

Appendix D
Draft ANEF Report

Evans Head Aerodrome

Draft 2025 ANEF

Preparation of Data

Draft Report

April 2005

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- A Evans Head Airfield Layout
- B Draft 2025 ANEF Chart
- C N60 Chart
- D LAMAX departure 18R and arrival 36L
- E Flight Track charts for the aircraft categories

1. General

The Evans Head Memorial Aerodrome (Evans Head airfield) is located on Richmond Valley Council (RVC) land, is managed by RVC and is suitable only for daytime use by light aircraft and occasional smaller turbo-props. It is located approximately 2km to the northwest of Evans Head Village centre and is bound by environmentally sensitive nature reserves to the north and west, the Woodburn-Evans Head road to the south and residential and industrial land to the east.

The Airfield was built between 1937 and 1939 to service civil aviation operations. In 1939 the airfield was a selected site for aircrew training under the Empire Air Training Scheme. With the establishment of the training school the airfield was substantially expanded to include four runways, a number of hangars and associated taxiways and aprons.

After the war the airfield reverted to its original civil use with some commercial flight activities until 1956. In 1980 the runway 18/36 was lengthened to approximately 1,300m to accommodate the RPT service that was briefly established at that time.

There is currently little flying activity at the airfield other than the Great Eastern Fly-In organized on an annual basis by the EMAC and some Sports Aviation Ultra-Light activity generally on weekends. During the 20 year forecast period of this study it is not envisaged that either the RPT or large-scale commercial aviation activities will be established at the airfield due to the proximity of other well-established aviation centres. There is some scope for charter operations providing access for tourist activities as well as activities by private aircraft and these are included in the forecast movements.

Of concern to RVC is the likely noise exposure of a triangular block of land to the east of the runway 36 threshold. It is expected that there will be a Development Application submitted for this land proposing a retirement village and so the ANEF contours and other aircraft noise descriptors will be carefully reviewed in that area. Of lesser concern is the vacant land to the east of the Industrial area that may be developed as residential land in the future.

2. Attached Charts

- ▶ Airfield Layout – Appendix A
 - Evans Head Airfield giving an overview of the airfield and its environs;
- ▶ Draft 2025 ANEF – Appendix B
 - The draft 2025 ANEF chart;
 - The draft 2025 ANEF chart with the 15 ANEF contour displayed;
 - An N60 chart derived from the draft ANEF dataset;
 - An LAMAX derived from the draft ANEF dataset.
- ▶ Supplementary Modelling – Appendix C
 - An ANEC with some use of runway 06/24;
 - An N60 with some use of runway 06/24;
 - The ANEC contours for a busy day of the Great Eastern Fly-In;
 - An LAMAX for a small single engine aircraft undertaking an engine run-up at the current apron area.
- ▶ Flight Track – Appendix D
 - Turbo-props;
 - Light Twins;
 - Single engined;
 - Ultra-light; and
 - Helicopters.

3. Runway Configuration

The runway names adopted in this study and used in the remainder of the report are 18R/36L for the main runway, 06/24 and 09/27 for the cross-runways and 18L/36R for the helipad.

There are four sealed and one grass runway at the airfield, however RVC has resolved that for safety reasons only 18/36 (sealed) should be used and these will be the only runway on which maintenance will be carried out. Notwithstanding the RVC resolution light and ultra Light aircraft utilize 06/24 and 09/27 (both sealed but partially grassed) as well as 18/36 when prevailing wind conditions require. It was noted that the large grassed area to the south of 09/27 and west of 18/36 (maintained by volunteers) is in such a condition that the Ultra Light aircraft would be able to utilize it as an all-over field if wind conditions required, however this option has not been included in this draft ANEF. There is also a model aircraft club that utilizes a part of runway 04/22 (on the western boundary of the airfield).

There is a proposal for treated effluent to be disposed of in the area south of 09/27 and west of 18/36 by sub-surface injection. This may render the western extension of 06/24 unusable by any aircraft although the eastern part of this runway (approximately 580m) will not be affected.

The main north/south runway 18/36 is currently 1,298m in length with the southern portion 30m wide and the northern 500m 15m wide. There are no approach aids or runway lighting available on this runway and as previously noted RVC has advised that this is the only runway on which operational pavement maintenance will be undertaken – for a runway width of 15m over the 1298m length.

The cross-runways 06/24 (1,097m) and 09/27 (1,050m) although de-commissioned are used by ultra-light aircraft. These runways are partially sealed, are currently maintained (mowed) by voluntary labour and are in fair condition. RVC is re-considering the status of 09/27 and for this draft ANEF there was some use of this runway by Ultra-light and Single engine aircraft modelled.

The helipad was modelled as a 50m long runway parallel to 18/36 and positioned on the sealed apron to the east of that runway.

The airfield is located at 29 05.6 south latitude and 153 25.2 east longitude, has an elevation of 6.1m (20') and is listed in ERSA as unlicensed. The location of the ARP was not able to be determined. AMG coordinates (zone 56) for the runway ends were taken from charts supplied by RVC and converted to the INM coordinate system by assuming a coordinate origin close to the geometric centre of the runway layout.

The following table gives the AMG and INM coordinates of the runway ends as they exist at this time:

Table 1 AMG and INM Coordinates of Runway Ends

AMG coordinates (in meters)		
Runways	X-coord	Y-coord
18R	540901.478	6781544.397
36L	540,776.861	6,780,553.845
06	540,297.214	6,780,617.011
24	541,316.801	6,781,024.888
09	540295.103	6781041.975
27	540,855.932	6,780,967.645
18L	540,911.433	6,780,716.631
36R	540,905.192	6,780,667.022
Reduction	540,800.000	6,780,900.000
INM coordinates (in km)		
Runways	X-coord	Y-coord
18R	0.1015	0.6444
36L	-0.0231	-0.3462
06	-0.5028	-0.2830
24	0.5168	0.1249
09	-0.5049	0.1420
27	0.0559	0.0676
18L	0.1114	-0.1834
36R	0.1052	-0.2330

4. INM Set-up

INM version 6.1 was used in the production of the draft ANEF contours with the following settings;

- ▶ Project name R081
- ▶ Airport Elevation 6.1m
- ▶ Temperature 26.0°C
- ▶ Pressure 759.79mm-Hg
- ▶ Refinement Level 10
- ▶ Tolerance 0.1
- ▶ NPD curves were not modified for humidity

The ANEF noise metric was specified for use with the following settings:

- ▶ Metric ID ANEF
- ▶ Noise family perceived
- ▶ Metric type exposure
- ▶ Day multiplier 1.0
- ▶ Evening multiplier 4.0
- ▶ Night multiplier 4.0
- ▶ 10 log(time) 88.0

5. Aircraft Movements – General

There is only anecdotal aircraft movement data available for Evans Head Airfield as the RVC income records indicate that no payments have been received from uses of the airfield in relation to landing fees. There is no commercial aviation businesses located on the airfield. All the assumptions on aircraft movements outlined below are based on advice from RVC staff and EMAC and have been agreed by Council to be reasonable.

In developing a 20 year forecast the overall considerations included:

- ▶ The Ambulance and Emergency segment of the market would remain at about its present level;
- ▶ There is some scope for an increase in charter activity to cater for the package tourist market;
- ▶ The locally based aviation activities will be based on Sports Aviation type aircraft with some commercial development to service these aircraft types; and
- ▶ The Great Eastern Fly-In will be a significant event in the aviation calendar.

In formulating the aircraft movement data a number of general assumptions and conventions were developed as follows:

- ▶ The aircraft movements were categorized into five market segments; Ambulance, other Emergency, Charter, General Aviation (including sports aviation) and the Great Eastern fly-in. Each segment has its own set of detailed assumptions;
- ▶ Substitute INM aircraft types were created for each aircraft type within a market segment as this enabled the same actual aircraft type to be individually incorporated in the INM aircraft movement database file rather than being aggregated with all other aircraft of that type. Each market segment aircraft type was given the prefix indicating the segment;
- ▶ 'A' – Ambulance,
- ▶ 'E' – other Emergency,
- ▶ 'C' – Charter,
- ▶ 'G' – General Aviation (including sports aviation), and
- ▶ 'F' – Great Eastern fly-in.
- ▶ Six arrival/departure routes were assumed and they were;
- ▶ Northern (N) route to/from Brisbane/Archerfield over Ballina (route 1),
- ▶ South western (SW) to/from Sydney/Bankstown (or Newcastle) over Grafton (route 2),
- ▶ Over the beaches to/from the north (BN) (route 3),
- ▶ Over the beaches to/from the south (BS) (route 4),
- ▶ Inland to/from the north/west (INW) (route 5), and

- ▶ Inland to/from the south/west (ISW) (route 6)

Attached to this report are charts giving an indication of the likely flight tracks of the various aircraft types. It should be noted that a considerable greater range of flight tracks would be flown than shown; ie. the charts give indicative tracks only. On the charts the tracks are colour coded; red for arrival, blue for departure and green for circuits and the track names are aligned with the direction of flight.

- ▶ Routes were developed for the five types of aircraft assumed to operate at the airfield. They were; Turbo-Prop, Light Twin, Single Engine, Ultra Light and Helicopter. The flight track naming convention used was:
 - ▶ 1st – two letters for the type (TP, LT, SG, UL or HC),
 - ▶ next – the runway used (18R, 36L, 09, 27, 18L or 36R),
 - ▶ then – whether an arrival, departure or circuit flight (A, D, T),
 - ▶ finally – a single digit for the route

ERSA requires a right hand circuit to be flown off runway 18R and for the 2025 ANEF it was assumed that right hand circuits would also be flown off runway 27 as proposed in the Fly-neighbourly agreement.

Standard non-controlled circuit procedures were assumed for the Light Twin, Single Engine and Ultra Light aircraft types but were slightly modified as the proposed Fly-neighbourly agreement avoids flight tracks over fly built-up areas. As a result there is no available area for an 'upwind' leg and arrival and departure tracks were positioned to avoid the Evans Head village.

The Turbo-Prop aircraft were assumed to undertake straight-in approaches; i.e. be established on the runway centreline by 5nm and on departure turn onto their outbound heading on reaching 1,500' AGL with all turns away from the township.

Arriving helicopters were aligned with the runway centreline 100m from the touch down point and on departure they turned from runway heading to their outbound route 100m from lift-off.

Evans Head airfield is unlit and so all movements are during daylight hours. However the INM evening/night period is from 7pm to 7am, therefore there will be some aircraft movements during daylight hours but within the INM evening/night period especially over the summer months. Some movements were assumed in the INM evening/night period and all were assigned to the INM night period (10pm to 7am). The ANEF metric assigns an aircraft movement during both the evening and night periods a weighting of four times a day movement and so assigning all such movements to the night period does not introduce any inaccuracies;

For the piston-engined aircraft it was assumed that it would descent on a five-degree glide slope and the turbo-props would utilize a three-degree glide slope. Flight profiles (describing aircraft altitude, speed and power settings throughout a flight) were developed for aircraft undertaking local area flights and circuit training with the speed and power settings following the INM standard data and altitude being amended to allow for cruising at lower altitudes;

Aircraft movements, where a movement is an arrival, a departure, a departure to and arrival from the circuit (one movement), or a touch-n-go (one movement), were assumed for various periods of time (weekly, fortnightly, monthly, yearly or bi-yearly) and converted to yearly movements (weekly times 52, fortnightly times 26, monthly times 12, bi-yearly divided by 2). The resultant yearly movements were converted to daily movements, as INM requires, by dividing by 365. This results in the aircraft movement database containing fractions of aircraft and some minor rounding errors.

The effects of the activation of Restricted Area R634 (Evans Head bombing range) was disregarded as there is no data on the likely effects on aircraft movements at Evans Head airfield during those periods. This activation averages about 40 days per year, would affect aircraft routes to/from the south and requires that circuits be flown at 500' AMSL rather than the standard 1,000' AMSL for piston-engined aircraft.

6. Aircraft Movements - Detailed

In the following discussion a service is an arrival and a departure; i.e. two movements. A circuit is either an INM 'CIR' operation or an INM 'TGO' operation; i.e. one movement.

The detailed assumptions made for each of the market segments include:

6.1 Ambulance

These aircraft will utilize Evans Head airfield to retrieve those requiring medical attention and evacuation. The annual movements assumed are a little greater than what currently occurs, however there is some planned population expansion for Evans Head and its surrounding areas that may result in an increased need for these aircraft movements.

Aircraft types

- Beech 200 turbo-prop – study name AB200 – INM equivalent DHC6
- WestPac helicopter – study name AWPAC – INM equivalent S70
- (Note: This aircraft was modelled as a military Black Hawk as that was the only data available for a large twin engine helicopter.)

Annual movements

- ▶ AB200
 - One service every two weeks
 - 52 mpa or 0.1425 daily
- ▶ AWPAC
 - One service every two weeks
 - 52 mpa or 0.1425 daily

Routes used

- ▶ AB200
 - SW 25% and N 75%
- ▶ AWPAC
 - SW 50% and N 50%

Day night split

- AB200 - day 95% and night 5%
- AWPAC - day 75% and night 25% (not limited to daylight operations)

Flight Profiles

- AB200 – standard INM data
- AWPAC – cruise at 1,000'

Runway Usage

- AB200 –18R 50% and 36L 50%
- AWPAC – 18L 50% and 36R 50%

6.2 Emergency

Both civil and military have in the past responded to emergencies (floods, bush fires) in the Evans Head area with both fixed wing (Hercules or Caribou) and helicopters (Kiowa, B206 etc.). In the past there has been a major event requiring aircraft support about once every two years. The airfield is not really suitable for Hercules aircraft with pavement damage occurring on the last movement of this aircraft type and it is assumed that the Caribou will be out of service by 2025 and replaced by a turbo-prop utility aircraft such as the CASA 212. These aircraft, whether fixed or rotary wing may be from ADF, Federal or State Government sources, National Parks, SES or similar services.

Aircraft types

- ▶ - CASA 212 turbo-prop – study name ECA212 – INM equivalent DHC6
- ▶ - Kiowa or Bell 206 – study name EB206 - INM equivalent B206

Annual movements

- ▶ - ECA212
 - An aircraft responds to an emergency event (either fire or flood) every two years with six services per emergency event
 - 6mpa or 0.0164 daily
- ▶ - EB206
 - Four aircraft respond to an emergency event every two years with each aircraft undertaking eight services (sorties) per day over six days
 - 192mpa or 0.5260 daily

Routes used

- ▶ ECA212
 - SW 50% and N 50%
- ▶ EB206
 - INW 50% and ISW 50%

Day night split

- ▶ ECA212- 95% day and 5% night
- ▶ EB206- 88% day and 12% night
 - (Bush fires and floods are generally summer events and it is assumed that the aircraft would depart at first light, return to the airfield several times during the day and return for the night at last light)

Flight Profiles

- ▶ ECA212– standard INM data
- ▶ EB206– cruise at 1,000'

Runway Usage

- ▶ ECA212 –18R 50% and 36L 50%
- ▶ EB206 –18L 50% and 36R 50%

6.3 Charter

In line with many other coastal communities EMAC expressed the belief that it will be possible to develop some tourist activities based on moving groups between regions by air. Furthermore with increased development of the area it is quite possible that there will be some general aircraft charter activities occurring. Within the aircraft movements defined below it has been assumed that the turbo-prop aircraft services package tourist activities and light-twin and single engine aircraft service general charter requirements.

Aircraft types

- ▶ Beech 200 turbo-prop – study name CB200 – INM equivalent DHC6
- ▶ Piston engined light twin – study name CB58P - INM equivalent BEC58P
- ▶ Single engine with variable prop – study name CGAV – INM equivalent GASEPV

Annual movements

- ▶ -CB1900
 - One service per month
 - 24 mpa or 0.0658 daily
- ▶ CB58P
 - One service per two weeks
 - 52mpa or 0.1425 daily
- ▶ CGAV
 - Four services per two weeks
 - 208mpa or 0.5699 daily

Routes used

- ▶ CB1900 – N 50% and SW 50%
- ▶ CB58P – N 50% and SW 50%
- ▶ CGAV – N 50% and SW 50%

Day night split

- ▶ CB1900 - day 95% and night 5%
- ▶ CB58P – day 95% and night 5%

- ▶ CGAV – day 95% and night 5%

Flight Profiles

- ▶ CB1900 – standard INM data
- ▶ CB58P – standard INM data
- ▶ CGAV – standard INM data

Runway Usage

- ▶ CB1900 – 18R 50% & 36L 50%
- ▶ CB58P – 18R 50% & 36L 50%
- ▶ CGAV – 18R 50% & 36L 50%

6.4 General Aviation

It is assumed that general aviation activity at Evans Head airfield will be based on; a relocation of aircraft from high cost airfields, the development of businesses based primarily ultra-light aircraft and some drop-in traffic. With the probable development of Evans Head township there is scope for residents to relocate their aircraft from such airfields as Bankstown or Archerfield and then to use them to commute to/from places of business. Furthermore there is already some ultra-light aircraft activity and a real possibility of developing several businesses (flight training, servicing, maintenance) based on these aircraft types. As the above activities develop, the airfield becomes an attractive place to drop-into during a flight especially if refuelling and perhaps a refreshment area were to be established. For all the above activities the current apron area provides significant areas that could be developed for hangars, offices, flight schools, etc.

Aircraft types

- ▶ Piston engined light twin – study name GB58P - INM equivalent BEC58P
- ▶ Single engined variable pitch prop – study name GGAV - INM equivalent GASEPV
- ▶ Single engined fixed pitch prop – study name GGAF - INM equivalent GASEPF
- ▶ Ultra light – study name GUAF - INM equivalent GASEPF

Annual movements

- ▶ GB58P
 - one aircraft hangared at Evans Head and undertake
 - two services per week
 - 208mpa or 0.5699 & daily
 - two circuits per week
 - 104mpa or 0.2849 daily
- ▶ GGAV
 - four aircraft hangared at Evans Head and each undertake

- one service per week
- 416mpa or 1.1397 daily
- two circuits per week
- 416mpa or 1.1397 daily
- ▶ GGAF
 - four aircraft hangared at Evans Head and each undertake
 - one service per week
 - 416mpa or 1.1397 daily
 - two circuits per week
 - 416mpa or 1.1397 daily
- ▶ GUAF
 - twelve aircraft hangared at Evans Head and each undertake
 - one area trip (service) per week
 - 1,248mpa or 3.4192 daily
 - two circuits per week
 - 1,248mpa or 3.4192 daily
 - eight aircraft fly-in twice per month and undertake
 - one service
 - 384mpa or 1.0521 daily
 - two circuits
 - 384 or 1.0521 daily

Routes used

- ▶ GB58P – N 25%, SW 25%, BN 25% and BS 25%
- ▶ GGAV – N 25%, SW 25%, BN 25% and BS 25%
- ▶ GGAF – N 25%, SW 25%, BN 25% and BS 25%
- ▶ GUAF – N 25%, SW 25%, BN 25% and BS 25%

Day night split

- ▶ GB58P – day 95% and night 5%
- ▶ GGAV – day 95% and night 5%
- ▶ GGAF – day 95% and night 5%
- ▶ GUAF – day 95% and night 5%

Flight Profiles

- ▶ GB58P – arr & dep standard INM data, circuits @ 1,000'
- ▶ GGAV – arr & dep standard INM data, circuits @ 1,000'
- ▶ GGAF – arr & dep standard INM data, circuits @ 1,000'
- ▶ GUAF – arr & dep @ 1,000', circuits @ 500'

Runway Usage

- ▶ GB58P – 18R 50% and 36L 50%
- ▶ GGAV – 18R 50% and 36L 50%
- ▶ GGAF – 18R 50% and 36L 50%
- ▶ GUAF – 18R 30%, 36L 30%, 09 20% and 27 20%

6.5 Great Eastern Fly-In

The Great Eastern Fly-in is a two-day event that in the past has attracted up to 400 aircraft. However, several years ago, the number of aircraft in attendance was considerably reduced. This was attributed to the difficulty in arranging public liability insurance and a shift in event dates from the new year long weekend to October. In the last couple of years a solution appears to have been found to the insurance problem and the event has moved back to the New Year weekend. It is expected that it will grow back to the previous size with 400 aircraft being about the practical limit of the airfield. Apart from the gathering of pilots and their families for the event there is a considerable amount of demonstration flying, joy flights and trade stands and in the past the fly-in has generated up to 4,000 movements.

For the draft ANEF it was assumed that 400 aircraft will attend the Great Eastern Fly-in comprising 10 Warbirds, 40 twins, 120 single and 230 Ultra-light aircraft.

Aircraft types

Associated with the Great Eastern fly-in are operations by significant range of 'War-bird' aircraft including Antonov, Boomerang, Catalina, Constellation, Fiat G-59, MIG15, Mustang, Spitfire, T-6 Harvard, T-28 Trojan, Winjeel and Wirraway. Indicative types modeled were Vampire, Spitfire, Wirraway and Tiger moth aircraft. The noise characteristics (NPD curves) selected were the closest available in the INM database and the aircraft performance characteristics (fixed point profiles) were as supplied by the Temora Aviation Museum for the preparation of the Temora 2023 ANECs;

- ▶ Large piston engined twin – study name FDC3 – INM equivalent DC3
- ▶ Piston engined light twin – study name FB58P - INM equivalent BEC58P
- ▶ Single engined variable pitch prop – study name FGAV - INM equivalent GASEPV
- ▶ Single engined fixed pitch prop – study name FGAF - INM equivalent GASEPF
- ▶ Ultra light – study name FUAF - INM equivalent GASEPF
- ▶ Vampire – study name FVAMP – INM equivalent F8
- ▶ Spitfire – study name FSPIT – INM equivalent GASEPV
- ▶ Wirraway – study name FWIRR – INM equivalent DHC-2
- ▶ Tiger moth – study name FTIG – INM equivalent GASEPF

Annual movements

- ▶ FDC3
 - Four aircraft attends the fly-in and undertake two area trips per day

- 40mpa or 0.1096 daily
- ▶ **FB58P**
 - Thirty-six aircraft attends the fly-in and undertake one area trip per day
 - 216mpa or 0.5918 daily
- ▶ **FGAV**
 - Forty aircraft attends the fly-in and undertake
 - one area trips per day
 - 240mpa or 0.6575 daily
 - two circuits per day
 - 160mpa or 0.4384 daily
- ▶ **FGAF**
 - Eighty aircraft attends the fly-in and undertake
 - one area trips per day
 - 480mpa or 1.3151 daily
 - two circuits per day
 - 320mpa or 0.8767 daily
- ▶ **FUAF**
 - two hundred and thirty aircraft attends the fly-in and undertake
 - one area trips per day
 - 1380mpa or 3.7808 daily
 - two circuits per day
 - 920mpa or 2.5205 daily
- ▶ **FVAMP**
 - two aircraft attends the fly-in and undertake
 - one area trips per day
 - 12mpa or 0.0329 daily
 - two circuits per day
 - 8mpa or 0.0219 daily
- ▶ **FSPIT**
 - two aircraft attends the fly-in and undertake
 - one area trips per day
 - 12mpa or 0.0329 daily
 - two circuits per day
 - 8mpa or 0.0219 daily
- ▶ **FWIRR**
 - two aircraft attends the fly-in and undertake
 - one area trips per day
 - 12mpa or 0.0329 daily

- two circuits per day
- 8mpa or 0.0219 daily
- ▶ FTIG
 - four aircraft attends the fly-in and undertake
 - one area trips per day
 - 24mpa or 0.0658 daily
 - two circuits per day
 - 16mpa or 0.0438 daily

Routes used

- ▶ FDC3 – N 25%, SW 25%, BN 25% and BS 25%
- ▶ FB58P - N 25%, SW 25%, BN 25% and BS 25%
- ▶ FGAV - N 25%, SW 25%, BN 25% and BS 25%
- ▶ FGAF - N 25%, SW 25%, BN 25% and BS 25%
- ▶ FUAF - N 25%, SW 25%, BN 25% and BS 25%
- ▶ FVAMP - N 25%, SW 25%, BN 25% and BS 25%: uses the Light-twin circuit
- ▶ FSPIT - N 25%, SW 25%, BN 25% and BS 25%: uses the Light-twin circuit
- ▶ FWIRR - N 25%, SW 25%, BN 25% and BS 25%: uses the Light-twin circuit
- ▶ FTIG - N 25%, SW 25%, BN 25% and BS 25%: uses the Ultra-light circuit

Day night split

- ▶ FDC3 – 100% day
- ▶ FB58P – 100% day
- ▶ FGAV – 100% day
- ▶ FGAF – 100% day
- ▶ FUAF – 100% day
- ▶ FVAMP – 100% day
- ▶ FSPIT – 100% day
- ▶ FWIRR – 100% day
- ▶ FTIG – 100% day

Flight Profiles

- ▶ FDC3 – arr & dep standard INM data, circuits @ 1,000'
- ▶ FB58P – arr & dep @ 1,500', circuits @ 1,000'
- ▶ FGAV – arr & dep @ 1,500', circuits @ 1,000'
- ▶ FGAF – arr & dep @ 1,500', circuits @ 1,000'
- ▶ FUAF – arr & dep @ 1,000', circuits @ 1,000'

- ▶ FVAMP – arr & dep @ 1,500', circuits at 500' (uses Temora Aviation Museum profiles)
- ▶ FSPIT – arr & dep @ 1,500', circuits at 500' (uses Temora Aviation Museum profiles)
- ▶ FWIRR – arr & dep @ 1,500', circuits at 500' (uses Temora Aviation Museum profiles)
- ▶ FTIG – arr & dep @ 1,500', circuits at 500' (uses Temora Aviation Museum profiles)

Runway Usage

It is assumed that the fly-in activities will take place primarily on runway 18R/36L however there will be some usage of 09/27 by light and ultra-light aircraft that are crosswind limited.

- ▶ FDC3 – 18R 50% and 36L 50%
- ▶ FB58P – 18R 50% and 36L 50%
- ▶ FGAV – 40% 18R, 40% 36L, 10% 09, 10% 27
- ▶ FGAF – 40% 18R, 40% 36L, 10% 09, 10% 27
- ▶ FUAF – 40% 18R, 40% 36L, 10% 09, 10% 27
- ▶ FVAMP – 18R 50% and 36L 50%
- ▶ FSPIT – 18R 50% and 36L 50%
- ▶ FWIRR – 18R 50% and 36L 50%
- ▶ FTIG – 18R 50% and 36L 50%

6.6 Aircraft Movement Summary

The overall aircraft movements for the five market segments for the forecast year 2025 were:

Table 2 Overall Average Daily Movements for the Forecast Year 2025 – by Market Segment

	Annual	Daily
Market Segment		
Ambulance	104	0.2849
Emergency	198	0.5425
Charter	284	0.7781
General Aviation	5,240	14.3562
Great Eastern Fly-In	3,856	10.5644
Total	9,682	26.5260

The overall aircraft movements for the aircraft types for the forecast year 2025 were:

Table 3 Overall Average Daily Movements for the Forecast Year 2025 – by Market Segment

	Annual	Daily
Arrivals & Departures		
Beech 200	52	0.1425
Large Helicopter	52	0.1425
CA212	6	0.0164
Small Helicopter	192	0.5260
Beech 1900	24	0.0658
Beech 58P	476	1.3042
GASEPV	864	2.3671
GASEPF	896	2.4548
Ultra-Light	3012	8.2520
DC3	40	0.1096
Vampire	12	0.0329
Spitfire	12	0.0329
Wirraway	12	0.0329
Tigermoth	24	0.0658
Circuits		
Beech 58P	104	0.2849
GASEPV	576	1.5781
GASEPF	736	2.0164
Ultra-Light	2552	6.9918
Vampire	8	0.0219
Spitfire	8	0.0219
Wirraway	8	0.0219
Tigermoth	16	0.0438
Total Movements	9,682	26.5260

7. Aircraft Movements – INM Database

The following detailed tables of aircraft movements are from the INM database. The columns are:

- ▶ TYPE – INM aircraft type;
- ▶ OP_TYPE – arrival (A), departure (D), circuit (F) or touch-n-go (T);
- ▶ PROF_ID1 & ID2 – flight profile whether INM standard or user defined
- ▶ RWY_ID1 – the runway used
- ▶ TRK_ID1 – the flight track
- ▶ OPS_DAY – aircraft movements during 7am to 7pm
- ▶ OPS_NIGHT – aircraft movements during 7pm to 7am

Table 4 Ambulance Aircraft

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
AB200	A	STANDARD	1	18R	TP18RA1	0.0085	0.0000	0.0004
AB200	D	STANDARD	1	18R	TP18RD1	0.0085	0.0000	0.0004
AB200	A	STANDARD	1	36L	TP36LA1	0.0085	0.0000	0.0004
AB200	D	STANDARD	1	36L	TP36LD1	0.0085	0.0000	0.0004
AB200	A	STANDARD	1	18R	TP18RA2	0.0254	0.0000	0.0013
AB200	D	STANDARD	1	18R	TP18RD2	0.0254	0.0000	0.0013
AB200	A	STANDARD	1	36L	TP36LA2	0.0254	0.0000	0.0013
AB200	D	STANDARD	1	36L	TP36LD2	0.0254	0.0000	0.0013
AWPAC	A	S70A	1	18L	HC18LA1	0.0134	0.0000	0.0045
AWPAC	D	S70D	1	18L	HC18LD1	0.0134	0.0000	0.0045
AWPAC	A	S70A	1	36R	HC36RA1	0.0134	0.0000	0.0045
AWPAC	D	S70D	1	36R	HC36RD1	0.0134	0.0000	0.0045
AWPAC	A	S70A	1	18L	HC18LA2	0.0134	0.0000	0.0045
AWPAC	D	S70D	1	18L	HC18LD2	0.0134	0.0000	0.0045

AWPAC	A	S70A	1	36R	HC36RA2	0.0134	0.0000	0.0045
AWPAC	D	S70D	1	36R	HC36RD2	0.0134	0.0000	0.0045

Table 5 Emergency Aircraft

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
ECA212	A	STANDARD	1	18R	TP18RA1	0.0020	0.0000	0.0001
ECA212	D	STANDARD	1	18R	TP18RD1	0.0020	0.0000	0.0001
ECA212	A	STANDARD	1	36L	TP36LA1	0.0020	0.0000	0.0001
ECA212	D	STANDARD	1	36L	TP36LD1	0.0020	0.0000	0.0001
ECA212	A	STANDARD	1	18R	TP18RA2	0.0020	0.0000	0.0001
ECA212	D	STANDARD	1	18R	TP18RD2	0.0020	0.0000	0.0001
ECA212	A	STANDARD	1	36L	TP36LA2	0.0020	0.0000	0.0001
ECA212	D	STANDARD	1	36L	TP36LD2	0.0020	0.0000	0.0001
EB206	A	B206A	1	18L	HC18LA5	0.0579	0.0000	0.0079
EB206	D	B206D	1	18L	HC18LD5	0.0579	0.0000	0.0079
EB206	A	B206A	1	36R	HC36RA5	0.0579	0.0000	0.0079
EB206	D	B206D	1	36R	HC36RD5	0.0579	0.0000	0.0079
EB206	A	B206A	1	18L	HC18LA6	0.0579	0.0000	0.0079
EB206	D	B206D	1	18L	HC18LD6	0.0579	0.0000	0.0079
EB206	A	B206A	1	36R	HC36RA6	0.0579	0.0000	0.0079
EB206	D	B206D	1	36R	HC36RD6	0.0579	0.0000	0.0079

Table 6 Charter Aircraft

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
CB1900	A	STANDARD	1	18R	TP18RA1	0.0078	0.0000	0.0004
CB1900	D	STANDARD	1	18R	TP18RD1	0.0078	0.0000	0.0004
CB1900	A	STANDARD	1	36L	TP36LA1	0.0078	0.0000	0.0004
CB1900	D	STANDARD	1	36L	TP36LD1	0.0078	0.0000	0.0004
CB1900	A	STANDARD	1	18R	TP18RA2	0.0078	0.0000	0.0004
CB1900	D	STANDARD	1	18R	TP18RD2	0.0078	0.0000	0.0004
CB1900	A	STANDARD	1	36L	TP36LA2	0.0078	0.0000	0.0004
CB1900	D	STANDARD	1	36L	TP36LD2	0.0078	0.0000	0.0004

CB58P	A	STANDARD	2	18R	LT18RA1	0.0169	0.0000	0.0009
CB58P	D	STANDARD	1	18R	LT18RD1	0.0169	0.0000	0.0009
CB58P	A	STANDARD	2	36L	LT36LA1	0.0169	0.0000	0.0009
CB58P	D	STANDARD	1	36L	LT36LD1	0.0169	0.0000	0.0009
CB58P	A	STANDARD	2	18R	LT18RA2	0.0169	0.0000	0.0009
CB58P	D	STANDARD	1	18R	LT18RD2	0.0169	0.0000	0.0009
CB58P	A	STANDARD	2	36L	LT36LA2	0.0169	0.0000	0.0009
CB58P	D	STANDARD	1	36L	LT36LD2	0.0169	0.0000	0.0009
CGAV	A	STANDARD	2	18R	SG18RA1	0.0677	0.0000	0.0036
CGAV	D	STANDARD	1	18R	SG18RD1	0.0677	0.0000	0.0036
CGAV	A	STANDARD	2	36L	SG36LA1	0.0677	0.0000	0.0036
CGAV	D	STANDARD	1	36L	SG36LD1	0.0677	0.0000	0.0036
CGAV	A	STANDARD	2	18R	SG18RA2	0.0677	0.0000	0.0036
CGAV	D	STANDARD	1	18R	SG18RD2	0.0677	0.0000	0.0036
CGAV	A	STANDARD	2	36L	SG36LA2	0.0677	0.0000	0.0036
CGAV	D	STANDARD	1	36L	SG36LD2	0.0677	0.0000	0.0036

Table 7 General Aviation Aircraft

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
GB58P	A	STANDARD	2	18R	LT18RA1	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	18R	LT18RD1	0.0338	0.0000	0.0018
GB58P	A	STANDARD	2	36L	LT36LA1	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	36L	LT36LD1	0.0338	0.0000	0.0018
GB58P	A	STANDARD	2	18R	LT18RA2	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	18R	LT18RD2	0.0338	0.0000	0.0018
GB58P	A	STANDARD	2	36L	LT36LA2	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	36L	LT36LD2	0.0338	0.0000	0.0018
GB58P	A	STANDARD	2	18R	LT18RA3	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	18R	LT18RD3	0.0338	0.0000	0.0018
GB58P	A	STANDARD	2	36L	LT36LA3	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	36L	LT36LD3	0.0338	0.0000	0.0018

GB58P	A	STANDARD	2	18R	LT18RA4	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	18R	LT18RD4	0.0338	0.0000	0.0018
GB58P	A	STANDARD	2	36L	LT36LA4	0.0338	0.0000	0.0018
GB58P	D	STANDARD	1	36L	LT36LD4	0.0338	0.0000	0.0018
GGAV	A	STANDARD	2	18R	SG18RA1	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	18R	SG18RD1	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	36L	SG36LA1	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	36L	SG36LD1	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	18R	SG18RA2	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	18R	SG18RD2	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	36L	SG36LA2	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	36L	SG36LD2	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	18R	SG18RA3	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	18R	SG18RD3	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	36L	SG36LA3	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	36L	SG36LD3	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	18R	SG18RA4	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	18R	SG18RD4	0.0677	0.0000	0.0036
GGAV	A	STANDARD	2	36L	SG36LA4	0.0677	0.0000	0.0036
GGAV	D	STANDARD	1	36L	SG36LD4	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	18R	SG18RA1	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	18R	SG18RD1	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	36L	SG36LA1	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	36L	SG36LD1	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	18R	SG18RA2	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	18R	SG18RD2	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	36L	SG36LA2	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	36L	SG36LD2	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	18R	SG18RA3	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	18R	SG18RD3	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	36L	SG36LA3	0.0677	0.0000	0.0036

GGAF	D	STANDARD	1	36L	SG36LD3	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	18R	SG18RA4	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	18R	SG18RD4	0.0677	0.0000	0.0036
GGAF	A	STANDARD	2	36L	SG36LA4	0.0677	0.0000	0.0036
GGAF	D	STANDARD	1	36L	SG36LD4	0.0677	0.0000	0.0036
GUAF	A	ULA	2	18R	UL18RA1	0.1593	0.0000	0.0084
GUAF	D	ULD	1	18R	UL18RD1	0.1593	0.0000	0.0084
GUAF	A	ULA	2	36L	UL36LA1	0.1593	0.0000	0.0084
GUAF	D	ULD	1	36L	UL36LD1	0.1593	0.0000	0.0084
GUAF	A	ULA	2	09	UL09A1	0.1062	0.0000	0.0056
GUAF	D	ULD	1	09	UL09D1	0.1062	0.0000	0.0056
GUAF	A	ULA	2	27	UL27A1	0.1062	0.0000	0.0056
GUAF	D	ULD	1	27	UL27D1	0.1062	0.0000	0.0056
GUAF	A	ULA	2	18R	UL18RA2	0.1593	0.0000	0.0084
GUAF	D	ULD	1	18R	UL18RD2	0.1593	0.0000	0.0084
GUAF	A	ULA	2	36L	UL36LA2	0.1593	0.0000	0.0084
GUAF	D	ULD	1	36L	UL36LD2	0.1593	0.0000	0.0084
GUAF	A	ULA	2	09	UL09A2	0.1062	0.0000	0.0056
GUAF	D	ULD	1	09	UL09D2	0.1062	0.0000	0.0056
GUAF	A	ULA	2	27	UL27A2	0.1062	0.0000	0.0056
GUAF	D	ULD	1	27	UL27D2	0.1062	0.0000	0.0056
GUAF	A	ULA	2	18R	UL18RA3	0.1593	0.0000	0.0084
GUAF	D	ULD	1	18R	UL18RD3	0.1593	0.0000	0.0084
GUAF	A	ULA	2	36L	UL36LA3	0.1593	0.0000	0.0084
GUAF	D	ULD	1	36L	UL36LD3	0.1593	0.0000	0.0084
GUAF	A	ULA	2	09	UL09A3	0.1062	0.0000	0.0056
GUAF	D	ULD	1	09	UL09D3	0.1062	0.0000	0.0056
GUAF	A	ULA	2	27	UL27A3	0.1062	0.0000	0.0056
GUAF	D	ULD	1	27	UL27D3	0.1062	0.0000	0.0056
GUAF	A	ULA	2	18R	UL18RA4	0.1593	0.0000	0.0084
GUAF	D	ULD	1	18R	UL18RD4	0.1593	0.0000	0.0084

GUAF	A	ULA	2	36L	UL36LA4	0.1593	0.0000	0.0084
GUAF	D	ULD	1	36L	UL36LD4	0.1593	0.0000	0.0084
GUAF	A	ULA	2	09	UL09A4	0.1062	0.0000	0.0056
GUAF	D	ULD	1	09	UL09D4	0.1062	0.0000	0.0056
GUAF	A	ULA	2	27	UL27A4	0.1062	0.0000	0.0056
GUAF	D	ULD	1	27	UL27D4	0.1062	0.0000	0.0056
GB58P	F	B58C	1	18R	LT18RT	0.0677	0.0000	0.0036
GB58P	F	B58C	1	36L	LT36LT	0.0677	0.0000	0.0036
GB58P	T	B58T	1	18R	LT18RT	0.0677	0.0000	0.0036
GB58P	T	B58T	1	36L	LT36LT	0.0677	0.0000	0.0036
GGAV	F	GAVC	1	18R	SG18RT	0.2707	0.0000	0.0142
GGAV	F	GAVC	1	36L	SG36LT	0.2707	0.0000	0.0142
GGAV	T	GAVT	1	18R	SG18RT	0.2707	0.0000	0.0142
GGAV	T	GAVT	1	36L	SG36LT	0.2707	0.0000	0.0142
GGAF	F	GAFC	1	18R	SG18RT	0.2707	0.0000	0.0142
GGAF	F	GAFC	1	36L	SG36LT	0.2707	0.0000	0.0142
GGAF	T	GAFT	1	18R	SG18RT	0.2707	0.0000	0.0142
GGAF	T	GAFT	1	36L	SG36LT	0.2707	0.0000	0.0142
GUAF	F	ULF	1	18R	UL18RT	0.3186	0.0000	0.0168
GUAF	F	ULF	1	36L	UL36LT	0.3186	0.0000	0.0168
GUAF	F	ULF	1	09	UL09T	0.2124	0.0000	0.0112
GUAF	F	ULF	1	27	UL27T	0.2124	0.0000	0.0112
GUAF	T	ULT	1	18R	UL18RT	0.9557	0.0000	0.0503
GUAF	T	ULT	1	36L	UL36LT	0.9557	0.0000	0.0503
GUAF	T	ULT	1	09	UL09T	0.6372	0.0000	0.0335
GUAF	T	ULT	1	27	UL27T	0.6372	0.0000	0.0335

Table 8 Great Eastern Fly-in

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FDC3	A	STANDARD	2	18R	LT18RA1	0.0068	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FDC3	D	STANDARD	1	18R	LT18RD1	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	36L	LT36LA1	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	36L	LT36LD1	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	18R	LT18RA2	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	18R	LT18RD2	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	36L	LT36LA2	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	36L	LT36LD2	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	18R	LT18RA3	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	18R	LT18RD3	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	36L	LT36LA3	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	36L	LT36LD3	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	18R	LT18RA4	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	18R	LT18RD4	0.0068	0.0000	0.0000
FDC3	A	STANDARD	2	36L	LT36LA4	0.0068	0.0000	0.0000
FDC3	D	STANDARD	1	36L	LT36LD4	0.0068	0.0000	0.0000
FB58P	A	B58A	2	18R	LT18RA1	0.0370	0.0000	0.0000
FB58P	D	B58D	1	18R	LT18RD1	0.0370	0.0000	0.0000
FB58P	A	B58A	2	36L	LT36LA1	0.0370	0.0000	0.0000
FB58P	D	B58D	1	36L	LT36LD1	0.0370	0.0000	0.0000
FB58P	A	B58A	2	18R	LT18RA2	0.0370	0.0000	0.0000
FB58P	D	B58D	1	18R	LT18RD2	0.0370	0.0000	0.0000
FB58P	A	B58A	2	36L	LT36LA2	0.0370	0.0000	0.0000
FB58P	D	B58D	1	36L	LT36LD2	0.0370	0.0000	0.0000
FB58P	A	B58A	2	18R	LT18RA3	0.0370	0.0000	0.0000
FB58P	D	B58D	1	18R	LT18RD3	0.0370	0.0000	0.0000
FB58P	A	B58A	2	36L	LT36LA3	0.0370	0.0000	0.0000
FB58P	D	B58D	1	36L	LT36LD3	0.0370	0.0000	0.0000
FB58P	A	B58A	2	18R	LT18RA4	0.0370	0.0000	0.0000
FB58P	D	B58D	1	18R	LT18RD4	0.0370	0.0000	0.0000
FB58P	A	B58A	2	36L	LT36LA4	0.0370	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FB58P	D	B58D	1	36L	LT36LD4	0.0370	0.0000	0.0000
FGAV	A	GAVA	2	18R	SG18RA1	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	18R	SG18RD1	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	36L	SG36LA1	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	36L	SG36LD1	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	09	SG09A1	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	09	SG09D1	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	27	SG27A1	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	27	SG27D1	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	18R	SG18RA2	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	18R	SG18RD2	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	36L	SG36LA2	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	36L	SG36LD2	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	09	SG09A2	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	09	SG09D2	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	27	SG27A2	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	27	SG27D2	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	18R	SG18RA3	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	18R	SG18RD3	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	36L	SG36LA3	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	36L	SG36LD3	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	09	SG09A3	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	09	SG09D3	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	27	SG27A3	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	27	SG27D3	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	18R	SG18RA4	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	18R	SG18RD4	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	36L	SG36LA4	0.0082	0.0000	0.0000
FGAV	D	GAVD	1	36L	SG36LD4	0.0082	0.0000	0.0000
FGAV	A	GAVA	2	09	SG09A4	0.0329	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FGAV	D	GAVD	1	09	SG09D4	0.0329	0.0000	0.0000
FGAV	A	GAVA	2	27	SG27A4	0.0329	0.0000	0.0000
FGAV	D	GAVD	1	27	SG27D4	0.0329	0.0000	0.0000
FGAF	A	Gafa	2	18R	SG18RA1	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	18R	SG18RD1	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	36L	SG36LA1	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	36L	SG36LD1	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	09	SG09A1	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	09	SG09D1	0.0658	0.0000	0.0000
FGAF	A	Gafa	2	27	SG27A1	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	27	SG27D1	0.0658	0.0000	0.0000
FGAF	A	Gafa	2	18R	SG18RA2	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	18R	SG18RD2	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	36L	SG36LA2	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	36L	SG36LD2	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	09	SG09A2	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	09	SG09D2	0.0658	0.0000	0.0000
FGAF	A	Gafa	2	27	SG27A2	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	27	SG27D2	0.0658	0.0000	0.0000
FGAF	A	Gafa	2	18R	SG18RA3	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	18R	SG18RD3	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	36L	SG36LA3	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	36L	SG36LD3	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	09	SG09A3	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	09	SG09D3	0.0658	0.0000	0.0000
FGAF	A	Gafa	2	27	SG27A3	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	27	SG27D3	0.0658	0.0000	0.0000
FGAF	A	Gafa	2	18R	SG18RA4	0.0164	0.0000	0.0000
FGAF	D	GAFD	1	18R	SG18RD4	0.0164	0.0000	0.0000
FGAF	A	Gafa	2	36L	SG36LA4	0.0164	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FGAF	D	GAFD	1	36L	SG36LD4	0.0164	0.0000	0.0000
FGAF	A	GAFA	2	09	SG09A4	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	09	SG09D4	0.0658	0.0000	0.0000
FGAF	A	GAFA	2	27	SG27A4	0.0658	0.0000	0.0000
FGAF	D	GAFD	1	27	SG27D4	0.0658	0.0000	0.0000
FUAF	A	ULA	2	18R	UL18RA1	0.0473	0.0000	0.0000
FUAF	D	ULD	1	18R	UL18RD1	0.0473	0.0000	0.0000
FUAF	A	ULA	2	36L	UL36LA1	0.0473	0.0000	0.0000
FUAF	D	ULD	1	36L	UL36LD1	0.0473	0.0000	0.0000
FUAF	A	ULA	2	09	UL09A1	0.1890	0.0000	0.0000
FUAF	D	ULD	1	09	UL09D1	0.1890	0.0000	0.0000
FUAF	A	ULA	2	27	UL27A1	0.1890	0.0000	0.0000
FUAF	D	ULD	1	27	UL27D1	0.1890	0.0000	0.0000
FUAF	A	ULA	2	18R	UL18RA2	0.0473	0.0000	0.0000
FUAF	D	ULD	1	18R	UL18RD2	0.0473	0.0000	0.0000
FUAF	A	ULA	2	36L	UL36LA2	0.0473	0.0000	0.0000
FUAF	D	ULD	1	36L	UL36LD2	0.0473	0.0000	0.0000
FUAF	A	ULA	2	09	UL09A2	0.1890	0.0000	0.0000
FUAF	D	ULD	1	09	UL09D2	0.1890	0.0000	0.0000
FUAF	A	ULA	2	27	UL27A2	0.1890	0.0000	0.0000
FUAF	D	ULD	1	27	UL27D2	0.1890	0.0000	0.0000
FUAF	A	ULA	2	18R	UL18RA3	0.0473	0.0000	0.0000
FUAF	D	ULD	1	18R	UL18RD3	0.0473	0.0000	0.0000
FUAF	A	ULA	2	36L	UL36LA3	0.0473	0.0000	0.0000
FUAF	D	ULD	1	36L	UL36LD3	0.0473	0.0000	0.0000
FUAF	A	ULA	2	09	UL09A3	0.1890	0.0000	0.0000
FUAF	D	ULD	1	09	UL09D3	0.1890	0.0000	0.0000
FUAF	A	ULA	2	27	UL27A3	0.1890	0.0000	0.0000
FUAF	D	ULD	1	27	UL27D3	0.1890	0.0000	0.0000
FUAF	A	ULA	2	18R	UL18RA4	0.0473	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FUAF	D	ULD	1	18R	UL18RD4	0.0473	0.0000	0.0000
FUAF	A	ULA	2	36L	UL36LA4	0.0473	0.0000	0.0000
FUAF	D	ULD	1	36L	UL36LD4	0.0473	0.0000	0.0000
FUAF	A	ULA	2	09	UL09A4	0.1890	0.0000	0.0000
FUAF	D	ULD	1	09	UL09D4	0.1890	0.0000	0.0000
FUAF	A	ULA	2	27	UL27A4	0.1890	0.0000	0.0000
FUAF	D	ULD	1	27	UL27D4	0.1890	0.0000	0.0000
FVAMP	A	MAV01	1	18R	TP18RA1	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	18R	TP18RD1	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	36L	TP36LA1	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	36L	TP36LD1	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	18R	TP18RA2	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	18R	TP18RD2	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	36L	TP36LA2	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	36L	TP36LD2	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	18R	TP18RA3	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	18R	TP18RD3	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	36L	TP36LA3	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	36L	TP36LD3	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	18R	TP18RA4	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	18R	TP18RD4	0.0021	0.0000	0.0000
FVAMP	A	MAV01	1	36L	TP36LA4	0.0021	0.0000	0.0000
FVAMP	D	MDV01	1	36L	TP36LD4	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	18R	LT18RA1	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	18R	LT18RD1	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	36L	LT36LA1	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	36L	LT36LD1	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	18R	LT18RA2	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	18R	LT18RD2	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	36L	LT36LA2	0.0021	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FSPIT	D	MDS01	1	36L	LT36LD2	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	18R	LT18RA3	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	18R	LT18RD3	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	36L	LT36LA3	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	36L	LT36LD3	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	18R	LT18RA4	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	18R	LT18RD4	0.0021	0.0000	0.0000
FSPIT	A	MAS01	1	36L	LT36LA4	0.0021	0.0000	0.0000
FSPIT	D	MDS01	1	36L	LT36LD4	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	18R	LT18RA1	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	18R	LT18RD1	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	36L	LT36LA1	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	36L	LT36LD1	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	18R	LT18RA2	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	18R	LT18RD2	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	36L	LT36LA2	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	36L	LT36LD2	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	18R	LT18RA3	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	18R	LT18RD3	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	36L	LT36LA3	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	36L	LT36LD3	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	18R	LT18RA4	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	18R	LT18RD4	0.0021	0.0000	0.0000
FWIRR	A	MAW01	1	36L	LT36LA4	0.0021	0.0000	0.0000
FWIRR	D	MDW01	1	36L	LT36LD4	0.0021	0.0000	0.0000
FTIG	A	MAT01	1	18R	UL18RA1	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	18R	UL18RD1	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	36L	UL36LA1	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	36L	UL36LD1	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	18R	UL18RA2	0.0041	0.0000	0.0000

TYPE	OP_TYPE	PROF_ID1	PROF_ID2	RWY_ID	TRK_ID1	OPS_DAY	OPS_EVE	OPS_NIGHT
FTIG	D	MDT01	1	18R	UL18RD2	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	36L	UL36LA2	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	36L	UL36LD2	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	18R	UL18RA3	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	18R	UL18RD3	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	36L	UL36LA3	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	36L	UL36LD3	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	18R	UL18RA4	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	18R	UL18RD4	0.0041	0.0000	0.0000
FTIG	A	MAT01	1	36L	UL36LA4	0.0041	0.0000	0.0000
FTIG	D	MDT01	1	36L	UL36LD4	0.0041	0.0000	0.0000
GGAV	F	GAVF	1	18R	SG18RT	0.0877	0.0000	0.0000
GGAV	T	GAVT	1	18R	SG18RT	0.0877	0.0000	0.0000
GGAV	F	GAVF	1	36L	SG36LT	0.0877	0.0000	0.0000
GGAV	T	GAVT	1	36L	SG36LT	0.0877	0.0000	0.0000
GGAV	F	GAVF	1	09	SG09T	0.0219	0.0000	0.0000
GGAV	T	GAVT	1	09	SG09T	0.0219	0.0000	0.0000
GGAV	F	GAVF	1	27	SG27T	0.0219	0.0000	0.0000
GGAV	T	GAVT	1	27	SG27T	0.0219	0.0000	0.0000
GGAF	F	GAFF	1	18R	SG18RT	0.1753	0.0000	0.0000
GGAF	T	GAFT	1	18R	SG18RT	0.1753	0.0000	0.0000
GGAF	F	GAFF	1	36L	SG36LT	0.1753	0.0000	0.0000
GGAF	T	GAFT	1	36L	SG36LT	0.1753	0.0000	0.0000
GGAF	F	GAFF	1	09	SG09T	0.0438	0.0000	0.0000
GGAF	T	GAFT	1	09	SG09T	0.0438	0.0000	0.0000
GGAF	F	GAFF	1	27	SG27T	0.0438	0.0000	0.0000
GGAF	T	GAFT	1	27	SG27T	0.0438	0.0000	0.0000
GUAF	F	GAFF	1	18R	UL18RT	0.5041	0.0000	0.0000
GUAF	T	GAFT	1	18R	UL18RT	0.5041	0.0000	0.0000

GGAV	F	GAVF	1	18R	SG18RT	0.0877	0.0000	0.0000
GUAF	F	GAFF	1	36L	UL36LT	0.5041	0.0000	0.0000
GUAF	T	GAFT	1	36L	UL36LT	0.5041	0.0000	0.0000
GUAF	F	GAFF	1	09	UL09T	0.1260	0.0000	0.0000
GUAF	T	GAFT	1	09	UL09T	0.1260	0.0000	0.0000
GUAF	F	GAFF	1	27	UL27T	0.1260	0.0000	0.0000
GUAF	T	GAFT	1	27	UL27T	0.1260	0.0000	0.0000
FVAMP	F	MOV01	1	18R	LT18RT	0.0055	0.0000	0.0000
FVAMP	T	MOV01	1	18R	LT18RT	0.0055	0.0000	0.0000
FVAMP	F	MOV01	1	36L	LT36LT	0.0055	0.0000	0.0000
FVAMP	T	MOV01	1	36L	LT36LT	0.0055	0.0000	0.0000
FSPIT	F	MOS01	1	18R	LT18RT	0.0055	0.0000	0.0000
FSPIT	T	MOS01	1	18R	LT18RT	0.0055	0.0000	0.0000
FSPIT	F	MOS01	1	36L	LT36LT	0.0055	0.0000	0.0000
FSPIT	T	MOS01	1	36L	LT36LT	0.0055	0.0000	0.0000
FWIRR	F	MOW01	1	18R	LT18RT	0.0055	0.0000	0.0000
FWIRR	T	MOW01	1	18R	LT18RT	0.0055	0.0000	0.0000
FWIRR	F	MOW01	1	36L	LT36LT	0.0055	0.0000	0.0000
FWIRR	T	MOW01	1	36L	LT36LT	0.0055	0.0000	0.0000
FTIG	F	MOT01	1	18R	UL18RT	0.0110	0.0000	0.0000
FTIG	T	MOT01	1	18R	UL18RT	0.0110	0.0000	0.0000
FTIG	F	MOT01	1	36L	UL36LT	0.0110	0.0000	0.0000
FTIG	T	MOT01	1	36L	UL36LT	0.0110	0.0000	0.0000

7.1 Supplementary Modelling

To provide a more complete view of the likely aircraft noise exposure for aircraft activities at Evans Head Airfield several other contour sets were calculated as follows:

- The runway 06 direction is likely to be the most into-wind runway for significant periods of the year, especially summer when the afternoon sea breezes are active. An ANEC has been provided that re-distributes the draft 2025 ANEF traffic towards that runway that are able to operate on it generally the single engine and ultra-light aircraft. Furthermore the majority of the traffic operating throughout the Great Eastern Fly-in has also been modeled on runway 06. The advantages of utilizing

this runway are that it is often into wind and the aircraft movements are further from the Evans Head built-up areas;

- ▶ N60 contours are provided for both the draft 2025 ANEF and the utilization of 06 options. With the relatively low numbers of aircraft predicted to operate at Evans Head, and the majority of those propeller driven, the ANEF contours are not very sensitive to changes in aircraft numbers on any particular runway and so the N60 helps to show the likely changes to aircraft noise disturbance between the two operating procedures;
- ▶ LAMAX contours are provided for the two runway operating scenarios giving 50, 60 and 70 d BA noise contour levels. These contours show the noise generated by the noisiest aircraft operating in a particular area with no indication of the frequency of that event. The turbo-prop aircraft will generally be the aircraft that generates the contours and there is only 82 aircraft of this type predicted to operate throughout a full year;
- ▶ As the Great Eastern Fly-in is likely to be the period of the greatest aircraft activities an ANEC using the draft ANEF dataset and runway operating procedures has been calculated to provide a worst-case days activities;
- ▶ One of the more disturbing aircraft noise events is likely to be piston engine aircraft running-up their engines prior to flight and so an LAMAX contour set has been provided for a single engine fixed pitch prop aircraft running up on the current apron and facing north. These contours can be positioned and orientated anywhere on the airfield to give an indication of disturbance likely from aircraft running-up.

8. Fly Neighbourly Agreement

As aviation activities at Evans Head Airfield increase it is recommended that a Fly Neighborly agreement (rather than Noise Abatement Procedures) be established to reasonably regulate aircraft noise. This agreement would need to be negotiated between those conducting businesses at the airfield, an aero-club (if established), EMAC, the local community and RVC. The agreement, when formulated, would be widely circulated to appropriate aero-clubs and a notice inserted in ERSA to advise that there is a FNA in force.

The FNA would address the following issues:

- ▶ Flight Tracks
 - Following a review of the major inbound and outbound routes in use establish where possible flight tracks that are clear of sensitive areas.
- ▶ Flight Altitude
 - Use standard circuit heights, 1,000' AMSL for piston engined aircraft and 1,500' for turbo-prop and jet aircraft. A lower height for Ultra-light aircraft could be negotiated.
 - All arriving and departing aircraft to cruise no lower than 1,500' AMSL; this is to include aircraft transiting to/from training areas.
- ▶ Flight training areas
 - Establish flight-training areas over non-inhabited areas to be used for all practice of normal and emergency procedures.
- ▶ Circuit dimensions
 - Review the dimensions of the circuits being flown to determine if the crosswind, downwind and base legs can reasonably be moved to avoid sensitive areas. This may require that all aircraft be required to depart from the full length of the runway, that repetitive touch-n-goes along the runway are banned or that the crosswind leg be moved further upwind. It may also be necessary to have differing circuit geometry for each runway. Consider a method of delineating the downwind legs of the circuits to help with the accurate tracking of aircraft. This could be achieved by painting power and telephone poles, solar powered strobe lights, planting distinctive trees etc.
- ▶ Circuit direction
 - In nil or low wind conditions consider varying the runway direction in use to distribute the aircraft noise. Conversely adopt a preferred runway direction so as to concentrate aircraft noise in less sensitive areas. Give consideration to nominating 09/27 as the preferred runway for Ultra-light aircraft.
- ▶ Duration of training
 - Consider limiting the number of circuits undertaken by aircraft in any one exercise.

- ▶ Training curfew
 - Not permit repetitive training before 7:00am weekdays and Saturday and 8:00am Sundays or after 7:00pm.
- ▶ Weather station
 - Consider providing an automatic weather station, with in-flight interrogation available, and suggesting that straight-in approaches be undertaken by travel flights.

DRAFT

9. Australian Standards for Land Use Planning

9.1 Australian Noise Exposure Forecasts

The National Acoustics Laboratory (NAL) report 88 of 1982 concluded that an “Equal-energy indices, e.g. a Noise Exposure Forecast (NEF), showed a significantly stronger relationship with public reaction to aircraft noise than other types of index tested, including peak-level indices and indices which are independent of the number of over flights per day”. This NEF was then modified to better suit Australian conditions by re-weighting the importance of nighttime flights and the resultant set of NEF contours named the Australian Noise Exposure Forecast (ANEF).

The ANEF is a generic name for three types of equal energy aircraft noise contours:

- ▶ The Australian Noise Exposure Forecast (ANEF) is the only metric approved and promoted by the Federal Government for use in determining the suitability of land use in regards to aircraft noise. The ANEF is generally provided for a 20 year time frame, is updated regularly and there can be only one approved set of ANEF contours at a given time. The approving authority is the Federal Government.
- ▶ The Australian Noise Exposure Index (ANEI) provides historical data on aircraft noise exposure. Normally one years actual traffic at an airport is used to generate the ANEI and the approval process is the same as that for the ANEF.
- ▶ The Australian Noise Exposure Concept (ANEC) is used as a planning tool to investigate likely changes to aircraft noise exposure resulting from proposed changes to conditions at an airport. Those changes include, among other things, variations to runway layouts, changes to Noise Abatement Procedures and changes to aircraft types or numbers.

The ANEF system described in AS2021 is the only method of controlling land use planning at all but two minor Australian aerodromes. It is not used to regulate aircraft operations but rather to report on the effects of those activities. This system takes into account the frequency, intensity, time and duration of aircraft activities and calculates the total sound energy generated at any location. While ANEF contour charts are often mis-understood by the public at large various expert committees that have considered the regulation of aircraft noise around Australian aerodromes have concluded that they are the most appropriate measure available. In the last few years there have been supplementary indices developed to help better describe aircraft noise. These indices include N70 and Flight Track Frequency charts and are described later in this Section.

The only method of calculating ANEF contours is by use of the Integrated Noise Model developed by the Federal Aviation Authority of the USA: it cannot be directly measured. The INM calculates the aircraft noise exposure for an average days (averaged over a year) activity at an airport and for an ANEF this day is an average day of a complete year at the forecast date.

The Australian Standard AS2021 provides guidance to regional, local authorities and others associated with urban and regional planning and building construction on the acceptable location of new buildings in relation to aircraft noise. Zones that are

described as ‘conditionally acceptable’ may be approved as building sites provided that any new construction incorporates sound proofing measures. Section 2 of the standard gives guidelines for determining the acoustic acceptability of a particular site. Conversely, the standard can be used to assess the noise impact of a new aerodrome or of altering an existing one, by the production of an ANEC.

The Australian Standard AS2021 provides recommended land use compatibility as reproduced at Table 8-1. For land designated “conditionally acceptable” it should be noted that land use authorities might consider that “the incorporation of noise control features in the construction of residences or schools is appropriate”.

Table 9 AS2021 table of Building Site Acceptability Based on ANEF Zones

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

For aerodromes that do not have ANEF charts published for them AS2021 provides a land use compatibility table based on measured aircraft noise and frequency of flight.

Table 12 reproduces that table:

Table 10 AS2021 Table of Building Site Acceptability Based on Aircraft Noise Levels

Building Site	Aircraft Noise Level expected at building site, dB(A)					
	20 or less flights per day			Greater than 20 flights per day		
	Acceptable	Conditionally acceptable	Unacceptable	Acceptable	Conditionally acceptable	Unacceptable
House,	<80	80 - 90	>90	<75	75 - 85	>85

Building Site	Aircraft Noise Level expected at building site, dB(A)					
	20 or less flights per day			Greater than 20 flights per day		
	Acceptable	Conditionally acceptable	Unacceptable	Acceptable	Conditionally acceptable	Unacceptable
home unit, flat, caravan park						
Hotel, Motel, hostel	<85	85 - 95	>95	<80	80 - 90	>90
School, university	<80	80 - 90	>90	<75	75 - 85	>85
Hospital, nursing home	<80	80 - 90	>90	<75	75 - 85	>85
Public building	<85	85 - 95	>95	<80	80 - 90	>90
Commercial Building	<90	90 - 100	>100	<80	80 - 90	>90
Light industry	<95	95 - 105	>105	<90	90 - 100	>100
Heavy industry	No limit	No limit	No limit	No limit	No limit	No limit

9.2 The Integrated Noise Model

The USA FAA produced and supports the INM that is the only computer programme to be used in Australia to calculate ANEF contours as well as a variety of other aircraft noise metrics. This model is widely used by the international civil aviation community for the evaluation of aircraft noise impacts in the vicinity of airports.

The INM model itself contains a detailed database of aircraft performance and noise characteristics that have been determined from actual detailed measurements of the required parameters. In fact a part of the certification process for new aircraft types is that the manufacturer is required to undertake the required measurements to support the model. The user of the INM is required to supply all other required data, typically covering aircraft operations over an average day with this day representing the average aviation activities for a whole year. The data required includes:

- Physical data; descriptions of runways and flight tracks and location of any sites that specific results are required for;

- ▶ Detailed flight characteristics for any non-standard aircraft operations to be modelled;
- ▶ A detailed description of all aircraft flights for the typical, or average, day being modelled; and
- ▶ Any variations to the standard output metrics that is required.

Apart from the ANEF contours that are used for land use-planning guidelines at Australian aerodromes there is a wide range of other metrics that can be calculated using the INM. These include:

- ▶ Eight A-weighted metrics (used for standard noise analysis where aircraft noise spectra are modified by depressing noise levels in the low and high frequency bands to approximate the response of the human ear). These metrics include Day-night average sound level (the Section 4-2 average exposure level) and LAMAX (the Section 4-2 maximum exposure level);
- ▶ Three C-weighted metrics (used for low-frequency noise analysis where aircraft noise spectra are modified by depressing noise levels in the low and high bands but to a lesser degree than A-weighting); and
- ▶ Five Perceived tone-corrected noise metrics (used for noise analysis based on aircraft noise certification tests where aircraft noise spectra are modified by depressing noise levels in the low and high frequency bands and elevating metric levels if there are tones in the spectra). This family of metrics includes the ANEF contours.

9.3 Other Noise Metrics in Use

In the last few years there have been supplementary indices developed to help better describe aircraft noise. These indices include N70, Flight Track Frequency charts and Single Event Contours.

The N70 contour chart is commonly used to supplement an aerodrome's ANEF charts. The N70 is calculated using the INM and indicates the number of aircraft noise events that exceed 70 dB (A). The 70 dB(A) value is used, as it is the external noise level that will be at the disturbance threshold of people in an average residence with doors and windows closed. These contour types can be calculated for whatever noise value is required and for airports in quiet areas and with small overall aircraft movements N60 (or other value) charts can be calculated.

Another way of describing aircraft noise is to use flight track frequency charts to indicate the number of times in an average day that aircraft will utilise a specific track. Rather than having charts indicating fractions of aircraft operating on individual flight tracks this report provides a table of aircraft movements on individual flight tracks and attached to the report are charts depicting the flight tracks modelled.

For the noisiest aircraft type assumed to use Evans Head Airfield LAMAX charts have been provided indicating the 50, 60 and 70 d B (A) contours generated by a single flight; arriving runway 36L and departing runway 16R. It should be noted that the forecasts indicate that there will be about 58 aircraft movements per year of turbo-prop

aircraft and only about half of them will be on flight paths that directly affect the proposed retirement village site.

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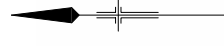
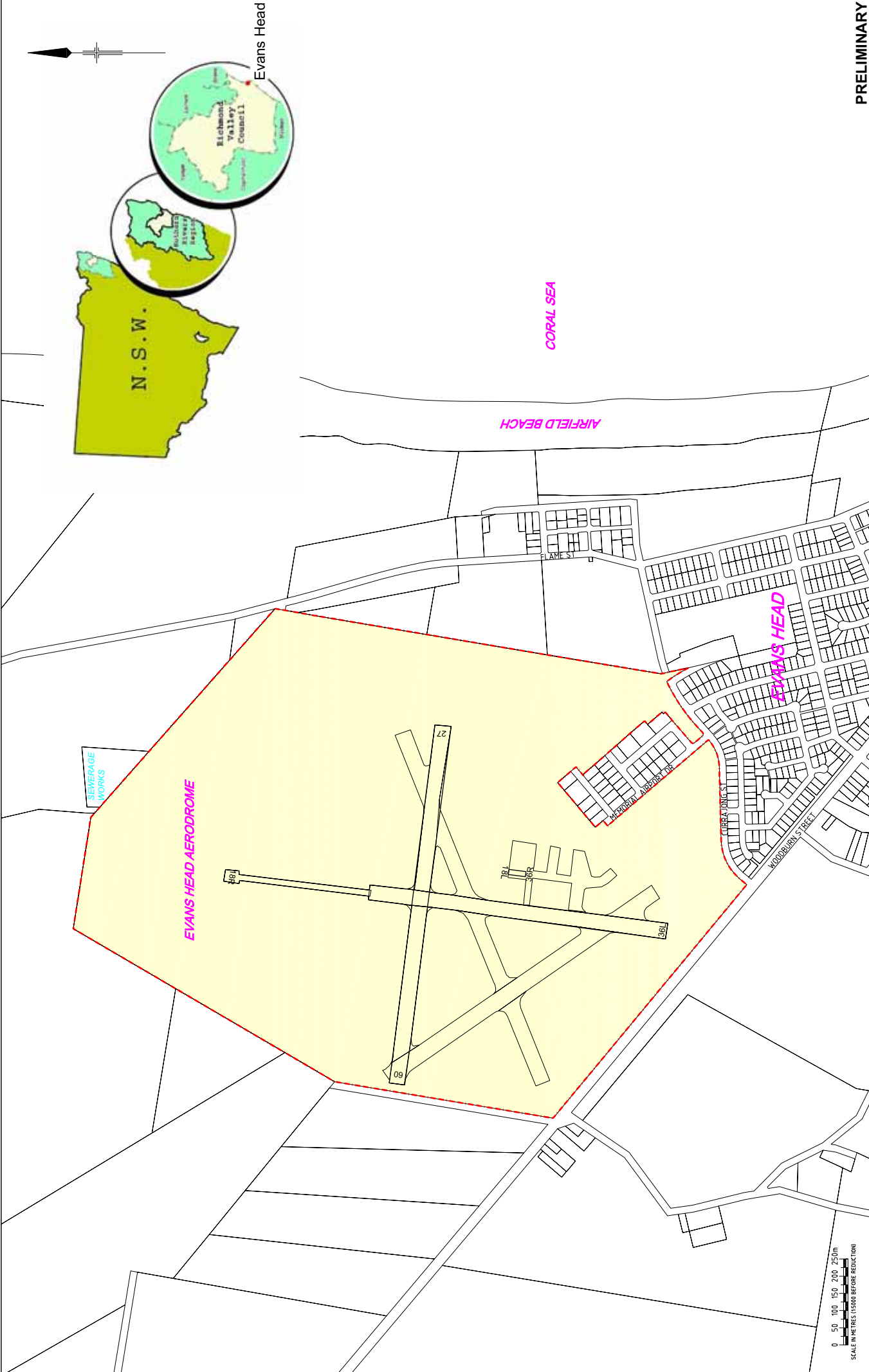
10. Abbreviations

ADF	Australian Defense Forces
AGL	Above Ground Level
AMSL	Above Mean Sea Level
ANEF	Australian Noise Exposure Forecast
ARP	Aerodrome Reference Point
EMAC	Evans Head Memorial Aerodrome Committee
ERSA	Aeronautical Information Publication – Enroute Supplement
INM	Integrated Noise Model
mpa	Movements per annum
RPT	Regular Public Transport
RVC	Richmond Valley Council

Appendix A

Evans Head Airfield Layout

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SCALE: 1:625 (1:5000 BEFORE REDUCTION)

PRELIMINARY ISSUE - REVISED TO 2025 ANEF		DO NOT SCALE		Client	
PRELIMINARY ISSUE		AS SHOWN		RICHMOND VALLEY COUNCIL	
No	Revision	Drawn	Checked	Approved	Date
					21.4.05
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				Date	
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				Project	
				EVANS HEAD AERODROME - 2025 ANEF	
				Title	
				AIRFIELD LAYOUT	
				Scale	
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				Original Size	
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GHD Pty Ltd
 201 Church Street Brisbane QLD 4000
 GPO Box 988 Brisbane QLD 4001
 E evanshead@ghd.com.au W www.ghd.com.au

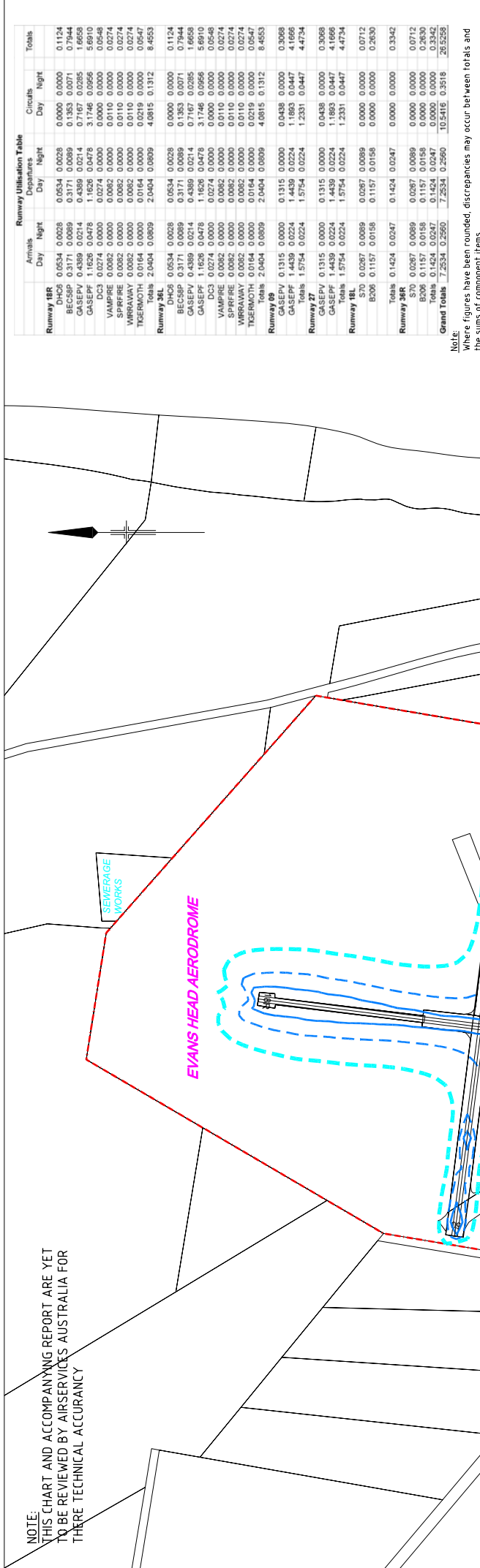
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PRELIMINARY
RICHMOND VALLEY COUNCIL
EVANS HEAD AERODROME - 2025 ANEF
AIRFIELD LAYOUT

Appendix B
Draft 2025 ANEF Chart

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NOTE:
THIS CHART AND ACCOMPANYING REPORT ARE YET
TO BE REVIEWED BY AIRSERVICES AUSTRALIA FOR
THEIR TECHNICAL ACCURACY



AS2021 Table of Building Site Acceptability Based on ANEF Zones

Building Type	Acceptable	ANEF Zone of Site	Unacceptable
House, home unit, flat, caravan park	Less than 20 ANEF	20 to 25 ANEF	Greater than 25 ANEF
Hotel, motel, hostel	Less than 20 ANEF	25 to 30 ANEF	Greater than 30 ANEF
Public building	Less than 20 ANEF	30 to 35 ANEF	Greater than 35 ANEF
Public building	Less than 20 ANEF	35 to 40 ANEF	Greater than 40 ANEF
Public building	Less than 20 ANEF	40 to 45 ANEF	Greater than 45 ANEF
Commercial building	Less than 25 ANEF	25 to 35 ANEF	Greater than 35 ANEF
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Liability Disclaimer for ANEF Charts
The aircraft noise contours on this chart have been calculated using the best available modeling process. The data input to that process are forecasts, and forecasts cannot guarantee their ultimate correctness. Airservices accepts no liability for any reliance placed on any data on this chart by any third party. Airservices accepts no responsibility for any interpretation of this data by third parties.

AIRSERVICES AUSTRALIA ENDORSEMENT
This plan was endorsed for technical accuracy by the Airspace and Environment Regulatory Unit of Airservices Australia.
Original signed copies are held on file by Airservices Australia and Richmond Valley Council.

Legend:
 --- 20 ANEF CONTOURS
 --- 25 ANEF CONTOURS
 --- 30 ANEF CONTOURS

Richmond Valley Council
 Evans Head Aerodrome - 2025 ANEF
 Draft 2025 ANEF Contours

Runway IFR	Annals	Departures	Circuits	Totals
	Day	Night	Day	Night
DHC6	0.0534	0.0028	0.0534	0.0000
BEC58P	0.3171	0.0089	0.1353	0.0071
GASEPF	1.1626	0.0478	1.1626	0.0956
DC3	0.0274	0.0000	0.0274	0.0000
VAMPIRE	0.0082	0.0000	0.0082	0.0000
SPIRIFRE	0.0082	0.0000	0.0082	0.0000
MIRRAWAY	0.0062	0.0000	0.0062	0.0000
TIGERMOTH	0.0164	0.0000	0.0164	0.0000
Totals	2.0404	0.0609	2.0404	0.1312

Runway IFR	Annals	Departures	Circuits	Totals
	Day	Night	Day	Night
DHC6	0.0534	0.0028	0.0534	0.0000
BEC58P	0.3171	0.0089	0.1353	0.0071
GASEPF	1.1626	0.0478	1.1626	0.0956
DC3	0.0274	0.0000	0.0274	0.0000
VAMPIRE	0.0082	0.0000	0.0082	0.0000
SPIRIFRE	0.0082	0.0000	0.0082	0.0000
MIRRAWAY	0.0062	0.0000	0.0062	0.0000
TIGERMOTH	0.0164	0.0000	0.0164	0.0000
Totals	2.0404	0.0609	2.0404	0.1312

Richmond Valley Council
 Evans Head Aerodrome - 2025 ANEF
 Draft 2025 ANEF Contours

Legend:
 --- 20 ANEF CONTOURS
 --- 25 ANEF CONTOURS
 --- 30 ANEF CONTOURS

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GHD Pty Ltd ABN 39 008 488 373

201 Charlotte Street Brisbane Qld 4001

GPO Box 668 Brisbane Qld 4001 Australia

T: (07) 3316 3000 F: (07) 3316 3333 E: bnemail@ghd.com.au

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