Final Report

Hamilton Airport Master Plan 2011

Prepared for Southern Grampians Shire Council

By Airports Plus Pty Ltd in association with Kneebush Planning Pty Ltd

Adopted by Council on 9 March 2011

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1 Introduction

Hamilton Airport is a Registered Aerodrome owned and operated by the Shire of Southern Grampians. The airport is an important community asset for the Shire which must be carefully managed to ensure that Hamilton and the wider region continue to benefit from its existence well into the future. To this end, in June 2010 Airports Plus Pty Ltd was commissioned by the Shire to prepare this Master Plan for the airport.

1.1 Overview of Master Plan

The central goal of this Master Plan is to provide a strategic planning document for the airport's future growth and development.

The Hamilton Airport Master Plan provides Council with a long term (20 year) planning framework for the safe, secure, efficient, and sustainable use and development of the airport site. It provides clear direction as to how growth is to be accommodated, particularly continued growth and expansion of Regular Passenger Transport services and General Aviation activities, and how a balance is to be achieved between airport functions and various forms of surrounding land use. The Master Plan provides an optimal spatial outcome for the airport in keeping with commercial business objectives and environmental, planning, security and operational obligations.

The emphasis of the Master Plan is on aviation growth and development, and protecting the site for the future expansion of aviation facilities. However, parts of the site have been identified for possible future non-aviation uses on land that is not likely to be required for aviation purposes.

1.2 Master Plan Objectives

The key objectives of the Master Plan as set out in the original project brief are to:

- Ensure long-term sustainability of Hamilton Airport, by providing the Framework to best utilise existing facilities and facilitate additional business and commercial (including non-aviation) development at Hamilton Airport;
- Identify strategies to allow for the continued growth and expansion of passenger services and passengers;
- Identify the need for and location of precincts both within the airport and surrounding land, taking into consideration services required;
- Identify strategies and facilities required to ensure the long term development of the airport as a Pilot Training Centre;
- Ensure Hamilton Airport continues to be managed, operated and maintained at a high standard to meet the needs of existing and future users in compliance with regulatory requirements;
- Accommodate increases in tourist passenger traffic at the airport;
- Facilitate the continued presence of CFA and DSE fire fighting facilities as well as all other emergency services.

1.3 Methodology and Consultation

The methodology used to prepare the Master Plan comprised the following stages and tasks. Throughout the project there were regular meetings with the Project Control Group (PCG) which comprised senior representatives of all relevant Council departments.

Stage 1 – Project Inception

- Project inception meeting.
- Preparation of a Consultation Strategy.

Stage 2 – Background Review & Strategic Context

- Review of existing background information, previous studies and other information provided by Southern Grampians Shire Council and obtained from other sources.
- Assessment of existing planning scheme policies and controls.
- A review and assessment of existing airport infrastructure and facilities.
- A review of the relevant Aircraft Planning Criteria.
- Collection of data regarding the types of aircraft being operated, the number of movements, runway use, flight tracks and future aircraft types that may be introduced;
- Aircraft activity forecast.
- Liaison with relevant Council staff, utility companies and emergency services agencies.
- Liaison with Sharp Airlines to ascertain current and future business needs.
- Identification of key issues, constraints and opportunities relevant to the airport.
- Preparation of a SWOT analysis based on all of the above.
- Preparation of a draft vision and objectives for the airport.
- Stakeholder workshops to discuss and test the identified constraints, opportunities and aspirations for the airport:
    - Workshop with the Key Stakeholders Advisory Group on 31 August 2010.
    - Workshop with Councillors on 1 September 2010.
    - Workshop with airport tenants/users and surrounding landowners on 1 September 2010.

Stage 3 – Preparation of Draft Master Plan Elements

- Amendment of vision and objectives based on consultation feedback.
- Preparation of a draft precinct plan for the airport site.
- Preparation of draft concept plans for key precincts and facilities.
- Identification of major infrastructure and facility requirements based on the future forecasts and user needs.
- Preparation of a draft OLS chart.
- Preparation of a draft ANEF plan.
- Preparation of draft Planning Scheme Amendment recommendations.
- Stakeholder workshops to present the draft Master Plan elements and seek feedback:
    - Workshop with Councillors on 13 October 2010.
    - Workshop with the Key Stakeholders Advisory Group on 14 October 2010.
    - Workshop with airport tenants/users and surrounding landowners on 14 October 2010.

Stage 4 – Final Master Plan

- Preparation of a draft Master Plan report.
- Preparation of a draft ANEF report.
- Preparation of a draft Planning Scheme Amendment.
- Submission of the draft Master Plan report, ANEF report and Planning Scheme Amendment to the PCG for review.
- Submission of the draft ANEF report and plan to DPCD and Airservices Australia for endorsement.
- Finalisation of the Master Plan report, ANEF report and Planning Scheme Amendment.

1.4 Report Structure

This report has been structured to provide a clear description of the issues that have been considered in the preparation of the Master Plan and the elements that comprise the Master Plan.

Section 1 of this report introduces the Master Plan and explains the scope of the project.

Section 2 describes the existing situation. This includes a description of the airport site and surrounds and the existing airport facilities, activities and utility services.

Section 3 provides an outline of the underlying planning policy context relevant to the airport and preparation of this Master Plan.

Section 4 provides an analysis of the airport against the relevant airport planning criteria.

Section 5 of this report sets out the key findings of the airport SWOT analysis.

Section 6 sets out the strategic vision and objectives for the airport which provides broad guidance and direction for the future use and development of the airport.

Section 7 of this report sets out the land use plan for the airport, including a description of the Master Plan's land use precincts and general land use guidelines.

Section 8 sets out the facilities plan for the airport, which describes the major physical facilities and infrastructure requirements.

Section 9 describes the Obstacles Limitation Surfaces (OLS) chart which was prepared to assist in the ongoing protection of the airport's airspace.

Section 10 describes the Australian Noise Exposure Forecast (ANEF) which was prepared to provide an understanding of the airport's potential aircraft noise impact for future land use planning purposes.

Section 11 sets out a number of recommendations for amendment of the Southern Grampians Planning Scheme.

Finally, Section 12 of this report provides recommendations on how to best implement the Master Plan, including trigger points and estimated timing for key actions.

2 Existing Situation

The following section provides information regarding the existing site conditions and the surrounding land. The plan at Appendix 1 shows the site and surrounds.

2.1 Airport Site

Hamilton Airport is located approximately 11km north of the Hamilton town centre on the north-east corner of Hensley Park Road and Menzels Road. The airport site has a total area of 176 hectares. Access to the airport is off Hensley Park Road.

Southern Grampians Shire Council owns the entire site and is the operator of the airport.

The airport site is zoned Farming Zone (FZ) under the Southern Grampians Planning Scheme.

2.2 Existing Airport Activities

Activities at the airport currently comprise a Regular Passenger Transport (RPT) service and a pilot training school, both operated by Sharp Airlines, in addition to a range of General Aviation (GA) activities.

The RPT service currently uses Metro III/23 aircraft with 19 passenger seats and connects to Melbourne (Essendon) and Adelaide. The pilot training school conducts circuit training using both runways.

GA activities include:

- Hamilton Aero Club (which conducts some occasional pilot training)
- Emergency services
- Charter services
- Air freight
- Private / recreational flying
- Aerial agriculture

2.3 Existing Airport Facilities

2.3.1 Runway 17/35

Runway 17/35 is oriented north-south and is 1404m long and 30m wide. The runway strip associated with runway 17/35 is 1524m long and 150m wide. The surface of the runway is a bituminous sprayed seal that has been applied as a double coat and 14 mm/7 mm aggregate has been applied to the bituminous coat.

The runway has a published PCN of 10 and a tyre pressure restriction of 600 Kpa (87 PSI) which is in the mid range of pavement ratings.

Runway 17/35 is the primary runway due to the prevailing wind and night lighting. Aircraft operating on runway 17/35 undertake normal left hand circuits. Runway 17 and 35 directions have GPS Non-Precision Approach procedures designed by Airservices Australia to allow aircraft to make a straight in approach with a minima for pilots to continue their approach at 516 ft and 539 ft respectively above the aerodrome elevation.

Runway 17/35 is equipped with runway edge lighting and visual slope guidance known as T-VASIS which are located on both sides of the runway and at both ends of the runway.

2.3.2 Runway 10/28

Runway 10/28 is oriented in the northwest-southeast direction and is 1233m long and 30m wide. The surface of the runway consists of graded and compacted gravel and has a PCN of 6 and a tyre pressure of 400 Kpa (58 PSI). This runway can be used by aircraft such as Kingair 200 and Metro III/23 if the primary runway is not available.

Aircraft operating on runway 10/28 undertake normal left hand circuits and as this is a Non-Instrument Runway there are no published approach procedures that can be used by pilots to operate approaches to the runway.

There is no lighting provided on this runway.

2.3.3 Taxiways

There are two bituminous sprayed seal taxiways connecting runway 17/35 with the apron parking area that are each approximately 115m long. The northern taxiway is the same strength as the runway and apron and is constructed 15 m wide which allows Code C aircraft to operate. The southern taxiway is constructed 10.5m wide and is of a lower strength than the runway and has an aircraft weight restriction that only allows a maximum weight of 5,700 kg. The taxiway is only suitable for Code B aircraft operations.

A gravel taxiway connects the northern edge of the main apron to the threshold of runway 10 and is approximately 170m long and is primarily used by fire suppression aircraft when operating at the airport.

2.3.4 Aprons

Hamilton Airport only has one apron area consisting of two sections. The first section is approximately 140m x 60m wide and is a similar strength to the runway and has a double bituminous sprayed seal surface. A concrete pad, approximately 40m x 20m has been constructed in front of the aircraft refuelling bowsers. The second section of apron is approximately 70m x 25m and is restricted to aircraft below 5,700 kg and has a single coat bituminous sprayed seal. A bituminous sprayed seal taxi lane and apron area approximately 60m x 30m provides access to a number of aircraft hangars and is a similar strength to the main apron.

2.3.5 Buildings

The terminal building is approximately 400 m^2 and consists of a passenger waiting area, male/female toilets, a small kitchen area and an office area for Sharp Airlines that includes a check-in counter. A pilot training facility in a demountable building is owned and operated by Sharp Airlines and is located adjacent to the terminal building on the landside of the airport.

There are six hangars of various sizes used for the storage of aircraft. One hangar is attached to the Hamilton Aero Club clubrooms south of the terminal building.

The remaining buildings on the airport consist of a residence for Council staff currently occupied by the Senior Aerodrome Reporting Officer and a shed and carport housing maintenance equipment and the Senior Reporting Officer's office.

2.3.6 Other Facilities

Two aircraft refuelling facilities operate on the airport; one for the supply of AVGAS and the other for the supply of Jet A1. The AVGAS facility consists of an underground storage tank with a total capacity of 55,000 litres and is operated by the Aero Club and the Jet A1 facility consists of an above ground tank with a capacity of 9,000 litres and is operated by Sharp Airlines in conjunction with the Council. Fuel is supplied to the facilities by Air BP. The fuel facility is adjacent to the main apron immediately south of the terminal building.

A Non-Directional Beacon (NDB), owned and operated by Airservices Australia, is located west of the building area adjacent to Hensley Park Road on airport land. An approach procedure for pilots to find the airport using the NDB is published in Aeronautical Information Publications.

A permanent fire suppression base has been established north of the terminal building adjacent to the gravel taxiway. This base contains a shed with water pumping equipment, fire retardant mixing equipment and water storage tanks.

A weather station owned by the Bureau of Meteorology is situated east of runway 17/35 which provides pilots with weather information via a telephone number. This weather station also supplies the Bureau of Meteorology with local weather information to assist in preparing terminal area forecasts (TAF).

A small car park with 14 spaces is located adjacent to the terminal building.

2.4 Assessment of Facilities

2.4.1 Runways

Runway 17/35 has been assessed as a separate project to this Master Plan and included geotechnical testing of the pavement materials. Findings from this testing have been considered by the Council and were the basis of a successful application for funding from the State Government. Work on improving the runway surface will be undertaken as a separate project to any other recommendations made in this Master Plan. Upgrading of the runway visual aids has also been included in the project funded by the State Government. Runway 10/28 is in reasonable condition and the Council is intending to re-gravel the runway in the near future. The area between the threshold of runway 10 at the west end of the runway and the intersection of runway 17/35 shows signs of more prop wash erosion than other parts of the runway due to the gravel taxiway connecting to the threshold of runway 10.

2.4.2 Taxiways

The southern taxiway is in poor condition as the surface of the taxiway is cracking and failing in several areas. The Council is planning, as part of the upgrade project funded by the State Government, to repair this taxiway and improve the surface. The gravel taxiway used by fire suppression aircraft is in good condition.

2.4.3 Apron

The main area of apron is suitable for current aircraft operations and provides adequate parking for RPT aircraft and a small number of itinerant aircraft. However, when the airport is being used by additional aircraft undertaking fire suppression activities and/or agricultural spraying activities then there is not enough capacity to allow the parking and taxiing of aircraft during loading operations. Additional aircraft parking areas have been identified in this Master Plan.

2.4.4 Terminal

The current passenger check-in and lounge areas in the terminal building are adequate for handling a single RPT aircraft flight (19 seats) at a time. When Sharp Airlines expands its routes it is possible that an increased number of passengers could be using the terminal facilities at the same time. The location of the Sharp Airlines corporate office in the southern section of the terminal prevents further expansion of the passenger handling areas. The terminal would not be large enough if passenger screening and checked bag screening were introduced by the Commonwealth Government for aircraft down to the size of the current RPT aircraft operating into Hamilton Airport. Expansion of the terminal has been identified in this Master Plan.

2.4.5 Other Facilities

The weather station will have equipment installed under the State Government funded project that will broadcast the weather information to pilots on a specific frequency (AWIB).

2.5 Utility Services

Given the airport's rural location and the distance from the Hamilton urban area, the provision of utility services to the site is currently limited and requires upgrading to support future development.

Water is currently sourced via a water main directly from the nearby Hayes Reservoir and from rainwater tanks. The supply from Hayes Reservoir is untreated raw water and is not potable. The rainwater tanks are the only source of drinking water. The nearest town water main is in Beveridges Road, approximately 7km south of the airport. However, the Council is currently in the process of installing an on-site treatment system which will treat the raw water from Hayes Reservoir with the intent of making it suitable for drinking.

Wastewater is currently disposed of via a number of on-site septic tank systems. There is currently no reticulated sewerage. The nearest sewer main is near the corner of North Boundary Road and Hensley Park Road, approximately 9km south of the airport. The existing septic tank systems are generally regarded as inadequate, particularly in the context of an expanding airport, and an alternative, more modern, wastewater disposal system is recommended.

Electricity is currently supplied to the airport by a two phase overhead powerline to a main pole and transformer located behind the existing caretaker's residence. Power is also supplied from this transformer to Hensley Park Homes located opposite the airport. Over the past few years the airport has experienced several full power outages and part power outages. The last Powercor works on the transformer to address these problems resulted in an increase of power output from the transformer to its limit. In recent times increased power usage, especially in the terminal building and pilot training facility, has overloaded and tripped safety switches on several occasions. However, Powercor has advised that the power supply to the airport could be upgraded to address these issues and provide capacity for future development.

Telecommunication services at the airport are limited by "older style" infrastructure. However, there is an optical fibre telecommunications cable running along Hensley Park Road which Telstra has indicated could be accessed to provide substantially improved services to the airport. This requirement is particularly important for Sharp Airlines and the pilot training school.

Minimal stormwater drainage facilities currently exist on the site. There are minimal underground drainage assets. Stormwater drainage is generally managed by open unlined drains but there are no retention basins to control stormwater flows exiting the site. Adjacent landowners have indicated that stormwater flows off the airport site can be a problem.

Minimal fire fighting facilities exist for the protection of the buildings on the site. There is no fire fighting water supply or hydrant system on the site. The CFA have advised that the current fire fighting facilities do not meet their requirements.

Section 8.4 of this report makes a number of recommendations for upgrading of the existing utility services.

2.6 Surrounding Land

As can be seen on the Existing Conditions plan at Appendix 1, the airport site is generally surrounded by broadacre farming land. All of the surrounding land is zoned Farming Zone (FZ) under the Southern Grampians Planning Scheme.

Hensley Park Homes, a manufacturer of transportable / relocatable homes, is located directly opposite the airport on the west side of Hensley Park Road.

There are only two houses in the immediate vicinity of the airport site. The closest is located approximately 250m north-east of the northern end of Runway 17/35. The other house is located approximately 500m east of the airport site's eastern boundary.

3 Planning Policy Context

This section provides an overview of the planning policy context relevant to the airport and preparation of this Master Plan. There are a number of policy documents that will guide or influence the future use and development of the Hamilton Airport and which therefore need to be considered. As this is the first Master Plan for Hamilton Airport, it is important to understand this underlying planning context to determine any land use directions and development guidelines relevant to the achievement of the Master Plan objectives.

3.1 Council Plan 2009-2013

The Southern Grampians Shire Council Plan 2009-2013 contains the Council's vision, fundamental objectives and strategies to achieve those objectives.

The Council Plan contains the following vision and objectives:

"The Southern Grampians Shire's Vision is to be Australia's Most Liveable Provincial Community.

To achieve our vision we have developed five fundamental objectives. These are our goals. These are the key things we must do to become the most liveable provincial community.

We will:

- *Provide the people of the Southern Grampians Shire with the highest standards of good governance.*
- *Plan for and foster economic growth and prosperity.*
- *Ensure a wide range of quality services are available to our community.*
- *Help communities in our Shire feel strong and safe.*
- *Pursue environmental sustainability in our Shire."*

In relation to the economic growth and prosperity objective, the Council Plan includes the following strategy:

"Undertaking feasibility studies at Hamilton Airport to clearly establish opportunities for the Airport to drive new business investment in the Shire."

3.2 Tourism Strategic Plan 2010-2015

The Southern Grampians Shire Tourism Strategic Plan 2010-2015 aims to *"guide SGSC's resourcing of tourism marketing and development activities, inform the work portfolios of staff, and to communicate Council's tourism priorities to tourism operators and the broader community"*.

Tourism plays an important role in the Shire's economic prosperity. The Tourism Strategic Plan states:

"The tourism industry in Southern Grampians Shire (SGS) makes a substantial contribution to the local economy by bringing new dollars into the shire which are spent on a wide range of services, from the retail sector to accommodation, restaurants and attractions. This income further supports industry sectors that rely on business from tourism operators such as tradesmen, builders, accountants, lawyers, etc."

The Tourism Strategic Plan recognises the important role the airport plays in relation to tourism in the Shire. It recognises that "*Hamilton Airport is the only airport in the Grampians region that conducts flights to major cities*". One of the plan's strategic actions is:

"Support the upgrade of the airport so it can carry larger aircraft."

3.3 Municipal Strategic Statement

Council's Municipal Strategic Statement (MSS) contains the following vision statement:

"The Vision Statement for land use planning and development builds on the Shire's Corporate Vision and establishes a desired future. The Vision for the Southern Grampians Shire is to:

- *Encourage and support uses and development which more efficiently use and manage land, water and other finite resources;*
- *Diversify the economic base of Hamilton, the smaller townships and the rural areas by attracting further investment, generating new employment opportunities and strengthening the role and identity of Hamilton as a regional service centre;*
- *Protect and promote the cultural and environmental heritage of the Shire;*
- *Manage the natural resources in a sustainable way to; secure the Shire's environmental assets, improve water quality and supply, and the condition of the catchments and environmental flows of the Shire's rivers and streams."*

The MSS contains two strategies relating to Hamilton Airport. In relation to settlement issues, the MSS states:

"Ensure that the use and development of land in the vicinity of the Hamilton airfield does not adversely affect its operation."

In relation to industrial development, the MSS states:

"Support the development of industrial uses at the Hamilton airfield where such uses complement the use of the airfield."

3.4 Hamilton Airfield and Surrounds Policy

Clause 22.04-1 of the Southern Grampians Planning Scheme sets out a Local Planning Policy specifically relating to the airport and surrounding land.

Under the heading "Policy Basis" this policy states:

"The Hamilton airfield is an important economic asset. Opportunities exist to expand the air services to Hamilton and to develop aircraft related industries. Development within the vicinity of the airfield should not limit the potential for these activities."

The objective of this policy is:

"To ensure that the use and development takes advantage of the opportunities provided by the Hamilton Airfield and that the capacity of the Airfield to operate and support a range of industries and businesses complementary to this airfield is not compromised by inappropriate land use and development."

Under the heading “Implementation” it states:

It is policy that:

- *The use and development of land adjacent and nearby to the Hamilton Airfield shoould be managed so it does not lessen the capacity of the operation of the airfield or the development of businesses and industries related to the aircraft industry.*
- *Preference should be given to business and industry related to the aircraft industry or that can capitalise on the airfield to locate in the vicinity of the airfield.*
- *Noise sensitive uses will be discouraged from locating within the vicinity of the airfield and flight paths.*
- *If noise sensitive uses are located within the vicinity of the airfield, requirements for appropriate noise amelioration measures may be included on any permit.*

3.5 Economic Development Strategy 2004

The Southern Grampians Shire Economic Development Strategy 2004 sets out a strategic framework to support the economic growth of the Shire. The strategy aims to build on the Shire’s competitive advantages. In this regard the strategy states:

“As a rural municipality, primary production has historically been the predominant income earning activity however this has changed in recent times to encompass agricultural diversification, tourism, service and retail industry development as well as the pending mineral sands processing facility.

The Shire now has in place several competitive advantages that need to be strengthened and marketed to attract both transient and permanent visitors. These include the education sector, the natural environment, a strong agricultural base, and the mining and manufacturing sector. This is enhanced by the positive sentiment of its business and residents.”

“The Shire townships and Hamilton in particular, provide the liveability mix of a sustainable environment, recreational pursuits and support of infrastructure in health and education.

Additional emphasis needs to be placed on the Shire’s proximity to natural assets, and position it regionally and promote the distinct advantages it has relative to surrounding regions.”

The document outlines strategies to direct resources towards the critical areas. This includes the airport which is recognised as a critical asset requiring the following actions:

“Plan future infrastructure for Hamilton airport.”

“Investigate and identify future infrastructure requirements for the Hamilton Airport.”

3.6 Planning Scheme Review 2010

The Southern Grampians Shire Council Planning Scheme Review 2010 identifies a series of major strategic issues facing the Shire. The review proposes a comprehensive set of future initiatives to resolve strategic gaps and address predicted future strategic issues. The review identifies that following specific actions relating to Hamilton Airport:

“Prepare Hamilton Airport Master plan, incorporate updated Airport Environs Overlay to protect aircraft flight paths into Scheme, and consider inclusion of Design and Development Overlay for aircraft noise.”

"Strengthening the Hamilton Airfield Local Policy with height limitations for structures in and around the Airport."

"Undertake corrections amendment to apply correct Zones and Overlays: Hamilton Airport (currently FZ, should be PUZ4)."

The development of a Master Plan for Hamilton Airport is identified as an urgent priority.

3.7 Hamilton Structure Plan 2010

Southern Grampians Shire Council is currently in the process of preparing a Structure Plan for Hamilton. As part of this project a Residential and Industrial Land Assessment has been undertaken. This assessment has found that there is currently an adequate supply of industrial land in Hamilton. The report states:

"This reasonable scenario suggests that the industrial land requirement for the period from 2010 to 2031 is likely to be around 44 ha. This compares with a vacant industrial land supply of 200 ha (or 104 ha excluding the land zoned Industrial 2)."

In relation to Hamilton Airport, the report states:

"Hamilton Airport is likely to expand its operation in coming years. This will generate demand for airport-related industries, particularly storage, servicing and maintenance which can be located on land within the airport boundary. Presently this area is not fully serviced and would be unsuitable for more general industrial expansion."

In addition, a Draft Hamilton Investment Attraction Strategy has also been prepared. This draft strategy identifies the airport as a key strength of Hamilton, and which provides the following opportunities:

"Promote high end tourism to the region, with operators co-operating on packages

Establish airport services precinct for airport-related businesses including training academy

Establish accommodation for air-training facility "

4 Airport Planning Criteria

The CASA *Manual of Standards Part 139 - Aerodromes* sets out the relevant airport planning criteria. This section provides an analysis of the airport against those criteria.

4.1 Aerodrome Reference Code

The Aerodrome Reference Code is based on the characteristics of an aeroplane not the aerodrome. Once the critical aeroplane is determined then the aerodrome facilities are designed and built to meet those characteristics. The primary runway, taxiway and apron at Hamilton Airport have been constructed to Code 3C standards. The following table indicates the size of aircraft that determine the Aerodrome Reference Code.

Table 1 - Aerodrome Reference Code extracted from MOS Part 139 - Aerodromes

Aerodrome Reference Code				
Code Element 1		**Code Element 2**		
Code number	**Aeroplane reference field length**	**Code letter**	**Wing span**	**Outer main gear wheel span**
1	Less than 800 m	A	Up to but not including 15 m	Up to but not including 4.5 m
2	800 m up to but not including 1200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1200 m up to but not including 1800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m
		F	65 m up to but not including 80 m	14 m up to but not including 16 m

4.2 Determining Runway Length, Width and Strength

The Aeroplane Reference Field Length (ARFL) published by aircraft manufacturers for each aircraft type is a guide only when determining suitable runway length; many other factors can also influence usable runway length including air temperature, runway slope and elevation.

There are a number of aircraft commonly used in the Australian aviation industry for regional passenger operations and for business charter. The most commonly used RPT aircraft operating in regional centres on the eastern seaboard are turbo prop aircraft such as the Dash 8, SAAB 340 and Metro III/23.

Commonly used business charter aircraft include the Canadair Challenger 604 which is used by the RAAF to transport Federal Parliamentarians within Australia and the Cessna Citation/Learjet which is used by many businesses to transport senior management within Australia. These aircraft can operate into Hamilton Airport with some restrictions in its current configuration (i.e. the runway length and the current pavement strength place some limits on these aircraft types).

The construction materials used and the constructed depth of the pavement determine pavement strength. For a pavement to be determined suitable for an aircraft operation the designated Pavement Classification Number (PCN) should match the Aircraft Classification Number (ACN) given to an aircraft by the manufacturer.

Runway strength is the limiting factor that can restrict larger aircraft from operating. Runway 17/35 pavement strength at Hamilton Airport has a published low PCN (10) but this may have been lowered over the years to preserve the pavements. A pavement strength study was

undertaken by Aurecon Pty Ltd separate to this report which made recommendations on how to improve the pavement.

Table 2 - Typical Aircraft Types

Aircraft	Seats	ARFL	MTOW (kg)	ACN
Dash 8-300	50	1122	18642	14
Dash 8 Q400	70	1354	29000	17
Jetstream 31	32	1440	7000	6
Kingair 350	12	1100	6800	8
SAAB-340	30	1220	12370	8
Metro III	18	991	6577	4
Metro 23	18	1341	7484	6
Challenger 604	12	1780	21500	17
Learjet 55	8	1292	9298	10

4.3 Selected Design Aircraft

For the purpose of this Master Plan the critical deign aircraft selected is a Dash Q400. This aircraft can operate at Code 3C aerodromes and Hamilton Airport's primary facilities are built to Code 3C standard. However this does not take into account pavement strength and as Hamilton Airport has a PCN of 10, this aircraft would be weight restricted until the pavements were upgraded.

4.4 Aircraft Activity Forecast

Master Plans usually include aircraft activity forecasts. Hamilton Airport has no historical statistical records of annual aircraft activity so an estimate of annual movements and of forecast growth of annual movements has been prepared. This estimate is used to check that the current airport facilities are adequate for the indicated movements and also to indicate the timing for future airport infrastructure development.

The estimate of annual movements is based on information received regarding daily and weekly movements observed by airport staff and users. A movement is defined as the landing or take-off of an aircraft. Based on this advice there are currently approximately 10,656 movements per year at Hamilton Airport, or 29.19 per day.

Growth in general aviation in Australia has been stable at 1 - 2% per annum for the last twenty years. The Commonwealth Department of Infrastructure produces general aviation activity reports annually verifying this growth trend. At Hamilton Airport a specific area of growth that may occur is with pilot training. Taking into consideration these factors, a 1.5% compound growth rate has been applied for all aircraft activity at Hamilton Airport. Applying this growth rate indicates that the forecast movements in the year 2030 will be approximately 14,352 movements per annum, or 39.32 movements per day.

The capacity of the current runway and taxiway configuration is much greater than the number of aircraft movements forecast. The current runway configuration has the capacity for handling over 60,000 movements per annum.

5 SWOT Analysis

To help clarify the future direction of the airport and key issues to be addressed in the Master Plan, a SWOT analysis of the airport was undertaken. The following points summarise the airport's strengths, weaknesses/constraints, opportunities and threats. The SWOT analysis was based on an assessment of the existing facilities, a review of background information, relevant policies and the airport planning criteria and consultation with stakeholders. These issues were then used to guide the preparation of the strategic vision/objectives and the Master Plan elements.

5.1 Strengths

The key strengths of the airport are considered to be:

- Southern Grampians Shire owns the airport site.
- Distance from urban / residential areas.
- Main runway has correct orientation for prevailing winds.
- Runway 17/35 is 30 metres wide and can except aircraft up to 36m wing span.
- Runway 10/28 has a gravel surface which is good for training student pilots.
- Large land holding (176 hectares).
- Proactive Council.
- Sharp Airlines RPT services.
- Sharp Airlines training school.
- Hamilton Aero Club.
- Regional prosperity.
- Mining and industrial activity in the region.
- Twin link taxiways allow good traffic management.
- Reasonable base of itinerant traffic.
- Local Planning Policy in Southern Grampians Planning Scheme (Clause 22.04-1: Hamilton Airfield and Surrounds).
- Distance from Melbourne and Adelaide (4-5 hour drive) makes flying attractive.
- Geographical/central location.

5.2 Weaknesses

The key weaknesses of the airport are considered to be:

- Length of main runway restricts passenger/freight loads.
- Land would need to be acquired for runway extension.
- Existing dwelling located near north end of main runway.
- Runway 17/35 longitudinal slope prevents pilots from viewing the other end of the runway when lined up for takeoff.
- Runway 17/35 is restricted by the pavement strength.
- Runway 17/35 is not long enough for unrestricted operations of current operator RPT aircraft (Metro III/23) when temperature is over 30°C.
- No Obstacle Limitation Surfaces (OLS) chart for the airport.
- No Australian Noise Exposure Forecast (ANEF).
- No aircraft movement data.
- Distance from town (10km).
- Site totally surrounded by private land holdings.
- Site is zoned Farming Zone (FZ).
- Inadequate planning controls in place.
- Gravel runway 10/28 restricts operations in wet weather.
- Terminal building needs upgrading/expansion.

- Low population base.
- No fee/revenue system.
- No Automatic Weather Information Broadcast (AWIB) facility.
- Insufficient space in terminal building for Sharp administration and passenger check in area for the future.
- Ageing infrastructure.
- No reticulated sewerage.
- Water supply (not potable, low pressure).
- Power supply needs upgrading.
- Location of Non-Directional Beacon (NDB) could restrict future development to the south (150m buffer requirement).
- Minimal promotion of airport to attract development, tourism and business.
- Limited access to technology infrastructure such as telephone and internet.
- Development has occurred without a long term plan.

5.3 Opportunities

The key opportunities for the airport are considered to be:

- Runway extension would provide improved access for the region.
- Disposal of land not required for aviation purposes in the long-term.
- Surplus land could be made available for non-aeronautical development (property development) including light industrial or business uses.
- Land south of the existing terminal and hangar precinct could be used for further hangar and industrial developments.
- Land north of the existing terminal and hanger precinct (north of Runway 10/28) could be used for industrial development.
- Develop/offer hangar space to private operators (there have been a number of enquiries for new hangars).
- Develop residential airpark?
- Further development of RPT services.
- Growth from mining and industrial traffic.
- Growth from tourism traffic.
- Expansion of existing terminal building, or develop new terminal building.
- Increased aviation revenues.
- Investigate sealing of Runway 10/28 for cross wind RPT operations?
- Rezone site to Special Use Zone to facilitate future development.
- Amend Airport Environs Overlay to correctly relate to ANEF contours.
- Apply Design and Development Overlay to protect Obstacle Limitation Surfaces.
- Investigate the provision of environmental friendly electricity and wastewater treatment to make the airport a green site.
- More pilot training.
- Coaxial, optical fibre technology for pilot training.
- Parking for aircraft and passenger vehicles.

5.4 Threats

The threats to the airport are considered to be:

- Potential for native grasses on land required for expansion.
- Maintenance costs.
- Good and improving road access to Melbourne as a realistic alternative to flying.
- Competition - other no fee aerodromes.
- Competition - other development sites in Hamilton.

- Bird hazards.
- Kangaroos on airfield.
- Airport security costs increasing.
- Older technology landing aids: T-VASIS and runway lighting increasingly expensive to maintain, ultimately require replacement.
- Costs for long-term asset renewal.
- Construction of dwellings around the airport site.
- Construction of structures around the airport which infringe the Obstacle Limitation Surfaces.

6 Strategic Vision and Objectives

The vision statement and objectives for the airport provide broad guidance and direction for the development of the Hamilton Airport Master Plan and its 20 year planning horizon.

6.1 Vision for Hamilton Airport

Building on the vision statements contained in the Council Plan and Municipal Strategic Statement, the vision for Hamilton Airport is:

Hamilton Airport is a significant aviation facility servicing Western Victoria and will be further developed to support a greater range of related activities and businesses which will provide tangible benefits for the community and economy of Southern Grampians Shire.

6.2 Objectives for Hamilton Airport

The key objectives for Hamilton Airport are:

- Protect the airport's primary function for aviation.
- Recognise the airport as a valuable community asset.
- Create positive gains for the community & economy.
- Support the growth of RPT and pilot training activities.
- Support aviation-related development on the site.
- Support the growth of tourist passenger traffic.
- Support the ongoing use by the Aero Club.
- Support the ongoing use by agricultural aircraft.
- Support the ongoing use by emergency services.
- Ensure that appropriate infrastructure is provided.
- Allow appropriate development of surplus land.

7 Land Use Plan

This section sets out the land use plan for the airport, including a description of the Master Plan's land use precincts and general land use guidelines.

7.1 Land Use Precincts Plan

To assist Southern Grampians Shire Council in planning future use and development of the airport site, a Land Use Precincts Plan has been prepared. This plan forms the basis of the Master Plan for the future use and development of the site. The proposed Land Use Precincts Plan for the airport is attached at Appendix 2. A plan showing greater detail of the terminal and hangar area is attached at Appendix 3.

The Land Use Precincts Plan shows the following 11 precincts:

- Airfield
- Runway Extension
- Terminal
- Hangar
- Hangar Expansion
- Caretakers Residence
- Maintenance Precinct
- Fire Base
- Non-Directional Beacon
- Development Opportunity (on-airport)
- Surplus Land

Each of the land use precincts shown on the plan has different characteristics and objectives. These details are discussed in the following section of this report (Section 7.2). More detailed concept plans have also been prepared for the airfield, terminal and hangar areas to show how facilities in these areas should be developed in the future (see Appendices 4, 5 and 6). These plans are discussed in section 8.

7.2 Land Use Precincts

The use and development of the precincts shown on the Land Use Concept Plan (Appendix 2) should be consistent with the following guidelines and requirements.

7.2.1 Airfield Precinct

The Airfield Precinct contains the existing airfield facilities, including the runways, taxiways, aprons and navigational aids. This precinct must be retained and protected for future airport operations and facilities.

The protection of the runway strip associated with runway 17/35 to 300m in width instead of the current 150m width is shown in this precinct. The reason for this increase is principally that there are currently no structures that prevent the 300m strip being protected other than the primary wind indicator. Furthermore, this will enable GPS Precision Navigation to apply to Hamilton Airport as a 300m runway strip will be required as part of the facilities needed for this technology. A primary wind indicator is planned to be relocated as part of the airport lighting upgrade.

7.2.2 Runway Extension Precinct

The Runway Extension Precinct is designed to provide for the proposed 300m extension to runway 17/35. This precinct is currently on private land, and is the subject of discussions and negotiations between the Council and the landowners which will ultimately decide if the runway extension is possible.

If and when the runway extension is constructed, this precinct will form part of the Airfield Precinct.

A concept plan for the Airfield and Runway Extension Precincts is provided at Appendix 4. This is discussed in section 8.1.

7.2.3 Terminal Precinct

This precinct contains the existing terminal, pilot training and Aero Club buildings, the fuel facility and car parking. A large portion of this precinct, between Hensley Park Road and the existing car park, contains a number of trees in a garden or park-like setting. There is only a small area of land available for development in this precinct, which should be reserved for uses directly related to RPT and pilot training activities. The "park" area should be maintained and enhanced where possible as it provides a pleasant environment for users of this precinct, particularly RPT passengers and employees.

A "Terminal Precinct Concept Plan" has been prepared which shows how this precinct should be developed in the future. This plan is attached at Appendix 5 and is discussed in more detail in section 8.2 below.

7.2.4 Hangar Precinct

This precinct contains the existing hangar buildings and the aprons that service the hangars. This precinct should be used only for hangar purposes or activities directly related to aircraft storage, loading or unloading.

There is space available in this precinct to build four or five new hangars.

7.2.5 Hangar Expansion Precinct

This precinct is the ideal area for expansion of aviation activity, in particular further hangar construction, and should be reserved for that purpose.

A concept plan for the Hangar and Hangar Expansion Precincts is provided at Appendix 6. This is discussed in section 8.3.

7.2.6 Caretakers Residence

This precinct contains the existing caretaker's residence. This is an appropriate location for the caretaker's residence and the precinct should be retained and protected for this purpose.

7.2.7 Maintenance Precinct

This precinct contains the existing maintenance facilities including the plant and equipment sheds. This is an appropriate location for the maintenance facilities and the precinct should be retained and protected for this purpose.

7.2.8 Fire Base Precinct

This precinct contains the existing fire base facilities used by CFA and DSE for fire suppression aircraft. This is an appropriate location for the fire base and the precinct should be retained and protected for this purpose.

7.2.9 Non-Directional Beacon Precinct

This precinct contains the existing Non-Directional Beacon (NDB). Whilst the land is owned by the Shire, the NDB facility itself is provided and maintained by Airservices Australia.

The location of the NDB facility, and particularly its proximity to the terminal and hangar precincts, is not ideal due to the following requirement at Clause 11.1.13 of the Manual of Standards Part 139—Aerodromes:

"Obstructions. The immediate surrounding area within a radius of 150 m of the antenna should be free of buildings exceeding 2.5 m in any dimension, vegetation should be kept below a height of 0.6 m. Small buildings of substantially non-metallic construction extending less than 2.5 m in any dimension may be erected no closer than 60 m to the antenna."

The 150m buffer area around the Hamilton Airport NDB is shown on the Land Use Precincts Plan (Appendix 2) and the Terminal and Hangar Area Concept Plan (Appendix 3). It is noted that some of the proposed new building sites shown on the concept plans forming part of this Master Plan are located within the 150m buffer. However, only a very small portion of the Hangar Expansion Precinct is within this buffer area, and none of the proposed new hangar sites within this precinct are affected.

The following points should be noted in relation to the NDB:

- Whilst the NDB location is not ideal, it is not unusual for NDB's to be located very close to the terminal and hangar buildings at other regional airports.
- Whilst there is a requirement for the area within a radius of 150m of the antenna to be kept free of substantial buildings, there are many examples of where buildings have been built within this area, including at Hamilton Airport.
- It is not known whether Airservices Australia approved the hangars constructed within the NDB's 150m radius at Hamilton Airport, but the author is aware of cases where Airservices allowed this at other airports.
- Aviation in Australia is moving to the next generation of GPS navigation. This will include more accurate information being provided to pilots enabling them to conduct precision navigation in all weather conditions including precision approaches. When this system is fully implemented NDB's are likely to become redundant.
- The cost of relocating the NDB away from the terminal and hangar precincts would be significant.

Given all of the above, it is recommended that the NDB remain in its current location. Any new development within a radius of 150m of the NDB will need to be discussed with Airservices, particularly the construction of new hangars within the existing Hangar Precinct. As previously noted, none of the proposed new hangar sites within the Hangar Expansion Precinct (which is the primary area for the construction of new hangars) is within the NDB buffer area.

7.2.10 Development Opportunity Precincts

The Land Use Concept Plan identifies two Development Opportunity Precincts. These precincts are areas of land within the airport site that are not required for airfield, terminal or hangar purposes and are set aside for possible future development. This could take the form of aviation-related development, or non-aviation activities, such as industrial or commercial land uses.

The northern-most Development Opportunity Precinct abuts the Airfield Precinct, and it is therefore recommended that this precinct be reserved for aviation-related development that may require airside access.

In both cases, the development of land in these precincts for any form of substantial use or activity will be constrained by the utility services currently available (refer to sections 2.4 and 8.4 of this report for further details).

7.2.11 Surplus Land Precincts

Two Surplus Land Precincts have been identified on the east side of Runway 17/35. Like the above precincts, the Surplus Land Precincts are not required for airfield, terminal or hangar purposes, but they are not considered suitable or appropriate for development due to their location.

Whilst the land comprising these precincts is considered surplus to airport requirements, it should remain in Council ownership in order to provide a safeguarding buffer. These precincts are currently leased for grazing or cropping, and it is recommended that this continue.

7.2.12 Surrounding Land

The key issue in relation to land surrounding the airport is to ensure that its use and development does not prejudice the ongoing operation of the aerodrome. This primarily involves ensuring that:

- development proposals near the airport do conflict with the airport's Obstacle Limitation Surfaces (OLS); and
- changes of land use near the airport are not for land uses which may be sensitive to aircraft noise (e.g. residential land uses).

These matters are discussed further in sections 9 and 10 of this report.

7.3 Land Use Guidelines

Use and development of the individual precincts should comply with the following general guidelines:

- Future use and development must comply with the Master Plan and be compatible with ongoing airport operations.
- Land should be reserved for its designated use in accordance with the Land Use Precinct Plan.
- A detailed precinct development plan should be prepared prior to development in any individual precinct.
- Environmental and cultural heritage constraints need to be identified and managed.
- Ensure that appropriate utility services are provided for new development.
- Ensure that industrial activities do not produce air emissions that are likely to impact on aviation activities.
- Ensure that building lighting does not impact on airport operations.
- Ensure that landscaping is not bird-attracting.
- Ensure that buildings do not exceed the heights specified in the Obstacle Limitation Surfaces (OLS) chart that will impact on flight paths or airport operations.
- Ensure that land use and development restrictions relating to the NBD are met.
- Ensure that land uses are not sensitive to aircraft noise (residential uses should generally be discouraged).
- Ensure that convenient, safe and efficient vehicle access is provided within and to the site.

7.4 Further Investigations

At the time precinct development plans are prepared, further detailed investigations of the following will be required:

- The requirements for and sequencing of utility service and stormwater drainage upgrades.
- Definition of building envelopes to achieve OLS requirements so that proposed structures do not interfere with future aviation operations.
- Environmental constraints (for example analysis of significant vegetation) and ensuring that future precinct plans acknowledge and manage these constraints.
- Cultural heritage – identifying any items or areas of cultural heritage significance and ensuring that ongoing management of cultural heritage values is reflected in the detailed planning of each precinct.
- Building restrictions relating to the Non-Directional Beacon.

7.5 Native Grass Requirements

In relation to environmental constraints, it should be noted that there is anecdotal evidence that there may be native grasses on the airport site, possibly including in the Hangar Expansion Precinct.

The airport site is located in the Victorian Volcanic Plain bioregion, where the Natural Temperate Grassland can be found.

The Natural Temperate Grassland of the Victorian Volcanic Plain is a native grassland which is a critically endangered ecological community under the Australian Government's Environment Protection and Biodiversity Conservation Act 1999. The vegetation is dominated by a native ground layer of tussock-forming perennial grasses interspersed with a variety of wildflowers. Few, if any, large shrubs and trees are present.

The grassland corresponds most closely with two Victorian Ecological Vegetation Classes (EVC) that occur in the region. These are: EVC 132 Plains Grassland and EVC 654 Creekline Tussock Grassland. The grassland is also listed as a threatened community under Victorian environmental laws, where it is known as the Western Basalt Plains Grassland Community.

The potential existence of this grassland community on the airport site needs to be determined. If the grassland exists on the site, preparation of a Native Vegetation Precinct Plan, in consultation with the relevant government agencies, may be appropriate.

8 Facilities Plan

This section outlines the future facility (physical infrastructure) requirements for Hamilton Airport.

8.1 Airfield Facilities

Refer to the "Airfield and Runway Extension Precincts Concept Plan" (Appendix 4).

8.1.1 Runway 17/35

Sharp Airlines have indicated that they will continue to operate Metro III/23 aircraft as the primary aircraft for RPT operations from Hamilton Airport. In summer when the air temperatures are higher this aircraft cannot operate fully loaded on the existing runway length. The need to extend the runway to cater for these aircraft is an important facet in the ongoing

operation of Sharp Airlines at Hamilton Airport. The extension of the runway in either direction was initially investigated and due to the terrain at the south end of the runway it was determined not to be possible to extend the runway in that direction without significant engineering design and cost.

Extension of runway 17/35 to the north is feasible as long as the adjoining private land becomes available for this construction. An estimate of the cost of this extension has already been determined by the Council. An extension of runway 17/35 will trigger the requirement by CASA to relocate the runway end safety areas (RESA) outside of the runway strip. Currently the RESA, which is 60m long x 60m wide, commences at the end of the runway pavement. It is possible to provide the new RESA outside the runway strip at the south end within the airport property. The widening of the runway strip to 300m has been discussed in section 7.2.1 of this report.

The improvements to the runway surface are planned to be undertaken as part of the State Government funded project. However, it is recommended that some runway surface correction be addressed as part of the project to improve the drainage of the central portion of the runway where wheel loadings have caused a slight depression before a new runway surface is applied.

The runway lighting upgrade and associated visual slope guidance have already been allowed for in the State Government funded project. This upgrade should include relocating the runway edge lighting to 60m spacing to allow pilots to execute low visibility take-offs and the provision of an emergency power generator that senses power outage and is capable of providing emergency power in less than 15 seconds to the runway lighting.

8.1.2 Runway 10/28

This runway has a gravel surface which if well maintained provides a suitable second runway for Hamilton Airport. This runway surface is a useful training aid for pilots operating at Hamilton Airport. It is also a good surface for agricultural aircraft to operate when landing at the airport to refill during aerial spraying and fire suppression activities. As indicated earlier in this report, the area between the threshold of runway 10 and the intersection of runway 17/35 does suffer from prop wash erosion. The application of a bituminous sprayed seal on this section of the runway would protect the runway surface from increased take-offs of aircraft involved in fire suppression activity as the permanent fire base enlarges in size. It may be feasible to seal only the central 18m of this section of the runway to limit the monetary cost.

8.1.3 Taxiways

As aircraft operations increase due to pilot training which is envisaged to occur in the next few years the need to reduce runway occupancy time by aircraft taxiing on the runway will become more important. The provision of a parallel taxiway will greatly improve the capacity of runway 17/35 and will provide for safer operations of all aircraft using Hamilton Airport. Initially the south portion of a parallel taxiway would be constructed as this will also provide access to the new hangar development precinct recommended in this Master Plan. It is recommended that the taxiway be constructed as a Code C taxiway 15 m wide. The north portion of the parallel taxiway would not be constructed for some years and would only be required if aircraft operations grew beyond those currently forecast.

The parallel taxiway centreline should be located 168m from the centreline of runway 17/35 in accordance with the standards in MOS Part 139 - Aerodromes, chapter 6, table 6.3-5 for a Code 3C runway where precision approach procedures are available. It is expected that GPS Precision Approach Procedures will be available in the next three years and so it is important to build this taxiway to enable these procedures to apply at Hamilton Airport.

The gravel taxiway providing access to runway 10 should be provided with a bituminous sprayed seal to ensure that this taxiway can be used in all weather conditions. This will be particularly important if the portion of runway 10/28 is sealed as recommended above. Consideration should be given to widening this taxiway to Code C standards (15m wide) as this will then enhance the taxiway system as this taxiway will become the first portion of the parallel taxiway north of the main apron and will allow aircraft to taxi to runway 17/35 via the sealed portion of runway 10/28.

8.1.4 Weather Station

Installation of equipment that would assist pilots operating at Hamilton Airport are instruments that can measure visibility (transmissometer) and the height of cloud above the aerodrome (ceilometer). This equipment can be supplied and installed by the Bureau of Meteorology and the Council would need to negotiate directly with the Bureau for this upgrade to take place.

8.2 Terminal Precinct Facilities

Refer to “Terminal Precinct Concept Plan” (Appendix 5).

8.2.1 Terminal Building

The terminal building was built in 1980. A recent building inspection highlighted a number of defects that will need to be addressed to keep the building functional, including rotting timber in many of facias and window frames and damage to the ceiling due to water ingress through the roof. The report also indicated that the building does not comply with disabled access requirements. The heating and cooling systems are inadequate due to the design of the building and the toilets require refurbishment.

Expansion of the terminal building may also be required in the next two years due to an increase in the number of passenger flights from Hamilton to locations other than Melbourne. The terminal can be expanded on the existing site with a Stage 1 expansion to the west which would enable an increase in passenger facilities and remove one of the major problems being a glass wall which affects the heating and cooling properties of the building.

A Stage 2 expansion, as well as incorporating the current office area occupied by Sharp Airlines, can also be connected to the north of the existing building. The requirement for this expansion would be triggered by the instigation of passenger and checked bag screening by the Commonwealth Government Office of Transport Security for aircraft down to the size operated by the current airline operator or the commencement of a second airline operator with larger aircraft.

A Stage 3 expansion is possible also in a northerly direction in the terminal precinct.

8.2.2 New Commercial Building

During key stakeholder discussions Sharp Airlines indicated that they would like to establish their corporate headquarters at Hamilton Airport to consolidate all their personnel currently located at four airports and their pilot training school in the one building. Sharp Airlines indicated that the building would need to accommodate up to forty personnel and therefore using normal practice for space allocation, a 400m^2 building would be required on the site. If the building was a two storey construction then the pilot training school could be accommodated on the second floor.

This building should be constructed under commercial terms negotiated between Sharp Airlines and a property developer. The Council should assist this process by permitting a long

term lease of the site determined during this Master Plan. The lease terms should be a minimum of twenty years with at least a ten year extension option. This building should be designed to complement the existing terminal building and any future expansion.

8.2.3 Car Park

The current car park layout will need to be relocated and expanded before the terminal building is expanded in Stage 1 and after the Sharp Airlines commercial building has been constructed and the current portable building housing the Sharp Pilot Training School has been removed. The car park expansion will accommodate at least sixty spaces to cater for airline passengers, visitors and Sharp Airlines personnel and students. The location of the car park in the Master Plan will have minimum impact on vegetation.

8.2.4 Main Access Road

The main access road entrance should be improved to enhance the first impression that visitors gain of Hamilton Airport. These improvements should include the removal of the cattle grid on both the entrance and exit roads, improved road surface condition and an enhanced entranceway that clearly defines for visitors that they have arrived at Hamilton Airport's primary access.

8.3 Hangar Facilities

Refer to "Hangar and Hangar Expansion Precincts Concept Plan" (Appendix 6).

8.3.1 Hangar Area Expansion

Currently there are only two small sites available for new hangar construction within the existing apron area. There is current demand for larger hangar sites that cannot be provided within the existing apron area. This Master Plan allows for hangar expansion to the south of the existing hangars in a layout that allows separation of the airside and landside areas.

The hangar layout depicted in Stage 1 allows aircraft up to Code B wingspan (24m) to operate under power to and from the hangars. The taxiway strip for a Code B taxiway is a total width of 43m and 15m has been allowed for aircraft parking in front of each hangar. This means that the total width between the hangars is 73m. Road access is provided at the rear of the hangars and services can also be located in this road reserve. With adequate fencing and locked gates the airside of the airport can be protected from inappropriate vehicle access. Stage 1 also allows access to at least two additional hangar sites next to an existing hangar.

Stage 2 of the hangar layout allows for larger hangars to be constructed and for Code C aircraft (36m wingspan) to access these hangars. These larger hangars could be used by aircraft maintenance organisations.

Both stages are accessed by the parallel taxiway proposed to be constructed south of the main apron. Further stages using the same layout as Stage 1 can continue south of Stage 2 if required.

When Ambulance Victoria aircraft are undertaking patient transfers there is currently no nominated aircraft parking position and there is no undercover area that can be used to remove patients from a road ambulance in preparation for loading on aircraft and vice versa. It is recommended that a vacant hangar site, immediately east of the most southern existing hangar, be reserved for Ambulance Victoria for the construction of a carport suitable for the parking of ambulance vehicles and for the transfer of patients. This site is immediately adjacent to an existing pavement that is suitable for the Ambulance Victoria aircraft.

8.3.2 New Access Road

With the development of the hangar precinct south it also provides the opportunity to provide a secondary access road to this section of the airport. This road is particularly important as it can be utilised as the heavy vehicle access onto the airside of the airport to facilitate the transfer of chemicals to aircraft during the agricultural spraying season. This road would also be used by other heavy vehicles accessing the airport including water trucks during fire suppression activities. The road should be designed and constructed to cater for 20 tonne vehicles at a minimum. An access gate from the road onto the proposed parallel taxiway will complete the secondary access.

8.3.3 Services Compound

An area has been designated as the location for the static water supply for fire fighting and for the bio-cycle system that would handle waste water. This site has been located just outside the southern boundary of the NDB Precinct which is land that cannot be used for other purposes.

8.4 Utility Services

The existing situation with respect to utility services was outlined in section 2.4 of this report. The section below outlines the requirements for upgrading of the services to support the future development of the airport.

8.4.1 Water Supply

Council is currently in the process of installing an on-site treatment system which will treat the raw water from Hayes Reservoir with the intent of making it suitable for drinking and hand washing. This system, combined with rainwater tanks, should be adequate for the next few years at least. Additional treatment systems can be added as water demand increases.

In the long term, a connection to the town water supply at Beveridges Road (approx. 7km from the airport) may need to be considered. This would require construction of a pipe to the airport, booster pump and balancing tank at the airport. Wannon Water has no limitations on providing the daily volumes envisaged.

8.4.2 Wastewater

As the wastewater load associated with the airport is low, it is recommended that a small Bio-cycle plant be installed to service all premises on the airport site. The treated effluent can then be disposed of by irrigation.

The Bio-cycle plant should be located in the services compound shown on the “Services Layout Plan” at Appendix 7. This plan also shows the recommended alignment of the wastewater collection system.

8.4.3 Power

Powercor has advised that the power supply to the airport could be upgraded to address the current issues and provide capacity for future development. The upgrade would involve converting the existing high voltage single phase power supply to three phase and upgrading the existing substation to three phase 100kVA.

It is expected that the current trend of power usage will continue when further hangars are developed. It is not expected that airport tenants will have a need for large capacity electrical use as it is not envisaged that industrial plant and equipment will be operated on the airport.

In the Hangar Expansion Precinct it is recommended that all electrical power lines be placed underground along the access roads servicing the hangars. This would ensure that there is no conflict with aircraft operations and would provide a safer environment within the aviation development area.

8.4.4 Telecommunications

There is an optical fibre telecommunications cable running along Hensley Park Road which Telstra has indicated could be accessed to provide substantially improved services to the airport. Council has already commenced negotiations with Telstra in relation to this matter.

8.4.5 Stormwater Drainage

An improved stormwater drainage system is required on the site, in order to accommodate the increased hard surfaces that will be introduced over time, and to minimise drainage problems both on and off the airport site. It is also considered that Council should investigate the option of stormwater harvesting on the site to enable reuse of rainwater which would otherwise end up leaving the site. Two indicative stormwater retarding basins are shown on the Land Use Precincts Plan (Appendix 2) for this purpose. However, this matter requires a separate, detailed study in order to develop a drainage system design which addresses the specific requirements of this site.

8.4.6 Fire Fighting Water Supply

The provision of an on-site fire fighting water supply system is required. The CFA has advised that they would require a static 288,000 litre water supply (two 144,000 litre tanks) with a pressure pump and a flow rate of 20 litres per second. This static storage should be connected to a reticulated hydrant system, with the hydrants at a maximum of 100m spacing.

The fire fighting water supply tanks should be located in the services compound shown on the “Services Layout Plan” at Appendix 7. This plan also shows the recommended alignment of the fire hydrant reticulation system.

The final capacity and layout of the fire fighting reticulation system will need to be negotiated with, and approved by, the CFA.

Council should also consider installing a large (say 100,000 litre) rainwater tank in the Fire Base Precinct to capture and store rainwater off the roof of the Terminal building (and potentially other buildings in the Terminal Precinct). This tank could then supply water to the Terminal Precinct but also the Fire Base if required during the fire season.

9 Obstacle Limitation Surfaces

9.1 Overview

The CASA *Manual of Standards Part 139 - Aerodromes* defines Obstacle Limitation Surfaces (OLS) as:

"A series of planes associated with each runway at an aerodrome that defines the desirable limits to which objects may project into the airspace around the aerodrome so that aircraft operations at the aerodrome may be conducted safely."

The OLS are determined by the Aerodrome Reference Code for each runway. At Hamilton Airport the runways are both Code 3C.

9.2 OLS Chart

An OLS chart for Hamilton Airport has been produced by Airport Survey Consultants in association with this Master Plan (see Appendix 8). This chart is based on the Code 3C runways and a 300 metre wide runway strip.

There are no significant obstacles in relation to Hamilton Airport that penetrate the obstacle free gradients for approach and take-off for all four runway ends.

The future building area in the Hangar Expansion Precinct will not be affected by the OLS, provided development closest to the runway is below approximately 6m (to be confirmed by survey). The height of development further away from the runway can be increased in accordance with the OLS chart. Future buildings erected close to both runways will be required to have a maximum building height restriction applied to ensure that they remain below the transitional surface.

9.3 Planning Scheme Overlay Control

The OLS chart should be incorporated into the Southern Grampians Planning Scheme via an overlay control. This is discussed further in section 11 of this report.

10 Australian Noise Exposure Forecast

10.1 Overview

An Australian Noise Exposure Forecast (ANEF) is a contour map showing the forecast of aircraft noise levels that are expected to exist around an airport in the future.

The assessment of aircraft noise effects is an important consideration in the development of an airport Master Plan. It aims to ensure that:

- Sensitive land uses are not located in areas of unacceptable aircraft noise;
- The amenity of other surrounding developments is not adversely affected by aircraft noise; and
- Airport operations are protected long term from conflicts due to the encroachment of inappropriate development into noise affected areas.

10.2 ANEF Contours Map

An ANEF contours map has been prepared for Hamilton Airport based on a forecast of aircraft activity in the year 2030 and including the proposed 300m extension to runway 17/35. The resulting ANEF map is attached at Appendix 9. The ANEF methodology and input data are discussed in a separate report. The ANEF has not yet been endorsed by Airservices Australia.

It is noted that there is only one existing house located within the ANEF contours. This house is located approximately 240 metres north-east of the existing north end of Runway 17/35. The house is located in the 20-25 ANEF zone.

10.3 Australian Standard AS2021-2000

Recommendations relating to land use within the ANEF contours are contained in Australian Standard AS2021-2000 “Acoustics – Aircraft Noise Intrusion – Building Siting and Construction”. These recommendations are summarised in Table 3 below. This is a summary only; Council should consult the Australian Standard for full details of the land use recommendations, and associated notes and conditions.

Table 3: Building Site Acceptability Based on ANEF Zones

(Based on Australian Standard AS 2021-2000 Table 2.1)

Building Type	ANEF Zone of Site		
	Acceptable	**Conditional**	**Unacceptable**
House, home unit, flat, caravan park	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hotel, motel, hostel	Less than 25 ANEF	25 to 30 ANEF	Greater than 30 ANEF
School, university	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hospital, nursing home	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Public building	Less than 20 ANEF	20 to 30 ANEF	Greater than 30 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

‘Acceptable’ means that special measures are usually not required to reduce aircraft noise.
‘Conditional’ means that special measures (noise attenuation) are required to reduce aircraft noise.
‘Unacceptable’ means that the development should not normally be considered.

10.4 Planning Scheme Overlay Control

In Victorian Planning Schemes, the Airport Environs Overlay (AEO) is used to implement the ANEF and AS2021-2000 land use recommendations. Whilst an AEO currently applies over the Hamilton Airport site and surrounds, due to its rectangular shape it is obviously not based on any ANEF contours.

It is recommended that the AEO be amended to correctly relate to the ANEF contours map and AS2021-2000. The ANEF contours map will need to be submitted to and endorsed by Airservices Australia prior to preparation of a Planning Scheme Amendment.

11 Planning Scheme Amendments

The following amendments to the Southern Grampians Planning Scheme are recommended in order to reflect this Master Plan. This is an outline only; the full set of amendments will be set out in the Planning Scheme Amendment documents.

11.1 Municipal Strategic Statement

Despite its importance, there are currently only two references to Hamilton Airport in the Municipal Strategic Statement (in Clause 21.08 – Objectives, Strategies and Implementation). They are:

Settlement

"Ensure that the use and development of land in the vicinity of the Hamilton airfield does not adversely affect its operation."

Industrial Development

"Support the development of industrial uses at the Hamilton airfield where such uses complement the use of the airfield."

It is recommended that the following changes be made to the MSS to strengthen its recognition of Hamilton Airport and the role it plays in the local and regional context:

- Clause 21.04-2 Hamilton – The Regional Centre: add reference to Hamilton Airport as an important transport hub.
- Clause 21.04-8 Tourism: add reference to Hamilton Airport as an important asset for future tourism growth.
- Clause 21.08-1 Settlement: add reference to the Hamilton Airport Master Plan.
- Clause 21.08-3 Tourism: add reference to Hamilton Airport as an important asset for future tourism growth.
- Clause 21.08-3 Industrial Development: add reference to Hamilton Airport Master Plan.

11.2 Local Planning Policy

The Southern Grampians Planning Scheme contains a Local Planning Policy specifically relating to Hamilton Airport (Clause 22.04-1 Hamilton Airfield and Surrounds). This policy is an appropriate and valuable tool for the ongoing protection of the airport, however some improvements are recommended.

It is recommended that the following changes be made to the policy:

- Add reference to the Hamilton Airport Master Plan.
- Add reference to the Obstacle Limitation Surfaces chart in relation to the assessment of development proposals around the airport.
- Add reference to the Australian Noise Exposure Forecast in relation to the assessment of noise sensitive uses.

11.3 Zones

The airport site is currently zoned Farming Zone (FZ) under the Southern Grampians Planning Scheme. This zoning is not appropriate having regard to the planning policy context (outlined in section 3) and the vision and objectives for the airport (outline in section 6).

It is recommended that the airport site should be rezoned from Farming Zone (FZ) to Special Use Zone (SUZ) similar to the Special Use Zones that apply to Mildura Airport, Ballarat Aerodrome and Bendigo Aerodrome and the zone that is proposed to apply to the Echuca Aerodrome. The Farming Zone does not facilitate the proposed future development of the site as outlined in this Master Plan. A Special Use Zone, on the other hand, can be tailored to the specific objectives and requirements for this site.

11.4 Overlays

11.4.1 Airport Environs Overlay

As stated in section 10 of this report, an Airport Environs Overlay (AEO) already exists in the Southern Grampians Planning Scheme but due to its shape it is obviously not based on any ANEF contours. It is recommended that the AEO be amended to correctly relate to the ANEF contours map and AS2021-2000.

The ANEF contours map will need to be submitted to and endorsed by Airservices Australia prior to preparation of a Planning Scheme Amendment.

11.4.2 Design and Development Overlay

The Design and Development Overlay (DDO) should be applied to protect the Obstacle Limitation Surfaces (OLS) and thereby ensure that the height of future development on, and in proximity of, the airport site does not adversely impact on or constrain the future operations of the Hamilton Airport. This overlay is currently used at a number of aerodromes in Victoria to protect their OLS through planning scheme controls (e.g. Mildura Airport and Ballarat Aerodrome).

The most critical surfaces to protect via the DDO are the take-off, approach and transitional surfaces (all surfaces inside the inner horizontal surface) as these are the lowest and closest to the airport. However the other (higher) surfaces can also be protected if required.

The DDO controls should specify the heights above which a permit must be obtained for buildings or works, based on the OLS chart. Because the OLS chart comprises numerous surfaces (many of which are not horizontal) it is not possible to convert every single surface into a specific DDO height control. The OLS heights will therefore need to be simplified, or minimised, adopting a conservative approach. This will require at least two or three schedules to the DDO, each specifying a different height control.

12 Implementation Plan

The following table sets out the key actions required to implement this Master Plan. It includes trigger points and a broad indication of likely timing for each action.

Table 4: Implementation Plan

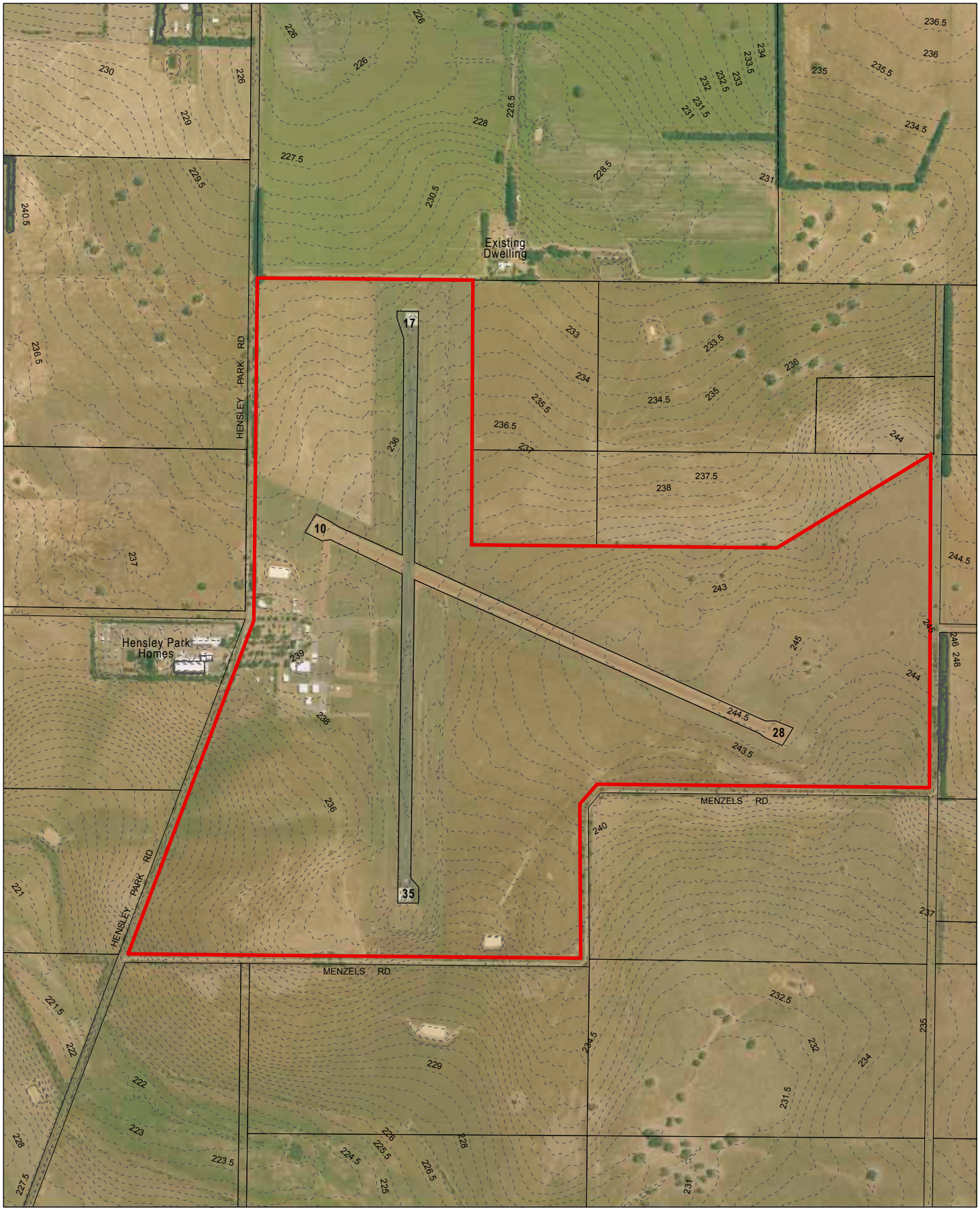
Action	Trigger Point	Timing
Adopt Master Plan	Finalisation of Master Plan	Immediate
Endorsement of ANEF by Airservices	Adoption of Master Plan	Immediate
Discuss NDB buffer requirements with Airservices Australia	Adoption of Master Plan	Immediate
Planning scheme amendment	Adoption of Master Plan	Immediate
Flora and fauna study	Adoption of Master Plan	Immediate
Cultural heritage study	Adoption of Master Plan	Immediate
Stormwater drainage study	Adoption of Master Plan	Immediate
Extension of runway 17/35	Successful negotiation with adjacent landowner	Immediate – 12 months
Infrastructure upgrades, water, wastewater, power, telecommunications, stormwater, fire fighting water supply	Adoption of Master Plan	Immediate – 12 months
Construction of parallel taxiway to south and apron area – stage 1	Increased aircraft movements, particularly pilot training	Immediate – 12 months
Upgrading of Gravel Taxiway	Adoption of Master Plan	Immediate – 12 months
Construction of new access road into hangar precinct	Demand for more hangar sites and heavy vehicle access	Immediate – 12 months
Preparation of development plan for Hangar Expansion Precinct	Demand for more hangar sites	1-2 years
Preparation of development plan for Terminal Precinct	Demand for new/expanded terminal building or new commercial building	1-2 years

Expanded terminal building – stage 1	Increased RPT passenger numbers	1-2 years
Construction of new commercial building	When required by Sharp Airlines	1-2 years
New car park in terminal precinct	Construction of either new/expanded terminal building or new commercial building	1-2 years
Expanded terminal building – stage 2	Passenger and Checked bag screening	2-5 years
Construction of parallel taxiway to south and apron area – stage 2	Demand, increased movements	2-5 years
Preparation of development plan for Development Opportunity Precincts	Development proposal	5-10 years
Construction of parallel taxiway to north	Increased aircraft movements, or development of north-west Development Opportunity Precinct	5-10 years

Appendix 1

Hamilton Airport Master Plan

Existing Conditions - Airport Site and Surrounds



Aerodrome Study Area
Contours (0.5m)

0 200 400 600m

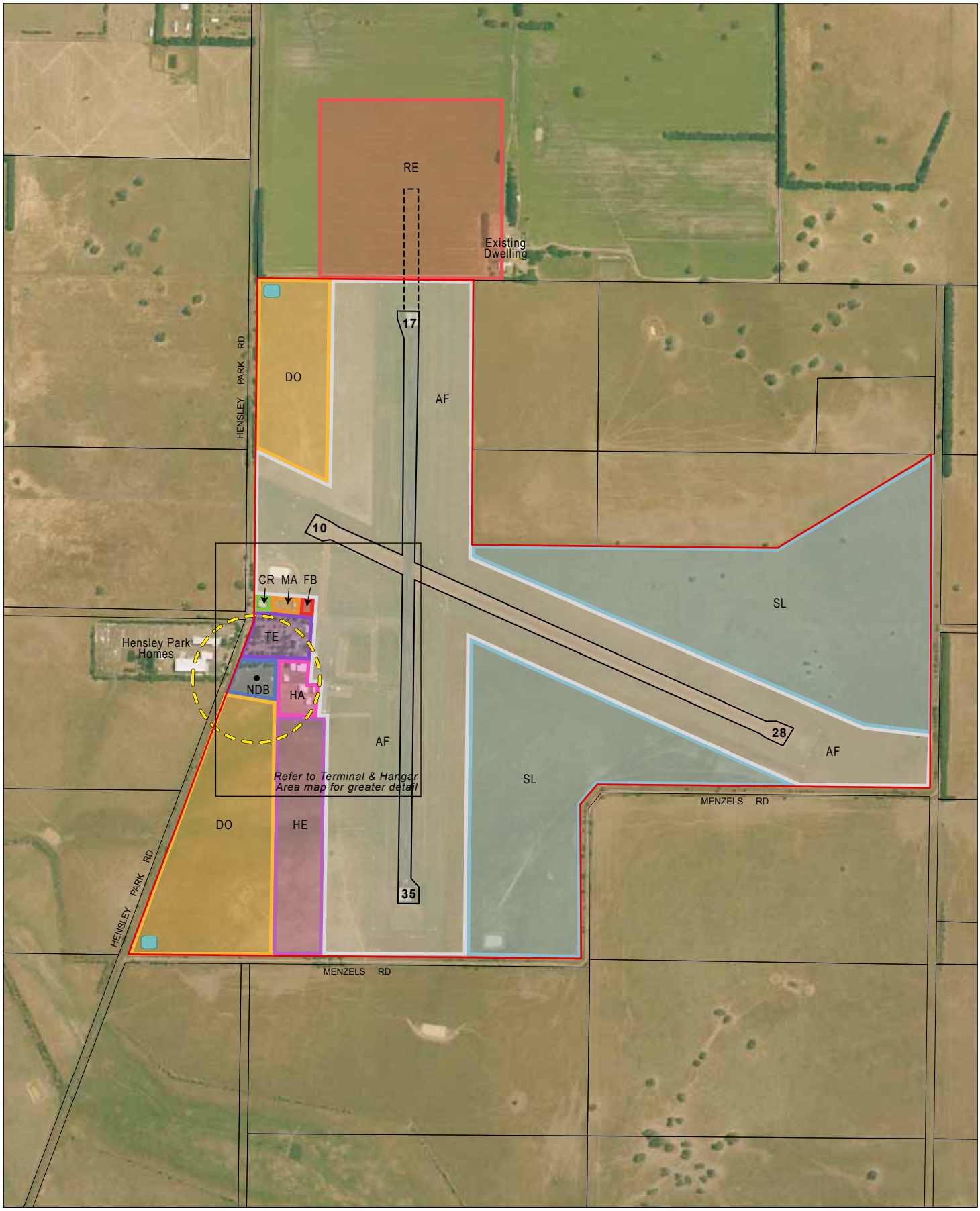
N

Drawing No.: 2010-HAMP-001 | Rev. No.: C | Date: 09-03-11
Prepared for Southern Grampians Shire Council by Airports Plus, Kneebush Planning and Globe Cartographics.

Appendix 2

Hamilton Airport Master Plan

Land Use Precincts Plan



- Aerodrome Study Area
- NDB (and 150m Buffer)
- Runway Extension
- Stormwater Retarding Basin

Precincts

- Airfield (AF)
- Terminal (TE)
- Hangar (HA)
- Hangar Expansion (HE)
- Caretakers Residence (CR)
- Maintenance (MA)
- Surplus Land (SL)
- Non-Directional Beacon (NDB)
- Development Opportunity (DO)
- Runway Extension (RE)
- Fire Base (FB)

0 200 400 600m

N

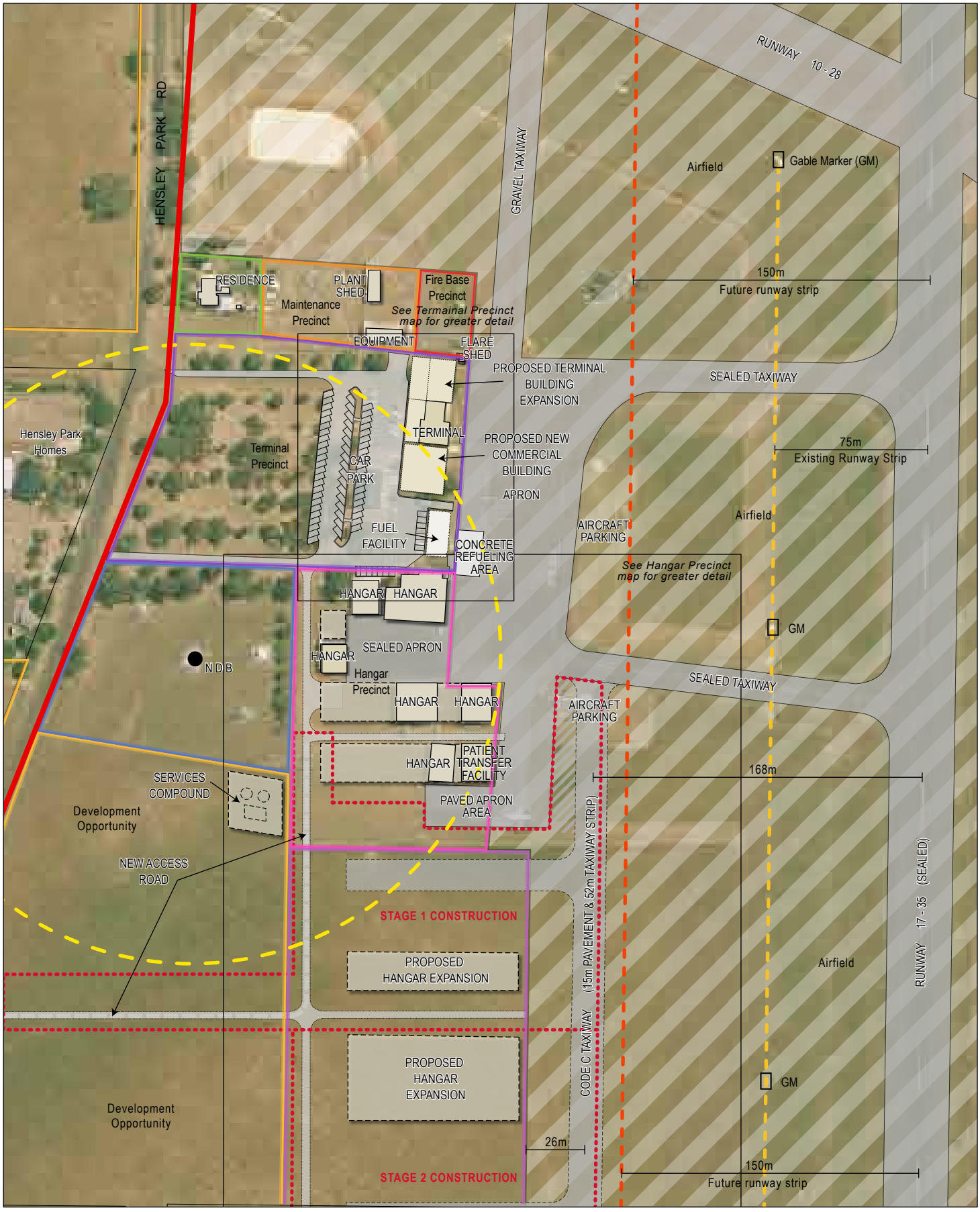
Drawing No.: 2010-HAMP-002 | Rev. No.: G | Date: 09-03-11

Prepared for Southern Grampians Shire Council by Airports Plus, Kneebush Planning and Globe Cartographics.

Appendix 3

Hamilton Airport Master Plan

Terminal and Hangar Area Concept Plan



- Aerodrome Study Area
- NDB (and 150m Buffer)
- Proposed 300m wide runway strip
- Existing 75m runway strip
- Existing Buildings
- New Buildings
- New Access Road

Precincts

- Airfield
- Non-Directional Beacon (existing)
- Hangar (existing hangar buildings)
- Hangar Expansion (south of existing hangars)
- Terminal Precinct (terminal building, car parks)
- Caretakers Residence (existing residence)
- Maintenance Precinct (existing plant and equipment sheds and storage area)
- Fire Base Precinct

0 25 50 100m

N

Drawing No.: 2010-HAMP-003 | Rev. No.: F | Date: 09-03-11

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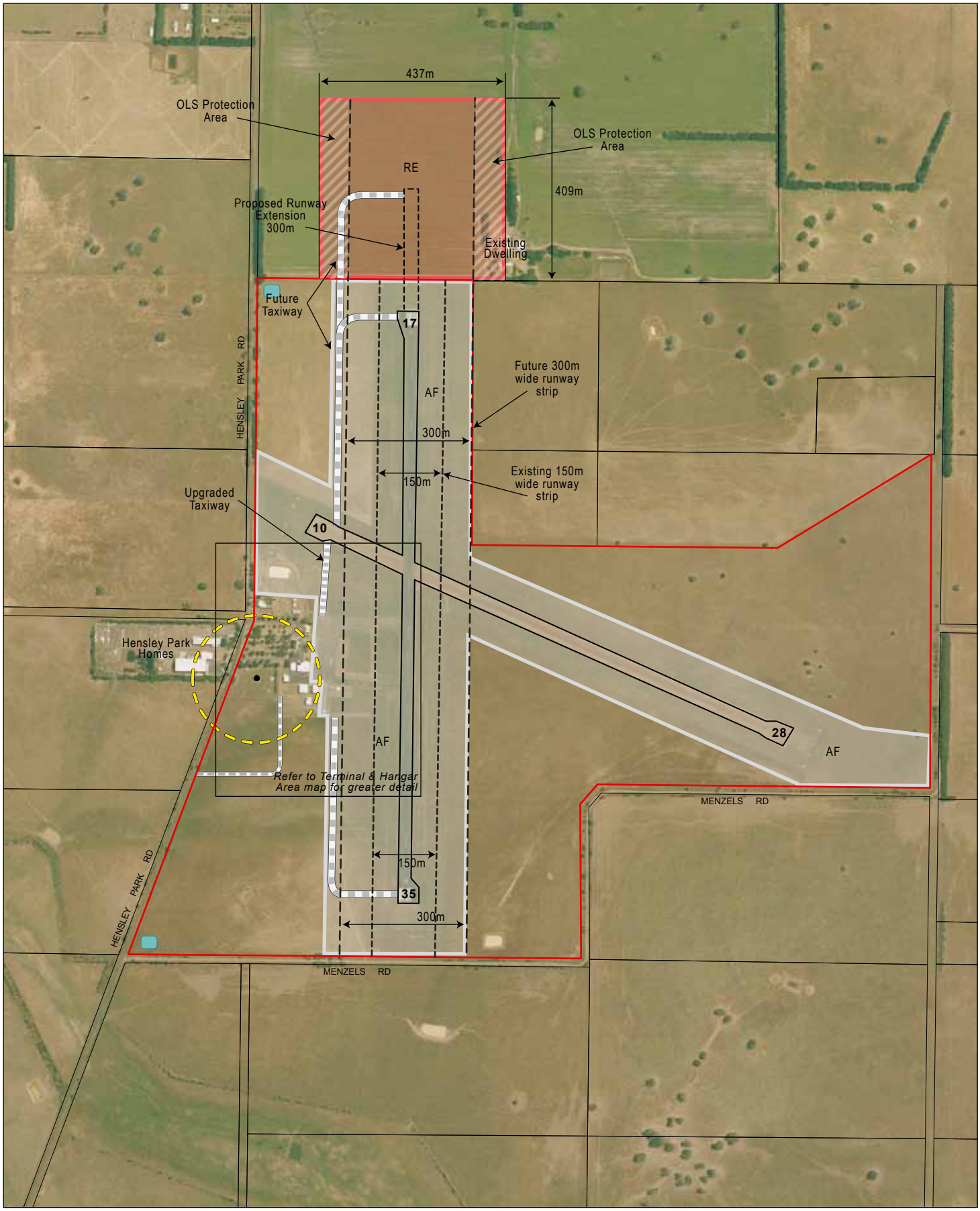
Appendix 4

Hamilton Airport Master Plan

Airfield & Runway Extension Precincts Concept Plan



Aerodrome Study Area
NDB (and 150m Buffer)
Runway Extension
New parallel taxiway
New access road
Stormwater Retarding Basin

0 200 400 600m

N

Precincts

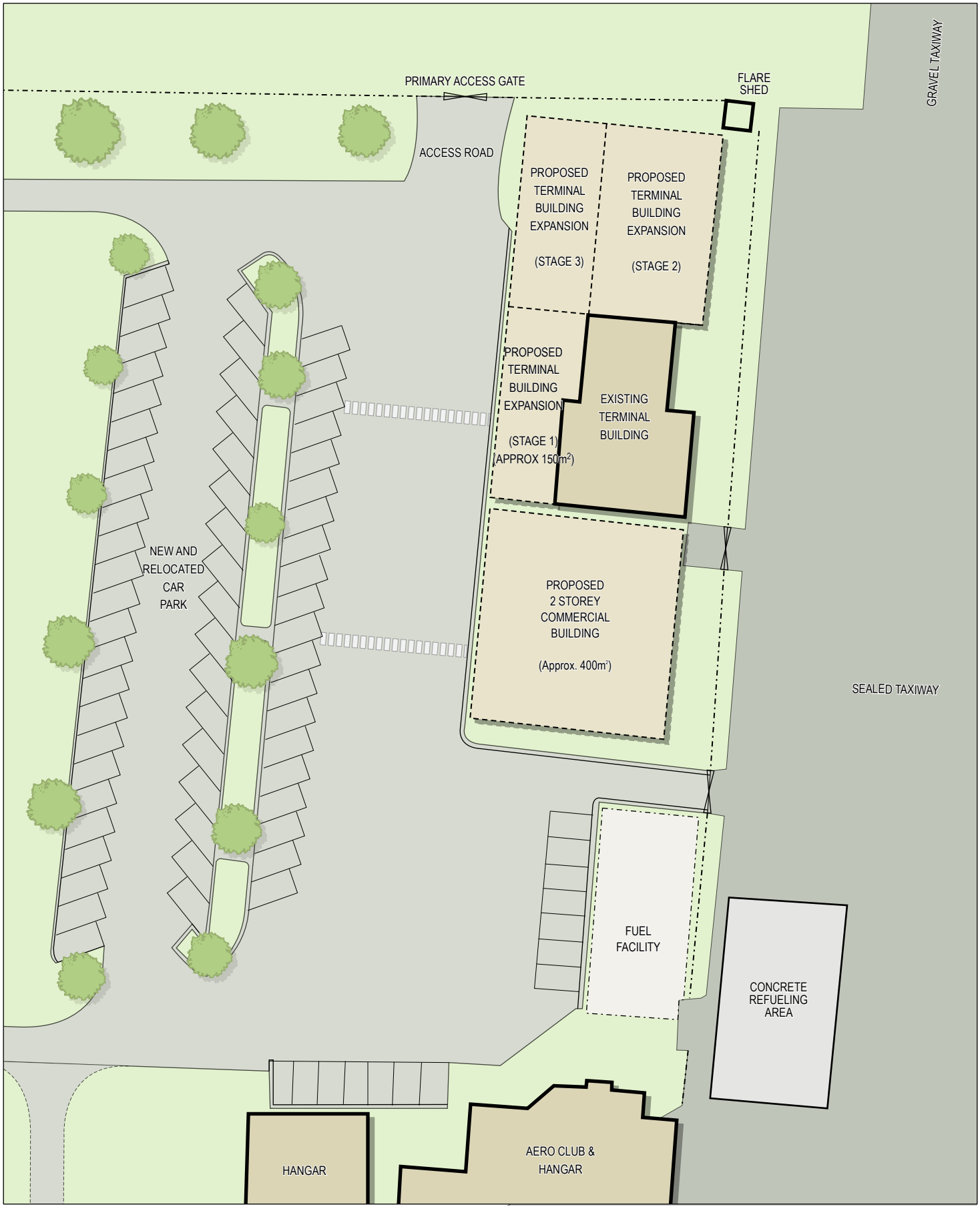
Airfield (AF)
Runway Extension (RE)

Drawing No.: 2010-HAMP-014 | Rev. No.: C | Date: 09-03-11
Prepared for Southern Grampians Shire Council by Airports Plus, Kneebush Planning and Globe Cartographics.

Appendix 5

Hamilton Airport Master Plan

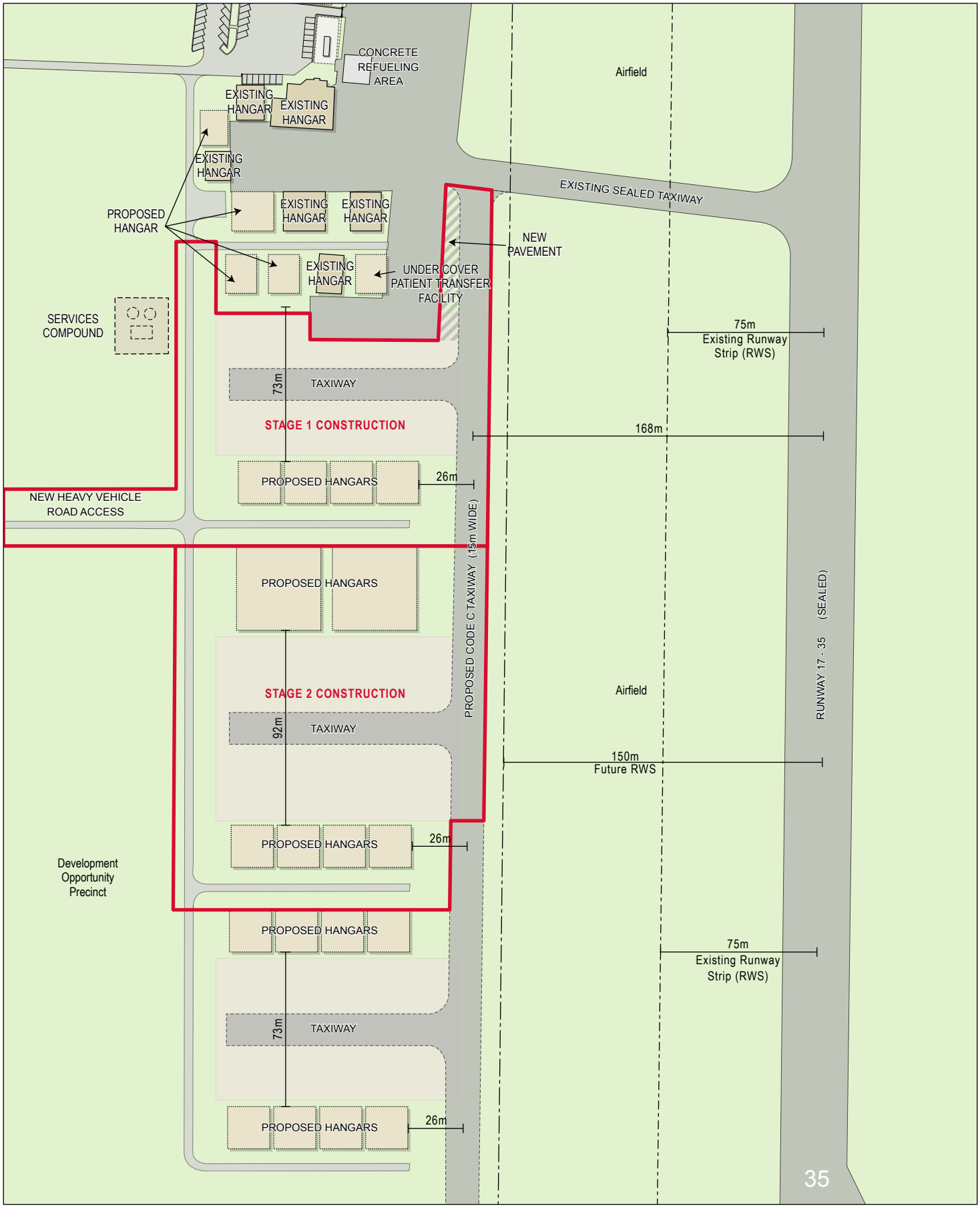
Terminal Precinct Concept Plan



Drawing No.: 2010-HAMP-004 | Rev. No.: F | Date: 09-03-11
Prepared for Southern Grampians Shire Council by Airports Plus, Kneebush Planning and Globe Cartographics.

Appendix 6

Hangar and Hangar Expansion Precincts Concept Plan

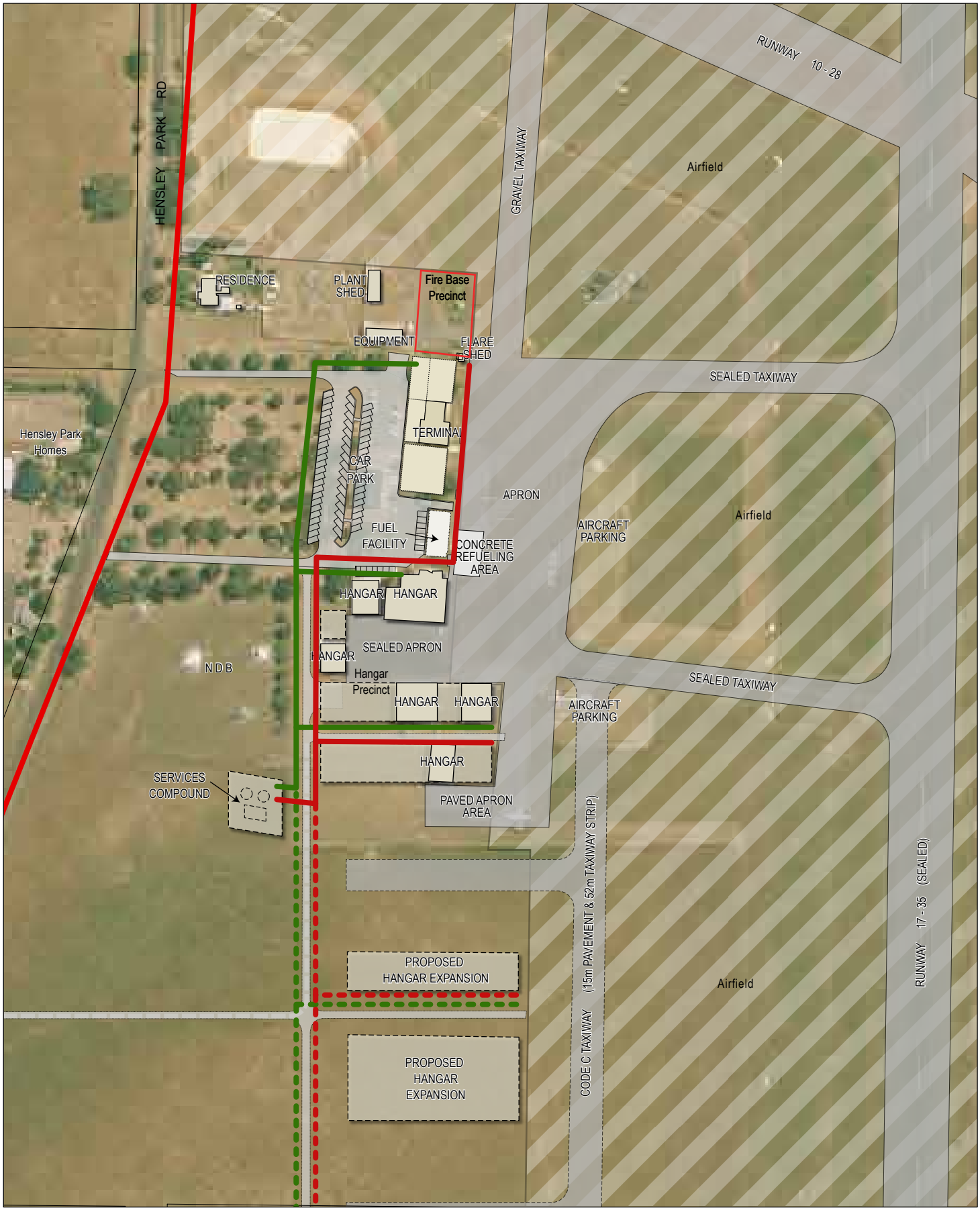


Drawing No.: 2010-HAMP-005 | Rev. No.: E | Date: 09-03-11
Prepared for Southern Grampians Shire Council by Airports Plus, Kneebush Planning and Globe Cartographics.

Appendix 7

Hamilton Airport Master Plan

Services Layout Plan (Fire Hydrant & Waste Water Reticulation)



Aerodrome Study Area
NDB (and 150m Buffer)
Proposed 300m wide runway strip
Existing Buildings
New Buildings
New Access Road
Airfield
Waste Water Reticulation
Fire Hydrant Reticulation

0 25 50 100m

N

Drawing No.: 2010-HAMP-013 | Rev. No.: B | Date: 09-03-11
Prepared for Southern Grampians Shire Council by Airports Plus, Kneebush Planning and Globe Cartographics.

Appendix 8

HORIZONTAL SECTION RL 379.8

HORIZONTAL SECTION RL 426.3

INNER HORIZONTAL SURFACE RL 287.0

INNER HORIZONTAL SURFACE RL 287.0

INNER HORIZONTAL SURFACE RL 287.0

INNER HORIZONTAL SURFACE RL 287.0

MGA 94 ZONE 54
GRID NORTH

HAMILTON AERODROME

OBSTACLE LIMITATION SURFACE DIMENSIONS

CO-ORDINATES ARE MGA94 ZONE 55.

RUNWAY 10 - 28

CODE 3 NON-PRECISION INSTRUMENT APPROACH RUNWAY

10 THRESHOLD 594576.808 5832432.533 244.331

28 THRESHOLD 593449.890 5832934.610 236.427

CENTRELINE BEARING 114° 00' 52"

TAKE OFF SURFACE

TAKE OFF GRADE 2%

LENGTH OF TAKE OFF AREA 15000 metres

INNER EDGE LENGTH 180 metres

DIVERGENGE ANGLE 12.5%

APPROACH SURFACE

FIRST SECTION GRADE 3.33%

FIRST SECTION LENGTH 3000 metres

SECOND SECTION GRADE 2.5%

SECOND SECTION LENGTH 3600 metres

HORIZONTAL SECTION LENGTH 8400 metres

INNER EDGE LENGTH 150 metres

DIVERGENCE ANGLE 15%

RUNWAY 17 - 35

CODE 3 PRECISION INSTRUMENT APPROACH RUNWAY

17 THRESHOLD 593690.488 5833744.849 229.800

35 THRESHOLD 593668.300 5832040.979 238.790

CENTRELINE BEARING 180° 44' 46"

TAKE OFF SURFACE

TAKE OFF GRADE 2%

LENGTH OF TAKE OFF AREA 15000 metres

INNER EDGE LENGTH 180 metres

DIVERGENGE ANGLE 12.5%

APPROACH SURFACE

FIRST SECTION GRADE 2%

FIRST SECTION LENGTH 3000 metres

SECOND SECTION GRADE 2.5%

SECOND SECTION LENGTH 3600 metres

HORIZONTAL SECTION LENGTH 8400 metres

INNER EDGE LENGTH 300 metres

DIVERGENCE ANGLE 15%

TRANSITIONAL SLOPE 14.3%

INNER HOR. SURFACE HT 45 metres

INNER HOR. SURFACE RAD 4000 metres

CONICAL SURFACE SLOPE 5%

CONICAL SURFACE WIDTH 1500 metres

DRAWN	P.FITZGERALD
DATE	08.09.2010
SURVEYED	B.FITZGERALD
DATE	30.09.2009
ARCHIVED	
DRAWING No.	HML/001 Sheet 1 of 4 Sheets

NOTE:

- LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (AHD)
- CO-ORDINATES ARE MGA94
- BACKGROUND DATA PROVIDED BY SOUTHERN GRAMPIANS SHIRE COUNCIL

CLIENT

HAMILTON AERODROME

Airport Survey Consultants
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Mobile: 0407 360 008
Fax: (03) 9739 4517
Email: b_fitzgerald@bigpond.com
PO Box 306
Chirnside Park, VIC, 3116

PROJECT

OBSTACLE LIMITATION SURFACES

1 : 40,000

0 250 500 750 1000 1500 2000 2500

AMMENDMENTS		
DATE	AMMENDMENT	SIGNED

HORIZONTAL SECTION RL 379.8

INNER HORIZONTAL SURFACE RL 287.0

INNER HORIZONTAL SURFACE RL 287.0

INNER HORIZONTAL SURFACE RL 287.0

INNER HORIZONTAL SURFACE RL 287.0

HORIZONTAL SECTION RL 434.2

HORIZONTAL SECTION RL 388.8

HAMILTON AERODROME

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INNER HOR. SURFACE RAD 4000 metres

CONICAL SURFACE SLOPE 5%

CONICAL SURFACE WIDTH 1500 metres

MGA 94 ZONE 54
GRID NORTH

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1 : 40,000

0 250 500 750 1000 1500 2000 2500

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HAMILTON AERODROME

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HORIZONTAL SECTION RL 426.3

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INNER HORIZONTAL SURFACE RL 287.0

HORIZONTAL SECTION RL 388.8

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- BACKGROUND DATA PROVIDED BY SOUTHERN GRAMPIANS SHIRE COUNCIL

Scale 1 : 60,000 at A1

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PROJECT

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AMMENDMENTS		
DATE	AMMENDMENT	SIGNED

HAMILTON AERODROME

OBSTACLE LIMITATION SURFACE DIMENSIONS

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INNER HORIZONTAL SURFACE RL 287.0

H BROMELLS RD

PARK

WENSLEYS

WENSLEY

MENZEL

FORTS

MCFARLANES

RD

17

10

SEALED RUNWAY

1233 x 30 GRAVEL RUNWAY

1704 x 30

ARP

28

35

RL 320 RL 310 RL 300 RL 290 RL 287 RL 280 RL 270 RL 260 RL 250 RL 240 RL 230

MGA 94 ZONE 54
GRID NORTH

DRAWN	P.FITZGERALD
DATE	08.09.2010
SURVEYED	B.FITZGERALD
DATE	30.09.2009
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DRAWING No.	HML/001 Sheet 3 of 4 Sheets

NOTE:

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Scale 1 : 12,500 at A1

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Chirnside Park, VIC, 3116

PROJECT

OBSTACLE LIMITATION SURFACES

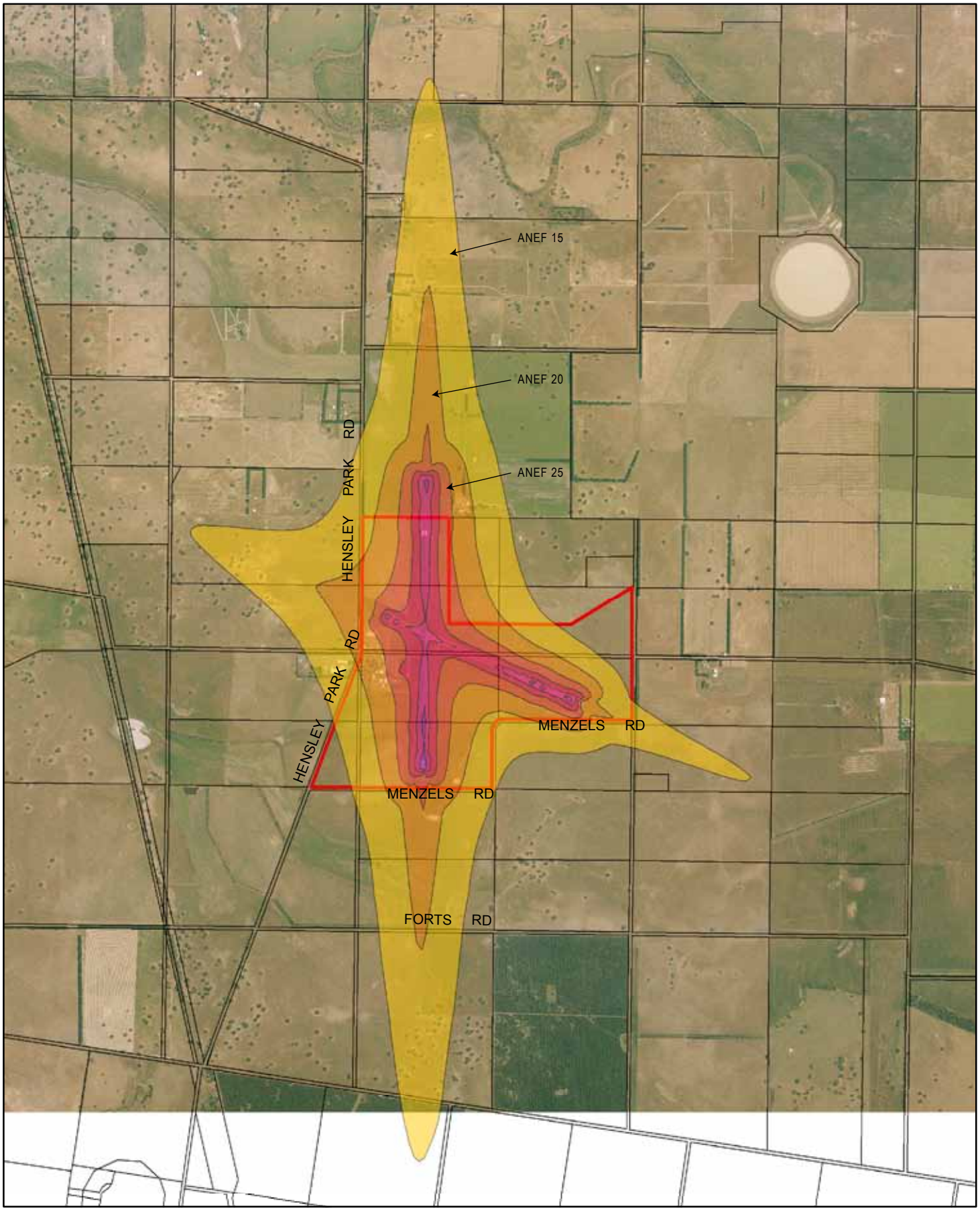
AMMENDMENTS		
DATE	AMMENDMENT	SIGNED

Appendix 9

Hamilton Airport Master Plan

Australian Noise Exposure Forecast

DRAFT



- Aerodrome Study Area
- ANEF 15
- ANEF 20
- ANEF 25
- ANEF 30
- ANEF 35
- ANEF 40
- ANEF 45

0 500 1,000 1,500m

N

Drawing No.: 2010-HAMP-011 | Rev. No.: B | Date: 09-10-10

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