Following on from the character analysis, an evaluation of the landscape's ability to absorb change without significantly diminishing the landscape character and quality was provided. Development issues and opportunities were identified as were landscape management strategies.

It was determined that the Wharehuanui area has pockets within it ranging from low to high ability to absorb change. It was also determined that in all instances, change should occur in a manner which employees and reflects the character elements of the place, be they cultural or natural. This reflection could take the form of design controls, retention of open space, protection of specific features, etc.

Conclusion

Figure 34: Sunrise in the Rural Resort Landscape Unit.



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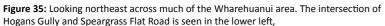
Wharehuanui Landscape Study

8.2 Recommendations (Refer to Appendix J)

The following is a summary of the findings in terms of the landscapes ability to absorb change.

- Escarpment faces, including Malaghans North Facing Escarpment and Speargrass South and North Facing Escarpments are considered to have a **low** ability to absorb change. These escarpment faces are susceptible to degradation as they are highly visible, often form a ridge or skyline and contain a high degree of natural character.
- The slopes leading up The Foothills landscape unit are also deemed to have a low ability to absorb change. These slopes display a distinct rolling hills land form similar to the escarpment faces. They form a ridge complex between Malaghans Road and the ONL slopes. A roche moutonnée feature to the south of Malaghans Road is included in this area. The landforms have a moderately strong rural character with patches of vegetation. They are highly visible and legible and any inappropriate development would likely lead to the degradation of this area's values and quality.
- The uppermost hills of the Upper Hills landscape unit are also deemed to have a low ability to absorb change. These hills contain significant hummocks which form the uppermost ridge and skyline of the Wharehuanui as seen from several public views. The open character of these hills and their natural form would be degraded should any inappropriate development occur on them.
- A pocket of open space near the intersection of Speargrass Flat Road and the Lake Hayes –
 Arrowtown Road is considered to have a low ability to absorb change. This pocket exists on
 the overlapping boundaries between the East Speargrass Valley and the Hogans Gully unit.
 It is considered that the highly visible nature of this area, its strong rural character and high
 degree of openness would be degraded should inappropriate development occur.
- Much of the Rural Resort and East Speargrass Valley and a small portion of the Hogans
 Gully units are considered to have a moderate to low ability to absorb change. Residential
 activities has formed part of these unit's existing character, but the landscape still retains a
 high degree of openness and rural character. It is considered that appropriate development
 could occur in certain pockets within these units, but that they are close to crossing the
 threshold with respect to the landscape's ability to absorb change.
- The broader flatlands of the Millers Flat unit are considered to have a **moderate to low** ability to absorb change. These broad flatlands are significant in the valley and offer distinct open views across the flatlands to the contrasting slopes and hummocks. Limited development could occur within this area but would need to be very strategic and directed to not adversely affect the landscape values and quality.
- Much of the Upper Hills unit is considered to have a **moderate** ability to absorb change. The strong open rural character and hummocky landforms of this area are susceptible to degradation due to inappropriate development. However the plateaus within the unit offer areas where appropriate development could occur without degrading the landscape's values or quality.
- A portion of land in the Wharehuanui Plateau unit adjacent to Hunter Road is considered to have a **moderate** ability to absorb change. Existing development in this area has degraded the rural character to a moderate degree. Appropriate development could occur in this area, however it's capacity to absorb change is limited.
- The flatter more northerly portions of The Foothills are considered to have a moderate
 to high ability to absorb change. These flatter portions, while displaying a strong rural
 character are not visible from the most public places. It is considered that appropriate
 development could occur in this area without degrading the quality or character of the
 landscape.

- A long strip of land taking in all of the Lake Hayes Rural Residential unit and the southern
 portion of the Hogans Gully unit is considered to have a moderate to high ability to
 absorb change. This strip of land already displays a strong rural residential character. It is
 considered that further appropriate development could occur in several pockets within this
 area without degrading the landscape's values or quality.
- Waterfall Park is a small, isolated landscape unit deemed to have a high ability to absorb
 change. It's surrounding land form and vegetation visually encloses it. Its character is more
 natural than rural and it is considered that appropriate development could occur without
 degrading and perhaps enhancing this landscape unit's values.
- The Wharehuanui Plateau is visually isolated and most existing development is only visible form within the unit. It is considered that the flatlands and gently rolling hills within this plateau have a **high** ability to absorb change so long as elements of the existing rural character are employed and development does not impede on the character of the adjacent escarpments or hills.





8.3 Conclusions

The Wharehuanui displays a range of landscape values and characters ranging from rural residential, distinctly rural, to highly natural. Ridge-lines, skylines, and escarpment faces are considered to be the landforms that are most susceptible to degradation. However these faces and ridges visually screen internal portions of land. These less visible pockets of land could accommodate appropriate development.

Significant areas of open character, specifically the lands in the vicinity of the intersection of Lake Hayes Estate – Arrowtown Road and Speargrass Flat Road as well at the broader flatlands of Millers Flat are susceptible to degradation resulting from inappropriate development. Any development within these areas needs to be strategic and directed as to not degrade the distinct open character.

Much of the Rural Resort and Western Speargrass Valley units are near their capacity to absorb change.

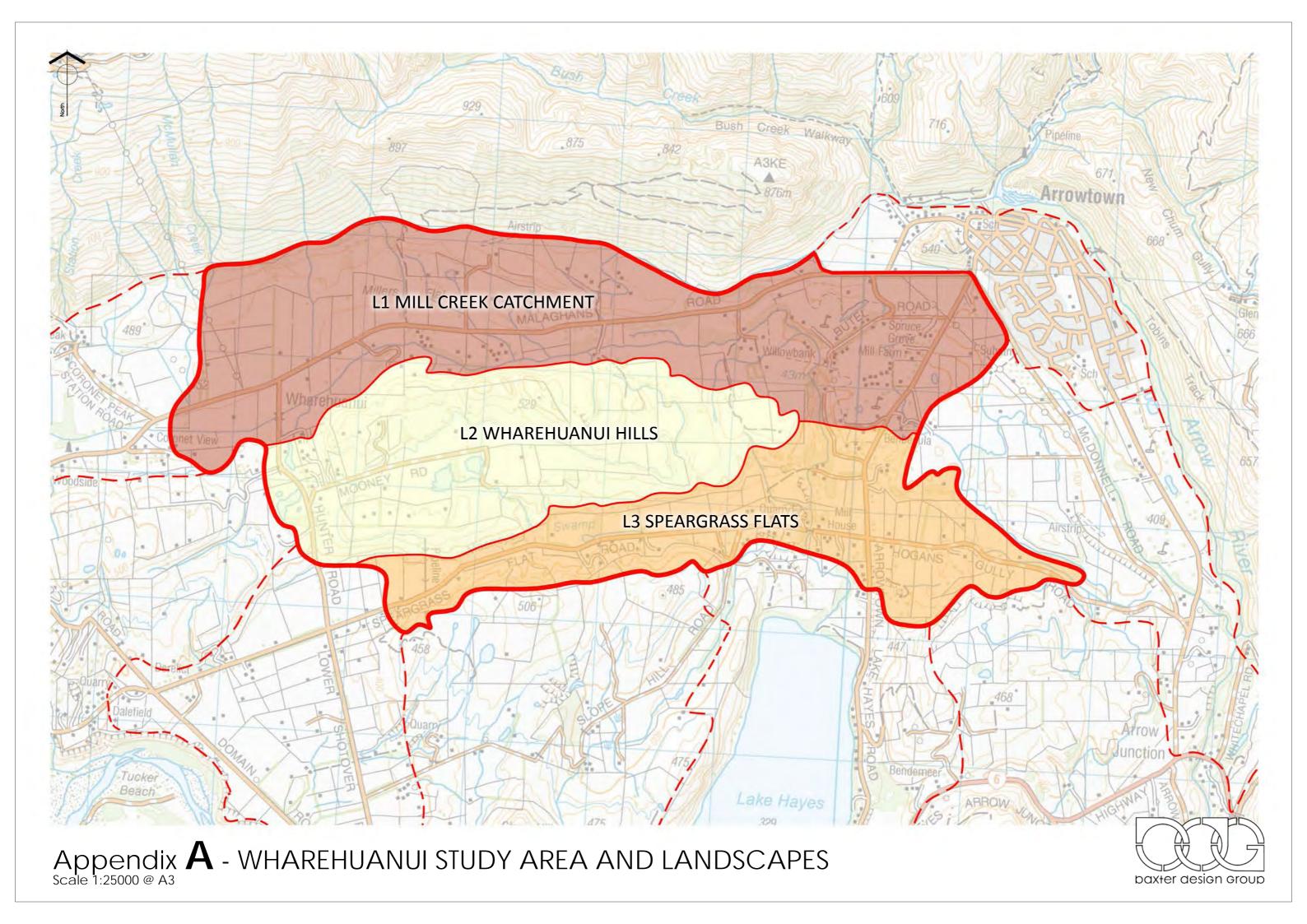
Waterfall Park and much of the Wharehuanui Plateau is well suited to absorb further appropriate development.

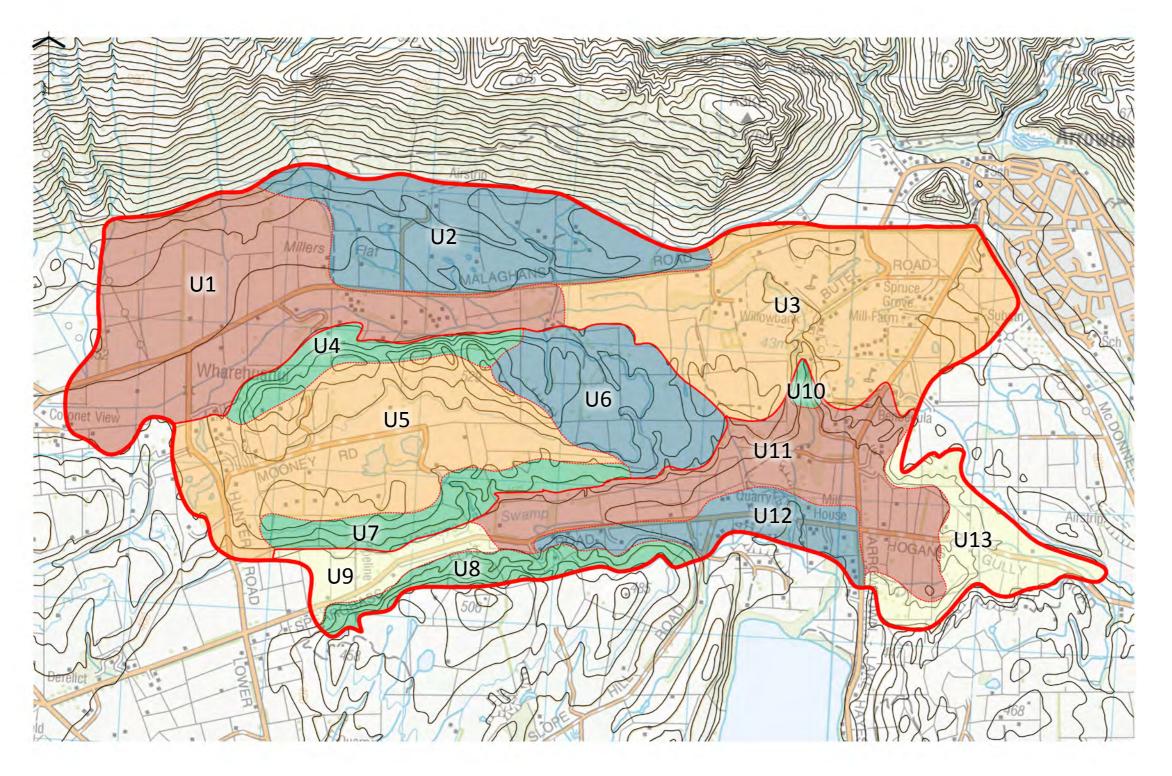
Development is also possible in pockets of land where it can be visually absorbed by the landscape. This includes the lands at the base of escarpments and the plateaus and valleys located between hummocks and gullies.

The Wharehuanui is a diverse area with strong natural and rural character values. Development to date has provided much of that character and in order for it to be retained future development should be directed and strategic. This report has provided a description of the landscape, an analysis of its character and an evaluation of its ability to absorb change. The recommendations of this report are intended to be used as a guide when considering future development within the area.

Conclusion







LANDSCAPE UNITS

Mill Creek Catchment

- U1 Millers Flat
- U2 The Foothills
- U3 Rural Resort
- U4 Malaghans North Facing Escarpment

Wharehuanui Hills

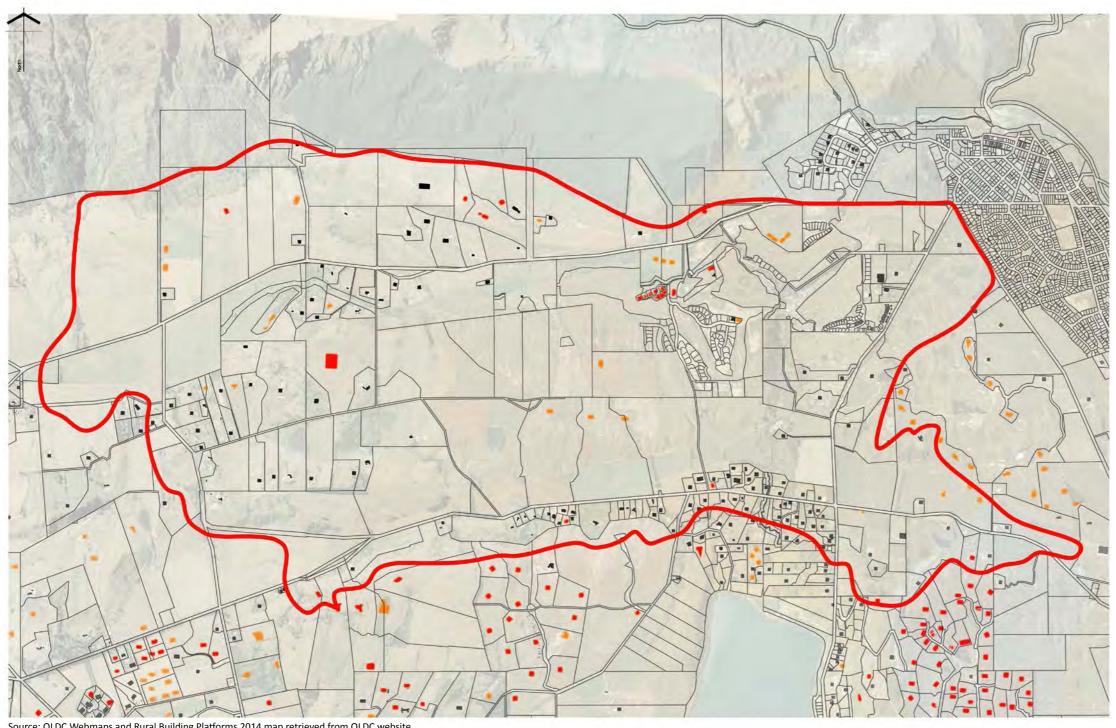
- U5 Wharehuanui Plateau
- U6 Upper Hills

Speargrass Flats

- U7 Speargrass South Facing Escarpment
- U8 Speargrass North Facing Escarpment
- U9 West Speargrass Valley
- U10 Waterfall Park
- U11 East Speargrass Valley
- U12 Lake Hayes Rural Residential
- U13 Hogans Gully







QLDC Lot Boundaries and Residential Building Platforms



Lot Boundaries



Approved Residential Building Platforms



Active Residential Building Platforms

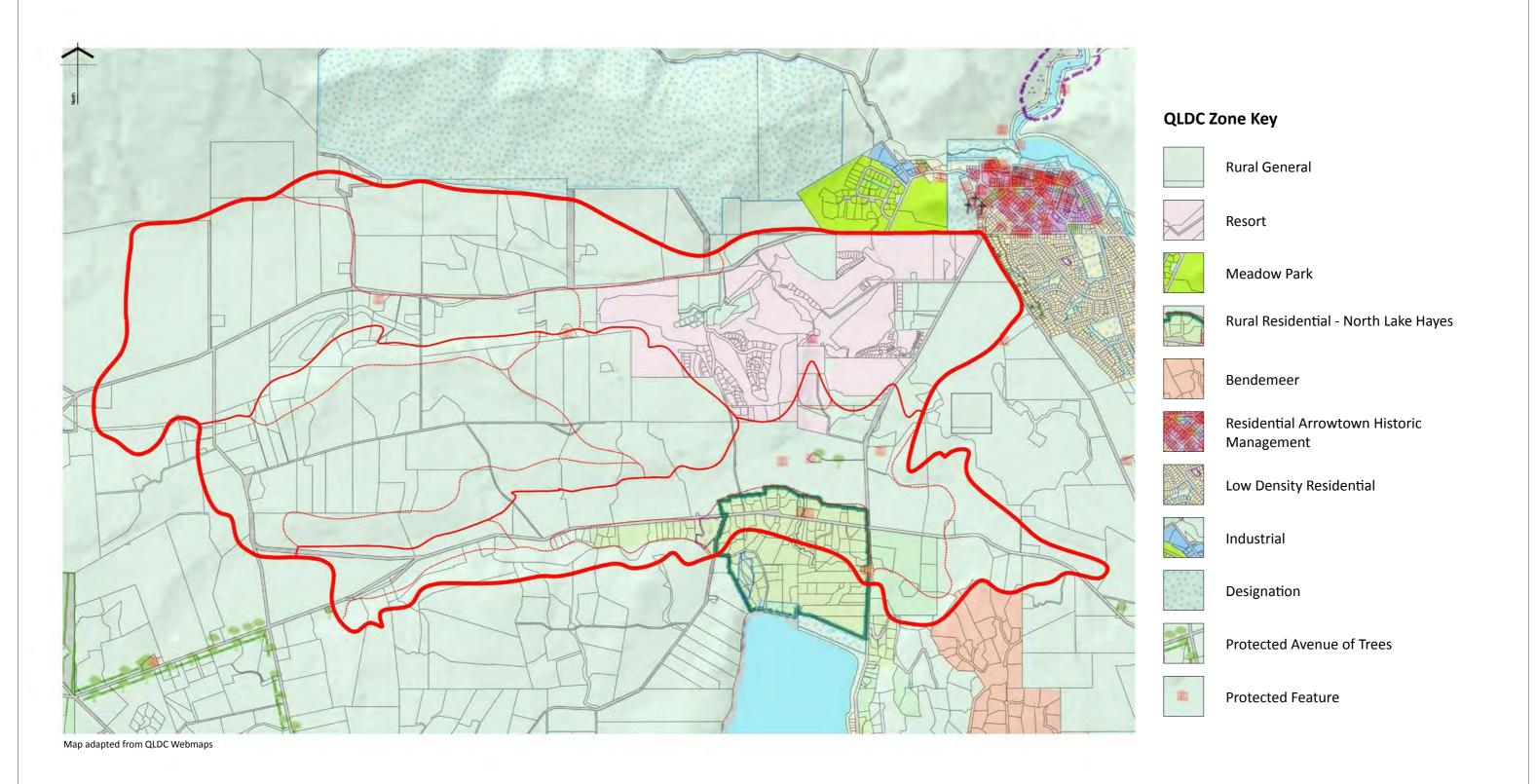


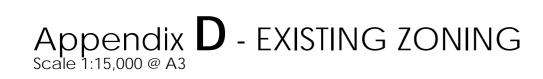
Built Residential Building Platforms

Source: QLDC Webmaps and Rural Building Platforms 2014 map retrieved from QLDC website













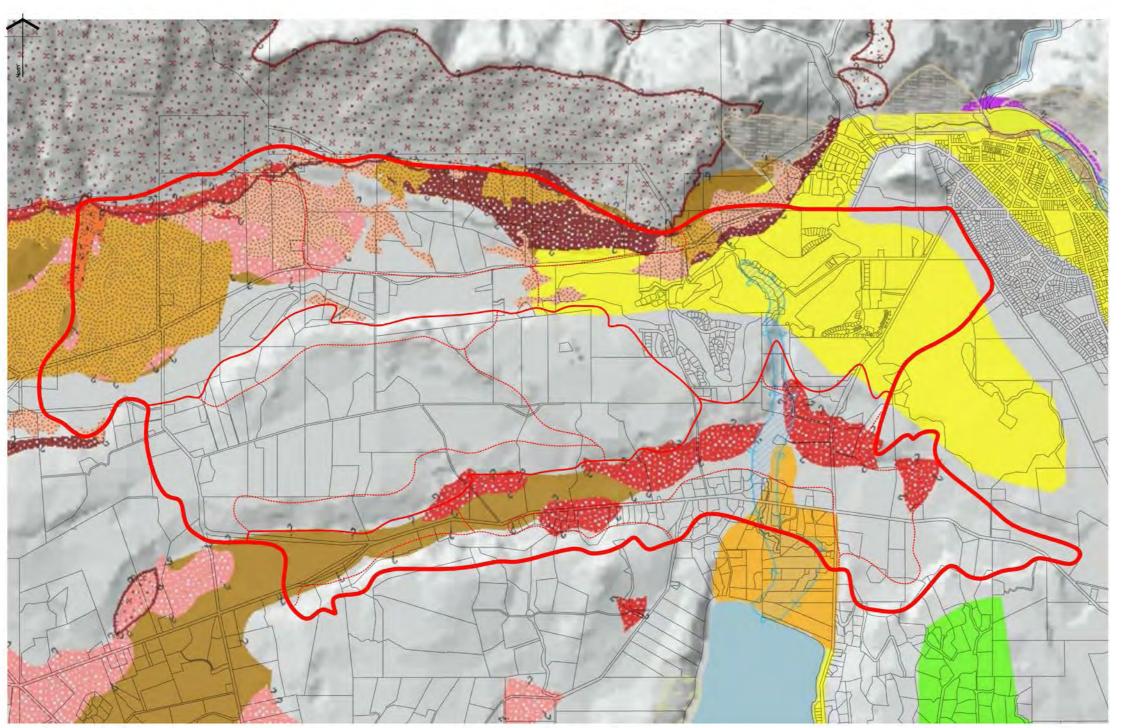


20m Contours

Source: Quickmaps







Map adapted from QLDC Webmaps Hazard data. Davis Consulting Group. Note: Hazards may not be comprehensive

QLDC Hazards Key



Landslide Area - non verified



Alluvial Fan - ORC: fan recently active



Alluvial Fan - Regional Scale: Active, floodwater dominated



Alluvial Fan - (Regional Scale) Active, Debris-dominated



Alluvial Fan - ORC: fan less recently active



Liquefaction Risk: Nil to Low



Liquefaction Risk: Probably Low



Liquefaction Risk: Possibly Moderate



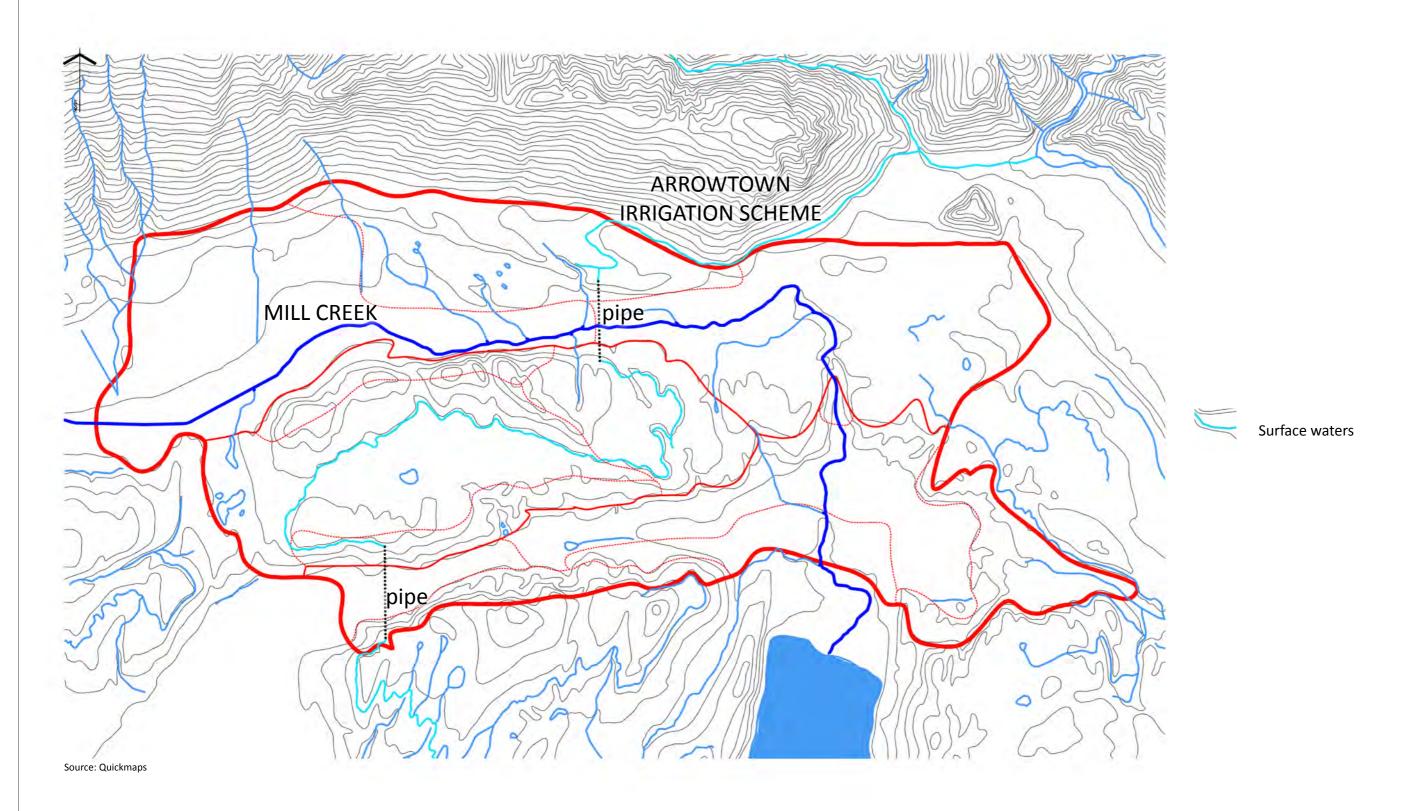
Liquefaction Risk: Susceptible



Flooding due to Rainfall

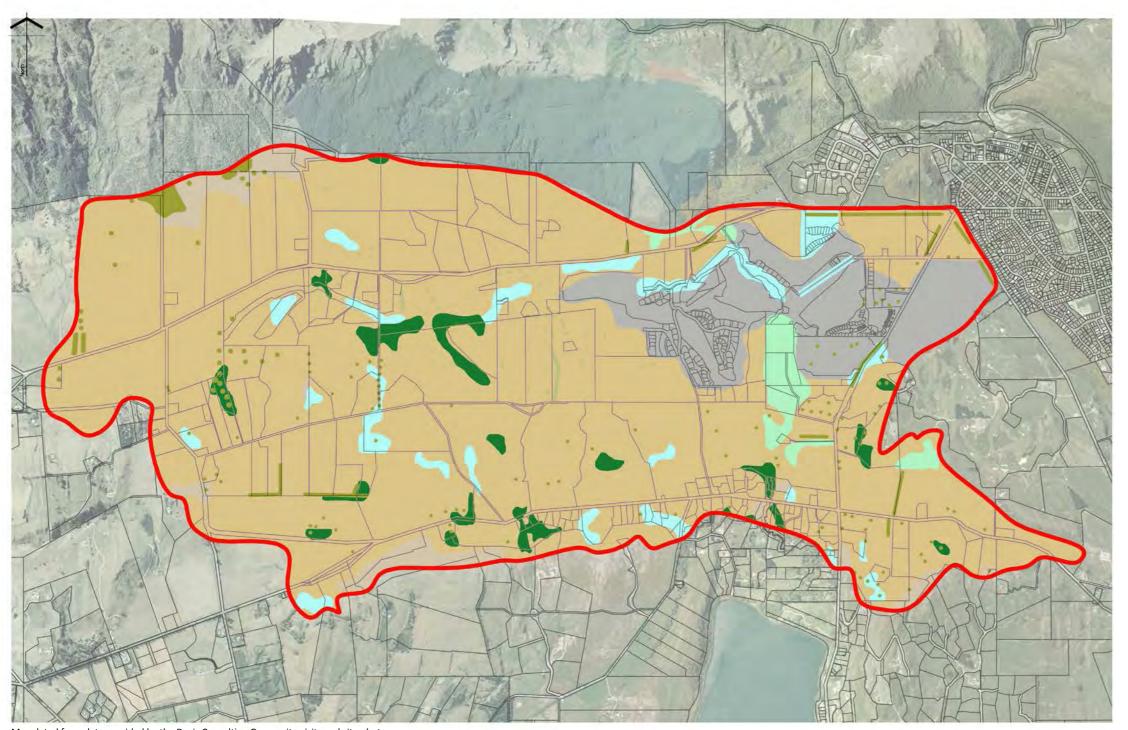












Ecology Key



Urban Parkland / Open Space



High Producing Exotic Grassland



Indigenous Forest



Manuka and/or Kanuka



Deciduous Hardwoods



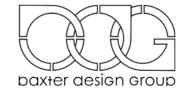
Low Producing Grasslands

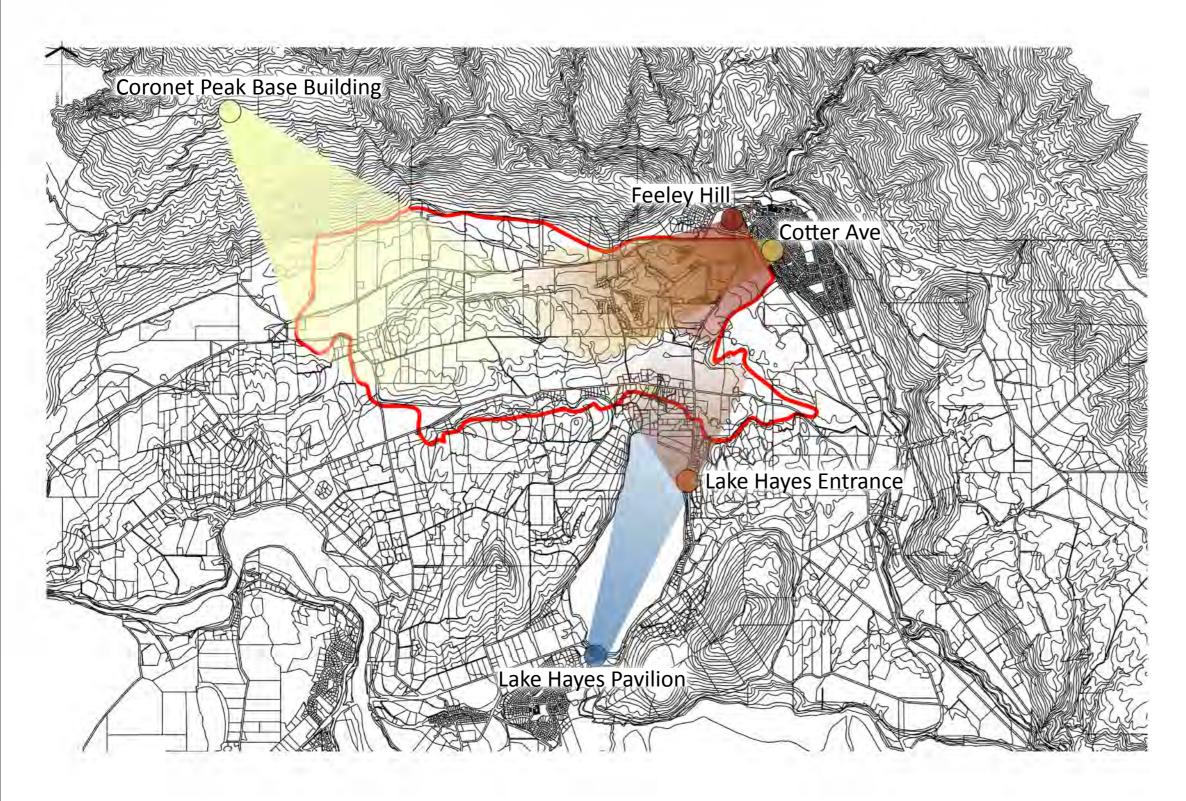


Exotic Forest

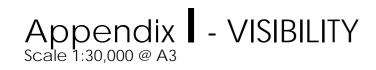
 $\label{thm:consulting} \textbf{Map dated from data provided by the Davis Consulting Group, site visits and site photos.}$



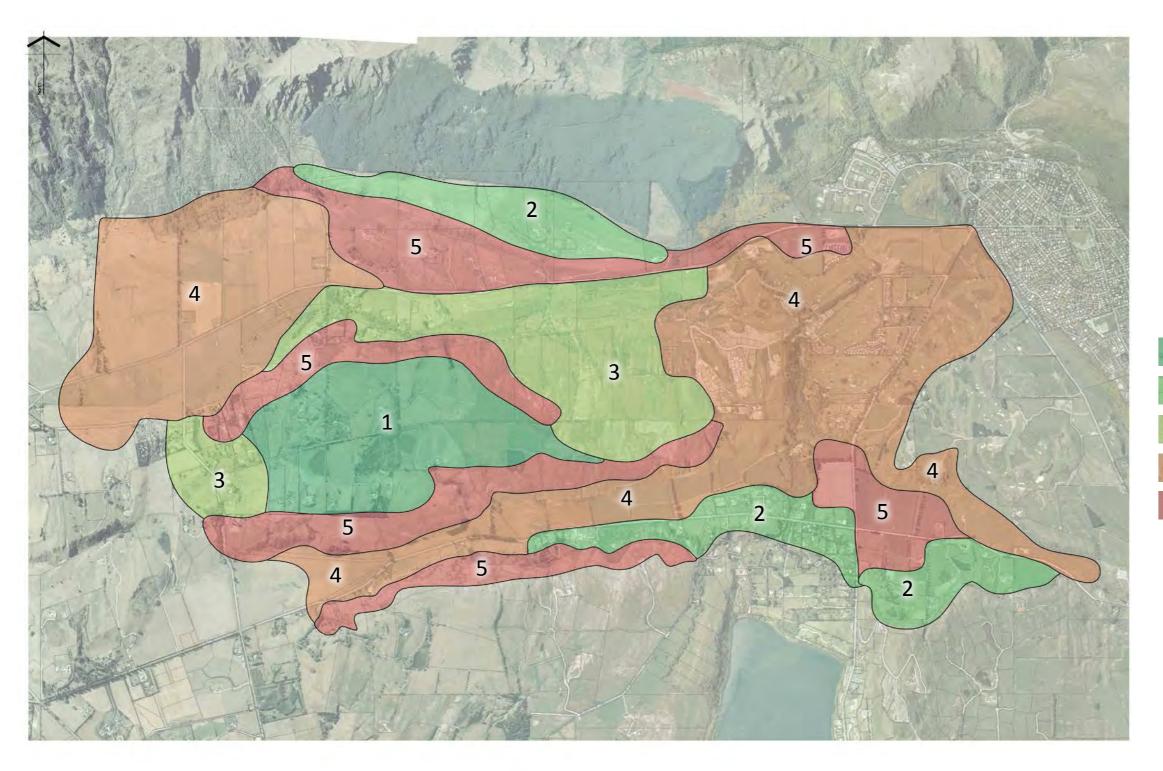




Note: Views are from selected key viewpoints outside the study area.







Ability To Absorb Change

High

Moderate to High

Moderate

Moderate to Low

Low



