

# Exploring the issues of Wake Turbulence at Jandakot GAP from Heavy Aircraft inbound on Perth runway 03.

A Paper by Robyn Edwards, PPL



The red lines are the circuit patterns of 24L/06R and 24R/06L respectively. The circuits are based on a 1 nm final and 1 nm Base giving a 2 nm decent from the circuit height of 1000 foot AGL. Decent rate depends on aircraft speed but would be typically 500 fpm @ 60 KN.

The green line is the standard approach from Forestdale Lake. It is standard procedure to overfly the control tower at 1500 feet. This gives a 500-foot separation between the inbound traffic and the T&G (Touch and Go) training traffic on 24L/06R. All Inbound traffic is at 1500 foot AGL and all outbound and circuit traffic is at 1000 foot AGL.

The dark blue circle is the 3 nm boundary of the Jandakot airspace. The vertical dimension of this airspace is from SFC (surface ground level) to 1500 foot.

The white line in the track of inbound traffic to Perth runway 03.

The orange area is an area of Jandakot Airspace (and of course beyond) that a VFR light aircraft has no reason to be in. The exception is that they have gained clearance from Perth ATC Clearance Delivery, as the only place to go from this area is into controlled airspace. This would be extremely rare and I can only foresee a situation that a light aircraft would have to divert direct Jandakot to Perth for an Emergency. As this would always be under control of ATC aircraft separation would be managed by them.

Point A is the closest point T&G traffic will get to the flight path of inbound traffic to Perth 03. Also traffic outbound to Armadale will cross this point.

Point B is the intersecting point of inbound traffic to Jandakot from Forestdale Lake and inbound traffic to Perth 03

## **With regards to Wake Turbulence for Heavy Aircraft on approach to Perth runway 03.**

Heavy Aircraft, such as the Boeing 747 and the Airbus A380 rarely do a circuit approach, as due to their speed, the circuits would be very large. For economical reasons the direct landing is preferred. The approach angle, AKA Glide angle, for an approach is normally 3 degrees. These aircraft will line up for the approach just before 10nm from the near end of the target runway at an altitude, as set by Airservices, of 3000 foot. In other words just after 10 nm the aircraft will be in line with (in this case tracking 016) and descending at an angle of 3 degrees with the target runway.

Airservices Australia provides the aviation navigation information publisher, Jepperson, information so that Jepperson can create an "Approach Plates". These information plates (pages) are the rules for making an approach into a runway. The Approach Plate for Perth 03 was used for the below.

Applying this to Point A and Point B, we find that:

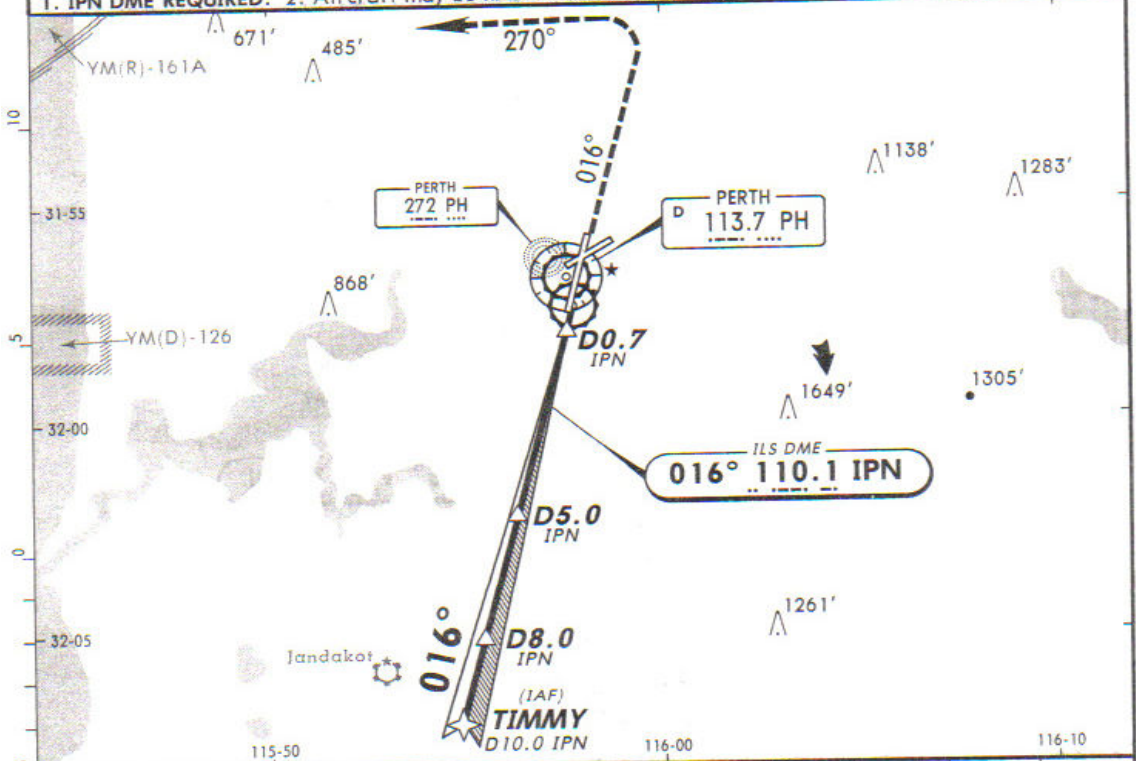
- Point A, approximately 9 nm from the southern end of Perth runway 03, the expected altitude of the aircraft should be 2925 feet AGL. This will give a 1925 foot separation between the inbound heavy and traffic departing Jandakot for Armadale and greater, due to horizontal separation, for T&G circuit traffic. This separation is over double the required vertical separation of 900 foot. As per the approach plate the lowest altitude allowed is 2500 foot AGL, this will still leave a separation of 1500 foot or 600 foot greater than the prescribed 900 foot required. In other words, no issue.
- Point B, approximately 11 nm from the southern end of Perth runway 03, the expected altitude of the aircraft should be 3000 foot AGL. This will give a 1500-foot separation between the inbound heavy and traffic Inbound for Jandakot from Forestdale Lake. Do I need to labour the point, 1500 feet of separation is 600 foot greater than the required separation for Wake Turbulence.

So why is it believed that wake turbulence is an issue at Jandakot when the Perth duty runway is 03? The only answer I can come up with is that those claiming it is a problem a safety risk, a danger are those who have no idea on how the airport works. It is very true, the separation buffer for wake turbulence does impinge on Jandakot airspace, at the very northeast edge, in an area not used by VFR traffic or in fact, any light traffic in normal circumstances. Aircraft Inbound to Perth runway 03 at this boundary will be at 2290 feet AGL, minus the 900 foot buffer gives you an infringement of 110 foot into the Jandakot airspace but still not effecting the outbound level of 1000 foot AGL with 390 foot still to spare.

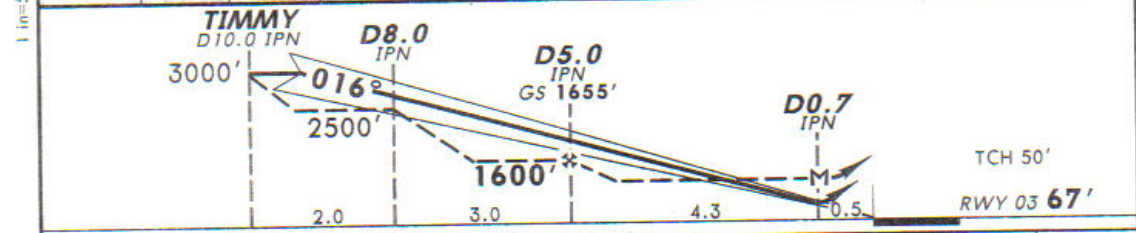
Wake Turbulence caused by heavy aircraft on approach to Perth 03 is not a problem, unless of course it is in your interest to convince people it is.

PERTH FINAL

ATIS 113.7 123.8 272			PERTH Approach (R) 123.6		PERTH Tower 120.5		Ground 121.7	
LOC IPN <b>110.1</b>		Final Apch Crs <b>016°</b>		GS <b>D5.0 IPN</b> 1655' (1588')		ILS DA(H) <b>320' (253')</b>		Apt Elev 67' <b>RWY 03 67'</b>
MISSED APCH: Track 016°. At 1500', turn LEFT, track 270°. Continue climb to 3000' or as directed by ATC.								3000' MSA PH VOR 2700' within 10 NM
Alt Set: hPa Rwy Elev: 2 hPa Trans level: FL 110 Trans alt: 10000' 1. IPN DME REQUIRED. 2. Aircraft may be RADAR vectored to final.								



LOC	IPN DME	9.2	9.0	8.0	7.0	6.0	5.0	4.0	3.0	2.0	1.4
(GS out)	ALTITUDE	3000'	2925'	2610'	2290'	1970'	1655'	1335'	1015'	700'	520'



Gnd speed-Kts	70	90	100	120	140	160	PAPI		<b>016°</b>	<b>1500'</b>
GS	3.00°	377	484	538	646	753				
MAP at D0.7 IPN										

STRAIGHT-IN LANDING RWY 03		CIRCLE-TO-LAND		NO CIRCLING Cat C & D aircraft beyond 4NM PH East of Rwy 03-21 and 06-24.
ILS DME DA(H) <b>320' (253')</b>		LOC DME (GS out) MDA(H) <b>520' (453')</b>		
1.5 km		2.5 km		
		Max Kts 100 <b>760' (693') -2.4 km</b> 135 180 <b>1440' (1373') -4.0 km</b> 205 <b>1440' (1373') -5.0 km</b>		