



## AYRBURN RETIREMENT VILLAGE

EXPRESSION OF INTEREST: SPECIAL HOUSING AREA  
November 2015







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# Executive Summary

Ayrburn Retirement Village is a proposed retirement village development of up to 201 dwellings plus associated care facilities and community amenities on the 45.7 hectare site at 341-343 Arrowtown - Lake Hayes Road, near Arrowtown ("Ayrburn Retirement Village").

Ayrburn Retirement Village is being developed by Ayrburn Farm Developments Limited ("AFDL"), an experienced local developer with the resources and intention to commence development immediately.

There is a high level of unmet demand for seniors living alternatives in and around Queenstown. The characteristics of Ayrburn Retirement Village and the concept plan lends itself to a medium density retirement village that will partially alleviate this unmet demand at no cost to the QLDC or any impact on the feel or aesthetic appeal of the surrounding area. Ayrburn Retirement Village meets all of the requirements to be considered a Special Housing Area as per the Housing Accords and Special Housing Areas Act 2013 Implementation Guidelines Council Lead Policy. Specifically, the strength of the Ayrburn Retirement Village submission lies in large part that:

- **The site is one of the only flat parcels of fully serviced, sun-filled land in the Queenstown Basin where proposed retirement housing will be screened from the surrounding roads and residents.** The visual amenity of the existing streetscape will be retained in perpetuity by covenanting that the paddocks fronting Arrowtown – Lake Hayes Road will remain, other than as required to create a new tree-lined driveway into the site. Development will be limited to approximately 30% of the site and the proposed housing will not be seen from any road or residents due to the existing ridgelines that surround the building platforms, the proposal to cap new dwellings to a single storey and proposed planting to further screen the new buildings.
- **An appealing place to live:** Residents will benefit from a range of amenities, including a bowling green, recreational club, restaurant, café and additional common areas to be provided as part of the estate. Single level construction will maximize daylight for all residents and afford residents with commanding views of Coronet Peak, the Remarkables and surrounding open space. Residents will also enjoy direct access to the Queenstown Trail located that runs along the western boundary of the site and Mill Creek that runs through the property, benefits that are unique to the location of the estate.
- **The housing will be affordable:** The existing generally level building platforms and single level construction reduce construction costs and should allow appealing housing to be delivered to residents cost effectively. Lot sizes will range from c140-600sqm (but typically c200-400sqm), thereby offering a large range of lots sizes and entry points for residents. Ten new two-bedroom houses (c80sqm each) will be built on the site and provided rent free to employees of the retirement village. Any of these 10 houses that are surplus to the needs of employees will be made available to the Housing Trust for free community housing.
- **Adjacency to an existing urban area:** The site adjoins the Millbrook Resort and Waterfall Park Special Zones, both of which provide for urban development in a manner similar to the Jacks Point Resort Zone which is contained within an Urban Growth Boundary under the recently notified Proposed District Plan despite the fact that the zone contains 95% open space.
- **Respecting the feel of Arrowtown without extending its extend its boundary:** Although the site is located 2km south of the Arrowtown urban boundary, design guidelines will ensure all housing is in keeping with the classic feel of the original Arrowtown housing. The Ayrburn Retirement Village will cater for unmet seniors living demand in the Wakatipu Basin without the need to extend Arrowtown's existing urban boundary.
- **Adaptive reuse of historical buildings:** In addition to providing much needed seniors living accommodation, the development will facilitate both the restoration and extension of the existing listed farmhouse and other associated buildings and development of adjacent new buildings to create a central core of amenities that benefit residents and the wider community including a medical centre, medium and high care facilities, central offices and a restaurant / café. All such buildings will not exceed two storeys in height.
- **A sustainable development:** Ayrburn Retirement Village's vision is to establish a community that will deliver its residents a high standard of living while also minimising the development's environmental footprint. Several sustainability initiatives will minimise the development's energy consumption, through building energy efficient homes and installing solar panels on each home to generate onsite solar energy.
- **No capital cost to QLDC:** The site is easily serviced given its topography and the fact that all major services are located nearby given the immediate presence of Millbrook Resort, Arrowtown and the residential premises surrounding the site. Minor pump station upgrades and other connection required in conjunction with the development will be funded by AFDL with no cost to be borne by QLDC. All other forms of existing infrastructure have sufficient capacity to service Ayrburn Retirement Village.

The project team consists of local consultants who have experience with residential developments in the area (Bridesdale Farm, Jacks Point, Lake Hayes Estate, Shotover Country and Northlake) and as such, have a deep understanding of the area and its attributes. Refer to Appendix 1 for full details of the project team.

Please note that the attached consultants reports relate to a 150 lot residential scheme as contemplated by the Ayrburn Farm SHA EOI that was submitted to QLDC for consideration in February 2015. Data generally shows new retirement villages at the time of establishment have an average 1.3 residents per unit, dropping to closer to 1.1 over time. This occupancy rate is significantly lower than the 3 occupants per unit assumed by QLDC for residential subdivisions. As a result, the infrastructure and servicing loads for the Ayrburn Retirement Village are expected to fall well below the levels required under the previous Ayrburn Farm proposal as outlined in the attached consultants reports.

AFDL looks forward to working collaboratively with QLDC to ensure the delivery of Ayrburn Retirement Village to the Queenstown public in a timely manner. We welcome the opportunity of meeting with QLDC to discuss this Expression of Interest and to provide further details on Ayrburn Retirement Village.

# Ayrburn Retirement Village - Concept Plan





# Ayrburn Retirement Village – Land Uses





# Ayrburn Retirement Village – Housing Areas



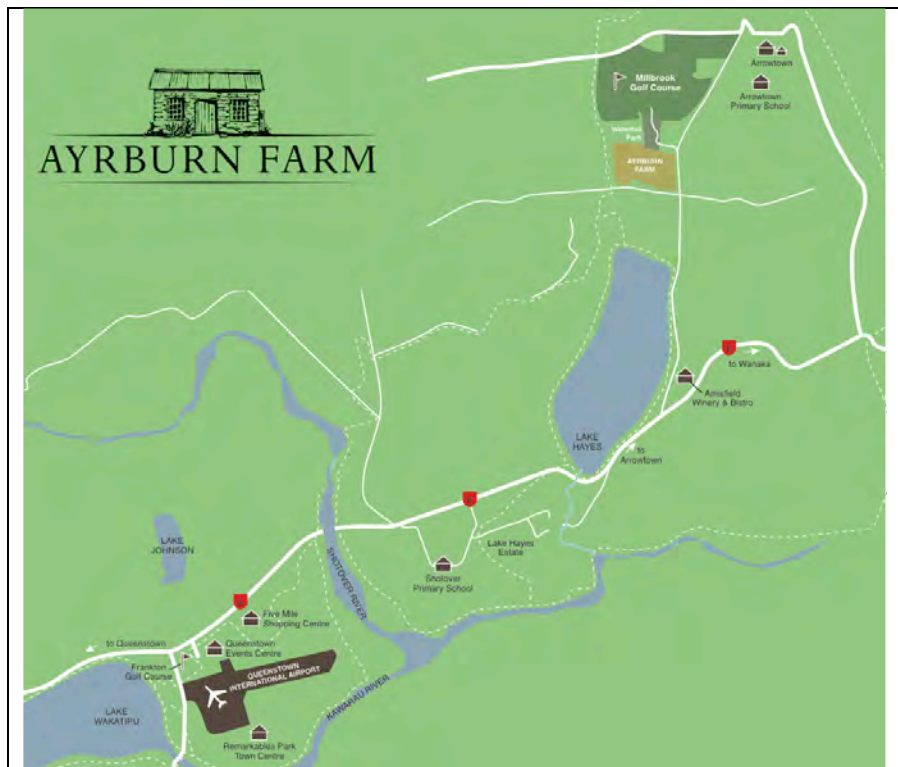
# Special Housing Area Criteria

## 1. Location

Ayrburn Retirement Village meets the Lead Policy requirement of being in or adjacent to an existing urban area.

Whilst the site is located 2km south of central Arrowtown and 18km north east of Queenstown's CBD, the site adjoins the Millbrook Resort and Waterfall Park Special Zones, both of which provide for urban development in a manner similar to the Jacks Point Resort Zone which is contained within an Urban Growth Boundary under the recently notified Proposed District Plan despite the fact that the zone contains 95% open space. Existing residential development also adjoins the southern boundary of the site.

### Location Map



Arrowtown – Lake Hayes Road, a major access route from Arrowtown to Frankton and Queenstown, runs along the eastern boundary of the site. Along the western boundary of the site runs an unformed road, which is used as a walking a cycling track as part of the Wakatipu Trail that connects Arrowtown to Lake Hayes. Mill Creek, which is home to spawning brown trout, flows generally from north to south through the middle of the property.

In the past 20 years the availability of flat land at Frankton has enabled the expansion of the airport, as well as the growth of retail, residential and industrial activities, due to its accessible location, so that Queenstown and Frankton are now one urban area. More recently there has been the establishment of remote and reasonably well hidden residential suburbs; including Arthurs Point, Quail Rise, Jacks Point, Henley Downs, Lake Hayes Estate and most recently Shotover Country.

The development of these 'suburbs' is the result of the limited availability of flat land near the existing urban centres, coupled with the need to minimise visual impacts of development from public places. In most cases these suburbs have been established near arterial road corridors, on mostly flat land where service connections to Council's key infrastructure networks can be efficiently made.

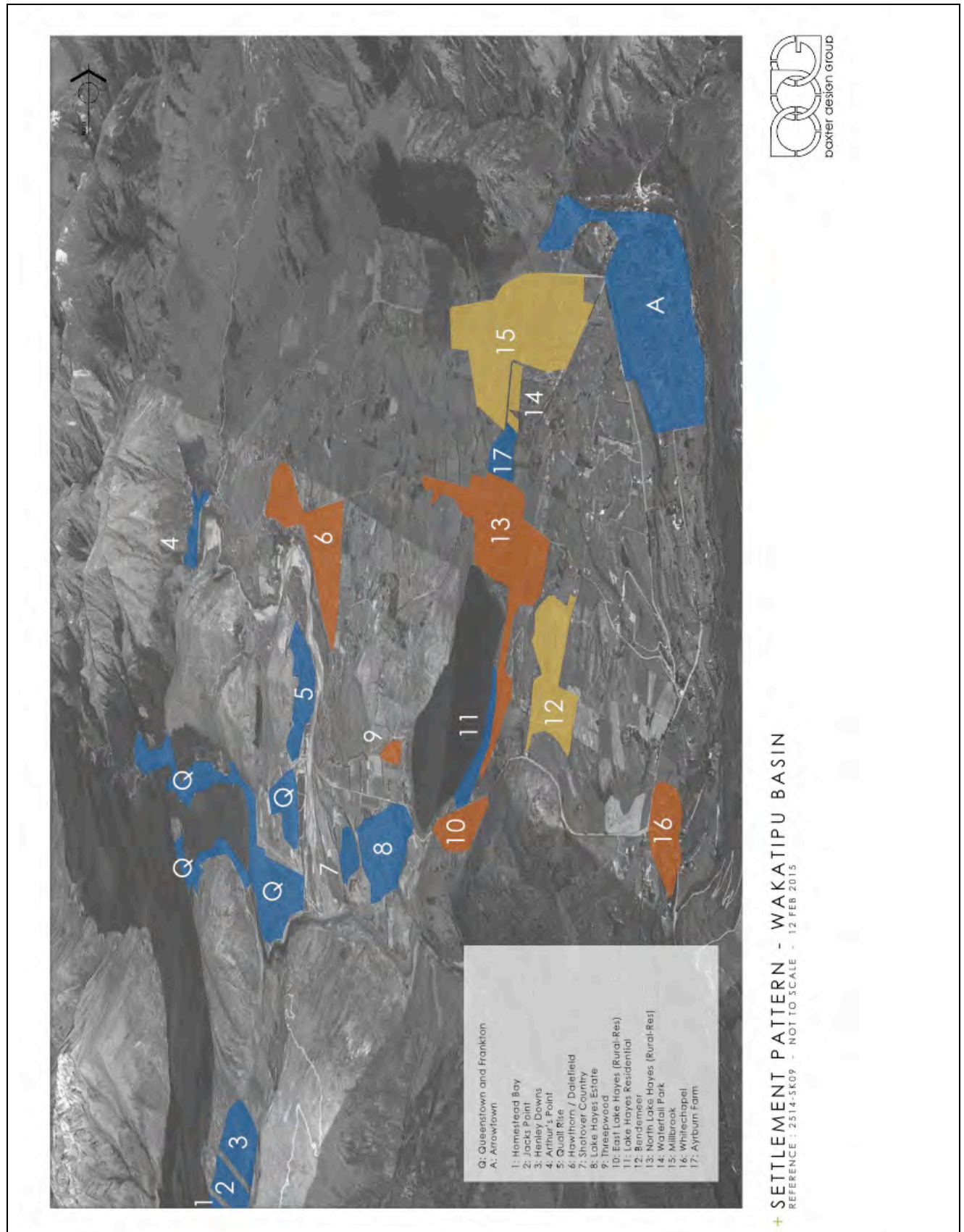
In recent years there has been greater integration within the Wakatipu Basin as outlying urban areas have established almost entirely as dormitory suburbs. This has resulted in greater and more extensive movement of people between homes, shopping localities, service areas and workplaces. This increased movement has been coupled with a growth of the off-road trail network; for recreation and commuting purposes.



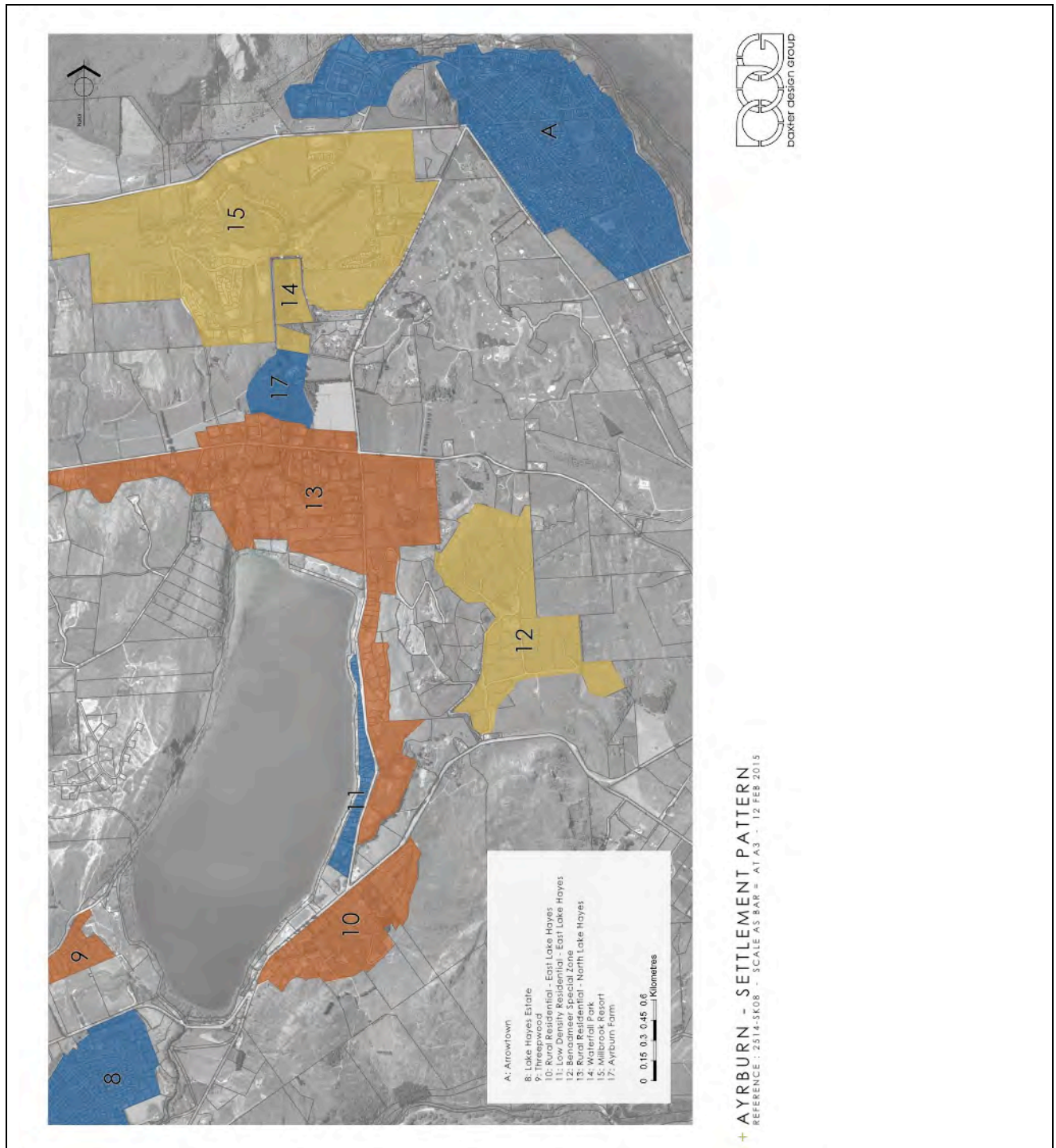
This wider settlement pattern takes into account the visual effects of development and the ability of a particular site to visually absorb those effects. This has been typically achieved through physical separation of suburban areas from roads, while also utilising the particular characteristics that a site might include such as changes in topography that screen or hide development, together with existing and proposed landscaping.

As shown in the following diagrams, Ayrburn Retirement Village will continue the trend of additional residential pockets that have been established over the last 20 years between Queenstown and Arrowtown.

### Settlement Patterns from Queenstown to Arrowtown



## Settlement Patterns around Ayrburn Retirement Village



As shown in the above settlement pattern, despite the rural zoning of Ayrburn Retirement Village, the site is adjacent to Millbrook Resort which is an urban zone and there is significant existing residential accommodation in direct proximity to the site as follows:

- **Millbrook Golf Resort:** Located directly north of the site, the site's resort mixed zoning provides for 450 residential units, visitor accommodation and resort services clustered within particular development nodes, interspersed by several international standard golf courses and areas of open space.
- **Arrowtown:** Arrowtown is located <2km north of the site and has c1,300 lots. We understand that it is the strong preference of both residents and QLDC is that the existing Arrowtown urban boundary is not extended. Due to its inherent characteristics, Ayrburn Retirement Village represents a viable site to provide additional housing in the Arrowtown area without extending the existing boundary or impacting on the visual amenity from Arrowtown – Lake Hayes Road. AFDL is ready to submit a full resource consent application immediately should the site be designated a Special Housing Area.



- **Waterfall Park:** Waterfall Park is a 14.7 hectare site adjoining the northern boundary of Ayrburn Retirement Village. Approximately 12 hectares of the site is zoned “Resort Zone” which permits residential, tourist and broad commercial village accommodation set amongst parkland open space while the remaining 2.7ha is zoned Rural suitable for a rural residential dwelling. The site was zoned for 100 lots in 1984. Waterfall Park site is uneven and covered with dense vegetation that limits solar access and has made it uneconomic to develop over the last 30 years. Waterfall Park provides a strong precedent for the Ayrburn Retirement Village project. Ayrburn Retirement Village has none of the delivery obstacles associated with Waterfall Park due to the existence of a series of predominantly flat, cleared building platforms that can be subdivided into residential lots relatively simply,
- **Residential development to the south:** The land in between the farm and Speargrass Flat road is contained in the Rural Residential Zone (North Lake Hayes), and contains a number of dwellings (15 dwellings on 18 separate titles) on typically 0.5 hectare blocks of land. This land has been subdivided to near its zoned capacity. Further to the south of Speargrass Flat Road, the same Rural Residential zoning continues as far as Lake Hayes (approximately a further 55 dwellings). A pattern of development continues along the eastern side of Lake Hayes (on both sides of the Arrowtown-Lake Hayes Road) with a mixture of Low Density Residential, Rural-Residential and Rural Lifestyle zoning.

Retail facilities are located in Arrowtown and Frankton and are accessible by public transport and by car.

### Existing Improvements

Ayrburn Retirement Village is a working farm of 45.7 hectares. Existing improvements include the original farmer’s cottage built in 1862, which now is used as a shed at the rear of the now vacant main homestead, which was built at the beginning of the 20<sup>th</sup> century and which comprises six bedrooms, one bathroom, a large formal living area and nine fireplaces set within a magnificent mature garden and orchard. These buildings have historic significance and will be retained and adapted for various uses including central offices, a medical centre, medium and high care facilities, a restaurant and a recreation centre.

### *Streetscape from Arrowtown – Lake Hayes road towards the Homestead*

There will be a c300m setback from the street to the first new houses, which will be sheltered by an existing circa 8 metre ridegline and extensive vegetation. Minimal housing will be visible to passing traffic. Existing views of farmland will be retained by a covenant in perpetuity on this section of land.





***View of the existing tree-lined driveway to the Homestead***

This is the primary access point to the site. A new access road will be built further along Arrowtown – Lake Hayes Road for the new housing lots.



***The current farmhouse as viewed from the entrance driveway***



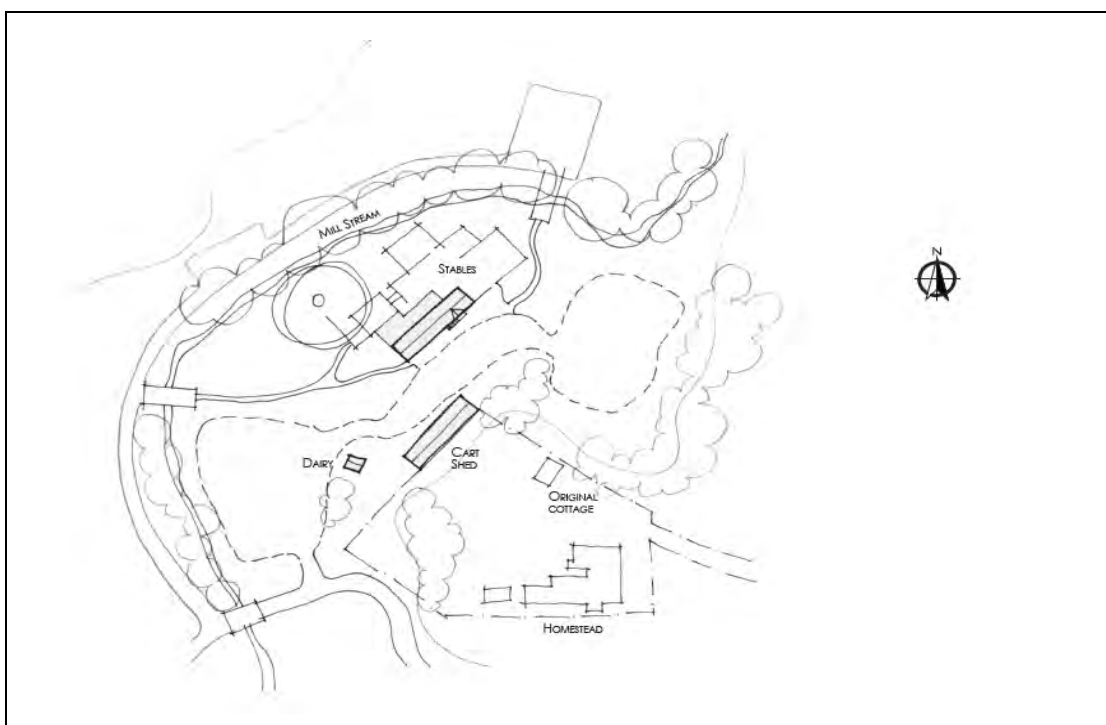


*The original farmer's cottage from circa 1862*



Immediately to the rear of these buildings sit three further buildings of heritage significance: (i) an extensive two-storey stone Woolshed/Stable; (ii) the cart shed; and (iv) the old dairy. All of these buildings have continued in various forms of use since their construction over 100 years ago. Adjacent to the dairy also sits a three-bedroom old-style farm cottage currently used as the caretaker's accommodation, which has no historical significance and will be removed in conjunction with the proposed project and relocated to the western corner of the site.

*Site plan of existing historic buildings*



*The Woolshed/Stable*



*The Woolshed/stable and the Cart Shed*



With the exception of these improvements, the remainder of the site comprises farming land, with a series of three generally level building platforms (shown as areas A, B & C on the Concept Plan) that will be converted into the new housing lots and community amenities.



**View from centre of Area C towards the north west**



**View from centre of Housing Area C towards the north**





*View from centre of Housing Area C towards the south west*



*View from centre of Housing Area C towards the south east*





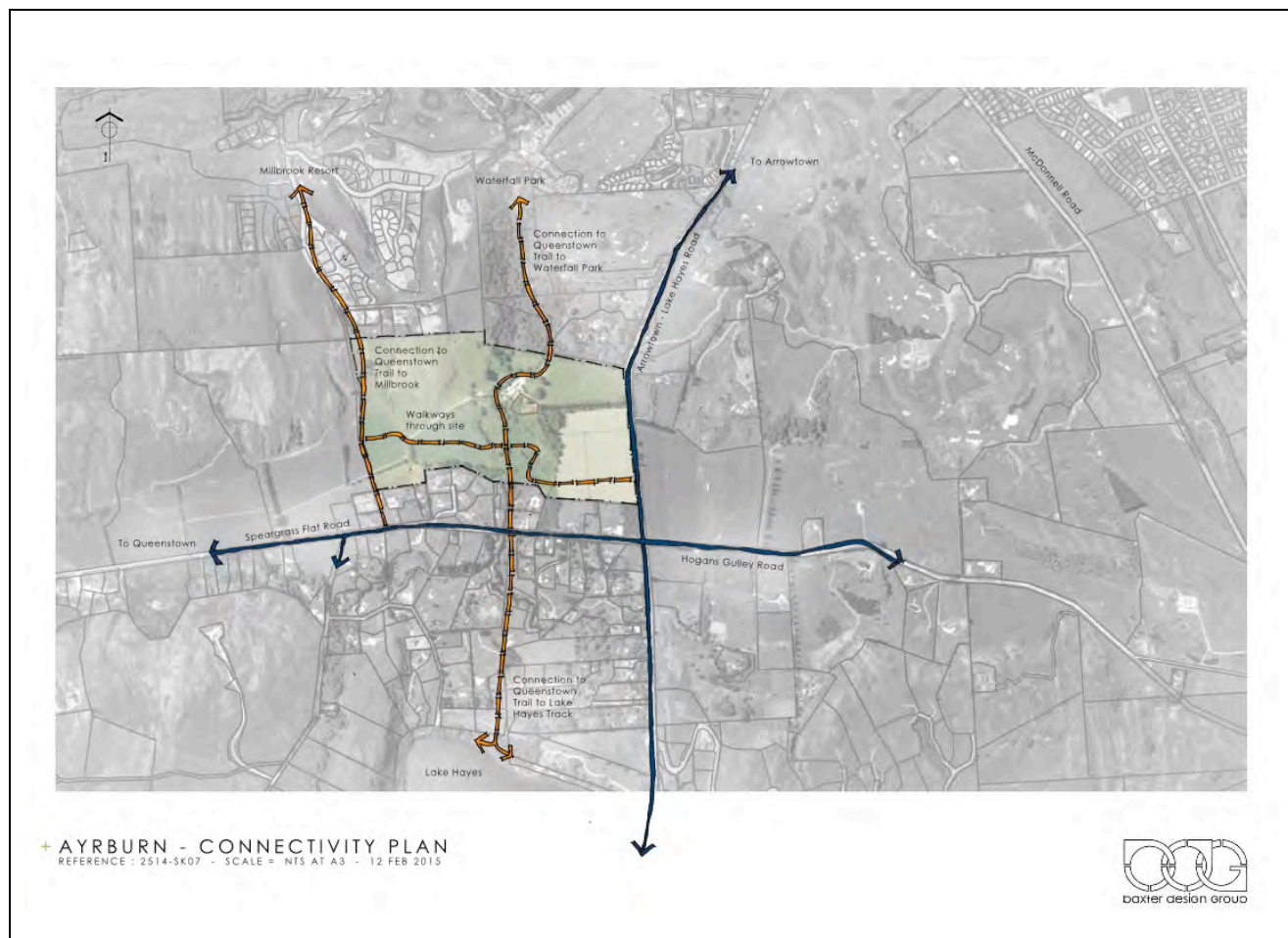
*View from eastern end of Housing Area B towards the south west*



#### Legal Description

Address	343 Arrowtown – Lake Hayes Road, Arrowtown	341 Arrowtown – Lake Hayes Road, Arrowtown
Legal Description	Part Lot 3 DP 5737	Lot 1 DP 18109
Identifier	666857	OT9A/1001
Area (more or less)	45.0964 hectares	6,495 square metres

## Context Plan



### 1. Adequate Infrastructure

Key infrastructure is currently at the boundary to the land. Existing infrastructure appears to have sufficient additional capacity to accommodate the likely cumulative demand of the proposed project. The only exception to this relates to waste water capacity where the local pump station will need to be upgraded irrespective of whether or not Ayrburn is redeveloped. The land appears to be relatively easily serviced by existing QLDC infrastructure, with any upgrades to wastewater expected to be covered by standard headworks charges or direct payment by AFDL such that there is no additional capital contribution required from QLDC.

- a) **Water Supply:** Tonkin & Taylor have modelled water supply considerations. Water supply is sourced from the Lake Hayes water intake structure located at the northern end of Lake Hayes (near Rutherford Road). Tonkin & Taylor have assumed that Lake Hayes Estate will be supplied by the Shotover Country water supply bores and therefore conclude that adequate flows and pressures are available to service the development from the Lake Hayes Water Scheme. AFDL will need to lay a 150mm internal diameter main for approximately 300m as an extension to the network along Arrowtown-Lake Hayes Road. Tonkin & Taylor have assessed that there is sufficient pressure from the QLDC system for domestic and fire fighting supply. No additional capital is required to be expended by QLDC in regard to supplying water to Ayrburn Retirement Village, as the only upgrades required are the extension to the water main, the cost of which will be met by AFDL directly or via headworks contributions.
- b) **Wastewater:** All of the site can drain with gravity to the existing QLDC reticulation in Speargrass Flat Road, subject to either QLDC consent to an easement to lay the pipe through the esplanade reserve adjoining Mill Creek or alternatively, AFDL installing a pump station on the site. The Lake Hayes pump station has insufficient capacity for existing development in the catchment and requires upgrading, before considering the requirements of the Ayrburn Retirement Village scheme. As outlined in the attached reports from Holmes and Rationale, the upgrades to the Lake Hayes Pump Station 1 (PS1) that are required in conjunction with this proposed development are therefore incremental to the works already required to be undertaken by Council to PS1. Those portion of the upgrade works required to service the development could be covered by headworks contributions or funded directly by AFDL to ensure that no additional capital is required to be



expended by QLDC with regard to wastewater infrastructure at Ayrburn Retirement Village. Other works to be undertaken include upgrading the rising main from PS1 and portions of the network between PS1 and Lake Hayes Pump Station 2 (PS2) and installing an emergency storage or emergency standby generator, both of which will come at no capital cost to QLDC as the costs will be met via development contributions or funded directly by AFDL.

- a) **Transport:** Traffic modelling confirms the existing road network has sufficient capacity to cater for the additional traffic created by Ayrburn Retirement Village. Appropriate design of the new driveway to the site will ensure safe entry and exit options from all angles. No additional capital is required to be expended by QLDC with regard to transport infrastructure at Ayrburn Retirement Village.
- b) **Stormwater:** A new stormwater disposal system (either piped and/or infiltration) will be constructed to cater for primary and secondary flows. Treatment solutions will be adopted to meet QLDC requirements. Stormwater would ultimately discharge to Mill Creek and hence an application will need to be made to Otago Regional Council to determine whether resource consent is required. It is likely that any discharges to Mill Creek will require both treatment to remove potential contaminants and attenuation / detention to limit outflows to pre-development flows. This will likely be provided within a constructed wetland or pond system. No additional capital is required to be expended by QLDC with regard to stormwater infrastructure at Ayrburn Retirement Village.

The basis for the information above is the Ayrburn Farm Infrastructure Assessment prepared by Holmes Consulting, the referred reports from Tonkin Taylor, Rationale and Clarke Fortune & McDonald and the Ayrburn Farm Traffic Assessment prepared by Traffic Design Group, all of which are attached to this report.

We have also commissioned geotechnical and hydrology reports from GeoSolve and Fluent Solutions respectively which are attached to this report. These reports indicate the following:

- **Geotechnical:** Testing indicated that there is no identified risk of liquefaction on the land under SLS loading and minor liquefaction noted under ULS loading in the northern part of the site, which could be addressed during construction via standard cost effective engineering solutions during the civils stage. A small diversion channel is recommended to be built at the foot of the hill at the northern end of Areas A and C to intercept any upslope runoff and minimize any potential risk of alluvial fanning. Drill holes suggest housing can be delivered in Areas A, B and C may be overcome by implementing appropriate standard engineering solutions.
- **Hydrology:** Subject to ORC consent, works will be undertaken to certain sections of the Mill Creek channel to create a 15-20m wide floodway and to close off the existing secondary overflow across Area B. On completion of these works, there is no expected flooding to take place based on 1 in 100 year flood projections. However, as water flow during a 1 in 100 year event is expected to be rapid due to the fall from the northern end of the site, the channel is expected to require rock protection and planting treatments to manage erosion, which again will be subject to ORC consent.

As noted earlier in this submission, the above infrastructure comments are largely drawn from consultants reports that relate to a 150 lot residential scheme as contemplated by the Ayrburn Farm SHA EOI that was submitted to QLDC for consideration in February 2015. Data generally shows new retirement villages at the time of establishment have an average 1.3 residents per unit, dropping to closer to 1.1 over time. This occupancy rate is significantly lower than the 3 occupants per unit assumed by QLDC for residential subdivisions (and the original Ayrburn Farm SHA EOI). As a result, the infrastructure and servicing loads for the Ayrburn Retirement Village are expected to fall well below the levels required under the previous Ayrburn Farm proposal as outlined in the attached consultants reports.

## 2. Demand for a Qualifying Development

Classification of Ayrburn Retirement Village as a Special Housing Area will help QLDC achieve the aim and target of the Queenstown Lakes District Housing Accord ("QLDHA"), specifically:

***"QLDHA Aim: Increase the supply of housing in Queenstown Lakes with a particular focus on Wakatipu Basin."***

Ayrburn Retirement Village is a medium density retirement village development of up to 201 new dwellings comprising a mix of house types (including more affordable housing options) to be released to the Queenstown market at varying prices. Additional beds will be offered in a medium care and high care facilities.

AFDL is committed to delivering affordable houses to prospective residents. At least 70% of the lots within the development will be sized under 400m<sup>2</sup> range, which are suitable for a comfortable 3 to 4 bedroom single storey freestanding home, or a 2 bedroom home with additional living space.

Dravitski Brown Architects have designed two Ayrburn Retirement Village Homes. In total Dravitski Brown will design 9 home types from which house builders and or end purchasers must select their desired housing type to be constructed on a particular lot. These Ayrburn Retirement Village Home plans will be made available to the purchasers of the Affordable Home Lots free of charge. This approach to residential development will ensure the delivery of a wide selection of well-designed, affordable homes to the Queenstown public.

Refer to section 4. Demand for Residential Housing for full details of the Ayrburn Retirement Village Homes.

***“QLDHA Target: The agreed medium-term target for the Wakatipu Basin is 350 sections and dwellings consented in year 1. Note: Consented sections is measured at the point of resource consent and consented dwellings is measured at the point of building consent”***

Classification of Ayrburn Retirement Village as a Special Housing Area will achieve 58% of the QLDHA’s year 1 target. AFDL is in a position to immediately lodge a resource consent application upon confirmation that Ayrburn Retirement Village has been classified as a Special Housing Area as it is our intention to commence development of Ayrburn Retirement Village at the earliest opportunity.

### 3. Demand for Residential Housing

There is a high level of unmet demand for seniors living alternatives in and around Queenstown.

Residents of Ayrburn Retirement Village will acquire a lot and then select and build their chosen house from a range of 9 house types that meet the Ayrburn Retirement Village Design Guidelines and are summarised as follows:

	Storeys	Bedrooms	Total Floor Area	House Floor Area	Garage / Carport Floor Area	Outdoor Floor Area
TYPE A: (refer Appendix 4)	1	3	152m <sup>2</sup>	109m <sup>2</sup>	27m <sup>2</sup>	16m <sup>2</sup>
TYPE B: (refer Appendix 4)	1	3	140m <sup>2</sup>	100m <sup>2</sup>	24m <sup>2</sup>	16m <sup>2</sup>
TYPE C: (to be finalised)	1	2	110m <sup>2</sup>	86m <sup>2</sup>	16m <sup>2</sup>	8m <sup>2</sup>
TYPE D: (to be finalised)	1	2	104m <sup>2</sup>	80m <sup>2</sup>	16m <sup>2</sup>	8m <sup>2</sup>
TYPE E: (to be finalised)	1	3	136m <sup>2</sup>	100m <sup>2</sup>	20m <sup>2</sup>	16m <sup>2</sup>
TYPE F: (to be finalised)	1	3	146m <sup>2</sup>	106m <sup>2</sup>	24m <sup>2</sup>	16m <sup>2</sup>
TYPE G: (to be finalised)	1	3	156m <sup>2</sup>	116m <sup>2</sup>	24m <sup>2</sup>	16m <sup>2</sup>
TYPE H: (to be finalised)	1	4	180m <sup>2</sup>	140m <sup>2</sup>	24m <sup>2</sup>	16m <sup>2</sup>
TYPE I: (to be finalised)	1	4	190m <sup>2</sup>	150m <sup>2</sup>	24m <sup>2</sup>	16m <sup>2</sup>

AFDL will lever its existing relationships with several prominent Queenstown homebuilders through the development stages of the Ayrburn Retirement Village Homes to ensure that a high quality home, at an affordable price, can be delivered to the Queenstown public. It is AFDL’s intention to appoint two preferred homebuilders to construct the Ayrburn Retirement Village Homes. This will deliver an additional cost savings through economics of scale while also ensuring the overall quality of the development.

Refer to Appendix 4: Ayrburn Retirement Village Concepts and Appendix 5: Ayrburn Retirement Village Home Types for the typical street frontage for the development, including both the Type A Home and Type B Home.

### 4. Affordability

- The existing generally level building platforms and single level construction reduce construction costs and should allow appealing housing to be delivered to residents cost effectively. Lot sizes will range from 140-600sqm (but typically 200-400sqm), thereby offering a large range of lots sizes and entry points for residents.



- b) At least 70% of the lots at Ayrburn Retirement Village will be less than 400m<sup>2</sup> and hence should well exceed the requirement that 30% of the lots range from 250-400sqm as stipulated by QLDC.
- c) There will be 9 dwelling types at Ayrburn Retirement Village, which provides purchasers with an appropriate range of options. As per the two housing types outlined in this report, the most common house configuration will be for a traditional 3 bedroom with 1 living area. However, this configuration can easily be changed to 2 bedrooms with 2 living areas and we intend to include at least two by two bedroom house options within the suite of 9 proposed house types, to ensure that at least 20% of dwellings comprising of two bedroom dwellings can be delivered if required.
- d) The site already contains a series of generally level building platforms, which are already screened from surrounding housing and passing traffic by existing ridges and hollows. This reduces the costs to deliver the lots. Similarly, single level construction reduces the delivery cost of the dwellings. These factors combine to reduce the overall price point for which the homes can be offered to the end purchaser and thereby will increase the affordability of the stock.
- e) Ayrburn Retirement Village targets Queenstown's specific housing need.
- f) Each home constructed at Ayrburn Retirement Village is required to meet the Ayrburn Retirement Village Design Guidelines. The Design Guidelines are in place to protect the purchaser's investment by ensuring that each home at Ayrburn Retirement Village is designed and constructed with the same vision and integrity, while also acting to protect the natural semi-rural character. Refer to Appendix 4: Ayrburn Retirement Village Concepts and Appendix 5: Ayrburn Retirement Village Home Types for the typical street frontage for the development, including both the Type A Home and Type B Home.
- g) Ten new two-bedroom houses (80sqm each) will be built on the site and leased rent free to employees of the retirement village. Any houses surplus to the needs of employees will be made available to the Housing Trust for free community housing.
- h) Other relevant matters: AFDL views Ayrburn Retirement Village as a community of the future and the following sustainability initiatives are being incorporated into the development.
  - i. Solar access – Single storey housing will maximise solar access.
  - ii. Solar Panels - Each roof will have solar panels of at least 2m<sup>2</sup> - This specifically designed roofing panel will be used to generate electric power. Power is generated through the use of Photo-Voltaic Laminate solar panel technology. An ideal way to reduce electricity costs by taking advantage of nature's most renewable source of energy – the sun.
  - iii. Hydro generator – Mill Creek's naturally falling waters provides the opportunity to install a small hydro generator to generate electricity. Subject to approval from Otago Regional Council, water will be diverted from the Creek into a small hydro generator located upstream of the housing lots to minimise visibility and then back into the Creek. This should serve to lower overall electricity costs for residents.
  - iv. Insulation – Each home is designed with a high quality of insulation and glazing as well as rib-raft and polyblock floor slab system that ensures maximum heat retention and energy efficiency.

## 5. Predominantly Residential

Ayrburn Retirement Village's primary purpose is to supply residential dwellings to senior members of the Queenstown public and employees of the retirement village. Within the development the following additional facilities/concepts will add to the experience of the Ayrburn Retirement Village residents and the wider Queenstown community.

As noted above, there are a series of significant heritage buildings that date back to the late 1800s and early 1900s as Ayrburn Retirement Village's operations grow to support the growing Arrowtown population during the gold rush years. All of these heritage buildings will be retained, restored and or extended to ensure their future and to provide integral amenities for the retirement village. Importantly, the buildings will be used in such a way to promote community interaction with these historic buildings and to increase amenities for both residents and visitors alike.

The key proposals are outlined as follows:

### a) The Homestead and original farmer's cottage

The Homestead and original farmer's cottage would be converted into the offices for the retirement villages and a medical centre

**b) The Woolshed / Stable**

The proposals envisage a part commercial, part public, part community use for the Woolshed / Stable with removal of the 20<sup>th</sup> century Woolshed and minimal changes to the original stone building. No structural alterations are proposed to the Stable, other than earthquake strengthening. The building will be transformed into a café and garden centre that backs onto Mill Creek and its picturesque willow trees.

**c) The Cart Shed**

The undulations in the Cart Shed roof reduce its ability for alternate use. The roof will be earthquake strengthened to prevent further deterioration.

**d) Playground**

A children's playground and bench seating will be located behind the converted Woolshed, next to the cafe creating a family friendly area for residents and their friends and family to enjoy.

**e) Open Space**

Ayrburn Retirement Village will provide significant open space, including a central village green, as either public recreational reserve or private open space that all residents as well as the wider Queenstown community will be able to access and enjoy.

Within Ayrburn Retirement Village all streets and right of ways are connected to an internal walkway plan.

**f) Mill Creek and Wakatipu Trail**

Residents will also benefit from the amenity provided by Mill Creek that flows through the middle of the site, together with direct access to the Wakatipu Trail walking and cycling track that runs along the western boundary of the site.

## 6. Building Height

All new dwellings at Ayrburn Retirement Village will be single storey homes and the maximum building height allowable under the Ayrburn Retirement Village Design Guidelines will be 5.5 metres. This height restriction falls below the QLDC District Plan zoning rules for other housing estates. The height limit has also been proposed to maximise solar access for each of the properties, improve affordability of the properties and to minimise visibility from Arrowtown – Lake Hayes Road.

Upon conversion and extension, the existing heritage buildings and adjacent new buildings will be 1-2 storeys high.

## 7. Minimum Number of Dwellings

Ayrburn Retirement Village is a medium density retirement village development of up to 201 new dwellings on 191 new lots, which exceeds the minimum lot threshold for consideration as a Special Housing Area.

## 8. Residential Development Quality

Ayrburn Retirement Village provides for a comprehensively designed community, with a strong heart to the development and good connectivity, both vehicular and trail, to all surrounding residential communities and reserve areas.

The residential aspect of the development would be based around a series of three neighbourhoods, located towards the central part of the farm, while preserving the rural pastoral character of the edges:

- The residential areas will occur in three clusters, with the majority of lots sized between 200-400m<sup>2</sup>.
- The northern neighbourhood (Area A) is located in the vicinity of the Stone Farm buildings; and comprises approximately 30 sections that are positioned on the northern side of Mill Creek.
- The second residential neighbourhood (Area B) is located in the vicinity of the true left bank of Mill Creek, to the south of Ayrburn Homestead. This area will comprise approximately 120 sections, and will be screened from the Arrowtown-Lake Hayes Road through their location in a lower terrace combined with the effect of existing trees and additional screening as required.



- The third neighbourhood (Area C) is the land to the west of Mill Creek, which would provide for up to 90 sections. This land is contained by the steep terrace face to the north, the ephemeral watercourse to the west and south and by Mill Creek to the east.
- The 10 houses to be provided to employees of the retirement village will be located at the western end of the site to the south of Area C.



Fundamental to the heart of Ayrburn Retirement Village is the retention and re-use of the historic buildings Ayrburn Retirement Village, which will be used as follows:

- Woolshed / Stables as a café and garden centre, with a connected playground towards the northern end of the development.

- The existing established willow trees along Mill Creek behind the Woolshed would provide an attractive back drop for residents and visitors.
- These buildings and amenities provide an ongoing link to the historic use of the land and a sense of place.

Furthermore, there will be an additional central village green as an additional open space provision for residents to maximise resident amenity.

#### **a) Integrating into the Neighbourhood**

##### **i. Connections**

Connectivity can be described at 2 levels; the connections to the wider surrounding trails and road networks, and the internal connections. Within the proposed development all streets and right of ways are connected to an internal walkway plan, with the intention of always giving pedestrian options aside from foot paths. All lots have access to the primary green spaces, and from there to Mill Creek, with that walkway providing a high quality walk along the creek edge than is currently unavailable.

Ayrburn Retirement Village will be accessible by vehicle directly from Lake Hayes – Arrowtown Road Estate via a new driveway that will be built to the south of the existing tree-lined driveway to the Homestead. Lake Hayes – Arrowtown Road runs directly to Arrowtown to the north and the south joins Highway 6, which is the major connection to Frankton and Queenstown. The new driveway will not impact on the visual amenity of the road generally as it will seek to replicate the style of the existing driveway to the homestead.

Construction of this new driveway will allow the existing driveway to be dedicated to the homestead and respect the character afforded to that home via its current grand entrance.

##### **ii. Facilities and Services**

Ayrburn Retirement Village is located within close proximity of the following amenities.

Retail	<ul style="list-style-type: none"> <li>• Suburban Retail Shops at Arrowtown</li> <li>• Remarkables Park Town Centre, Frankton</li> <li>• Five Mile Retail and Entertainment Precinct, Frankton (opening in 2015)</li> </ul>
Transport	<ul style="list-style-type: none"> <li>• Gibbston Highway (3km) is the main arterial route servicing Queenstown</li> <li>• Bus services currently run along Arrowtown - Lake Hayes Road from Frankton to Arrowtown (see below)</li> <li>• Queenstown Airport (13km)</li> </ul>
Community Facilities	<ul style="list-style-type: none"> <li>• The bowling green provides a central recreational point for residents.</li> <li>• The proposed conversion of woolshed / stable as a café and garden centre will offer another meeting point for residents and visitors.</li> <li>• The internal walking trails provide easy access to the connecting trails that border the site.</li> </ul>

Access to education facilities and current capacity is not relevant to the proposal due to the proposed use of the site as a retirement village.

##### **iii. Public Transport**

Daily bus services currently run from Frankton to Arrowtown along Arrowtown - Lake Hayes Road. The nearest bus stops are 3km Ayrburn Retirement Village at Arrowtown to the north and at the junction of Gibbston Highway and Arrowtown – Lake Hayes Road to the south. AFDL propose that subject to further investigation and discussion with all relevant parties, it may be appropriate that another bus stop be located on Lake Hayes – Arrowtown Road either directly outside of the site or elsewhere to support the additional housing.

##### **iv. Meeting Local Housing Requirements**

As detailed above, the location and characteristics of Ayrburn Retirement Village lends itself to a medium density development that will help satisfy unmet demand for seniors living options in



Queenstown. The development is spread over three generally level platforms positioned for optimum light and views over the ridgeline. The majority of the lots within the development will be sized between 200-400m<sup>2</sup>, which is suitable for a comfortable home of at least 2-3 bedrooms. Ten new c80sqm, 2 bedroom houses will be constructed on site and will be made available to employees of the retirement village on a rent-free basis.

Dravitski Brown Architects have designed two indicative homes, the Ayrburn Retirement Village Homes, in accordance with the Ayrburn Retirement Village Design Guidelines. A further 7 house types that meet the Ayrburn Retirement Village Design Guidelines will be created prior to commencement of the project. This approach to development will ensure the delivery of a wide selection of affordable homes to prospective residents of the estate.

## **b) Creating a Place – Residential Form and Character**

Together with Bridesdale Farm, Ayrburn Retirement Village is unique to the Queenstown region in its approach to lot size and layout. The majority of the lots within the development will be less than 400m<sup>2</sup>. This approach to residential development has been taken in response to the requirement to deliver affordable housing at an appropriate price point. A comprehensive approach to housing such as this requires defined parameters with regards to housing sizes and forms and an integrated approach to the look and feel of a typical street. In order to maintain these goals the key components of the development include:

### **i. Articulation and design**

The scheme provides a good degree of visual interest and variation through the following measures:

#### **a. Home Sizes**

By creating 9 approved house types, with additional colour palate options, buyers are offered controlled architectural choices on each lot. The architecture of the Ayrburn Retirement Village Homes is fixed with common unifying elements, which will provide a quality contiguous street amenity and repetition that is a requirement when creating a “village” character. Whilst repetition is required, owners will still have some choices in regards to colour and claddings within the fixed form of the Ayrburn Retirement Village Homes. These choices will be controlled by the Ayrburn Retirement Village Design Guidelines. This serves to provide sufficient variation to the streetscape of the estate.

#### **b. Dwelling Height Patterns**

All of the dwellings at Ayrburn Retirement Village will be single storey detached houses with a maximum height of 5.5m. The key driver of this design control is to ensure that there is negligible visibility of the new housing from Arrowtown - Lake Hayes Road and that there are only 4-5 existing houses surrounding the site, which will have limited visibility of the Ayrburn Retirement Village homes. The low ceiling heights also serve to maximize solar access and afford most of the homes with uninterrupted views of surrounding mountain ranges.

#### **c. Outdoor Spaces Within Lots**

Every site plan that accompanies a house design includes a sunny and private outdoor space. Whilst these spaces are generally small, they will be however located for maximum sun. As with any comprehensive design the size of these spaces are offset by easy access to green spaces, open space, and the wider trail network. The dwelling design process is driven primarily by the need to provide for these spaces; with dwelling selection ensuring that dwellings will not shade or compromise dwellings to the south and, where dwelling do occur running east-west, those dwelling allow for sunlight to a southern neighbour.

### **ii. Working with the site and its context**

The proposed development respects the historic use of the site as a farm and preserves both the visual amenity and historic buildings. It does this by limiting new development to only 1/3<sup>rd</sup> of the site will be developed, with the remaining 2/3rds to be retained in its natural condition. It will be covenanted that

there is no new development in perpetuity within 300 metres from Arrowtown – Lake Hayes Road. This will preserve the fields and the mature tree-lined driveway that lead to the homestead. New development will sit behind the homestead where it cannot be seen from the road by taking advantage of existing ridgelines and vegetation, and proposed building height limits. The natural characteristics of the site allow the proposed residential development to be based around a series of three neighbourhoods, located towards the central part of the farm, while preserving the rural pastoral character of the edges and providing the restored and re-used historic buildings as a central focus point for community gathering and activity. Both the farm paddocks to the west and those elevated slopes that lead up toward Millbrook would be retained and protected as grazing paddocks. A single farmer's residence and associated farm buildings are proposed at the far western edge of the site.



### iii. Creating well defined streets and places



Ayrburn Retirement Village will provide a fixed design outcome for all street edges in order to provide a contiguous, uniform and controlled quality outcome throughout. A consistency of materiality and defined palette of materials will be enforced through the Ayrburn Retirement Village Design Controls.

- **General Concept:** The Concept provides for a comprehensively designed community, with a strong heart to the development and good connectivity, both trail and vehicular, to all surrounding residential communities and reserve areas. Fundamental to the heart of the Ayrburn Retirement Village is the retention of the historic buildings and the concept that the development sits 'within' the landscape, maintaining a strong rural surround and allowing the existing rural character from Arrowtown Lake Hayes Road.
- **Street character:** In general, aside from the principle axis into the development, the streets are relatively narrow to facilitate a safer pedestrian environment. The need for parking is acknowledged by way of off street parking within lots and parking areas placed wherever space permits. Quality street frontages are maintained with a consistency of street items including lighting, walls, entry paving, planting, street trees, letter boxes and lot numbers.
- **Street Edges:** In order to provide a contiguous and uniform / controlled quality outcome to the streets, the development will provide a fixed design outcome for street edges, with a consistency of materiality that is expected in medium density housing developments. Individual expressions are discouraged on street edges, with a defined palette of materials.

iv. Easy to find your way around

The road network has been designed to make it easy for residents and visitors to find their way around. Ayrburn Retirement Village will have one major entrance road, which provides direct access to residents in Area B. The road reaches a fork near the middle of the site which will be clearly signposted, directing residents of Area B and to the care facilities, restaurant and offices to the right and the bowling green and residents of Area C to the left.

Within Ayrburn Retirement Village all streets and right of ways are connected to an internal walkway plan, the intention being to always give pedestrian options aside from foot paths. All lots have access to the primary green spaces.

c) **Street and Home**

i. Carparking and access

The need for parking is catered for by way of off street parking within lots and parking areas placed strategically throughout the development where space permits. Quality street frontages will be maintained with a consistency of street items including lighting, walls, entry paving, planting, street trees, letter boxes and lot numbers (as is shown in Appendix: Ayrburn Retirement Village Concepts).

Access to the residential areas within the retirement village would be via a new tree-lined driveway from the Arrowtown-Lake Hayes Road that would be located 250m south of the existing entry and 200m from the intersection with Speargrass Flat/ Hogan Gully Road. It is important, visually, that this avenue access is similar in form to the existing access and maintains a rural character. To that end lighting is kept to a minimum. Furthermore it is recommended that a hedge be planted along the southern edge of this access in order to screen views of vehicles from southern private views

A right of way is maintained to the west of the site, accessing Speargrass Flat Road. Whilst this is not a vehicular access, aside from framing access, it is recommended that this be available for emergency access if required.

ii. Public and private spaces

Public and private spaces will be clearly separated by appropriate natural vegetation or non-obtrusive fencing. Streets will provide appropriate lighting to maximise user safety.

The proposed development has the opportunity to connect directly to existing trails and cycle ways. Direct access to the cycleway from Speargrass Flat Road to Millbrook can be easily achieved to the west.

This will provide easy access to both Lake Hayes and Millbrook. It is anticipated further, that public access will be encouraged into the centre of the site, providing stimulation to the heart of the site and an opportunity for further public cycle ways.

A walkway will be provided along the margin of Mill Creek, within land to be vested as an esplanade reserve. This will create another potential linkage between Waterfall Park and Millbrook through to Speargrass Flat Road, with the potential for the public to continue along the margins of Mill Creek almost as far as Lake Hayes.

A further pedestrian/ cycle connection is provided between the existing unformed road (part of the Wakatipu Trail) and the farm, along the toe of the Ayrburn Terrace.

### iii. Good quality homes

As demonstrated by Ayrburn Retirement Village House Type A and Type B, the Ayrburn Retirement Village Design Guidelines and House Types will offer a range of housing options which provide functional, open plan living, adequate storage, garaged parking and maximize solar access through by restricting all dwellings to single storey construction with a 5.5 metre height limit.

Refer to Appendix 4: Ayrburn Retirement Village Concepts and Appendix 5: Ayrburn Retirement Village Homes Types for the typical street frontages for the development and plan. Appendix 6 shows how a similar offering is made available to the market at Bridesdale Farm.

## d) Environmental Responsibility

AFDL, in developing the Ayrburn Retirement Village concept, has aimed to create a community of the future that will provide its residents with a high standard of living, while also minimising the development's environmental footprint.

As detailed above, AFDL intends to work with several prominent Queenstown homebuilders through the development stage of the Ayrburn Retirement Village Homes, to ensure that a high quality home, at an affordable price, can be delivered to the Queenstown public.

The extreme climate range in Queenstown means that warmth and energy efficiency are high priorities for the homes at Ayrburn Retirement Village. This will be achieved through the design of the homes, the placement of the homes on the lots, and the construction practises that will be implemented.

Large glass areas have been incorporated into the northern areas of the Ayrburn Retirement Village Homes to maximise the amount of sunshine that can be captured. The designs also provide for polished concrete floor areas that retain heat, as well as adding to the overall design aesthetics. Optimisation of the eaves size will allow the winter sun to enter the homes for heat and permit shading to occur in summer. As previously detailed, consideration has been given to the orientation of each home on the lots to allow the maximum level of passive solar gain to transpire. These characteristics of the homes will maximise solar access, thereby increasing comfort for residents, whilst simultaneously minimise energy consumption.

The incorporation of a rib-raft foundation solution into the homes will further enhance the level of insulation. These poly-block, steel and concrete foundations provide additional insulation through the floor of the home. Double Glazed windows, with low E-glass, allows sunlight to enter the home but not escape due to the windows' coating.

Several sustainability initiatives are being incorporated to minimise the development's energy consumption, through building energy efficient homes, installing solar panels on each home, onsite energy generation and installation of a development-wide heating solution (please see details noted above).

These design ideas and construction practises will create a quality living environment for the resident of Ayrburn Retirement Village, will help to reduce their overall heating expense, as well as reducing the developments overall environmental footprint.



# Conclusion

There is a high level of unmet demand for seniors living alternatives in and around Queenstown. The characteristics of Ayrburn Retirement Village and the concept plan lends itself to a medium density retirement village that will partially alleviate this unmet demand at no cost to the QLDC or any impact on the feel or aesthetic appeal of the surrounding area. Ayrburn Retirement Village meets all of the requirements to be considered a Special Housing Area as per the Housing Accords and Special Housing Areas Act 2013 Implementation Guidelines Council Lead Policy. Specifically, the strength of the Ayrburn Retirement Village submission lies in large part that:

- **The site is one of the only flat parcels of fully serviced, sun-filled land in the Queenstown Basin where proposed retirement housing will be screened from the surrounding roads and residents.** The visual amenity of the existing streetscape will be retained in perpetuity by covenanting that the paddocks fronting Arrowtown – Lake Hayes Road will remain, other than as required to create a new tree-lined driveway into the site. Development will be limited to approximately 30% of the site and the proposed housing will not be seen from any road or residents due to the existing ridgelines that surround the building platforms, the proposal to cap new dwellings to a single storey and proposed planting to further screen the new buildings.
- **An appealing place to live:** Residents will benefit from a range of amenities, including a bowling green, recreational club, restaurant, café and additional common areas to be provided as part of the estate. Single level construction will maximize daylight for all residents and afford residents with commanding views of Coronet Peak, the Remarkables and surrounding open space. Residents will also enjoy direct access to the Queenstown Trail located that runs along the western boundary of the site and Mill Creek that runs through the property, benefits that are unique to the location of the estate.
- **The housing will be affordable:** The existing generally level building platforms and single level construction reduce construction costs and should allow appealing housing to be delivered to residents cost effectively. Lot sizes will range from c140-600sqm (but typically c200-400sqm), thereby offering a large range of lots sizes and entry points for residents. Ten new two-bedroom houses (c80sqm each) will be built on the site and provided rent free to employees of the retirement village. Any of these 10 houses that are surplus to the needs of employees will be made available to the Housing Trust for free community housing.
- **Adjacency to an existing urban area:** The site adjoins the Millbrook Resort and Waterfall Park Special Zones, both of which provide for urban development in a manner similar to the Jacks Point Resort Zone which is contained within an Urban Growth Boundary under the recently notified Proposed District Plan despite the fact that the zone contains 95% open space.
- **Respecting the feel of Arrowtown without extending its extend its boundary:** Although the site is located 2km south of the Arrowtown urban boundary, design guidelines will ensure all housing is in keeping with the classic feel of the original Arrowtown housing. The Ayrburn Retirement Village will cater for unmet seniors living demand in the Wakatipu Basin without the need to extend Arrowtown's existing urban boundary.
- **Adaptive reuse of historical buildings:** In addition to providing much needed seniors living accommodation, the development will facilitate both the restoration and extension of the existing listed farmhouse and other associated buildings and development of adjacent new buildings to create a central core of amenities that benefit residents and the wider community including a medical centre, medium and high care facilities, central offices and a restaurant / café. All such buildings will not exceed two storeys in height.
- **A sustainable development:** Ayrburn Retirement Village's vision is to establish a community that will deliver its residents a high standard of living while also minimising the development's environmental footprint. Several sustainability initiatives will minimise the development's energy consumption, through building energy efficient homes and installing solar panels on each home to generate onsite solar energy.
- **No capital cost to QLDC:** The site is easily serviced given its topography and the fact that all major services are located nearby given the immediate presence of Millbrook Resort, Arrowtown and the residential premises surrounding the site. Minor pump station upgrades and other connection required in conjunction with the development will be funded by AFDL with no cost to be borne by QLDC. All other forms of existing infrastructure have sufficient capacity to service Ayrburn Retirement Village.

The project team consists of local consultants who have experience with residential developments in the area (Bridesdale Farm, Jacks Point, Lake Hayes Estate, Shotover Country and Northlake) and as such, have a deep understanding of the area and its attributes. Refer to Appendix 1 for full details of the project team.

AFDL looks forward to working collaboratively with QLDC to ensure the delivery of Ayrburn Retirement Village to the Queenstown public in a timely manner. We welcome the opportunity of meeting with QLDC to discuss this Expression of Interest and to provide further details on Ayrburn Retirement Village.

## Key Facts and Statistics Regarding Aged Care in the Wakatipu Basin

The Queenstown-Lakes District has the second highest forecast rate of population growth in New Zealand over the next 35 years

The number of 'households' in NZ is set to increase by 1.1% per annum, while over that same period the number of households in the Queenstown-Lakes area will increase at 2.0% per annum (2<sup>nd</sup> highest in NZ).

The number of one person households in NZ is set to increase by 1.6% per annum over the next 35 years, while over that same period the number of one person households in the Queenstown-Lakes area will increase by 3.84% per annum (2<sup>nd</sup> highest in NZ).

The increase in one person households will be driven by an ageing population; with 90% of the growth occurring in the 65+ age group.

The proportion of elderly people (+65) in the Wakatipu is increasing at a higher rate than any other age group. Currently 1:10 people are over 65, and this will dramatically change over the next 35 years; to 1:4.

Year	District Population	Those Aged 65+	Percentage of District Pop'n
2013	29,700	3,200	10.7%
2018	33,800	4,300	12.75%
2023	37,300	5,500	14.75%
2028	40,700	7,000	17%
2033	44,000	8,500	19%
2038	47,300	10,200	21%
2048	50,600	11,900	23.5%

The Wakatipu basin typically comprises 70% of the district-wide population. On this basis, there will be an additional 770 people aged over 65 living in the Wakatipu basin between 2013 and 2018.

KPMG estimates that 8% of people aged between 65 and 70 will move to a retirement village or care facility. This percentage increases to 16% for people aged 70+, and 30% for people aged 80+. Applying an average uptake of 12% over these age ranges equates to 268 people requiring access to a retirement facility in 2013.

A further 93 places will be required by 2018 (total 361), and an additional 101 spaces by 2023 (total 402). This figure continues to disproportionately climb to a total of 1,000 places being required in the Wakatipu basin by 2048.

These figures do not include potential additional retirees who may move to Queenstown/Wakatipu if facilities are made available. Given the favourable residential attributes of the Wakatipu Basin, this is likely to occur. Therefore the above figures almost certainly understate the potential market demand.

Currently there are two facilities in the Wakatipu basin; the Frankton Hospital (Bupa) that provides 36 beds (both residential and hospital care) and the Presbyterian Support Services facility in McBride Street that provides 18 self contained cottages (total of 54).



There are a range of issues facing a community with an ageing population; including the provision of appropriate and adequate services, health care and accessibility. The most pressing need is to identify the suitable locations for the provision of housing. These figures represent that there is a chronic undersupply of housing choice for an ageing population. It is necessary that a range of housing is made available.

## Appendix 14: Neighbour Screening

AFDL proposes the following screening arrangements in order to maintain the southern neighbours' pastoral outlook:

- AFDL will dedicate the area of land more or less shown in brown on the attached sketch to provide screening for the neighbours in the form of a circa 50m wide strip of land that may be used for detention ponds, landscaping, vegetation and or other natural forms of buffer between the southern neighbours and the development.
- The dedicated land will be subject to prohibitions on buildings and other improvements (excluding fencing or stormwater requirements) to maintain its pastoral amenity.

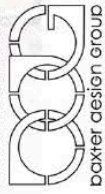




10m planted buffer to  
residential lots retained by  
Ayrburn Farm Development

Land gifted to neighbouring  
properly owners shaded  
brown, approximate areas  
as indicated. May be  
planted by owners for  
amenity & additional  
screening as desired

**+ AYRBURN - NEIGHBOUR SCREENING**  
AYRBURN FARM DEVELOPMENTS LTD  
BDG REF: 2514-SK17 - SCALE = 1:3000 T A3 - 04 MAY 2015





# Ayrburn Retirement Village Water Services Review

Prepared for the Queenstown Lakes District Council

February 2016



**MWH**<sup>®</sup>

**BUILDING A BETTER WORLD**



## Ayrburn Retirement Village Review

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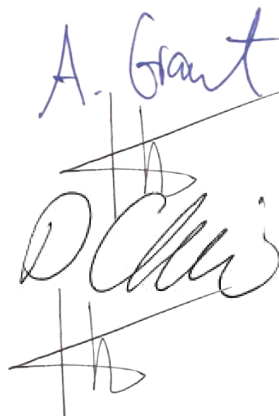
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## Executive Summary

### Water Supply

The information currently available indicates that it is a practical option to supply potable water and firefighting flows to the proposed development from the Lake Hayes Water Supply Scheme. The Lake Hayes Estate area has recently been disconnected from the Lake Hayes Water Supply Scheme and is now supplied from the Shotover Country Water Supply Scheme. This change provides surplus capacity in the Lake Hayes Water Supply Scheme to provide both potable water and firefighting flows to the proposed Ayrburn Retirement Village development.

However, the water supply modelling in the Tonkin + Taylor report indicates that the supply of firefighting flow to the care facility at the required FW3 level may not be feasible with the design assumptions stated in the expression of interest document. A detailed water supply model for the currently proposed development is required.

### Wastewater Drainage

MWH concurs with the findings of the Rationale report within the expression of interest document, which finds that it is practical to drain wastewater from the proposed development into the Lake Hayes Wastewater Scheme. However, the following modifications to the existing Lake Hayes Wastewater Scheme are required:

- Upgrade of the pumps in the Lake Hayes Pump Station #1 located at the Lake Hayes Recreation Reserve at the north end of the lake
- Install additional emergency storage at the Lake Hayes Pump Station #1 or provide emergency power by means of a generator or supplemental power feed from the Lake Hayes bore site
- Upgrade of the gravity main along the Lake Hayes walking track between the entrance to the Lake Hayes Recreation Reserve at the north end of the lake and the Lake Hayes Pump Station #2 located at the Bendemeer Bay Reserve. An upgrade of a 500 – 1,330 m section of 225 mm gravity main would be required to avoid overflows. Alternatively, we consider a more practical option is extending the rising main from the Lake Hayes Pump Station #1 directly along the Arrowtown Lake Hayes Road to the pump station at Bendemeer Reserve.

It is noted that a gravity connection between the new development and the Lake Hayes Wastewater Scheme is the preferred option for the development, but wastewater may also be pumped from the development into the Lake Hayes Wastewater Scheme on Speargrass Flat Road should this be necessary.

### Stormwater Drainage within the site

The following criteria for the feasibility assessment in respect to stormwater drainage within the site was checked:

- The grade across the site available for the stormwater reticulation pipework
- The depth available for stormwater detention in the proposed attenuation ponds
- The available freeboard between the pond invert and the recorded flood levels for Mill Creek.

This analysis did not identify any areas where the current information indicated that the proposed stormwater system was impractical. However, this assessment was carried out using the information currently available which is both imprecise and incomplete. A more detailed survey, river level data and detailed long sections will be required to specifically confirm the practicality of a gravity stormwater system. In particular our preliminary assessment indicates that the southernmost area of the development on the true left of Mill Creek may have marginal freeboard between the invert of the stormwater detention structure and possible flood levels in Mill Creek. A further study is required.

## **Flooding of the site**

MWH have investigated historic flood levels within Mill Creek (based on the imprecise information currently available) and no specific flooding risk to the development has been identified. However, we believe that a more detailed hydrological assessment of Mill Creek is warranted to establish the flood levels for various Annual Recurrence Interval storm events in order to specifically confirm the level of risk to low lying parts of the planned development.



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# 1 Introduction

MWH was engaged by the Queenstown Lakes District Council to undertake a high level review of the “Ayrburn Retirement Village – Expression of Interest: Special Housing Area (November 2015)” document. The purpose of the review is to assess the feasibility of options proposed in the report for:

- Domestic and commercial potable and firefighting water supply from the existing Lake Hayes Water Supply Scheme
- Domestic and commercial wastewater drainage from the proposed development into the existing Lake Hayes Wastewater Scheme
- Reticulated stormwater drainage
- Flooding Risk

The expression of interest document has been prepared by a project team consisting of a variety of consultants. In regard to the infrastructure elements above we have reviewed the following documents that form part of the proposal;

1. Holmes Consulting Group – Infrastructure assessment (dated 23 November 2015)
2. Rationale – Wastewater assessment (dated 18 November 2015)
3. Tonkin + Taylor – Water supply modelling (dated 5 November 2015)
4. Clark Fortune McDonald & Associates – Preliminary Infrastructure Assessment (dated 12 February 2015)
5. Fluent Solutions – Flood Hazard Mitigation (dated 13 February 2015)

It is noted that the water demand and wastewater generation figures in the expression of interest document are based on a previously planned 150 lot special housing development on the same site. The water demand and wastewater generation figures used in the reports from Rationale, Tonkin + Taylor, Clark Fortune McDonalds & Associates, and Fluent Solutions are based on this previous special housing development and not specifically on the proposed Ayrburn Retirement Village. We anticipate that the water demand and wastewater generation of the Ayrburn Retirement Village will be somewhat less than the 150 lot special housing development and thus the wastewater generation and water demand figures stated in the proposal will be conservative.

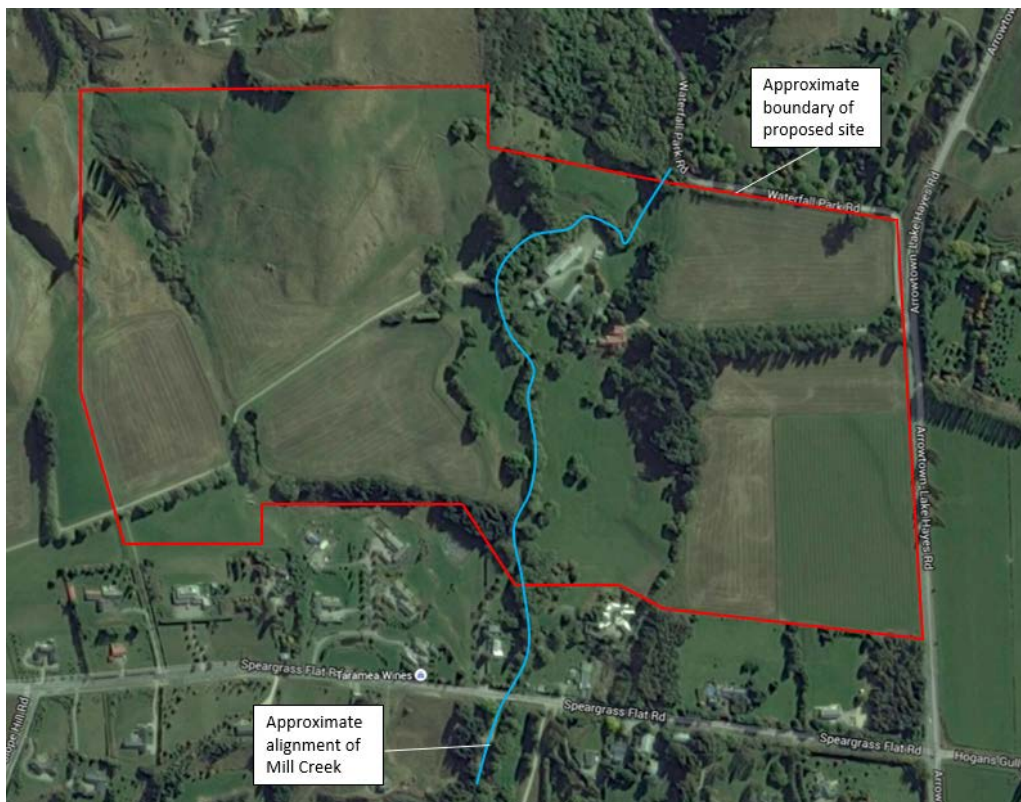
The report by Holmes Consulting Group makes an assessment of the wastewater flow, water demand and stormwater run-off and management for the Ayrburn Retirement Village and not the previous 150 lot special housing development.

## 2 Background

Ayrburn Retirement Village is a proposed development on a 45.7 ha farm site at 341 – 343 Arrowtown – Lake Hayes Road. The proposal is for the development of a 191 lot retirement village plus associated care facilities (medium and high care) and ten 2-bedroom houses for employees. It is also planned to include community amenities such as a bowling green, recreational club, restaurant, café and additional common areas in the development.

Mill Creek runs through the middle of the proposed site.

Figure 1 shows the location of the proposed approx.14.2 ha retirement village development.



**Figure 1: Location of the proposed retirement village development**



## 3 Specific Review of the three waters infrastructure

### 3.1 Population Review

For the assessment of the infrastructure demands the expression of interest document assumes a design occupancy of 1.3 residents per retirement village lot and three people per house for the employee houses. These assumptions are in line with the New Zealand Retirement Village Database – Whitepaper (May 2015) prepared by JLL<sup>1</sup>, and the Queenstown Lakes District Council Land Development and Subdivision Code of Practice.

A total resident number of 280 people has been used for the assessment of water demand and wastewater generation. It is noted that the water demand and wastewater generation from the care facilities and the community amenities have not been taken into account in the expression of interest document.

The previously proposed 150 lot special housing development was based on a design occupancy of 3 residents per lot resulting in a total of 450 residents. Therefore, the assumed population equivalent numbers (PE) in the reports prepared by Rationale, Tonkin + Taylor, Clark Fortune McDonalds & Associates, and Fluent Solutions for the assessment of the water supply, wastewater generation and stormwater management are higher than the calculated PE for the retirement village development (450 PE versus 280 PE →  $\Delta + 170$  PE).

AS/NZS 1547:2012 recommends a wastewater generation figure of 25 l/p/day for tearooms and 30 l/p/d for restaurants. There is no guidance on hospital wastewater generation in AS/NZS 1547:2012, and as a result MWH applied a figure of 250 l/p/d for hospitals or rest homes from the Auckland Regional Council Technical Publication 58 (ARC TP 58). This publication is commonly applied for additional design guidance for wastewater systems if AS/NZS 1547:2012 does not provide detailed information.

Based on the flow figures from AS/NZS 1547:2012 and ARC TP 58, we anticipate that the omitted water demand and wastewater generation for the care facilities and the community amenities of the Ayrburn Retirement Village will be somewhat less than the surplus 170 PE and thus the wastewater generation and water demand figures stated in the proposal appear to be adequately conservative.

### 3.2 Water Supply and Fire Fighting Design Review

The Queenstown Lakes District Council Land Development and Subdivision Code of Practice has been used for the assessment of the water demand. The specific design standards to be applied for the assessment of water supply demand are included in Appendix 1.

Council specified the Lake Hayes water supply network as the potential water source for the new development. The water supply calculations have been based on the assumption that the Lake Hayes Estate water supply is no longer supplied by the Lake Hayes scheme. Steve Murch of Fulton Hogan confirmed on 2<sup>nd</sup> February 2016 that the Lake Hayes Estate water supply is now covered through the Shotover Country water supply scheme and is disconnected from the Lake Hayes Water Supply Scheme. Lake Hayes Estate consists of approximately 600 lots. Therefore, the design assumption about the water supply scheme in this report are verified.

The expression of interest document does not state which water reticulation modelling software has been used. Additionally, it is noted that the background demand from the Lake Hayes water supply network was taken as the design network peak day flow of 12.9 l/s without the consideration of diurnal flow records.

The design flows calculated by Tonkin + Taylor for the 150 lot development exceed the calculated design flows from Holmes Consulting Group for the currently proposed development.

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<sup>1</sup> JLL is a professional services and investment management firm offering specialized real estate services. <http://www.jll.nz/new-zealand/en-gb/research/364/jll-nzrvd-2015>

The water supply demand and the reticulation modelled in the Tonkin + Taylor report is based on a FW2 fire flow throughout the development. However, based on the MWH assessment, FW3 fire flows have to be provided to the care facility within the proposed retirement village.

The calculated design flows for 150 lot development and the currently proposed retirement village development are presented in Table 1 below. Table 1 also presents the MWH assumptions for the required firefighting flow and calculations of the reticulation design flow and bore field capacity.

**Table 1: Design water flows for the previous 150 lot and currently proposed retirement village developments**

	Previous 150 lot special housing development proposal	Current 201 lot retirement village development proposal
Average daily flow (l/s)	3.65	2.27
Peak day flow (l/s) [2.35 times average day flow]	12.0	7.5 (calculated by MWH, not stated in report)
Peak hour flow (l/s) [6.6 times average day flow]	24.1	15.0
Reticulation design (the larger of either peak hour flow rate or peak day plus firefighting flow)		
Peak hour (l/s)	24.1	15.0
Peak day flow (l/s)	12.0	7.5
Firefighting flow	12.5 (FW2)	25 (FW3)
Reticulation design flow (l/s)	<b>24.5</b>	<b>32.5</b>
Bore field capacity		
Borefield capacity equals peak day flow rate (l/s)	12.0	7.5

The Holmes Consulting Group report concludes that the design assumptions from Tonkin + Taylor are conservative for the current development and the water supply modelling results are still applicable for the new development.

As a result of the initial analysis in Table 1 above, we believe that there may have been an increase in the firefighting flow from the 150 lot residential development to the Ayburn Retirement Village Development as a result of increased firefighting demand for the hospital. However, because of the reduction in the area of the Lake Hayes Water Supply Scheme we believe that there is sufficient capacity in the Lake Hayes Water Supply Scheme to supply the Ayburn development.

A detailed water supply model for the currently proposed development is required to specifically confirm the suitability of the existing water network infrastructure.

### 3.3 Wastewater Design Review

The Queenstown Lakes District Council Land Development and Subdivision Code of Practice has been used for the assessment of the generated wastewater volumes in the expression of interest document.

The design flows calculated by Rationale for the 150 lot development exceed the calculated design flows from Holmes Consulting Group for the currently proposed development. The calculated design flows for both developments are presented in Table 2 below:

**Table 2: Design wastewater flows for the previously and currently proposed developments**

	150 lot special housing development (Rationale figures)	201 lot retirement village development (Holmes Consulting Figures)
Average dry weather flow (l/s)	Not stated	0.8
Peak wet weather flow (l/s)	8.5	4.05

The Holmes Consulting Group report concludes that the design assumptions from Rationale report are conservative for the current development and the wastewater discharge modelling results are still applicable for the new development.

#### 3.3.1 Wastewater discharge to the Council system

The preferred solution for the wastewater discharge from the new development is a gravity connection to the Lake Hayes scheme. Modelling has been undertaken by Rationale assuming a connection to the manhole at the junction of Speargrass Flat Road and Slope Hill Road (QLDC 'UnitID' SM11800).

The modelling is based on the Wakatipu dynamic wastewater model (2012). The applied model for the wastewater discharge. This model is the commonly used model for the Queenstown Lakes District.

Assuming that the omitted wastewater generation from the care facilities and the community amenities does not exceed the equivalent of 170 PE, the results from the Rationale report are applicable.

The Rationale report concludes that "the development could connect to the network, following the upgrade of the Lake Hayes Pump Station 1 and the downstream reticulation, with no further significant effects on the capacity reserved for developments that currently comply with the district plan/scheme boundaries".

The following modifications to the existing scheme are required to allow for the wastewater discharge into the Lake Hayes Wastewater Scheme:

- Upgrade of the pumps in the Lake Hayes Pump Station #1 located at the Lake Hayes Recreation Reserve at the north end of the lake
- Install additional emergency storage at the Lake Hayes Pump Station #1 or provide emergency power by means of a generator or supplemental power feed from the Lake Hayes bore site
- Upgrade of the gravity main along the Lake Hayes walking track between the entrance to the Lake Hayes Recreation Reserve at the north end of the lake and the Lake Hayes Pump Station #2 located at the Bendemeer Bay Reserve. An upgrade of a 500 – 1,330 m section of 225 mm gravity main would be required to avoid overflows. Alternatively, we consider a more practical option is extending the rising main from the Lake Hayes Pump Station #1 directly along the Arrowtown Lake Hayes Road to the pump station at Bendemeer Reserve.

It is noted that an upgrade of the Lake Hayes Pump Station 1 is required regardless of the new development.



### 3.3.2 Wastewater drainage within the site

There is no detailed information on sizing and depth of the wastewater pipe system.

For the purpose of this review, the following assumptions have been made for the feasibility assessment of the wastewater reticulation system:

- DN200 wastewater discharge pipe
- 1:100 fall
- Longest part of discharge pipe to pond on western side of Mill Creek is 70m
- Critical length of discharge pipe to pond on eastern side of Mill Creek is 30m
- Pipe cover of 1m

Applying the above assumptions indicates that there is sufficient fall along the proposed development to allow the implementation of the proposed wastewater management system.

It is noted that the gravity discharge pipe along Mill Creek to the connection point into the Council network at the junction of Speargrass Flat Road and Slope Hill Road has not been assessed. However, this section of pipe can be realised with a pump station within the development and a rising main to the intended discharge point should any problems with this section arise in the further design.

Therefore, the proposed option for wastewater management is deemed feasible.

### 3.4 Stormwater runoff generated within the development area

The development proposes two separate but similarly designed stormwater systems, one on either side of Mill Creek. It is proposed to drain the stormwater by a combination of piped drainage and surface swales to detention ponds on either side of Mill Creek. The purpose of the detention ponds is to attenuate flow into Mill Creek to pre development levels and to possibly offer some degree capture of contaminants. For such a system to function effectively the top water of the pond needs to be higher than the receiving water in Mill Creek.

It is noted that a resource consent from the Otago Regional Council is required for the stormwater discharge into Mill Creek.

The expression of interest document does not include a site survey.

The requirements of the relevant documents for the design of the stormwater system are summarised in Appendix 2.

MWH have used the Queenstown Lakes District Council Land Development and Subdivision Code of Practice to undertake an 'order of magnitude' review of the stormwater run-off figures in the expression of interest document.

Both the Holmes Consulting Group and the Clark Fortune McDonald & Associates (CFMA) report have used the Rational Method for the calculation of stormwater run-off from the area proposed to be developed. However, these two reports apply different return periods and durations.

It is noted that Holmes Consulting Group and CFMA use different numbers for the area that will be developed. The final size of the development should be confirmed by the developer.

Table 3 presents the results of the two run-off calculations:

**Table 3: Stormwater run-off calculations pre- and post-development**

	Developed area	Pre-development flow	Post-development flow
Holmes Consulting Group	14.2 ha	<b>323 l/s</b> 1 in 20 year return 20 min period	<b>923 l/s</b> 1 in 20 year return 10 min period
CFMA	11.26 ha	<b>103 l/s</b> 1 in 5 year return 60 min period	<b>310 l/s</b> 1 in 100 year return 120 min period (critical)

Holmes Consulting Group have undertaken a stormwater runoff calculation using a methodology consistent with current practice, although, no conclusions are drawn from the runoff results. The report calculates the total stormwater run-off quantity but has no information on the expected flows in either of the two systems.

### 3.4.1 Stormwater reticulation

The expression of interest document does not include any information on the sizing of the stormwater collection system.

After analysis of preliminary and imprecise topographical maps of the site, MWH is satisfied that the proposed stormwater management on the western side of Mill Creek appears to be feasible as outlined in the expression of interest document.

However, fall available on the true left of Mill Creek within the most southern development area is minimal. Discharge through a reticulated network to a detention pond at the southern end of the site *may* be possible but there is insufficient detailed information available currently to confirm that there is sufficient fall available to accommodate the reticulation system and the detention pond an appropriate height above the flood level of Mill Creek. A detailed survey of the site including the mean water level within Mill Creek and the proposed earthworks are required to confirm this.

For the purpose of this review, the following assumptions have been made for the feasibility assessment:

- DN200 stormwater discharge pipe
- 1:100 fall
- Longest part of discharge pipe to pond on western side of Mill Creek is 70m
- Critical length of discharge pipe to pond on eastern side of Mill Creek is 30m
- Pipe cover of 1m
- Level of Mill Creek flow channel during flood at 341.5m at the pond locations
- Depth of pond structure is 1m

### 3.4.2 Stormwater detention

On the basis of clause 4.3.5 of the Queenstown Lakes District Council Land Development and Subdivision Code of Practice, CFMA have calculated the pre and post development stormwater run-off. The difference between these two figures being the detention volume required to ensure that post-development flow does not exceed pre-development flow. For the calculation of the post-development flow a conservative return period of 1 in 100 was chosen. Although clause 4.3.5 is applicable for discharge to an existing network from a primary system, this approach is considered sensible.

The CFMA report calculates the required total detention volume for stormwater but does not separate the stormwater and detention volumes in each of the two systems.

### **3.5 Flooding Protection Review**

The Fluent Solutions report on flood hazard mitigation states that “part of the proposed Ayrburn development would lie within an area described in the Queenstown Lakes District Council GIS based Hazard Register data as being within an area referred to as “Flood Hazard due to rainfall” resulting from flows that pass down Mill Stream”. Therefore, the proposed development allows for a flood way with a minimum width of 20 m.

Based on a 1 in 100 year return period, Fluent Solutions calculates the flow through Mill Creek to the order of 100 m<sup>3</sup>/s with a depth of the flow estimated to approximately 1.8m.

No reduced level of the mean water level within Mill Creek is provided in the expression of interest document.

Topographical maps indicate that Mill Creek is a relatively steep creek without a significantly incised flow channel. Mill Creek is known to flood upstream of Speargrass Flat Road.

The following issues from flooding within the development should be considered:

- Flooding of buildings
- Contamination of the surface water with sewerage
- Damage to infrastructure

The Fluent Solutions report does not include the calculation details which were used to derive the flow through Mill Creek and the resulting flow depth. However, MWH compared the results with the flow data from the Otago Regional Council at the measuring point Mill Creek at Fish Trap. The results of the Fluent Solutions report are consistent with the reviewed Otago Regional Council data consider these to be credible.

Due to the lack of detailed site survey, the reduced level of the Mill Creek flow channel and the earthworks plan for the proposed development, no meaningful comment on the freeboard between development and flood levels can be made. Reviewing of the ORC flow data and the initial contour data does not raise specific concern as there appears to be freeboard between development areas and historic flood levels. However specific design and more detailed survey will be required to specifically confirm this.

#### **3.5.1 Separation of flooding and wastewater drainage**

We have assumed that stormwater and wastewater drainage pipelines will be laid along similar alignments. Even if there are potential issues with the freeboard available for the stormwater system, we do not anticipate that there will be infiltration issues for the waste water system. This is because the stormwater detention pond will have freeboard to the flood level in Mill Creek of around 1m above this flood level. Thus there is around 1m depth available to lay the wastewater pipelines before they are lower than flood level in Mill Creek.

This is an initial assessment, and should be checked as part of detailed design, but this assessment indicates that there is a significant risk of the wastewater system becoming infiltrated with flood water from Mill Creek.

It is noted that the gravity discharge pipe along Mill Creek to the connection point into the Council network at the junction of Speargrass Flat Road and Slope Hill Road has not been assessed.



## **Appendix 1 – Water Supply Guidelines**

### **A.1.1 Water Supply Guidelines Clarification**

MWH Ref: Z15707

20 November 2007

Queenstown Lakes District Council  
Private Bag 50072  
**QUEENSTOWN**

**Attention: John Porter**  
**Water Services Manager**

Dear Sir

**QLDC 07/02 Water Services Network Management**  
**Notice To Engineer No. 042**  
**Water Supply Peaking Factor Clarifications**

The purpose of this notice is to clarify elements of the Queenstown District Councils amendments to NZS 4404:2004 that relate to water supply.

**Background**

QLDC produced a document of amendments to NZS 4404:2004 in September 2005. This document included Council's specific requirements for section 6.11.5 of NZS 4404:2002 relating to water supply.

It has been noted that Councils amendments to NZS 4404:2004 and the requirements in Councils Asset Management Plans (AMP) have been applied inconsistently by various parties. In some cases the extent of the variation of application of these guidelines has been significant.

This document is intended to clarify the use of the AMP and amendments to NZS 4404:2004 and to obtain consistency in approach between those using these documents.

The preparation of this document follows a meeting attended by the following organisations:

- Connell Wagner (Martin Dasler)
- GHD (Graham Robinson)
- Tonkin and Taylor (Robert Frost)
- Rationale (Tom Lucas)
- Hadley Consultants (John McCartney)
- MWH (Derek Chinn)

**Recommendations**

**Basic Factors**

The basic factors are as follows:

1. Average Daily domestic flow rate = 700 litres / person / day
2. Occupancy per residence = 3 people
3. High density accommodation Average Daily Flow rate = 350 litres / person / day; occupancy 2 people per bedroom.
4. Queenstown Peak Day Flow rate = 2.35 times Average Day Flow rate
5. All other places Peak Day Flow rate = 3.3 times Average Day Flow rate

6. Queenstown Peak Hour Flow rate = 4.0 times the Average Day Flow rate
7. All other places Peak Hour Flow rate = 6.6 times the Average Day Flow rate

High Density accommodation is defined as including three of the following:

- Gross floor area less than 202 m<sup>2</sup>
- Development must be at least 4 units
- Units must be joined
- Overall site building coverage > 30%

### **Borefield and Intake Designs**

It was agreed on the following interpretation would be used when designing new intakes or bores supplying systems including a reservoir designed in accordance with Councils AMP:

1. Bore/intake capacity = Peak Day Flow rate

Where the intake or bore pumps directly into a reticulation network without a reservoir, the bore or intake is to be designed to supply the design capacity of the reticulation network.

### **Reticulation Network Design**

It was agreed that the following interpretation would be used when designing new water reticulation systems:

The reticulation system shall be designed to convey the greater of:

1. Peak Hour Flow rate
2. Fire fighting flows plus Peak Day Flow rate

The pressure requirements are:

1. At Peak Hour minimum 300 kPa at each service connection
2. Maximum of 900 kPa at every point in the reticulation network at any time
3. All hydrants have residual pressure of 100 kPa while fire flow is being abstracted under the Peak Day Demand

### **Reservoir Design**

It was agreed that reservoirs shall be designed with minimum available storage volume comprising of the sum of the following:

1. Fire fighting reserve (W5 - 540m<sup>3</sup>, W4 - 180m<sup>3</sup>, W3 - 45 m<sup>3</sup>) plus;
2. Emergency Storage of 4 hours of the Peak Day Flow rate + 1 hour of indirect peak flow rate (flow to other reservoirs and flow to other than the reticulation network) plus;
3. Working Storage of 8 hours of Average Daily Flow rate to the network

Where standby generators, standby pumps and duplicate rising mains are provided, the AMP does not require emergency storage.

### **Resource Consent & Level of Service Issues**

Council has adopted the amendments to NZS 4404:2003 and these amendments plus the requirements of Councils AMP's are a requirement for Engineering Approval of Subdivision Plans.

If the QLDC is to operate an 'on demand' system it is necessary to have capacity to match the intake maximum daily capacity the peak day demand. The QLDC has adopted the above figures for calculating this peak.



The Otago Regional Council will not necessarily issue a water permit based on the QLDC's amendments to NZS 4404:2003. A new development may have to have a bore of a certain capacity to satisfy the QLDC's amendments and the Otago Regional Council may not issue a resource consent for this Peak Day abstraction rate.

Council is currently undertaking a Water Demand Management Strategy to develop approaches to minimising water demand. This document will go some way to identifying demands in specific locations and Average Day to Peak Day factors for those locations. The Demand Management Strategy will identify measures for minimising water demand in different areas. This work may recommend different demand and peaking factors for different communities.

In the interim the QLDC has adopted the above figures and generally, but not always, applies these figures. We note that neither Arrowtown nor Lake Hayes schemes have a peaking factor applied to the bore capacity.

Until other factors are adopted by the QLDC Scoping reports and designs for new schemes should use the figures in this notice unless specific justification for a variation is accepted by Council.

Yours sincerely

**MWH New Zealand Limited**

A handwritten signature in black ink, appearing to read 'D Chinn', written in a cursive style.

Derek Chinn  
Engineer

## A.1.2 Applicable Standards for firefighting flows

SNZ PAS 4509:2008 shall be applied to assess the firefighting flow.

Table 1 – Method for determining required water supply classification

Sprinklered structures															
Category	Water supply classification (see table 2)														
Single family homes with a sprinkler system installed to an approved Standard	FW1														
All other structures (apart from single family homes) with a sprinkler system installed to an approved Standard	FW2														
Non-sprinklered structures															
Category	Water supply classification (see table 2)														
Housing; includes single family dwellings, multi-unit dwellings, but excludes multi-storey apartment blocks	FW2														
All other structures (characterised by fire hazard category <sup>(1)</sup> ), examples of which are given below	Water supply classification (see table 2)														
	Floor area of largest firecell of the building (m <sup>2</sup> )														
	0-199 <sup>(10)</sup>	200-399	400-599	600-799	800-999	1000-1199	1200-1399	1400-1599	1600-1799	1800-1999	2000-2199	2200-2399	2400-2599	2600-2799	> 2800
FHC 1 <sup>(2)</sup>	FW3	FW3	FW3	FW4	FW4	FW4	FW5	FW5	FW5	FW5	FW5	FW5	FW5	FW5	FW6
FHC 2 <sup>(3)</sup>	FW3	FW3	FW4	FW5	FW5	FW5	FW6	FW6	FW6	FW7	FW7	FW7	FW7	FW7	FW7
FHC 3 <sup>(4)</sup>	FW3	FW4	FW5	FW5	FW6	FW6	FW7	FW7	FW7	FW7	FW7	FW7	FW7	FW7	FW7
FHC 4 <sup>(5)</sup>	FW4	FW6	FW6	FW6	FW6	FW7	FW7	FW7	FW7	FW7	FW7	FW7	FW7	FW7	FW7
For special or isolated hazards not covered in above categories <sup>(9)</sup>	FW7														
NOTE –															
(1) Fire hazard category as defined in the compliance documents for the New Zealand Building Code, Acceptable Solution C/AS1.															
(2) FHC 1 is sleeping activities including care facilities, motels, hotels, hostels; crowd activities of <100 people including cinemas, art galleries, community halls, lecture halls, churches; working/business/storage activities processing non-combustible materials such as wineries, cattle yards, horticultural products; multistorey apartment blocks.															
(3) FHC 2 is crowd activities of >100 people, libraries, book storage, night clubs, restaurants, working/business/storage activities with low fire load such as hairdressers, banks, medical consulting rooms, offices.															
(4) FHC 3 is working/business/storage activities with medium fire load such as manufacturing, processing, bulk storage up to 3 metres.															
(5) FHC 4 is working/business/storage activities with high fire load such as chemical manufacturing, feed mills, plastics manufacturing, supermarkets or other stores with bulk display over 3 metres.															
(6) For special or isolated fire hazards in an area with a lower water supply classification, an assessment should be carried out to determine measures to mitigate the hazard or increase the water supply (see 4.4).															
(7) The values in the table were determined by heat release rate modelling for fully developed fires.															
(8) All non-sprinkler protected structures, except houses, have an entry level of FW3.															
(9) Examples of special or isolated hazards may include bulk fuel installations, timber yards, tyre dumps, wood chip stock piles, recycle depots, and marinas.															
(10) For non-sprinkler protected fire hazard category 1 structures less than 50 m <sup>2</sup> in floor area, the FW3 requirement may be reduced by up to 50% with the agreement of the Fire Region Manager. Examples of the sorts of structures intended to be covered by this comment are predominantly garages, sheds, and outbuildings.															

SNZ PAS 4509:2008

Figure A-1: Method for determining required water supply classification

Table 2 – Method for determining firefighting water supply

Fire water classification	Reticulated water supply			Non-reticulated water supply	
	Required water flow within a distance of 135 m	Additional water flow within a distance of 270 m	Maximum number of fire hydrants to provide flow	Minimum water storage within a distance of 90 m (see Note 8)	
				Time (firefighting) (min)	Volume (m <sup>3</sup> )
FW1	450 L/min (7.5 L/s) (See Note 3)	–	1	15	7
FW2	750 L/min (12.5 L/s)	750 L/min (12.5 L/s)	2	30	45
FW3	1500 L/min (25 L/s)	1500 L/min (25 L/s)	3	60	180
FW4	3000 L/min (50 L/s)	3000 L/min (50 L/s)	4	90	540
FW5	4500 L/min (75 L/s)	4500 L/min (75 L/s)	6	120	1080
FW6	6000 L/min (100 L/s)	6000 L/min (100 L/s)	8	180	2160
FW7	As calculated (see Note 7)				

Figure A-2: Method for determining firefighting water supply

## Appendix 2 – Applicable Standards for stormwater management

### A.2.1 Clause E1 Surface Water of the New Zealand Building Code

Clause E1 'Surface Water' of the New Zealand Building Code has the following requirements regarding surface water entering buildings;

<p><b>FUNCTIONAL REQUIREMENT</b>  <b>E1.2</b> <i>Buildings and sitework</i> shall be constructed in a way that protects people and <i>other property</i> from the adverse effects of <i>surface water</i>.</p> <p><b>PERFORMANCE</b>  <b>E1.3.1</b> Except as otherwise required under the Resource Management Act 1991 for the protection of <i>other property, surface water</i>, resulting from an event having a 10% probability of occurring annually and which is collected or concentrated by <i>buildings or sitework</i>, shall be disposed of in a way that avoids the likelihood of damage or nuisance to <i>other property</i>.</p> <p><b>E1.3.2</b> <i>Surface water</i>, resulting from an event having a 2% probability of occurring annually, shall not enter <i>buildings</i>.</p>
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Figure A-3: Relevant sections of Clause E1 of the NZBC relating to stormwater return period

### A.2.2 NZS 4404 2010

The requirements in NZS 4404:2010 New Zealand Standard for Land Development and Subdivision Infrastructure are reproduced in the table from the standard below.

Table 4.1 – Recommended AEP for design storms

Function	AEP (%)	Return period (years)
Primary systems –		
Rural	20	5
Residential and rural residential areas	10	10
Commercial and industrial areas	10	10
All areas where no secondary flow path is available	1	100
Secondary systems	1	100

Figure A-4: Relevant sections of NZS 4404 relating to stormwater return period

NZS 4404 2010 also makes the following recommendations regarding secondary flow systems.



#### 4.3.4.2 Secondary systems

Secondary systems shall consist of ponding areas and overland flow paths to manage excess run-off. Where possible, secondary systems shall be located on land that is, or is proposed to become public land. If located on private land, the secondary system shall be protected by legal easements in favour of the TA or by other encumbrances prohibiting earthworks, fences, or other structures, as appropriate.

Secondary systems shall be designed so that erosion or land instability will not occur. Where necessary the design shall incorporate special measures to protect the land against such events.

Ponding or secondary flow on local roads shall be limited to a 100 mm maximum height at the centre line and velocity such that the carriageway is passable in a 5% AEP design storm.

The TA should be consulted to confirm design requirements.

**Figure A-5: Relevant sections of NZS 4404 relating to stormwater secondary flow**

### A.2.3 Queenstown Lakes District Council Land Development and Subdivision Code of Practice

The Queenstown Lakes District Council Land Development and Subdivision Code of Practice are reproduced in the table from the code below.

**Table 4.1 – Recommended AEP for design storms**

All Primary Systems shall, as a minimum, cater for the worst case 1 in 20 year return period (5% AEP) storm with no surface flooding.

Where no secondary flow path is available the worst case 1 in 100 year return period (1% AEP) storm shall be catered for with no surface flooding.

#### 4.3.5 Design criteria

When the design process includes the use of a hydrological or hydraulic model, all underlying assumptions (such as run-off coefficients, time of concentration, and catchment areas) shall be clearly stated so that a manual check of calculations is possible. A copy of the model may be required by the TA for either review or records or both.

The design shall accommodate all upstream catchments on the basis of full development allowed for in the district plan. (The catchment area shall be based on geographical and topographical boundaries and not development boundaries).

Discharge to an existing reticulated network, or other Council owned stormwater network, shall require consent/permission from the Council.

Discharge to an existing network from a primary system shall be at a rate (litres per second) no greater than would have occurred for the undeveloped catchment during a 60 minute 5 year storm.

**Figure A-6: Relevant sections of the Queenstown Lakes District Council Land Development and Subdivision Code of Practice**

9 February 2016

Chief Executive  
Queenstown Lakes District Council  
Private Bag 50072  
**QUEENSTOWN 9348**

Attention: Anita Vanstone

Dear Anita

**Ayrburn Farm Developments Limited – Special Housing Area – Proposed Retirement Village**

Thank you for recently providing details of the above proposal to the NZ Transport Agency for comment. We understand that the proposal relates to a development of up to 201 dwellings plus associated care facilities and community amenities at 341–343 Arrowtown Lake Hayes Road, Arrowtown. Access to the site will be from a formed intersection on Arrowtown Lake Hayes Road.

On the basis of the information currently available to us, we are satisfied that the proposal is unlikely to have a significant adverse effect on the safety, efficiency and functionality of the State Highway 6/ Arrowtown Lake Hayes Road intersection, especially in the short to medium term. We are satisfied that the intersection is likely to be able to accommodate the traffic likely to be generated by this proposal.

We do have some concerns around the longer term operational capability of the State highway in this part of the Wakatipu Basin, particularly given the growing volume of consented but unrealised residential development on the eastern side of the Shotover River. It may ultimately prove difficult in the short to medium term to reprioritise investment funding to deliver on any required capital assets such as a new State highway bridge to respond to what is unanticipated and/or unintentional residential growth on the eastern side of the Shotover River delta.

Please do not hesitate to contact me if you have any further queries or require further information.

Yours sincerely



**Kirsten Tebbutt**  
Planning and Investment Manager – Southern (Acting)

Our Reference: A881303

10 February 2016

Anita Vanstone  
Queenstown Lakes District Council  
PO Box 50072  
**Queenstown**

Dear Anita

**ORC feedback on expression of interest for development of a Retirement Village for the Ayrburn Special Housing Area**

Otago Regional Council (ORC) provided Queenstown Lakes District Council (QLDC) feedback on a former proposal for the Ayrburn Special Housing Areas in June 2015.

Given the information supporting the proposal is not detailed, nor complete at this time, I can only provide an indication of issues the ORC would expect to see further addressed before considering a decision on its position.

As with ORC's previous response, ORC considers it as important to provide QLDC with any preliminary concerns ORC holds in respect to aspects of the proposals prior to making their decision.

There is an active debris-dominated alluvial fan through the centre of the proposed development area (with a 100 annual return interval). Residential development will significantly increase risk. It is noted the supporting information recognises an appropriate investigation will be required to assess this, and other, geotechnical and hazard related matters.

Storm water proposed to be discharged to Mill Stream will be required to have no decrease in the quality of storm water discharge from this site nor an increase in its rate of discharge. It is noted that the supporting information recognises ORC resource consent will be required to be applied for.



ORC seeks that a strategic approach is considered to address transport issues, particularly public transport, to, from and within these developments as well as connection to other necessary infrastructure.

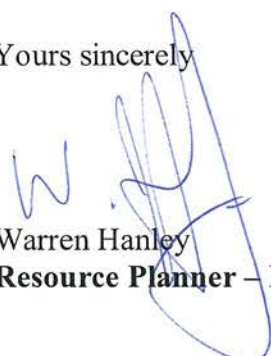
ORC public transport staff note that the proposed development is isolated from other residential areas and this can be problematic for providing public transport. Isolated developments results in a lot of “dead” running where there are no passengers to pick up- e.g. running past paddocks and this type of land use leads to indirect services, as the routes need to deviate to pick people up.

The traffic report assumes that public transport would be provided without consideration of the likely cost implications and uptake of the service.

Compliance with other higher level regulations such as National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health will also be important.

Please contact me at this office if you have any further questions.

Yours sincerely



Warren Hanley  
**Resource Planner – Liaison**