



**LIGHTWATER GATE
ANALYSIS JANUARY 2016
SUMMARY**

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As part of the brief of the Heathrow Community Noise Forum, flight paths through a series of penetration gates have been analysed. The gate extends approximately 3km either side of Lightwater, focusing on the area around the three villages of Bagshot, Windlesham and Lightwater. The analysis covers the years 2005 and 2010 to 2015 inclusive and addresses departures and arrivals on easterly and westerly operations.

Over the analysis period (2005 -2015) there have been changes in the number, type, altitude and concentration of aircraft within the existing routes which may impact people's experience of noise.

This summary highlights the changes only (read full executive summary here) and unless stated numbers, altitude, distribution and concentration patterns either remain as per previous years or have returned to previous years' levels following the end of the 2014 trials.

NUMBERS

- **Westerly Departures:** approximately 44 per day similar to 2005 and 2013 levels and reduced from approximately 50 per day in 2011 and 2012
- **Westerly Arrivals:** reduced from approximately 4 per day in 2005 to approximately 2.5 per day in 2015.
- **Easterly Arrivals:** The report shows early morning arrivals from 04:00, strongly peaked in early morning at 06:00. Overall daily flights (after 06:00) increased from an average of 64 per day in 2010 to 96 per day in 2015
- **Easterly Departures:** reduction to an average of approximately 2 per day since the realignment of the Compton Route

ALTITUDE

- **Westerly Departures:**
 - Minimum height has reduced from 5600' to 5200' between 2005 and 2015
 - Downward trend in altitude for some but not all African flights
 - Slight upward trend on the vertical centre of gravity (mean height) from approximately 7400 feet in 2005 to approximately 7900 in 2015 with wide daily variation.
 - Cap on minimum height of 6000' due to departing aircraft being held down by ATC to avoid traffic conflict with arrivals
 - Cyclical pattern in the vertical centre of gravity indicating westerly departures are generally lower in summer than in winter.
- **Westerly Arrivals:** remain constant
- **Easterly Arrivals:** remain constant at approximately 6000' with large day to day variation between 5500' to 9000'+ with average minimum height ranging from 4000' and below to 6000' and above.
- **Easterly Departures:**
 - Average mean height increased from approximately 6400' in 2005 to approximately 7200' in 2015
 - Upward trend on minimum height from 5500' in 2005 to 6700' in 2015

AIRCRAFT TYPES

Westerly Departures: Introduction of A380s through the gate in 2014

DISTRIBUTION/CONCENTRATION

- **Easterly Arrivals:**
 - Peaks of horizontal distribution in the centre of gate in 2015
 - The average lateral centre of gravity (average position) for easterly arrivals is just to the right of the centre of the gate but with large day to-day fluctuations. There is a trend for this to shift towards the centre of the gate, towards the centre of Lightwater.
 - From 2010 to 2012 the distribution showed slightly increasing intensity to the right hand side whereas the 2015 distribution peaks slightly in the centre of the gate.
 - Arrival traffic is spread across the day with a morning peak of heavy aircraft between 06:00-08:00. The mid day peak has grown in 2015.

AN3V Notes:

- The analysis is based solely on the position of aircraft and not on the manner in which they are flown, (i.e., ascending, descending or flying level) or the speed of the aircraft. Information on whether an arriving aircraft is descending or flying level is vitally important as that makes a significant difference to the noise profile.
- Due to the fact that the gate used in the analysis was not in a perpendicular position, the analysis does not accurately reflect Easterly arrivals which often pass over the area twice, once on approach to the stack and once on leaving the stack, (potentially creating two noise events from one flight).
- Due to the downward trend in minimum altitude, AN3V does not concur with the comment in the report that on Westerly Departures traffic returned to pre-trial structures and levels after the trials, since the downward trend in the minimum altitude of aircraft continued after the trials.

SUMMARY

HAL and AN3V have agreed from the conclusions of the report that there have been changes around minimum altitude, position and numbers of flights. HAL will work with the necessary HCNF sub groups to investigate and report on the impact of these changes on noise on the ground in the AN3V area.