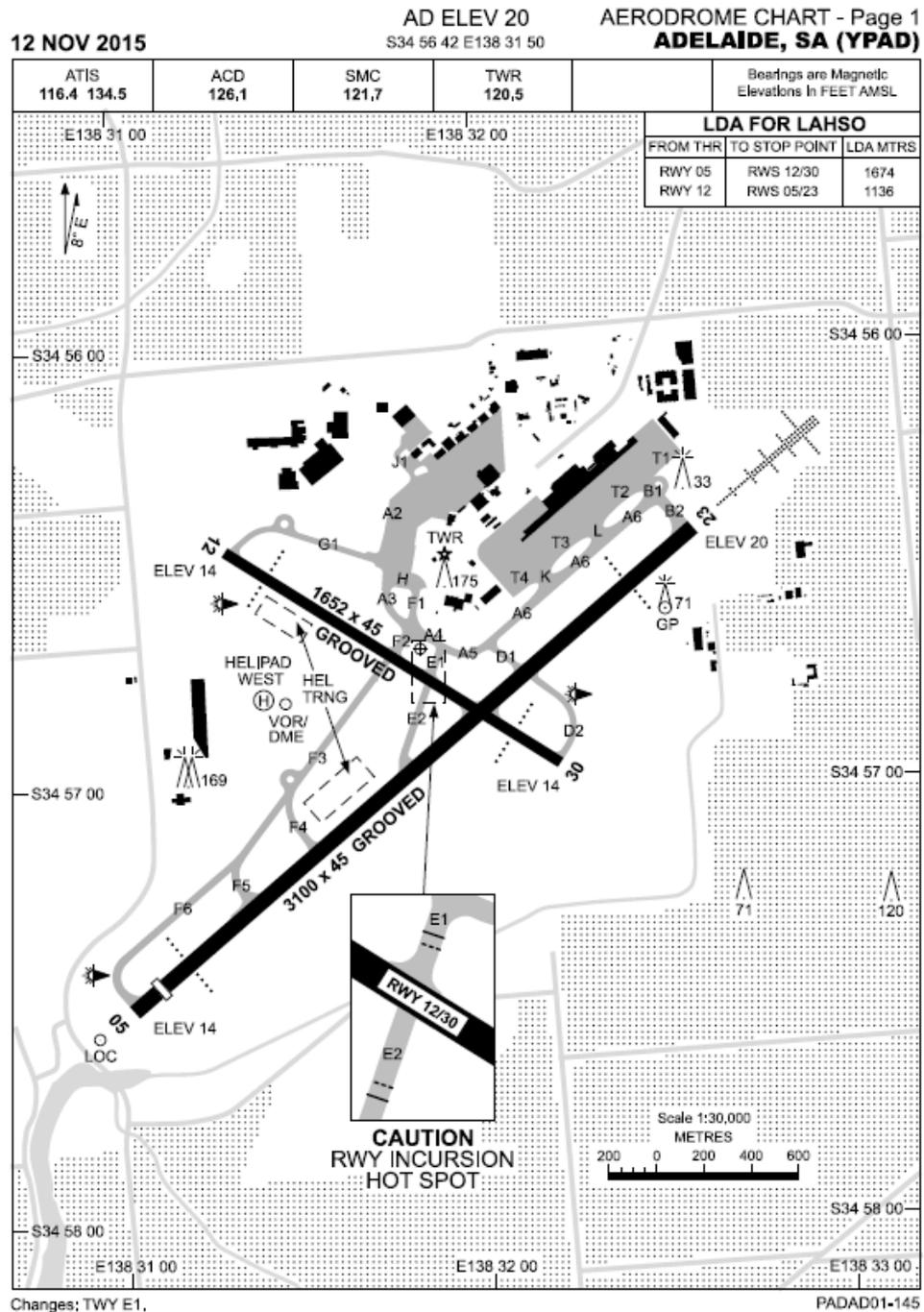




# YPAD Air Traffic Operations

Adelaide International Airport consists of two intersecting runways in the directions 05/23 magnetic and 12/30 magnetic.



**Figure 1: Adelaide Airport Aerodrome Chart**

(Source: Airservices Australia)

## Noise Abatement

A curfew at Adelaide airport prevents most passenger carrying aircraft from taking off or landing between the hours of 11pm and 6am. An aircraft must not take off from, or land at, Adelaide airport during a curfew period, unless the take-off or landing is permitted under Part 3 of the *Adelaide Airport Curfew Act 2000*. The preferred runways for noise abatement during curfew hours are runway 23 and runway 05.

(Changes to the previous version have been highlighted in yellow)

## Terminal Area (TMA)

This term is used to describe the designated area of controlled airspace surrounding a major airport where there is a high volume of traffic. The Terminal Area (TMA) is a 36nm radial area surrounding Adelaide airport with a wedge to 110nm to the north to encompass RAAF Base Edinburgh.



**Figure 2: Adelaide Terminal Airspace**  
(Source: Airservices Australia)

Within the TMA there are a number of corridors for arriving and departing aircraft. For Jet arrivals at Adelaide airport corridors to the E and SE are critical; whereas a corridor to the NW is important for Turbo Prop and Jet arrivals and departures.

### Aircraft Acceptance Rates (AAR)

Runway configurations allow up to 48 movements (arrivals plus departures) per hour at Adelaide airport. A maximum planned aircraft acceptance rate (AAR) of 24 occurs during the use of both runways for arrivals (refer to section below on LAHSO). Note due to the lack of sufficient consecutive arrivals in Adelaide from LAHSO capable aircraft the AAR is not adjusted for LAHSO.

### Runway Direction

It is important to remember that although runway direction is annotated in magnetic co-ordinates, wind direction is reported in degrees true. The conversion for Adelaide airport Adelaide Airport is as follows:

**Table 1: Adelaide Runway Direction Conversion Table**

Magnetic	True
050	042
120	115
230	222
300	295

\*Please note that you refer to a runway direction as it is being travelled on. Using RWY12 means landing and departing towards the SE. This is the opposite of reported wind direction but in general results in the runway in use being aligned to the wind direction.

### Nomination Of Runways

The nomination of runway is determined by Air Traffic Control (ATC) using a preferred runway or take-off direction. ATC shall not nominate a particular runway for use if an alternative runway is available, when:

**Table 2: Runway Wind Thresholds**

	Dry	Wet
Crosswind	>20kts	>20kts
Downwind	>5kts	>0kts

(\*Please note that thresholds relate to sustained wind gusts as well as mean wind speeds.)

If possible, aircraft will take off and land with a head wind. A tail wind on landing is acceptable up to 5 knots on a dry runway. Tail winds are unacceptable on wet runways. When departing with a tail wind, the take-off distance increases so the runway length is important.

When there is a crosswind component exceeding 20 knots, an alternative landing runway should be planned except where the crosswind components exceed 20kts for both runway options. Departures and arrivals do not have to occur on the same runway.

Landing and take-off distances differ with aircraft-type, weight, atmospheric pressure and temperature. The active runway will have to be able to accommodate the majority of traffic.

### Forecasting for Adelaide Airport

Forecasters for Adelaide airport can contact NOCMET for information on the operational effect caused by a TAF amendment. Alternatively, forecasters may contact Adelaide Approach or Tower directly if the need arises.

Air Traffic Controllers are encouraged to contact forecasters when the need arises.

### Peak Times

Generally peak demand for traffic movements arriving at Adelaide airport occurs between **8:30-11:00am** and 5-7:30pm Monday to Friday and Sunday evenings 5-7.30pm. Additional loads occur on both a Tuesday and Thursday evening due to mining industry traffic.

**Peak departure demand occurs from 6-7am Monday to Friday.**

The forecasting of holding near or during these hours must be considered carefully. The amendment of TAF holding requirements affecting this period should be followed up by a call to NOCMET.



### Wind Forecasts

The TAF can be used by forecasters to routinely provide information about significant wind changes that affect ATC runway decisions.

Accurately forecasting a strong cross wind on a runway is important in planning. Instances can occur where a strong cross wind component is forecast for both runway directions. ATC has a process to deal with this issue.

Wind is specifically critical to the Adelaide Terminal Control Unit (TCU). A late change of runway causes the manual recalculation of slots for arriving aircraft and can potentially cause aircraft to back up in taxiways.

A change of runway causes re-direction of aircraft leading to an additional 10-20min delay in arrivals during peak periods.

It can be common to see the sea breeze affect an airport such as Adelaide but not Parafield or RAAF Base Edinburgh. The trending of a sea breeze is particularly important to ATC at Adelaide airport.

### Thunderstorms at YPAD

Thunderstorm cells identified on ATSAS/ATIFS within 10nm of Adelaide airport affect the ability of aircraft to land and the provision of services to aircraft once on the ground. The movements of aircraft into and out of bays are affected due to ramp closures and the removal of ground staff from the tarmac.

Airline WHS regulations require the removal of ground staff from the tarmac when a thunderstorm is within 5nm, with an 'on-alert' status for a thunderstorm within 10nm. This decision is an important part of the duties of the Virgin and Qantas meteorologists.

In prolonged thunderstorm events this can lead to an accumulation of aircraft waiting on the ground to be handled.

Additionally the ability of forecasters to predict or recognise wind outflow from nearby thunderstorms is important in the management of tactical runway changes.

### Thunderstorms in the TMA (36nm)

Thunderstorms within the Terminal Area (TMA - 36nm) also affect operations. Specifically thunderstorms lining the entry corridors to the east and southeast of Adelaide airport have major impacts on traffic flow.

The ability to forecast organised thunderstorms in these areas can provide Airservices the capability to open additional corridors and re-route aircraft to minimise delays. It is important to note that thunderstorms typically stop operations from RAAF Base Edinburgh opening up the northern airspace to commercial traffic.

Within the TMA, any thunderstorms within a 10nm radius present a specific problem for aircraft trying to join the initial approach for Runway 23 or 05.

### Fog

On average there are 4 fog events per year at Adelaide Airport which occur between early April and early October. The majority of fog events (approximately 80%) occur during June, July and August.

It is important that forecasters reduce the fog forecast period or remove fog from the TAF through amendment when appropriate.

Fog observed at YPAD is tactically managed in the Adelaide TCU. Low visibility procedures are instituted when the Runway Visual Range (RVR) system drops below 800m or when scattered cloud is observed below 300ft.

Low visibility procedures allow only the movement of one aircraft at a time on the runway and taxiways

### Cloud/Visibility

Low cloud and/or reduced visibility on approach will necessitate the use of an instrument approach when a visual reference with the runway is not available. Any instrument approach has a specified decision height (landing minima) at which a 'missed approach' must be initiated if the required visual reference to continue the approach has not been established.

This decision height (DH) can vary and will depend on the available equipment for the runway. The DH is approximately 250ft AGL for an Instrument Landing System (ILS) category 1, the most common instrument approach on runways at Australian major airports. Visibility and cloud are less critical during take-off, with most commercial jet aircraft allowed to depart with visibility over 550m.

Cloud and visibility have a large effect on aircraft arrival at Adelaide airport. Adelaide airport have a Category 1 ILS on Runway 23. In spring, it is common to have stream showers and low cloud to force the use of the ILS at Adelaide airport. Scattered or more cloud below 2000ft can effect operations, as seen in the Table 3.

Further afield, cloud on and northwest of Mt Lofty Ranges to the northeast of Adelaide can cause problems for jet aircraft from Melbourne. These aircraft are required to complete a 10-15nm visual approach for Runway 23 placing them at approximately 3200ft - 3800ft initially on final approach. Aircraft unable to establish visual are redirected to Modbury for an Instrument (ILS) approach.

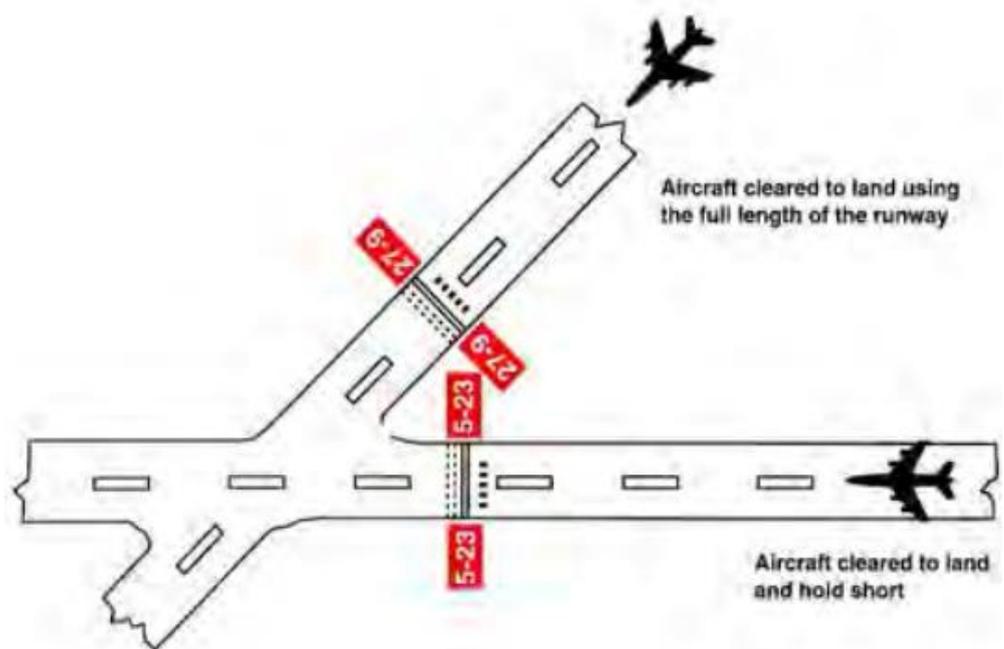


## LAHSO

LAHSO is an acronym for "Land and Hold Short Operations." Land and hold short operations are an ATC procedure intended to increase airport capacity without compromising safety. The illustration below shows aircraft arriving to land on both runways (Figure 3).

At Adelaide the most frequently used LAHSO configuration results in aircraft being cleared to land and hold short on RWY 12 before the intersection of RWY 05/23. Aircraft operating on RWY 05 or 23 are able to utilize the full length. It is common at Adelaide for jet aircraft to land on RWY 23 or 05 with light aircraft landing RWY 12.

Most aircraft that use LAHSO at Adelaide can't use RWY 12 and hold short Runway 23/05 if there is any downwind on RWY 12 or the RWY 12 is wet. The ability to use LAHSO during the peak air traffic period can reduce total air traffic holding from 180mins to 20/30mins in most instances.



(Source: <http://www.cfinotebook.net/graphics/operations/terminal/land-and-hold-short-operations>)

**Figure 3: Depiction of Land and Hold Short Operations (LAHSO)**

Meteorological conditions that restrict the use of LAHSO are scattered cloud at or below 3100ft, visibility below 8km, and reported wind shear. These criteria are in addition to the wind thresholds for the runways. A forecast SE or SW wind direction producing <20kts crosswind on the runways is optimal for LAHSO.

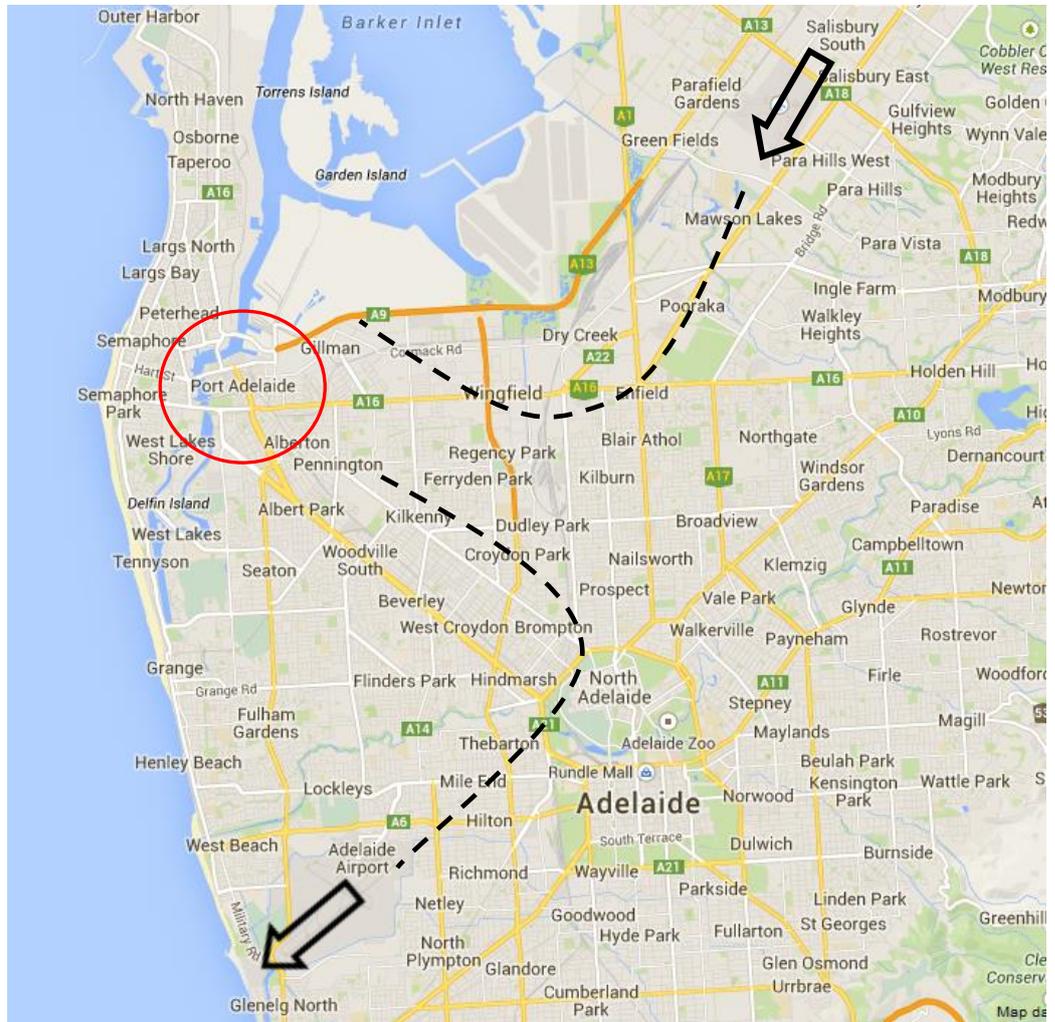
## Parafield Airport Effects

Low visibility conditions (<5000m or <2000ft) at Parafield airport can affect Adelaide airport. Aircraft maintaining visual conditions at Adelaide may completing a right turn onto final for runway 23 as illustrated in Figure 4. If IMC (Instrument Meteorological Conditions) exist at Parafield forcing the use of runway 21, the number of potential traffic conflicts above the Port Adelaide area increases significantly. This runway configuration increases workload and complexity leading to increased delays to Parafield departures.

When both Adelaide and Parafield are in IMC conditions aircraft arriving Adelaide are required to track via Modbury onto the ILS approach for runway 23. They then overfly Parafield well above any departures, reducing workload and complexity.

Low cloud (<2000ft) to the northeast of Parafield restricting visual conditions at VFR waypoints Substation and Damwall (near Little Para Reservoir) also effects operations at Adelaide airport. The inability for aircraft to enter Parafield from the northeast often results in additional aircraft moving through the Adelaide controlled airspace.

When Runway 05 is in use at Adelaide and Parafield is on Runway 21, non jet departures from Adelaide will turn initially to the North West restricting Parafield departures using the Runway 21 to depart.



(Source: Google Maps)

**Figure 4: Map showing visual right base onto short final Runway 23 at Adelaide Airport and IFR departure track Runway 21 at Parafield Airport.**

### Reciprocal Runway Operations

Low visibility conditions (<3000m or BKN<1000ft) with a northerly wind component at Adelaide airport can lead to reciprocal runway operations on runway 05/23. The nomination of runway 23 for the purposes of an ILS approach may not be appropriate given the associated wind direction. Departures, particularly those who are performance limited, will request Runway 05, while arrivals will require Runway 23 to take advantage of the lower landing minima.

For simplicity, the meteorological conditions which cause a change in operational requirements at Adelaide airport have been summarised in Table 3.



**Table 3: Summary of Decision Point Triggers**

Phenomena	Criteria	Potential Effect
Cloud (>3octas)	≤ 4000'	Instrument Approach over land approaching from East RWY 23/05 Centreline
	≤2500'	Instrument Approach RWY 05, 23 or 30
	≤2000'	Instrument Approach RWY 12 Non VMC inland
	<1500'	Non VMC circuit area and coastal
	≤1000'	Expect 23 ILS RWY 23
	≤200'	Low Visibility Procedures
Visibility	<5000m	Expect Instrument Approach and Non VMC
	<4000m	Expect ILS approach RWY 23
	≤1500m	Low Visibility Procedures
X-Wind	>20kts	Change of runway
Downwind	>5kts/0kts (dry/wet)	Change of runway
	>0kts RWY12	LAHSO not available
Runway Condition	Wet	LAHSO not available

(Coastal refers to offshore flights between Largs Jetty and MLIT not above 500ft)

### Summary - Weather Effects at Adelaide Airport

The effect of weather at Adelaide airport is summarised in Table 4 & 5.

**Table 4: Coastal Procedures Criteria**

#### Criteria

Cloud base	2000 FT or above
Visibility	8 km or more
Flight category	VFR only
MTOW	Less than 7000 kg

(Source: Airservices Australia)

**Table 5: Runway Rates at YPAD**

Conditions	Intervals (Mins)	Hourly Rate
Visual	+2+3+2+3 recurring	24
Instrument	+3 recurring	20

(Source: Airservices Australia)

*This is a reference card intended to educate users on the phenomena that affect Air Traffic Flow Management (ATFM) and is based on information obtained from Airservices Australia. The card was accurate on 24/12/2015 – Version 3.0, but may be subject to short term changes that are not reflected in this document. There may also be other factors beyond the meteorological conditions affecting ATFM on any particular day. Airservices Australia, NOC should be contacted for all day of operations information related to arrival/departure rates and runway configurations. Please email any feedback, corrections or comments to [SRAT@bom.gov.au](mailto:SRAT@bom.gov.au).*