PORT AUGUSTA
LAURIE WALLIS AERODROME
MASTER PLAN

2016 – 2036

VERSION 1. June 2016

1 INTRODUCTION

1.1 Overview of the Airport

Port Augusta Laurie Wallace Aerodrome is located 5km west of the City of Port Augusta in the State of South Australia, 300km or 50 minutes flight from Adelaide. Access to the aerodrome from Port Augusta is via Caroona Rd and Gap Rd. The Aerodrome is owned and operated by the Port Augusta City Council.

Port Augusta Aerodrome is a Certified Aerodrome and currently services twice-daily Regular Public Transport (RPT) flights by 18 seat turbo prop Metro 23 aircraft flown by Sharp Airlines. The airport also services the mining industry in the north of the state though fly in fly out (FIFO) services by Alliance Airlines and Heathgate Resources using turboprop and jet aircraft under closed charter arrangement.

Port Augusta Airport hosts the base for the Royal Flying Doctor Service Central Operations Communications Centre, from which Tasking Coordinators receive emergency calls, plan and assign all retrieval flights from Adelaide, Alice Springs and Port Augusta, whilst providing after-hours back up for Broken Hill Base (operated by South Eastern section).

The aerodrome also accommodates a number of hangars for storage and maintenance of aircraft used in private flying, flying training and aerial work.

1.2 Purpose and Objectives of the Master Plan

The purpose of the Master Plan is to provide:

- a realistic representation of the future aerodrome layout which maximises operational capacity in manner compatible with the community, the environment and expanded commercial development within the aerodrome;
- long term planning that is sufficiently flexible to respond to changes within the region and the aviation industry;
- the airport operator, State and Local Governments, aviation sector, local community, commercial users, stakeholders, the broader community and investors with the confidence to plan for the future development of the aerodrome and its surrounds; and,
- the basis for planning aviation activities, land and commercial development, environmental management and infrastructure delivery in an integrated and timely manner.

Key objectives include, but are not limited to;

- maintain the ability for aircraft to operate safely without undue restriction;
- facilitate the ability of the aerodrome to grow and expand in response to demand;
- promote the role of the airport and its significance as a community asset;
- safeguard the airport's long term plans;
- ensure compliance with relevant regulations; and,
- manage environmental and heritage constraints.

The Master Plan also aims to minimise the potential encroachment of incompatible activities and development in the vicinity of the aerodrome, particularly in terms of:

- aircraft noise impacts;
- intrusions into the protected airspace;
- distractions to pilots from lighting in the vicinity of the aerodrome;
- wildlife strikes;

- building generated wind-shear and turbulence from nearby development;
- public safety; and,
- impacts on navigational aids.

1.3 Methodology and Consultation

The consultation program adopted at Port Augusta has included direct consultation with stakeholders including Council, RFDS, industry, airline operators and local general aviation (GA) operators.

1.4 Report Structure

This Master Plan comprises 2 parts; - background information - Sections 1-3 and Master Planning - Sections 4 onwards.

2 MASTER PLAN CONTEXT

2.1 Historical Background

The first recorded landing at Port Augusta occurred in 1920 when an aircraft landed at an area identified as a “suitable landing place for aero-planes”. This area, previously a polo ground was known as W E Whiting’s paddock. At this time airplanes were considered to be the latest thing in up-to–the- minute modern scientific advancement with a flight from Adelaide to Port Augusta taking only two hours and twenty minutes. Around this time there was much national interest in establishing an air mail and possible passenger service between Perth and Adelaide. To be a link in the national air mail route was a cause of local excitement and pride. Once again the Port’s strategic position made it a part of larger plans. (Information from R J Andersons book “Solid Town - The History of Port Augusta).

An area of land was identified as being suitable for a landing ground located approximately 2.5 miles from Port Augusta. The identified land was leased by the Port Augusta Racing Club and at a special committee meeting held on the 22nd November 1937, a resolution was passed that the Racing Club, offer the Corporation of Port Augusta the required area of Perpetual Leasehold land as surveyed by Captain Royal of the Civil Aviation Department, for an aerodrome, in exchange for a 42 year lease with the right of renewal of the present Racecourse under the same conditions as the previous 42 years. In a letter dated 3rd December 1937 it was agreed that in exchange for council granting the club a 42 year lease the Port Augusta Racing Club would make available the area of land as shown in the survey by Inspector Royal of the Civil Aviation Department. Following an inspection by the Department of Civil Aviation in August 1941 it was identified that the site required remedial works and once this work was completed it would render the area suitable for licensing as a “B” class aerodrome in dry weather only. For all weather use it would be necessary to construct hard surfaced runways with a complete drainage system. (the current Port Augusta Airport is located on this site.)

As a result of three aircraft crashes in the Port Augusta area in 1945 the Royal Australian Air Force (RAAF) sought to register the site as an ‘Emergency Landing Ground”. Council was asked by the Air Force to purchase hurricane lamps for marking the ground at night and attend to mark the ground so that it could be easily discernible from the air .This was done with the air force advising on the actual requirement of the markings. The current Laurie Wallis Airport is situated on this site.

The sealed runway 15/33 was constructed and opened on the 9th May 1984 with a further upgrade and extension completed and officially opened on 22nd July 1999.

The Royal Flying Doctor Service Central Operations was formed in 1936 and initially operated (from 1937) as the South Australian Section out of Broken Hill jointly with the New South Wales Section. The first base owned and operated independently by SA Section was opened in Alice Springs in 1939. The SA Section operating out of Port Augusta Airport base became Central Operations in 2001.

Sharp Airlines commenced RPT services to Port Augusta on 28th April 2008 using a Metro 23 aircraft. The 18 seat operation occurs twice daily, 5 days per week Monday through Friday. There are no weekend RPT flights. Previously the aerodrome was serviced by O'Connor Airlines, predominantly using nine a seat aircraft. O'Connor Airlines ceased operations in December 2007.

A number of charter and air transport aircraft services are now staging through Port Augusta en-route to the various mine sites in the north of the State. Both Fokker F50 turboprop and occasional F70 and F100 jet aircraft regularly transit Port Augusta en route to the Prominent Hill Mine. A Cessna Bravo jet services to the Beverly Mine 3-4 times a week via Port Augusta. Other locally based operators use twin and single engine light aircraft for flying training and aerial work.

2.2 Socio-Economic Context

The Port Augusta Airport provides the community of Port Augusta and surrounding areas access to services, including, education, health and training across all socio-economic levels. Health and education specialists utilise commercial flights, allowing important services to be delivered directly to the Port Augusta community that would otherwise only be available in Adelaide.

The airport provides a strategic base for fly-in fly-out workers drawn from the district, travelling to at mines in the States north, giving increased employment opportunities and the ability to participate in higher paying mining jobs. The airport also enables local workers to live in Port Augusta while undertaking regular travel to Adelaide for work, training, meetings etc.

2.3 Regulatory Context

Port Augusta aerodrome is a Certified Aerodrome and required to comply with the Civil Aviation Safety Authority (CASA) regulations as delegated in their Manual of Standards Part 139 – Aerodromes.

As the airport receives an RPT service it is a designated security airport which requires controlled access to airside. The current RPT aircraft are less than 20 tonnes and do not require electronic screening of passengers and luggage. This also applies to closed mining charters which involve use of an aircraft above 20 tonnes. Screening is required for tourist charter F50 services where tickets are available to the public for purchase.

2.4 Policy Context

The land use provisions of this Master Plan are based are based on the Port Augusta City Council Development Plan consolidated on 15th November 2012.

National perspective:
Airports are critical pieces of national infrastructure and suitable locations are scarce. The current and future viability of aviation operations at Australian airports can be threatened by inappropriate development. Communities under flight paths and near airports can be affected by issues including noise, development restrictions and safety risks.

In the interest of safety and public amenity, development needs to be carefully managed in the vicinity of airport operations. However, there is also a need for airports to be easily accessible to population centres and for developments to be undertaken in a way that is compatible with airport operations, both now and into the future.

The National Airports Safeguarding Framework (NASF) was developed with the above in mind and comprises overarching Principles and Guidelines. Section 11 of this Master Plan (Airport Safeguarding Plan) provides further detailed information on the Framework.

State-wide Perspective:
The SA Government has seven strategic priorities. These include making South Australia an affordable place to live. The quality of life for South Australians is influenced by the rising costs of housing, transport and utilities. Regional airports are an important component of the transports sector.

SA Government Strategic Plan targets include the provision of key economic and social infrastructure accommodates population growth.

Regional population levels are forecast to increase in regional areas, by 20 000 to 320 000 or more by 2020. Access to the area is a key component for the increased population.

Tourism Industry: Increase visitor expenditure in South Australia's total tourism industry to $8 billion by 2020. Port Augusta is a regional centre and seen as a gateway to a number of significant tourism areas.

The Integrated Transport and Land use Plan provides to maintain aviation assets – to continue to actively support local councils and airport owners in maintaining regional and remote aviation assets. It also seeks to work with local council to identify upgrades of strategically important local airports and aerodromes

2.5 Previous and Current (Master) Plans

The Master Plan was developed in 2015/16. This Master Plan had been prepared on the basis of a 20 year planning horizon.

A previous Master Plan was completed by Aerodrome Design Pty Ltd in 2009.

2.6 Key Stakeholders

Key Stakeholders for the Port Augusta Airport include;

- Port Augusta City Council
- Royal Flying Doctor Service (RFDS)
- Sharp Airlines
- Alliance Airlines
- Port Augusta Aero Club
- ProSky

3 CURRENT SITUATION

Port Augusta Aerodrome consists of a single, 1650m sealed runway, upgraded in 1999 to accommodate BAe 146 aircraft. While the aerodrome has catered for these aircraft on occasions, there is insufficient apron and terminal facilities available to adequately provide for larger aircraft. Regular passenger services currently involve flights by 18 seat turbo prop Metro 23 aircraft flown by Sharp Airlines. Port Augusta is a major base for the Royal Flying Doctor Service Central Operations Division which recently completed new administration, hangar and workshop facilities.

The aerodrome also accommodates a number of hangars for storage and maintenance of aircraft used in private flying, flying training and aerial work.

3.1 Ownership and Management

Port Augusta Aerodrome is owned by the Port Augusta City Council. Port Augusta City Council does not have a full time employee based at the aerodrome; it has a part time manager operating from the Council Civic Centre in Port Augusta who is assisted by 7 Airport Reporting Officers, with support from the LGAMLS Aerodrome Risk Management Programme and Aerodrome Design Pty Ltd.

3.2 Site Description

Port Augusta Airport is located approximately 5 kilometers west of the CBD. The airport is contained within an area of 77.87 hectares as shown on drawing PAG-011 and is contained within Hundred of Copley, Lot 106 DP 50393, CT 5725/169.

The aerodrome comprises a sealed runway 15/33, sealed Taxiway A, gravel Taxiway B and a sealed apron as outlined in the images below.

3.3 Surrounding Land

Port Augusta Aerodrome is bounded by privately owned grazing land to the north and west. This land is arid and vegetated with salt bush and occasional Acacia and Myall trees. North

across National Highway 1 is zoned Commercial with light industry such as trucking companies and fuel depots predominant. Land to the east and south is zoned Residential but at this stage is not heavily populated.

3.4 Existing Activities

Regular passenger services currently involve twice-daily flights by 18 seat turbo prop Metro 23 aircraft flown by Sharp Airlines.

Port Augusta has been a major base for the Royal Flying Doctor Service Central Operations Division since 2001.

The airport also services the mining industry in the north of the state by accommodates fly in fly out (FIFO) services by Alliance Airlines and Heathgate Resources.

The aerodrome also accommodates a number of hangars for storage and maintenance of aircraft used in private flying, flying training and aerial work.

3.5 Existing Facilities

Port Augusta airport has a sealed main runway, taxiway and apron and a gravelled secondary taxiway. The following is a summary description of the airside pavements:

Main runway
The main runway is designated 15/33 and is aligned 152 degrees magnetic. The runway is 1650m long, constructed and sealed to a width of 30m, in accordance with requirements for Code 3C aircraft operations.

The runway is rated for unrestricted Fokker F70 operations based on technical evaluation.

The runway is contained within a graded 150m wide runway strip which meets CASA requirements for Code 3C aircraft operations on a non-precision approach runway.

Taxiway and Apron
A sealed taxiway and apron is provided off the eastern side of Runway 15/33.

The northern RPT sealed apron can accommodate large charter aircraft up to Fokker 100 size with 2 additional positions for a Saab SF 340 and Dash 8 300 simultaneously. The southern part of the sealed apron is used by RFDS. A GA parking area is provided at the northern end of the main apron is available when not required for large charter aircraft, with additional space available for GA parking on the western edge of the RFDS apron.

Airport Lighting
Runway 15/33 is equipped with low intensity runway lighting at a longitudinal spacing of 60m. Taxiway A is fitted with elevated blue edge lighting. Power is fed from the town mains. A standby generator set is available at the aerodrome for emergency standby power in times of failure. Standby power is not currently listed in the ERSA publication meaning that RPT aircraft are required to a carry additional fuel to alternate destinations in the event of a power failure occurring after last light.

The aerodrome is fitted with 3 illuminated wind direction indicators as well as apron floodlighting.

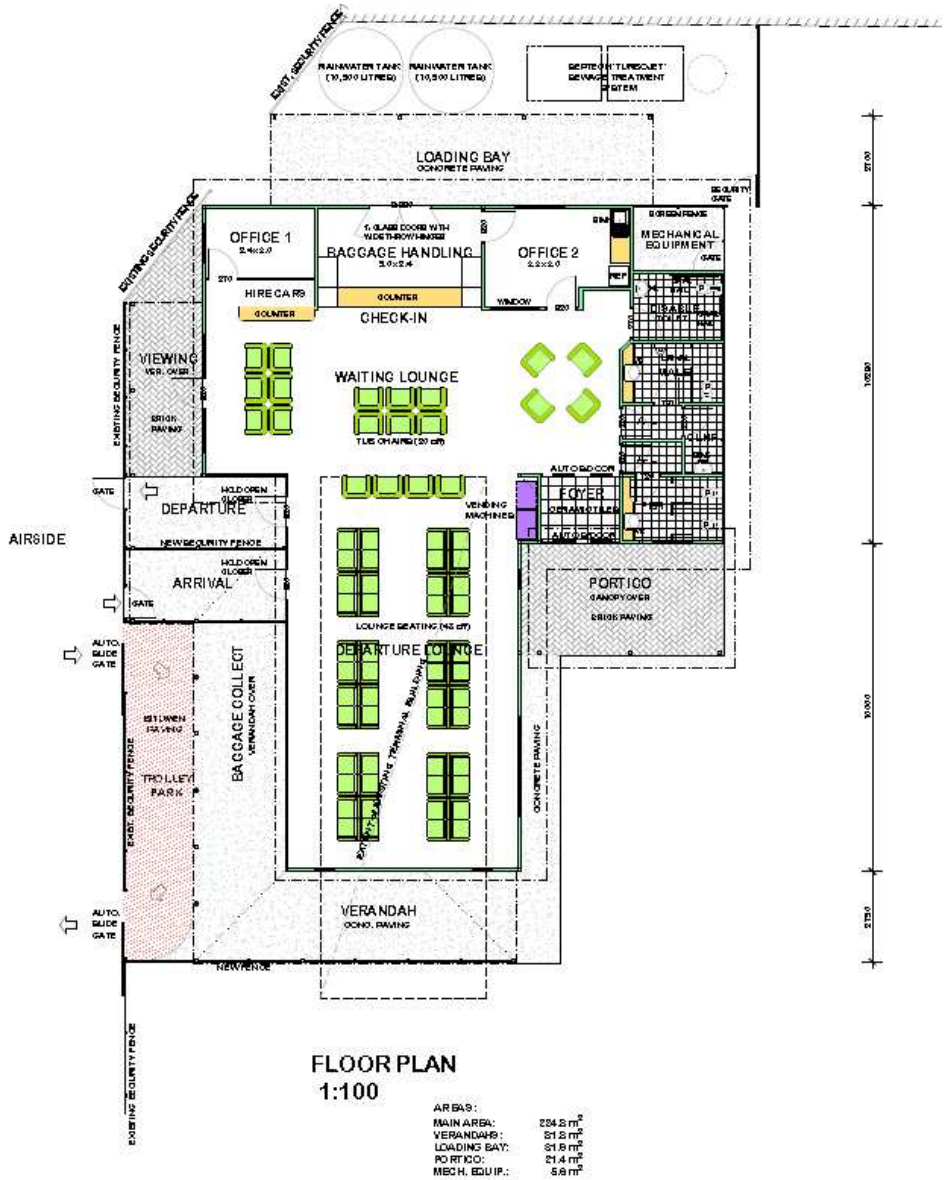
Fuel Facilities

The existing aviation fuel facility at Port Augusta provides 24HR self service CARNET access to:

- AVTUR Jet A1 55kL above external tank.
- AVGAS 25kL above ground external tank.

Passenger Terminal: The current terminal building constructed on the site of the old terminal, was officially opened on the 6th February 2015. The project was supported by funding from the Australian Federal Government, under the Regional Development Australia Program and the South Australian Government and the Port Augusta City Council.

The terminal covers a total area of 365.5 square metres with the layout shown below.



Hangar Facilities: Existing hangars comprise:

- 3 RFDS hangars on the east side of the sealed apron at the southern end.
- Aero Club hangar north of the passenger terminal.
- Emu Rocks hangar north of the aero club hangar.
- Pro Sky hangar and training facility at the northern end of the three hangars.

Non aviation activities include car rental firms:

- Avis
- Hertz
- Ceduna Car Hire

3.6 Ground Transport Access

Sealed road access to Port Augusta Aerodrome is approximately 7km from the city centre via Caroona Rd and Gap Rd.

The local hire car companies have a base at the airport and drop off and pick up of hire cars. The Airport is also serviced by local taxi companies.

3.7 Utility Services

Electricity
A 63 amp three phase underground electrical supply is provided to the terminal building and a 50amp three phase supply to the airport lighting system. An RFDS owned 25 kVA Dunlit generator with an auto switch provides backup power to the RFDS complex and the airport lighting system in the event of a power outage. A 5Kw solar power system is installed to supplement mains power input to the terminal building.

Water
A metered SA Water supply is connected to all airport facilities. The terminal building has rainwater tanks that provide water for toilet flushing, with the water then recycled and used on the landscaped gardens around the building.

Communications
Telstra copper wire and 10mb optic fiber provide landline and internet access to the terminal precinct. No wireless services are available. There is no public telephone service available.

There is CCTV coverage for the Apron area and the RFDS complex that is currently monitored by SAPOL.

Dependant on future funding, a new CCTV system will be installed to cover internal and external areas of the terminal building. This system will be monitored by council's contracted security company.

3.8 Environmental Values

Native vegetation extant on the airport itself is dominated by native grasses, salt bush with the occasional Acacia and Myall tree.

A conservation zone is located within the airport precinct as shown in the Port Augusta Development Plan November 2012. The area is outside the aerodrome boundary fence.

3.9 Heritage Values

The Port Augusta City Council is in the process of signing off of an Indigenous Land Use Agreement (ULUA) with the traditional owners of the land.

4 STRATEGIC VISION AND OBJECTIVES

4.1 Strategic Vision

The strategic vision for Port Augusta Airport is to develop airport facilities that will support growth in regular passenger services, fly in fly out charters tourism charters, the RFDS base and promote increased commercial use of available sites within the airport.

4.2 Objectives

- To continue to promote and develop an efficient and safe airport that meets future community and industry needs and expectations ensuring regulatory systems and compliance with safe airport operations and maintenance are maintained.
- Encourage aviation business development particularly in regards to expanded Regular Public Transport operations, tourist charters the mining industry fly in fly out services.
- Develop the airport in a manner that has minimal adverse impacts on the environment and the surrounding community.

5 CRITICAL AIRPORT PLANNING PARAMETERS

5.1 Forecast of Future Operations

Current RPT and charter services at Port Augusta are intrastate operations utilising turboprop and occasionally jet aircraft up to Code 3C. The largest aircraft regularly operating at Port Augusta has been the 50 seat Fokker F50 with occasional F70 or F100 jets.

The largest aircraft that will potentially operate at Port Augusta in the foreseeable future and 20 year Master Plan timeframe is expected to remain at the Code 3C level.

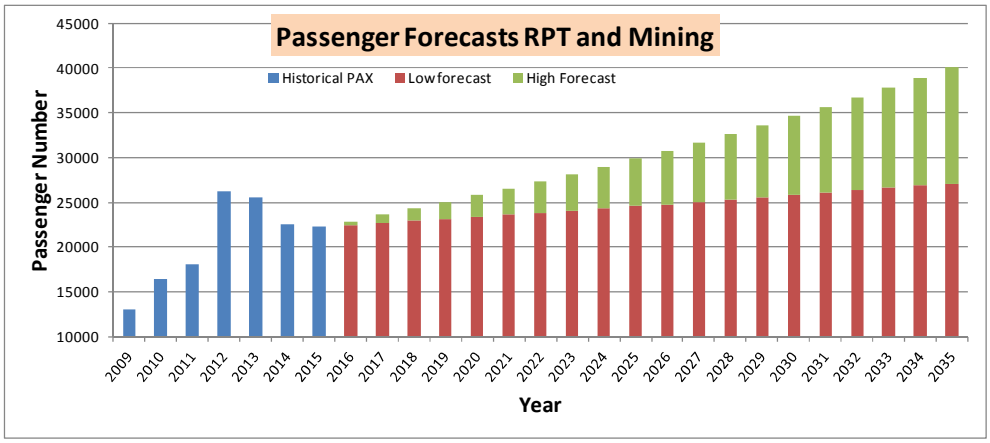
Defence has an increasing presence in the Port Augusta area with the expansion of the Cultana Training Area leading a potential increase in requests for military aircraft such as C130 Hercules. This aspect is difficult to quantify and is not included in the following forecasts.

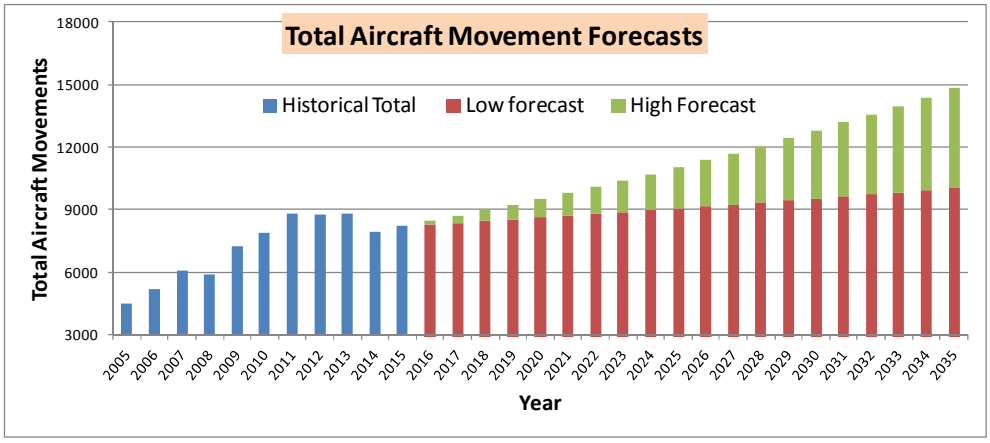
Over the last 10 years the regional area of Port Augusta has experienced moderate growth in economic activity, driven primarily by the mining sector. However the recent down turn in the mining is reflected in declining numbers of passenger and aircraft movements

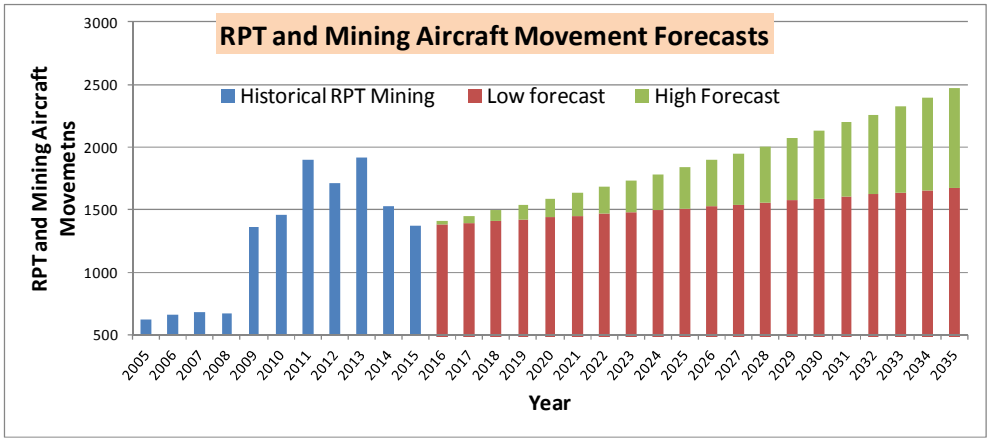
For planning purposes, it is suggested an average annual increase in aircraft movements will range from a high of 3.5% down to a low of 1% to the year 2035. This relatively wide range attempts to cover some of the volatility seen recently especially in mining sector.

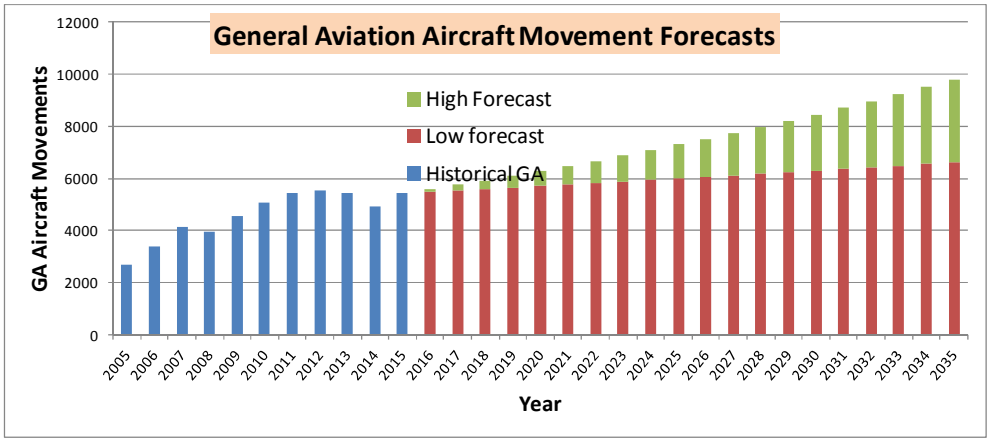
	PAX Numbers		Total ACFT		RPT and Mining		RFDS Movements		GA Movemetns	
Year	Low	High	Low	High	Low	High	Low	High	Low	High
2005			4513	4513	624	624	1182	1182	2707	2707
2006			5164	5164	657	657	1143	1143	3364	3364
2007			6062	6062	684	684	1226	1226	4152	4152
2008			5873	5873	668	668	1238	1238	3967	3967
2009	13039	13039	7242	7242	1358	1358	1320	1320	4564	4564
2010	16431	16431	7902	7902	1460	1460	1349	1349	5093	5093
2011	18110	18110	8821	8821	1902	1902	1454	1454	5465	5465
2012	26292	26292	8732	8732	1712	1712	1487	1487	5533	5533
2013	25511	25511	8800	8800	1919	1919	1454	1454	5427	5427
2014	22492	22492	7912	7912	1525	1525	1437	1437	4950	4950
2015	22220	22220	8206	8206	1368	1368	1411	1411	5427	5427
2016	22442	22887	8288	8452	1382	1409	1425	1453	5481	5590
2017	22667	23573	8371	8706	1395	1451	1439	1497	5536	5758
2018	22893	24280	8455	8967	1409	1495	1454	1542	5591	5930
2019	23122	25009	8539	9236	1424	1540	1468	1588	5647	6108
2020	23353	25759	8625	9513	1438	1586	1483	1636	5704	6291
2021	23587	26532	8711	9798	1452	1633	1498	1685	5761	6480
2022	23823	27328	8798	10092	1467	1682	1513	1735	5818	6675
2023	24061	28148	8886	10395	1481	1733	1528	1787	5877	6875
2024	24302	28992	8975	10707	1496	1785	1543	1841	5935	7081
2025	24545	29862	9065	11028	1511	1838	1559	1896	5995	7293
2026	24790	30758	9155	11359	1526	1894	1574	1953	6055	7512
2027	25038	31680	9247	11700	1541	1950	1590	2012	6115	7738
2028	25288	32631	9339	12051	1557	2009	1606	2072	6176	7970
2029	25541	33610	9433	12412	1572	2069	1622	2134	6238	8209
2030	25797	34618	9527	12785	1588	2131	1638	2198	6301	8455
2031	26055	35657	9622	13168	1604	2195	1655	2264	6364	8709
2032	26315	36726	9718	13563	1620	2261	1671	2332	6427	8970
2033	26578	37828	9816	13970	1636	2329	1688	2402	6491	9239
2034	26844	38963	9914	14389	1653	2399	1705	2474	6556	9516
2035	27113	40132	10013	14821	1669	2471	1722	2548	6622	9802

Table of forecast passenger and aircraft movement numbers.


Passenger Forecasts RPT and Mining
Historical PAX
Low forecast
High Forecast
Passenger Number
Year


Total Aircraft Movement Forecasts
Historical Total
Low forecast
High Forecast
Total Aircraft Movements
Year


RPT and Mining Aircraft Movement Forecasts
Historical RPT Mining
Low forecast
High Forecast
RPT and Mining Aircraft Movemetns
Year


General Aviation Aircraft Movement Forecasts
High Forecast
Low forecast
Historical GA
GA Aircraft Movements
Year

5.2 Airport Capacity

The Federal Aviation Administration Handbook, Advisory Circular AC 150/5060-5, provides estimates of Hourly Capacities and Annual Service Volumes for various runway layout configurations and aircraft mix indexes.

For a single runway, the annual capacity is of the order of 190,000 - 200,000 aircraft movements. Using even the most optimistic forecasts, this figure will not be reached within a time frame well beyond the 20 year period of this Master Plan.

At Port Augusta a limitation on the aerodrome capacity occurs at the single taxiway entry point for larger aircraft to access the apron. The requirement for aircraft to back-track the runway in the absence of an alternative taxiway access which can also lead to aircraft delays. In view of the relatively low numbers of aircraft numbers predicted, it is not expected the lack of a part of full length parallel taxiway will be of concern to future use of the runway.

5.3 Aerodrome Reference Code System

The Airport Reference Code is described by International Civil Aviation Organisation (ICAO) as a system that relates the characteristics of Airports to specifications that are suitable for the aeroplanes that are intended to operate from these Airports. The code number relates to the aeroplane reference field length, the code letter is based on the aeroplane wingspan and outer main gear wheel span. Note that determination of the aeroplane reference field length is solely for the selection of the code number and is not intended to influence the actual runway length provided.

The table below indicates the aircraft characteristics 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	**Aircraft reference field length (ARFL)**	**Code letter**	**Wing span**	**Outer main gear wheel span**
1	Less than 800m	A	Up to but not including 15m	Up to but not including 4.5m
2	800m up to but not including 1200m	B	15m up to but not including 24m	4.5m up to but not including 6m
3	1200m up to but not including 1800m	C	24m up to but not including 36m	6m up to but not including 9m
4	1800m and over	D	36m up to but not including 52m	9m up to but not including 14m
		E	52m up to but not including 65m	9m up to but not including 14m
		F	65m up to but not including 80m	14m up to but not including 16m

5.4 Selected Design Aircraft

Current RPT operations at Port Augusta are serviced by regional turboprop Metro 23 aircraft. Regular closed charter operations include turboprop Fokker F50 and jet F70 / F100.

It is expected that the future critical aircraft used for either RPT or charter will not increase beyond the current largest aircraft operating into the aerodrome being the Fokker F50 and F70/F100 or modern equivalent, i.e. EMB 170. These aircraft are classified by CASA as Reference Code 3C which comprises aeroplanes with a reference field length up to 1800m and wingspans up to 36m. The characteristics of typical Code 3 aircraft (together with some Code 4) are shown in the following table.

Aircraft	Seats	ARFL (m)[2]	MTOW (kg) [3]	ACN [4]	Ref code
Metro 23	19	1341	7484	4	3B
EMB 120	30	1420	12134	6	3C
SAAB-340	35	1220	12371	5.7	3C
F50	50	1760	20820	11	3C
Bombardier Q-300	50	1122	18642	10	2C
Bombardier Q-400	75	1354	29347	16.5	3D**
ATR 42	50	1165**	18560	10	2C
ATR 72-600	68	1165	21566	12	3C
F100	100	1695	44450	27	3C
EMB170	80	1600	37200	21	3C
EMB190	100	2110	51800	30	4C
B737-200	97	2295	52390	32	4C

Note 1: For indicative purposes only. Specific values for particular aircraft should be obtained from the aircraft operator or the aircraft manufacturer.
Note 2: ARFL = Aircraft reference field length.
Note 3: MTOW = Maximum take-off weight.
Note 4: ACN = Aircraft Classification Number. The ACN is based on the aircraft's maximum take-off weight on a flexible pavement; the values listed are for medium a sub- grade rating of "B".
Note **: Q400 allowed as Code 3C by CASA.
***Basic MTOW ISA-SL

Design Aircraft Fokker F100 characteristics

1. ICAO Aerodrome Reference Code 3C
2. Wingspan 28.1m Length 35.5m
3. Outer Main Gear Wheel Span 5.0m Wheel Base 14.0m
4. Maximum takeoff weight 46,090Kg Tyre Pressure 940 kPa
5. Aircraft > 100 passenger seats.

5.5 Runway Configuration

a) Runway Layout and Orientation

The existing runway 15/33 1650m x 30m (sealed) aligned 152 degrees magnetic. The following looks at the Runway Wind Usability; the percentage of time during which the airport is not restricted because cross winds.

There is no CASA requirement for an airport to have specific wind useability, whereas ICAO Annex 14 states the number and orientation of runways should produce a usability factor of not less than 95 per cent for the aeroplanes that the aerodrome is intended to serve.

The allowable crosswind component varies with aircraft type. ICAO Annex 14 gives the following crosswind component guidelines for planning purposes:

- 37 km/h (20 kt) for aeroplanes whose reference field length[1] is 1 500 m or over.
- 24 km/h (13 kt) for aeroplanes whose reference field length is 1 200 m or up to 1 500 m.
- 19 km/h (10 kt) for aeroplanes whose reference field length is less than 1 200 m.

[1] Reference Field Length is the minimum length required for take-off at maximum certificated takeoff mass, sea level, standard atmospheric conditions, still air and zero runway slope.

For this study a revised cross wind component of 13kt (24kph) was chosen to cover the needs of all RPT, charter and RFDS aircraft. Wind data from Bureau of Meteorology (BoM) Port Augusta aerodrome weather station site was used to determine the percentage of time the wind, in 5km/hr increments, occurred within the 16 compass points.

The percentage of time that cross-winds occur in excess of 24 km/hr occur was analysed graphically by plotting the existing runway centerline (corrected to true north heading of 159 deg) onto a wind rose with the 24km/hr cross wind component lines plotted to scale as parallel lines either side of the runway centerline. The sum of the percentages of wind components outside the parallel lines determines the time the crosswind exceeded 24 km/hr. *Airport Operations Ashford Stanton and Moore 1984*

The study determined the 24kph cross wind useability of the existing single runway to be 97.17% and 94.24% for the 9am and 3pm periods respectively; the average being in accordance with the ICAO recommendation for wind useability.

The BOM wind data and subsequent Wind Rose Analysis are shown below and overleaf.

9AM Tot	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Calm																	4.10
1–5 km/h	0.17	0.40	0.28	0.11	0.22	0.11	0.17	0.11	0.23	0.17	0.40	0.34	0.67	0.45	0.23	0.23	4.30
6–10 km/h	2.20	0.84	0.96	1.07	1.69	1.41	1.01	0.68	0.45	0.23	0.51	0.86	2.55	1.72	1.47	1.47	19.12
11–15 km/h	2.20	0.51	0.45	0.56	1.18	1.57	2.69	0.84	0.56	0.40	1.08	0.63	0.62	1.08	1.53	2.43	18.30
16–20 km/h	1.19	0.06	0.06	0.17	0.68	1.57	2.91	1.69	0.39	0.40	0.67	0.39	0.39	0.28	0.28	0.91	12.03
21–25 km/h	2.11	0.06	0.00	0.56	1.01	0.62	6.54	4.48	0.95	0.78	1.41	0.51	0.28	0.11	0.39	0.62	20.41
26–30 km/h	1.59	0.11	0.16	0.33	0.40	0.11	2.91	3.53	1.12	0.67	0.95	0.17	0.06	0.17	0.17	0.34	12.78
31–35 km/h	0.90	0.00	0.05	0.00	0.11	0.06	0.79	1.56	0.22	0.28	0.22	0.34	0.29	0.00	0.11	0.00	4.94
36–40 km/h	1.07	0.00	0.06	0.05	0.00	0.00	0.22	1.06	0.11	0.11	0.00	0.05	0.00	0.05	0.00	0.05	2.85
>40 km/h	0.50	0.00	0.05	0.00	0.00	0.00	0.11	0.17	0.22	0.00	0.05	0.05	0.00	0.00	0.00	0.00	1.17
TOTAL	*11.93*	*1.97*	*2.08*	*2.86*	*5.28*	*5.45*	***17.35***	*14.13*	*4.25*	*3.03*	*5.29*	*3.34*	*4.87*	*3.85*	*4.18*	*6.05*	100.00

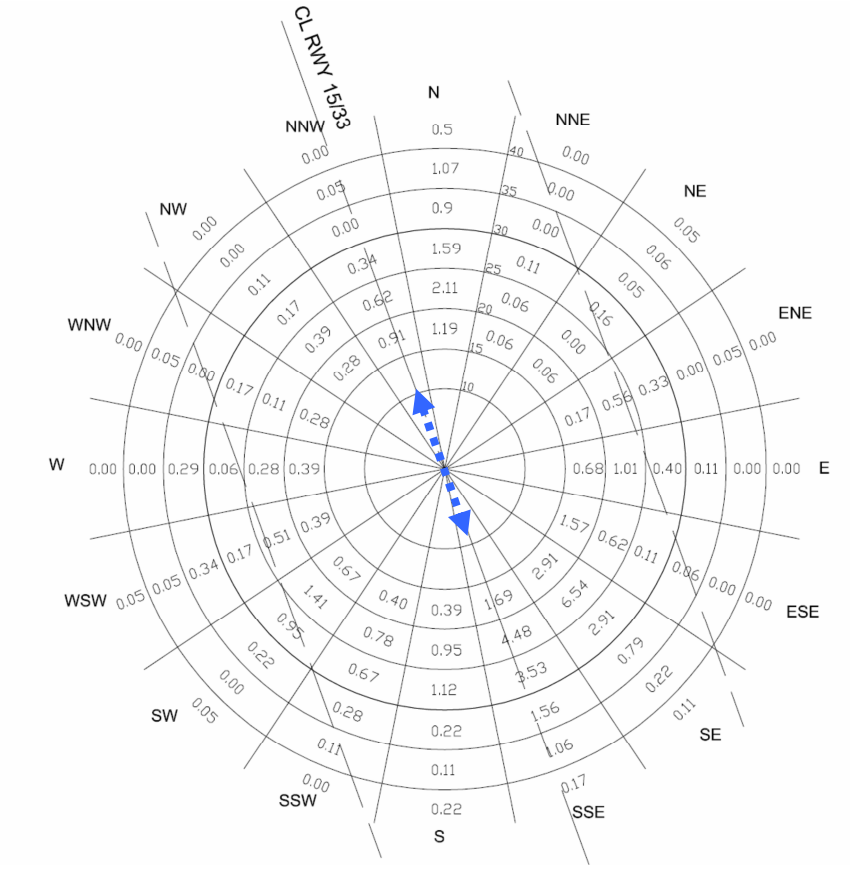
3PM Tot	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
Calm																	0.11
1–5 km/h	0.00	0.06	0.06	0.12	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.06	0.06	0.00	0.52
6–10 km/h	1.20	0.40	0.40	0.40	0.63	0.57	0.57	0.34	0.17	0.22	0.23	0.23	0.63	0.68	0.23	0.46	7.36
11–15 km/h	2.17	0.85	0.45	0.34	1.10	2.25	2.17	1.33	0.63	0.35	0.63	0.29	1.10	0.74	1.02	1.37	16.79
16–20 km/h	1.95	0.29	0.00	0.12	0.28	0.86	2.11	1.54	0.41	0.12	0.34	0.11	0.85	0.57	0.90	1.16	11.62
21–25 km/h	2.62	0.35	0.06	0.00	0.28	0.71	3.80	2.86	0.51	0.57	0.48	0.92	1.43	0.68	0.85	1.19	17.30
26–30 km/h	1.76	0.11	0.06	0.06	0.12	0.59	6.57	3.65	1.14	0.57	0.40	0.75	0.52	0.69	0.51	1.14	18.63
31–35 km/h	1.26	0.11	0.00	0.06	0.00	0.12	4.46	1.87	1.55	0.17	0.40	0.46	0.45	0.40	0.91	0.23	12.45
36–40 km/h	1.70	0.00	0.00	0.06	0.00	0.00	3.05	1.58	1.10	0.00	0.29	0.52	0.34	0.51	0.28	0.52	9.96
>40 km/h	1.47	0.06	0.00	0.00	0.00	0.00	1.07	0.65	0.30	0.24	0.23	0.22	0.40	0.00	0.17	0.47	5.27
TOTAL	*14.14*	*2.22*	*1.02*	*1.14*	*2.53*	*5.08*	***23.80***	*13.81*	*5.81*	*2.25*	*2.99*	*3.51*	*5.77*	*4.34*	*4.93*	*6.53*	100.00

Runway 15/33 Percentage of Time Cross Wind Exceeds 13 knots

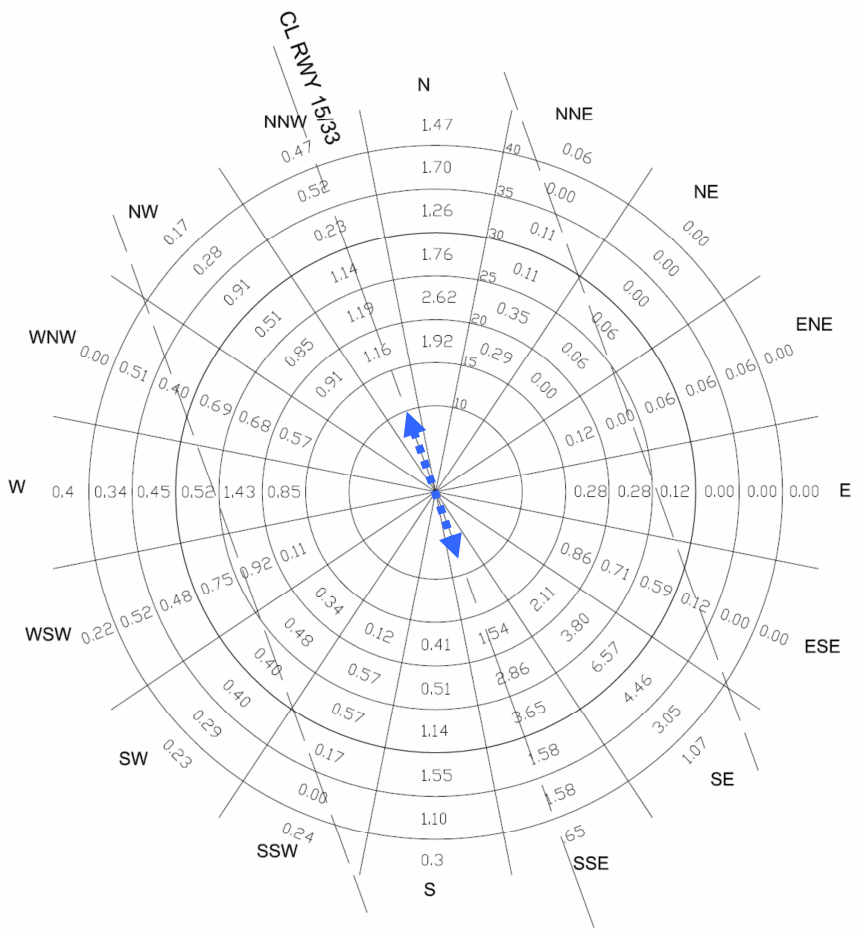
9AM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
1–5 km/h																	
6–10 km/h																	
11–15 km/h																	
16–20 km/h																	0
21–25 km/h				0	0						0	0	0				0
26–30 km/h			0.08	0.33	0.2	0					0.5	0.16	0.03				1.3
31–35 km/h			0.05	0	0.11	0.02				0.1	0.22	0.34	0.29	0			1.13
36–40 km/h			0.06	0.05	0	0				0.06	0	0.05	0	0.03			0.25
>40 km/h	0	0	0.05	0	0	0	0	0	0	0	0.05	0.05	0	0	0	0	0.15
total																	2.83
																%use	**97.17**

Runway 15/33 Percentage of Time Cross Wind Exceeds13 knots

3PM	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total
1–5 km/h																	
6–10 km/h																	
11–15 km/h																	
16–20 km/h																	0
21–25 km/h											0						0
26–30 km/h		0	0.03	0.05	0.06						0.2	0.75	0.26				1.35
31–35 km/h		0.03	0	0.06	0	0.04				0.05	0.4	0.48	0.45	0.15			1.66
36–40 km/h		0	0	0.06	0	0				0	0.29	0.52	0.34	0.4			1.61
>40 km/h	0	0.05	0	0	0	0	0	0	0	0.24	0.23	0.22	0.4	0	0	0	1.14
total																	5.76
																%use	**94.24**



Port Augusta Wind Rose 9AM



Port Augusta Wind Rose 3PM

b) Runway Length

The runway length required for an aircraft to reach a specified destination is dependent on the aircraft type and model, operating weight (in turn dependant on destination distance and hence fuel payload), ambient temperature and air pressure, wind direction, runway slope, terrain clearance, prevailing surface condition (runway wet or dry).

The existing runway length of 1650m is considered suitable for the current and likely range of RPT and charter aircraft to serve Port Augusta over the next 20 years.

The 2009 Master Plan looked at possible runway extensions available within the confines of the present site. Extensions are limited by the requirement to maintain takeoff clearance over possible future 2.1m security fencing off both ends of the runway, in addition to tall vehicles using the Eyre Highway to the north. Additional length can be gained by pushing the start of the takeoff run back beyond the existing runway both ends which gives around an additional 150m for takeoff. The runway location at the end of the takeoff runs would essentially remain unchanged. Such a layout does not require any adjustment to the current obstacle limitation surfaces depicted in the existing OLS plan.

c) Runway and strip width

Aircraft such as the Fokker F100 and F50 are defined in CASA facility planning terms as Aerodrome Reference Code 3C. The CASA Manual of Standards Part 139-Aerodromes, requires the runway width for a 3C aircraft to be 30m.

The existing 15/33 runway has a width of 30m with 3m sealed shoulders running the full length of the runway. The runway width and shoulder arrangement complies with CASA requirement for Code 3C aircraft. The runway width is therefore considered adequate for all aircraft likely to require use of the aerodrome within the next 20 years.

The current runway strip is 150m wide as required for Code 3C non-precision approach runways. An overall runway strip width of 300m would be required for Code 4C aircraft. The current runway strip width is considered suitable for the scope of this Master Plan.

d) Pavement Strength

The runway was constructed in 2 halves with the original 1140m x 18m section built in the 1980's with funding assistance under the Commonwealth Aerodrome Local Ownership Plan. The runway was widened and extended in 1999.

The runway has a published pavement rating of PCN 21/F/A/1200(174 PSI)/T where:

PCN	21 Pavement Classification Number
F	Flexible pavement
A	subgrade category A (equivalent to Californian Bearing Ratio CBR 15)
1200	permissible tyre pressure of 1200kPa
T	technical evaluation used to determine the pavement strength rating

For unlimited operations, the PCN should be equal to the Aircraft Classification Number (ACN) of the largest aircraft using the facility. The table below provides ACN values for the largest aircraft known to visit Port Augusta. Boeing 717 and 737 aircraft are included for comparison purposes. The ACN values are for subgrade classification A.

Aircraft	ACN (at max weight)	Aircraft max weight kg
BAe 146 200	22	42,419
BAe 146 300	24	44,460
EMB 170	20	37,525
EMB 190	28	49,048
F50	8	20,820
F100	25	46,090
B717 300	32	55,370
B737 800	44	79,231
C130 Hercules	29	79,333

The current rating suggests the pavement is slightly under strength for ongoing operations by Fokker 100 aircraft which have used the aerodrome infrequently.

Aircraft with an ACN above the PCN may only use the facility where Council accepts that some degree of overload is acceptable and issues of pavement concession based on a limited number of operations. Issue of a pavement concession is not automatic and is dependent on the runway being in sound condition and the amount of overload is within recognised guidelines and unlikely to cause damage to the pavement.

To increase the rating of the pavement to accommodate regular use by larger aircraft, the aerodrome operator may choose to provide a strengthening asphalt overlay. Other options include placing additional layers of gravel pavement then reapplying a bituminous seal or asphalt. The advantage of using an overlay is that works can be programmed for night, outside the period of scheduled aircraft operations. Emergency RFDS aircraft would have to make alternative arrangements such as using Whyalla while works are in progress.

One aspect that may limit the capacity of the runway is the presence of a box culvert that runs underneath the runway, 400m from the northwestern end. Subject to structural evaluation, an asphalt overlay may not provide adequate strengthening for the culvert, which may have to be exposed and strengthened with concrete as part of a future pavement upgrade.

5.6 Navigation Systems

The Port Augusta navigation system consists of a Global Navigation Satellite System GNSS (GPS) non-precision approach from the north to the threshold of runway 15 and a Non Directional Beacon (NDB) located 2.5 km west of the aerodrome. There is no instrument approach from the south.

On 22 August 2012, the Civil Aviation Authority mandated the use of Global Navigational Satellite System (GNSS) technology for all Instrument Flight Rule (IFR) aircraft operating in Australia by 4 February 2016. The transition to GNSS as the primary means of navigation in 2016 also marks the commencement of Airservices Navigation Rationalisation Project (NRP). The Port Augusta NDB was not identified in the NRP as a required navigational aid and will subsequently be decommissioned during May 2016.

Instrument approach design procedures are developed by AirServices Australia and also approved providers and are typically provided at airports with RPT services. The provision (or non provision) of a GPS approach to the southern end (runway 33) may be limited by terrain to the south west of the aerodrome. Irrespective the protection of airspace through the obstacle limitation surface plan will allow for a possible future instrument approach to Runway 33.

Civil Aviation Safety Authority regulations require provision of visual slope guidance on landing for RPT jet operations. The standard visual aid is a Precision Approach Path Indicator (PAPI) consisting of a bank of 4 lights either side of the runway (normally only a left hand side array is used unless the site is a major airport or has terrain problems). Currently there is no PAPI at Port Augusta as jet operations are conducted under charter arrangements. CASA regulations are trending towards treating regular charter operations (more than 1 flight a week) as RPT. The requirement for a slope guidance visual aid is also likely to extend to larger turbo prop aircraft such as the Bombardier Q400.

With the exception of Whyalla and Ceduna Port Augusta is the only certified airport in SA without a visual landing aid. It also receives more jet charter services (F70/F100) than other regionals in SA. A PAPI array can readily be installed at Port Augusta without alteration to the existing lighting layout and places no limitations on master planning.

5.7 Aviation Support and Landside Facilities

a) Passenger Terminal

The existing passenger terminal facilities provide arrival and departure lounge, check in counters, toilets and baggage facilities.

Terminal expansion will be necessary in the 20 year Master Plan timeframe if a change in security regulations dictate a requirement for passenger and checked baggage screening.

The long term plan shows a new terminal location to the north of the current RPT apron.

b) Security Requirements

Current security regulations require passenger and baggage screening for RPT operations by aircraft with a maximum weight in excess of 20 tonnes. Port Augusta currently operates closed charter with aircraft greater then 20t and RPT with aircraft less than 20t and has no requirement for security screening at the present time. It is possible that security screening regulations may change and a requirement for screening be introduced within the Master Plan timeframe. The current passenger terminal does not have dedicated areas or sufficient space to cater for security screening in the current arrangement.

c) Refuelling facilities

The present aviation fuel storage facility is located on the western side of the RPT apron. The fuel facility at Port Augusta contains above ground storage for 25,000 litres of aviation turbine fuel (AVTUR) and 55,000 litres of aviation gasoline (AVGAS).

d) Aircraft hangars

Existing hangars on the aerodrome comprise:

- 3 large RFDS hangars south of the RPT apron.
- 3 private hangars north of the RPT apron.

Future development depending on demand may be required for:

- expansion of RFDS facilities including additional hangars.
- further private hangar development.

e) Meteorological facilities

The existing Bureau of Meteorology (BoM) facilities at Port Augusta comprises an automatic weather station (AWS) Terminal Area Forecast (TAF) Category C. The facility has been identified as a required facility in the Review of Aerodrome Forecast Services for the Aviation Industry *BOM September 2014.*

5.8 Airspace Protection Surfaces

An Obstacle Limitation Surface (OLS) Plan has been prepared which defines the extent airspace around the airport to remain clear of obstacles. The OLS assists Council in planning development to ensure obstacles to airspace are avoided.

The parameters used in the Port Augusta OLS for runway 15/33 consist of:

- Code 3 non-precision instrument approach (GPS) both runway ends
- Runway length / width 1650m X 30m.
- Inner horizontal radius 4000m from strip ends to 45m above mean runway elevation.
- Conical surface slope 5% to 75m above the inner horizontal surface.
- Approach inner edge width 150m, divergence 15%.
- Approach gradient /segment length – 3.3% / 3000m, 2.5% 3600m, horizontal 8400m.
- Side transitional slope 14.3% from runway strip edge.
- Take off surface inner edge length 180m, divergence 12.5%.
- Takeoff gradient / surface length 2% / 15000m.

5.9 Restricted Airspace

Due to terrain to the south circling is not permitted west of the aerodrome. Night operations require a right hand circuit when landing on the southern runway end (runway 33).

The Defence Force Cultana Firing Area restricted airspace (R302A and R302B) commences approximately 5.5km south west of the aerodrome. Operations are restricted from flying over the area from surface level to 3000ft and above 3000ft as advised by Notice to Airman (NOTAM). Details are shown in the Air Services Australia *Designated Airspace Handbook and the Departure and Approach Plates (DAP)*. Any expansion of the restricted airspace can adversely affect the operational viability of the aerodrome and make it more difficult for aircraft to access the aerodrome.

5.10 Aircraft Noise

As indicated in Section 5.4, F50 F70/F100 or equivalent aircraft are the largest likely to be providing RPT or Air Transport charter services.

Australian Noise Exposure Forecasts

At capital city and major centres, information on aircraft noise airports has been provided using Australian Noise Exposure Forecasts (ANEF). Modelling of aircraft activity is used to produce ANEF noise contours which identify restriction of land uses in certain ANEF zones, according to the sensitivity of the nominated land use. The ANEF contours show the logarithmically averaged noise energy received near an airport on an average annual day of the forecast year. They are modelled from data including the number of movements by aircraft type, approach and departure profiles and flight paths for the aircraft predicted to be operating in the forecast year. Aircraft operating after 7PM and before 7AM are given an added weighting to take into account the increased intrusion of aircraft noise after hours.

The Australian Standard AS 2021 *Acoustics-Aircraft Noise Intrusion-Building Siting and Construction* lists various land uses (eg houses through to heavy industrial areas) considered acceptable/unacceptable within the various ANEF contours. The acceptable ANEF zones for residential development is less than ANEF 20 is acceptable, ANEF 20-25 is conditional, while greater than ANEF 25 is considered unacceptable. The standard notes the following:

1. The actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths.
2. Within the 20 ANEF to 25 ANEF, some people may find that the land is not compatible with residential or educational uses. Land use authorities may consider that the incorporation of noise control features in the construction of residences or schools is appropriate. *Ref AS 2021-2000*

Single Event Contours

Because the ANEF is a summation of the total noise over an average day, when applied at aerodromes with only small numbers of aircraft movements the results are less than satisfactory, in that the ANEF contours barely go beyond the extent of the airport, whereas it is known aircraft noise will be heard over a far greater area and will, in some situations, be considered intrusive.

Even with high rates of growth in air traffic, it is unlikely Port Augusta would receive more than 4 flights per day by RPT services using F50 or larger aircraft. This low level of activity flights would be insufficient to expand the area covered by the ANEF contours to effectively describe the areas subject to potential noise intrusion. This would still be the case even if the number of predicted movements were increased well above the likely growth rate.

An alternative is to plot the aircraft noise as a single noise level event contour, superimposed on the aircraft flight paths. Typically the 70 dB(A) contour is the benchmark used in studies undertaken by Department of Infrastructure, Transport, Regional Development and Local Government, as it is equivalent to a single event level of 60dB(A) specified in the Australian Standard 2021, as the accepted indoor design sound level for normal domestic dwellings. (An external single noise event will be attenuated by approximately 10 dB(A) by the fabric of a house with open windows) An internal noise level above 60 dB(A) is likely to interfere with conversation or listening to the television.

The following data obtained from AS 2021 provides noise levels appropriate for a particular building site and number of aircraft operations.

BUILDING SITE ACCEPTABILITY BASED ON AIRCRAFT NOISE LEVELS*

Number of flights per day	Aircraft noise level expected at building site dB(A)		
	Acceptable	Conditionally acceptable	Unacceptable
House, home, caravan park, school, university, hospital, nursing home			
>30	<70	70-75	>75
15–30	<80	80–85	>85
<15	<90	90-95	>95
Hotel, motel, hostel, public building			
>30	<75	75-80	>80
15–30	<85	85-90	>90
<15	<95	95-100	>100
Commercial Building			
>30	<80	80-85	>85
15-30	<90	90-95	>95
<15	<100	100-105	>105

The values in the above table are based on a small aerodrome with a small number of civil, non-jet aircraft movements. They should not be used in any other circumstances.

NOTE: The forecast daily average number of aircraft flights affecting the site should be obtained from the aerodrome owner. However, each night-time flight between 1900 hours and 0700 hours is to count as four operations.

The following assumptions have been made in selection of aircraft for the noise study:

- Regular operations will continue with general aviation single and twin engined aircraft.
- The maximum size aircraft serving RPT / Air Transport traffic will be a Code 3C.
- Future regular operations by jet aircraft will utilise newer engine technology with lower noise output. For this reason the ERJ 170/190 noise contour has been used as opposed to a similar size aircraft with a larger noise footprint.

Flight Paths

Aircraft flight paths can be influenced by route structure and runway heading, and restricted airspace. Normal arrival during Visual Meteorological Conditions makes use of straight in approaches. The wind direction data from BoM shows the majority of approaches would be from the north.

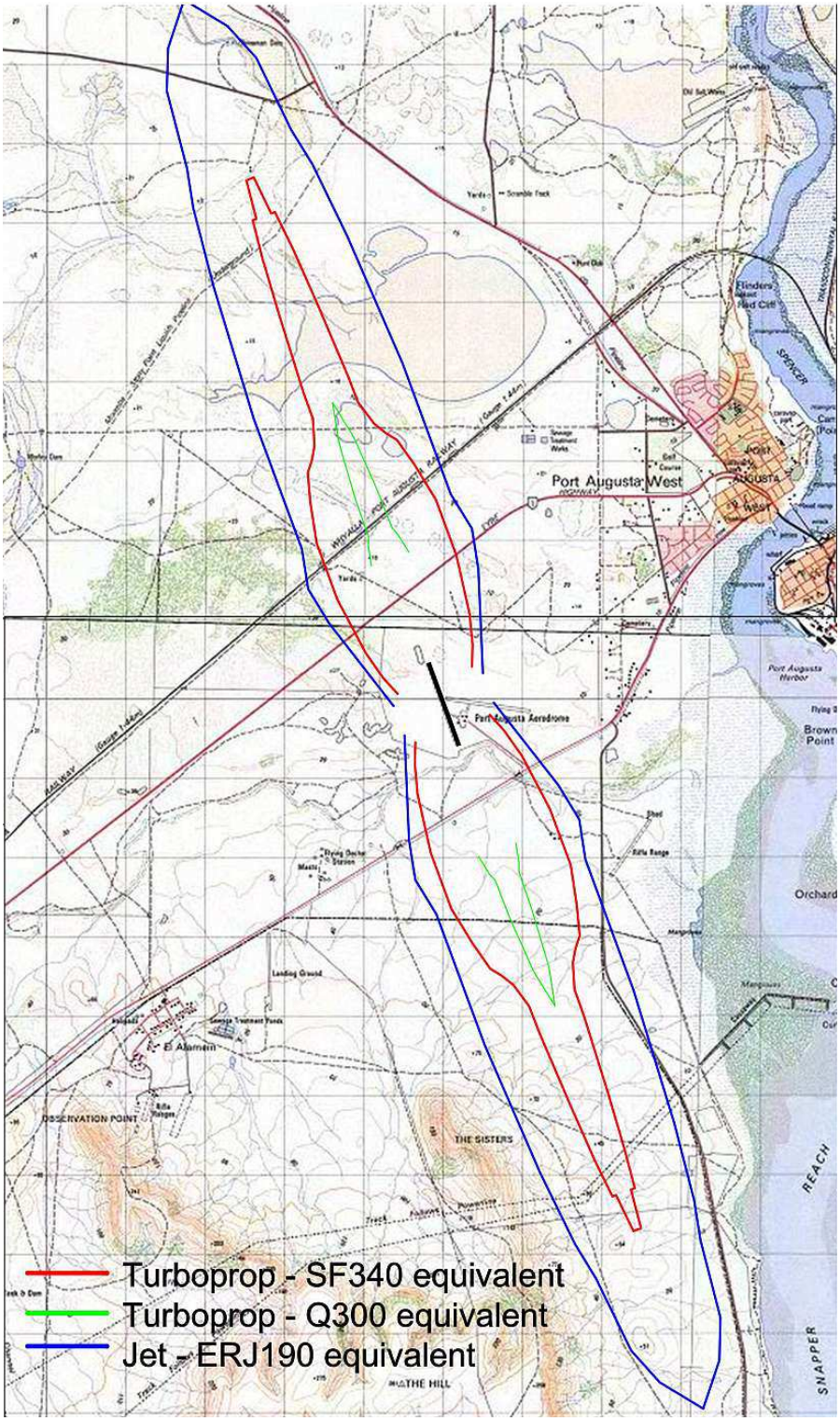
Instrument arrivals during poor weather condition are designed by AirServices Australia. Currently they include a GPS straight in approach to runway 15 and an NDB approach from the NNE; with the NDB being decommissioned in 2016.

Where flying training is to take place involving circuits, these would normally run in flight paths parallel with the duty runway and offset approximately 1 to 1.5 km for training aircraft before turning onto the approach centreline for landing or touch and go.

Single event 70dBA noise contours for straight in approaches and straight out departures are shown for Saab 340, Dash 8 300 and ERJ190 aircraft, landing and departing both runway directions.

Currently there are no housing or other noise sensitive areas off either end of the 15/33 runway. Maintaining the area free of housing within the 70dBA contour would be seen as an appropriate method of ensuring the aerodrome continues to operate free from noise complaints.

In the figure overleaf, single event 70dBA aircraft noise contours, extracted from AS 2021 are plotted onto the aerodrome topographical map. AS 2021 lists noise level against the longitudinal and offset distance from the point of landing and takeoff for various aircraft.



70dB(A) noise contours - Combined arrival and departure in both directions

5.11 Environmental and Heritage Sites

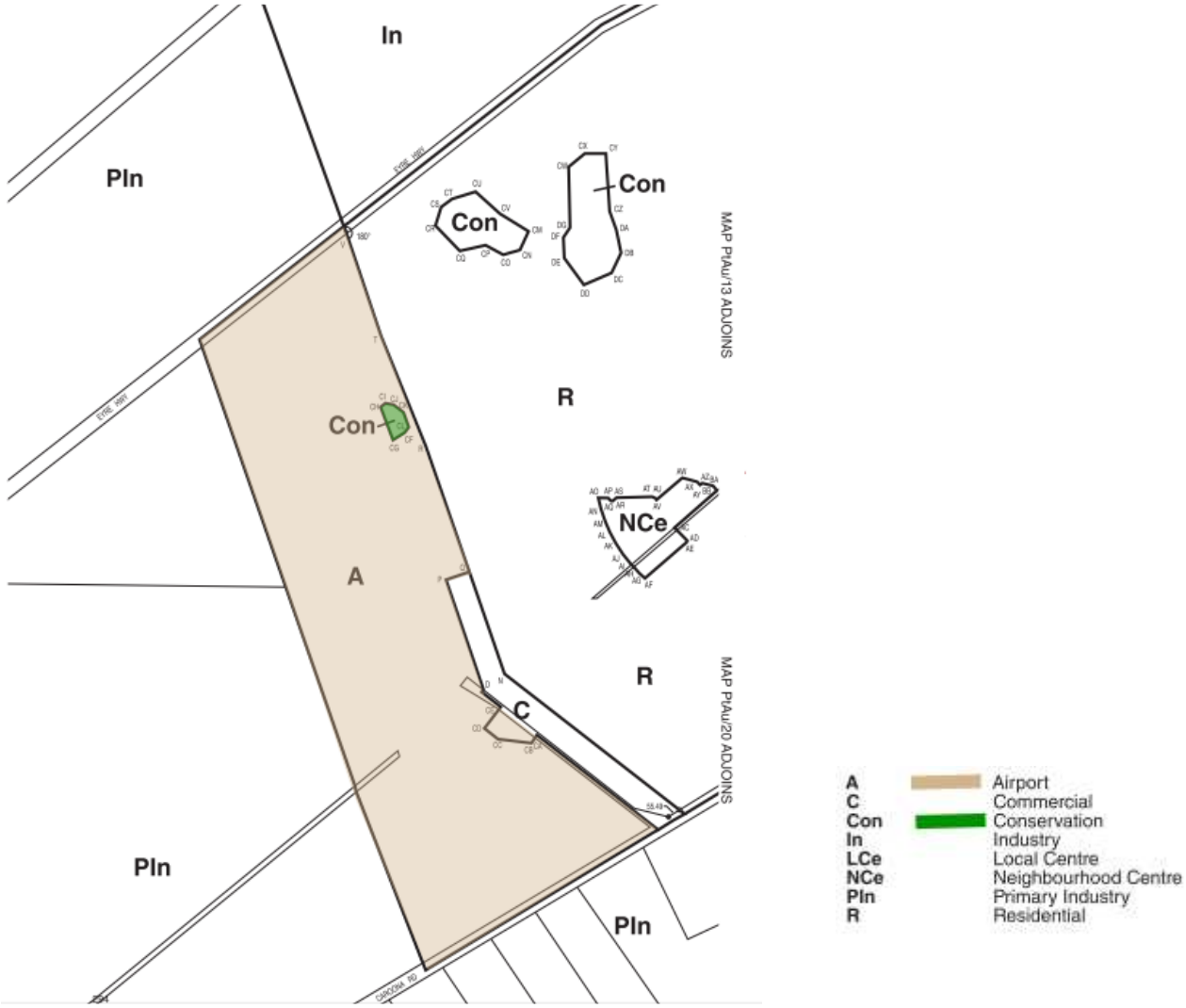
A conservation site is contained within the Airport zone as identified in the map under section 6.1 – Land Use Precincts.

6 LAND USE PLAN

6.1 Land Use Precincts:

The following zones surrounding the airport are identified in the Port Augusta City Development Plan 2012, MAP PtAu/19.

- Primary Industry surrounds most of the Airport Zone to the north, west and south.
- A strip of commercial zoning is included along the airport access road and part of the eastern boundary.
- Land to the east of the airport is zoned Residential.
- Industry is to the north/northeast of the airport.
- A small Conservation zone is located within the Airport zone towards the northeast boundary.



6.2 Land Use Precinct Guidelines

AIRPORT ZONE
The following objectives land use principles are from the Port Augusta City Development Plan November 2012.

Objectives of the Airport Zone
A zone developed for airport and aviation related light industrial, service industrial, warehousing and storage purposes.

Principles of Development Control - Airport Zone
Form of Development
1. Development undertaken in the zone should be for airport and aviation related light industry, service industry, warehousing or storage purposes.
2. Buildings and structures should not occupy more than 60 percent of the site on which they are erected and should not be more than ten metres in overall height.
3. Buildings should have noise attenuation measures to protect occupants from aircraft noise in compliance with Australian Standard 2021 - 1994.
4. Lighting associated with any development should not impair the safe operation of aircraft. Land should not be divided except for the realignment of allotment boundaries, where this assists in the more efficient operation and use of the airport.

The Port Augusta Development Plan lists a number of complying and non complying developments. Development listed as non-complying is generally inappropriate.

BUILDING NEAR AIRFIELDS
1. The height and location of buildings and structures should not adversely affect the long-term operational, safety, commercial and military aviation requirements of airfields.
2. Development in the vicinity of airfields should not create a risk to public safety, in particular through any of the following:
   a) lighting glare
   b) smoke, dust and exhaust emissions
   c) air turbulence
   d) storage of flammable liquids
   e) attraction of birds
   f) reflective surfaces (eg roofs of buildings, large windows)
   g) materials that affect aircraft navigational aids.
3. Outdoor lighting within 6 kilometres of an airport should be designed so that it does not pose a hazard to aircraft operations.
4. Development that is likely to increase the attraction of birds should not be located within three kilometres of an airport used by commercial aircraft. If located closer than three kilometres the facility should incorporate bird control measures to minimise the risk of bird strikes to aircraft.

5. Dwellings should not be located within areas affected by airport noise and, in particular, should not be located within the 70dBA noise contour associated with the Port Augusta Aerodrome.
6. Development within areas affected by aircraft noise should be consistent with Australian Standard AS2021 - Acoustics - Aircraft Noise Intrusion - Building Siting and Construction

7 FACILITY DEVELOPMENT PLAN

7.1 Movement Area Facilities

a) Runways and runway strips

The existing runway dimensions meet the future aircraft demands with the master planning time frame. Some additional runway length can be gained if needed from development within the current airport perimeter. The resultant configuration does not require any adjustment to the obstacle limitation surface.

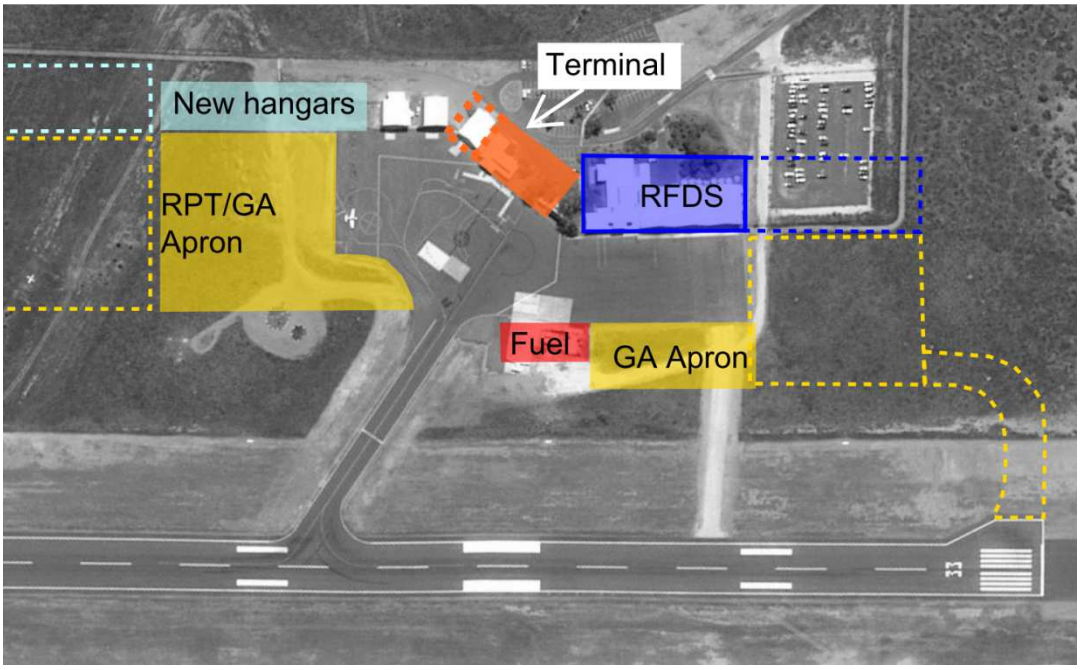
The existing runway strip width is considered adequate for the 20 year Master Plan scope.

b) Taxiways Aprons and Terminal facilities

Taxiway and aprons at Port Augusta primarily support aircraft parking associated with:

- RPT Metro 23 and air transport charter Fokker F50/F100 aircraft
- RFDS operations Pilatus PC12 aircraft
- Charter aircraft
- Flying training and aerial work

The terminal has recently been developed on the old site and potentially could be expanded to support 2 RPT aircraft of around 50 passengers each. To maximise the available space the existing hangar abutting the northeast end of the terminal may need to be relocated. Development of the existing site is shown in the layout below.

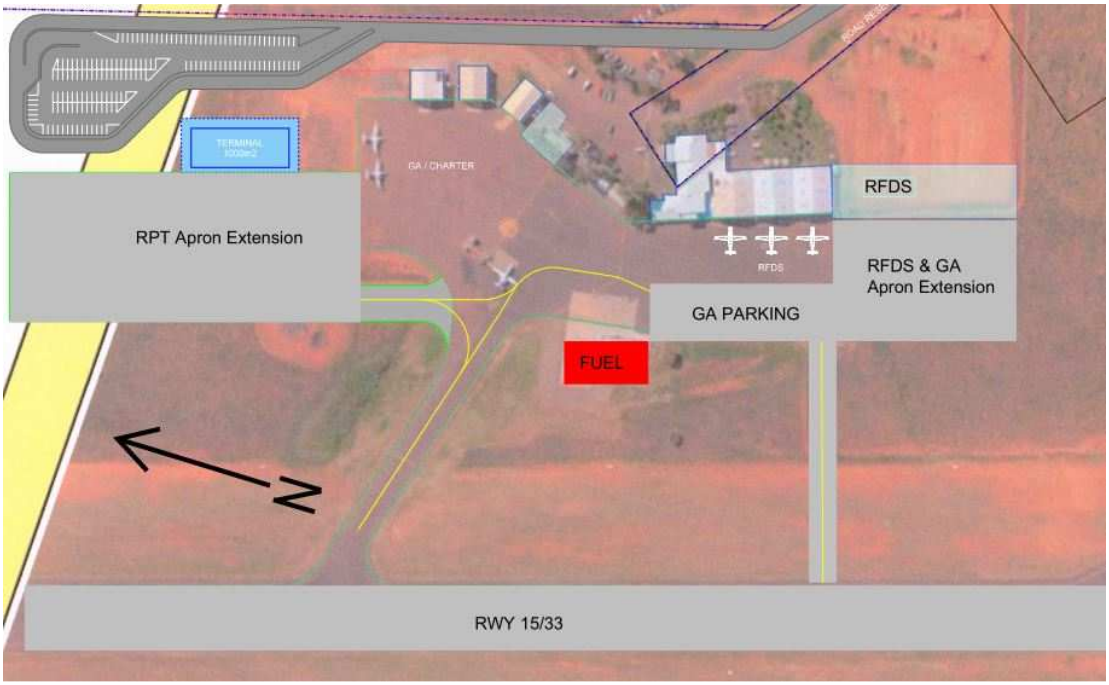


Development retaining the current passenger terminal location. Broken lines show expansion probably beyond the 20 year forecast period

Allowing for some expansion, it is anticipated that the existing terminal site will probably meet passenger demand for the next 20 years. In the case where security screening is demanded by legislation, for example when RPT aircraft above 20 tonnes maximum weight are used, the existing terminal area may prove inadequate and a new location will be needed. Possible options are overleaf.

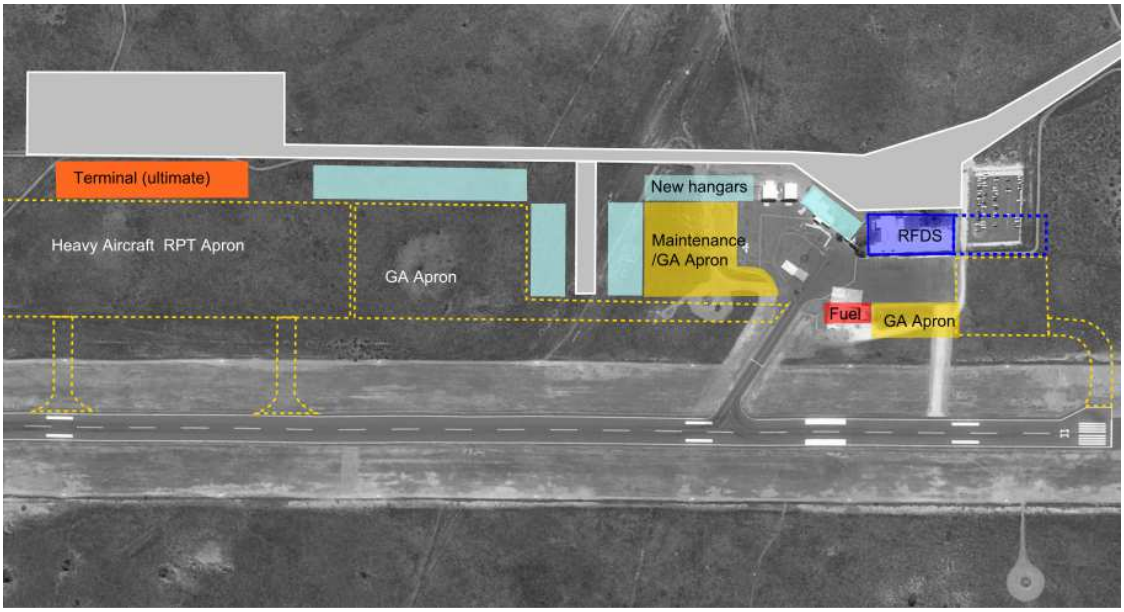
Option A below shows a long term planning option featuring:

- new terminal, north of the existing general aviation apron, suitable for 4 x Code 3C aircraft parking positions.
- expansion of the RFDS facility and general aviation parking.



Option A relocated RPT terminal and apron facilities north of the existing GA area

Option B places the terminal development further north. The layout allows a far greater site for a new terminal plus significantly increased areas for future hangar development which can also run perpendicular to the runway. This option has capacity to accommodate significant change in circumstances such as introduction of large military aircraft, significantly expanded mining charters etc. For this reason Option B is recommended.



Option B Ultimate development in the case where larger RPT aircraft commence requiring passenger and baggage screening along with expanded mining charter operations plus a large increase in hangar sites.

c) Airfield Lighting

Additional apron floodlighting would be required with an RPT apron expansion. Similarly use of jets for RPT services requires installation of a PAPI visual slope guidance lights.

Other improvements could include the provision of automated standby power.

d) Aviation Support Facilities

An expanded car park and access road system is planned to support the new terminal.

7.2 Commercial Sites

Possible sites for commercial development within the terminal and hangar precincts are shown on the drawings. The sites identified are suitable for both aviation and non-aviation uses. For example a freight storage and haulage complex could be developed either side of the airport access road to handle both road and air consignments.

Areas to the rear of the hangars could be set aside for aviation related activities such as workshops or tourist operator facilities.

Large areas within the aerodrome are also available for commercial development with potential for industrial development.

7.3 Car Rental Facilities

Port Augusta Aerodrome which provides a gateway to road destinations to tourism and mining areas. Consolidation of car rental facilities within the commercial area adjoining the terminal car park is considered an appropriate planning option. If there is an increased demand, car rental companies could to establish related facilities such as maintenance work shops, refuelling, car wash, and car detailing areas.

8 GROUND TRANSPORT PLAN

The existing entrance off the old Whyalla Road is considered suitable for the short and long term planning. The road provides direct access to the passenger terminal, RFDS and hangar facilities.

9 ENVIRONMENTAL MANAGEMENT PLAN

Currently there is a single conservation zone located in the NE part of the airport. This site will be protected through appropriate planning. A dedicated Environmental Management Plan (EMP) has not been developed as part of this study.

10 HERITAGE MANAGEMENT PLAN

Heritage sites have not been identified within the airport. If discovered, are managed under the Port Augusta Council Development Plan, the Aboriginal Heritage Act 1988 and associated regulations.

11 AIRPORT SAFEGUARDING PLAN

11.1 National Airports Safeguarding Framework (NASF)

The National Airports Safeguarding Framework is a national land use planning framework that aims to:

- improve community amenity by minimising aircraft noise-sensitive developments near airports; and
- improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.

The National Airports Safeguarding Framework was developed to provide guidance for Planners to consider potential impact of developments outside the airport on airport operations. Principles of the guideline will be considered in local planning processes when assessing a development application in the vicinity of Port Augusta Aerodrome. The purpose of the framework is to enhance the current and future safety, viability and growth of aviation operations at Australian airports, by supporting and enabling:

- the implementation of best practice in relation to land use assessment and decision making in the vicinity of airports;
- assurance of community safety and amenity near airports;
- better understanding and recognition of aviation safety requirements and aircraft noise
- impacts in land use and related planning decisions;
- the provision of greater certainty and clarity for developers and land owners;
- improvements to regulatory certainty and efficiency; and
- the publication and dissemination of information on best practice in land use and related planning that supports the safe and efficient operation of airports.

NASF PRINCIPLES

Principle 1. The safety, efficiency and operational integrity of airports should be protected by all governments, recognising their economic, defence and social significance.

Principle 2. Airports, governments and local communities should share responsibility to ensure that airport planning is integrated with local and regional planning.

Principle 3. Governments at all levels should align land use planning and building requirements in the vicinity of airports.

Principle 4. Land use planning processes should balance and protect both airport/aviation operations and community safety and amenity expectations.

Principle 5. Governments will protect operational airspace around airports in the interests of both aviation and community safety.

Principle 6. Strategic and statutory planning frameworks should address aircraft noise by applying a comprehensive suite of noise measures.

Principle 7. Airports should work with governments to provide comprehensive and understandable information to local communities on their operations concerning noise impacts and airspace requirements.

NASF GUIDELINES

Over the long term, inappropriate development around airports can result in unnecessary constraints on airport operations and negative impacts on community amenity due to the effects of aircraft noise. These impacts need to be managed in a balanced and transparent way.

Guideline A *p*rovides advice on the use of a complementary suite of noise metrics, to inform planners and provide communities with comprehensive and understandable information about aircraft noise.

Guideline B presents a layered risk approach to the siting and design of buildings near airport runways to assist land use planners and airport operators to reduce the risk of building - generated windshear and turbulence. It also provides options to modify existing buildings.

Guideline C provides advice to help protect against wildlife hazards originating off-airport through appropriate land use planning decisions and the way in which existing land use is managed in the vicinity of airports.

Guideline D *provides advice on the location and safety management of wind turbines and other similar structures which can constitute a risk to low-flying aviation operations and can also affect the performance of Communications, Navigation equipment operated by Airservices Australia.*

Guideline E *provides advice on ensuring lighting in the vicinity of airports is not configured so as to cause distraction or confusion to pilots*

Guideline F *provides advice for planners and decision makers about working within and around protected airspace, including obstacle limitation surface (OLS) and Procedures for Air Navigation Services (PANS-OPS) intrusions, and how these can be better integrated into local planning processes.*

11.2 Aircraft Noise Contours

Australian Noise Exposure Forecasts (ANEF) have not been prepared for Port Augusta on the basis that the frequency of aircraft movements and the type of aircraft flying are not sufficient to generate a meaningful ANEF even using the most optimistic forecasts. Instead single event noise contours have been generated using modelling data for aircraft types potentially operating at Port Augusta within the Master Plan timeframe.

11.3 Planning Policies and Controls

A detailed review of existing and proposed planning controls for the Port Augusta Airport are provided in Section 6 – Land Use Plan.

12 IMPLEMENTATION PLAN

This Master Plan has a forecast timeframe of 20 years to 2035. Given that the airport is subject to considerable variation in passenger numbers and aircraft type and demand it is recommend that the Master Plan is reviewed every five years. This time frame should be reduced in the event of major alterations to the Port Augusta Development Plan or any significant change in influencing factors such as Defence activities or industry activity.

The following items are included in the scope of future works needed.

Provision of Improved Perimeter Fencing
The aerodrome receives extended use at night by the RFDS. There is a constant risk of an animal strike, mainly kangaroos, brought on by the proximity of nearby scrub land and the lack of suitable perimeter fencing. Provision of a 2.1m security / animal proof fence is includes in the suggested scope of works

Precision Approach Path Indicator (PAPI)
Infrastructure Required – Installation of a Precision Approach Path Indicator (PAPI) visual slope guidance system as discussed in Section 5.5 of this document.

Introduction of Security Screening
Infrastructure required – Extension of terminal building to accommodate security screening facilities.There are no dedicated facilities for security checking of passenger or baggage at Port Augusta Airport. Long term planning will need to include allowance for screening passengers, carry-on baggage and checked bag screening. The requirement to introduce increased security measures rests with the Office of Transport Security which is part of the Department of Infrastructure & Regional Development.

In the longer term it may not be possible to cater for both increased passenger numbers and increased security requirement. In that case a new terminal in a new location would be required

Standby Power
The existing generator set for the RFDS can supply emergency power for airport lighting. The RFDS generator set does not have the capacity to power the terminal building in the event of an outage. Allowance to provide automated standby power is included in the list of future works

Reseal of Runway 15/33, Taxiway and Apron.
While the 2008 surface remains in good condition, a reseal or other treatment will be required within the master planning time frame. The normal course of action is to apply a bituminous reseal approximately every 12 years. In the case where an increase in pavement strength is needed to meet increased use of large aircraft such as F100, then a strengthening overlay in the form of asphalt surfacing is needed.

The RFDS apron is subject to flooding during intense storms resulting in inundation to the RFDS hangars. Improved drainage would include provision of a grated drain along the front of the hangars connected to an underground pipe with an out fall to the south well clear of all buildings and pavements.

The gravel taxiway at the southern end of the RFDS apron could be upgraded to sealed standard.

The long term planning layout shows a new passenger terminal and associated new apron area. To compliment the expanded facility and provide improved traffic flow a second RPT taxiway could be provided at the northern end of the new apron

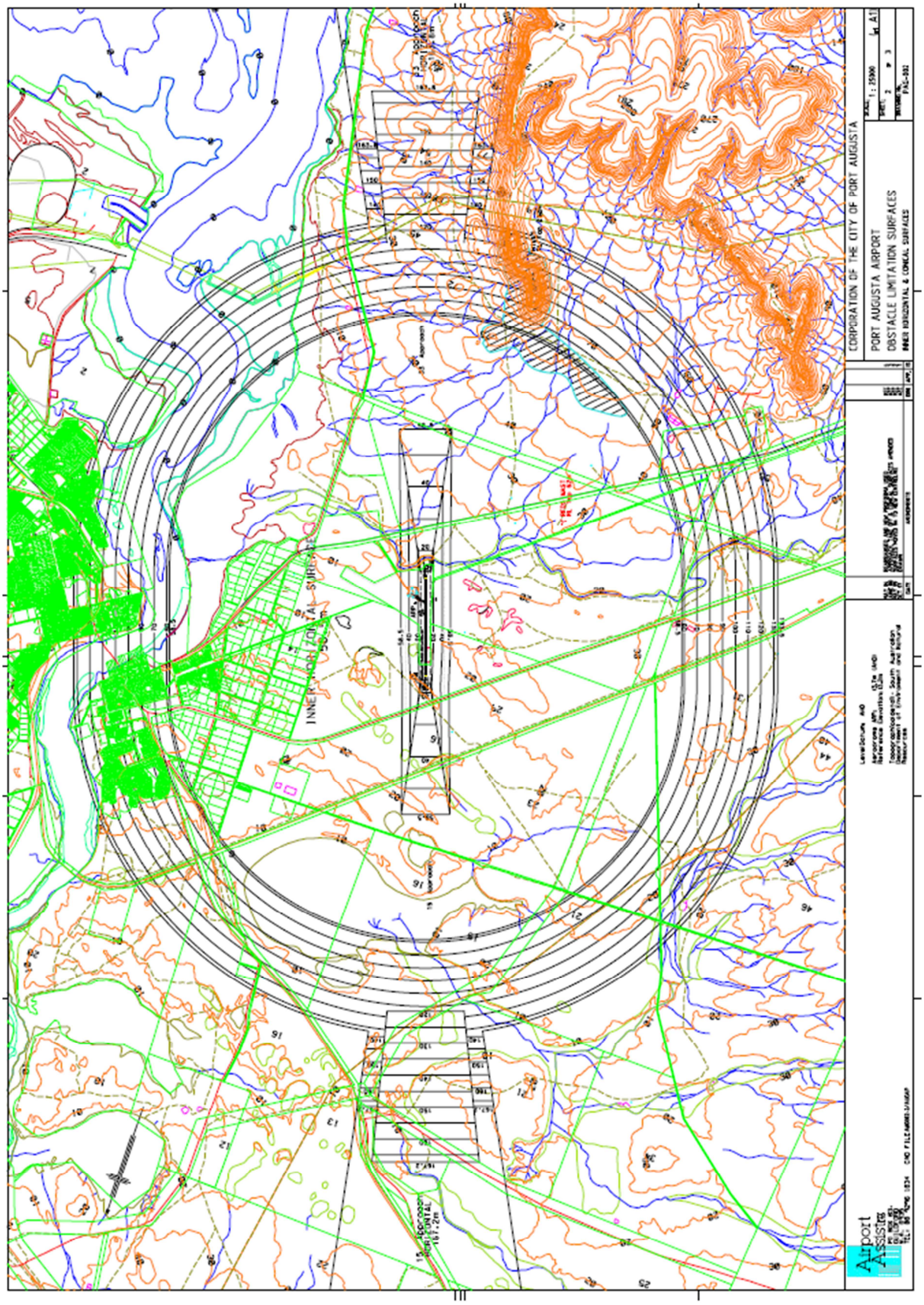
Item	Scope	Timeframe	Cost Estimate
Decommissioning of NDB	Time frame for Airservices Australia to decommission NDB	2016	Completed
Installation of animal proof boundary fence	Upgrade / replace boundary fence to reduce animal hazard– Approx 5.5kms	2017-20	$200,000
RFDS Apron	Installation of grated drain and underground pipe to eliminate flooding issues	2017-18	$120,000
Standby Power	Stand by generator for Terminal Building	2017-18	$35,000
PAPI installation (precision approach path indicator)	Regulations may dictate a need for PAPI for Code 3C turboprop RPT or jet charter operations. Includes new controller and new mains cabling from the controller.	2017+	$220,000
Reseal Works 14/7mm 2 coat @ $17/m2	Runway 50,000m2 – 14/7mm 2 coat Taxiway & Apron 20,000	2020	$850,000 $340,000
Apron Extensions	GA Apron Extension (opposite RFDS) RFDS & GA apron extension South RPT apron extension north with access taxiway	2017 2017+ 2020+	$80,000 $200,000 $1,000,000
Seal Taxiway B	Upgrade and bituminous seal the gravel taxiway at the southwest end of the RRFDS apron. Include lighting	2020	$250,000
Introduction of Security Screening	The requirement to introduce increased security measures rests with the Office of Transport Security which is part of the Department of Infrastructure and Regional Development.		$250,000
Terminal Expansion	Expansion of the terminal building may be required to accommodate increased security screening requirements.		$250,000
New Terminal	New terminal and associated infrastructure apron lighting roads and car parks, timing subject to change in security regulations and or significant increase in aircraft size and passenger numbers		$10M
New RPT taxiway	Provide a second entrance to the new RPT apron off runway 15/33		$500,000

12 DRAWINGS

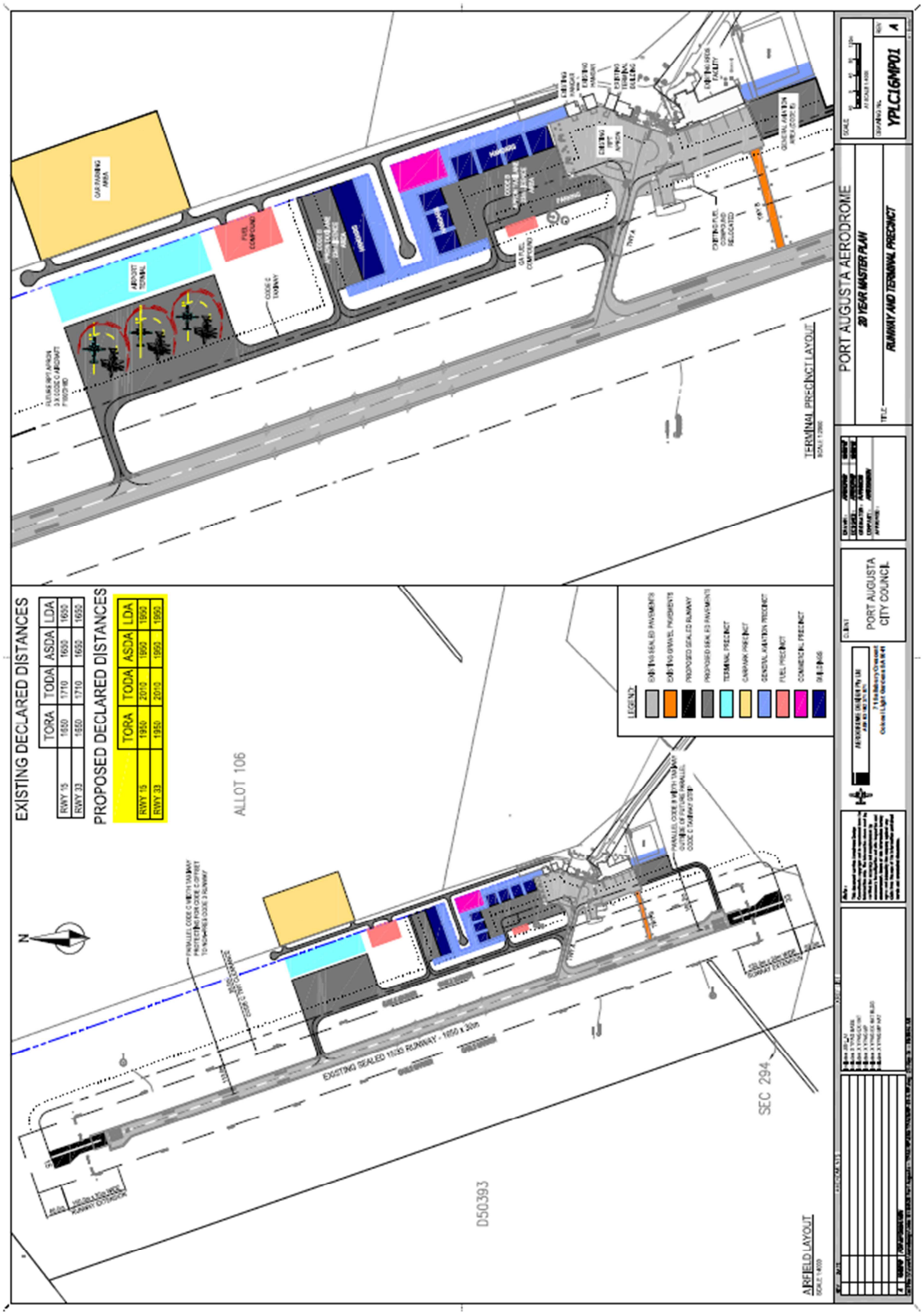
I. Airport Obstacle Limitation Surface Plan

II. Master Plan Layout

Airport Obstacle Limitation Surface Plan



II. Master Plan Layout


EXISTING DECLARED DISTANCES
TORA TODA ASDA LDA
RWY 15 1650 1710 1650 1650
RWY 33 1650 1710 1650 1650
PROPOSED DECLARED DISTANCES
TORA TODA ASDA LDA
RWY 15 1950 2010 1950 1950
RWY 33 1950 2010 1950 1950
LEGEND
ALLOT 106
SEC 294
D50393
EXISTING SEALED 1650 RUNWAY - 1650 x 30m
AIRFIELD LAYOUT
TERMINAL PRECINCT LAYOUT
PORT AUGUSTA AERODROME
20 YEAR MASTER PLAN
RUNWAY AND TERMINAL PRECINCT
YPLC16MP01
PORT AUGUSTA CITY COUNCIL