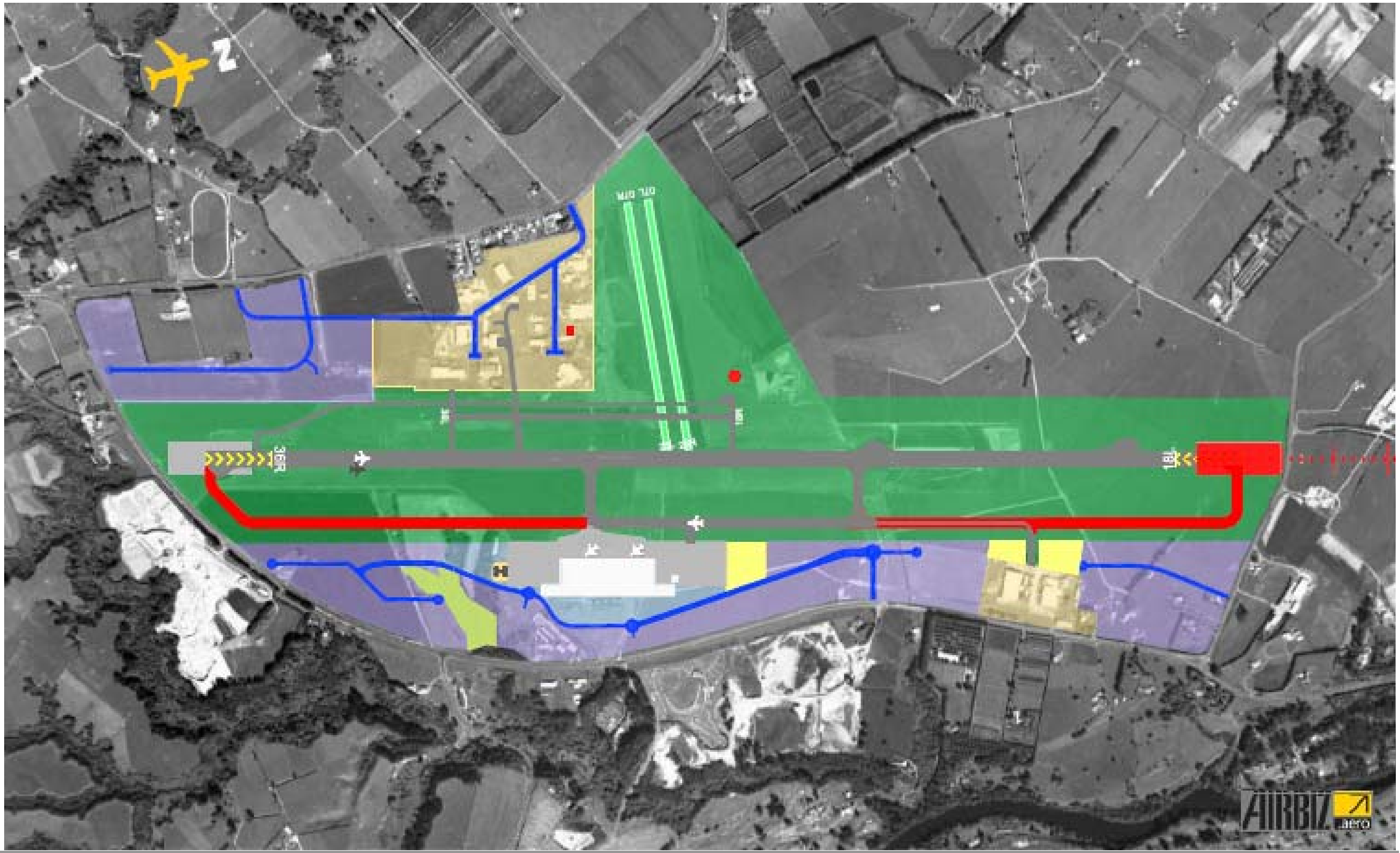
Hamilton International Airport

MASTER PLAN 2030

12 March 2009



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Contents

1 Introduction

1.1. Background

Hamilton International Airport (HIA) has engaged Airbiz to assist in the preparation of an airfield master plan. The objective is to prepare a 20 year master plan to 2030 for the airfield areas of the airport (runways, taxiways, aprons, safety areas, and bulk location for terminal areas), for three principal purposes:

- To provide greater detail and clearer guidance about long-term aeronautical requirements to avoid encroachment and ensure compatibility of near-future commercial developments on the airport,
- To identify potential airfield capacity constraints (e.g. peak period runway congestion),
- To identify long-term aeronautical land requirements and safety areas for HIA and regional planning; and
- To identify staging for infrastructure developments (e.g. taxiway construction) that would alleviate future capacity constraints, for the purposes of high level capital works programming.

Concurrently, HIA engaged Airbiz to prepare a scoping study on the Airport's opportunities in relation to attracting new airlines in both the trans-Tasman and long haul markets.

Clearly, the two studies are closely inter-related as success in one (the business development strategy) informs the demand scenarios for the master plan and guides the requirements for near-future infrastructure including runway length and terminal area facilities.

1.2. Approach and Consultation

An initial workshop was held in Hamilton on 5 September 2007 with HIA management. The workshop session provided an opportunity for consideration of most aspects of the master planning process, including:

- Demand projections
- Planning parameters
- Constraints and issues
- Ultimate development of airfield
- Staging.

In late 2007 and early 2008, master planning focussed on identifying the core land required for aviation purposes so that the balance of peripheral land could be allocated for non-aviation commercial purposes. Also analysed were the OLS constraints on the surrounding land, recommendations for land use under the flight tracks, and recommendations on sizes for parcels of land which opened on to aeronautical land. The bulk of commercial areas have been incorporated into HIA's Titanium Park Joint Venture development with the remaining area allocated for commercial uses under direct HIA control.

Airbiz canvassed freight opportunities with the HIA executive management team in early 2008.

During 2008, HIA concentrated on developing its airline marketing initiatives and considering the implications for runway length that might be associated with various new route scenarios.

In later 2008, the Master Plan process involved a review of the earlier traffic forecasts, for both master planning and noise contour preparation. In particular, the airport had been experiencing strong growth in flying training activities and HIA wanted to be sure that the Master Plan and noise contour forecasts were accounting for this satisfactorily.

With these further planning tasks now complete, the overall Master Plan has been finalised.

2 Airport description

2.1. Ownership

HIA is owned and operated by the Waikato Regional Airport Limited (WRAL). The following five local councils share the ownership of WRAL as follows:

Hamilton District Council	50.000%
Waipa District Council	15.625%
Piako District Council	15.625%
Waikato District Council	15.625%
Otorohonga District Council	3.125%.

2.2. Airport Location

HIA is located on a 277 hectare site (of which 215 hectares is retained by WRAL and 63.4 hectares by Titanium Park) approximately 14 kms south of Hamilton City and is sited strategically between State Highways 1, 3 and 21. Refer to Figure 2-1 which depicts the location.

FIGURE 2-1 HAMILTON AIRPORT LOCATION

Auckland International Airport (AIA), New Zealand's largest international airport is approximately 90 minutes drive north from HIA.

2.3. Current Airport Infrastructure

Four runways provide a platform for aviation operations. The main sealed runway 18L/36R was extended to its current length of 2195m in 2006. There is a parallel grass runway 18R/36L of 875m length. There are also two parallel grass cross runways, 07L/25R and 07R/25L. The declared operational lengths of each runway are shown in Table 2-1.

		Runway declared lengths (m)		
Runway	**Surface**	**ASDA**	**TODA**	**LDA**
18L	B	2135	2165(1)	1782
36R		2195	2255	2059
18R 36L	Gr	750	750(2)	750
07L 25R	Gr	720	720(3)	720
07R 25L	Gr	715	715(3)	715

TABLE 2-1 CURRENT RUNWAY DATA

Notes: *(1) TODA at 1:50*
(2) TODA at 1:20
(3) TODA at 1:30

Two stub taxiways link the main runway to the aprons as follows:

- A Code C stub taxiway provides access to the passenger terminal apron on the eastern side,
- A Code B stub taxiway provides access to the GA area on the western side.

The terminal building has a gross floor area of approximately 6,600m^2 and caters for a range of domestic and international services.

A substantial General Aviation (GA) and aircraft maintenance precinct has developed to the west of the main runway, with landside access from State Highway 3.

The major GA operator situated at the Airport is CTC Aviation Training (NZ) Limited. The 1800m^2 Crew Training Centre provides training facilities on the airport site for up to 190 trainee pilots annually. This purpose-built training centre is based on a 2.8 hectare site adjacent to the airport's main runway and has an on-site aircraft maintenance area which supports the centre's fleet of 30 aircraft comprising a mix of single and twin engine types.

CTC's contribution to the numbers of aircraft movements is predicted to increase even further as the training centre has recently expanded its facilities to include:

- Additional flight simulators
- More ramp space for aircraft parking
- Additional numbers of trainees
- Student accommodation – a purpose-built trainee accommodation complex on nearby land.

Other GA operators include:

- Pacific Aerospace Corporation Ltd which manufactures and distributes three aircraft types from their hangars adjacent to State Highway 21
- Alpha Aviation Ltd which manufactures training aircraft from their site west of the GA cluster
- The Waikato Aero Club, which is also involved in flying training
- Superair Ltd, which is a large top-dressing company that maintains their head office and maintenance facilities on the west side of the main runway, and
- Various GA engineering organisations operating in and around the GA cluster.

Eagle Airways Ltd is a regional carrier Beech1900D operating aircraft on regional routes. It is a wholly owned subsidiary of Air New Zealand and maintains its head office and engineering facility at HIA on the west side of the main runway.

HIA has the fourth longest commercial runway in New Zealand (2,195m) after Auckland, Christchurch and Invercargill and is preparing a business case to further extend the runway to position itself to target additional international passenger and freight carriers from beyond the Tasman market.

The existing airport layout, including key facilities, is illustrated on Figure 2-2.

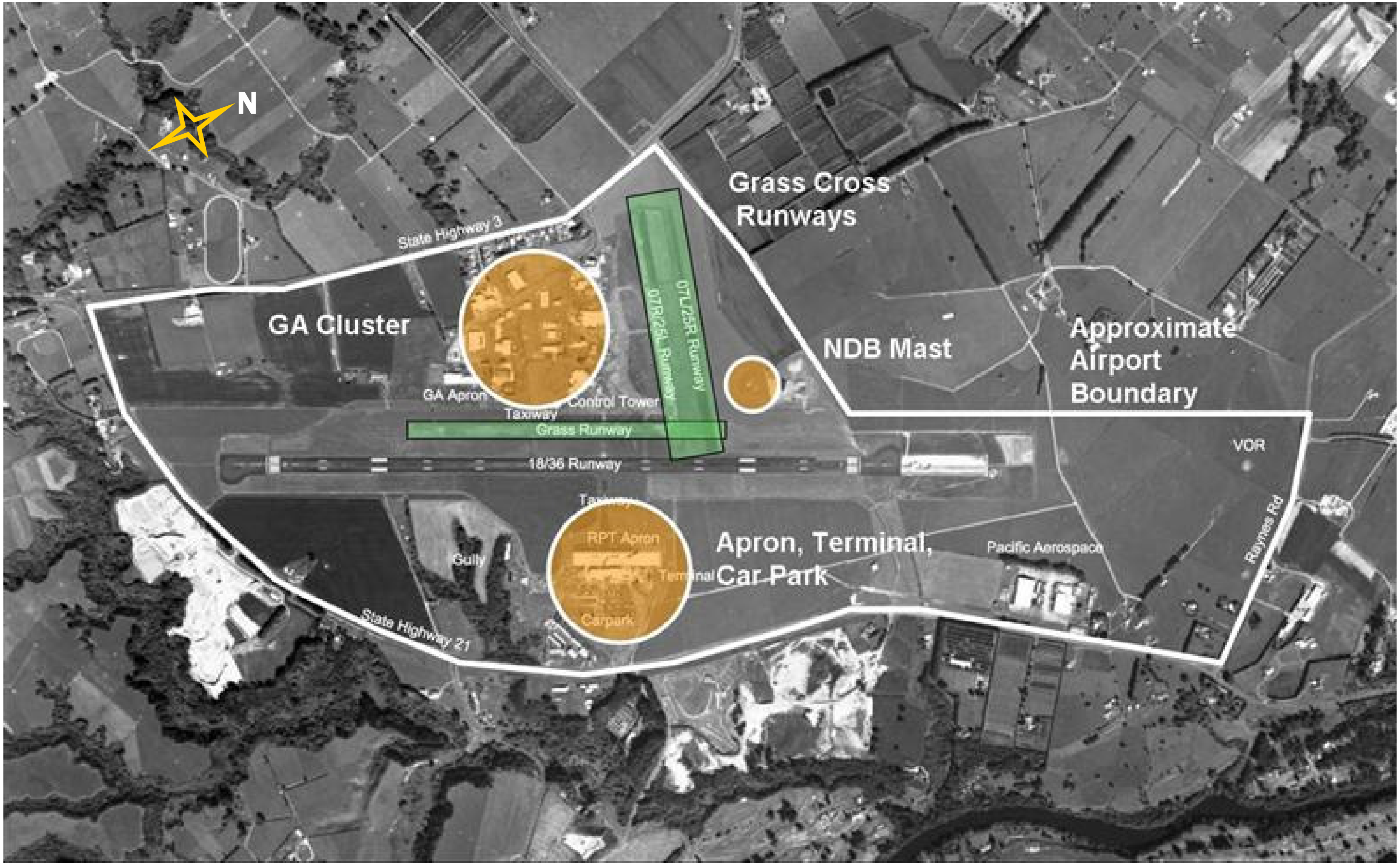

FIGURE 2-2 CURRENT AIRPORT LAYOUT

2.4. Role of the Airport

HIA is the third busiest airport in New Zealand in terms of aircraft movements.

The airport has moderate levels of scheduled domestic activity, limited to a degree by its proximity to Auckland Airport. The international component of HIA's business is 100% Tasman which is viewed as a highly competitive and volatile market with a risk of negative growth. From April 2009, all International services will have been suspended by Air New Zealand from Hamilton to Australian East Coast ports; Sydney, Gold Coast and Brisbane. Services have previously operated to Melbourne and Fiji as well.

HIA is the international airport closest to the North Island's most popular attractions and HIA is encouraged by the success of secondary airports in Australia (Gold Coast, Avalon) in attracting Low Cost Carriers (LCC) to their ports.

The following are the strategic intents of the airport as outlined in the 2008 Annual Report:

- Deliver sustainable airport operations for the North Island
- Become a leading freight and distribution hub in the central North Island
- Grow national and international connectivity to the region
- Promote economic development in the region
- Develop capability according to customer and connectivity requirements
- Position and promote HIA as the preferred North Island regional airport
- Deliver value to customers
- Enable the Airport's people to deliver
- Airport to be a significant, strategic infrastructure asset
- The Airport's role to provide affordable, reliable and safe access to the air transport system; and to enhance economic development.

In the course of the September 2007 workshop, HIA management summarised their goals for the airport as being to:

- Provide a successful and profitable commercial entity, and
- Become the second major airport for the Auckland/Waikato region.

3 District Plans

3.1. General

HIA is located solely within the Waipa District but its activities affect, and are affected by, the two adjacent neighbouring municipalities – Hamilton City and the Waikato District. Also, the airport's Obstacle Limitation Surfaces (OLS) and Outer Control Boundary (OCB), based on the current runway system, extend over Hamilton City and Waikato District.

Airport noise is a growing issue for areas adjacent to the airport as air traffic grows. To protect residential areas and other noise sensitive activities within the OCB from excessive airport noise, and to protect the airport's future operations from reverse sensitivity complaints from surrounding areas, the rules of the various councils require that an acceptable internal noise environment is provided.

The approach and departure surfaces as well as circling areas surrounding an airport are defined by OLS. OLS are conceptual (imaginary) surfaces associated with a runway system which identify the lower limits of the airspace surrounding an aerodrome above which objects become obstacles to aircraft operations. Figure 3-1 depicts the current OLS surrounding the airport.

The District Plans of the three affected municipalities have all incorporated the height profile requirement for aerodromes as specified in New Zealand's Civil Aviation Authority (CAA) Advisory Circulars (AC) 139-6.

The District Plan provisions for the airport in Hamilton City and Waipa District are dated as they are based on information from the year 1992. The Waikato District Plan is more up to date as it was reviewed and amended in 2004.

3.2. Waipa District Plan

3.2.1. Noise

The Waipa District Plan recognises that the airport is a major transport facility which has an important role in the economic and social well being of the District and Region. Its continuing operation could be jeopardised, or at least seriously affected, by further subdivision development in its environs if the effects of noise from aircraft operations become a nuisance to residents in the area.

The Waipa District Plan restricts further residential development in the environs of the airport and discourages the erection of further dwellings and residential institutions whose occupants could be adversely affected by aircraft noise, along with other noise sensitive land uses. The Plan, at the same time, also protects areas for airport use from development which could adversely affect the expansion and/or operation of the airport. An extract from the Waipa District Plan for areas surrounding the airport is provided on Figure 3-2.

Future residential and noise sensitive development near the airport is controlled by an Airnoise Boundary and OCB prepared in accordance with New Zealand Standard 6805:1992.

The District Plan also includes rules requiring the Airport to operate so as to comply with the predicted noise levels.

3.3. Waikato District Plan

The Proposed Waikato District Plan (Appeals version 31 January 2007), states that the noise generated by aircraft movements associated with the airport is predicted to eventually reach levels between 55dBA (Ldn) and 65dBA (Ldn). Those noise levels, which are identified in the Waikato District Plan, may be higher than the present levels of aircraft noise affecting the land, as allowance has been made for predicted expansion of airport activities.

The requirements for acoustic insulation of dwellings set out in the Waikato District Plan are intended to manage the effects that airport noise may have on residential activity and reduce the potential for constraints on airport development and activities.

Any dwelling house, or building listed below, which is erected on land within the Airport Noise OCB shall be designed to be constructed to incorporate appropriate acoustic insulation measures to ensure an internal Ldn of 45dBA.

Following is the list of buildings not permitted within the Airport Noise OCB:

- Papakainga housing
- Homestays
- Multi unit development
- Comprehensive residential development
- Travellers accommodation
- Residential activity
- Hospitals
- Schools.

In addition, the District Plan requires that new lots created within the OCB include a Consent Notice referring to airport noise and noise insulation requirements.

The Horizontal, Conical, Main Runway Approach Surface at the northern end of the main runway and the Subsidiary Strip Approach Surface at the eastern end extend into Waikato District. In order to ensure safe and unrestricted operation of aircraft using the airport, no building, object, structure or tree is to extend through or above these surfaces. Refer to Figure 3-3.

3.4. Hamilton City District Plan

According to Rule 2.6 of the ‘Hamilton Airport Protection Overlay’ in Hamilton City’s Proposed District Plan, land which lies directly under the surfaces shown in Figure 3-4 and/or are adjacent to the airport have a building height restriction imposed along with controls on development are imposed within defined areas subject to aircraft noise.

The desired output is to have uninterrupted air traffic approach paths across the City and exposure of residential activities to airport noise created by the airport limited to levels that protect amenity values

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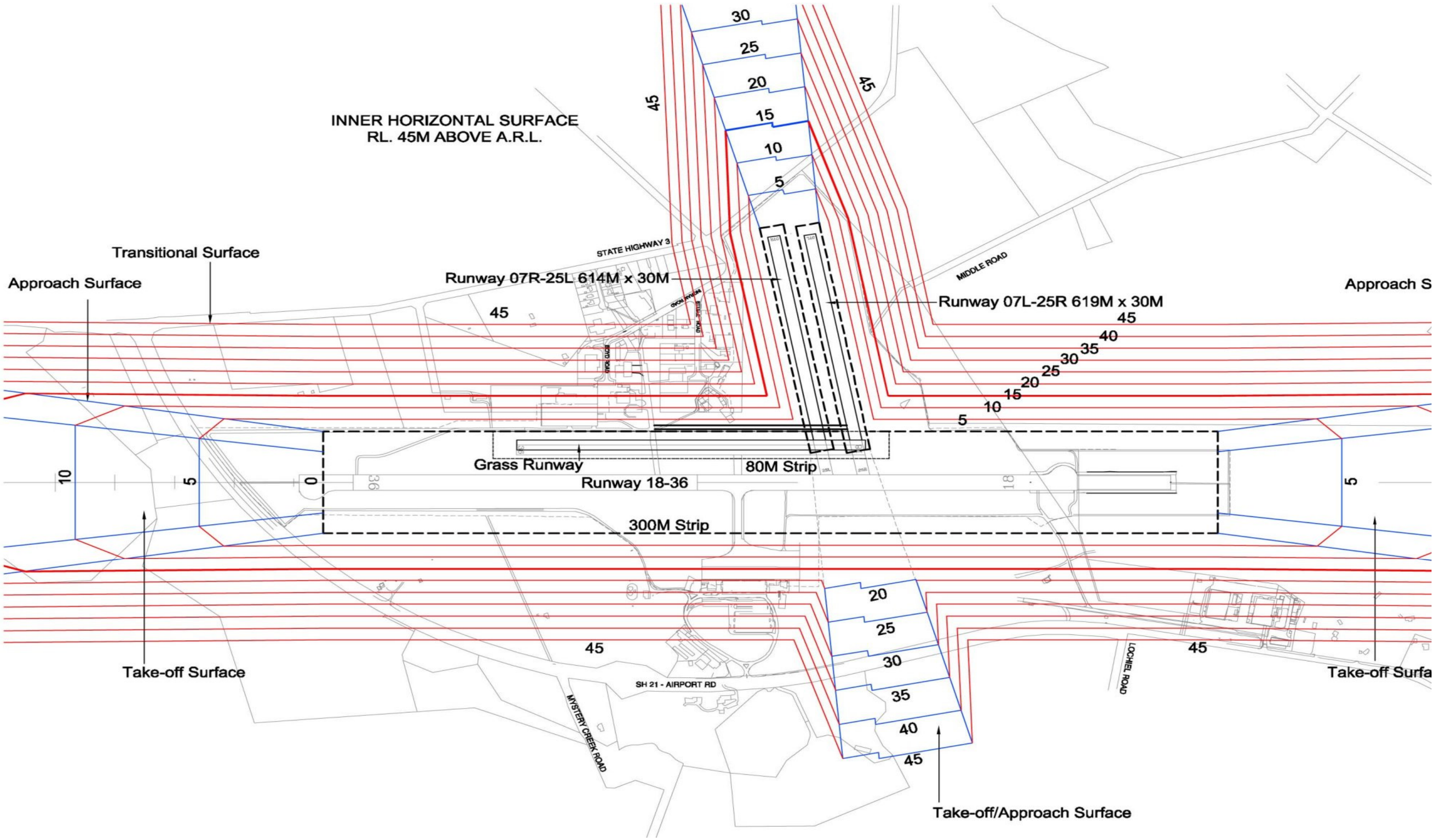


FIGURE 3-1 HAMILTON AIRPORT OLS

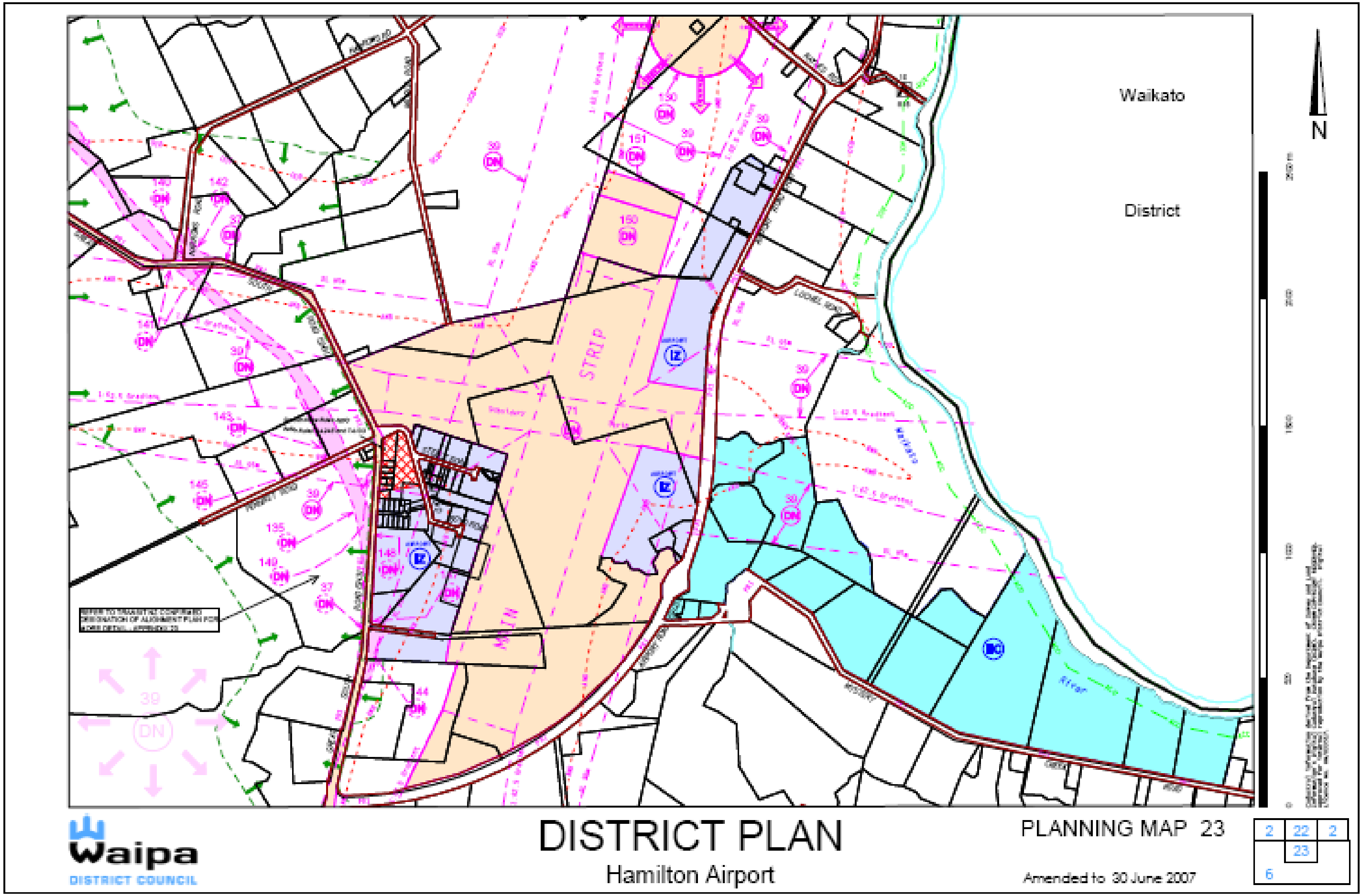


FIGURE 3-2 WAIPA DISTRICT PLAN - LAND DESIGNATION SURROUNDING HAMILTON AIRPORT

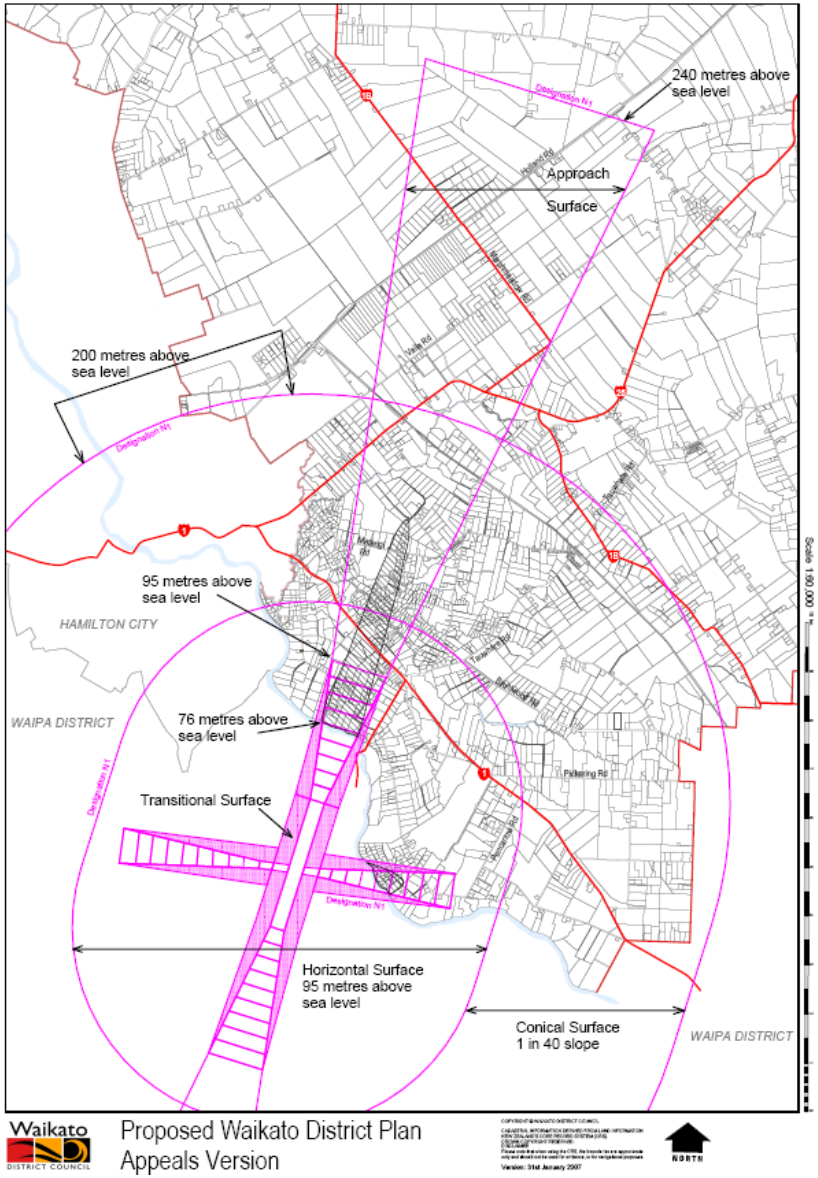


FIGURE 3-3 WAIKATO DISTRICT PLAN – HIA OBSTACLE LIMITATION SURFACE

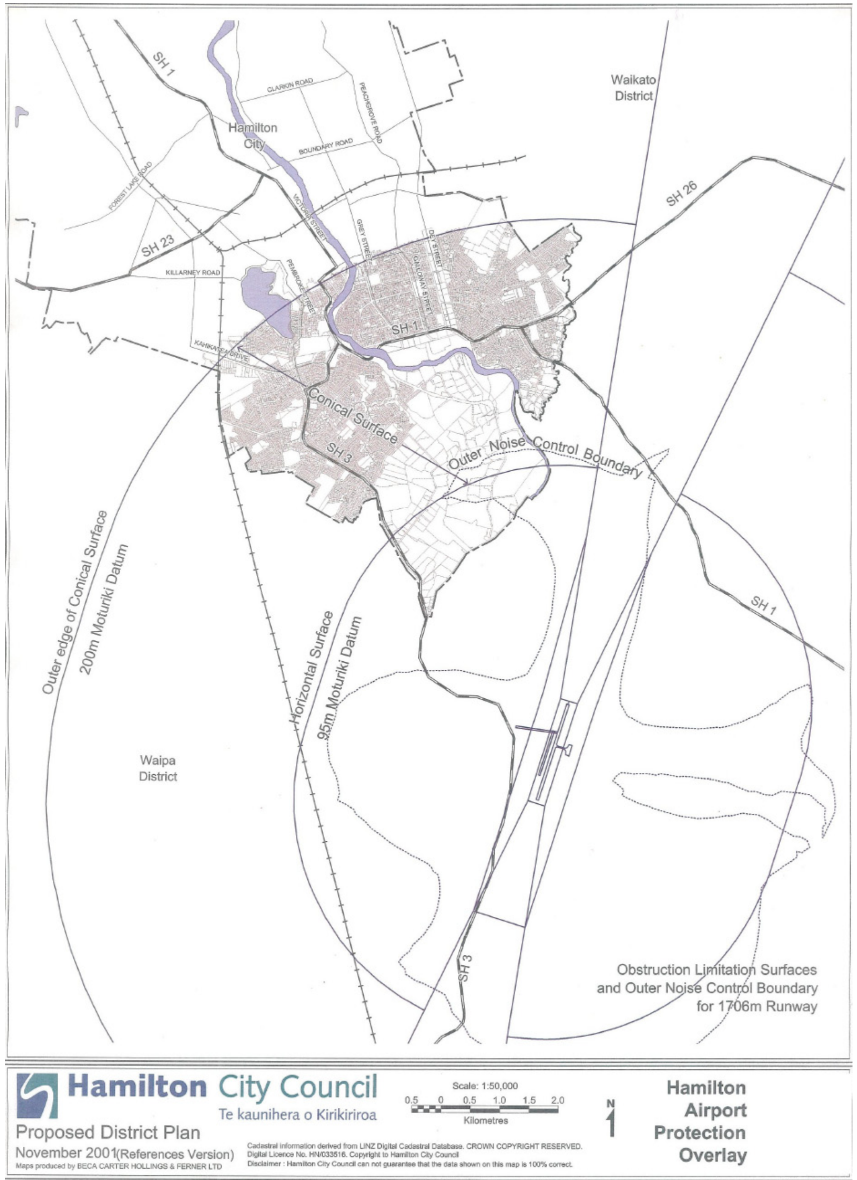


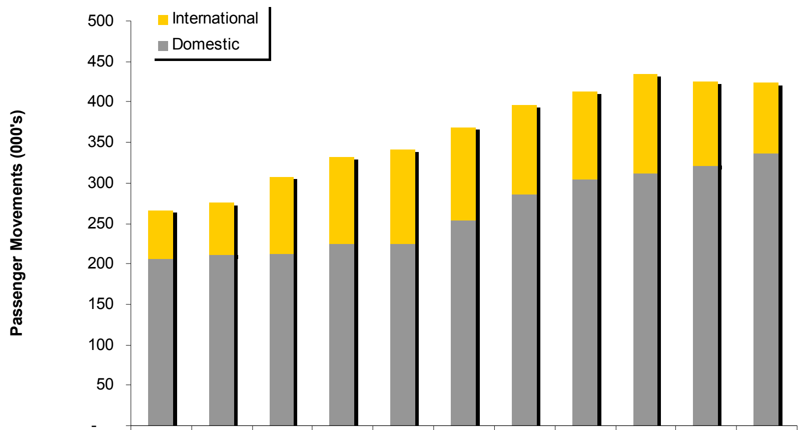
FIGURE 3-4 HIA OVERLAY MAP

4 Aviation Activity and Forecasts

4.1. Historical Activity

4.1.1. Passenger Movements

Historical annual passenger movements from 1998 to 2008 are shown on Figure 4-1. The total number of passenger movements has been increasing at an Average Annual Growth Rate (AAGR) of 4.7% over this period, with average annual growth in international and domestic passenger movements being 6.3% and 3.8%, respectively.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
International	59,727	64,529	93,801	106,958	116,350	113,816	110,910	107,842	122,514	103,016	86,694
Domestic	206,384	210,468	213,164	225,382	224,070	254,506	285,706	304,520	311,444	321,694	336,320

Year

FIGURE 4-1 HISTORICAL PASSENGER MOVEMENTS

Source: HIA Annual Reports

While domestic passenger movements have been on a steady increase since 1998, international passenger movements have dropped significantly in 2007 and 2008 primarily due to Air New Zealand pulling out its Freedom Air services completely from March 2008 and operating just as Air New Zealand, resulting in a reduced number of Tasman services.

Reduced numbers of international services have been compounded even further as Air New Zealand declared that from April 2009 it would be suspending all its international services from Hamilton.

4.1.2. Aircraft Movements

Historical recording of actual aircraft movements has been carried out by Airways Corporation in the control tower. These movements are categorised into Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). It is reasonable to assume that VFR movements represent solely General Aviation (GA) aircraft movements. However, IFR movements represent the following three:

- Scheduled international movements
- Scheduled domestic movements, and
- GA movements conducted under IFR.

Although HIA does not hold complete records of numbers of international and domestic scheduled movements, they have been able to provide numbers of international movements for the years 1998 – 2006.

HIA was also able to source complete operational records for calendar year 2004 and for 12 months June 2006 – May 2007. These data were analysed to provide estimates of domestic aircraft movements for 2004/5 and 2006/7, as well as average seat and passenger loads (international and domestic) for the same periods.

Further, HIA advised estimated total aircraft movements for 2008 of 148,000.

The average seat and passenger loads showed reasonable stability being:

	2004	2006/7
International		
Average seats	136	150
Average passengers	82	98
Load factor	61%	65%
Domestic		
Average seats	37	38
Average passengers	25	25
Load factor	66%	67%[1]

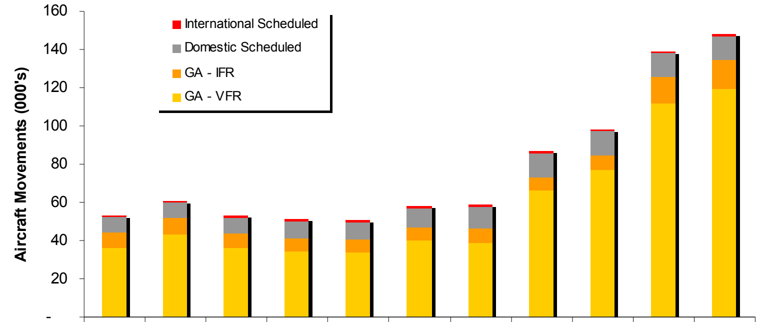
[1]*Note – small differences due to rounding*

TABLE 4-1 2004 AND 2007 OPERATIONAL DATA COMPARISON

The historical international aircraft movements (for 2008) and domestic movements (for 1998 – 2008) were then estimated by applying estimates of average passengers to the historical annual passenger numbers.

The advised and estimated domestic and international movements were finally subtracted from the Airways IFR numbers to provide an estimate of historical GA IFR movements, which were combined with the VFR numbers to give total GA movements. A breakdown of GA movements into IFR and VFR for calendar year 2008 was not available. Instead estimates have been made.

These historical estimated aircraft movements are shown in Figure 4-2.



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
International Scheduled	667	666	1,117	1,155	1,136	1,109	1,165	1,233	1,138	905	889
Domestic Scheduled	8,255	8,419	8,527	9,015	8,963	10,180	11,824	12,181	12,869	12,094	12,429
GA - IFR	7,749	8,537	7,437	6,880	6,856	6,621	7,084	7,205	7,391	13,786	15,000
GA - VFR	36,314	43,314	36,012	34,151	33,694	39,981	38,888	65,953	76,974	112,098	119,682

Year

FIGURE 4-2 HISTORICAL AIRCRAFT MOVEMENTS

The significant increase in movements in 2005 through to 2007 is primarily due to the increase in VFR movements associated with pilot training activities by the CTC crew training centre.

GA VFR movements recorded the largest average growth of 12.7% per annum from 1998 to 2008, with growth in international and domestic aircraft movements from 1998 – 2008 averaging 2.9% and 4.2%, respectively. GA IFR movements recorded a growth of 6.8% over this same period. It should be noted that total aircraft movements in 2005 represented an increase of 47% over 2004.

4.1.3. Growth rate trends

The AAGR for both passengers and aircraft movements has been calculated for the period 1998 to 2008. See Table 4-2.

AAGR	1998 - 2008
Passenger movements	
International	3.8%
Domestic	5.0%
Total	4.7%
Aircraft movements	
International Scheduled	2.9%
Domestic Scheduled	4.2%
GA - VFR	12.7%
GA - IFR	6.8%

TABLE 4-2 AAGR – PASSENGER AND AIRCRAFT MOVEMENTS

4.1.4. Growth drivers

The underlying growth drivers of aviation activity at airports include:

- Population growth
- Tourism (regional, national, world)
- Growth in local industry, business
- Regional and national GDP
- Regional tourism marketing
- Local Council planning initiatives
- Airline marketing
- Airline competition
- Airline choices of fleet, aircraft size, schedule and frequency
- Mode of transport choices (air versus surface) and relative convenience and cost.

From these, the most relevant to air traffic at Hamilton Airport are considered to be:

- HIA historical domestic passenger growth rate – 5.0%
- HIA historical international passenger growth rate – 3.8%
- New Zealand GDP growth forecasts (NZ Treasury) – long term approximately 3.0%, despite short term recessionary effects in 2009/10
- Tourism Research Council NZ – Waikato Region Total Visits – approximately 1.4% (Long Term)
- Statistics NZ – Population growth forecasts for Waikato Region – approximately 0.5% (Long Term)

Historical air traffic growth rates as well as these trends in growth drivers are compared in the following Figure 4-3.

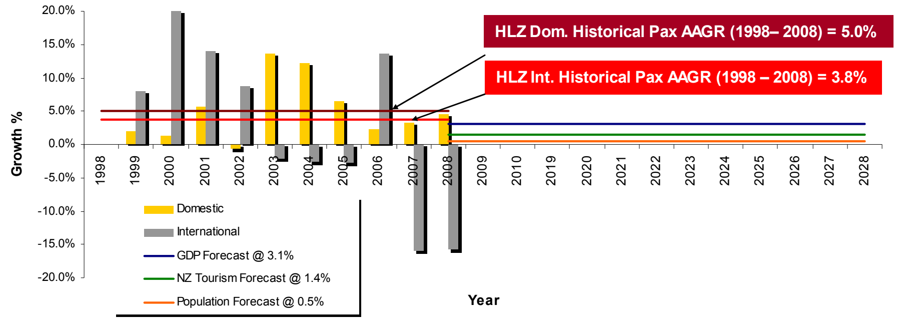


FIGURE 4-3 GROWTH RATES

4.2. Forecast Growth Rates

4.2.1. Domestic Passenger Movements

From Figure 4-3 it can be seen that most indicators of growth for the region (GDP and population) are below 3%, while historical passenger growth rates have been higher at between 3% and 5%. However, closer examination of the year to year passenger growth rates shows that the historical trends are strongly affected (upwards) by two exceptional years of growth in 2003 and 2004 which correspond to a period of heightened competition from (now defunct) Origin Pacific and strong activity growth as Air New Zealand lowered fares and introduced their simpler Domestic Express product.

It was agreed with HIA that these strong historical passenger growth rates would be too optimistic for future master planning and therefore moderated growth rates would be adopted, more in line with underlying population and economic trends.

The growth rates adopted for the Master Plan are shown in Table 4-3. High and Low rates have been adopted to indicate realistic upper and lower bound forecasts and growth rates have been further moderated in the second 12 year period of the Master Plan to avoid unrealistic compounding growth effects.

	2009 – 2017	2018 – 2030
Domestic passengers – High	4.0%	2.5%
Domestic passengers – Median	3.0%	2.0%
Domestic Passengers – Low	2.0%	1.5%

TABLE 4-3 ADOPTED GROWTH RATES – DOMESTIC PASSENGERS

4.2.2. International Passenger Movements

Despite the recent decline in international air traffic, HIA is currently pursuing an aggressive programme of new airline marketing and route development, aimed at reversing the recent downward trend.

It is HIA's view that the recent downturn in international traffic is not solely due to a structural change in the market but rather a result of current airline policies which encourage more traffic to flow through Auckland Airport. Therefore the low 2008 historical level or the near-future nil traffic level are not considered to be satisfactory starting points to apply long-term growth rates. Instead, the 2007 level of international passengers has been adopted as the base for forecasting as it is higher than the 2008 number, although lower than the 2006 record peak.

Consultation with HIA concluded that based on the average growth rate trend since 1998, an annual growth rate of 4.0% would be appropriate for the median forecast for the first 8 years of the Master Plan and as with the domestic passenger growth rates, the international rates are further moderated for the second 12 year period of the master plan. For low and high passenger movement projections, growth rates of 1.0% and 6.0%, respectively, were also deemed suitable. Projected annual growth rates for international passenger movements for the planning horizon are provided in Table 4-4.

	2009 – 2017	2018 – 2030
International passengers – High	7.0%	4.0%
International passengers – Median	4.0%	2.5%
International Passengers – Low	1.0%	1.0%

TABLE 4-4 ADOPTED GROWTH RATES – INTERNATIONAL PASSENGERS

4.3. Passenger Demand Projections

The adopted growth rates for master planning have been applied to current activity levels (2008 for domestic and 2007 for international) to generate demand projections for domestic and international passenger movements, shown in Figures 4-4 and 4-5.

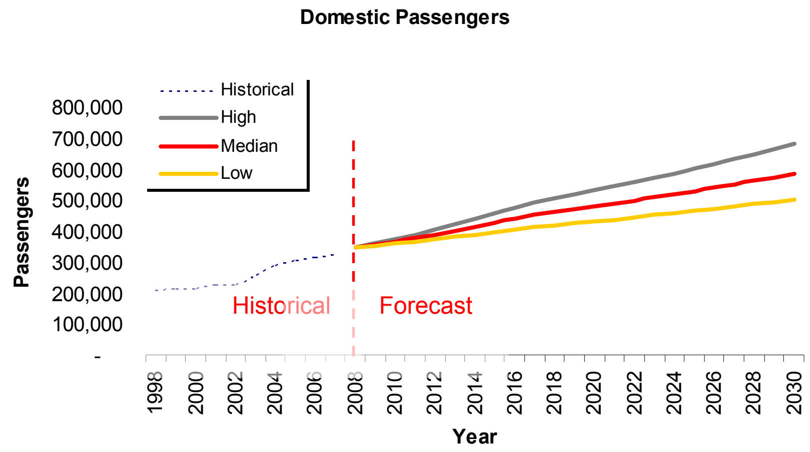


FIGURE 4-4 DEMAND PROJECTIONS – DOMESTIC PASSENGERS

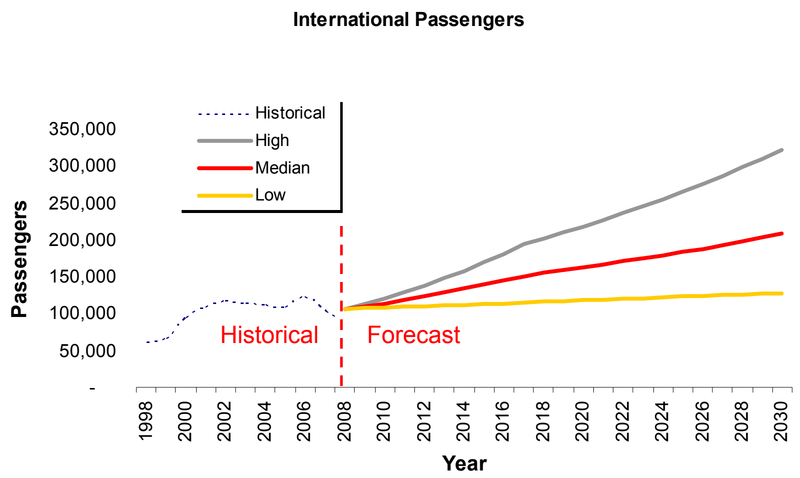


FIGURE 4-5 DEMAND PROJECTIONS – INTERNATIONAL PASSENGERS

4.4. Aircraft Movement Projections

4.4.1. Scheduled Aircraft Projections

International and domestic aircraft movements have been forecast by estimating the future average aircraft sizes for international and domestic types expected to operate at Hamilton. In similar way, a view of future load factors has been taken based on historical load factors.

The results are shown in Table 4-5.

	Historical		Forecast				
	2004	2006/7	2010	2015	2020	2025	2030
International							
Average seats	134	132	150	164	180	180	180
Average passengers	95	108	105	115	126	126	126
Load factor	71%	82%	70%	70%	70%	70%	70%
Domestic							
Average seats	37	38	40	45	50	55	60
Average passengers	24	24	28	32	35	39	42
Load factor	65%	64%[1]	70%	70%	70%	70%	70%

[1]Note – small differences due to rounding

TABLE 4-5 FORECAST – SCHEDULED AIRCRAFT

Applying these aircraft size/passenger forecasts to the annual passenger projections then generated future international and domestic aircraft movement forecasts. These are shown in Figures 4-6 and 4-7, and Tables 4-6 and 4-7.

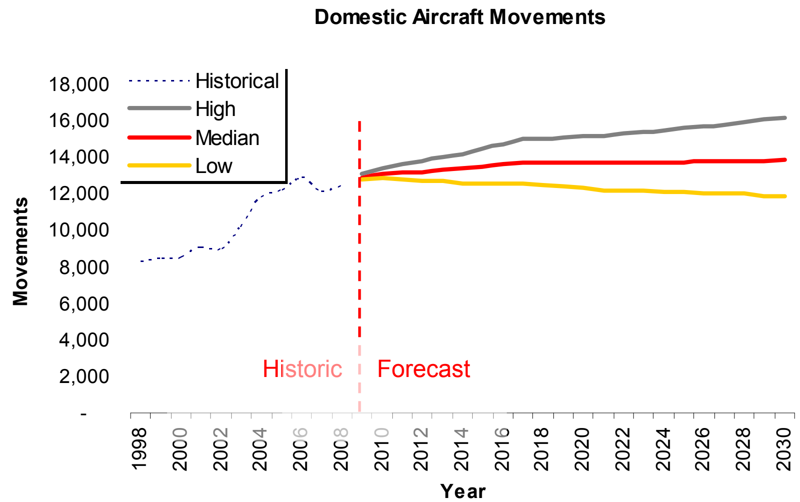


FIGURE 4-6 DEMAND PROJECTIONS – DOMESTIC AIRCRAFT MOVEMENTS

	2010	2015	2020	2025	2030
High	13,400	14,500	15,200	15,600	16,200
Median	13,100	13,500	13,700	13,700	13,900
Low	12,900	12,600	12,300	12,100	11,900

TABLE 4-6 DEMAND PROJECTIONS – DOMESTIC AIRCRAFT MOVEMENTS

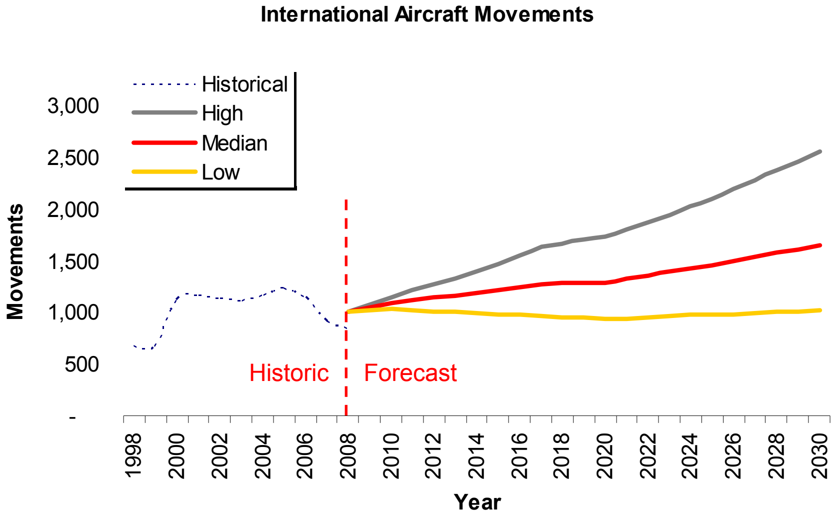


FIGURE 4-7 DEMAND PROJECTIONS – INTERNATIONAL AIRCRAFT MOVEMENTS

	2010	2015	2020	2025	2030
High	1,150	1,470	1,730	2,100	2,560
Median	1,090	1,210	1,290	1,450	1,650
Low	1,030	980	940	980	1,020

TABLE 4-7 DEMAND PROJECTIONS - INTERNATIONAL AIRCRAFT MOVEMENTS

4.4.2. GA Aircraft Projections

Growth rates for GA were discussed and agreed with HIA during the consultation process. GA operators were also canvassed for their views about growth prospects. Growth rates for 2009 and 2010 have been set at a strong level to represent the current real surge in GA traffic which is primarily due to CTC Aviation's growth.

However, while these growth rates taper off over consecutive years, they are still reasonably strong growth rates when compared with normal recreational GA growth experienced in New Zealand which is at a rate of 1-2% per annum. See Table 4-8.

	2009 – 2010	2011 – 2020	2021 – 2030
GA – High	10.0%	5.0%	3.0%
GA– Median	8.0%	4.0%	2.0%
GA – Low	6.0%	3.0%	1.0%

TABLE 4-8 FORECAST – SCHEDULED AIRCRAFT

These growth rates were then applied to the 2008 base of total GA movements to derive the GA movement projections. These are shown in Figure 4-8 and Table 4-9.

	2010	2015	2020	2025	2030
High	163,000	208,000	265,000	307,000	355,000
Median	158,000	192,000	234,000	259,000	285,000
Low	152,000	177,000	205,000	215,000	225,000

TABLE 4-9 DEMAND PROJECTIONS – GA AIRCRAFT MOVEMENTS

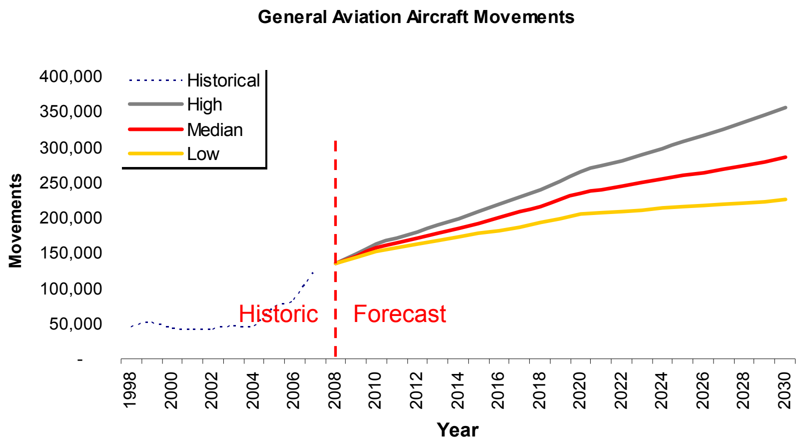


FIGURE 4-8 DEMAND PROJECTIONS – GA AIRCRAFT MOVEMENTS

4.4.3. Total Aircraft Movements

	2010	2015	2020	2025	2030
High					
International	1,150	1,470	1,730	2,100	2,560
Domestic	13,400	14,500	15,200	15,600	16,200
GA	163,000	208,000	265,000	307,000	355,000
Total	**177,550**	**223,970**	**281,930**	**324,700**	**373,760**
Median					
International	1,090	1,210	1,290	1,450	1,650
Domestic	13,100	13,500	13,700	13,700	13,900
GA	158,000	192,000	234,000	259,000	285,000
Total	**172,190**	**206,710**	**248,990**	**274,150**	**300,550**
Low					
International	1,030	980	940	980	1,020
Domestic	12,900	12,600	12,300	12,100	11,900
GA	152,000	177,000	205,000	215,000	225,000
Total	**165,930**	**190,580**	**218,240**	**228,080**	**237,920**

TABLE 4-10 TOTAL AIRCRAFT MOVEMENTS

4.4.4. Potential Long Term Restraints on Growth

The forecast level of aircraft movements shown in Table 4-10 is very high in the mid to later stages of the master planning horizon, exceeding activity levels at any New Zealand airport. By comparison, the busiest airport is currently Ardmore Airport with approximately 200,000 annual movements.

This high level of forecast movements is driven primarily by the GA component of traffic, projected at what are essentially unconstrained growth rates, albeit at moderate rates in the long term.

The implications of this possible level of growth require further study by HIA in the near future to assess:

- Whether HIA wishes to eventually be operating such a major GA facility or whether its primary focus should be on passenger and freight operations.
- Whether the capacity of the system of runways and taxiways is capable of handling that level of future traffic.
- Whether the surrounding airspace is capable of safely handling that level of future traffic, particularly considering the diverse mix of large/fast and small/slow aircraft.
- Whether users of the airport themselves want that level of activity and whether the major contributors to that level (GA) would be capable of meeting the costs of the necessary infrastructure.
- Whether the surrounding community would be comfortable with the airport operatives with that level of activity.

A possible outcome of such further study by HIA might be a decision to progressively impose restraints on growth on some components of airport activity, targeting an acceptable long-term threshold and mix of traffic.

This Master Plan does not yet include any outcomes of an assessment of desirable traffic levels or the application of possible future restraints on growth.

4.5. Busy Hour Aircraft Demand

HIA does not formally hold or record information on busy day and busy hour movements and this information is not recorded in a comprehensive way by Airways in the Control Tower.

However, sample information on HIA's busy day and hour runway movements (arrivals and departures) was provided by the manager of the Control Tower at Hamilton who surveyed a representative busy day (09/07/2008). The results of the survey are shown in Table 4-11.

Runway usage often depends on the aircraft types using it and why they are using it. Hence in terms of busy hour, because circuit training are recorded separate from arrivals and departures, two busy hours are shown in Table 4-11 as aircraft doing circuits "occupy" the runway for less time than that required for arrivals and departures.

	Busy Day (09/07/2008)	Busy Hour – Arrivals and Departures (09:45 – 10:45)	Busy Hour – Circuit Traffic (08:30 – 09:30)
International Jets	1	0	0
Domestic Jets	0	0	0
Domestic Turboprops	30	4	0
GA Arrivals and Departures	171	33	1
GA Helicopters	10	0	1
GA Circuits (Touch and Go)	374	2	58
Total	**586**	**39**	**60**

TABLE 4-11 BUSY HOUR GA AIRCRAFT MOVEMENTS

4.5.1. Busy Hour Growth Rates

The growth in annual aircraft movements by 2030 has been translated into average annual growth rates over the period from 2008 as shown in Table 4-11. Busy hour growth rates can be expected to be generally in line with the overall average annual growth rates for each category of aircraft, with some reduction to taken into account for peak spreading.

Therefore the average busy hour growth rates adopted for the period to 2030 is as shown in Table 4-12.

	Annual Actual (2008)	Annual Forecast 2030	% Change	Average Annual Growth Rate	Adopted Average Busy Hour Growth Rate
International Jets	800	1,800	125%	3.8%	3.0%
Domestic Jets	300	1,200	300%	6.5%	3.0%
Domestic Turboprops	11,200	12,700	13%	0.6%	0.5%
General Aviation	135,700	377,200	178%	4.8%	3.0%
Total	**148,000**	**392,900**	**165%**	**4.5%**	**-**

TABLE 4-12 BUSY HOUR PROJECTIONS

4.5.2. Busy Hour Aircraft Movement Projections

The adopted average busy hour growth rates from Table 4-12 have been applied to the current busy hour activity levels from Table 4-11 to generate projections for busy hour aircraft movements in 2020 and 2030.

It should also be noted that intensive circuit activity in future, based on current levels, can only occur in periods when little or no scheduled airline arrivals or departures is occurring.

The projections for the busy hour in which the majority of scheduled activity is occurring is shown in Table 4-13 while projections for the busy hour in which the majority of circuit training occurs is shown in Table 4-14.

	Adopted Average Busy Hour Growth Rate	Current Busy Hour Movements	Projected Busy Hour Aircraft Movements	
			2020	2030
International Jets	3.0%	0	1	2
Domestic Jets	3.0%	0	2	4
Domestic Turboprops	0.5%	4	4	4
GA Arrivals and Departures	3.0%	33	47	56
GA Helicopters	3.0%	0	1	2
GA Circuits (Touch and Go)	3.0%	2	3	3
Total	**-**	**39**	**64**	**83**

TABLE 4-13 BUSY HOUR PROJECTIONS – MAJORITY SCHEDULED ACTIVITY

	Adopted Average Busy Hour Growth Rate	Current Busy Hour Movements	Projected Busy Hour Aircraft Movements	
			2020	2030
International Jets	3.0%	0	0	0
Domestic Jets	3.0%	0	0	0
Domestic Turboprops	0.5%	0	0	0
GA Arrivals and Departures	3.0%	1	1	2
GA Helicopters	3.0%	1	1	2
GA Circuits (Touch and Go)	3.0%	58	83	99
Total	**-**	**60**	**85**	**103**

TABLE 4-14 BUSY HOUR PROJECTIONS – MAJORITY CIRCUIT ACTIVITY

4.6. Busy Hour Passenger Demand

As part of the work in 2007 to identify the core land required for aviation purposes so that the balance of peripheral land could be allocated for non-aviation commercial purposes (including the Titanium Park Joint Venture), HIA requested that the core should include sufficient land for long term terminal precinct that would provide for balanced and flexible development for growth to approximately 2 million passengers per annum.

The terminal precinct provided in the land use definition phase incorporated land for aprons, terminal building, forecourt, car parking, taxis, coaches and rental cars, circulation, as well as aviation support functions. The area provided in the terminal precinct comprises 15.84 ha.

It is considered that this provision is satisfactory for Master Planning to 2030 and that further analysis of busy hour passenger demand for the purposes of sizing terminal area facilities is not warranted at this stage until a future terminal development project might arise.

5 Planning Parameters

5.1. Design aircraft

The largest aircraft that currently operate regularly at HIA are the Code C A320-200 (Air New Zealand) along with occasional military operations by Hercules C130 and P3 Orion, which are both Code D aircraft.

HIA's business goals clearly envisage long haul passenger and freight operations involving wide-body Code E aircraft such as B747-400, B777 and B787 types.

The critical planning dimensions for current and future aircraft types expected to operate at HIA are:

Aircraft	Code	Length (m)	Wingspan (m)
A320-200	C	37.57	33.91
B737-300	C	33.40	28.88
B737-800	C	39.48	35.80
B787-9	E	62.81	60.10
A330-300	E	63.69	60.30
B777-200	E	63.73	60.95
B777-200LR	E	63.73	64.80
B777-300ER	E	73.86	64.80
B747-400	E	70.67	64.94
Cessna Caravan	B	11.50	15.90

TABLE 5-1 DESIGN AIRCRAFT DIMENSIONS

From the above aircraft types, the design aircraft code adopted for Master Planning is Code E.

5.2. Airfield parameters

To position taxiways relative to runways, clearances prescribed by NZCAA must be used. Different sized aircraft, aircraft codes B, C and E – E being the design aircraft in this instance – require different clearance dimensions. See Table 5-2.

The intent is to protect adequate clearances for taxiways for both Code B (on the western side) and Code E (on the eastern side) so that future development choices remain unconstrained by actions or developments that are currently underway.

	Code B	Code E
Runway – runway centreline[1]	120.0m	n.a.
Runway – taxiway centreline	52.0m	182.5m[2]
Taxiway – obstacle	21.5m	47.5m
Runway width	23.0m	45.0m
Taxiway width	10.5m	23.0m

[1] *For independent dual runway operations by Code A aircraft on both runways*
[2] *For instrument runway*

TABLE 5-2 RUNWAY AND TAXIWAY CLEARANCES

5.3. Runway Strip Width

The Master Plan provides for a 300m wide runway strip for Runway 18/36, meeting the requirements for an instrument runway.

5.4. Runway End Safety Area (RESA)

Runway End Safety Areas (RESA) are cleared and graded areas extending from the end of a runway strip to reduce the risk of damage to an aeroplane in the event of a runway undershoot or overrun.

NZCAA has invoked a rule change making it mandatory for airports operating runways for regular air transport services to provide a RESA extending at least 240m from the end of the runway strip, if that is practicable.

The requirement to provide a RESA in Hamilton's case is 5 years from the date of the new rule, approximately 2011. The NZCAA requirements are detailed below:

- A length of the greatest distance that is practicable between the minimum 90m and 240m
- A width of at least twice the width of the runway
- Required for instrument runways
- Required for any new runway extension or upgrade
- Required for international airports

The Master Plan provides for 240m RESAs.

There are no requirements for RESAs on the parallel Code B Runway 18/36 and the two grass cross runways.

5.5. Runway Protection Zone (RPZ)

To protect the public from the risk of an incident of an aircraft undershooting or overshooting a runway, many national authorities define a zone beyond the runway end which enhances the protection of people and property on the ground beyond the end of a runway.

Currently there is no regulation for RPZs in New Zealand. The Hamilton Master Plan has adopted the guidelines of the United States Federal Aviation Administration (FAA) Runway Protection Zone (RPZ)1 to enhance the protection of people and property on the ground.

An RPZ is proposed at each runway end. Each RPZ is trapezoidal in shape, 750m long and is centred around the extended runway centreline.. RPZ dimensions are a function of the type of aircraft and approach visibility minimum associated with the end of a runway. See Figure 5-1

Because the RPZ at each end of the runway lie substantially on land outside the boundary of the Airport, it is recommended that HIA works with Waipa District Council to institute appropriate land use controls within the RPZ at each end of the runway to achieve the following outcomes.

- Land uses recommended to be permitted under the RPZ should be activities that do not attract the assembly of a large number of people, such as:
  - Golf courses (not club houses)
  - Agricultural operations (other than forestry or livestock)
  - Plant and machinery buildings
  - Low occupancy warehousing
  - Car parking.
- Land uses recommended to be discouraged, avoided or prohibited should be activities that may attract the assembly of large number of people or that have the potential to be highly hazardous in the event of an incident involving an aircraft, such as:
  - Residences and public places of assembly (churches, schools, hospitals, office buildings, shopping malls etc.)

[1] FAA – Airport Design (AC 150/5300-13)

— Playgrounds, sports grounds,
— Fuel storage facilities

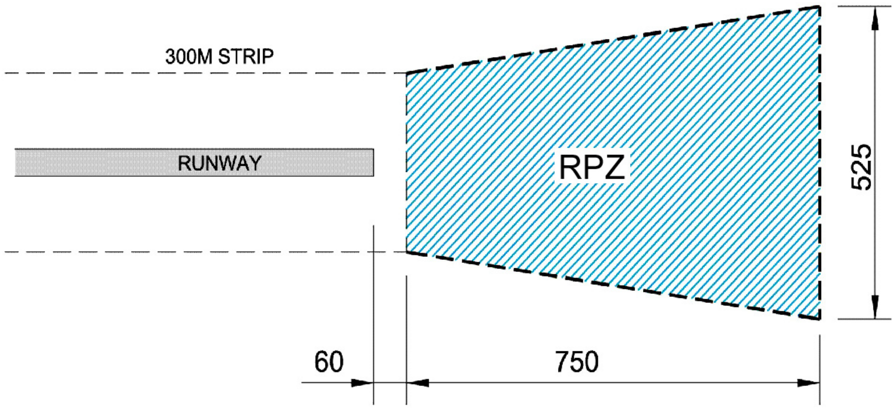


FIGURE 5-1 RUNWAY PROTECTION ZONE DIMENSIONS

5.6. Pavement Strength

The following general notes provide an overview of the Runway 18/36 pavement and its ability to accommodate new (heavier) aircraft types.

ACN-PCN System

The Aircraft Classification Number/Pavement Classification Number (ACN/PCN) system of classification of pavements load carrying capacity is a procedure whereby the loading characteristics of an aircraft are compared with the supporting capacity of the pavement.

Annex 14 specifies that *"the bearing strength of a pavement intended for aircraft of mass greater than 5,700 kg shall be made available using the ACN/PCN method by reporting all of the following information:*

a) The pavement classification number (PCN)

b) Pavement type for ACN/PCN determination

c) Subgrade strength category

d) Maximum allowable tyre pressure category or maximum allowable tyre pressure value

e) Evaluation method.

The Pavement Classification Number (PCN) reported shall indicate that an aircraft with an Aircraft Classification Number (ACN) equal to or less than the reported PCN can operate on the pavement subject to any limitation on the tyre pressure, or aircraft all-up mass for specified aircraft types."

The Runway 18/36 pavement strength is currently declared to be PCN 45 F/C/X/T (Flexible, low sub-grade bearing strength, tyre pressure, from engineering study).

Indicative ACN for the different types of aircraft that could potentially serve Hamilton Airport are as follows:

- B737-300 41
- A320-200 47
- B737-800 51
- B767-300 72
- A330 70-79
- B777-200ER 90-97

6 Aviation facility requirements

6.1. Main Runway 18/36

Astral Aviation was engaged by HIA to assess options for extensions to the main runway both as an interim step and for the maximum possible development on the current available land to facilitate HIA's business goals of establishing sustainable long haul international passenger and freight operations.

Two options were developed with runways sufficiently long for MTOW operations by larger Code E aircraft types.

Option 1, which is the maximum possible runway development on the current site, provides for an extension of the current 2195m pavement by 789m to achieve a total sealed pavement length of 2984m, providing a runway of nominal 2796m length (LDA = 2608m; TORA/ASDA = 2796m).

Option 2 is an initial runway development which provides for an extension of the current 2195m pavement by 493m to achieve total sealed pavement length of 2688m, providing a runway of nominal 2500m length (LDA = 2500m; TORA/ASDA = 2688m).

Both options provide for 240m RESAs.

The Astral configurations are shown in Figures 6-3 and 6-4.

6.2. Code B Runway 18/36

The Master Plan provides for reconstructing this secondary runway at an increased separation of 120.0m from its current separation of 107.5m from the main runway to achieve, in future, independent simultaneous dual runway operations for small aircraft. Independent operations are not currently possible as the current separation is insufficient.

HIA may choose to seal the secondary runway when it is re-aligned if the business case for doing so exists.

6.3. Grass Cross Runways

The two grass cross runways are presently aligned so the approach and takeoff surfaces infringe on an area protected as future apron reserve. See Figure 6-1. This has no immediate effect as Code E aircraft are not yet operating, nor has the apron been expanded to facilitate parking.

However, this alignment also means the approach and take off surfaces extend over an area to the east of the proposed Code E apron planned for commercial development as part of Titanium Park.

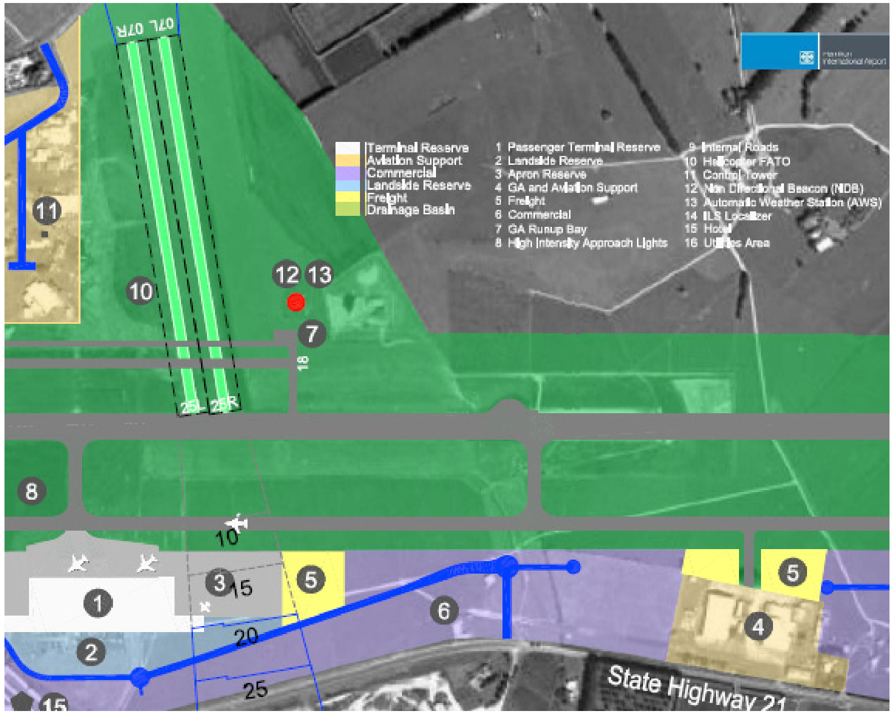


FIGURE 6-1 GRASS CROSS RUNWAYS – CURRENT ALIGNMENT

To keep the cross runways in their current alignment and allow for future Code E apron parking, the runway lengths may need to be adjusted such that the approach and take off surfaces do not infringe clearances.

Further measurement will be required to ensure precise location of clearance lines with respect to formally declared runway thresholds and the future location of aircraft parking to the north of the passenger terminal.

Another potential issue arises over the desirability of ab-initio pilots undertaking take off and landing phases of their training directly over new building developments. While technically this may be feasible and NZCAA regulations do not specifically prohibit such activities, international best practice does not reflect this as positive for airport planning.

Flight training has inherent risks associated with manoeuvres by new pilots. Generally, pilot training is carried out at airports and in airspace where obstructions and conflicting traffic are minimised.

There exists at Hamilton sufficient land resource to realign the grass cross runways such that 07L/25R runs parallel to the fence line on the northwest perimeter. This re-alignment would direct the eastern approach and take off surfaces over land currently identified for the main Titanium Park access road and intersection with State Highway 21. However, the Titanium Park plan also shows land adjacent to the access road being available for commercial building developments and therefore it is not clear at this stage that a possible re-alignment would necessarily avoid flight paths over new developments.

An additional benefit from re-alignment would, however, be obtained whereby an area of land south of the re-aligned runways becomes available for possible lease and further commercial development.

The NDB mast and related equipment is currently in the path of the possible re-alignment. This equipment would need to be relocated to another section of the airfield. This possible re-aligned new runway layout is illustrated in Figure 6-2.

At this stage until there has been further study of the benefits of re-alignment, the Master Plan retains the cross runways in the present configuration.

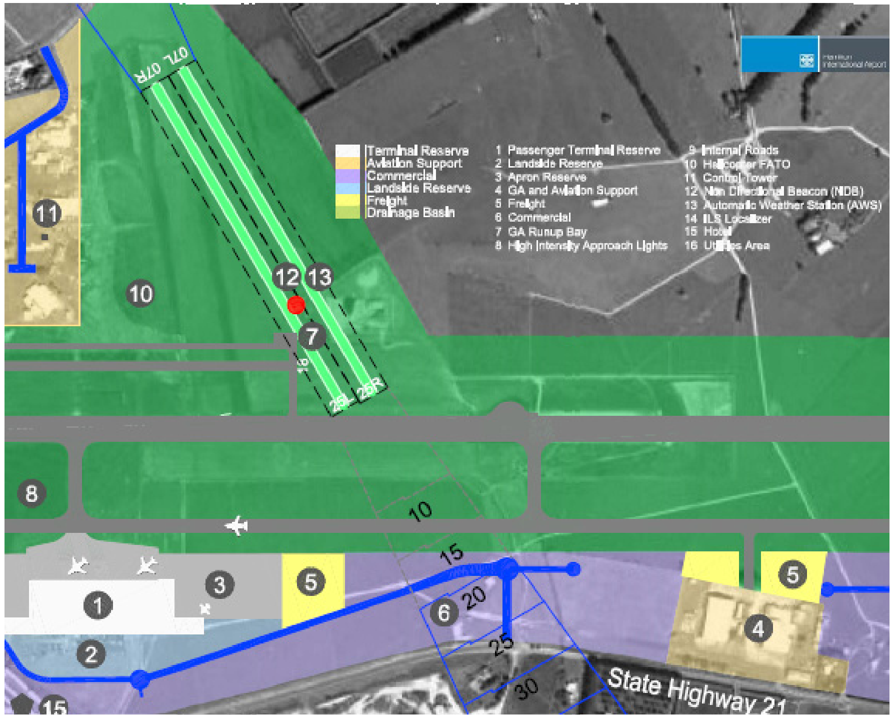


FIGURE 6-2 GRASS CROSS RUNWAYS – POSSIBLE RE-ALIGNMENT

6.4. Taxiways

Code B Taxiway

It is recommended that the existing parallel Code B taxiway, to west of the main runway, is extended parallel to the full length of the reconstructed Code B runway in order to maximise capacity available from this runway.

Code E Taxiway

It is recommended to protect land parallel to the future full length of the main runway for a future Code E taxiway. It is expected that the parallel taxiway would be constructed in stages as described in Section 6-6.

6.5. Passenger Terminal Area

As mentioned in Section 4-6, HIA requested for core land to be identified in order to build a long term terminal precinct that would provide for balanced and flexible development for growth to approximately 2 million passengers per annum.

The terminal precinct provided in the land use definition phase incorporates land for aprons, terminal building, forecourt, car parking, taxis, coaches and rental cars, circulation, as well as aviation support functions. The area provided in the terminal precinct comprises 15.84 ha.

6.6. Staging

Figure 6-5 shows indicative staging of developments of the runways, taxiways and aprons.

Stage 1

This stage has a reconstructed Code B Runway 18/36, parallel to the main runway, with its own full length Code B taxiway to the west of the runway. This taxiway also has two additional stub accesses to the main Runway 18/36 to provide for dual runway operations.

Stage 2

This stage also provides for a partial parallel taxiway that could be built initially as a Code C taxiway and later widened for Code E. This taxiway would provide possible linkage to the cargo facilities adjacent to the terminal area and in the north adjacent to PAC.

This partial taxiway would have two stubs providing access to the main runway. The distance from each stub access point on the runway to the end of the main runway on either side is about 1500m. This distance should enable all turboprops and most Code C jets to land from each end of the runway and turn off at the stubs and for most turboprops to take-off from the stub access points, removing the need for most aircraft to turn and taxi on the main runway, thereby enhancing the capacity of the runway.

Stage 3

This stage shows the maximum runway length (total sealed pavement of 2984m) with full length parallel Code E taxiway.

6.7. Aerodrome Rescue and Fire Fighting Services (ARFFS)

The current location for the ARFFS facility is on the northern side of the passenger terminal.

Previous apron planning by HIA to accommodate possible Code E aircraft to the north of the passenger terminal and possible terminal expansion northwards did not specifically address the feasibility of retaining the ARFFS on its current location.

Although there was no specific conflict identified during this apron planning exercise, the Master Plan retains the same current ARFFS location but notes that long term terminal planning might need to address its location/relocation.

6.8. Control Tower

The siting of the control tower is aimed at providing views for the controllers that incorporate the following key elements:

- Adequate visibility of all of the manoeuvring area and airspace under the controller's area of responsibility, including runway approach lights, graded areas at least 300m from the runway threshold and take-off climb surfaces
- A view of all runway ends and fire fighting routes
- Visual resolution of all aerodrome movement areas with the exception of the passenger and cargo terminal aprons and taxi lanes which are supervised by HIA apron control
- Minimised glare from the sun
- The ability to detect the movement of an aircraft commencing its take-off run within an appropriate time frame (recommended to be four seconds, with an upper limit of five seconds)
- Lines of sight that are not impaired by external light sources.

The current location of the Control Tower, in the west GA and Aviation Support precinct is appropriate for the long term development of the airport. However, strict control will be required on the locations and heights of new buildings that may be constructed between the Tower and the airfield so as to not obstruct sightlines.

6.9. General Aviation (GA)

The land use definition undertaken to delineate between the core aviation and commercial activities has confirmed the precinct for GA and aviation support activities (including aircraft assembly and maintenance) to the west of the main runway. The bulk of current GA facilities, including flying training, are in this area which also provides capacity for expanded activities.

6.10. Helicopters

An existing helicopter Final Approach and Take-off point (FATO) is located immediately to the west of the passenger terminal area and should be retained. The Master Plan indicates a second FATO located near the intersection of the Code B runway and crosswind runways for access directly from the GA precinct.

6.11. Aircraft Re-fuelling

The current fuel storage and tanker filling area located to the south of the passenger terminal precinct is appropriate and should be retained, providing for both landside and airside access.

6.12. Ground Support Equipment (GSE)

Sufficient area has been provided in the 16Ha terminal precinct to cater for the storage and staging of GSE.

6.13. Navigational Aids

The existing Non-Directional Beacon (NDB) is located north of the crosswind runways and should be retained at that location until a time in the future when its role is possibly considered to be redundant.

The VHF Omnidirectional Range (VOR) is located on the main runway centreline, at a distance of approximately 750m north from Runway 18 pavement end, off airport on a leased site.

This location is appropriate for the long term Master Plan.

6.14. Instrument Landing System

The Master Plan provides for the possible installation of an Instrument Landing System (ILS) and High Intensity Approach Lights (HIAL) at each end of the runway, subject to a satisfactory business case. However, landing approaches from the north on to Runway 18 represent the majority of low visibility operations and it is possible that the business case may show that an ILS would likely only be required at this one end.

The Master Plan also identifies the need to relocate the VOR from its current position to a new position north of Raynes Road, approximately 750m from the sealed end of Runway 18 directly on the centre line of the runway.

ICAO Annex 14 recommends that[2], where physically practicable, a precision approach category 1 runway should be provided with a precision approach category 1 lighting system and a precision approach category II or III runway should be provided with a precision approach category II or III lighting system.

[2] Volume 1, Clause 5.3.4.1

ICAO Annex 14 further states that a precision approach lighting system i.e. HIAL, shall, wherever possible, extend over 900m from the threshold. The length of 900 m is based on providing guidance for operations under category I, II and III conditions. Reduced lengths may support category II and III operations but may impose limitations on category I operations.

An approach lighting system could also enable the decision height of an ILS precision approach to be reduced below 250ft where no obstacles are controlling the decision height. Prior to any decision to implement approach lighting a business case would be required to quantify the increase in airport operational availability that would be achieved.

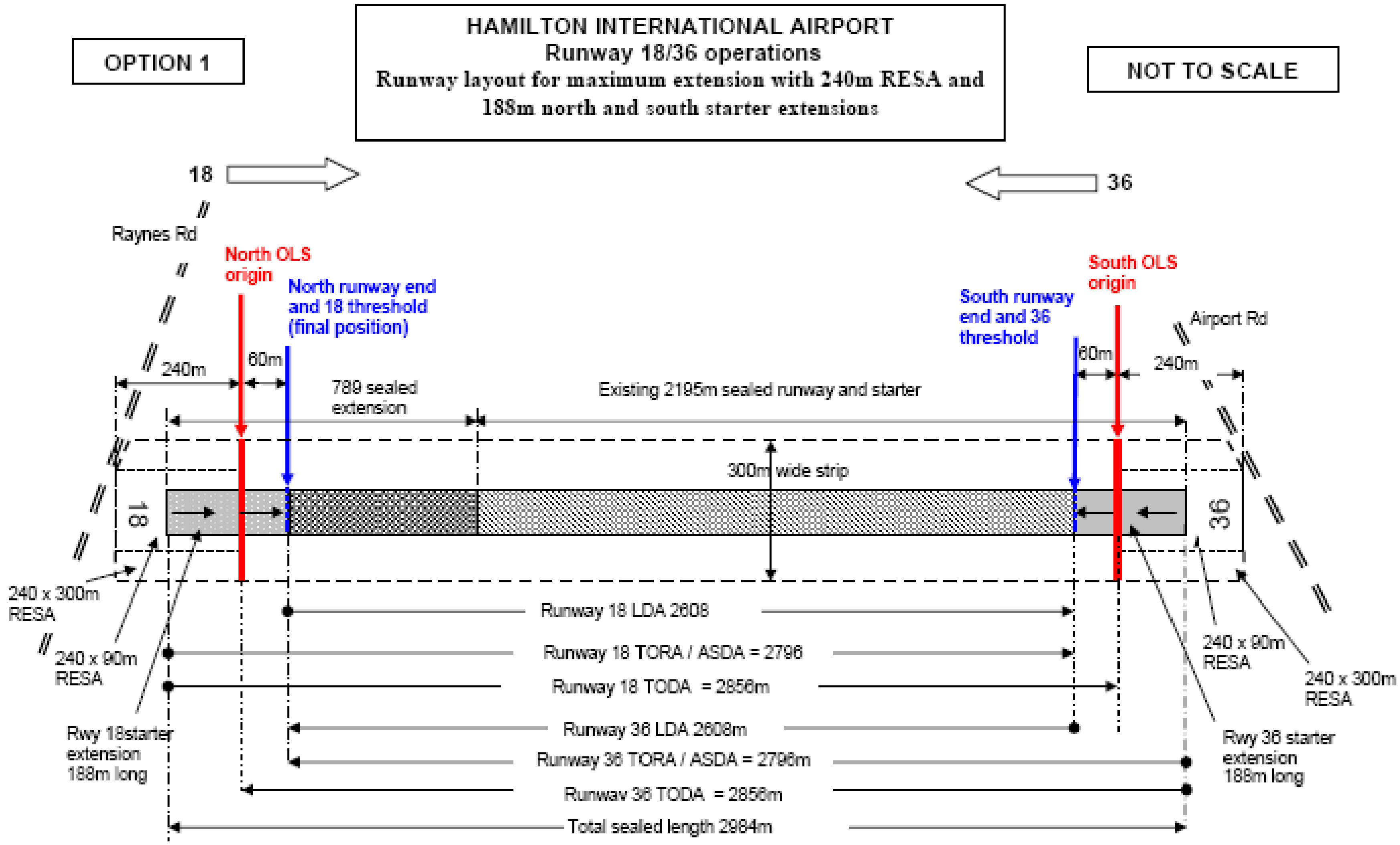
The length of 900m is based on providing guidance for operations under category I, II and III conditions. Reduced lengths may support category II and III operations but may impose limitations on category I operations.

An area extending approximately 1000m long from the runway threshold and 120m wide obstacle free area centred about the extended centre line of the runway should to be provided for the HIAL. This would include an additional distance of approximately 100m beyond the outermost light to prevent its screening.

Because this area for the HIAL would lie substantially on land outside the boundary of the Airport, it is recommended that HIA works with Waipa District Council and Airways (the likely owner/operators of future HIAL) to institute appropriate control or designation over the HIAL reserve to provide for security for the lights and vehicle access for maintenance.

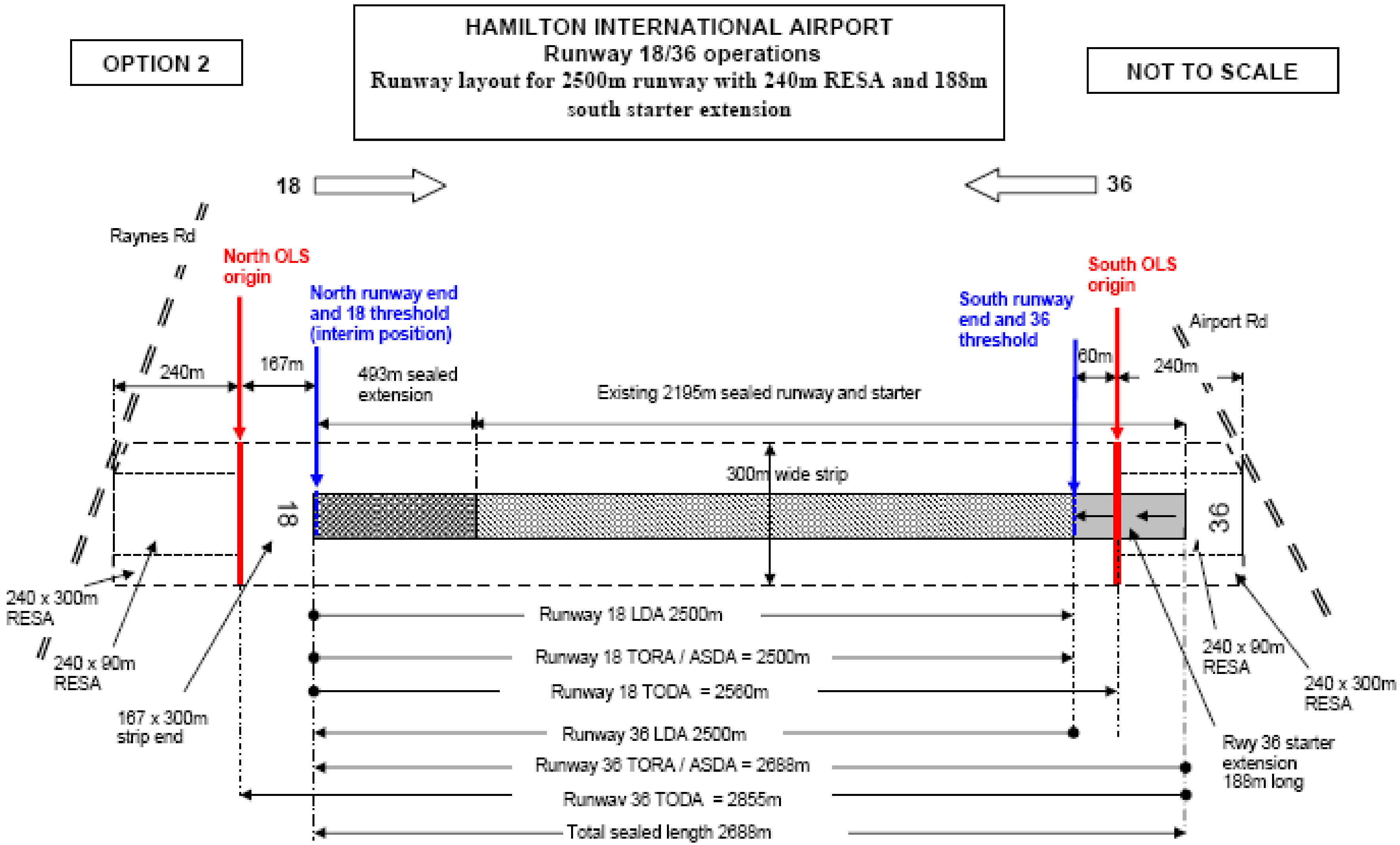
6.15. Master Plan

The final Master Plan for 2030 is shown at Figure 6-6 and incorporates the Stage 3 airfield development with the non-aviation commercial land use definition for areas peripheral to the aviation one.



Source: Astral Aviation Limited 'Notes on Hamilton Airport runway length operations'.

FIGURE 6-3 OPTION 1 – MAXIMUM RUNWAY DEVELOPMENT



Source: Astral Aviation Limited 'Notes on Hamilton Airport runway length operations'.

FIGURE 6-4 OPTION 2 – INTERIM RUNWAY EXTENSION

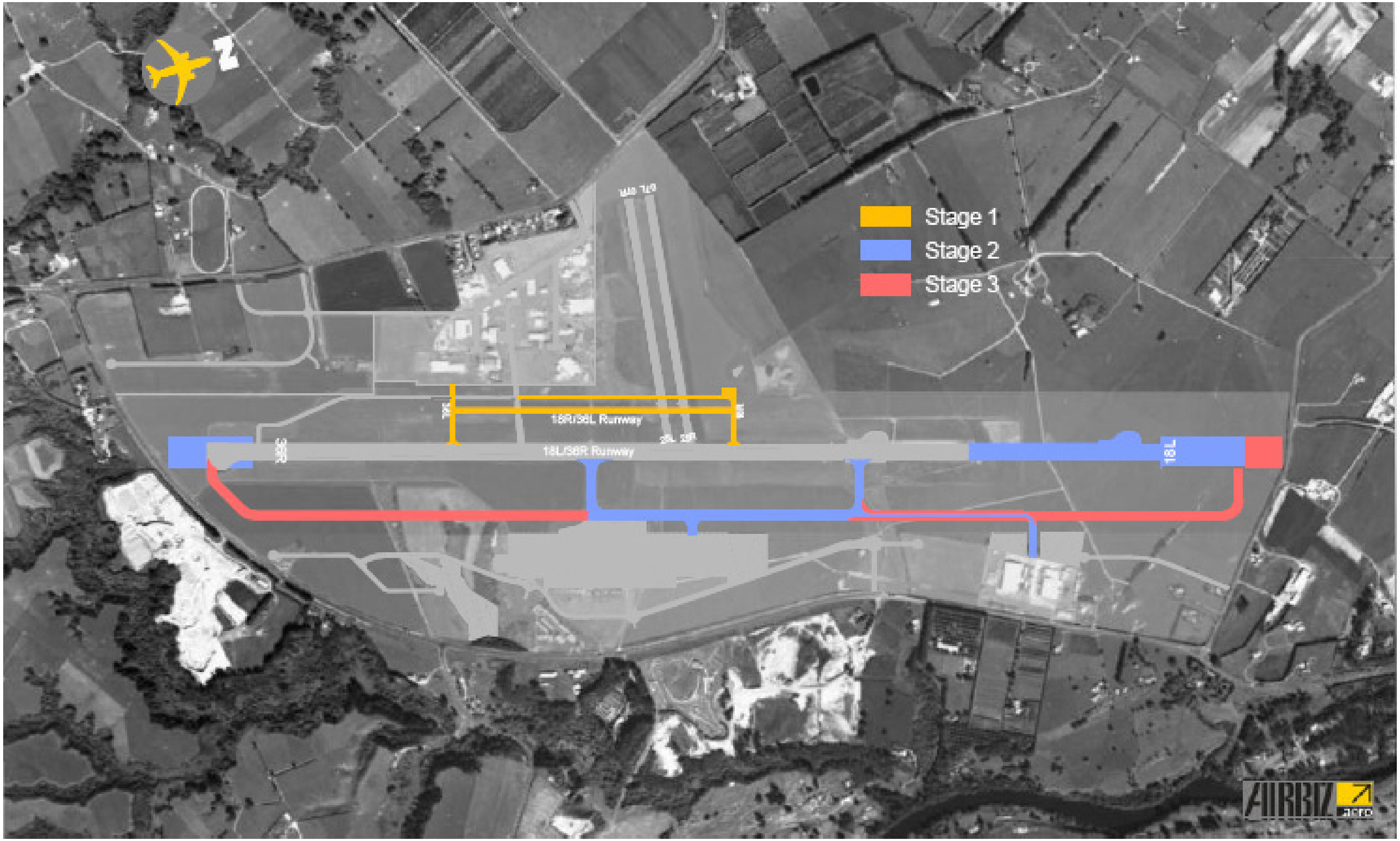


FIGURE 6-5 MASTER PLAN STAGING

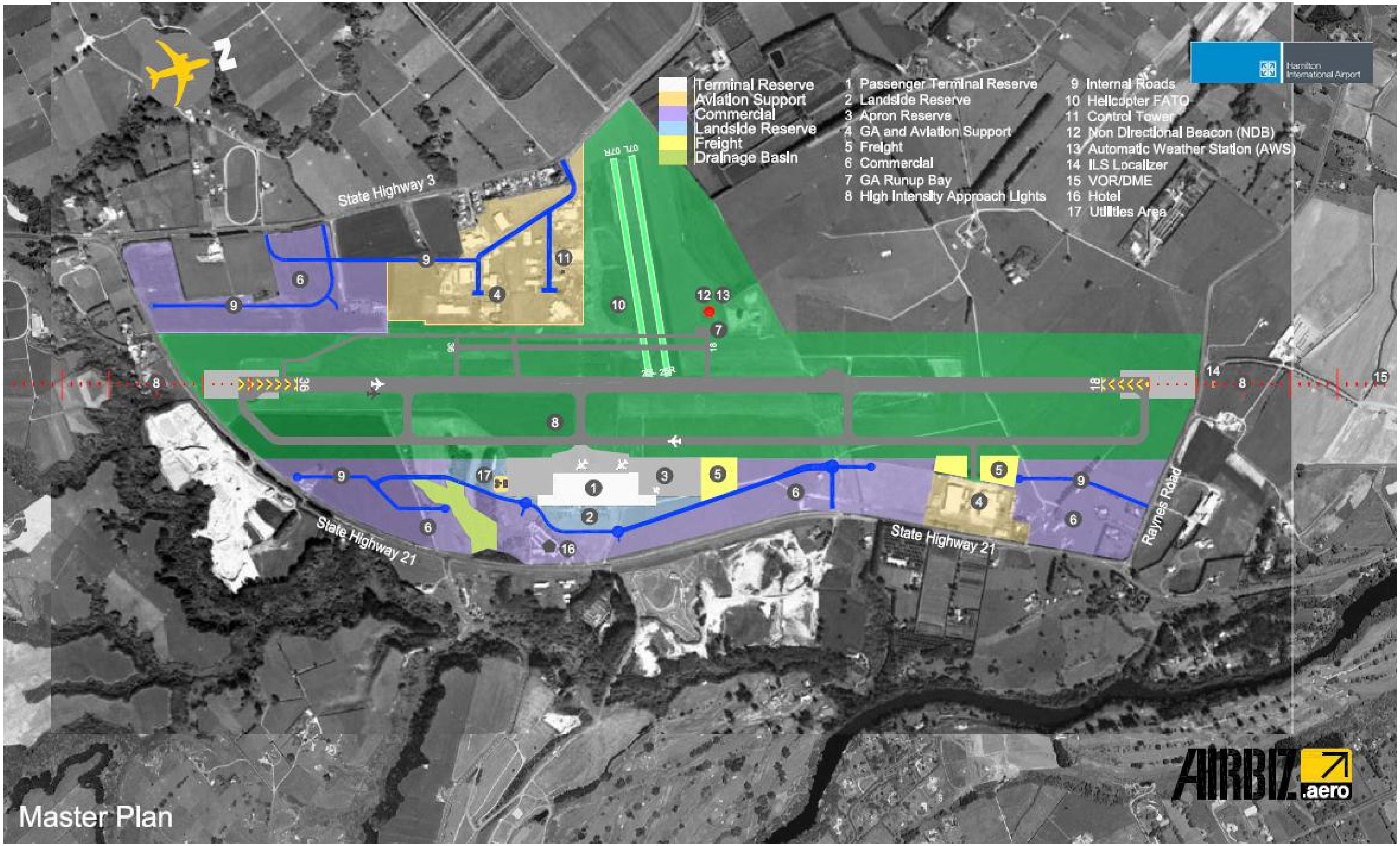


FIGURE 6-6 MASTER PLAN 2030

7 Freight

7.1. Current Situation

In 2006/07, more than 80% of New Zealand's export air cargo and 90% of import air cargo was handled at Auckland Airport with key goods being fruit, vegetables, seafood, machinery, meat and processed food. Refer to Table 7-1.

In 2006, Statistics New Zealand reported just 2 tonnes of cargo handled at HIA and since then there has been no significant increase in this level.

Because the types of aircraft servicing HIA are narrow bodied such as B737's and A320's, 1-2 tonnes of freight capacity per flight is the best that can be achieved. This has partly been a reason why a larger freight presence has not developed.

Airport	Market Share	Key Goods
Auckland Airport	81%	Fruit, vegetables, machinery, seafood, meat, processed food
Christchurch Airport	18%	Machinery, meat products, seafood
Wellington	1%	Machinery, seafood (from Nelson)
Ohakea Airport	0.003%	Machinery
Whenuapai Airport	0.003%	Other
Hamilton Airport	0.001%	Processed food – beer and wine

Source: Statistics New Zealand.

TABLE 7-1 MARKET SHARE BY PORT

In terms of passenger aircraft movements and consequently (belly-hold) air freight throughput, Auckland Airport holds the dominant, and steadily growing, market share position within New Zealand airports with the majority of the country's international air freight goods being carried to Auckland by road.

7.2. Regional Exporting Profile

Waikato's air freight market share is 7% of the total New Zealand air freighted exports with products including machinery (taps, valves, aeronautical, electrical) and dairy products (cream, cheese and eggs).

The majority of air freighted exports from Waikato move through Auckland Airport with 39% of air freighted goods (such as fruit, nuts and vegetables) going to Australia, making it the prime market for exports for the region. Fruit, nuts, vegetables and processed foods (i.e. beer and wine) are the main products exported to Asian countries (Waikato's second largest exporting market). See Figure 7-2.

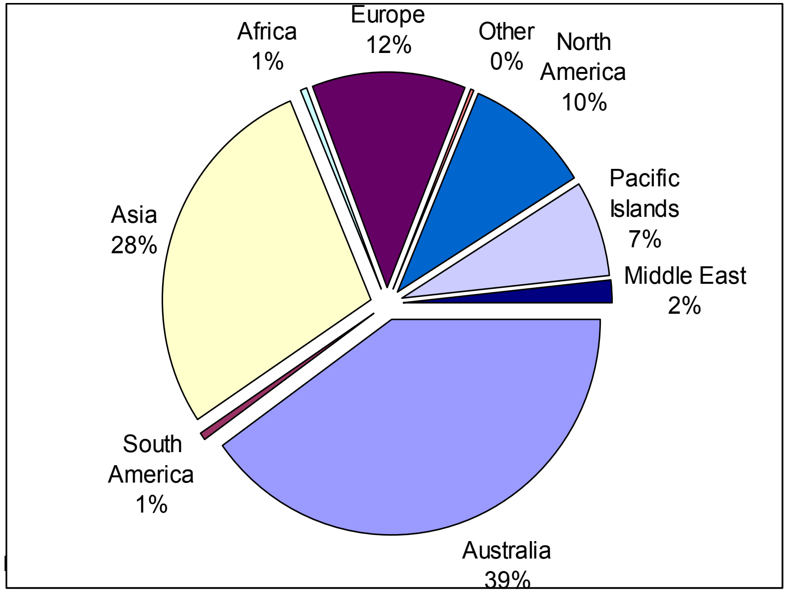


FIGURE 7-2 EXPORT MARKETS

Other significant exports from Waikato, via Auckland Airprot, are air freighted horses and cattle. The estimated value of New Zealand thoroughbred being exported has always been substantial and on the rise since 1999. Table 7-2 shows the size and value of the thoroughbred breeding export market.

It is estimated that nearly 50% of horses being air freighted out of New Zealand come from the Waikato region, trucked to Auckland before departure.

Season	Horses Exported	Estimated Value of Exports (million)	NZ Yearling Sales Aggregate (million)
1994-95	2065		$30.1
1995-96	1987		$29.1
1996-97	2027		$31.2
1997-98	1827		$44.4
1998-99	2175		$48.7
1999-00	1937	$110	$71.7
2000-01	2000	$115	$68.3
2001-02	1914	$115	$54.6
2002-03	1763	$115	$47.2
2003-04	1797	$115	$60.4
2004-05	1803	$120	$69.6
2005-06	1831	$125	$65.7
2006-07	1888	$130	$81.4
2007-08	1888	$145	$113.4

Source: New Zealand Thoroughbred Racing & New Zealand Stud Book.

TABLE 7-2 NZ THOROUGHBRED BREEDING STATISTICS

The traffic of horses (mostly for the racing industry) being air freighted out of New Zealand, via Auckland Airport, is fairly continuous through the year with 65% being exported to Australia. See Table 7-3.

While 84% of cattle are exported to Japan, making Australia and Japan the top two export markets for air freighted animals from New Zealand. However, the traffic of cattle being air freighted out of country is rather sporadic. See Figure 7-3.

Country of Destination	Number of Animals	Percent
Australia	1,720	65%
United States of America	247	9%
Singapore	185	7%
Hong Kong	140	5%
United Kingdom	101	4%
Malaysia	90	3%
Macau	82	3%
Other	95	4%

TABLE 7-3 DESTINATION OF HORSE AIR FREIGHT FROM AIA

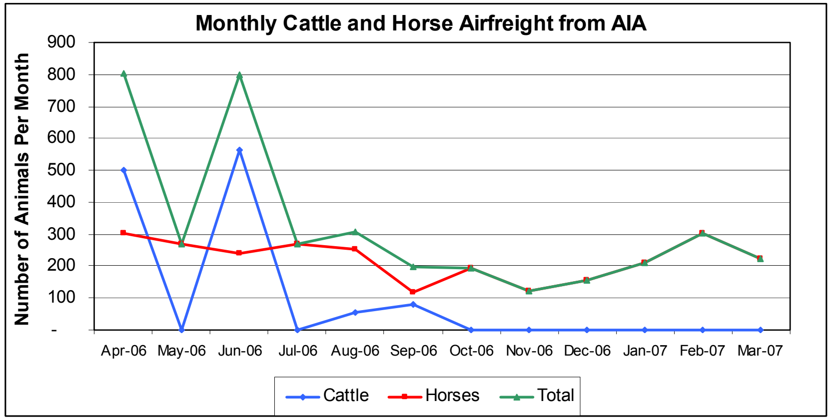


FIGURE 7-3 MONTHLY HORSE AIR FREIGHT FROM HIA

7.3. HIA's Opportunities

Targeting Companies

HIA has the potential to directly target major Waikato based export businesses such as Fonterra and Affco to work together to establish the business cases for direct export air freight from HIA.

HIA also has the potential to target national distribution businesses located to the south of Hamilton for products that may not specifically need to be exported or imported from AIA, thereby potentially saving road transport time of up to 1.5 hours each way.

Horses and Cattle

With HIA being located in the heart of one of New Zealand's major thoroughbred areas and with Waikato producing significant levels of horse and cattle exports, there is a real opportunity for HIA to establish a "centre of excellence" on airport for animal exports, including veterinarian and quarantine facilities.

Aquaculture

Aquacultural products, both by weight and value, are one of the biggest commodities exported from Auckland, sourced from throughout New Zealand. In the year ended 2007, by weight, the most air freighted commodity was fish, crustaceans and molluscs. The largest contributor to this was Salmon.

Aquaculture currently contributes approximately $27 million to Waikato's annual regional GDP. There is a clear opportunity for stronger focus on development of this industry for export markets.