

Report

Cowra Airport Master Plan

Prepared for Cowra Shire Council (Client)

By Beca Consultants Pty Ltd (Beca)

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Document Acceptance

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Executive Summary

Cowra Airport is an important community asset which must be carefully managed to ensure that Cowra and the wider region benefit from its existence well into the future.

The Cowra Airport Master Plan has determined that the predominant use of Cowra Airport for the foreseeable future will be for general aviation purposes and largely by smaller aircraft associated with recreational activities, pilot training, emergency services, light aircraft manufacturing and servicing industries. Whilst the airport has the capacity to accommodate larger aircraft and regular passenger transport, the primary purpose of the aerodrome is unlikely to be dominated by passenger transport activities. Continued patronage of Cowra Airport and demand for airport land for developments will more likely be driven by local and regional aircraft related businesses and a wide variety of recreational pilots.

Cowra Airport has capacity to accommodate expected increases in aircraft operations. The capacity of the current runway and taxiway system is much greater than the number and type of aircraft movements forecast. The airport has adequate capacity for the life of this 30 year Master Plan, having regard to the existing and likely future aircraft operations. No major changes to the airfield facilities are required.

There is currently no capacity at Cowra Airport to cater for the growing demand for freehold allotments and leasable land for new businesses. The demand for hangars for the storage and protection of aircraft is growing as Sydney region airports reach capacity, resulting in escalating land prices and usage costs. While there are large areas of undeveloped land at Cowra Airport, there has been little planning to date to identify constraints free land and the infrastructure requirements for new businesses. A primary objective of this Airport Master Plan is to identify adequate supplies of land that can be subdivided for future aviation-related and industrial purposes.

There are a wide variety of businesses and industries that should be planned for at the Cowra Airport. Provision needs to be made for small and large scale hangars as well as semi-covered and uncovered aircraft storage areas. There are a wide variety of industrial businesses that will benefit from locating to the Cowra Airport, including aircraft manufacturing and servicing industries, engineering services, spare parts sales and distribution, warehousing, aircraft charter services, aerial agriculture, tourism and their associated ancillary administrative services. There is also potential for the establishment of pilot training facilities at Cowra Airport as well as the expansion of emergency services facilities.

The growth of general aviation activities at the aerodrome will increase the number of aircraft at Cowra Airport, which will in turn increase the demand for aviation-related businesses. This Airport Master Plan provides for expansion of a hangar precinct to accommodate demand for private sector developments. Importantly, the sale of this land could provide funds for the ongoing operation and maintenance of the airport.

There are a number of community based clubs that use parts of the Cowra Airport for club events. This Airport Master Plan provides for limited community based development and expansion, where opportunities exist.

1 Introduction

The Cowra Airport is a Certified Aerodrome under the Civil Aviation Safety Regulations 1998 (CASR). Located close to the township of Cowra and in a clear skies valley, the airport offers excellent landing and takeoff conditions for a wide range of aircraft.

Future development of the airport is expected to be focused around a variety of aviation activities, including general aviation, pilot training, health service flights, defence, charter, aerial agriculture, tourism, and their associated ancillary services. There are also a small number of other land-use activities that might also locate at the airport.

As the owner of the Cowra Airport, Cowra Council is committed to growing Cowra Airport into a significant high quality aviation base servicing Central West NSW and beyond. Cowra Council recognises the key to a successful Cowra Airport lies largely with the aviation sector, and is linked to:

- Continued CASR Certification of the aerodrome.
- Low administrative fees for airport users, such as the current zero landing fees.
- Maintenance of high standard airport facilities, including adequate parking available for aircraft, taxiways, hardstand areas, landing lights, fuel and navigational facilities.
- Sufficient constraints free land for new developments and flexibility in planning controls to facilitate the expansion of private sector interests.
- Creation of freehold titles for lease or sale of land for government and private sector developments.
- Servicing of allotments with modern infrastructure and technology that meets the needs of airport users.

Beca Consulting Pty Ltd, in partnership with Airports Plus and Buchan Consulting have been successful in providing expert consultancy services to Cowra Council relating to the preparation of the Cowra Airport Master Plan. Cowra Council has contributed technical expertise to this document specifically in relation to sections 6, 7 and 10.3.

Preparation of this Airport Master Plan will assist in the strategic direction and development required for the Cowra Airport to be utilised to its full potential.

1.1 Study Objectives

The objectives of this Airport Master Plan are to:

- Identify the site's existing conditions and development constraints which will influence its future development.
- Identify opportunities for future development of the airport site which will include an analysis of aviation and industry trends in the area and demand for aviation facilities.
- Establish a plan for the future development of the airport site over the next 30 years including a vision, objectives, layout plan and land use strategy which will respond to the identified constraints and provide for the identified opportunities.

1.2 Methodology

The preparation of this Airport Master Plan has been informed by:

- Discussions with the Project Steering Committee.
- A workshop with relevant authorities and agencies on 14 October 2009.
- A workshop with aerodrome users and land owners on 15 October 2009.
- Review of various documents and other information provided by Cowra Shire Council and obtained from other sources, including:
 - The *CASA Manual of Standards Part 139 – Aerodromes*.
 - All documentation produced as part of the Cowra Shire Land-use Strategy.
 - One-on-one consultation with various stakeholders, servicing authorities and government agencies.
 - A second workshop with authorities and agencies on 24 May 2010.
 - A second workshop with aerodrome users and land owners on 25 May 2010.
 - A workshop with Cowra Council, Trent Kneebush and Ray Oakley on 17 December 2010

1.3 Structure of this Master Plan Report

The Cowra Airport Master Plan has been structured to provide a clear description of the issues that have been considered in the preparation of the Master Plan. There are 12 Sections to this Master Plan, as follows:

- Section 1 of this report introduces the Cowra Airport Master Plan and explains the scope of the project.
- Section 2 describes the Cowra Airport site and surrounding land-uses.
- Section 3 explains the location of Cowra Airport to other towns and airports.
- Section 4 describes the existing airport facilities.
- Section 5 describes the existing aviation uses and stakeholders at the airport.
- Section 6 describes the existing utility infrastructure that is available at the airport.
- Section 7 explains the local economic conditions and emerging opportunities that might influence future airport operations and development expansion.
- Section 8 provides an outline of the underlying planning context and criteria relevant to the preparation of this Airport Master Plan.
- Section 9 analyses the design and safety criteria for airport operations.
- Section 10 examines the constraints that need to be considered in light of future airport operations and development expansion.
- Section 11 presents Cowra Airport Master Plan.
- Section 12 provides recommendations on how best to implement the Master Plan.

2 The Site and Surrounds

2.1 Regional Context

The Shire of Cowra is located in the central west of New South Wales, approximately 300 kilometres west of Sydney. The Shire covers an area of approximately 2,810km² and according to the 2006 Census accommodates a resident population of 12,478 people. The major urban centre in the Shire is Cowra which is the heart of the region. The location of the Cowra Shire in relation to the wider areas of NSW is shown in Figure 1 below:

Figure 1 – Cowra Shire and wider NSW



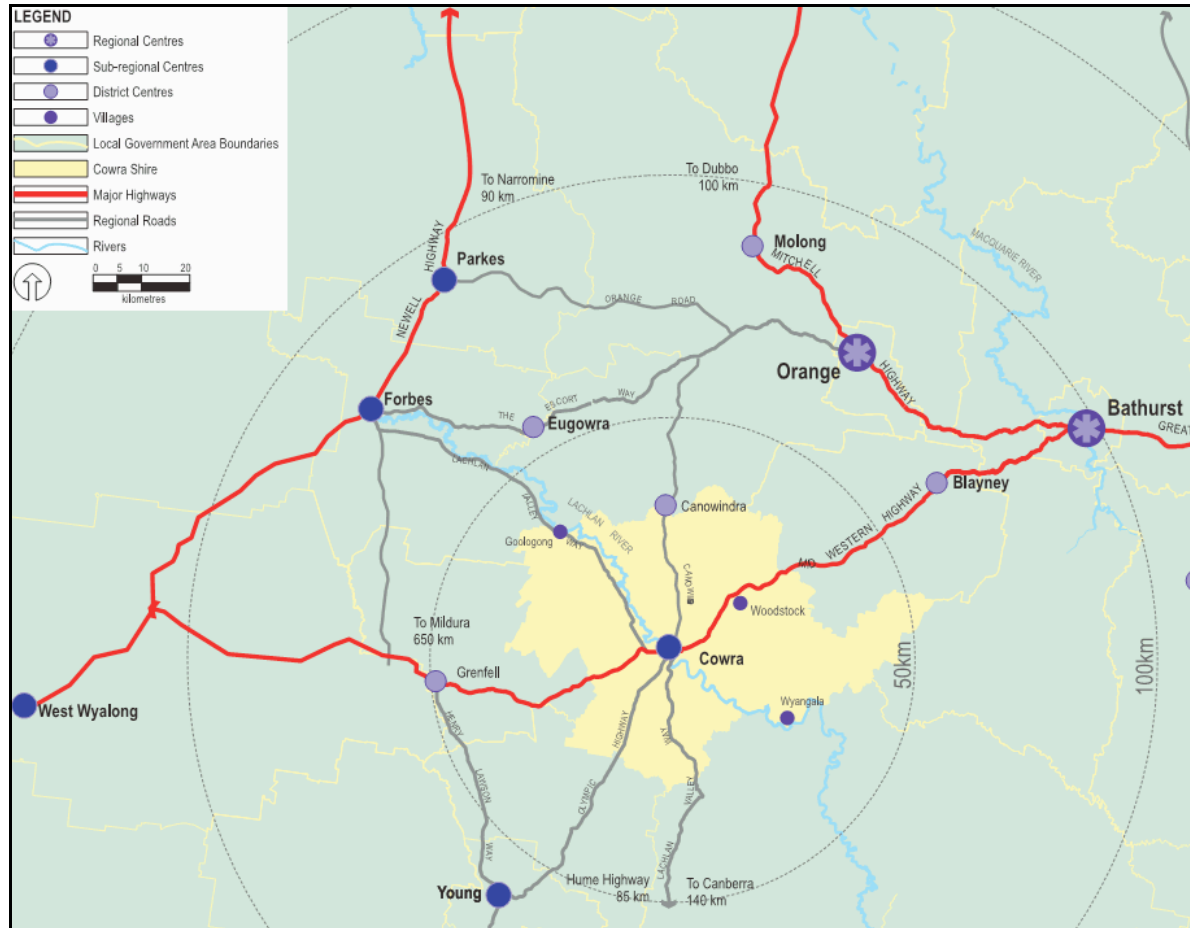
Source: Cowra Shire Local Profile

Major employment industries in Cowra Shire include agriculture, retail trade, manufacturing, transport and storage, community services and government. Tourism is also a key industry for Cowra in terms of investment, economic development and opportunity.

As an important crossing of the Lachlan River, Cowra Township has always featured as a transport hub. Cowra possesses a high level of regional accessibility, with a number of highways passing through the Township. The most regionally significant section of road is the Mid-Western Highway between Cowra and Bathurst, with as many as 3,000 vehicles per day travelling through Cowra.

The location of the Cowra Shire in relation to the Central West and main regional highways is shown in Figure 2 below:

Figure 2 – Cowra Shire and Central West



Source: Cowra Shire Land-use Strategy

2.2 The Subject Site

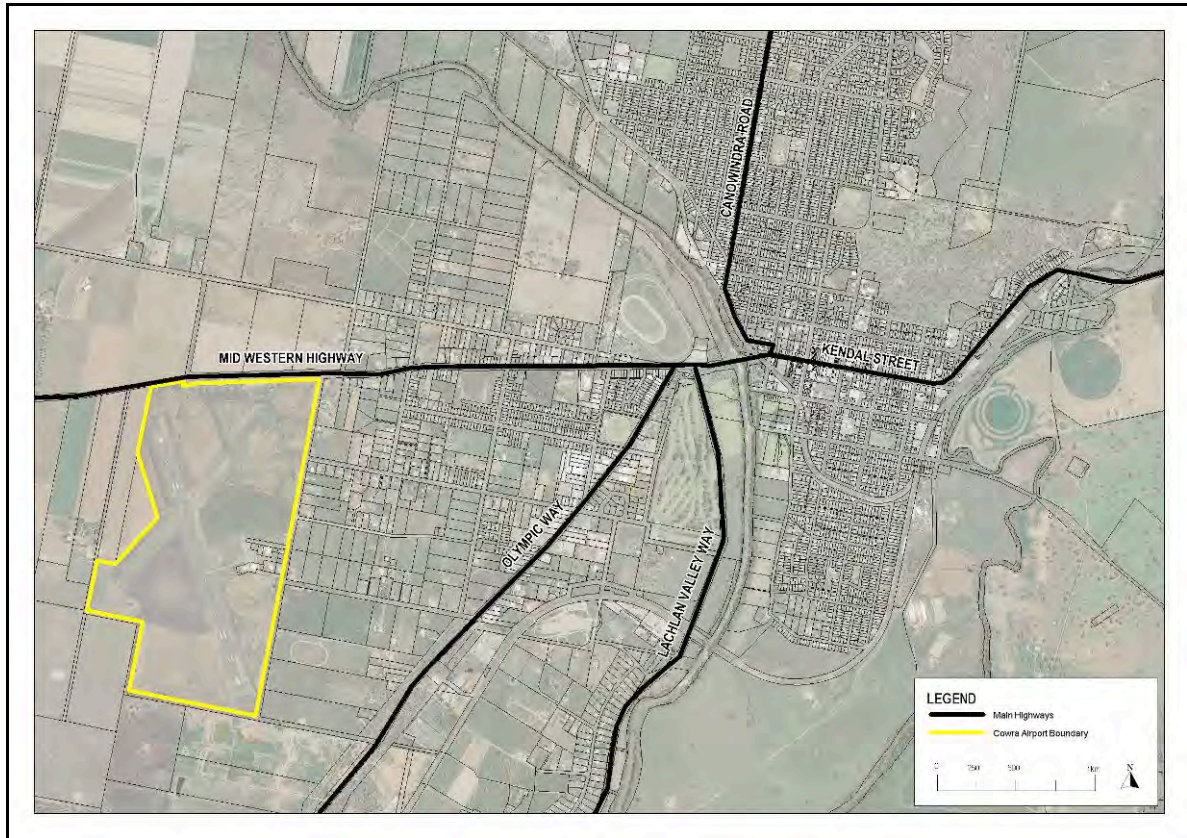
The Cowra Airport is strategically located three kilometres south-west of the Cowra town centre on the south-west corner of the Mid-Western Highway and Airport Road. Access to the airport site is from Airport Road.

The airport site has an area of approximately 200 hectares and comprises 16 lots. The largest lot, containing all of the airfield facilities, is Lot 8 DP 1131266. Under Cowra Local Environmental Plan 1990 the site is zoned No. 5(a) - Special Uses Zone.

Whilst the airfield is relatively flat, the site has a gentle slope from the eastern boundary adjoining Airport Road down to the western boundary of the site. The site is generally devoid of trees except for some tree belts located along property boundaries. The Lachlan River is located to the north-east of the site, whilst Back Creek is situated to the west.

A map showing the location of the Airport in relation to the town of Cowra is included in Figure 3 below:

Figure 3 – Cowra Airport and Cowra Township



The airport comprises two existing runways. The main runway (15/33) is a 30 metre wide by 1,630 metre long sealed runway. The secondary runway (03/21) is grassed, and is 30 metres wide and 1,166 metres long. There are two sealed taxiways and two sealed aprons.

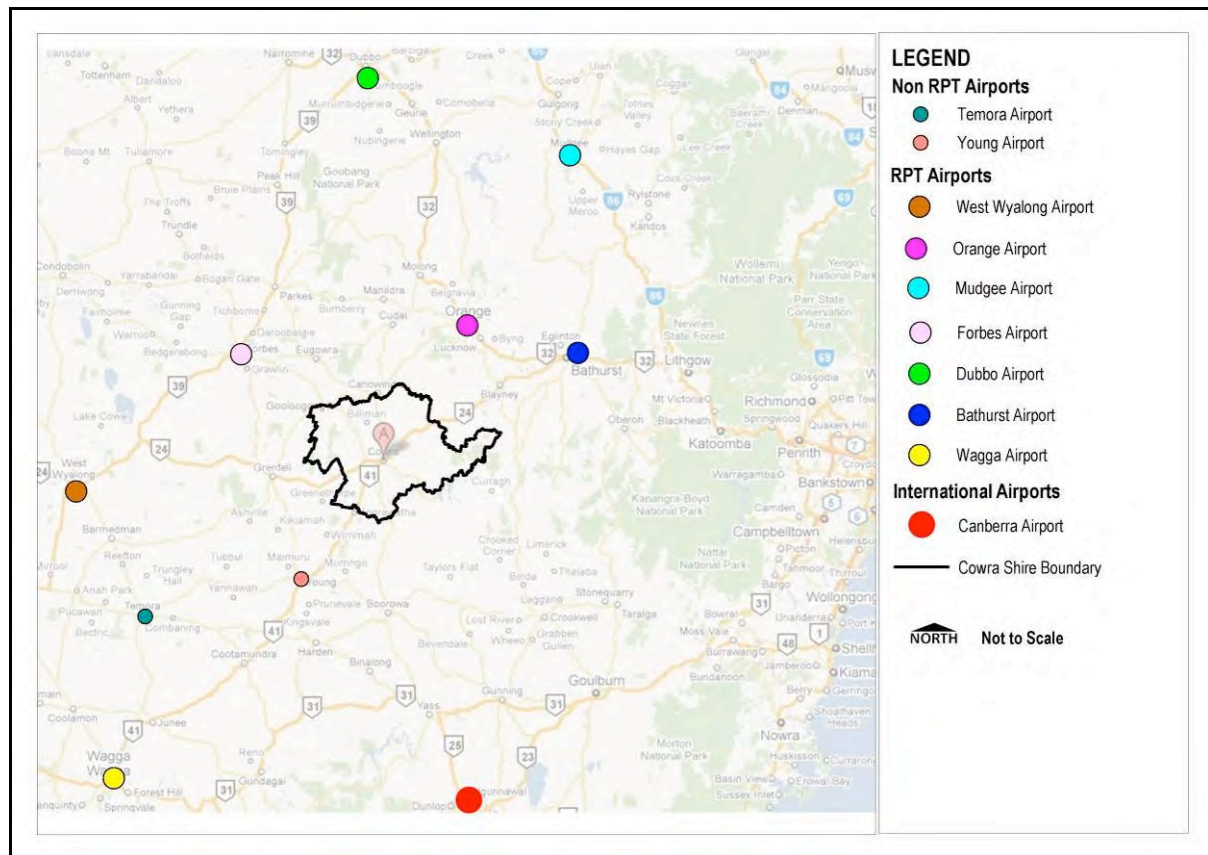
The existing Airport Terminal and hangar precinct contains an old terminal building located adjacent to the main apron and a number of hangars located around a central grassed taxilane / apron area. The terminal building is currently used by the Cowra Aero Club and a flight training school. All but one of the hangars is located on separate subdivided lots, some of which are privately owned. There are 10 hangar lots in total.

Apart from the airfield facilities such as runways, taxiways, aprons, and the development in the near vicinity of the Airport Terminal, most of the remainder of the site is vacant land. Some of this vacant land is leased for cropping purposes. A small area of land at the northern end of the site, abutting the Mid-Western Highway, is used by the Cowra Gun Club for clay target shooting.

Whilst the airport is a fully certified passenger airport it currently does not form part of a regular commercial passenger service. The last commercial passenger service was in 2001. The closest passenger airport is at Orange (approximately 96 kilometres from Cowra), which has direct passenger services to Sydney.

Figure 4 below shows the location of Cowra Airport to other airports in the region and an indication of the size and functionality of these airports as compared to the Cowra Airport.

Figure 4 – Cowra Airport and other Airports



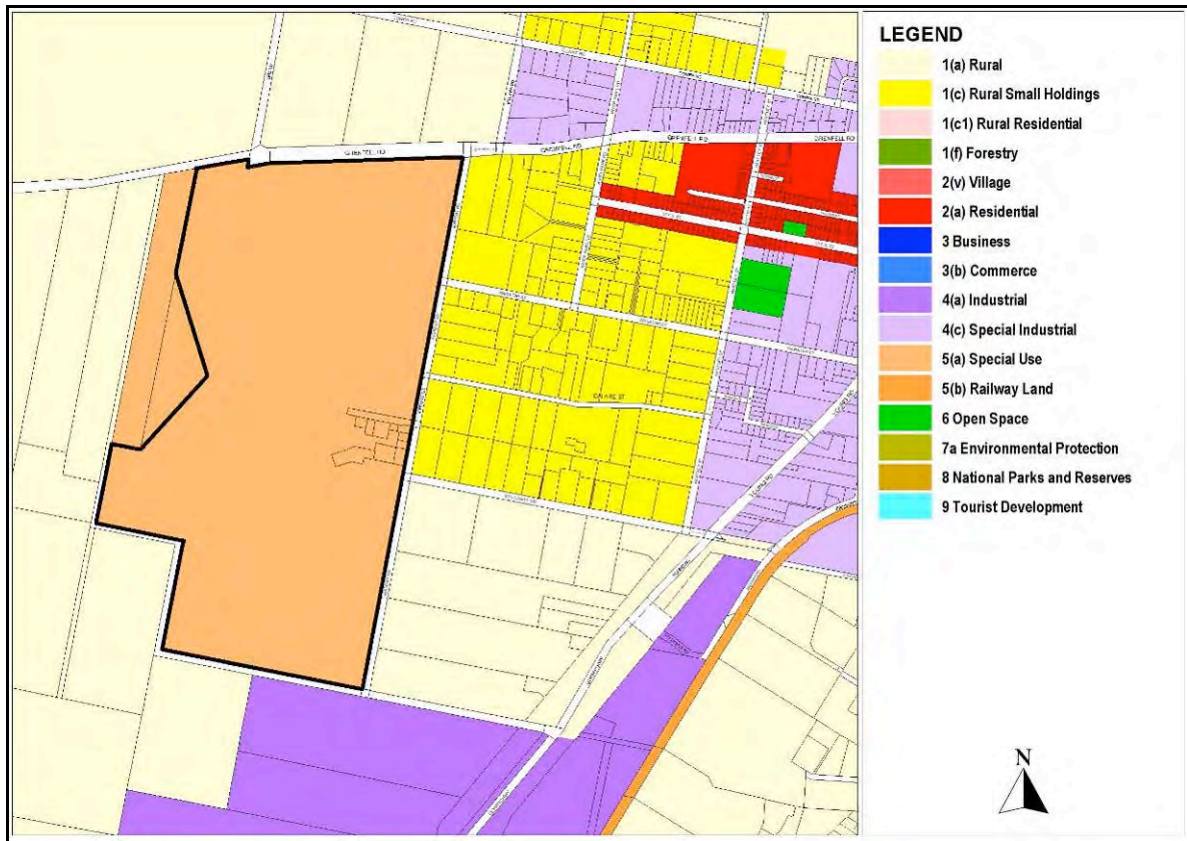
2.3 Surrounding Land

Figure 5 shows the zoning of the site and surrounding land. The following surrounds the Cowra Airport site:

- North: Mid-Western Highway and farmland (Rural Zone)
- East: Part rural living (Rural - Small Holdings Zone), part farmland (Rural Zone)
- West: Farmland (Rural Zone)
- South: Part farmland (Rural Zone) and part Abattoir Waste Treatment Area (Industrial Zone)

It is noted that Airport Road is not formed/constructed south of Boundary Road, nor is the road that runs along the southern boundary of the airport site.

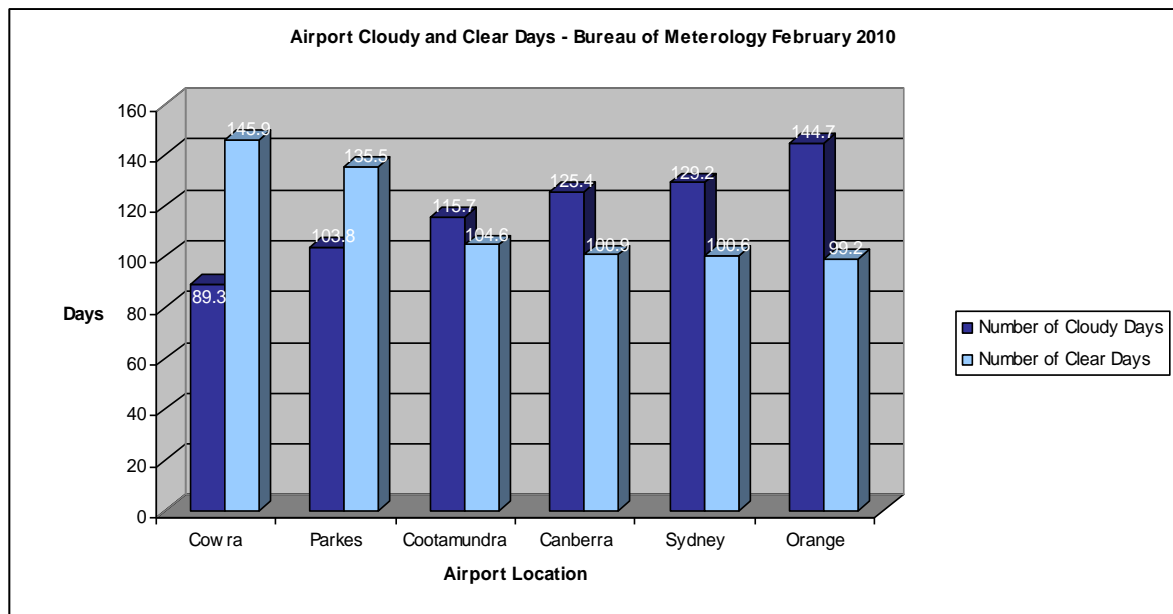
Figure 5 – Zoning of Cowra Airport and surrounding land



3 Accessibility / Location

Cowra Airport is located in a clear valley that allows for an average of 149.5 clear days and only 89.3 cloudy days per annum. This allows for easier access and landing of aircraft. See Figure 6 below:

Figure 6 – Airport Cloudy¹ and Clear² Days



Nautical miles between Cowra and other Airports makes Cowra Airport very accessible, shown in Table 1 below:

Table 1 – Nautical Miles between Cowra and surrounding Airports

From	To	Nautical Miles	From	To	Nautical Miles
Cowra	Sydney SYD	145	Cowra	Dubbo DBO	112
Cowra	Canberra YSCB	90	Cowra	Wagga YSWG	100
Cowra	Melbourne MEL	340	Cowra	Parkes PKE	55
Cowra	Williamtown NTL	198	Cowra	Temora TEM	76

¹ A cloudy day is recorded when the mean of the 9am and 3pm cloud observations is greater than or equal to 6/8th of the sky covered with cloud. Bureau of Meteorology.

² A clear day is recorded when the mean of the 9am and 3pm cloud observations is less than or equal to 2/8th of the sky covered with cloud. Bureau of Meteorology.

4 Existing Airport Facilities

4.1 Runways

Runway 15/33 is 1630 metres long and 30 metres wide. At the runway ends the runway has been widened to 45 metres to allow aircraft to turn. A turning node is also provided approximately 400 metres from the south end of the runway. The runway is contained in a runway strip 1796 metres long and 90 metres wide. The runway surface consists of a bitumen spray seal with a 7mm aggregate wearing course. The pavement is rated with a pavement classification number (PCN) 10 with a maximum tyre pressure of 580 kpa (84 PSI).

The runway is equipped with a single stage low intensity edge lighting system which can be activated by pilots using frequency 126.7. There is no Visual Slope Guidance system (PAPI or T-VASIS) associated with either runway end.

Figure 7 – Photographs of runway and taxiway



Rwy 15 threshold



Secondary Taxiway

Runway 15/33 is the primary runway due to the prevailing wind and runway lighting. Aircraft operate normal left hand circuits on runway 15/33. Both runway directions have a RNAV (GNSS) Non Precision Approach procedure published allowing aircraft to make straight in approaches. The airport is equipped with a Non-Directional Beacon (NDB) and a Visual Omni Range (VOR) and procedures have been designed allowing aircraft to locate the airport and enter the circuit for runway 15 using the NDB.

From a visual inspection undertaken the runway is in generally good condition. There is some minor loss of shape occurring on the centreline at the north end of the runway, but there were no major defects observed.

Runway 03/21 is 1166 metres long and 30 metres wide and is contained in a runway strip 1286 metres long and 80 metres wide. The runway surface is grass and has no pavement rating. The runway ends are marked with white cones and aircraft operate normal left hand circuits. The runway is used by light aircraft and for pilot training purposes.

4.2 Taxiways

The main sealed taxiway connects runway 15/33 with the terminal apron and is designated Taxiway Alpha. This taxiway is 15 metres wide and is 150 metres long. The surface of the taxiway is a bitumen sprayed seal. This taxiway is equipped with blue edge lighting to provide guidance for pilots to the terminal apron.

A secondary taxiway runs parallel to the main taxiway approximately 130 metres to the south and is designated Taxiway Bravo. This taxiway is 8 metres wide and is approximately 240 metres long. This taxiway has a bitumen sprayed seal and is aircraft weight limited to aircraft below 5,700 kilograms MTOW. The taxiway provides access to the hangar area and a general aviation apron and a connection to the terminal apron. There is no aircraft guidance lighting on this taxiway.

A grass taxilane connects the secondary taxiway to the existing hangar precinct.

4.3 Aprons

4.3.1 Terminal Apron

This apron, approximately 95 metres x 60 metres (5,700 m²), is situated directly adjacent to the old terminal building. A secondary area of pavement 30 metres x 50 metres (1,500m²) has been constructed between the apron and the low fence adjacent to the carpark. A visual inspection of these pavements found that they were in good condition. Floodlighting is located adjacent to the apron for night operations.

4.3.2 Refuelling Apron

A small area of bitumen sprayed seal apron is provided adjacent to a privately operated refuelling facility. This area of apron joins onto the general aviation apron.

4.3.3 General Aviation Apron

This apron is situated south of the old terminal building and is approximately 60 metres x 40 metres (2,400m²). The pavement surface is a bitumen sprayed seal.

4.4 Buildings

The old terminal building is utilised by the Cowra Aero Club and a flight training school and contains a meeting room, the Airport Reporting Officer's office, a kitchen/bar area and an open seating area. The building also contains male and female toilets. A separate public toilet block is located north of the terminal building in the car park. The car park around the terminal building is approximately 1,500m².

There are a number of private hangars east of the terminal building.

Figure 8 – Photograph of general aviation apron and hangars



4.5 Other Facilities

The airport has one refuelling facility owned and operated by Fred Fahey Aerial Services and comprises two 55,000 litre above ground tanks which dispense Avgas and Jet A1 through bowsers situated adjacent to the refuelling apron.

Figure 9 – Photograph of fuel facilities



A Non-Directional Beacon (NDB), owned by Airservices Australia, is situated east of the terminal apron and is adjacent to the main access road entering the airport. The navigational aids are

maintained by Airservices Australia. A Visual Omni Range (VOR) is located on the airport west of runway 15/33 and south of runway 03/21.

Cowra Airport has an Automatic Weather Station located north of the primary taxiway and provides automatic weather data to the Bureau of Meteorology and pilots via a telephone connection.

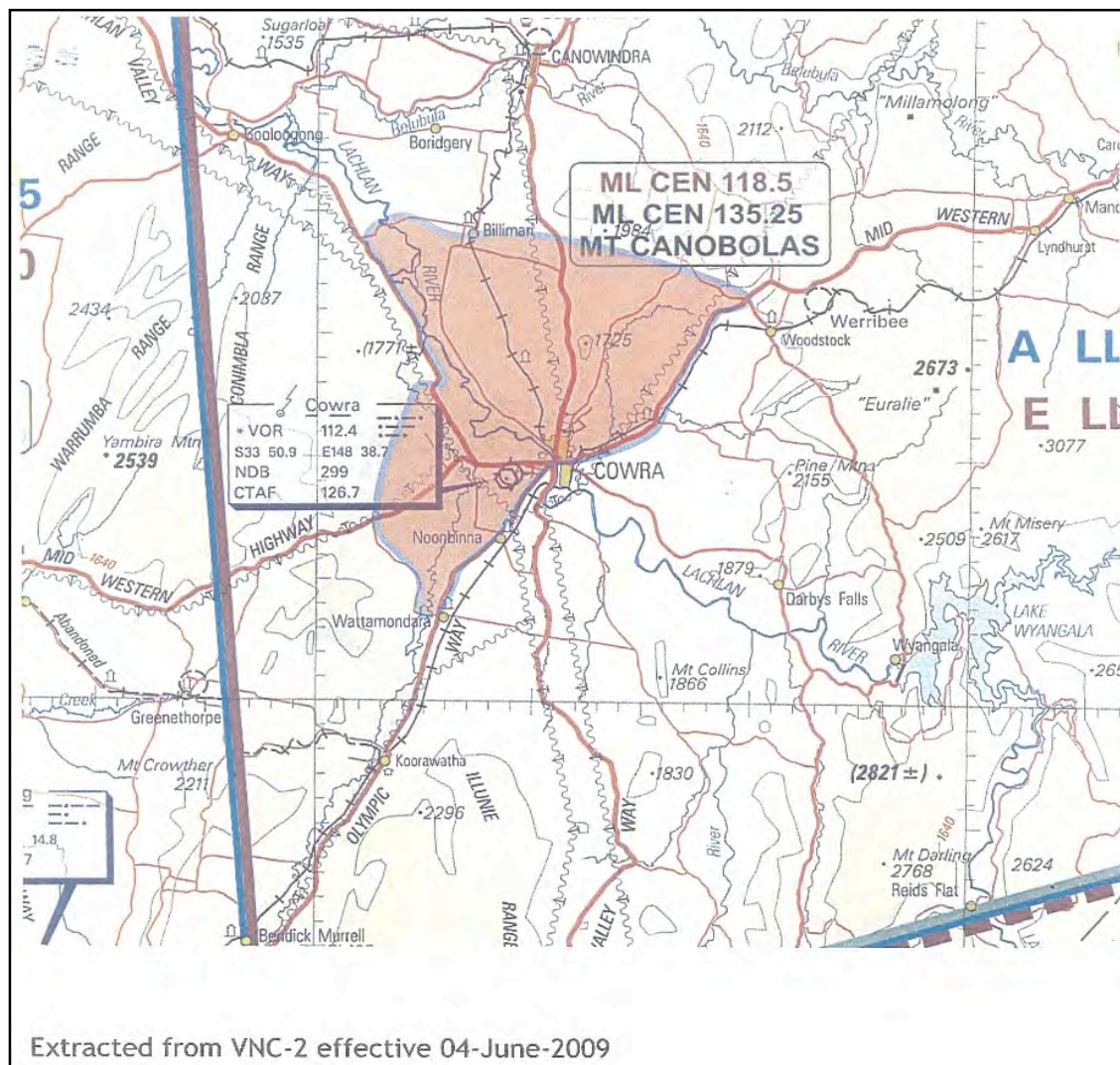
The airport also has:

- Rural Fire Service Water Tanks
- Low Intensity Runway Lighting (LIRL)

4.6 Training Area

Cowra Airport also has a designated training area located at Billimari which is 22 kilometres North North-West of the airport site. A map of the training area is shown in Figure 10 below:

Figure 10 – Training Area



5 Existing Aviation Uses and Stakeholders

5.1 Overview

As previously stated the Cowra Airport is owned and operated by Cowra Council. There is currently no regular air passenger transportation in and out of Cowra Airport. A regular route was originally operated by Eastwest Airlines, but this was replaced by Country Connection Airlines in 1991. The latter service ceased operations in 2001 and there has not been a regular passenger service since then.

Cowra Council has held talks with a number of Airline Companies to investigate the possibility of establishing a regular passenger service between Cowra and Sydney or Cowra and Canberra. To date these talks have not been successful in reintroducing a public airline service at Cowra.

Given the proximity of regular airline services at Orange, Bathurst, Parkes and Canberra, it is considered unlikely that a regular large scale passenger service will be reintroduced at Cowra in the foreseeable future, purely based on demand. Notwithstanding, Cowra Council is committed to re-establishing a regular passenger service at Cowra Airport in the future and wishes to maintain the airport as a Certified Aerodrome, which allows for passenger aircraft.

Other users of the Cowra Airport are expected to be focused around a variety of light aviation activities, including general aviation, pilot training, health service flights, defence, charter, aerial agriculture, tourism, and their associated ancillary services. There are also a small number of other land-use activities that might also locate at the airport.

5.2 Current Aviation Uses

The following aviation uses have been identified as ongoing:

- *PG Aviation* – A company that designs and manufactures Brumby Aircraft, repairs and services planes, manufactures parts and provides certificates of airworthiness. This business currently employs seven people.
- *Fred Fahey Aerial Services* – An aerial agricultural service (i.e. crop dusting and related activities). This business also holds a contract with the New South Wales Rural Fire Service to conduct aerial fire fighting, and is a supplier of jet fuel and avgas in the area.
- The *Cowra Aero Club* meets on the site and conducts flying lessons on weekends using one aircraft.
- *Lachlan Valley Aviation*.
- *Lachlan Aerowork*.
- *Hawkesbury Powered Parachutes*.
- *Aero Refuellers*.
- *Wagga Air* which conducts a daily air courier service.
- *Tony Ross and DB & RR Heilman* who are hangar owners at the Cowra Airport.
- *Air Ambulance* – Patient transport.
- *RAAF* – Conduct circuit training.

- *Australian Aerobatic Club, NSW Chapter* – Conduct practice flying and other events.
- *Clamback & Hennessy Flight Training School*

5.3 Current Non-Aviation Uses

The following non-aviation activities are located at the Cowra Airport:

- The Cowra Gun Club holds meetings and clay bird shooting events within a purpose built facility that is accommodated on airport land under a lease agreement.
- The Cowra Radio Control Car Club holds regular meetings at the airport terminal building.
- 'Cloud Dancers' Model Aircraft Club utilises the area adjacent to Runway 15
- Rotary Youth Driver Awareness is conducted annually at the airport site.
- The Rural Fire Service conducts firebombing operations from the airport.
- Parts of the airport site are leased for farming purposes.

The Cowra Greyhound Racing Club have expressed interest in establishing an off lead galloping areas (slipping track) at the airport site. Members of the club and representatives from Cowra Council have completed a site investigation process that has identified a suitable location for the slipping track adjoining the eastern boundary of the airport site, well south of the airport terminal and other existing buildings. This area is well clear of existing airport operations and is not required for future airport purposes.

6 Existing Utility Infrastructure

The Cowra Airport is located on the western outskirts of Cowra. Most urban services are already available at the airport site, including sealed roads, reticulated water supply, electricity supply and telecommunications. As the airport grows it will be relatively simple to augment new extensions to these services and infrastructure. However, the existing drainage, sewerage and information technology infrastructure is inadequate to support further expansion of the airport.

6.1 Water Supply

Potable water is currently supplied to the airport site via a 100mm diameter main in Airport Road. This main is served by 150mm diameter mains in Calare Street and Boundary Road. Individual 100mm diameter mains extend from the main in Airport Road to the airside of the terminal and to Lot 2 DP 1131538.

Modelling of the water reticulation system in this area indicates that the supply of water currently exceeds Council's minimum service standards of supplying 0.15L/s at 15 metres head 99% of the time.

Three Rural Fire Service water tanks are located adjacent to the southern side of Taxiway Bravo. These tanks are used for aerial fire fighting purposes. They have a capacity of 288,000 litres and are supplied from a bore.

6.2 Power

There is an 11kVa line with 4 transformers that run along the west side of Airport Road. There is a 220kV transformer opposite Entry Road. It currently services 6 customers within the Airport via overhead wire and underground cable. Country Energy advises that there is capacity in the current system to service new developments at the airport site.

6.3 Telecommunications

Telstra ADSL1 and ADSL2+ are available to existing PSTN line holders through selected providers. Satellite internet is available throughout the Cowra Shire and may attract HIBIS (High Bandwidth Incentive Scheme) subsidy. There are two optical fibre cables running near the airport. One line runs from Cowra to Grenfell and the other Cowra to Young. Telstra indicated that the latter would be the most likely line to provide access to the airport due to commercial restrictions on the line to Grenfell. The distance from the Young Road cable to the airport terminal is 1.8 kilometres. Optical fibre can be provided to an exchange at the airport, thus enabling on demand access to existing and new businesses at the airport development.

6.4 Gas

There are no gas easements or assets located within the Airport. At this stage it is not envisaged that there will be a strong demand for reticulated natural gas to the airport site. There is only bottled gas available in West Cowra.

6.5 Wastewater

The Cowra Airport site is not connected to Cowra Council's reticulated sewerage services. The existing toilet facilities at the site are connected to an existing on-site waste management system. The closest sewer main is located approximately 1.5 kilometres north-east of the site (via road reserves) in a residential area on Lyall Street.

6.6 Stormwater Management

The Cowra Airport does not drain into the urban drainage system developed by the Council for the Cowra Township. The airport site drains to a separate drainage system that eventually discharges to Back Creek.

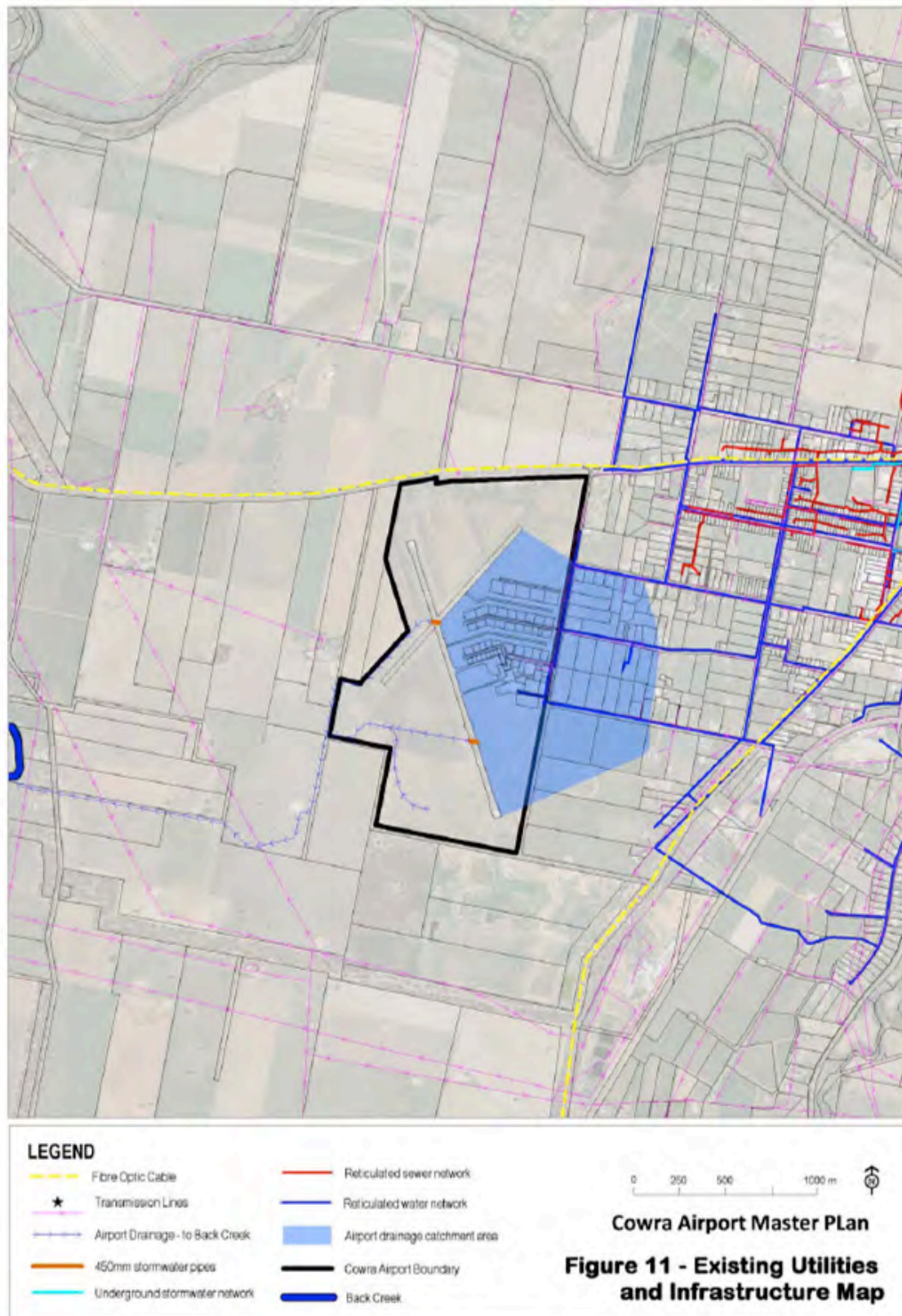
A system of underground drainage pipes and surface water channels drains the majority of stormwater generated from the airport site to a central point adjoining the western boundary of the airport site, adjacent to the south-western approach to the grassed runway.

From the airport site, stormwater drains over privately owned farmland via surface water channels to Back Creek. These channels form part of a larger drainage system that collects overflow water from the Cowra Abattoir evaporation ponds and discharges its flows to Back Creek. Overall, the drainage system appears to be well constructed and maintained, with capacity for substantial volumes of water to be carried to Back Creek.

There are no easements created over any drainage channels to secure the airport site drainage system and formalise maintenance access to the channels. Inspection of the discharge point to Back Creek revealed substantial erosion of private property adjoining the bank of the creek.

The existing utilities and infrastructure at the airport is shown on Figure 10 below:

Figure 11 – Existing Utilities and Infrastructure



7 Planning Context

This section provides an overview of the policies and controls that relate to or influence the future use and development of the Cowra Airport. This includes Cowra Council's ongoing Shire Land-use Strategy and imminent comprehensive new Local Environmental Plan. These are important considerations for the Cowra Airport Master Plan.

7.1 Cowra Local Environmental Plan 1990

The Cowra Airport site is zoned 5(a) Special Uses in accordance with Cowra Local Environmental Plan 1990.

In accordance with the land-use table provided in clause 9 of the Cowra Local Environmental Plan 1990, the objective of the zone "is to provide for public facilities on public land."

Permissible land-use activities within the 5(a) Special Uses zone are limited to the purpose indicated on the zoning map attached to Cowra Local Environmental Plan 1990 (Airport), or any purposes ordinarily incidental or subsidiary to the Airport. All other types of land-use activities are prohibited within the zone.

Historically, the current 5(a) Special Uses zoning of the site has suitably enabled operation of the site for Airport purposes. However, a primary objective of the Cowra Airport Master Plan is to allow the development of surplus land for private sector interests, provided the use does not prejudice the ongoing operation of the airport. The current zoning of the site is prohibitive to the development of the Cowra Airport site for non-airport related land-use activities. It will be important to establish a zoning framework for the Cowra Airport in the comprehensive new Local Environmental Plan which provides the necessary flexibility to allow the development of surplus land for non-airport purposes.

Clause 40 of Cowra Local Environment Plan 1990 contains provisions to control the erection of structures within the flight paths of the Cowra Airport and it is intended to retain such provisions in a new comprehensive Development Control Plan.

7.2 Development Control Plan

Cowra Shire Council Development Control Plan – Cowra Aerodrome Obstacle Limitation Surface was adopted by Council on 9 December 1996 and applies to land within the area of the Obstacle Limitation Surface (OLS) for the Cowra Airport.

The aim of the Development Control Plan (DCP) is to control development in relation to the height of the OLS for the Cowra Airport. The DCP requires the lodgement of a Development Application for any development within the area of the OLS to be accompanied with a Certificate from a Registered Surveyor indicating the maximum height of the development in relation to the height shown on the OLS plan adopted by Council. The DCP requires the Council to refer any development which exceeds the height of the OLS to the Civil Aviation Safety Authority Australia for comment.

Cowra Council intends to prepare a comprehensive DCP applying to all land in the Cowra Shire which will complement the comprehensive new LEP. The preparation of a comprehensive DCP presents a suitable opportunity to review the existing controls in the Cowra Shire Council Development Control Plan – Cowra Aerodrome Obstacle Limitation Surface.

New OLS plans have been prepared as part of this Airport Master Plan which should be incorporated into the preparation of the new DCP.

7.3 Cowra Shire Land-use Strategy

Since the beginning of 2006, Cowra Council has been working on the Cowra Shire Land-use Strategy and comprehensive LEP review process. The following main reports have been produced by Cowra Council and their consultancy team as part of the study process to date:

- Cowra Shire Local Profile, February 2008
- Cowra Shire Local Issues Paper, February 2008
- Cowra Shire Land-use Strategy, August 2009

The Cowra Shire Land-use Strategy provides the necessary strategic framework to guide the preparation of the new Local Environmental Plan in accordance with the NSW Department of Planning's Standard Instrument. The major findings of the Cowra Shire Land-use Strategy that are relevant to the Cowra Airport Master Plan include:

- The presence of heavy vehicle traffic within the Cowra Central Business District creates a number of problems for the centre, including congestion, parking problems, traffic and pedestrian safety risks, noise and vibration and general amenity impacts. In recognition of the need to remove heavy vehicle traffic from the main street, a number of potential ring road routes have been identified as part of the Strategy. The Northern Ring Road Option (detailed in Section 4.6.2) of the Strategy) involves the use of Airport Road, adjoining the Cowra Airport.
- Cowra Airport has been identified as a suitable location for an industrial park, specialising in aviation related industries, storage and training. The strategy supports the rezoning of a suitable portion of the Airport site to an appropriate zone under the Standard Instrument.

8 Constraints Analysis

There are a number of constraints affecting future development on the site that have influenced the Airport Master Plan. Issues include:

8.1 Non Directional Beacon

The Non-Directional Beacon (NDB) that is situated east of the terminal apron ideally requires a buffer from buildings of 150 metres, which acts as a constraint to new developments in and around the terminal apron. While it is advantageous that the NDB remains in effective operation at the airport, it does act as a considerable constraint to the expansion of existing business operations as well as proposed new developments.

Airservices Australia has advised the NDB is scheduled for an upgrade in 2011. In conjunction with that upgrade it is proposed to relocate the NDB to a more appropriate site on the airport.

The new location for the NDB would need to address the following:

- Substantially level and free of buildings (higher than 2.5m), trees etc for 150m.
- No high power transmission lines within 500 metres.
- Non-metallic buildings not higher than 2.5m can be between 60m and 150m of the towers.
- Power should be underground minimum depth .45m within the 150m.
- The area needs to be mowed.

A 150 metre Greenfield buffer around the new NDB site should also be incorporated into the new Development Control Plan currently being prepared by Cowra Council.

8.2 Weather Station

The Automatic Weather Station (AWS) that is situated to the north of the terminal apron requires a buffer of 100 metres radius based on the anemometer. The AWS acts as a constraint to new developments in and around the terminal apron.

It is proposed to relocate the AWS to a more appropriate location at the airport.

The new location for the AWS would need to be setback a minimum of 100 metres from existing buildings and structures. Electricity supply and all weather vehicular access would also need to be readily available to the new site.

A 100 metre buffer around the new AWS site should also be incorporated into the new Development Control Plan currently being prepared by Cowra Council.

8.3 Cowra Gun Club

The Cowra Gun Club Inc has operated a clay bird shooting range on the site of the Cowra Airport since the early 1950s. The club leases approximately 3.9 hectares of land from Cowra Council and has constructed a number of improvements on the land, including club buildings, five traps and shooting ranges. The Cowra Gun Club is located on the northern perimeter of the airport site and is accessed via the adjoining Mid Western Highway.

The Club has Development Consent from Cowra Council to construct an additional trap and shooting range directly west of the existing shooting range, bringing the total number of shooting

ranges to six. The approximate distances between shooting ranges and airport runways has been measured and is as follows:

- Minimum 350 metres from nearest trap to nearest part of the sealed runway.
- Minimum 200 metres from nearest trap to nearest part of the grassed runway.

The club operates under Australian Clay Target Association guidelines and a NSW Firearms Registry Shooting Range Licence (No. 404150646) and Club Approval Licence (No. 405894703). No firearms or ammunition are stored at the premises when the grounds are unattended. A CASA accredited Airport Safety Inspector has indicated that the current operations at the club should have no impacts on aircraft operations.

To ensure that adequate distance is provided between the Cowra Gun Club and airport operations, a greenfield buffer of 100 metres between the runways and Club's leased boundaries should be incorporated into the new Development Control Plan currently being prepared by Cowra Council.

Any future development at the site would require a development application.

8.4 Rural Residential Land-use

Land directly to the east of Airport Road, between Boundary Road and the Mid Western Highway, is zoned 1(c) Rural Small Holdings under Cowra Local Environmental Plan 1990. Under this zone dwelling-houses are permitted to be erected and maintained on allotments of no less than 4,000 square metres. There are currently seven dwelling-houses that have been erected on allotments that front onto Airport Road. Based on future subdivision potential provided under Cowra Local Environmental Plan 1990, a further 11 houses could be approved on land fronting Airport Road.

The nearest residence is setback approximately 5 metres from the front property boundary adjoining Airport Road, with average setback of the existing houses from Airport Road being 23 metres. Given that subdivision of airport land directly adjoining 1(c) zoned land is proposed, it is important that the interface between housing and airport operations is properly managed to avoid amenity impacts, such as noise, odour, visual and privacy impacts.

To ensure that adequate distance is provided between airport operations and rural residential land-use adjoining Airport Road, it is proposed to create a landscaped / acoustic buffer of 30 metres between the eastern side of the Airport Road Reservation and future aviation-related businesses.

Setbacks requirements for new housing fronting Airport Road should be considered in the new Development Control Plan currently being prepared by Cowra Council. A minimum front setback of at least 40 metres should be required for new housing along Airport Road.

8.5 Surface Water

The Cowra Airport is not subject to major flooding from rivers or creeks. The site is well elevated and distanced from the influence of flooding from both the Lachlan River and Waugoola Creek. The closest land subject to flooding is shown on Figure 12 below. This map also shows the roads providing access to the airport that are also subject to inundation in times of flood.

Flooding of the Lachlan River occurs irregularly, with the last major flood event in 2010. Similarly, flooding of the Back Creek is infrequent. While flooding of the Lachlan River can cause significant disruption and property damage in and around Cowra Township, the impact of flooding on the airport is limited to disruption of the normal road links between Cowra and the airport and redirection of traffic on a temporary basis.

Surface water flows on and across the airport site are limited to those generated within a localised catchment that is commenced several hundred metres to the east of the airport site.

The total area of the surface water catchment that drains onto the airport site is approximately 100 hectares. Stormwater on the airport site generally drains from east to the west. Approximately 58 hectares of land drains to a 450mm diameter underground drainage pipe that crosses the intersection of the two runways (northern pipeline). Approximately 10 hectares of land drains to a 450mm diameter underground drainage pipe, crossing the southern section of the sealed runway (southern pipeline). The remaining water drains around the runway via open drains. All surface water leaving the airport site drains across private farmland via an open drain that discharges into Back Creek.

A limiting factor of the existing airport drainage system is that there are only two existing 450mm diameter underground pipes that drain stormwater underneath the main runway. Any new development that proposes additional hard stand areas will increase the volume of stormwater entering these pipes, with the potential for them to overflow and flood the main runway in periods of heavy rainfall. To avoid localised flooding near the runway, an upgraded drainage system will be required.

A preliminary stormwater management analysis has been carried out by Cowra Council, which demonstrates that stormwater from expansion areas can be properly engineered and managed at the airport site. Council's stormwater management analysis proposes the construction of an on-site detention basin (minimum storage volume 2 mega-litres) on the eastern side of the sealed runway, adjoining the northern 450mm diameter underground pipe.

Another limiting factor is that the drainage system from the airport site traverses land held in private ownership. Any new development that proposes additional hard stand areas will increase the volume of stormwater entering private land on its way to Back Creek. It would be desirable to formalise access and maintenance of the drainage system under a public drainage easement.

The southern and western portions of the airport site can become quite boggy in extended wet weather conditions. It is important that any upgrading work to the drainage system aims to properly drain these areas to avoid them becoming too wet and swampy.

There are also two storage dams located on the airport site that partly derive their catchment from the airport land. Given these dams are located outside the flight paths of aircraft it may be desirable to continue their water storage function through careful planning of stormwater drainage.

An investigation of stormwater on and around the airport site has been carried out in order to establish the broad criteria for future concept planning and stormwater management planning. It will be necessary however, for more detailed stormwater planning to be carried out prior to any major new developments being approved at the airport site.

8.6 On-site Waste Disposal

There is currently no reticulated sewerage available to the Cowra Airport. Waste generated from the airport terminal and other businesses at the site is required to be disposed of on-site.

The management of individual on-site waste management systems for an expanding airport is not desirable in the long-term. It reduces the area available for development and becomes a maintenance burden on businesses operating at the airport. Groundwater can also become contaminated in areas where large numbers of on-site waste management systems are installed. The scope of new business activities at the airport can also be reduced to those businesses that don't generate large volumes of liquid waste.

From an environmental management and sustainability perspective, it is necessary to connect Cowra Airport to the Cowra Reticulated Sewerage System.

A small rubbish dump has also been established to the south of existing airport buildings, near the corner of Airport and Boundary Roads. All rubbish should be removed from this site and disposed of at Council's Materials Recycling Facility.

8.7 Cowra Abattoirs Waste Water Treatment Ponds

The Cowra Abattoirs evaporation ponds are located directly south of the Cowra Airport. The ponds potentially pose a bird strike risk for aircraft, particularly from larger bird species such as swans, pelicans, cranes, geese, waterfowl and ducks. It is considered important that a monitoring program be put in place to identify any significant bird strike hazards at the airport site or the Cowra Abattoirs evaporation ponds.

8.8 Supply of Building Blocks

Analysis indicates that there are historically low levels of industrial land take-up at the Cowra Airport.

In more recent years however, there has been unprecedented demand from the private sector for land at the airport. As a result a number of new businesses have established operations at the airport site. Out of the 14 allotments available for private sector purposes, only one allotment is not being fully used for aviation-related purposes. Survey of existing private businesses established at Cowra Airport confirms that most have plans to grow and expand their businesses at the airport.

Cowra Council continues to receive enquiries from new business operators about the availability of airport land, either for sale or lease, for aviation-related and industrial purposes. One of the main drivers for airport land at Cowra is the lack of supply and rising land prices being experienced at other larger airports. Emerging opportunities include:

- Pilot training.
- Emergency services facilities.
- Manufacturing, maintenance, repairs, warehousing and distribution.

The lack of supply of developable land at Cowra Airport is starting to have a negative impact on the growth and development of the airport. There is concern that new business opportunities are potentially being redirected to other airports.

Figure 12 shows the main constraints that might affect future operations and developments at the airport site.

Figure 12 – Airport Constraints



LEGEND

- | | |
|----------------------------|----------------------------------|
| Existing Airport Layout | Surface Water Flow |
| Cowra Airport Boundary | Northern Ring Road Option |
| Flood Prone Lane | Regional Highways |
| Existing NDB Location | Existing Vegetation Communities |
| Existing NDB Buffer - 150m | Surface Water Dams |
| Existing VOR Beacon | Vulnerable Groundwater Resources |
| VOR Buffer | Rivers and Creeks |
| Cowra Gun Club Precinct | Abattoir Waste Treatment Ponds |
| Water Logged Areas | Weather Station |
| Existing Rubbish Dump | Weather Station Buffer - 100m |
| Cowra Abattoir Buffer Zone | Adjoining Rural Res Development |

0 150 300 600 m



**Cowra Airport Master Plan
Figure 12 - Constraints and Opportunities Map**

9 Airport Planning Analysis

The CASA *Manual of Standards Part 139 - Aerodromes* sets out the relevant airport planning criteria.

9.1 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 have been constructed to code 3C standards. The following table indicates the size of aircraft that determine the Aerodrome Reference Code.

Table 2 - Aerodrome Reference Code

Code No.	Code Element 1		Code Element 2		
	Aeroplane length	Reference field	Code Letter	Wing span	Other main gear when 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

The above table is copied from the CASA Manual of Standards Part 139, Chapter 2.

9.2 Determining Runway Length, Width and Strength

The Aeroplane Reference Field Length (ARFL) published by aircraft manufacturers for each aircraft type determines the runway length.

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 and SAAB 340.

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 Cowra unrestricted in its current configuration (i.e. the runway length, width and the current pavement strength do not limit these aircraft).

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 15/33 pavement strength at Cowra Airport has a published low PCN (10) but this may have been lowered over the years to preserve the pavements.

Table 3 - Typical Aircraft Types

Aircraft	Seats	ARFL	MTOW (kg)	ACN
Dash 8-300	50	1122	18642	14
Dash Q400	70	1354	29000	18
Jetstream 31	19	1440	7000	5
Kingair 350	12	1100	6800	8
SAAB-340	30	1220	12370	8
Metro III	18	991	6577	10
Challenger 604	12	1780	21500	17
Learjet 55	8	1292	9298	10
Jetstream 41	32	1500	10433	5

9.3 Selected Design Aircraft

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

9.4 Aircraft Activity Forecast

Master Plans usually include aircraft activity forecasts. Cowra 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 will 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 weekly movements observed by airport staff. A movement is defined as the landing and take-off of one aircraft. Observed movements at Cowra Airport are between 175 - 225 movements per week which is an annual movement between 9,000 and 11,000.

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. The other area of growth in aviation that may occur is with charter operations. Taking into consideration these factors, a 1.5% compound growth rate has been applied for all aircraft activity at Cowra Airport. Applying this growth rate indicates that the forecast movements in the year 2023 could be in the range of approximately 11,000 to 13,500 movements per annum.

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.

9.5 Obstacle Limitation Surfaces

The Obstacle Limitation Surfaces (OLS) are determined by the Aerodrome Reference Code for each runway. At Cowra Airport runway 15/33 is a Code 3 runway and runway 03/21 is a Code 1 runway. The OLS is surveyed annually by a specialist surveyor and the information is published in ERSA-RDS. In addition a current OLS chart has been produced and is shown in Figure 13.

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

Future buildings erected close to both runways may be required to have a maximum building height restriction applied to ensure that they remain below the transitional surface.

Figure 13A – Cowra Airport OLS – Inner Horizontal Surface

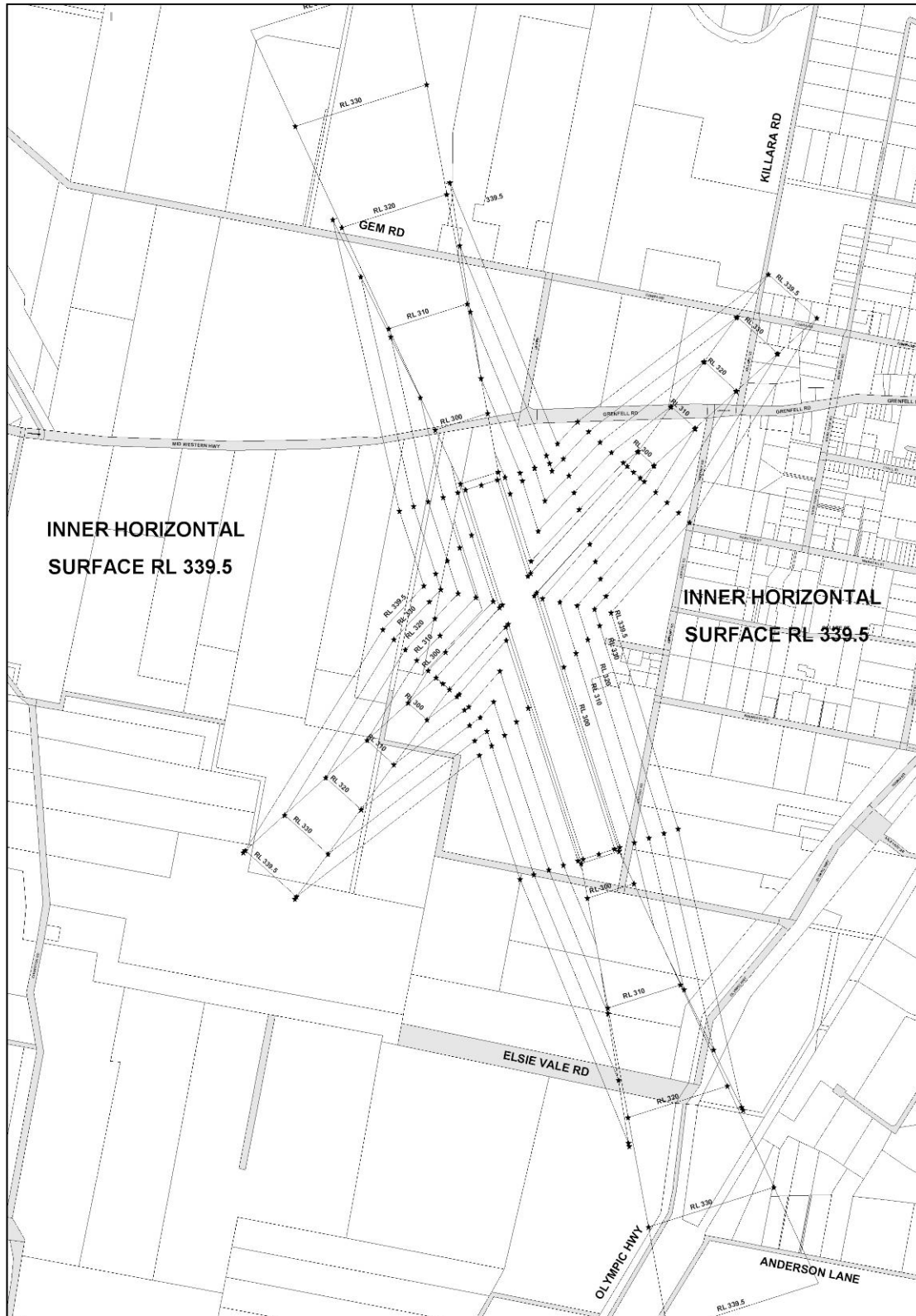
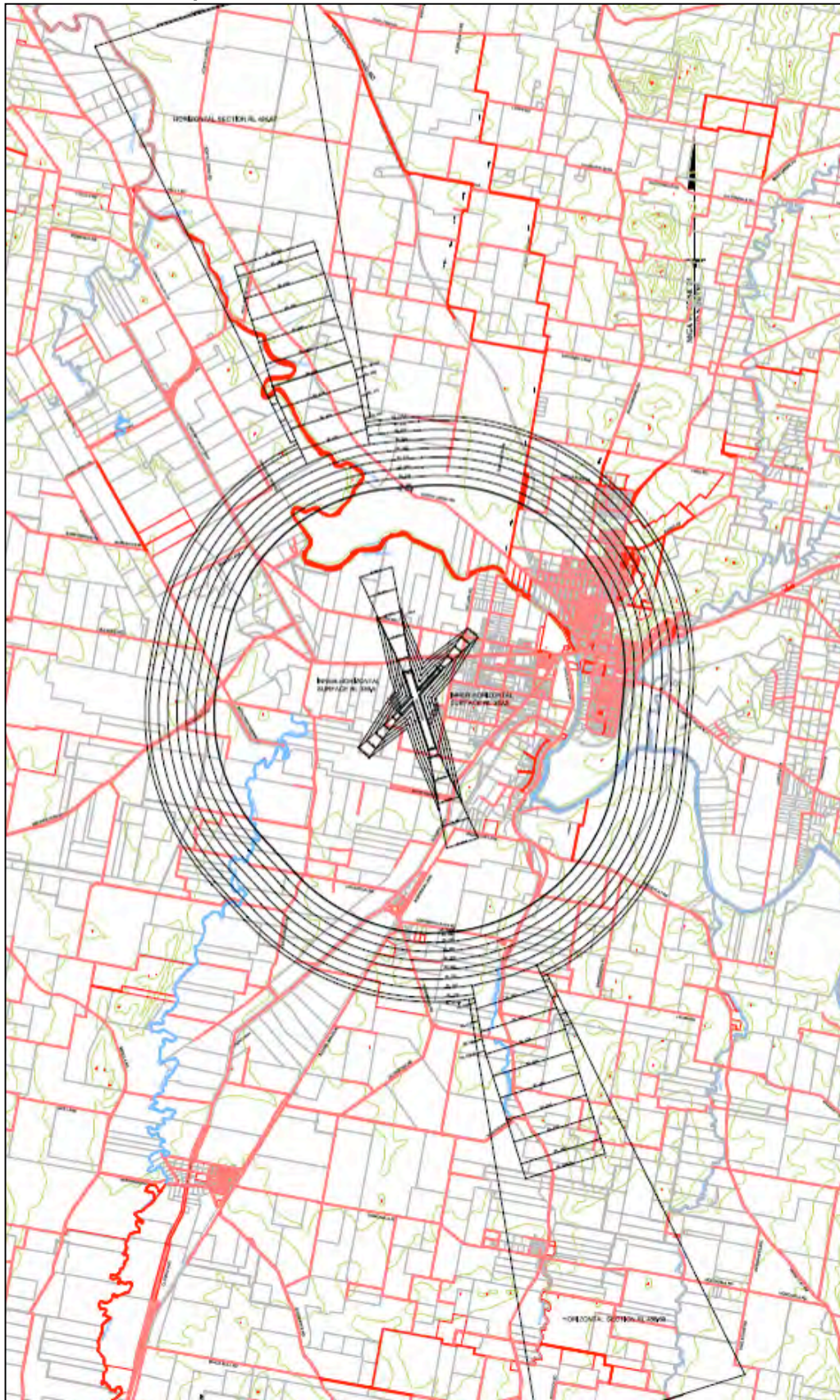


Figure 13B – Cowra Airport OLS – Outer Horizontal Surface



9.6 Australian Noise Exposure Forecast

Cowra Airport is only used by light aircraft and due to the low number of aircraft movements these aircraft do not generate sufficient noise for an Australian Noise Exposure Forecast (ANEF) to be meaningful.

An ANEF is not being produced as part of this Master Plan. The ANEF system adopted in Australia is a planning tool used to forecast the level of noise generated by aircraft operations at an aerodrome. The level of noise is determined by the size and type of aircraft, the number of movements and whether the movements occur during the day or at night. Wind conditions and runway orientation are also factored into the model that is used to produce the ANEF.

If a pilot training school was established at the airport, or an RPT service was reintroduced, Council should consider undertaking an ANEF study.

10 Airport Master Plan

This section sets out the Master Plan for Cowra Airport. The Master Plan is made up of four components, being:

1. Precinct Plan
2. Layout Plan
3. Servicing and Infrastructure Plan
4. General Land-use Guidelines

Following this there is a discussion of the issues relating to surrounding land and recommendations for the proposed new Local Environmental Plan and Development Control Plan.

10.1 Master Plan – Precinct Plan

A precinct plan, generally based on the preferred functionality of the Cowra Airport, is shown on Figure 14.

These precincts are discussed in more detail below:

- **Precinct 1** - contains the existing airfield facilities, including the runways, taxiways, aprons and fuel facilities. The precinct must be retained and protected for future airport operations. The apron area located in front of the terminal precinct must be preserved to ensure that any start-up airline that may decide to operate from Cowra Airport can do so at short notice. It would be desirable to relocate the weather station to an area that will not be affected by future development activities.
- **Precinct 2** - contains the terminal building and a number of privately owned / leased allotments used for the manufacturing, servicing and storage of aircraft. The Rural Fire Service and State Emergency Service have established premises in this precinct. This precinct should continue to be developed for aviation related private sector uses. The existing terminal building is old and nearing the end of its useful life. A new terminal building may be required in the future and therefore a building envelope for this to occur has been shown. This area should be protected. If a new terminal building was to be developed, particularly in association with a regular passenger service, additional car parking may be required. The area immediately east of the terminal building has been reserved for car parking.

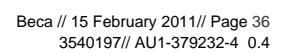
The only potential problem identified in this precinct is the distance between the title boundaries of Lot 1 DP 1131538 (Lachlan Aerowork) and Lot 5 DP 1131266 (PG Aviation). The current configuration of the allotments only allows for a 24 metre gap between the title boundaries of the two properties. The largest aircraft likely to use this area at the moment is the Air Tractor 802, which has a wingspan of 18.04 metres and an undercarriage width of 3 metres. The standard Code B taxiway strip width in total is 33 metres, which allows the operation of aircraft of up to 24 metres wingspan. CASA have advised that the width of the taxiway strip can be reduced to 28 metres which will allow safe operations of an aircraft with a wingspan of 19 metres. On this basis an additional 4 metres of clearance would be required between the existing title boundaries of Lot 1 DP 1131538 (Lachlan Aerowork) and Lot 5 DP 1131266 (PG Aviation).

A possible solution is to create either 2 two metre easements on both existing titles or 1 four metre easement on one of the lots. Consultation with the owners is required to resolve this issue.

- **Precinct 3** - is the ideal area for expansion of aviation-related and light industrial development. Upgrading of water and sewerage reticulation as well as stormwater drainage will be required to accommodate new developments. This precinct can be developed as a business park in stages, depending on demand. The lots adjacent to precincts 1 and 2 should be the first stage of development. The NDB will need to be relocated to realise the full development potential of this business park.

A 30 metre wide landscaped strip is proposed along the boundary of precinct 3 to provide a buffer between airport developments and housing on the east side of Airport Road. The layout of the taxiways and hangar development ensures that aviation activity can be separated from public access roads which are located at the rear of the hangar sites. The proposed taxiways servicing the hangar sites have been planned to ensure that there is adequate parking in front of hangars for stationary aircraft without restriction to taxiing aircraft. Various sized hangar sites have been included in the concept to ensure the greatest flexibility for any potential future development.

- **Precinct 4** - reserves additional land for future development purposes. Until this land is required for development purposes it should continue to be used for agricultural activities.
- **Precinct 5** - this area should be reserved for future aviation related use. It is potentially a suitable location for aircraft parking for large events (e.g. SAAA events). Previously SAAA aircraft have parked in precincts 2 and 3. When aircraft are no longer able to park in precincts 2 and 3 a new parking area could be provided in Precinct 4. The NDB and weather station should also be located to this precinct. The eastern boundary of the precinct provides an ideal location for the Cowra Greyhound Racing Club slipping track.
- **Precinct 6** - adjoins the Mid Western Highway at the northern end of the airport site. It is currently used by the Cowra Gun Club as well as for agricultural purposes. Part of the precinct is subject to OLS restrictions and requirements relating to highway access. This precinct should not be further developed.
- **Precinct 7** - There is no potential for developing this precinct due to the location of the VOR in the centre of this precinct. The VOR is an important navigational aid, particularly for pilot training and it is envisaged that it will be retained at Cowra Airport for at least the next 10 - 15 years. The VOR has a minimum restricted area of 300m radius that should be kept clear of unauthorised vehicles and personnel. It is preferable that there is a clearance zone of 600m radius that has no structures, buildings, trees, fences, towers or power lines if they extend above an elevation angle of one degree from the VOR site.



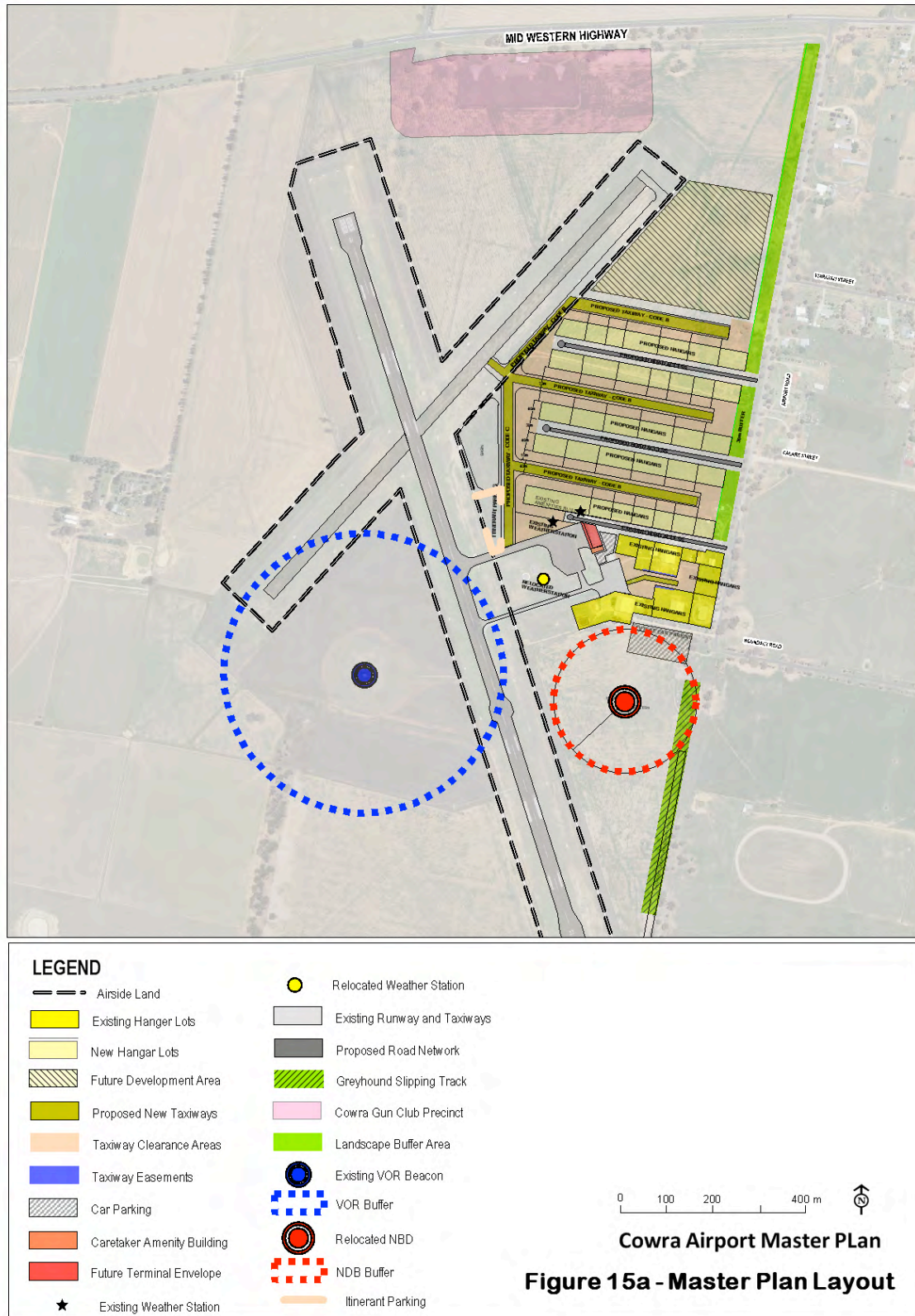
10.2 Master Plan – Layout Plan

A preferred future layout plan for the Cowra Airport is shown in Figure 15.

The key features of the Layout Plan are that it:

- Protects the airport's primary function for aviation activities and ensures that aviation associated activities can continue well into the future.
- Ensures that future development within the aviation zone, including any new hangar buildings, comply with CASA standards and requirements.
- Provides for the growth of General Aviation activities on the site and allows flexibility for aviation-related development to expand as the need arises, particularly in terms of further hangar space.
- Relocates sensitive navigational facilities to an area on the airport site that will not be subject to potential interference from other activities.
- Allows the development of surplus land, not required for aviation purposes, provided the use does not prejudice the ongoing operation of the airport.
- Recognises the role of the airport as an important facility for emergency services, including NSW Rural Fire Service, Air Ambulance and CareFlight.
- Caters for expansion of recreational / tourism aviation events.
- Supports the ongoing use of the airport by local community clubs, provided the use does not prejudice the ongoing operation of the airport.
- Ensures that future development of the site responds to the environmental and planning constraints of the site and the surrounding land-uses.
- Ensures that future development of the site is provided with appropriate infrastructure services.

Figures 15a Airport Master Plan Layout



Figures 15b Airport Master Layout – Precincts 2 and 3



Legend - Refer Figure 15a

Scale 1 : 3,500

Cowra Airport Master Plan

**Figure 15b - Master Plan Layout
Precincts 2 & 3**

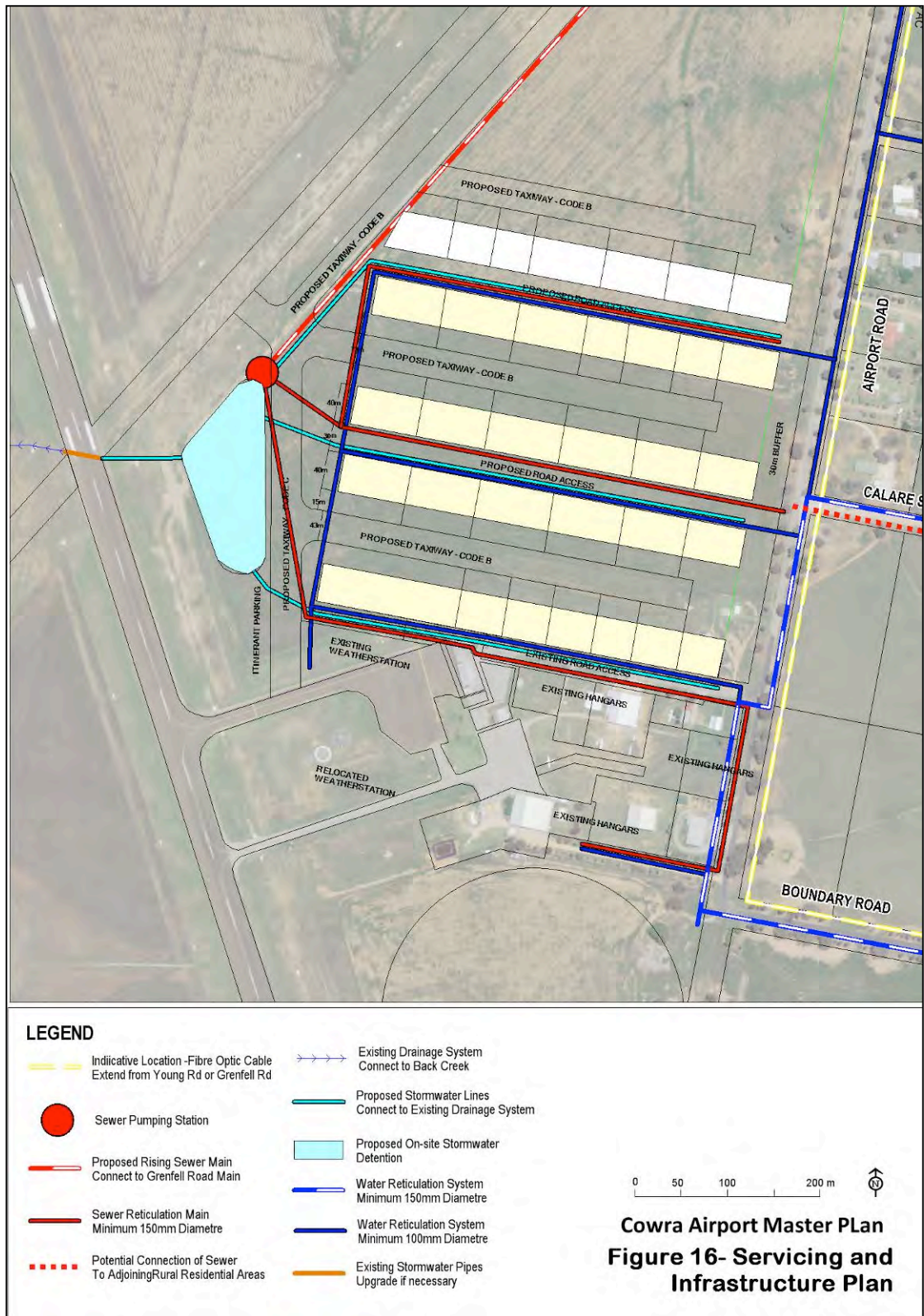
10.3 Master Plan - Servicing and Infrastructure Plan

An indicative servicing and infrastructure plan is shown in Figure 16. This plan underpins the development of the Cowra Airport along the lines of the preferred future development layout plan.

The servicing and infrastructure upgrades required are discussed in more detail below:

- **Sewerage Reticulation** - for any significant development to occur at the airport site, underground wastewater infrastructure will be required. Given the topography of the site it will be necessary to drain sewage to a sewer pump station(s) that can then feed into the Cowra Sewerage Reticulation System.
- **Water Reticulation** - upsizing the water main in Airport Road from a 100mm diameter main to a 150mm diameter main will ensure that future developments at the airport site will have adequate water pressure and supply. An inter-connected network of the water mains has been designed to service precinct 3, which should achieve good water quality and pressure.
- **Power** - for development with significant electrical loads to occur on the site, it is envisaged that an upgrade of the power infrastructure will be required. The relevant energy provider should be contacted for further information.
- **Stormwater** - drainage is required to service precinct 3 and to alleviate the wet ground conditions experienced on other parts of the airport site. It is proposed to incorporate on-site detention and additional drainage pipes / channels to properly manage stormwater at the airport site.
- **Telecommunications** - Additional telecommunications hard wired capacity is assumed to be laid in the road reserve in a common trench with other services. Fibre optic is required and should be augmented from the cable in either the Young Road or the Grenfell Road.
- **Vehicular Access** - Vehicular access to the airport site is generally satisfactory having regard to current airport operations. New sealed roads will be constructed to service new developments in precinct 3 and the air-related facilities at precinct 5. The following opportunities to improve site identification are recommended in the short term:
 - Installation of lighting at the entrance to the airport.
 - Installation of improved signage to identify the airport.
 - Installation of improved directional signage from key transport routes.
 - Improved identification of the airport and directional signage are important requirements in terms of risk management.
 - Review of the intersection of the Mid-Western Highway and Airport Road to take into account traffic volumes increase.
- **Gas** - no provision for gas reticulation has been made to the airport site.

Figure 16 – Servicing and Infrastructure Plan



10.4 General Land-use Guidelines

10.4.1 Cowra Airport Site

The use and development of the precincts should be consistent with the following guidelines and requirements.

- A detailed precinct development plan should be prepared prior to development in any individual precinct.
- Industrial activities should not produce air emissions that are likely to impact on aviation activities or nearby residential housing.
- Building lighting should not impact on airport operations or adjoining roads and residential housing.
- Landscaping should not be 'bird-attracting'.
- Development should not impact on any significant environmental or cultural heritage values of the aerodrome site.
- Buildings should not exceed the heights specified in the Obstacle Limitation Surfaces (OLS) chart that will impact on flight paths or airport operations.
- Land-use and development restrictions relating to the weather station, NBD and VOR should be met.
- Land-uses that create high levels of noise should be discouraged in close proximity to Airport Road.

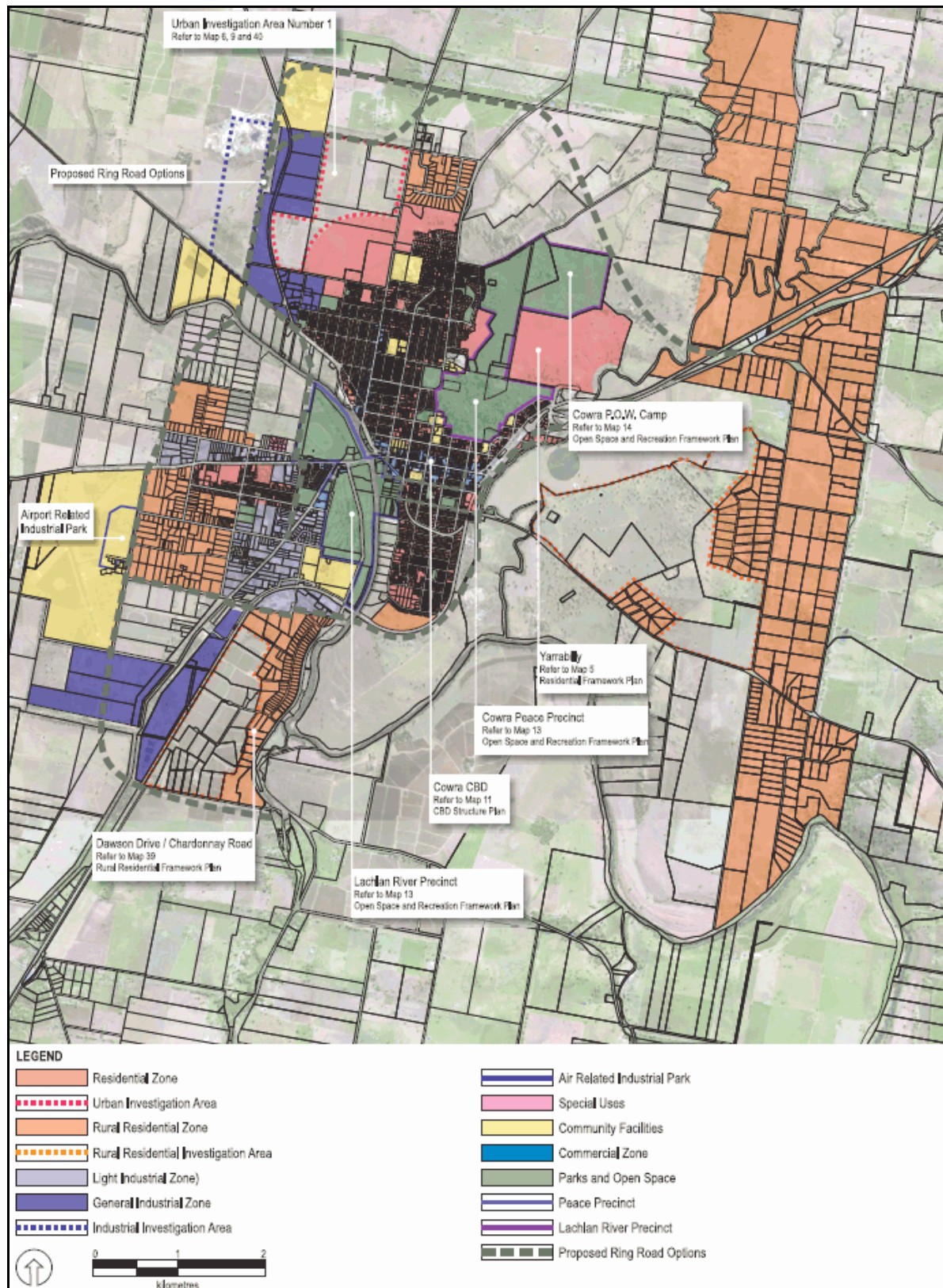
10.4.2 Land Surrounding Cowra Airport

The key issue in relation to land surrounding the Cowra Airport is to ensure that its use and development does not prejudice the ongoing operation of the airport. Generally, there are two primary methods of ensuring this, including:

- Ensuring that any land-use changes surrounding the airport are not sensitive to aircraft noise (e.g. residential land uses); and
- Ensuring that development proposals within the influence of the airport do not conflict with the airport's Obstacle Limitation Surfaces (OLS).

A long term strategic land-use framework has been developed as part of the Cowra Shire Land-use Strategy, dated August 2009 prepared by Collie Consultants Pty Ltd on behalf of and in association with Cowra Shire Council. Key features of the Cowra Township Framework Plan, detailed in Figure 17.

Figure 17 - Cowra Township Framework Plan



Source: Cowra Shire Land-use Strategy, August 2009

Elements of the Township Framework Plan that are of particular relevance to the Cowra Airport Master Plan are:

- The Cowra Airport is located adjacent to the West Cowra Rural Residential zone. This area, bounded by the Mid Western Highway to the north, Airport Road to the west and Boundary Road to the south, is currently zoned 1(c) Rural Small Holdings in accordance with the Cowra Local Environmental Plan 1990. Development standards prescribed under the Cowra LEP 1990 currently permit the subdivision of land into minimum 4,000m² allotments. The Strategy proposes to retain a similar zone for this area in the comprehensive new LEP, however new minimum lot size requirements have not been finalised at this stage.
- A pocket of land, comprising an area of approximately 80 hectares, is located to the south of Boundary Road, adjacent to the southern part of Cowra Airport site. There are several existing dwelling-houses located closer to the Olympic Way, however the land is predominantly used for agricultural related purposes. This area is currently zoned 1(a) Rural under Cowra LEP 1990. The Strategy proposes to retain a similar rural zone for this area in the comprehensive new LEP.
- A pocket of land, comprising an area of approximately 87 hectares, is located to the south east of the Cowra Airport Site. The area is currently zoned 4(a) Industrial and is currently used for water irrigation and stock holding purposes as part of the Cowra Abattoir's operations. The Strategy proposes to retain an industrial zoning for this area in the comprehensive new LEP.

The strategic land-use framework proposed in the Cowra Shire Land-use Strategy does not propose any significant land-use changes surrounding the Cowra Airport which would prejudice the ongoing operation of the airport including development for aviation and non-aviation related industrial uses. Strategically, it is important to prevent future intensification of residential or rural residential uses in the vicinity of the Cowra Airport. The most appropriate method of achieving this is through the adoption of appropriate minimum lot sizes in the comprehensive new Local Environmental Plan. A key recommendation of the Cowra Airport Master is therefore to ensure that residential land-use within the existing West Cowra rural residential precinct is not intensified. Similarly, it is strategically important to ensure that airport sensitive land-uses, such as residential or rural residential land-uses, do not further encroach on the airport site. The land-use framework proposed in the Cowra Shire Land-use Strategy supports this approach.

All development approvals must take account of the airport's Obstacle Limitation Surfaces (OLS). All development proposals will need to comply with the OLS, so as to ensure future building envelopes do not allow for building heights which intrude and therefore compromise future aviation requirements.

Appropriate development controls are required to ensure regulation of all structures so that future aviation requirements are not compromised and that the OLS can be enforced. The preparation of a comprehensive DCP for the Cowra Shire presents a suitable opportunity to review the existing development controls relating to the OLS at the Cowra Airport. This is important to ensure that there is appropriate control in relation to development of land surrounding the Cowra Airport.

It is not considered that Cowra Airport currently warrants other noise management measures. Commonwealth Government Policy requires the adoption of the Australian Noise Exposure Forecast system for determining likely noise exposure as contained in Australian Standard AS 2021 -2000 "*Acoustics - Aircraft Noise Intrusion - Building Siting and Construction*". The need to prepare an ANEF and to include relevant planning provisions should be reviewed in the event that there is a substantial expansion of aviation related use, or in conjunction with the establishment of new aviation uses.

11 Implementation of Airport Master Plan

This Master Plan provides Cowra Council with a strategic direction for future development of the Cowra Airport. It is a broad strategic document that aims to assist Council in planning for the next 30 years. Implementation of this plan will require a number of actions to be undertaken. It is therefore recommended that, as a first step, Council adopt this Master Plan.

It is also recommended that an implementation plan be prepared identifying immediate, medium-term and long-term actions to achieve the vision and directions identified by the Cowra Airport Master Plan. The implementation plan should clearly identify all required actions, lead agency, stakeholder interest and priority. Particular attention should be given to potential partnership opportunities and required funding.

The implementation plan will be an important tool to achieve further economic development and to facilitate provision of additional industrial land supply in Cowra. Specific actions to achieve this include:

- Rezone the Cowra Airport site to an appropriate zone under the Standard Instrument which allows the continued use of the site for airport purposes and a broader range of aviation uses and limited non-aviation related industrial uses as described in the Master Plan Precinct descriptions.
- Review and update all development controls relating to the Cowra Airport and surrounding land-uses to include an updated Obstacle Limitation Surfaces (OLS) and to protect airspace from inappropriate structures.
- Prepare detailed subdivision layout and engineering design plans for each of the recommended precincts for use in lodging Development Applications (DA), as and when required. Building envelopes should be shown on all development lots to allow assessment of OLS requirements. Geotechnical investigations should also be undertaken for each building envelope, with such information being submitted with the DA.
- Define the staging of development and sequencing of infrastructure and service delivery as part of the preparation of future Cowra Shire Council Management Plans.
- Confirm transport and traffic management arrangements, having regard to the overall road layout and access proposals which are identified in the Master Plan.
- Resolve the imposition of hangar lots on taxilane width.
- Relocate the NDB and weather station and confirm the buffer requirements for all navigational equipment located at the airport site.
- Undertake an ANEF study if the need arises.