

# ***WANAKA AIRPORT***

## ***MASTER PLAN***

***Wanaka Airport Management Committee***



*Revision 2.41*

*11 SEPTEMBER 2008*

***Disclaimer***

***Forecasts of future commercial operations at Wanaka Airport***

*The airport projections<sup>1</sup> prepared by the Airport (with the assistance of consultants Peak Projects, Astral Ltd /Zomac Planning Solutions Ltd. and peer reviewed by AirBiz) are based on historical information and future expectations of economic events in Wanaka and regions. It is believed that they represent a realistic expectation of a likely scenario for airport development.*

*The forecasts presented do not necessarily imply either the intention or commitment of any commercial operator to commence or increase services.*

*Actual growth strategies and commercial initiatives will be determined typically by operators' commercial policies.*

*Their decisions, usually confidential until implemented will be influenced by market factors and commercial expectations as perceived over time.*

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<sup>1</sup> Wanaka Airport Air Traffic Forecasts.

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## **1. Key Recommendations of the Master Plan**

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The Master Plan defines key tasks and works likely to be required at Wanaka Airport with emphasis on the period 2009 -2019.

We have ranked the Planning Tasks and Capital Works in current priority order but these are not costed in this plan. Cost detail is or will be included in specific studies and reports.

### **1.1 Development and Planning Tasks**

- i. Undertake consultation with airport users and stakeholders based on the Master Plan presented herein.
- ii. Complete the designation process and implement changes to the District Plan for revised airspace designation and noise boundaries.
- iii. Review and make recommendations regarding the most appropriate governance structure for the airport.
- iv. Prepare a comprehensive development report and business case study for the development of the northern hangar area.
- v. Prepare a long - term business plan.
- vi. Negotiate lease termination to secure site for future passenger terminal building.
- vii. Prepare all documentation and complete the full process for certification of the airport under CAA Part 139.
- viii. Ensure adequate protections are put in place to ensure the on-going future of the War birds Over Wanaka Air show event due to the significant economic benefits for the Wanaka, Queenstown Lakes District, and surrounding districts.

### **1.2 Major Capital Works Items**

- i. Seal access roads - Spitfire and Mustang Lanes.
- ii. Seal Taxiway to Southern Hangars.
- iii. Construct access road to northern hangar development.
- iv. Construct passenger terminal building.
- v. Extend main aircraft apron.
- vi. Construct new car parks.
- vii. Extend runway as required.

## **2. Introduction**

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In July 2001, the Wanaka Airport Manager commissioned Peak Projects International Ltd to assist in the preparation of an **Outline Master Plan**<sup>1</sup> for the future development of Wanaka Airport.

Specific issues addressed **then** included:

- Allocation of new leased sites for tandem parachute operators and for other potential new commercial and private tenants;
- Identification of key planning issues to facilitate the future introduction of scheduled air services; and
- Preparation of an initial plan in sufficient detail to secure funding for a full master plan and feasibility study.

This Master Plan report updates the Outline Plan (2002) and incorporates significant components/aspects of the airport's development since that time, including:

- Purchase of an additional 90 hectares of land;
- The commencement of scheduled air passenger services; and
- Additional survey and runway planning.

This expanded Master Plan forms the basis for planning the development of Wanaka Airport with the intention that both the Master Plan and the associated Air Traffic Forecasts be updated on a regular basis.

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<sup>1</sup> Outline Master Plan. Peak Projects/Johnston (August 2002)

### **3. Description of the Airport**

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#### **3.1 History**

The original airport at Wanaka was located near Mount Iron and used by a number of owners of fixed wing aircraft. During the tourist season in the 1950s, Southern Scenic Air Services Ltd became one of the first commercial companies to use the strip. It became clear that this strip would never be satisfactory as a municipal airport one of the main reasons being the very close proximity to Wanaka Township and concern about aircraft noise. The present site near Luggate was deemed the most practical alternative site. This site was used originally by the Gore Aero Club for pilot training some 40 years ago. The owner farmer with an interest in aviation made a paddock adjacent to State Highway 6 available for aircraft, which included, from the late 1960s, Cessna aircraft operated by Tim & George Wallis.

In 1978, a price was negotiated for the purchase of land at the current site. The new Wanaka Airport was opened at the beginning of 1983 with an initial sealed strip of 15m wide. In 1986, the runway was lengthened to 1200 m with a grass-seeded extension. This proved unsuccessful and over the next two years, the Airport was upgraded with a new sealed runway and taxiway at a cost of \$750,000.<sup>2</sup>

In 1990, Wanaka Airport transferred into the ownership of Queenstown Lakes District Council (QLDC) from Vincent County Council and placed under the management of the Queenstown Airport Corporation. Subsequently in 1998 authority for the airport was transferred to a Wanaka based Management Committee and Airport Manager.

In 2004/6, parcels of land amounting to an additional 90 hectares were added to the airport by the purchase of land from Alpine Deer Group, Big River Co. Ltd. and a neighbour Mr. Pittaway. These parcels have protected the airport's operations and have precipitated the current process of airport designation revision (refer Section 3).

Few areas in New Zealand have experienced the recent growth of Wanaka and the Southern Lakes area. Queenstown-Lakes has retained its position as the fastest growing region of New Zealand, recording a census night population in 2006 of 32,500, up 29.2% on 2001. Wanaka's population increased by 45% to 6,440 over the 5 year period 2001 to 2006.

Wanaka Airport lies clearly amongst the top rank of smaller NZ airports. Particular strengths include a superb location for aircraft operations, its proximity to town, its international Air Show reputation, and the fact that it is a tourist destination in its own right.

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<sup>2</sup> Wanaka and Surrounding Districts" Irving Roxburgh 1990



### **3.2 Mission Statement**

Wanaka Airport does not presently have a formal mission statement but one similar to the following might be appropriate (with due acknowledgement to the Taupo Airport Strategic Review.<sup>3</sup>)

*“To operate a safe and reliable airport facility based on sound business principles that services and promotes the range of aviation operations including scheduled air transport services for the economic and social well being of Wanaka and surrounding districts.”*

Further requirements (significant to Wanaka) are:-

*“To recognise and protect the future of the War birds Over Wanaka Air show event due the significant economic benefit for Wanaka Ward and surrounding districts.”*

The related long-term strategies, which follow logically, might then be defined:

- *“To provide a gateway to Wanaka Ward and surrounding districts and provide a complementary facility to Queenstown Airport for the Southern Lakes area.*
- *To maintain and improve airport land and airport facilities to meet the needs of all airport users in accordance with sound business principles based on forecast demand.*
- *To promote the maintenance and development of scheduled air transport services to meet the travel requirements of business, residents, visitors and tourists. “<sup>4</sup>*

### **3.3 Site Description<sup>5</sup>**

Wanaka Airport is located on a flat elevated river terrace to the east of the Clutha River. The terrace drops away steeply to the SE some 500m from the end of the existing runway. The Clutha River is below the terrace to the east and the airport is screened from the township of Luggate by high ground leading to Mount Barker and by a complex of terraces. To the north lies farmland and the Poplar Beach Subdivision.

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<sup>3</sup> Taupo Airport Authority Strategic Review. Taupo District Council, Errol Millar, Arrus Knoble (NZ) Ltd. April 2003

<sup>4</sup> Adapted from Taupo Airport Authority Strategic Review TDC Millar, Knoble 2003

<sup>5</sup> Proposed Designations at Wanaka Aerodrome. Beca ,Carter Hollings & Ferner Ltd October 1995

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The following photo depicts the airport location (runway visible in centre of photo)



The airport lies in an open rural locality – generally well separated from concentrated residential settlements and the terrain in the immediate vicinity of the runways is flat. The soils are not of high quality, being Luggate shallow sandy loam.

The airport has frontage and vehicular access to State Highway 6 (SH6).

The airport is recognised as well sited, not only because it is located away from populated urban areas, but also because of its topographical and climatic advantages. An AirBiz/Beca survey commissioned in 1995<sup>6</sup> assessed suitability criteria for five airport sites in the Lakes District area and concluded that Wanaka was top rated in all respects but judged second only to Queenstown because of the latter's proximity to the Queenstown urban area and its existing infrastructure.

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<sup>6</sup> Queenstown Airport Alternative Site Study AirPlan and Beca for QLDC October 1995

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The land area occupied by the airport (including current and proposed airport designations) includes the lots described below:

- Lots 1 – 5 DP 18824
- Lots 10 and 11 DP 24410
- Lots 7 and 8 DP 22637
- Lots 2 - 5 DP 23517
- Lot 6 DP 22636
- Lot 6 DP 24685
- Lot 1 DP 341605
- Lot 2 DP 34105 [owned by NZ Fighter Pilots Museum Trust]
- Lots 4 – 5 DP 340031
- Lot 2 LT 368240 (from subdivision of Lot 1 DP 300052)
- Lots 1 & 2 DP 26239
- Legal Road

Wanaka Airport has two runways. The main runway (11/ 29) has a 1200m paved length and is 30 m wide and there is an additional grass runway parallel to the NE side of the main sealed runway. This is 840m long x 40m wide. In general, the majority of aircraft use the main runway, although the grass is used by smaller and vintage aircraft – particularly for landing. The two runways are too close to allow simultaneous operations.



**Figure 3-1: This photo shows the extent of the new airport boundaries following the 2005/6 land purchases.**

The road in immediate foreground marks the new NW boundary, while the road on the left of photo lies 50m inside the new northern boundary. To the SW the new land extends 100m from the current boundary fence. The earlier boundaries lie close to the sealed runway, which is visible centre-rear.



**Figure 3-1a: another view (this from the eastern aspect) showing the extent of the new airport boundaries.**

### **3.4 Airport Environs**

The Airport is located in the rural general zone. However, there are a number of other non-rural activities, which have developed or are developing around the area, which may have a potential impact on the development of the airport, including:

- An expanding Luggate township, with new subdivisions, approximately 2km to the south-east and several houses along SH 6A, about 1 km from the threshold of the RWY 29;
- The Wanaka Transport Museum & Boutique Brewery occupies a site bordering airport land to the SW and adjacent to State Highway 6. This site, privately owned site, would if ever made available, offer a very suitable area for future expansion of airport infrastructure);
- The “Have-a-Shot” tourist activity centre on the opposite side of State Highway 6;
- The development of 17 rural residential sites in the Poplar Beach area generally, and particularly along the Clutha River and terraces approximately 1-2km to the NE and parallel to the main runway to the NW;
- Two house sites to the NW of the airport – approx 500m from the airport new NW boundary;

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- The waste water treatment works constructed by QLDC in the NE corner of airport land;
- Other residential applications are planned along the airport northern boundary; and
- an “aero park” subdivision on the Pittaway land adjacent to the toy and transport museum.



Figure 3-2: Wanaka Airport lies 9 km by road (SH6) from the main township (top left in photo).

### **3.5 Existing Airport Development**

The Airport has a number of established commercial and private facilities on leased sites within the airport environs including:

- flight seeing operators;
- commercial helicopter operators and a helicopter training school;
- tandem parachute operator;
- War birds museum and War birds Over Wanaka base;
- vintage, classic and fighter aircraft restoration and operation;
- aircraft engineering and servicing (most recently turbine helicopter maintenance);
- private general aviation and helicopter hangars;
- meteorological station; and
- three aircraft re-fuelling facilities.



**Figure 3-3: This photo shows the buildings at Wanaka Airport (at January 2007).**

**Private Hangars and War birds are located adjacent to SH 6.  
Scheduled and charter passenger services are located near the main apron & taxiway  
while the helicopter zone lies to the SE.  
The skydive hangar and PDZ are situated furthestmost to the SE at the Luggate end of  
the airport. The neighbouring Transport Museum borders the airport to the W and SW.**

### **3.6 Airfield Operations**

The airport currently operates as a non-certificated airfield. It does not therefore fall within the jurisdiction of Part 139 of the Civil Aviation Rules relating to the Certification of Aerodromes.

A non-certificated status means that Civil Aviation Rules place the responsibility on the operator of an aircraft to ensure that the airport is suitable for their particular aircraft.

A non-certificated status also precludes the operation of scheduled flights for aircraft with seating capacities of 30 persons or over.

Current airfield operations at the airport include:

- Air New Zealand scheduled flights with Beech 1900D aircraft (19 seat passenger capacity);
- Flight seeing (Britten Norman Islander and Cessna C177 and C206 aircraft);
- Helicopter flight seeing, training and commercial operations with R22, R44, AS350B and H500 aircraft;
- Tandem sky-diving flights (Cresco and C180 aircraft) including the landing of parachutists on the airport;
- Private general aviation with a large variety of aircraft fixed wing types;
- Private helicopters; (R22 and R44);
- Tourist flights in Tiger Moth, Pitts Special and War birds aircraft including Aero L 39 Albatros and P51 aircraft;
- Non-scheduled charter operations ( Business jets, Convair 580, ATR 72, Dash 8 and others ;
- Military aircraft including King-Air, Hercules C130 , Airtrainers, Iroquois and Seasprite Helicopters; and
- Specific aircraft movements associated with the bi-annual Warbirds over Wanaka Air show and other Air show events.

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Annual aircraft movements (landings and takeoffs), estimated from landing fees received are shown below in Table 1-1.

**Table 1-1 Aircraft Operations (2006) estimated.**

Category	Aircraft Type	No of Landings per year (Estimated)
Scheduled Flights	Beech1900D	850
Flight seeing Operators	BN2-A Islander Cessna 177 Cessna 206/185	165 770 2,390
Pilot Training	Cessna 172 Light Sports A/C	2,148 1,494
Charter Flights	Convair 580/ATR72 etc	12
Skydive Operators	Cresco & other	4,600
Helicopter Operators	Robinson R22/44 H500/AS350	3,384 2,110
Private/General Aviation	Light aircraft	3,195
Warbirds and Adventure Aircraft		314
<b>Total</b>		<b>21,432</b>

## **4. Regulatory Status**

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### **4.1 Current Aerodrome Designation**

The original airport site of 81.5 Ha (including the parcels of land previously owned by the Alpine Deer Group) is designated currently under the District Plan for Aerodrome Purposes.

The present designation allows for:

- Aviation activities including operation of vintage and classic aircraft;
- Associated buildings and infrastructure including a cafeteria; and
- A 197m extension of the existing runway.

This designation is in the process of amendment by proposed variations to the District Plan, to extend the designation to include the new land now owned by the airport.



## **4.2 Building Restrictions**

The District Plan provides a Building Restriction Area, which encompasses the airport site, plus some portions of neighbouring properties, within which the principal restrictions on buildings are:

- that buildings must not exceed 9m in height;
- a minimum set-back of buildings from the runway centreline of 200m on the northern side and 150m on the southern side; and
- The building setback is 124m. This allows buildings up to 7m high under the 1:7 side clearance based on a 150m wide strip.

Amendments to these restrictions are not required in the currently proposed variations to the District Plan.

## **4.3 Current Air Noise Boundary**

The Air Noise Boundary (ANB) and Outer Control Boundary (OCB) are delineated in the District Plan, but specific restrictions on activities within these areas are not specified. Restrictions therefore rely on the more general provisions of the Resource Management Act and the New Zealand Standard for Noise Management and Land Use Planning (NZS 6805).

The boundaries defined in the plan were based on the report prepared by Beca Carter Hollings and Ferner for QLDC in 1995.<sup>7</sup> This report included a noise modelling exercise to predict the 65 Ldn and 55 Ldn noise contours. This modelling exercise used Yr.2010 as a planning horizon and included an estimate of the numbers and types of aircraft that take-off (and land) on a typical (busy) day.<sup>8</sup>

Typically (as is also the case for the Queenstown airport), the restrictions that apply within these areas are:

- Air Noise Boundary (65 dBA) - only airport related activities are allowed, and
- Outer Control Boundary (55 dBA) - any existing accommodation building must be acoustically insulated to maintain a maximum interior noise level of 40 dBA plus restrictions on use and noise insulation of new buildings.

As noted above the recent development of and further applications for residential subdivision in areas adjoining the airport boundaries and/or

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<sup>7</sup> Proposed Designations at Wanaka Aerodrome. Beca ,Carter Hollings & Ferner Ltd October 1995

<sup>8</sup> Proposed Designations at Wanaka Aerodrome. Beca ,Carter Hollings & Ferner Ltd October 1995

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operational airspaces has highlighted the need to provide adequate airport protection measures.

As part of the designation process currently underway, it is proposed to amend the ANB and OCB boundaries based on the air traffic forecasts contained in this report.<sup>9</sup>

### **4.4 Airport Height Controls**

The District Plan defines take-off, approach and side planes, which define the maximum heights of structures and other obstacles such as trees. The critical slopes defined in the District Plan are:

- Take-off and approach slope of 1:50 at both ends of an extended main runway strip;
- Transitional slope from the edge of the runway strip (150m wide) at a slope of 1:7; and
- Inner horizontal and conical surfaces in accordance with CAA AC 139.06.

The existing approach controls will be revised in the process outlined below to include both the existing runway length and alignment and the proposed runway layouts.

### **4.5 Reverse Sensitivity Airport Protection**

Some eight years ago the WAMC recognised the necessity to protect the Airport from residential and other development in the vicinity.

With the support of QLDC, airport policy aims to secure the long term viability of the airport by ensuring development in the immediate vicinity of the airport is appropriate to and recognises the existence of airport related activities. This will be achieved through the use of a number of planning tools including designation and the District Plan and, where necessary, through the use of Restrictive Covenants on Titles to address potential reverse sensitivity, noise & other airport protection issues.

### **4.6 Designation and District Plan**

Wanaka Airport is designated for 'Aerodrome Purposes' in the Queenstown Lakes District Plan. This designation is intended to protect the operational capability of the airport, while at the same time minimising adverse environmental effects from aircraft noise. The designation primarily addresses activities associated with the use the aerodrome but also applies in respect of airspace near the airport including take off and approach fans and obstacle limitation surfaces. The Queenstown Lakes District Plan also

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<sup>9</sup> Wanaka Airport Air Traffic Forecasts. WAMC October 2005.

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includes rules relating to activities occurring within areas potentially affected by noise associated with the airport.

The airport designation is currently being updated to incorporate newly purchased land and to accommodate airport growth projections. Concomitant with this, QLDC is reviewing the provisions of the District Plan as they pertain to Wanaka Airport. In particular, this will include a review of the adequacy of existing air noise boundaries in light of proposed growth in airport operations and activities. Revision of air noise boundaries will be consistent with New Zealand Standard for Noise Management and Land Use Planning (NZS 6805).

### **4.7 Restrictive Title Covenants**

Aircraft noise can have an adverse impact on the quality of lifestyle for people living in residential properties near airports. Appropriately designed and developed buildings will significantly mitigate the effects of noise associated with airport activities. However, people soon forget they have built or bought near an operating airport facility and new residents moving into the area may be less aware of non-visual elements of the existing environment. This can result in reverse sensitivity issues, where activities sensitive to an existing activity choose to locate nearby but subsequently attempt to inhibit its operation.

Wanaka Airport has sought to obtain no complaint covenants on neighbouring residential property developments wherever possible to ensure current and future property owners recognize the presence of the airport and do not seek to limit its operation.

The current Airport Restricted Covenants require (in simplified terms):

- That the land - owner occupies the land at their risk regarding any disturbance and annoyance from the airport.
- That the owner permits the Airport to carry on its lawful activities without interference, restraint, or complaint.
- That the owner will not restrict any further development of operations of the airport.
- That there will be no further subdivision of the property (this proviso was of special importance in the case of the Poplar Beach subdivision).
- That in the case of Poplar Beach owners/occupiers and the biennial Warbirds Over Wanaka Air show or similar, the ability for the organisers to prevent any open air assembly of persons and/or require vacation of all persons from the properties for the duration of the event.

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These covenants are binding upon the owner and the owner's successors in title to the land.

### **4.8 Certification of the Airport**

The airport will need to be certificated under CAA Part 139 Rules Aerodromes -Certification, Operation and Use prior to the operation of scheduled services, which use aircraft with more, that 30 seats (e.g. Dash 8 or ATR aircraft). The forecasts suggest that certification might be required by Yr. 2013.

CAA Part 139 prescribes specific requirements for certification, which are detailed in an Aerodrome Certification Exposition and include:

- Aerodrome Design Requirements – physical features, obstacles, visual aids, equipment and installations.
- Personnel Requirements – appropriate to maintain services and facilities.
- An Aerodrome Emergency Plan.
- Public Protection – security fencing etc.
- Wildlife Hazard Management.
- Aerodrome Maintenance Programme.
- Aerodrome Inspection Programme.
- Aerodrome Internal Quality Assurance Procedures.

### **4.9 Adjacent Visitor Accommodation Zone**

A special visitor accommodation zone (lying within the rural general zone) borders the airport boundary to the Southwest and is accessed from SH6. We understand that a primary justification for approval of this zone change was to provide for future infrastructure (viz. accommodation) for Wanaka Airport.

The site offers some opportunity for an "aero park" facility.

## **5. Governance**

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In 1998 airport management passed from the Queenstown Airport Corporation (QAC) to a Wanaka based Management Committee of QLDC with a locally based Airport Manager. We believe that the airport has operated satisfactorily with this “committee based” management structure for the last 10 years. The airport has achieved an operating surplus each year (of about 30 to 40% of revenue), that has been used to fund capital improvements.

Over this period Wanaka airport operations have increased significantly with a more than trebling of aircraft movements. In addition, sustainable scheduled air services by Air New Zealand commenced in March 2004, on a once daily increasing to twice daily in 2006.

Indications are that traffic through the airport and usage of its facilities will increase significantly over the future in conjunction with the resident population expansion of Wanaka Ward and increasing tourism through this destination.

The airport continues to benefit from strong community support and we believe maintains a good relationship with airport user groups, a matter of amplified importance when structural changes in governance are mooted.

Given recent growth and increased QLDC investment the issue arises as to which ownership and management structure is best suited to this facility to meet the desired community outcome already identified through the Wanaka 2020 process, namely:

*“Effective and efficient infrastructure that meets the needs of growth”*

The optimum structure will:-

- Maximise the benefit of the airport for ratepayers, Wanaka airport users and the wider community;
- Facilitate the growth of scheduled air services and other airport activities;
- Provide for efficient economic operation including the ability to fund capital projects for essential items of airport infrastructure; and
- Manage the protection of future airport operations and associated airspace through the Designation and District Plan.

Options for future airport governance include:-

- Retain the status quo;
- Consider potential cooperation with QAC in one form or another.
- Move to a corporate model structure such as a Council Controlled Trading Organisation (CCTO) with a local Board.

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QLDC is reviewing various future governance options for Wanaka airport and has determined that a new structure should be in place by 31<sup>st</sup> March 2009.

### 6. Growth Parameters

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#### 6.1 District Plan Growth Scenario

The District Plan rules and the associated noise boundaries were based on the following growth scenario from the Beca Carter Report of 1995:<sup>10</sup>

**Table 6-1 Earlier Predictions of Airport Operations: Take-offs per Day – Beca Report October 1995** <sup>11</sup>

Aircraft Type	1994	2010
<b>Scheduled Passenger Aircraft</b>		
Bae 146	0	2
Boeing 737	0	1
Hawker Siddley	0	2
<b>Tourism and Private</b>		
DC3	0	2
BN2-A Islander	4	8
General Aviation (incl. flight seeing)	10	25
Warbirds	1	5
Helicopters	2	10
<b>Total Take-offs per day</b>	<b>17</b>	<b>55</b>

These projections are now seen as conservative in terms of take-off numbers, with the Yr. 2010 forecast exceeded already).

Conversely, the projections for jet operations appear optimistic and are unlikely to be met within the forecast period to Yr.2010.

#### 6.2 Revised Growth Predictions – Wanaka Airport Traffic Forecasts 2006 to 2036

A planning window of approximately 30 years was proposed for this report. The Air Traffic Forecasts predict the growth of air traffic and permit an assessment of airport user requirements through to the year 2036.

This methodology utilises standard practice at other airports around New Zealand and the same 30-year planning horizon used for the Queenstown Airport.

To formulate a prediction for future growth of Wanaka airport, general trends were analysed including recent forecasts for Queenstown Airport. The

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<sup>10</sup> Proposed Designations at Wanaka Aerodrome Assessment of Environmental Effects. QLDC Beca October 1995

<sup>11</sup> Proposed Designations at Wanaka Aerodrome Assessment of Environmental Effects. QLDC Beca October

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Queenstown forecasts were prepared by AirBiz, a respected aviation consultant, who suggested the following growth parameters.

**Comparative Queenstown Airport Forecast Growth Projections<sup>12</sup>**

**Table 6-2 Queenstown Airport growth predictions as updated by AirBiz in September 2006<sup>13</sup>**

	2006-2013	2014-2023	2024-2036
International	3.1%	2.9%	3.2%
Domestic	3.1%	2.9%	3.2%
Flight seeing	1.1%	1.9%	1.0%
GA	1.1%	1.9%	1.0%

	2005-2011	2012-2016	2017-2025	2025-2035
Helicopters	5.5%	3.5%	1.9%	1.0%

**6.3 Wanaka Area Growth Trends**

- The Wanaka Ward area has experienced steady growth over the last 4 census periods with an increase in resident population of 62% in the last 10 years.
- Trend analysis suggests a resident population of up to 15,000 by Year 2015.
- The demographics show a gradually aging middle –aged population.
- Median age in 2001 was 39.8 years.
- Wanaka international overnight visitor projections by the Tourism Research Council are for a 5.9% per annum increase to 2010.
- Domestic overnight visitors are predicted to increase at a much lower rate.
- Annual population growth rates projected by the QLDC Growth Management study<sup>14</sup> are 7%, falling to 3% per annum by 2021 with an average of 4.66% per annum.
- Visitors overall growth rate (as projected by the QLDC Growth Management study) for the period 2006-2021 is 4.02% per annum.

<sup>12</sup> Queenstown Airport Master Plan July 2004. Airplan

<sup>13</sup> Queenstown Airport Master Plan July 2004. Airplan

<sup>14</sup> Queenstown and Wanaka Growth Management Options Study report to QLDC Hill Young Cooper Ltd. Feb 2004

#### **6.4 General Growth Predictions Wanaka Ward**

General predictions with respect to tourism and development in the region include:

- a significant increase in tourism numbers based in Wanaka as accommodation facilities are developed, and Queenstown capacity restricts continued exponential growth;
- the continued development of the Wanaka Warbirds and Warbirds over Wanaka Air show, including potentially new operators and complimentary activities;
- a large increase in privately owned helicopters and fixed wing aircraft based at the airport owned by incoming new residents;
- the development of aircraft servicing (especially turbine helicopter) facilities;
- an increase in flight-seeing operations direct from Wanaka to meet increased foreign tourist numbers;
- the trend for helicopter tourist activities to increase at a much faster rate than light aircraft, as evidenced at Queenstown airport; and
- increase in scheduled aircraft services to/from Christchurch and charter/winter services from Wellington and Auckland.
- Increased usage (including overnight parking) of the airport by executive jet aircraft.

#### **6.5 Forecast Air Traffic Growth Scenario <sup>15</sup>**

Based on the above predictions, a preliminary growth scenario developed for Wanaka airport suggests inter alia: - (refer Air Traffic Forecasts for full details)

- gradual increase in Christchurch scheduled services using the Beech 1900D aircraft;
- further increase in scheduled services capacity from about Yr.2013 – 2017 to/from Christchurch and (perhaps) Wellington with the use of larger Dash 8 (50 pax) and ATR (66 pax);
- the introduction in about Yr.2020 of domestic jet aircraft scheduled flights to/from Christchurch (and possibly Wellington and Auckland) using the B737-300 or similar aircraft;

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<sup>15</sup> Wanaka Airport Air Traffic Forecasts. WAMC October 2005

This forecast prepared in-house by Wanaka Airport has been peer reviewed by Zomac Planning Solutions Ltd. Astral Limited and Air Plan (Air Biz Forecast Demand Review).



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- the possible replacement of ATR 72 with Dash 8 Q400 aircraft in Yr.2026;
- an increase in flight seeing services based on tourism increases and the transfer of local flight seeing operations to larger, more efficient aircraft such as the Cessna Caravan or Airvan GA8;
- an increase in helicopter operations in accordance with recent and higher than proportional growth (similar to that experienced at Queenstown) – between 6.7% and 8.4% pa over 10 years; and
- the continued growth in war bird and vintage and aerobatic aircraft as War Birds over Wanaka and similar operations continue to develop Wanaka’s reputation as an aviation adventure base.

**Table 6-3 Proposed Average Annual Growth Rates of Aircraft Movements**

<b>Aircraft Movements</b>	<b>Av.Growth Rates Proposed</b>	<b>Av.Growth Rates Proposed</b>
<b>(By category of pax type carried)</b>	<b>2006-2025</b>	<b>2025-2036</b>
Scheduled pax	9.40%	2.77%
Charter pax	8.60%	2.90%
Flight seeing		
- to 2012	6.50%	1.90%
- from 2012	6.00%	
Pilot training		
- Cessna	5.00%	1.90%
- Light Sports A/C	7.40%	1.90%
General aviation	5.50%	
Skydiving	5.50%	1.90%
Warbirds	3.90%	1.90%
Helicopters		
- R44/22	6.70%	2.25%
-AS350/H500	8.40%	2.25%

Using the above parameters and growth rates a table of aircraft movements in 2036 is developed for use as the basis for planning of facilities required at Wanaka Airport in 2036.<sup>16</sup>

<sup>16</sup> Wanaka Airport Air Traffic Forecasts WAMC – refer APPENDIX B Schedules 8 and 9.

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A summary of the aircraft and passenger movements (landings and takeoffs) for the years 2006, 2016, 2026 and 2036 are detailed in the table and figures below:

**Table 6-4 Summary of Forecast Annual Aircraft Movements<sup>17</sup>  
(by aircraft type or current equivalents)**

<i>Aircraft Type</i>	<u>2006</u>	<u>2016</u>	<u>2026</u>	<u>2036</u>
<b><i>Scheduled A/C</i></b>				
B737/AS320	nil	nil	2,254	2,999
ATR72	nil	nil	nil	nil
Dash* Q400			2,190	2,915
Dash8 Q300	nil	2,555	nil	nil
Beech1900D	850	nil	nil	nil
<b><i>Non-Scheduled Charter A/C</i></b>				
Convair 580/ATR 72 etc	12	26	54	71
<b><i>Flight seeing A/C</i></b>				
BN2-A Islander	165	nil	nil	nil
Cessna 206/185	2,390	nil	nil	nil
Cessna 177	770	nil	nil	nil
Cessna Caravan		1,014	1,689	2,039
Airvan GA8		1,014	1,689	2,039
<b><i>Pilot Training A/C</i></b>				
Cessna 172	2,148	3,499	5,531	6,676
Light Sports A/C	1,494	2,434	3,847	4,644
<b><i>General Aviation A/C</i></b>				
Cessna etc	3,195	5,885	8,912	10,757
<b><i>Skydiving A/C</i></b>				
Cresco etc	4,600	7,493	11,845	14,298
<b><i>Warbirds + Adventure A/C</i></b>				
	314	478	663	801
<b><i>Helicopters</i></b>				
R22/44	3,384	6,352	11,448	14,301
H500/AS350	2,110	3,961	7,138	8,917
<b>Total</b>	<b>21,432</b>	<b>34,711</b>	<b>57,260</b>	<b>70,457</b>

Note : ATR 72 aircraft are forecast to operate between 2017 and 2025.

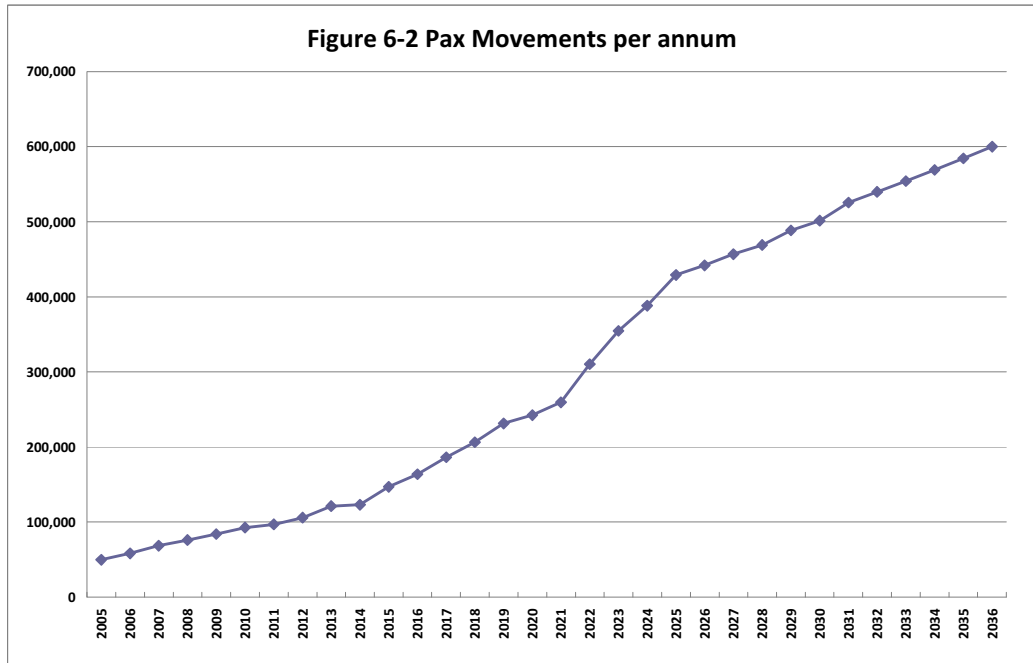
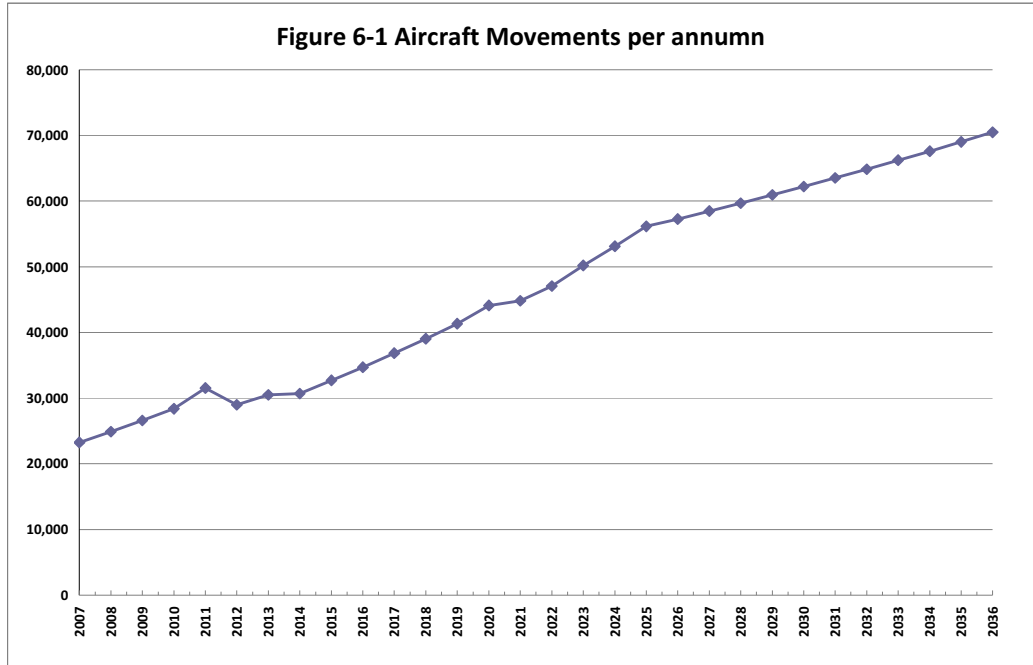
<sup>17</sup> Movements include “Touch and Go” landings where applicable e.g. training sorties. For detailed statistics Refer Airport Air Traffic Forecasts – extract APPENDIX B SCHEDULES 8 and 9.

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**Table 6-5 Summary of Forecast Annual Passenger Movements (by aircraft type or current equivalents)**

<i>Aircraft Type</i>	<b>2006</b>	<b>2016</b>	<b>2026</b>	<b>2036</b>
<b>Scheduled A/C</b>				
B737/AS320	nil	nil	214,534	305,924
ATR72	nil	nil		
Dash8 Q400	nil		113,442	155,297
Dash 8 Q300		89,425		
Beech1900D	11,628	nil	nil	nil
<b>Non-Scheduled Charter A/C</b>				
Convair 580/ATR 72 etc	510	1,105	2,274	3,027
<b>Flight seeing A/C</b>				
BN2-A Islander	989	nil	nil	nil
Cessna 206/185	8,963	nil	nil	nil
Cessna 177	1,732	nil	nil	nil
Cessna Caravan	nil	9,128	15,203	18,352
Airvan GA8	nil	4,563	7,600	9,173
<b>Pilot Training A/C</b>				
Cessna 172	2,685	4,374	5,531	6,676
Light Sports A/C	1,868	3,042	3,847	4,644
<b>General Aviation A/C</b>				
Cessna etc	6,390	11,770	17,823	21,514
<b>Skydiving A/C</b>				
Cresco	13,800	22,479	35,534	42,894
<b>Warbirds + Adventure A/C</b>	314	478	663	801
<b>Helicopters</b>				
R22/44	5,076	9,528	11,448	14,301
H500/AS350	4,115	7,723	13,919	17,388
<b>Total</b>	<b>58,070</b>	<b>163,615</b>	<b>441,818</b>	<b>599,991</b>

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## **7. Analysis of Airfield Operational Requirements**

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### **7.1 Runway**

#### **7.1.1 Runway Strip Width**

The runway strip width is the designated area either side of the runway centreline, which is unobstructed, level, and of sufficient strength to prevent serious damage to any aircraft, which might stray from the (sealed) runway during take-off or landing. The strip must be clear of obstacles such as buildings or fences.

Wanaka Airport currently has a defined strip width of 90m.

Runway strip requirements for various aircraft types are tabulated below.

The Civil Aviation rules define minimum strip widths, which are determined by:

- the type of aircraft;
- day or night use; and
- whether ILS or other precision approach systems are provided.

**Table 7-1 Runway Strip Width Requirements<sup>18</sup>**

<b>Airport classification</b>	<b>Aircraft Cat.</b>	<b>Strip width</b>
Domestic, non-instrument, day only for aircraft at or below 22.7T MCTOW	3 or 4	90m
Domestic, non-precision approach (day or night)	1,2,3, or 4	150m
Domestic precision approach	1 or 2	150m
Domestic precision approach	3 or 4	220m
International non-precision approach	3 or 4	150m
International precision approach	3 or 4	300m

Increasing the current strip width to 150m is recommended in order to allow for aircraft over 22.7 tonne MCTOW<sup>19</sup> and for future scheduled operations at night.

The airport has purchased sufficient additional land to provide for this upgrade to the current runway.

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<sup>18</sup> CAA Aerodrome Design Rules Part 139

<sup>19</sup> Maximum Capacity Take Off Weight

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Ultimately any decision on the need for and specification of a new runway will depend on future market and airline requirements and on CAA technical specifications. The main constraint on future runway capability is believed to be length rather than width – with elevated ground to the NW and a steep drop off to the SE.

The master plan supported by 30-year traffic forecasts provides for both existing runway extensions and the possibility of a new alternative runway to the north. These facilities provide for future aircraft operations up to B737 standard.

With the purchase of 90 hectares of new land Wanaka airport is able to provide for the option of a new runway if needed. The location of the proposed future runway is shown in the master plan in its extreme north position spaced 93m from the existing runway. In this position 150m strip width is available for the proposed runway and the existing runway could be used as a taxiway for the future runway.

The existing main runway and proposed future runway at Wanaka airport are under the master plan, designed as “instrument - non precision” runways. Under CAA runway design requirements the strip width required for such runways is 150m, as exists at most major New Zealand airports, including Wellington, Queenstown, Invercargill, Hamilton and Rotorua. Only the main runways at Auckland and Christchurch International airports, which are classed as “instrument – precision approach” runways have a 300m strip width, while Dunedin has 220m.

The Airline Pilots Association (ALPA) has requested that a 220m wide runway strip protection be considered. Refer ASTRAL comments in footnote.<sup>20</sup> Wider runway widths of 220m or 300m strips would be required for “precision approach” situations, although it should be acknowledged that improvements in GPS technology and RNP<sup>21</sup> navigation has led to an aviation industry view that 150m strip widths are sufficient for most if not all situations.

There is a total of 243m available for strip width should a future runway not be placed in its most northerly position shown in the master plan and this could

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<sup>20</sup> ASTRAL LTD notes “**runway strip width requirements**”

It is noted that the ICAO Annex 14 standard is for a 300m strip width for precision approach runways. Astral understands that 220m strip width for domestic precision runways is a somewhat dated requirement based on the old New Zealand CAA Airport Standards Manual and its long-term acceptability to CAA cannot be assured.

For these reasons, plus the limited additional reliability benefit precision minima are likely to provide, Wanaka Airport the master plan shows the option of 150m strip width. It is noted that Queenstown and Wellington airports are similar. The 150m wide strip does not of course mean that enhanced navigations systems, including GNSS and augmentation systems cannot be used to improve reliability of operation and overall safety; however, the minima will not be able to be reduced below non-precision limits.

<sup>21</sup> Required Navigation Procedure – (a navigation technology)

provide the option of a 220m strip width required for a domestic precision approach runway. This would be at the expense of retaining the existing runway as a taxiway – given insufficient lateral separation.

An airspace designation is proposed which will protect both the existing and future runways, the former in its existing position (with an extension at either end) and the latter in its most northern position. The airspace designation permits the future runway to be located closer to the existing runway, should this be required. This means there is considerable flexibility for Wanaka Airport to determine the final placement (parallel to the existing runway) of a future runway to meet the airport layout requirements as they evolve. Refer to runway length options (below).

### **7.1.2 Side Clearances**

Side clearance or transitional surfaces slope up from the edge of the runway strip at 1:7. These surfaces should be free of obstructions by buildings, trees or land.

At Wanaka Airport, the major side clearance issue is the terrace to the southwest of the Luggate end of the runway. This terrace cuts the side clearance surface by approximately 12m when allowance is made for a 150m strip width on the existing runway alignment. Whilst this can be notified by the appropriate notices in the Aviation Information Publication (AIP), it is likely to increase the allowable minimum cloud level for future RNP / GPS approaches. This is a further reason to protect an alternative main runway location offset to the north of the existing runway.

### **7.1.3 Obstacle Limitation Surfaces**

CAA Rule Part 139.51 requires an airport operator to provide obstacle limitation surfaces around the airport to ensure safe operation of aircraft approaching and departing from the airport.

This is calculated by means of height controls based on a series of geometric surfaces projecting up from the edges of the strip that surrounds the sealed runway, the intention being to prevent structures and trees from penetrating these surfaces in areas critical to operational safety and efficiency.

CAA AC's 139-06A provide details on the extent of these protection surfaces and applies to runways intended for aeroplanes with over 5700kg maximum certificated takeoff weight (MCTOW). It is essential that the protection surfaces appropriate to the largest aircraft type, which the airport plans to accommodate in the future, should be used; otherwise, the option to accommodate these aircraft may be lost due to conflicting development around the airport.

For this reason, it is considered appropriate to base the airspace protection around the airport on the requirements of AC139-6 AERODROME STANDARDS & REQUIREMENTS: ALL AEROPLANES CONDUCTING AIR TRANSPORT OPS.

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The resultant surfaces adopted under this standard for the existing and proposed runway are for a non-precision runway able to accommodate aircraft up to Code 4C for day or night operations. Code 4C aircraft include the Boeing 737-300 and Airbus A320 currently operating in New Zealand. Designing the flight paths to Code 4C standard will also cover the operation of smaller aircraft such as the Bombardier Dash 8 (40 - 50 seats), ATR-72 (64 seats) and the 19 seat Raytheon-Beech 1900.

The proposed sealed runway will be adequate for these aircraft types to operate domestic services although depending on the final runway configuration the B737-300 and A320 may have payload restrictions on landing with a wet runway. The B737-800 is unlikely to be able to operate due to the restricted landing distance on runway 11

### 7.1.4 Runway End Safety Area (RESA)

CAA implemented in 2006 (after a lengthy consultation period) a new runway end safety area regulation (RESA) that will apply to certificated airports and to Wanaka when it becomes certificated.

The rule states that a RESA must extend:

- “to a distance of at least 90m from the end of the runway strip”, and
- “if practicable:
  - to a distance of at least 240m; or
  - to the greatest distance that is practicable between 90m and 240m.

Provision of 240m RESA requires more extension of the runway to the north west and may reduce the landing distance on runway 11. However, refinement of the runway 11 threshold location, through a more detailed analysis of instrument approach obstacle clearance requirements may enable up to 200m more landing distance to be provided on runway 11, increasing the landing distance in to 1680m while providing a 240m RESA at each end of the runway. Refer Airways International Peer Review documentation.

CAA should be advised of RESA proposals and agreement sought before any definitive developmental plans are finalised.

The introduction of new aircraft types with improved performance characteristics may alter requirements and it is important to note that the RESA issue can be re-assessed when future runway extensions are under review.

### 7.1.5 Runway Length

The current runway has a sealed length of 1200m, with the designated strip extending a distance at each end of 60m. RESA's are not defined, but



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available RESA's (beyond the strip) are 220m at the 29 end and 180m at the 11 end of the runway- within the existing airport designation.

The following options are protected within the master plan, based on detailed survey data prepared by Astral Aviation and Clark Fortune Macdonald (surveyors) and peer reviewed by Airways International (a division of Airways Corporation of NZ).

### **OPTION 1- BASELINE**

A baseline configuration option that provides for an increase in the existing sealed runway from 1200 x 30m to a total sealed length of 1960m and allows for a 240m RESA to the NW and a 90m RESA at the SE runway end. This provides a 90m RESA for a RWY 11 landing with a 240m RESA at the SE end for RWY 11 take-off. Overall, there is a takeoff distance of 1720m and a landing distance of 1630m.

*These distances are best explained in PLAN 8934 Drawing 6 WANAKA AIRPORT FUTURE DEVELOPMENT – BASELINE CONFIGURATION. APPENDIX*

### **OPTION 2- ADDITIONAL EXTENSION**

A possible Additional Extension option which moves the NW threshold 200m further NW providing a total sealed length of 2160m x 150m. This allows for 240m RESA at both runway ends. This provides a takeoff distance of 1920m on RWY 11 and a landing distance of 1680m. For RWY 29 the takeoff distance is 1780m and the landing distance is 1680m. This option would require the installation of a visual slope indicator system and the application of PANS Ops criteria<sup>22</sup> and be subject to CAA specific approval.

*Again, this is best explained in PLAN 8934 Drawing 5 WANAKA AIRPORT FUTURE DEVELOPMENT – POSSIBLE ADDITIONAL EXTENSION. APPENDIX*

### **OPTION 3- CHANGE IN LATERAL POSITION**

The possible lateral relocation of either runway (1) or (2) configurations to a new centreline position located 93 m from the existing runway centreline. The existing runway could be retained as a taxiway.

### **OPTION 4- 220M WIDE STRIP**

A new runway with a 220m wide strip of either runway (OPTION 1) or (OPTION 2) length configurations (see above).

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<sup>22</sup> Refer Wanaka Airport Runway Development Peer Review. May 2008 Airways International (a subsidiary of Airways Corp. of NZ)

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Runway configuration options are protected in the revised air noise model providing maximum future protection for the airport development.

*Refer PLAN 8934 Drawing 5 WANAKA AIRPORT FUTURE DEVELOPMENT – AIR NOISE CONTOURS. APPENDIX*

Table 7-2 below provides an indication of the approximate runway lengths required for aircraft that could potentially use Wanaka Airport. These figures are subject to confirmation by the various operators of these aircraft in New Zealand, but can be considered accurate to within +/- 100m of Runway length.

The figures are for aircraft at maximum take-off weights (MCTOW). Aircraft loadings of passenger, baggage and or fuel, which are less than full, would reduce proportionately the runway length required.

**Table 7-2 Approximate Runway Lengths Required**

Aircraft Type	Aircraft Category	MCTOW (Tonne)	Pax Capacity.	Required Runway length metres Domestic	Required Runway length metres Trans Tasman #
Boeing 737-300	4C	63	136	1600	1900
Boeing 737-800	4C	79	180	1900	1900
A 320	4C	77	165	1650	1900
A319	4C	75.5	140	1500	1550
Embraer 190	4C	51.8	98	1550	2200
Dash 8 Q400	3C	29.3	74	1500	
Dash 8 Q300	2C	19.5	50	1200	
ATR 72 500	3C	22.5	66	1350	
Saab 340	3C	12.9	33	1300	
Jet Stream J 31	3C	6.9	19	1450	
Beech 1900D	2B	7.5	19	1200	
BN Islander	1A	2.9	9	400	

Specific data supplied by Mt Cook and Air New Zealand illustrate the limitations imposed on the operation of scheduled aircraft over 30 seats into the current 1200m runway as follows:

# Trans Tasman operations occur currently from these runway lengths with some payload restrictions.

Note: For some jets (e.g. A319), the difference between domestic and trans-Tasman runway length required is small – because the wet runway landing distance required for domestic operations is more limiting than the takeoff runway length required.

**ATR 72-500**

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- On 1200m runway, calm day with fuel for alternate landing other than ChCh
  - at 15 °C = reduce 750 kg or approx 6 pax
  - at 25 °C = reduce 1250 kg or approx 11 pax
- On 1500m runway
  - No pax restrictions with normal domestic fuel loads under most conditions
- On 1756m runway
  - 22.7T (max Tow) at 30° i.e. no restrictions at full load

### ***B737-300***

- On a 1700m runway
  - Relatively unrestricted domestic operations depending on fuel and baggage loads
- On a 1900m runway (similar to Queenstown)
  - Some restrictions on pax numbers for Trans-Tasman operations particularly in summer.

Over the period of this plan, it is possible that new aircraft types with improved performance could change this situation.

### **7.1.6 Runway Width (*sealed strip*)**

The present sealed runway is 30m wide. While this is of sufficient width to cater for all Category 3 aircraft (up to ATR 72), larger Category 4 aircraft require a 45 m runway width to comply fully with the recommendations of the Civil Aviation Rules.



**Figure 7-1: Runway 29 is 1200m long and 30m wide with a Runway Strip of 90m. The ability to increase the Runway Strip to a planned 150m is restricted currently by the Air show fence- line located on the left of the strip.**

**The adjacent mown grass strip to the north is 50m wide and approx 1000m long. The two runways lack sufficient separation to allow simultaneous operations.**

However, Boeing 737 and Airbus 320 aircraft (Cat 4) operate in New Zealand and Australia with a specific certification to land on 30m wide runways. This special certification allows Queenstown and Rotorua airports to operate B737 aircraft with 30m wide runways. Several other regional airports in New Zealand are also 30m wide notably Taupo, Whangarei and Oamaru

While an increase in sealed width to 45m might be required if new aircraft are introduced we do not think this likely within the 30 year planning horizon of this report. However, sufficient land is available to meet this requirement if found necessary. ALPA has suggested a 45m strip width and comments from Astral Ltd. are noted in the footnote.<sup>23</sup>

### **7.1.7 Main Runway Strength**

The existing main runway was constructed in 1987 with the design aircraft being a Hawker Siddley 748 (MCTOW = 20.1T) and the Friendship F27 (MCTOW = 20.4T).

The Ministry of Works certificated at the time that the runway was of adequate strength for two daily movements of the design HS748 over a period of 20 years.

The runway surface was originally constructed of chip seal and comprised:

- 150mm screened sub-base
- 100mm base-course
- chip sealed surface

The California Bearing Ratio (CBR) measured in 1987 at an average of 19 and a minimum of 13.

Based on a very conservative desktop study the runway strength was classified in 1989 as PCN 18/F/A/Y/T, which effectively means that the runway is suitable for aircraft with an ACN (Aircraft Classification Number) of 18 or less.<sup>24</sup>

Examples of ACNs for aircraft on flexible pavements with a high CBR of 15 or above are:

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<sup>23</sup> ASTRAL Ltd comments. The CAA rules at 121.71(i) (1) are quite clear than an aircraft, which has flight manual approval, based on certification flight-testing, for a lesser runway width than 45m may operate from runways of that lesser width. B737-300 and A320 operations from 30m wide runways are approved under this rule, as would be any future aircraft that has a similar flight manual provision.

<sup>24</sup> CAA AIP Vol.4 Wanaka Airport Specifications

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Boeing 737 –300	31
Bae 146-200	16
ATR 72-500	10-12
Dash 8	10
HS748	8
F27-500	8

Pavement strength should therefore be sufficient in the short term for the anticipated aircraft types up to the ATR 72.

The runway surface was originally constructed of chip seal with a camber similar to that used for general highways.

The reseal project included an assessment of the feasibility of reducing (or eliminating) this camber. Some minor remedial work was incorporated during the resealing but the camber remains. This is non-standard as most sealed runway surfaces are flat. A camber makes it more difficult for aircraft to track the centreline.

The airport completed a resurfacing of the existing runway in September 2007 with a coating of slurry cape seal. A slurry cape seal runway surface can be strengthened at any time with an asphalt overlay to provide for larger aircraft when necessary.<sup>25</sup>

### 7.1.8 Proposed Alternative Runway Alignment

The future development proposals provide for adequate land to be reserved for (the optional) relocation of the main runway to the north by 93m.<sup>26</sup> This would provide the following advantages:

- Resolve the side clearance issue with the adjacent terrace to the SE protruding 12m through the 1:7 side slopes.
- Create more space on the currently developed south side of the runway for expansion of apron, hanger and other facilities.
- Move the runway strip edge away from the state highway (SH 6) where it currently has limited clearance to the main road and the access road to the northern side of the airport.
- Allow the existing runway to be utilised as parallel code C taxiway.

This proposal has the disadvantage of reducing the development land available for building to the north by an area of approximately 93 m x 1930 m (17.9 ha). However, given that the width from the existing runway centreline to the northern boundary is approximately 310m we believe sufficient

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<sup>25</sup> Beca Report Commissioned for WAMC October 2006. Recommendations for Runway Surfacing at Wanaka Airport

<sup>26</sup> Wanaka Airport Future Development ( Clark Fortune MacDonald ) Map 8934 Drawing 3

infrastructure development area is retained. This area could provide, for example, some 35 sites of 2000m<sup>2</sup> each.

There is likely to be an aircraft tail height penetration of the 1:7 side surfaces with the existing runway and apron layout. The maximum tail height for 1:7 clearance is estimated to be about 6.3m at the apron edge. Care will need to be taken laying out the apron stand positions to minimise tail height penetration. The alternative parallel runway would eliminate this restriction.

Protection of the space for a possible new runway is therefore prudent.

## **7.2 Taxiways & Clearways**

### **7.2.1 Taxiways**

The airport currently has one sealed taxiway and two grassed taxiways, as follows:

- A main sealed taxiway to the main hangers and NW fuel pump apron
- A grass taxiway leading off the main taxiway to the SW - servicing the predominately-private southern hanger area for fixed wing aircraft operations.
- A grass taxiway which runs parallel to State Highway 6 serving the Skydive and Alpine Fighter Collection hangers (the latter being the future site for a new Warbirds Museum).



**Figure 7-2: Airport Taxiways.**

**The main sealed taxiway is at left centre and joins the mid-point of RWY 11/29.**

**The grass taxiway (L-shaped) to private hangars and Warbirds is in mid foreground.**

**The large taxiway to Alpine Fighter Hangar (and Warbirds display area) is located centre right adjacent to SH6.**

**The Neighbouring Transport Museum is in the immediate foreground.**

The main sealed taxiway and SW grass taxiway to the private hanger SW area are sufficient in size and configuration for the anticipated use, although some re-configuration of the junction will be required as the main apron sealed area expands.

Sealing of the private hanger taxiway and apron area would be desirable within five years depending on the degree of increased use, and the ability of the grass to withstand increased traffic levels. This taxiway is irrigated.

The taxiway serving the Alpine Deer Hanger needs to be retained to allow access to the Warbirds Museum, and to maintain the current role of this hanger as a service centre for the resident and visiting war bird aircraft. This taxiway is regarded as an essential facility for Warbirds over Wanaka and there is an airport commitment to retain it at a minimum of 30m wide for Air show purposes and for access to the Alpine Hangar.

Maintaining this taxiway does incur restrictions on the efficient utilisation of the limited building space at the airport and it is recommended that other operational scenarios might be considered for the future museum if this facility does not require taxiway access for operational aircraft.

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The airfield does not currently operate with a parallel taxiway to allow aircraft to either:

- quickly move off the main runway after landing; or
- taxi to the end of the runway prior to take-off without obstructing the runway.

After allowing for the increase in runway strip for the current runway to the proposed 150m width there is sufficient space for a parallel taxiway within the 160m building line restriction.

Relocation of the main runway by 93m to the alternative position to the north would allow the existing runway to be utilised as parallel code C taxiway.

Provision of an apron edge taxiway for both northern and southern apron areas is proposed.

Two scenarios for parallel taxiway arrangements are proposed below for the existing runway alignment and for the future alternative runway alignment.

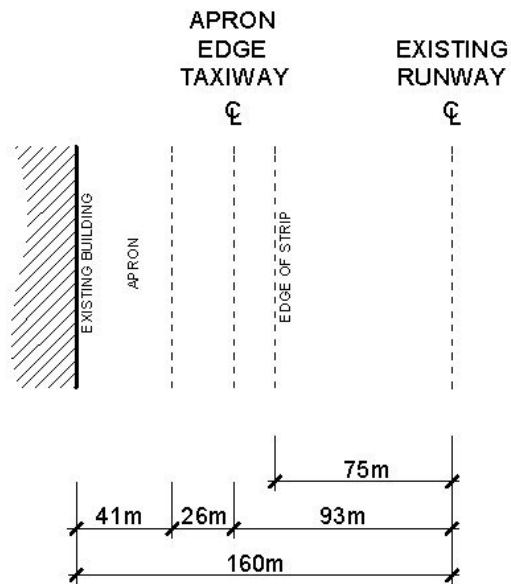
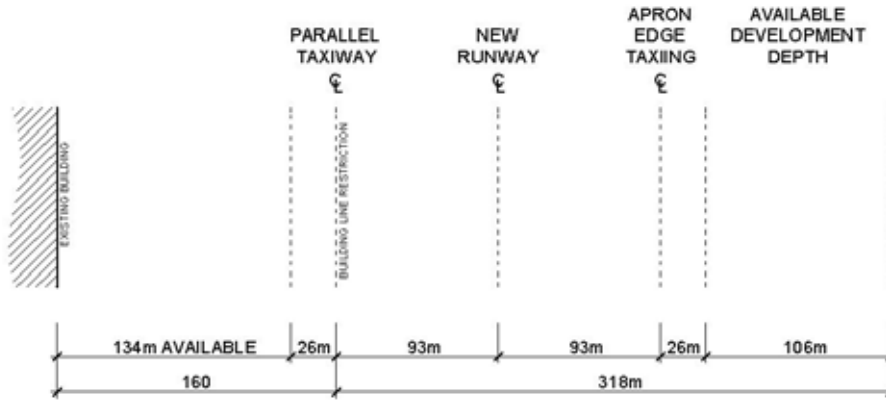


Figure 7-3: Apron Edge Taxiway – Existing Runway

Available apron depth is 41m to the 160m building line restriction or 81m to the older hangars that are set back 200m from the existing runway.





**Figure 7-4: Taxiway & Apron Depths – Relocated Runway**

### **7.2.2 Helicopter Clearways**

Whilst helicopters approach an airfield using similar flight tracks and circuit joining rules as fixed wing aircraft, their movements once within 30m of the ground, follow different rules and constraints.

Helicopter and fixed wing operations should ideally be separated once the helicopter comes close to the ground. Although helicopters can hover-taxi following similar routes to a fixed wing aircraft (albeit not on the ground), they should not pass above or close to fixed wing aircraft (either parked or manoeuvring) due to the downdraught from the rotor blades.

A designated helicopter clearway has been established between the existing designated helicopter hangars and the runway. Further designated helicopter hangars in the northern hangar areas will need to be identified and a clear separation between fixed wing and helicopter operations maintained.

Operation of helicopters from the general aviation hangers in the western corner of the airport site is not desirable and should be phased out as this area is not able to provide acceptable FATO's or alternative air taxiways to the runway area without interference with fixed wing aircraft aprons and taxiways.

### **7.3 Aprons**

### **7.3.1 Fixed Wing Aircraft Apron**

The current apron area is sufficient to accommodate two small commuter aircraft similar in size to the Air New Zealand Beech 1900D.



**Figure 7-5: This photo shows the existing apron area. The proposed sealed apron extension would extend N out beyond the fuel pumps towards the runway, SE almost to the red roof hangar. The seal would be extended also to the grass section adjacent to the proposed new terminal site**

Once scheduled operations involve aircraft larger than the 19 seat Beech, an expansion of the main apron area will be necessary to allow sufficient aircraft parking positions and maintain safe taxiing clearance behind parked aircraft. An apron depth of approximately 80m will be required from the existing building line. There is more than sufficient distance between the proposed edge of the apron and the outermost edge of the proposed runway strip to allow this.<sup>27</sup>

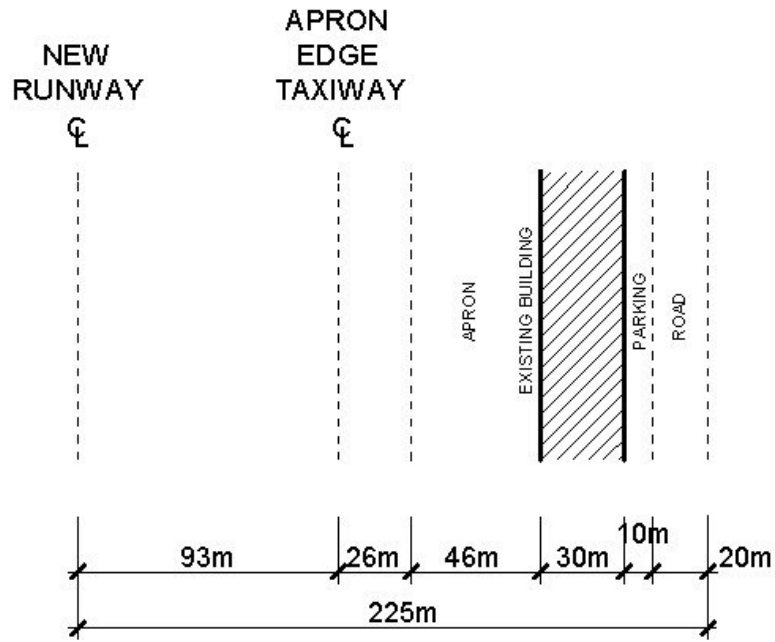
Expansion of the apron to the Southwest is also likely to be required to service the flight seeing operations. Whilst it is the airport's role to provide manoeuvring and loading apron areas, any long term parking use by individual tenants should be restricted where possible to within the boundaries of the tenants' own lot whereby the tenant funds construction.

<sup>27</sup> Wanaka Airport Future Development ( Clark Fortune MacDoanld ) Map 8934 Drawing 3

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The long-term plan envisages future hangar sites on the northern boundary with similar apron areas provided. An apron depth large enough to accommodate medium sized corporate jets and turbo prop passenger aircraft such as the ATR is recommended.

Refer figure 7-6 below.



**Figure 7-6: Northern Development Apron & Hangar Depths**

### **7.3.2 Helicopter Apron**

Dedicated “helicopter apron” areas are provided in front of the helicopter operator’s facilities to the southeast of the main aircraft apron.



**Figure 7-7: Hangars in the Helicopter Zone with existing concrete TALO areas in foreground. The proposed helicopter clearway extends out across the grass to the runway. Note irrigated apron verge to eliminate dust hazard.**

Dedicated “touch-down and lift off areas” (TALO’s) are located in front of each hangar - as for the fixed wing parking aprons. These TALO’s are within the individual tenants own lot where possible and constructed by that tenant.

A clearance area beyond these TALO’s out to the runway is provided (but not necessarily paved), to act as a helicopter clearway to allow the helicopters safe access to the runway.<sup>28</sup>

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<sup>28</sup> Wanaka Airport Future Development ( Clark Fortune MacDonald ) Map 8934 Drawing 3

## **8. Air Noise Boundary Assessment for Wanaka Airport using the Integrated Noise Model (INM).**

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### **8.1 Predicted Airport Noise Contours**

*The following commentary is drawn from a detailed report prepared by Marshall Day Acoustics Ltd.*

Marshall Day Acoustics Ltd was engaged by Wanaka Airport to prepare revised airport noise contours. The airport noise contours provide the basis for the implementation of New Zealand Standard NZS 6805 in the District Plan. The current noise contours contained within the District Plan were developed in 1995, with data representing the predicted airport operations for the year 2010. The purpose of this modelling exercise is to include more up to date operational data and thus provide revised noise control boundaries that could be used in any Plan Change or Variation application.

The noise contours produced in this assessment cover two potential runway configurations, and comprise the 2036 projected operations using *either*:

- the existing runway (extended), or;
- a proposed new runway (which would be located parallel to the existing).

The noise contours from each runway configuration have then been overlaid to produce one single set of combined contours. As a result, the noise contours presented in this assessment would enable either runway option to be developed in the future.

Each runway configuration includes the effects of starter extensions for jet aircraft departures and the effects of helicopter hovering along the northern boundary.

The predicted noise contours are shown in the plan in Appendix B.

### **8.2 Noise Performance Standards**

The New Zealand Standard NZS 6805:1992 “*Airport Noise Management and Land Use Planning*” provides a recommended approach for territorial authorities dealing with airports and land affected by airport noise. The process aims to manage the adverse effects of airport noise by controlling the use of land around airports, and by ensuring the airport does not exceed the future noise contours used for the planning process.

When establishing the location of noise boundaries, an allowance for the expected growth of the airport is made and NZS 6805 recommends a minimum 10 year projection of future aircraft operations. Some New Zealand Airports have used capacity as the future growth scenario. Marshall Day Acoustics Ltd recommends a minimum 20-year projection to be used. The updated set of contours for Wanaka Airport is based on a 30 year projected aircraft activity for the year 2036 to ensure that noise effects from future operational scenarios are included. Therefore, the contours represent a reasonable worst-case scenario, in terms of noise.

Reference should also be made to the provisions of New Zealand Standard NZS 6807:1994 “*Noise Management and Land Use Planning for Helicopter Landing Areas*” when, as is the case at Wanaka, helicopter operations make up a significant component of activity at the airport. Application of this standard is discussed further in the section on helicopters.

### **8.3 INM Model**

Several computer-based models have been developed to predict aircraft noise near an airport. The most widely used of the models (and the model recommended in NZS 6805) is the Integrated Noise Model (INM) developed by the US Federal Aviation Authority. The INM calculation procedures use an energy averaging technique to calculate the noise exposure in terms of  $L_{dn}$ . The INM calculates the noise level at a large number of grid points by summing the ‘noise energy’ from each aircraft movement during a ‘typical’ day’s operation. The ‘noise energy’ is calculated using the hourly  $L_{eq}$  value, night-weighted by +10 dBA (if applicable) and then averaged over 24 hours to give the daily  $L_{dn}$  value at each grid point. The grid points with equal noise level are then joined graphically to give a plot of  $L_{dn}$  noise contours.

### **8.4 Terrain**

Since the existing noise contours were originally included in the District Plan, the INM noise model has been updated several times. The latest version of the INM has the ability to include terrain effects in the noise contour calculation procedure. In summary, the effects of terrain are the screening it provides and the change in distance between aircraft noise sources and receivers on the ground.

Terrain data for Wanaka has been derived from NASA topographical data.

### **8.5 Aircraft Taxiing**

The INM does not specifically include calculations for aircraft taxi operations. However, there is provision to estimate noise from taxiing in the model. In situations where airport noise contours are located close to an airport, aircraft taxiing may contribute to the overall noise exposure level. Therefore, in these cases it is considered appropriate to include taxiing operations when calculating the airport noise contours. It has previously been shown that the situation at Wanaka Airport warrants the inclusion of taxiing in the noise contours. Only the noise from scheduled aircraft taxiing to and from the airport apron has been included in this assessment.

### **8.6 Standard INM Aircraft Data**

Based on previous studies comparing the INM prediction methodology with measured noise levels, the adjustments presented below have been utilised for the B737-800 in the noise contour calculations to more accurately predict the noise levels. It has been found that the B737-800 is typically louder than the Airbus A320; therefore this study has assumed all jet aircraft would be the B737.

Departure profile

- B737 - Departure + 3 decibels

Arrival profile

- B737– increase in Reverse Thrust components (as percentage of static thrust of 60%) on touchdown.

## **8.7 Helicopters**

The updated contours include 73 helicopter movements per day (32% of the total movements). Due to the distinctive character of helicopter noise, and the nature of helicopter operations, New Zealand Standard NZS 6807:1994 “*Noise Management and Land Use Planning for Helicopter Landing Areas*” has been developed specifically to deal with noise from helicopter landing areas.

NZS 6807 is similar to NZS 6805 in that it recommends controlling noise and the use of land around helicopter landing areas by establishing a ‘helinoise boundary’, defining an area of land within which, no new incompatible land uses are permitted unless adverse effects are mitigated.

The helinoise boundary is generally defined at  $L_{dn} 50$ , which is 5dB more stringent than the  $L_{dn} 55$  contour used for the fixed wing aircraft, recommended in NZS 6805.

The M-D report of 19 July 2007 states that all night time heli operations should depart or arrive on runway centreline until an altitude of 1000ft is attained.

Helicopters using Wanaka airport are required already to arrive and depart via the centreline of the runway and fly normal circuit patterns (the same as fixed wing aircraft) – at a minimum of 1000ft AGL.<sup>29</sup> For night-time operations, this minimum could be raised to 1500ft.

Helicopters are an essential part of Wanaka operations and night operations should be permitted.

## **8.8 Engine Testing**

The testing of aircraft engines is another noise generating activity that is vital to the operational viability of a commercial airport with scheduled flights.

It is noted that at present in the District Plan there is no noise rule applicable to unscheduled engine testing. Therefore for the current situation the normal noise rules would be applicable to engine testing.

MDA would not typically recommend the inclusion of Engine Testing within the noise control boundaries, but consider a specific noise rule within the District Plan a more appropriate method for controlling Engine Testing noise.

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<sup>29</sup> AIP Vol.4 Wanaka Airport NZWF

## **9. Airport Services and Tenant Requirements**

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### **9.1 General Guidelines for on-Airport Operations**

The District Plan specifically limits the type of activities that can be undertaken within the designated airport area to:

- aircraft and helicopter operations;
- aircraft servicing;
- fuel storage;
- aviation schools;
- activities and events (such as Air shows) associated with Warbirds and other vintage aircraft;
- aviation museum;
- aero recreation; and
- associated buildings, offices, parking and cafeteria/restaurant.

This section examines the general and specific needs of each type of existing and potential user, and how they may be accommodated within the Master Plan.

### **9.2 Passenger Terminal Building**

Currently, terminal facilities for scheduled air services are provided through a contract between Air New Zealand and Aspiring Air Ltd., which covers check in, baggage handling and aircraft servicing. Check-in services are provided by utilising the small terminal office of approximately 110 m<sup>2</sup> owned by Aspiring Air. With rapidly expanding demand and increasing pax numbers, this facility is over-stretched and new expanded facilities are necessary. Air New Zealand has identified this need and has formally approached the Airport and QLDC requesting that enlarged terminal facilities be provided as soon as practicable. It is unusual for a terminal facility to be privately owned and it is expected that any new terminal would be owned by the airport as is typical practice.

In early 2006 WAMC prepared a discussion paper to serve as a situation brief to the QLDC, airport users and architects about the background to, driving factors behind, and draft requirements for a new terminal facility for Wanaka airport.<sup>30</sup>

Two architects were asked to submit concept plans. Finance for these engagements was available under the LTCCP.

Subsequently a design concept from Ken Warburton, a Wanaka based architect was received. This concept design utilises a standard modular, steel framed industrial building, with additional areas provided to create an aesthetically pleasing public building. The use of a kitset frame minimises cost and allows for easy expansion when required. The modular construction allows also for a

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<sup>30</sup> Wanaka Airport Terminal Proposal Discussion Paper January 2006



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reduction in design area should the airport be unable to secure sufficient tenants for the proposed area.<sup>31</sup>

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<sup>31</sup> It is proposed that this design concept be peer reviewed with specific reference to functional layout of key airside and landside operational zones and estimated space requirements based on traffic expectations and input from potential users and tenants.

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It is envisaged that a new passenger terminal building would include as a minimum:

- Airline check-in facilities
- Baggage handling and storage areas
- Passenger waiting and greeting area
- Airline ticketing counter and offices
- Public and staff toilets (accessible inside and outside).

Associated facilities would include car parking, rental cars, tourist facilities and a café.

The anticipated location identified for the passenger terminal building comprises a plot of land adjoining the main aircraft apron, between the current Airport Office and the Aspiring Air Hangar. At 1000m<sup>2</sup> this plot is too small and narrow (20m) to feasibly accommodate the proposed terminal building, which will require amalgamation with an adjacent site (Lot 1) currently occupied by a small cottage.



**Figure 8-1: Proposed site for new terminal building is located on vacant land between Aspiring Air and Southair including the site occupied currently by the small cottage.**

**The Air NZ aircraft is shown parked beside the current terminal facility at Aspiring Air.**

Following expressions of interest received from potential tenants a draft Business Plan for the project has been prepared.

The terminal development plans allow for easy expansion of facilities (including possible building extension) within the Yr 2036 horizon of the Master Plan.

Longer-term space requirements for a significantly enlarged terminal might necessitate the re-acquisition of adjoining Lots 5 and 1 currently leased to airport operators.

### **9.3 Flight seeing Operations (Fixed Wing)**

Existing flight seeing operators are currently located facing the main apron area. Some further locations may become available with the proposed relocation of the Warbirds Museum. This will allow for a maximum of 2-3 new operators.

Development of a multi-user flight seeing terminal, or incorporation of flight-seeing boarding facilities within the passenger terminal building, are both options which are being considered further in consultation with the operators.

### **9.4 Helicopter Operators**

As outlined in Section 6 significant growth in helicopter operations is predicted. To maintain segregation of helicopter and fixed wing apron areas, all new helicopter operations have been located to the SE beyond Lot 28.

Separation of the helicopter operators from the parachute-landing zone becomes an issue as the helicopter operations extend to the southeast. A safety zone between the helicopter clearway and the parachute zone is therefore proposed.<sup>32</sup>

As noted earlier, commercial operation of helicopters from the private hanger area in the SW corner of the airport should not be permitted, due to the inherent conflict between taxiing light aircraft and helicopters and the potential lack of safe FATO surfaces due to the enclosure of the area with buildings and occupied areas such as the proposed car-park associated with the proposed terminal building.

It is reasonable to permit private helicopters to continue to use hangars in the fixed wing general aviation area in the short term and in particular the long established helicopter operation at Lot 4. In the long-term private helicopter operators should be relocated to the SE helicopter zone or to a designated helicopter zone in the Northern hanger development.

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<sup>32</sup> Wanaka Airport Future Development ( Clark Fortune MacDonald) Map 8934 Drawing 3

## **9.5 Parachute Operators**

Wanaka airport currently has one commercial parachute operator, providing tandem parachute jumps to the public. They do not operate a parachute training school and allow only experienced parachutists to jump on their own.

The parachute operator's new base was relocated to a dedicated site away from the main aircraft apron and other operational areas and the airport provides a fenced PDZ. This presents arguably one of the best parachuting facilities at any NZ airport. (see below)



**Figure 8-2: Parachute Hangar and Reception facility are shown in left foreground with fenced Parachute Drop Zone (PDZ) to left of threshold of RWY 29.**

Allowing parachutists to land on an operational airfield can pose special safety issues.

Precedents exist in New Zealand, at both Rotorua and Taupo, where commercial parachute operations co-exist with scheduled passenger services. In the case of Taupo Airport a formal memorandum of understanding (MOU) exists between three skydiving companies and Airways Corporation of NZ for operations in controlled airspace. A second MOU establishes guidelines between the skydivers, the Taupo Airport Authority and Eagle Air (Air New Zealand).

Rotorua airport covers parachute operations with an Agreement between the parachute operator and the Airport Authority

Whilst the arrangements at Wanaka are less formal, they have worked satisfactorily without incident since their commencement more than 10 years ago. The parachute plane advises all aircraft in the area of its position and specifically when jumpers leave the plane. Whilst operating above the local control zone (5,500 feet), the Skydive aircraft is in contact with Air Traffic Control in Queenstown. We are not aware of any conflict arising with the existing helicopter and flight seeing operators and other airport users, nor with scheduled passenger services but believe it may be prudent to seek more formal documentation as airport activity increases. This could include a specific Skydiving Operator licence agreement incorporating appropriate Memorandum of Understandings.

As the frequency of scheduled passenger air-movements (in particular) increases, the feasibility of uninhibited parachute operations may decrease, due to the reduced availability of free “windows” between aircraft arriving or departing. The successful continuation of ongoing parachute operations will necessitate a high level of cooperation between the skydive operator, other airport users and the airport authority.<sup>33</sup>

## **9.6 Warbirds and Aerobatic Flight Operators**

### ***Warbirds over Wanaka Air Show Community Trust***

A Community Trust has recently taken over this major international Air show and intends continuing with it biennially. The Air show has significant economic benefits for Wanaka Ward and surrounding districts. A renewable Deed of Licence with Wanaka Airport owners QLDC provides opportunity for the event to continue well into the future. As the number of operators and hangars increase at Wanaka Airport, it becomes essential to recognise the importance of retaining this significant community event. While some local operators and public may suffer temporary disruption, the overall long-term benefits for Wanaka Ward and surrounding districts are sufficient to ensure provision for the event in any airport planning.<sup>34</sup> This commitment and the current renewable Deed of Licence will need to be enshrined in a Constitution of the Council Controlled Trading Organisation if/when Wanaka Airport governance transfers from current QLDC management.

The airport has identified some issues with the current Deed of Licence that it is seeking to address at the time of its transfer over to the Trust.

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<sup>33</sup> Astral Limited (Airport Design consultants)– advisors to Wanaka Airport on design and operational issues note that “Astral is generally opposed to parachute landing operations becoming established at an airport where significant scheduled air transport and helicopter movements are planned to occur. In particular, the mixing of scheduled jet operations and parachuting is, in Astral’s opinion, likely to be prohibited by CAA and jet aircraft operators unless air traffic control is provided. Astral recommends that parachuting operations should be permitted only on the clear understanding that they might have to re-locate elsewhere once scheduled air services reach a level where safety becomes an issue and/or scheduled jet operations commence.

<sup>34</sup> NZ Major Events – Warbirds Over Wanaka 2006 Post Event Report and Visitor Impact Assessment Report” by Trinity Traders and Consultants, June 2006

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Adventure and WARBIRDS operations are predicted to expand in line with the increase anticipated in tourist numbers and the growing reputation of Wanaka Airport as an aviation adventure destination.

Existing facilities' for Warbirds are located suitably in areas adjacent to SH 6 and along the airport boundary with the adjacent Transport Museum to the NW.

These operations require that clear operational procedures be in place to ensure that members of the public are always escorted by a pilot once they cross the air-side/landside boundary. The airside/landside boundary is typically defined as:

- A gate from the car parking area to the apron/taxiway.
- A door from the car park into a hanger.
- A door from an office/reception area into the hanger or onto the apron.

### **9.7 NZ Fighter Pilots Museum Trust**

The New Zealand Fighter Pilots Museum opened at Wanaka Airport in April 1993. Utilising an existing hangar, its purpose is to tell the story of New Zealand fighter pilots and their crew as well as displaying the aircraft of the Alpine Fighter Collection.

Since opening, the museum has received 300,000 visitors from New Zealand and overseas.

In 2001 the museum purchased the large Alpine Fighter Collection Hangar and commenced studies to undertake a redevelopment of this building to house a new museum. At the same time the land under the museum was freeholded to the museum (tagged for museum use only) in return for land adjacent to the runway.

The new museum will feature state-of-the-art displays telling the story of New Zealand fighter pilots and display a collection of relevant aeroplanes. The exterior of the hangar will be architecturally remodelled, as befits a national institution.

Current planning indicates approximately 75,000 visitors per annum within 5 years of opening. There will be a requirement for adequate parking and possible modification to the entrance to the airport via slipways with a modified speed limit of 70km/h on SH6.

### **9.8 Aircraft Engineering**

As aircraft movements increase and more aircraft are based at Wanaka, the need to provide servicing and engineering facilities has increased significantly. Several dedicated facilities currently exist facing the main apron, for both fixed wing and helicopter operations, with other operators undertaking varying degrees of servicing.

Further engineering facilities will ideally be located in the northern development hangar area.

Segregation of fixed wing and helicopter maintenance operations should, where possible, continue as for private owners and commercial operators.

### **9.9 Private Hanger/General Aviation Area**

The SW general aviation area is retained in the proposed Master Plan. The landside access road (Spitfire Lane) will be sealed when funds permit.

The taxiway width of 30m provided at present is adequate for aircraft movements. Aircraft parking and servicing aprons should however be located within each lot owners boundary to avoid obstructing the taxiway.

Sealing of this taxiway area may be required in the future as traffic increases. Maintenance of the grass surface and reconstruction of soft or damaged areas should allow this grass to suffice for the next 5 years. Pop up irrigation installed last year has removed the previous dust problem.

Current lot boundaries and building locations (with a minimum 7m rear setback) provide sufficient parking within each lot.

A significant area for future development of private hangars exists to the north of the runway. This area is developed with a road access from two sides, (via Stephenson Road to the NW and the partially formed paper road in the NE) and car parking zone, hangars and apron serviced by an apron edge taxiway.

It is anticipated that the first sites will be located to the NW utilising the upgraded road access and it is intended to share power and water facilities, which are to be provided to the waste water works. Project Pure has undertaken to provide the necessary utility connections to the proposed hangar sites

### **9.10 Cafeteria**

An earlier proposal for an aviation themed cafeteria on Lot 2 adjacent to the main gate and opposite the proposed site of the relocated Warbirds Museum has since lapsed. This site was modified recently to provide an acceptable entrance to the service road and the site Lot 2A has reverted to the airport for future use as a public car park associated with the proposed terminal facility. Provision of a cafeteria within the proposed passenger terminal has been included in the terminal building concept plans.

### **9.11 Rental Car Operators**

Rental car facilities will be included in the new terminal concept to service the needs of arriving tourists. Currently one rental car facility operates from the premises of an airport-based flight-seeing operator. As rental car operators

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are a potentially significant revenue source, the terminal proposal provides specifically for:

- counter space within the terminal building; and
- dedicated parking places in the car park.

### **9.12 Retailers**

The current district plan does not specifically allow retailing, although any shops servicing the needs of airport users may be allowed. The District Plan could be broadened to allow retailing now prevalent at other airports notably Auckland, Wellington, Christchurch and Queenstown to service the travelling public and tourists.

### **9.13 Car Parking**

Car parking areas are required for each individual tenant, and should generally be their own responsibility. There is currently ample parking on most leased sites and an existing sealed car park near the main entrance. This can hold about 80-100 cars.

A larger car park will be provided to service the passenger terminal building, and the other operators such as the cafeteria. This main car park area (shown in the Future Scheme Plan) will provide sufficient space for approximately 260-300 cars

### **9.14 Project Pure (Waste Water Plant)**

QLDC has located the Project Pure treatment plant on airport land (separately designated) to the NW with other airport land used for subterranean disposal of treated wastewater. This arrangement is subject to the terms of an Agreement between QLDC and WAMC dated 7 November 2005.

This agreement requires (inter alia) that QLDC will “always ensure that the development and use of the land as an Airport shall not in any way be hindered and shall always be considered in priority to the use of the said land for wastewater disposal.”

Such issues that might arise and would result in mitigation measures include anti bird measures, road alignment and any obstacle height penetration. Two independent bird studies have concluded that there is no likely increase in bird activity resulting from the Project Pure plant.

## **10. Rescue Fire Services (RFS)**

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### **10.1 Other Operational Requirements & Issues**

RFS at Wanaka airport are currently limited to the provision of portable fire extinguishers, and a privately owned utility mounted foam unit. There are no



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rescue fire personnel employed at the airport other than special facilities and personnel provided during the Warbirds Air show. RFS are currently provided by the Luggate Fire Brigade with backup, if necessary, from the Wanaka and Lake Hawea brigades.

When the airport becomes certificated, a RFS is required to be provided at the airport. The level of services required is determined by the size of aircraft regularly visiting the airport. For turbo-prop aircraft with more than 30 passenger seats the relevant categories are specified in the table 10-1 below.

**Table 10-1 Rescue Fire Category – Turbo Prop Aircraft**

<b>Aircraft Type</b>	<b>Length</b>	<b>RFCategory</b>
ATR –72	27.1	3
Dash 8	25.7	3
Beech 1900D	17.6	2
Saab 340	19	2
Jet stream J31	14.4	2

Under CAA Rule 139.59(c) minimum categories are specified for aerodromes with regular services by jets of more than 30 pax seats and for turboprops of more than 30 pax seats if there are more than 700 movements in the busiest 3 months the minimum categories are 3 for turbo-prop aircraft and 4 for jet aircraft. The turbo-prop minimum applies only for more than 700 movements in 3 months or an average of 3.8 departures per day.

These are Cat 3 for turbo-prop aircraft of more than 30 pax seats if there are more than 700 movements and an average 3.8 departures per day. Cat 4 applies for jet aircraft,

In siting the RFS facility, response times to reach the extremities of the airport need to be considered.

In addition to the specific calculation based on aircraft size, a minimum standard of category 4 is often applied to aircraft over 30 seats by the operating airline.

Each of categories 2-4 requires one rescue fire vehicle, with the required water capacity and foam discharge rates increasing in accordance with the table 10-2 below.

**Table 10-2 Rescue Fire Extinguishing Agents**

<b>Aerodrome RF category</b>	<b>Water (litres)</b>	<b>Foam /minute (litres)</b>	<b>Other Agents; Dry chemical (kg)</b>	<b>Or CO<sub>2</sub> (kg)</b>
2	670	550	90	180
3	1200	900	135	270
4	2400	1800	135	270

Vehicles require trained personnel to be available at all times, of sufficient numbers to operate the vehicle at maximum capacity and sufficiently close to the vehicle to reach the most distant point on the airport within 3 minutes of an alarm being raised.

Typically this may be achieved initially by the airline providing trained personnel on a part time basis to attend when scheduled flights are due. Once operations extend for more than half the day, and/or more than one operator exists, then the employment of permanent staff by the airport will be required.

A building to house the vehicle and equipment will then be required, particularly during the winter when heating will be required to prevent freezing of the water. The Master Plan drawing identifies a possible location on the northern extremity of Spitfire Lane. The use of part of an existing hangar facing the apron would also be an acceptable interim solution.

Once the airport is certified, a rescue fire service will be required to Category 2 for beech 1900D aircraft, then to category 3 for ATR-72 and Dash 8 aircraft and eventually to Category 4 to service jet aircraft.

## **10.2 Air Traffic Control**

Currently air traffic control (ATC) is not provided at the airport. Whilst ATC is not likely to be required in the immediate future, provision for the location of a control tower is made within the Master Plan. A possible location is identified in the planning maps near the present location of the Met Service station, which would need to be moved to an alternative site.

This site would allow a tower to a maximum height of 9m before the 1:7 side clearance was infringed. Airways Corp will need to be consulted on the location of any future tower before this site (or any other) is confirmed.

## **10.3 Fuel**

The airport is currently serviced by two fuel companies (BP and Shell). BP has two pump stations located on the apron respectively 35m and 45m from the face of the building line. These two stations one new and the other recently upgraded provide a high standard facility. These locations can be accommodated within any apron expansion.

A third installation (Shell) is located beside the apron security fence in a relatively poor location and discussions have been held with Shell to provide a better site.

In the longer term, alternative locations will be investigated, for both BP and Shell, further away from the hangars and potential terminal building, although relocation to a remote site is likely to be unpopular with the majority of operators and oil companies, due to the inconvenience caused.

#### **10.4 Scheduled Night Operations**

The Master Plan provides for the possibility of aircraft operations at night.

For Master Plan purposes night operations are defined as operations between the end of evening civil twilight (ECT) and the beginning of morning civil twilight (MCT) i.e during the hours of darkness.

For District Plan purposes night operations are defined as those occurring between 10pm and 7am.

For District Plan noise contour purposes night operations are likely to include, but are not restricted to:

- scheduled and charter arrivals and departures of ski flights in winter;
- airline schedules that have aircraft overnighting in Wanaka and departing prior to 7am the following morning;
- night flight training, especially in summer when operations after 10pm are required to achieve night conditions;
- occasional early morning departures of Warbirds aircraft;
- general aviation newspaper and courier air delivery flights, typically arriving about 4-5am; and
- night heli operations for training, frost protection, policing and rural fire fighting.

To facilitate full night operations runway lighting would need to be installed and this normally consists of:

- Threshold lighting
- Runway edge lighting
- Runway end light
- Windsock lighting

We note that some instrument rated helicopter night operations occur currently at Wanaka airport typically for search, vineyard frost protection and other night time work. Allowance is made in the noise model for these activities.

#### **10.5 Good Neighbour Protocols**

The Airport operates a “good neighbour policy” and provides liaison between airport users and residents to address complaint issues (most likely related to noise).

## **Wanaka Airport Master Plan WAMC**

Wanaka Airport is ideally situated to ensure that noise issues are minimised with few close neighbours. There have been only few noise complaints directed to the airport over the last 10 years and typically have related to aircraft activities away from the airport environs.

Airport operators are aware of the potential for noise disturbance and generally adopt operational procedures to minimise adverse effects – provided only that safety considerations take priority.

The airport manager takes responsibility for investigating any complaints to ensure compliance with District Plan rules and will seek noise attenuation solutions through consultation with the parties.

It is important to note that the airport is not responsible for aircraft noise away from the airport as the airport controls directly only the use of the airport but airport management assists in investigating any noise complaints received.

### **10.6 Landscaping**

The airport landscaping plan is implemented progressively as funding permits and aims to enhance the airport environment with emphasis on tree planting to soften building sites - particularly as viewed from SH6.

All plantings require irrigation adding to the expense.

Individual leased sites are required under the terms of resource consent (through the Outline Plan process) to submit a landscape plan for WAMC and QLDC approval.

### **10.7 Environmental Issues**

These are addressed in detail the Wanaka Airport Assessment of Environmental Effects.<sup>35</sup>

### **10.8 Realignment Proposal of Roadway SH6**

Wanaka Airport landside area is constrained by the apex of a diminishing land triangle towards the eastern end. This triangle is created by the convergence of the main runway and adjacent highway SH6, and inhibits airport expansion.

It is proposed that SH6 realignment to affect a straight road from the lower Luggate cutting through the intersection of SH6 and Mt Barker Rd would provide long term protection of all future options at Wanaka Airport including future airline landing capabilities and provide for orderly expansion of both the existing main building line plus a potential second building line along the new roadside boundary.

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<sup>35</sup> Wanaka Airport Development Strategy Designations: Assessment of Environmental Effects :  
Draft Zomac May 2007

## **Wanaka Airport Master Plan WAMC**

Response from Transit NZ and with the neighbouring landowner indicates a favourable reaction to this realignment proposal in principle but cost will be a significant issue. The airport should continue discussions with Transit and neighbours to ensure that the potential benefit of a road realignment is recognised (and realised) for future airport development.

Discussions should continue also with the owners of the adjacent Toy and Transport Museum with the objective of reaching agreement for shared entry/exits on to SH6. This can be achieved by joining Spitfire Lane to the museum access road, across the common boundary.

### **11. Schedule of Development Tasks and Capital Works**

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The Planning Tasks and Capital Works are listed in current priority order but are not costed in this plan. Such detail is or will be included in specific studies and reports.

#### **11.1 Development and Planning Tasks**

- i. Undertake consultation with airport users and stakeholders based on the Master Plan presented herein.
- ii. Complete the designation process and implement changes to the District Plan for revised airspace designation and noise boundaries.
- iii. Review and make recommendations regarding the most appropriate governance structure for the airport.
- iv. Prepare a comprehensive development report and business case study for the development of the northern hangar area.
- v. Prepare a long-term overall business plan for the airport.
- vi. Prepare a design and business case study for the development of an airport terminal building.
- vii. Negotiate lease termination to secure sites for future passenger terminal building expansion.
- viii. Prepare all documentation and complete the full process for certification of the airport under CAA Part 139.
- ix. Ensure adequate protections are put in place to ensure the on-going future of the War birds Over Wanaka Air show event due to the significant economic benefits for the Wanaka, Queenstown Lakes District, and surrounding districts.

#### **11.2 Major Capital Works Items ( to be included in the QLDC - LTCCP )**

- i. Seal access roads - Spitfire and Mustang Lanes.

- ii. Construct access road to northern hangar development.
- iii. Construct passenger terminal building.
- iv. Extend main aircraft apron.
- v. Construct new car parks.
- vi. Extend runway as required.

## **12. Submissions received to Discussion Draft Master Plan – JUNE 2007**

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The WAMC sought submissions on the Discussion Draft of this Master Plan through advertising in local newspapers, the QLDC scuttlebutt newsletter and website and press articles in the ODT and Press newspapers.

Copies of the discussion draft were made available on the QLDC/Wanaka Airport website at the QLDC Wanaka Office, the Airport Office and Wanaka Library.

Additionally copies were sent directly to interested parties by email or hard copy.

As a result of this consultation, amendments and additions have been incorporated into the Plan.

The principal amendments are:

- provision in the air noise boundary model (ANB) for the possibility of scheduled air services at night;
- allowance in the ANB for helicopter hovering within the airport boundaries;
- provision for Engine Testing in the ANB;
- the addition of “starter extensions”; and
- provision for 240m RESA where practicable.

Four written submissions were received from the following:

- NZ Airline Pilots Association (ALPA) – the issues raised are discussed within the Plan under the relevant chapters. They relate to Runway Width, Runway Strip Width and Runway End Safety Areas (RESA's).
- Nugent (Resource Consent) Consultants - comments received covering air traffic forecasts and air noise boundary assessment.

## **Wanaka Airport Master Plan WAMC**

- Paul Le Blond (UK based Airport Consultant) –comments on air traffic forecasts, future aircraft types, terminal and car parking requirements and environmental issues.
- Brian & Judy Thomas (neighbours in Luggate) – “good neighbour policy” and concern about growth in Skydive operations.

We have sought to address these matters in the relevant sections of the Master Plan. In particular the issues raised by ALPA and Paul Le Blond were referred to Astral Aviation Consultants for review and response.

## **Appendix A - References**

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**Reference materials used in the compilation of this report are identified in the footnotes as well as the following:**

- “Wanaka Airport Outline Master Plan” dated October 2002 by Peak Projects International Ltd
- “Development Options for Wanaka Airport – A Preliminary Study” by Astral Ltd, dated 16 April 2004
- “Assessment of Environmental Effects - Proposed Designations at Wanaka Aerodrome” dated October 1995 by Beca Carter Hollings and Ferner
- “Queenstown Airport Alternative Site Study” dated October 1995 by Beca Carter Hollings and Ferner in association with AirPlan
- “Queenstown Airport Outline Master Plan” dated November 2000 by Peak Projects International Ltd
- Queenstown Airport Master Plan
- CAA Publications including
  - Civil Aviation Rules Part 139
  - Advisory Circulars AC 139-2 Rev 1, 139-4 Rev 3, 139-5 Rev 1, 139-6 Rev 2, 139-7 Rev 2, 139-8 Rev 2
- ICAO Airport Planning Manual Part 1 – Master Planning
- Queenstown Airport Corporation – Wanaka Airport files
- Queenstown Lakes District Council District Plan (as current at September 2006)
- “Queenstown and Wanaka Growth Management Options Study, Stage One” by Hill Young Cooper in association with QLDC, dated 6 February 2004
- “Queenstown Airport Aviation Forecasts Update” by AirPlan, dated September 2006
- “New Zealand Regional Tourism Forecasts” by Tourism Research Council, dated August 2004
- “New Zealand Major Events- Warbirds Over Wanaka 2006 Post Event Report and Visitor Impact Assessment Report by Trinity Traders and Consultants June 2006.
- Wanaka Airport Runway Development Peer Review May 2008 Airways International P Doyle. Aerodrome and Navigational Procedures Specialist. Airways Corp. of NZ.



**Wanaka Airport  
Master Plan**

**Appendix B – PLANS (listed in order as attached)**

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Appendix B Schedule 1. Existing Scheme Plan – Airport Layout

Appendix B Schedule 2. Future Scheme Plan – Airport Layout

Appendix B Schedule 5. Noise Model Flight Tracks

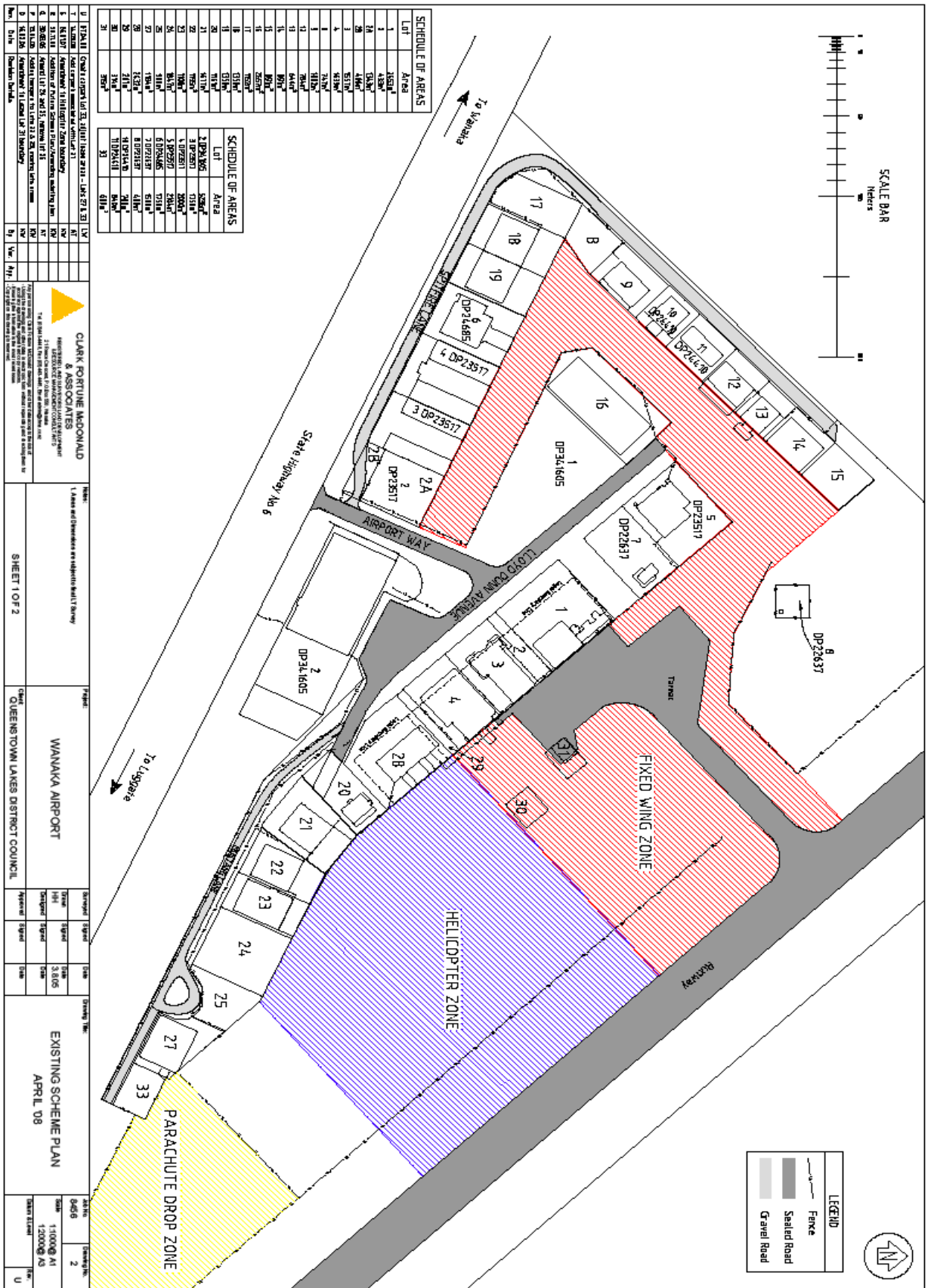
Appendix B Schedule 6. Predicted Noise Contours

Appendix B Schedule 7. Predicted Helicopter Ldn 50 and Lmax Contours

Appendix B Schedule 3. Baseline Runway Configuration

Appendix B Schedule 4. Possible Additional Extension Runway Configuration

# Wanaka Airport Master Plan

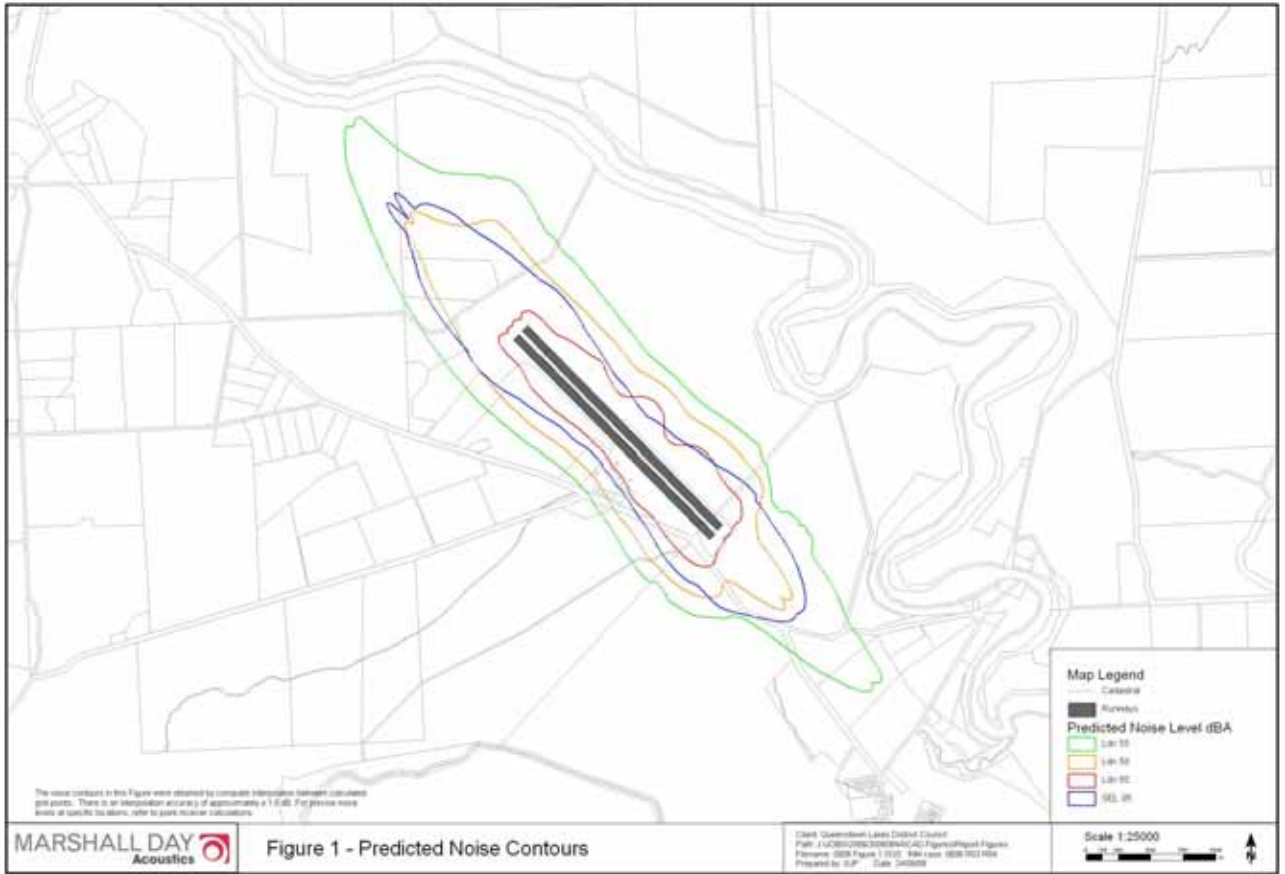




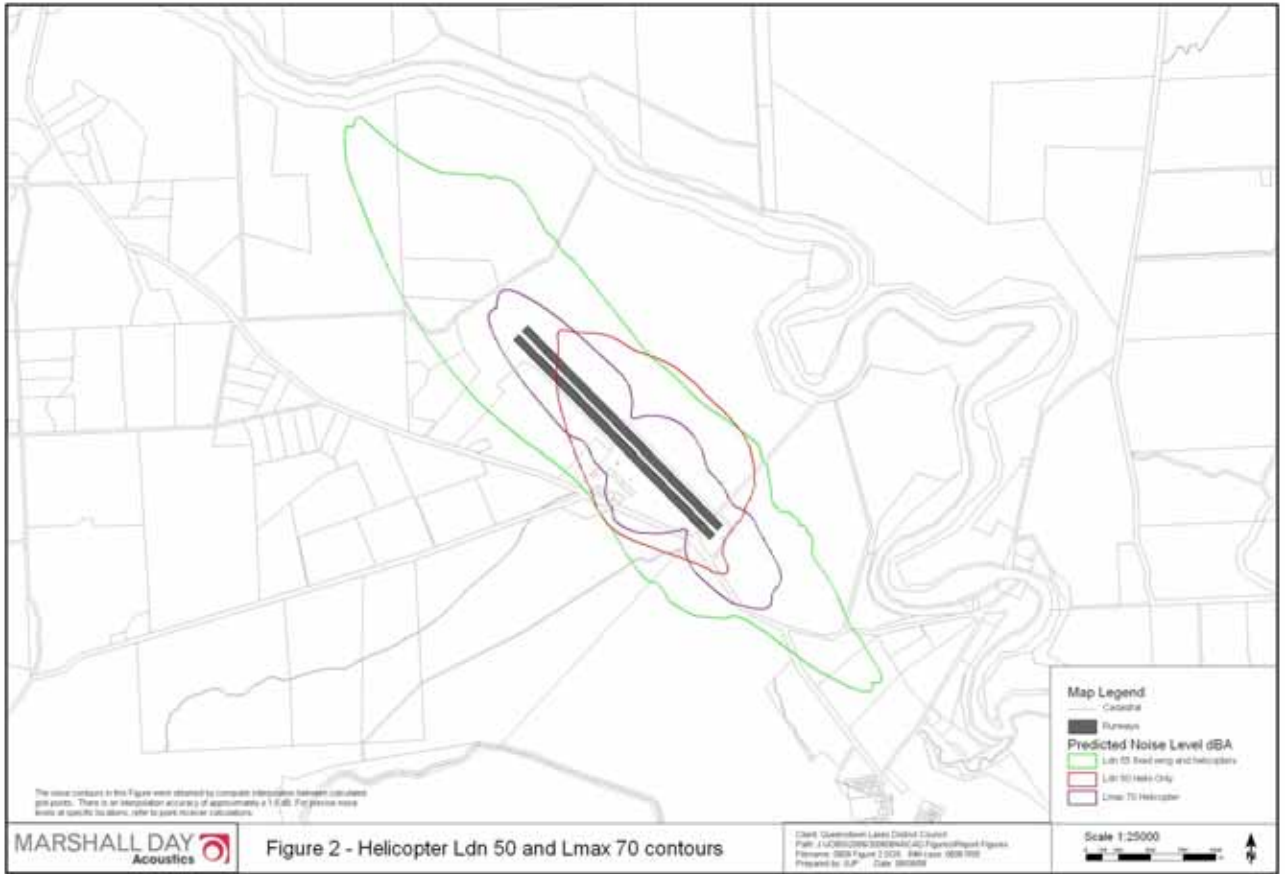
# Wanaka Airport Master Plan



# Wanaka Airport Master Plan



# Wanaka Airport Master Plan



# Wanaka Airport Master Plan

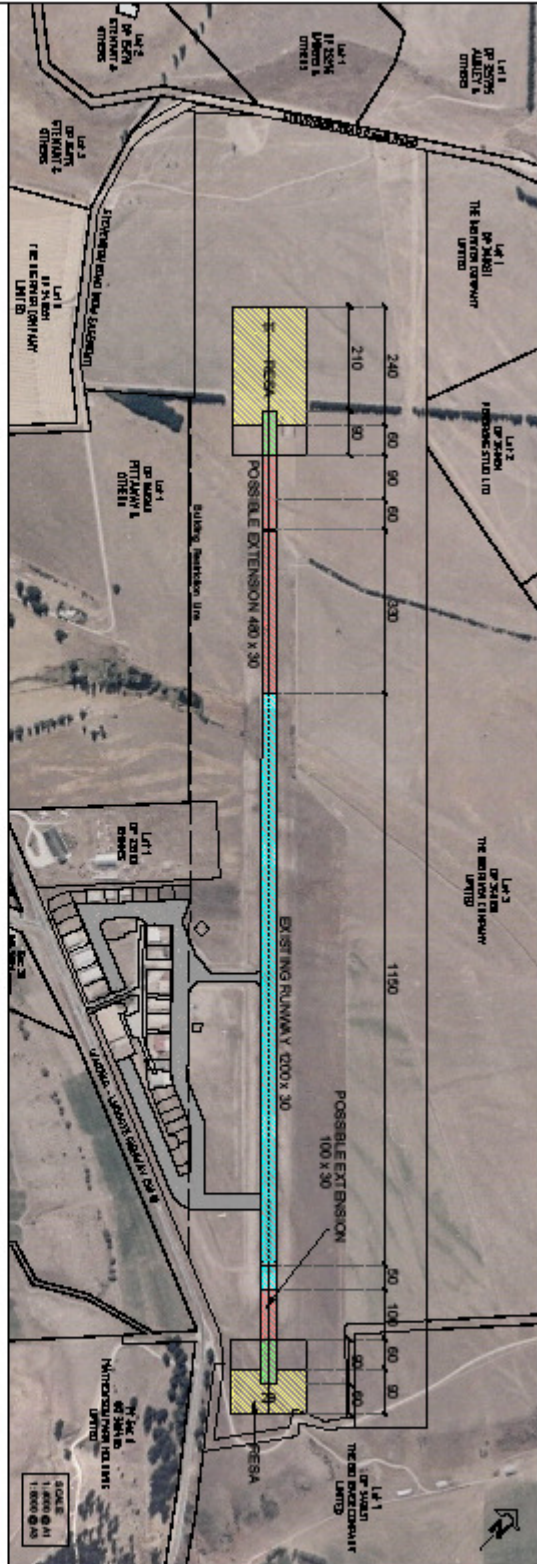
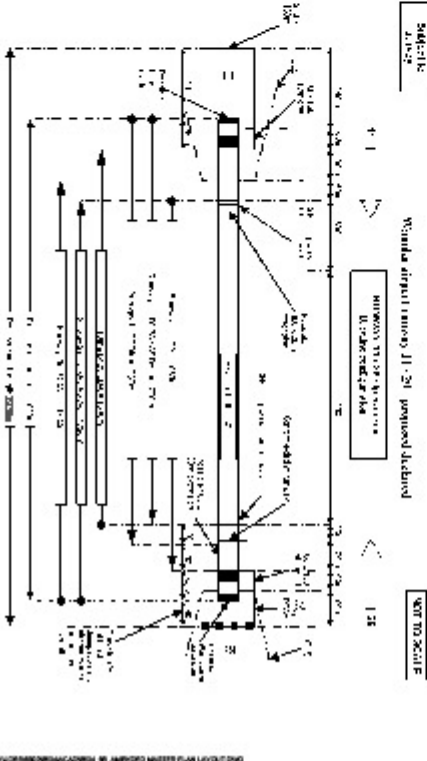


Table 3: Baseline Configuration physical characteristics

CHARACTERISTIC	Runway 11	Runway 29
Take off run available (TORA)	1720m	1720m
Accelerate stop distance available (ASDA)	1720m	1720m
Take off distance available (TODA)	1780m	1780m
Landing distance available (LDA)	1630m	1630m
Starter extension length	90m	90m
Overhoot RESA	90m	24.0m+
Undershoot RESA	24.0m+	24.0m
Strip width	150m	
Total sealed length	1960m	



**GLAY PORTLAND CEMENT CONCRETE**  
**CLASSIFICATION**  
 4 ASSOCIATION  
 7/25  
 100% CEMENT  
 100% SAND  
 100% GRAVEL  
 100% FINE GRAVEL  
 100% COARSE GRAVEL  
 100% FINE COARSE GRAVEL  
 100% FINE SAND  
 100% FINE SAND & GRAVEL  
 100% FINE SAND & GRAVEL & FINE COARSE GRAVEL  
 100% FINE SAND & GRAVEL & FINE COARSE GRAVEL & FINE SAND

**WANAKA AIRPORT**

**APPENDIX B SCHEDULE 3**  
**WANAKA AIRPORT**  
**FUTURE DEVELOPMENT -**  
**Baseline Configuration**

As shown  
 N100 1:5000  
 1:5000

