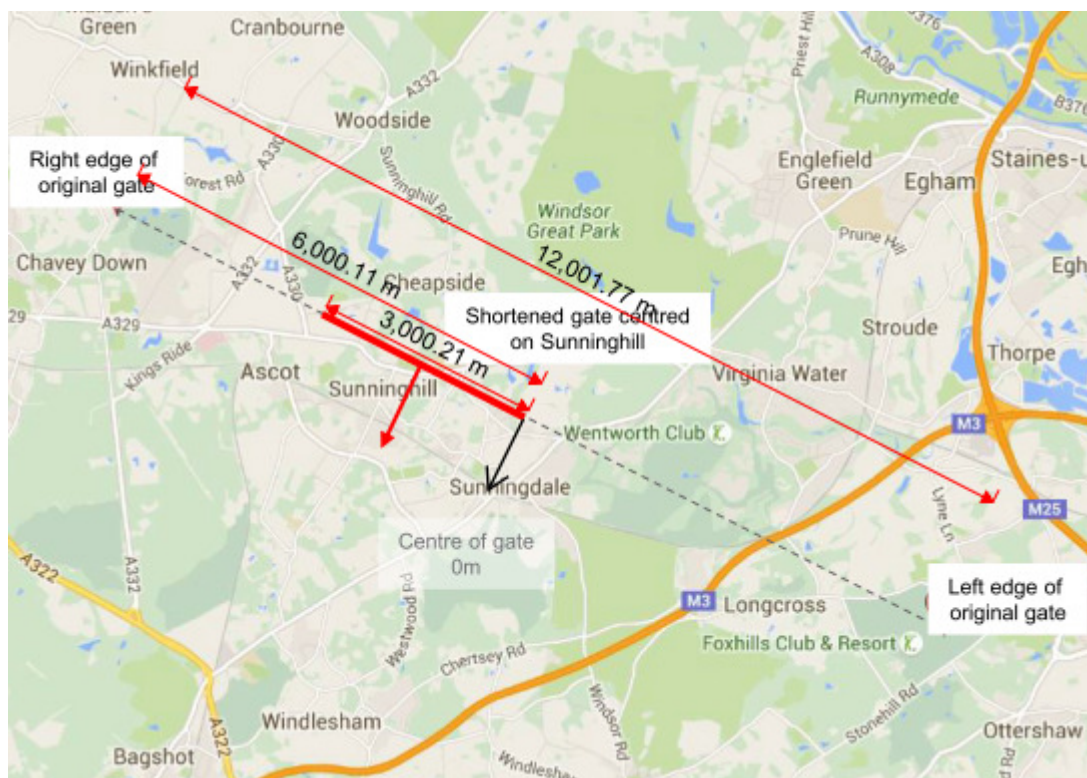


Conclusions drawn from the Sunninghill and Sunningdale gate data provided by PA Consulting.

Introduction.

Cllr. David Hilton and Kate Mann represent the Ascot area on the Heathrow Community Noise Forum. This paper details the conclusions we have drawn from the analysis provided by PA Consulting on the evolution of air traffic over time as it passes through two gates, the first termed the Sunningdale gate is some 12 kilometres wide and is centred on Holy Trinity Church in Sunningdale and the second called the Sunninghill gate, which provides a more granular detail, is just 3 kilometres wide and is centred on the A329 between Sunninghill Road and Silwood Road. Fig 1.



The red line represents Sunninghill Gate 3 Kilometres wide and the red arrow the centre of the gate.

The dotted line is the Sunningdale gate 12 kilometres wide and the black arrow the centre of the gate.

Concern about aircraft noise was triggered by the westerly departure trials that took place between 25th August and 12th November 2014. Fig 2 shows the concentration of aircraft on four narrow routes through the Sunninghill gate during the trials. Two further departure routes featured in the departure trail one can be seen on the western edge (+1500 metres) of Fig 2. and a further route ran across the centre of Ascot High Street. The figure shows the concentration of aircraft flying over Sunninghill and large areas of Sunningdale and that a significant number were flying below 4,000 ft.

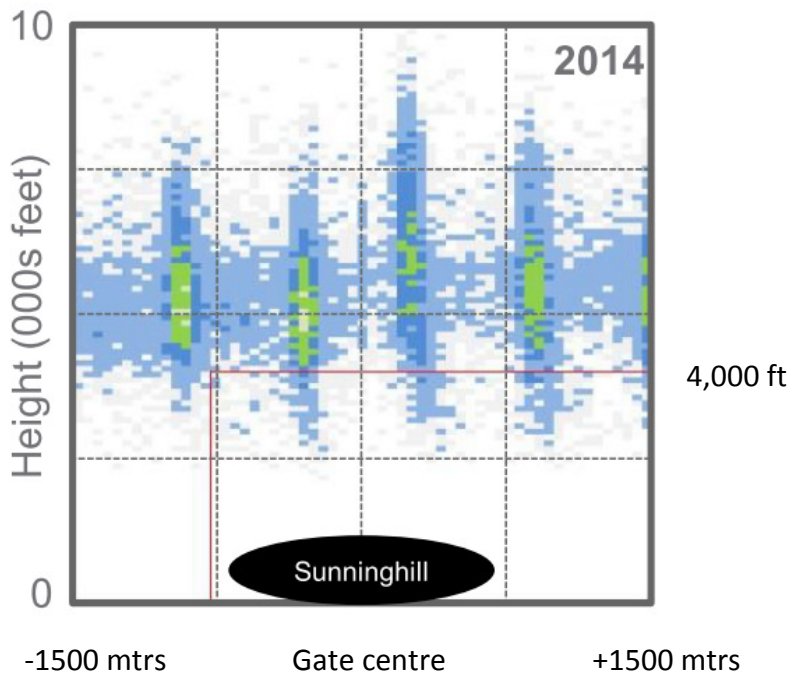


Fig. 2

This shows the location of aircraft both laterally on the gate and vertically. The centre line is the centre of the Sunninghill gate.

The green areas represent the greatest concentration of aircraft

The Westerly and Easterly departure Trial 2014 –Noise Analysis & Community Response published by Anderson Acoustics in July 2015 showed that during the trial most of the residents living in Sunninghill experienced an increase in noise levels ranging from 2 to 10 times that experienced before the trials.

It is hardly surprising that residents were annoyed by the intrusion into their lives, that they became sensitised to aircraft noise and that many became hostile to Heathrow, a hostility which has proven to be persistent.

Residents, including the authors of this report, believed that departing aircraft had not returned to the pre-trial departure routes, a perception that was not helped by the admission by NATS that they had made changes to the Compton route (CPT) on easterly departures.

It was against this backdrop that the Heathrow Community Noise Forum was formed.

The data and analysis provided by PA Consulting

Using data provided by Heathrow and verified by the National Aerospace Laboratory (NLR), an independent non-profit aerospace research institute based in the Netherlands, P A Consulting provided scatter plots of aircraft crossing the Sunningdale and Sunninghill gates for the years 2010, 2011, 2012, 2013, 2014 and 2015 and drew some conclusion from these plots that are included in this report.

The authors spend much time reviewing the data provided and make the observation that, from the point of view of residents, the comparison between flights in 2013 and 2015 is most important, 2014 being atypical as this included the westerly departure trials. It is unfortunate therefore that the data for 2015 covers just 8 months of that year and a like for like comparison between 2013 and 2015 is not possible.

The focus of this analysis has been on the location of departing aircraft over time, however, the most important metric is the noise generated by those aircraft, as if aircraft made no noise people would not be disturbed. The report from PA Consulting was to consider flight patterns and changes over time but in the future, data from a monitor in Ascot will be made available.

The analysis by PA Consulting compares one year's data to the next which seems reasonable when assessing whether there have been any macro changes in the location of departing aircraft over time. However, this averaging hides any week to week changes. For example no aircraft depart on MID during easterly departures, roughly 30% of the time, so the intrusion of aircraft noise is concentrated into roughly 250 days a year. Furthermore, there is no clarity as to whether, on a given day departing aircraft cross the gate at heights between the lowest altitude 2,500 ft and the maximum at 6,000ft or whether there were days when aircraft tended to depart at close to the lower altitudes. We make this point because local residents do not react to averages but to what is happening at a specific time.

Having made these comments that challenge the absolute value of the exercise we also recognise that this was worthwhile and the best that could be done with the available data.

Comments on the Sunningdale gate.

The report provides insights into arrivals and westerly Midhurst (MID) and easterly Compton (CPT) departures. It is our experience that few residents complain about arriving aircraft that tend to be at higher altitude and are also descending and therefore have their engines throttled back so we do not comment on these flights. The Sunningdale gate is quite wide and changes to the CPT route has seen a greater concentration to the northern end of the gate. The scatter plots also show that aircraft gain height as they fly west and are therefore less intrusive in the Sunninghill gate. With the exception of the following comment we focus our analysis on MID for westerly departures.

- There are two concentrations of aircraft, one over Sunningdale with a further significant concentration over Ascot. The Ascot concentration is not as pronounced in 2013 as it was in 2011.
- In 2013 the distribution of heavy aircraft was skewed towards the south of the gate but in 2015 this was more evenly distributed with more heavy aircraft to the north of the centre of the gate and fewer to the south.
- Air traffic is distributed mostly across the easterly $\frac{2}{3}$ rds. of the Sunningdale gate.
- The suggestion that there was a reduction in flights at the northern end of the gate in 2015 may not be valid as the scatter plot includes just the first 8 months of the year.

Analysis of the Sunninghill gate.

Midhurst (MID) departures.

The data provided by PA consulting indicates the following trends;

- There is a downward trend on the vertical median height from approximately 5700 ft in 2010 to approximately 5400 ft in 2015 with wide daily variation which is shown in Fig 3 where the green dots represent individual aircraft. There is a cyclical pattern in the vertical median height indicating westerly departures are generally lower in summer than in winter

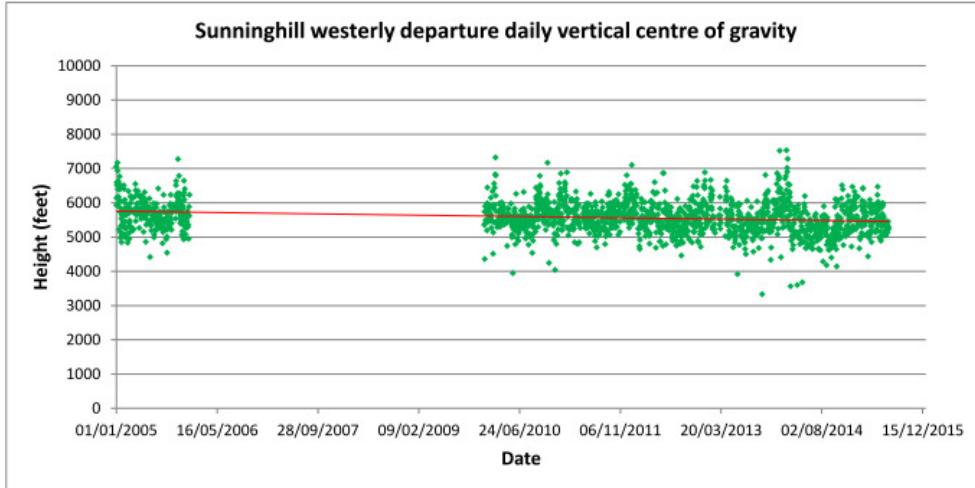


Fig 3

- In 2012, there was a shift of the median lateral location of departing aircraft to the south east of the gate. This shift although slightly less marked persisted in 2015.
- The minimum height for westerly departures shows a slight downward trend from 2010 to 2015 from 3700 feet to 3200 feet. There are a considerable number of flights with minimum height below 3000 feet as shown in Fig4. The chart shows the cap on minimum height of 6000 feet as departing aircraft are held down by air traffic control to avoid conflicts with arriving traffic.

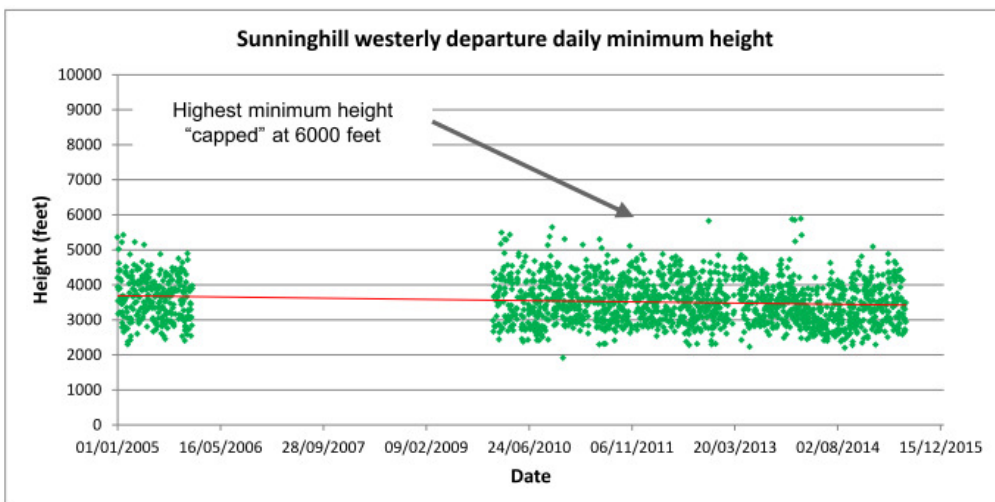


Fig 4

- We considered the numbers of aircraft flying outside of the Midhurst Noise preferential route to be an important factor. The Noise Preferential Route (NPR) lies to toward the eastern side of the Sunninghill gate and ends about 700 metres from the

start of the eastern end of the gate. Fig 5a and Fig 5b show departing heavy aircraft such as Boeing 747s scattered across the gate in 2013 and 2015. There is no direct comparison between these scatter plots as the 2015 plot includes just 8 months of data.

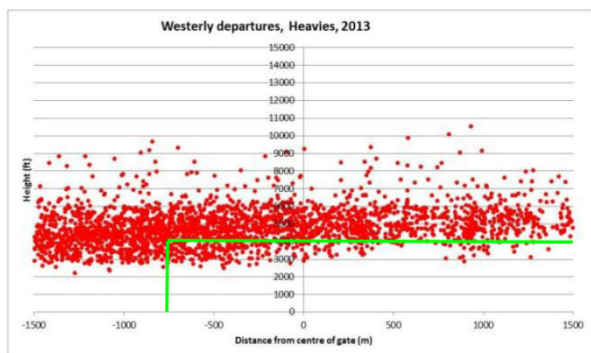


Fig 5a

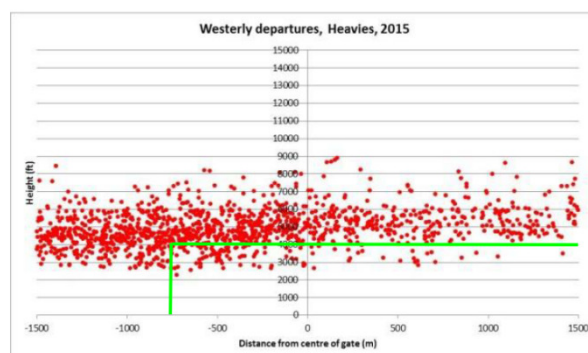


Fig 5b

The red dots are heavy aircraft and those inside the box outlined in green are flying outside of the Noise Preferential Route.

Fig 6a and Fig 6b show A380 aircraft in 2013 and 2015 respectively.

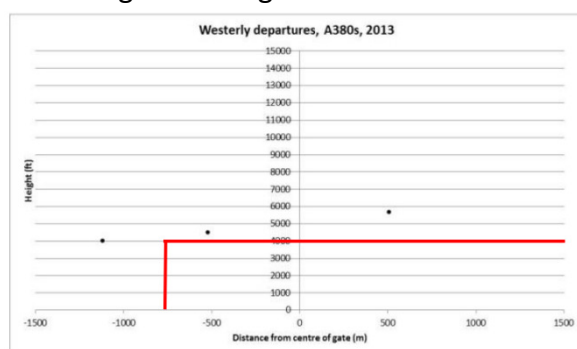


Fig 6a

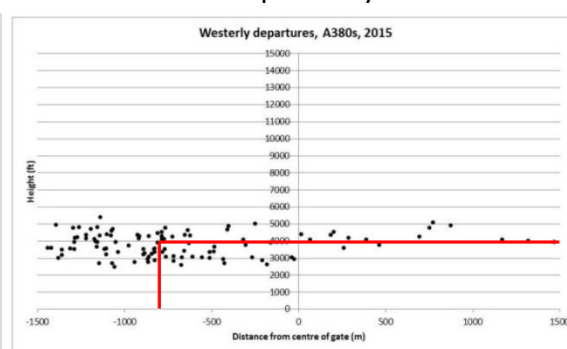


Fig 6b

The black dots are A380's and those inside the box outlined in red are flying outside of the Noise Preferential Route.

It is noticeable that just 3 A380s on the MID route passed through the gate in 2013 whereas MID was used by many A380s in 2015. Fig 6b shows that A380s climb more slowly and that many are not only below 3000 ft as they cross the gate but are also outside of the NPR. We are advised that Air Traffic Controllers may direct aircraft away from the Noise Preferential Route on the grounds of safety but believe that NATS should provide reasons for this early vectoring of aircraft.

Heat maps.

Heat maps show the density of aircraft crossing the gate. Fig 7a shows the heat map for the Sunninghill gate in 2013 and Fig7b in 2015.

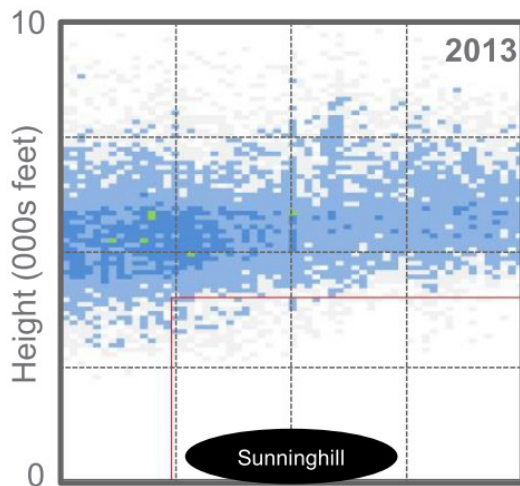


Fig 7a

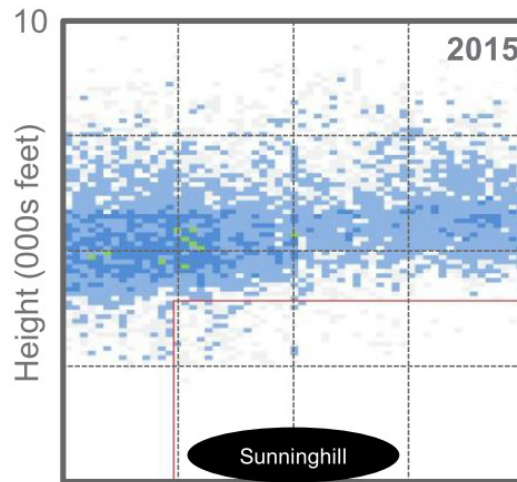


Fig 7b

It is noticeable that aircraft were less concentrated in 2013 with the highest density 750 metres to the south of the centre of the gate and at about 5,500ft whereas although the highest density in 2015 was in the same lateral position this was centred lower at 5,000 ft.

Individual Flights

We requested details of a number of individual flights all with destinations in South Africa. Of note was the fact that in the first half of 2015 flights BA057, BA059 and BA081 crossed the gate between 3600 ft and 5000 ft whereas the heights for SA273 and W3 102 ranged from 3000 ft to in excess of 6000 ft. The difference in minimum height and this spread of heights requires explanation.

Three flights stand out, BA055 where we are advised the aircraft type changed to A380 in 2014 and heights for this flight made an abrupt decline and now range between 2,500 ft and 5,000 ft also flights VS601 and VS651 in the period range from 2200 ft to in excess of 5,000 ft.

We draw the conclusion that different airlines use different departure procedures with the consequence that some aircraft climb more slowly than others. The data also confirms the concerns expressed by the Teddington Group that, as a matter of airline policy, A380s use a low climb rate. In our judgement and in the absence of any evidence to the contrary, airlines use low climb rates to reduce fuel burn and pollution at the expense of creating a bigger noise footprint. If this is proven to be the case it is contrary to Government policy which states that noise is a priority below 4,000ft.

Recommendations.

The authors make the following recommendations.

1. A study should be carried out to understand why the altitude of aircraft departing on Midhurst on westerly operations has reduced with the minimum height reducing from 3700 ft to 3200 ft with actions proposed to increase this height.

2. A review and publication of the reasons for aircraft leaving the Noise Preferential Routes below 4000 ft
3. An analysis of the departure procedures for A380's which cross the gate on average below 4000 ft to gain an understanding why these aircraft do not climb more quickly and why proportionately so many leave the Noise Preferential Route below 4000 ft.
4. The reasons for the range of heights at which aircraft cross the gate with the aim of increasing heights and importantly eliminating very low flying aircraft.

Conclusions

In the view of the authors the Sunninghill gate data demonstrates;

- Residents complained that aircraft had not returned to the pre-trial routes and in our opinion, based upon the analysis of the data provided by P A Consulting for 2013 and 2015, there has been change but it is not possible to state that this change was associated with the trials.
- The concentration of aircraft is shifted towards the east of the centre of the gate and is lower.
- Although three A380s crossed the gate in 2013, during 2014 operators brought more A380's into service and the presence of these aircraft at relatively low altitude in 2015 was a very significant change from 2013.

We also highlight the fact that the data is an average over time and this may obscure some periods when aircraft depart at lower altitudes or tend to concentrate across a narrow part of the gate.

We are also adamant that we see aircraft in the sky today in locations that prior to the departure trials we did not see them.

Cllr. David Hilton

Kate Mann

Ascot representatives on the Heathrow Community Noise Forum

8th May 2016.