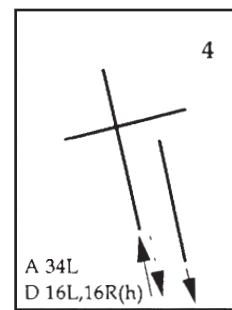


## Mode 4

### Method of operation

Departures to the south from Runway 16L. Departures to the south from Runway 16R for those aircraft requiring the long runway.

Arrivals from the south on Runway 34L.



This runway Mode of operation confines all operations to over-water and uses some mixed operations in the opposite direction on Runway 16R/34L.

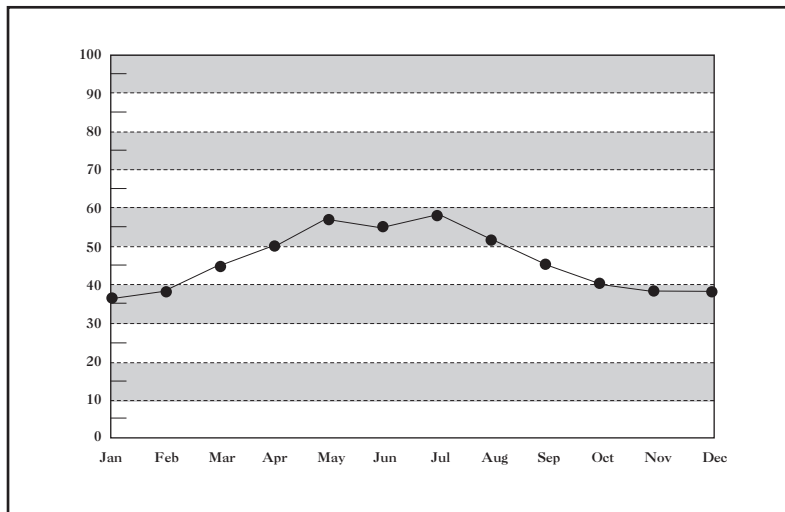
### Availability of configuration

Operationally available in wind conditions up to 5 knots downwind component on either runway. Available throughout the year, usually early morning and late evening.

The Bureau of Meteorology (BOM) wind data for the 55 years to December 1995 indicates that:

- the all months average availability would be 46 per cent.
- the average monthly availability ranges from 36 per cent in January to 57 per cent in May and July.

This graph indicates the 55 year average availability from January to December.



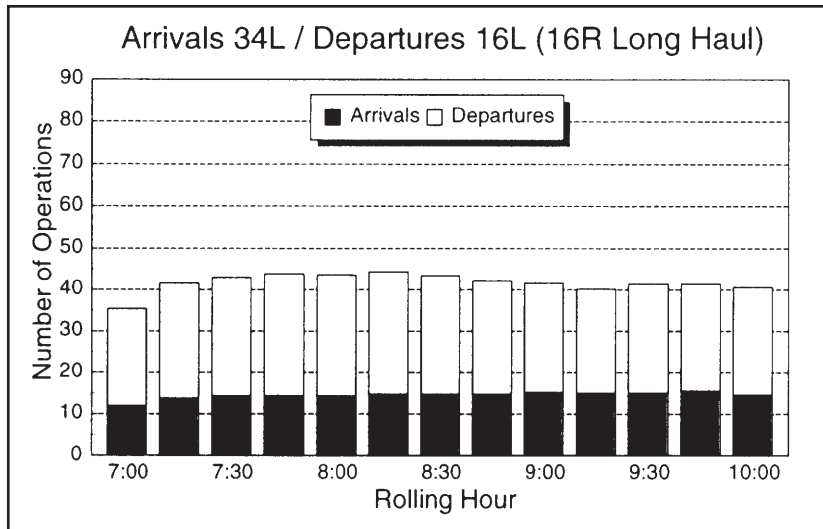
### Operational capacity

Sabre SIMMOD modelling found a sustained capacity of 43 operations per hour consisting of 15 arrivals and 28 departures. Peak observed capacity of 44 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.

This Mode will not reach 80 movements per hour. However, if new runway exits were provided on the arrivals runway 34L, landing role times could be decreased and capacity may be increased slightly. Additionally if a period of use of this Mode does not include long haul departures, the arrival capacity could be increased.

Graph below presents SDT simulation results for a rolling hour period.



*Operational complexity*

Airspace complexity increases with traffic levels.

Departures and arrivals are segregated to opposite sides of the traffic circuit.

*Constraints to optimisation of capacity*

Independent operation to the two runways is not permitted when the cloudbase and visibility is less than 2500 ft/8 km (3000 ft /10 km used for initial implementation). Dependent operations require additional spacing of arriving aircraft to sequence departures and provide the required radar separation and would severely limit capacity. Unless independent operations are available, traffic movement rates can be little better than Mode 1 with the enhancement of a left turn after departure

The division of airspace responsibility between tower and radar controllers needs to be clear and distinct, appropriate to the level of traffic to be handled. Whilst low levels of traffic can be safely handled with a mix of arrivals and departures in the same piece of airspace, as traffic levels increase, it is inappropriate, on safety grounds, to continue to operate in this manner.

Thus, to enable much more than current curfew arrival and departure rates it is not practicable to confine all operations over water, east of the coast. Flight paths on which arriving aircraft track over land at the highest practicable level and which avoid populous areas are to be employed with this mode.

Risk associated with this mode is provided for in the procedures employed and in the development of the operating standard.

As traffic levels increase, departure delays on Runway 16L will occur due to the single runway in use for departure and the limited departure tracking available, necessary to contain flight over water.

Controller workload is increased by extra coordination requirements between the aerodrome controllers.

Mode changes must be planned judiciously in advance if the operational capacity is to be sustained. Some flexibility is required in the management of a change of mode and experience indicates that efficiency can be maintained where the time of the change of mode is coordinated with an appropriate time in the traffic sequence.

Complexity of the mode will be a constraint to capacity and nose to nose operations on the same runway (34L arrivals and 16R departures) will require additional spacing to be provided between arrivals when aircraft taxi for departure from the long runway.

This may also require additional separation to provide for wake turbulence generated by either of the aircraft.

#### *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 16L & R*

The number of people exposed to noise of 70 dB(A) or more for B747-200 aircraft is a total of 9,800.

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 is a suitable operating mode where weather conditions permit independent arrival and departure operations and traffic levels do not impact on complexity and thus compromise safety. All operations in the initial departure phase and the final approach phase of flight are over water with the minimum impact on Kurnell achievable.

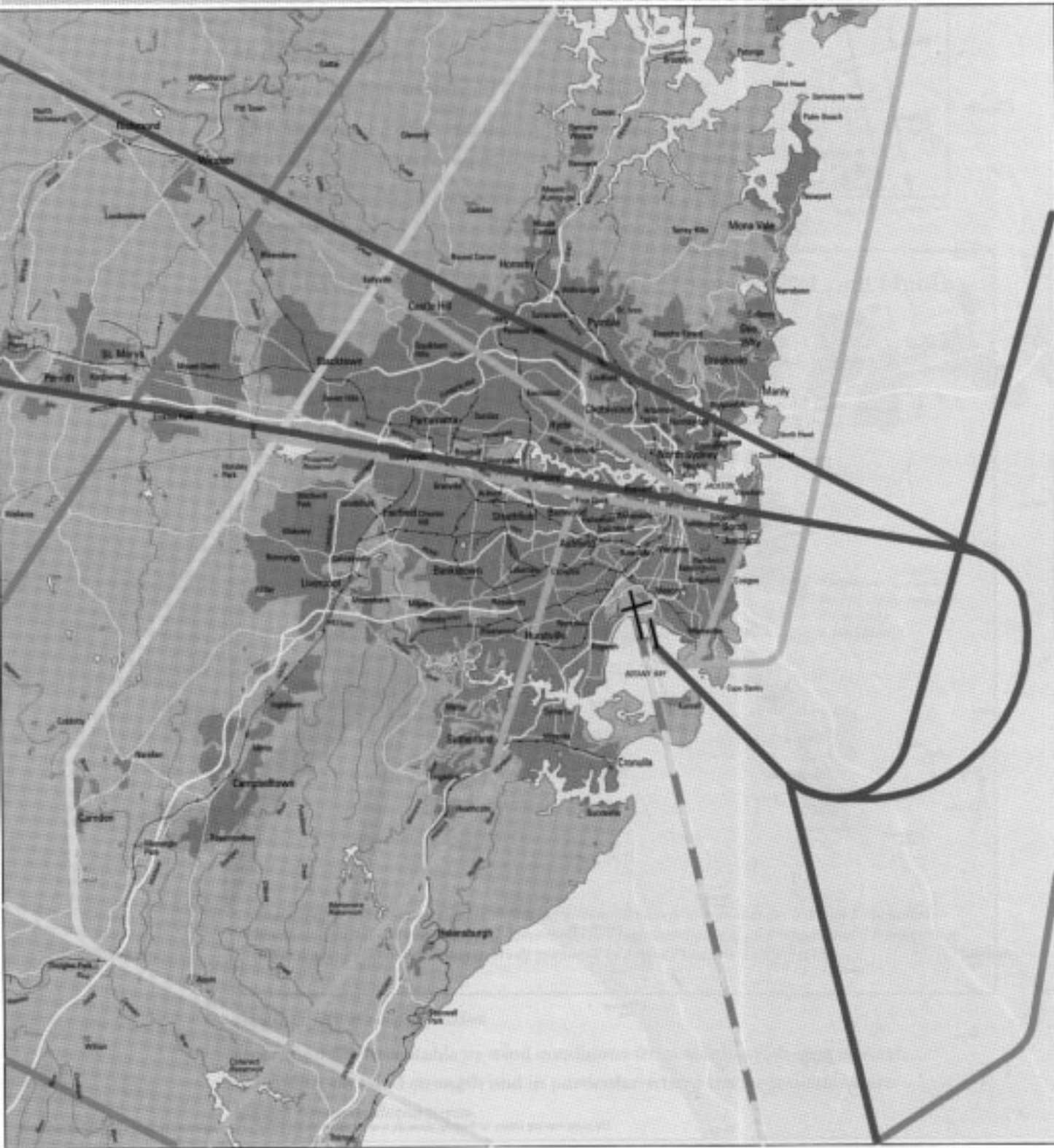
### *Proposed use*

At all times when weather and traffic conditions allow. It is anticipated that this mode will, in the main, be available in the early morning, immediately following the curfew and during light traffic periods in the middle of the day or at weekends. The likelihood of suitable wind conditions at other than early morning or late evening is limited.

Although the wind may only be a light drift, the operational requirement for those aircraft requiring the long runway may not be suited to this mode if the wind drift is northerly. Mode 3 covers this operation.



**SYDNEY MODE 4 DEPARTURES 16L ARRIVALS 34L  
(LONG HAUL JET DEPARTURES 16R)**



MP 16/544 E.4  
November 1996

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

0 km 5  
Scale approx



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

