

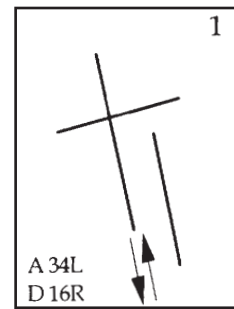
Modes of operation

Mode 1

Method of operation

All departures Runway 16R.

All arrivals Runway 34L.



(This is the mode under which the Sydney Airport Curfew operates.)

Requirements of Curfew legislation

The Curfew operates from 2300 to 0600 each day and uses only the main north-south runway.

Permitted movements during these hours are:

- Limited quota of BAe146 freight aircraft.
- Noise certificated propeller aircraft under 34,000 kilograms.
- Jet aircraft under 34,000kg which comply with applicable noise standards.
- Limited international passenger jet arrivals between 0500 and 0600.
- Emergencies.

During the Curfew, all movements must be over Botany Bay. Only the main north-south runway (16R-34L) is used. This means that departures are towards the south (16R) and landings are towards the north (34L). At weekends, between 0600 and 0700 and between 2200 and 2245, movements must be over Botany Bay unless otherwise directed by Air Traffic Control. From 2245 every day, departures must be over Botany Bay.

Availability of configuration

This runway configuration is used, by legislation, throughout the Curfew hours and cannot sustain reasonable traffic levels. It is not suitable for operations outside the Curfew.

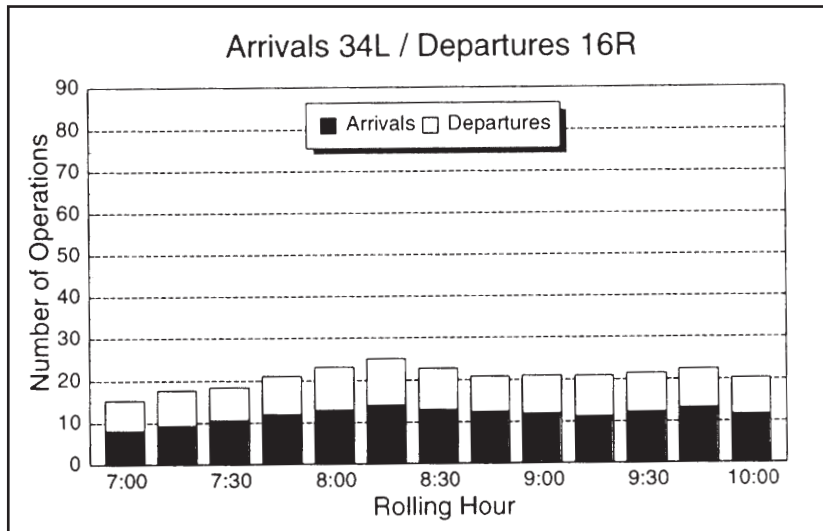
Operational capacity

The Sabre SIMMOD modelling found a sustained capacity of 23 operations per hour consisting of 13 arrivals and 10 departures. Peak observe capacity was 25 operations.

Due to the interaction of arrivals and departures in opposite directions on Runway 16R/34L and the 20 mile buyout for 16R departures, significant aircraft spacing was required on the take off and final approach tracks, limiting the capacity of the runway.

In operational practice, up to 40 nautical miles spacing between arrivals may be required to accommodate slow departures. Sabre indicated that this mode will not reach 80 movements per hour using only one runway. However, if

only arrivals or departures were operating for an extended period of time, the capacity for the active operation type could be increased. This would also decrease the capacity of the remaining operational type.



Graph Sabre simulation results for a rolling hour period

Operational complexity

Opposite direction operations to the same runway (16R/34L), with the requirement for departing aircraft to remain on the 163 radial of the Sydney VOR introduces a level of complexity which impacts on capacity. In addition, these operations do not provide for an operational environment of segregated airspace between arrivals and departures and safety must be maintained through additional restrictions to the aircraft.

Constraints to optimisation of capacity

The severe constraint is caused by nose to nose operations to the same runway and the need to maintain vertical separation until radar separation is achieved.

Movement rates will vary and the requirements of wake turbulence separation limit any increase in movement rates.

The availability of the mode, other than when it is mandated by legislation is limited to when the downwind does not exceed 5 knots.

Airspace arrangements are complex as both arrival and departures are over water in the same airspace. At times a high degree of traffic management is required to ensure aircraft conflicts remain at a level where controllers can safely ensure that undue noise is not created over populous areas due to separation or sequencing requirements.

Traffic management is complicated, with little ability to optimise operations. There is greater risk of controller error where a regime of separation assurance cannot be easily maintained.

Changes to airport operations to meet the requirements of the Curfew Act can have a significant effect on airport efficiency during the transition period into the curfew, particularly after 2230, when opposite direction traffic flow is commenced. The magnitude of this effect depends on the prevailing wind and weather conditions, and number and type of aircraft involved at the time.

Risk associated with this mode is provided for in the procedures employed and in the operating standard. The decision to operate aircraft during the curfew in conditions of significant downwind or crosswind is the responsibility of the pilot in command.

Environmental implications

Arrivals 34L

The number of people exposed to noise of 70 dB(A) or more for B747-200 aircraft is a total of 700.

At the outer tip of the contour for each particular type of aircraft the noise reaching the ground will be close to 70 dB(A) and the aircraft will be at the following heights.

B747-200	3,400ft	at	Over Water
B747-400	3,100ft	at	Over Water
B767	2,900ft	at	Over Water
Saab 340	850ft	at	Kurnell Peninsula

Departures 16R

The number of people exposed to noise of 70 dB(A) or more for B747-200 aircraft is a total 4,000.

At the outer tip of the contour for each particular type of aircraft the noise reaching the ground will be close to 70 dB(A) and the aircraft will be at the following heights.

B747-200	10,000ft	at	Over Water
B747-400	6,500ft	at	Over Water
B767	6,000ft	at	Over Water
Saab 340	3,000ft	at	Botany Bay

For further details refer to Appendix 9

Conclusions

This mode is not practical except during the required Curfew period. Outside these hours alternate opposite direction modes can be employed.

Consideration should be given to allowing aircraft to turn left after departure from Runway 16R and track over water through Botany Bay heads to provide separation assurance with arriving traffic and enhance safety.

Proposed use

Curfew hours only although enhancements noted above are proposed for consideration by Government



SYDNEY MODE 1 DEPARTURES 16R ARRIVALS 34L



MP 96/544.6.1
November 1996

Built-up-area (1993)
Note: Tracks shown are indicative
© Commonwealth of Australia



DEPARTURES	ARRIVALS
Jet track	Jet track
Non-Jet track	Non-Jet track
Dual track	Dual track



SYDNEY NOISE IMPRINT MODE 1 JET DEPARTURES 16R ARRIVALS 34L



November 1998 MP 96/544.5.1 © Commonwealth of Australia

0 km 5
Scale approx



The diagram above indicates that a 767, 737 and similar aircraft leave a significantly smaller imprint than 747-200 series aircraft

- Noise imprint Arrivals (70dBA or above based on a single movement of a 747-200 series aircraft)
- Noise imprint Departures (70dBA or above based on a single movement of a 747-200 series aircraft)
- Built-up-area (1993)

Note: The noise imprints shown are based on a single aircraft movement on the centreline of the indicative flight track