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| Title: Night Flying Restrictions at Heathrow, Gatwick and Stansted Airports IA No: DFT00232 Lead department or agency: Department for Transport Other departments or agencies: | Impact Assessment (IA) |
| | Date: 15 July 2014 |
| | Stage: Implementation |
| | Source of intervention: Domestic |
| | Type of measure: Secondary legislation |
| | Contact for enquiries: night.noise@dft.gsi.gov.uk |

| | |
|--|-------------------|
| Summary: Intervention and Options | RPC: Green |
|--|-------------------|

| Cost of Preferred (or more likely) Option | | | |
|---|----------------------------|--|--|
| Total Net Present Value | Business Net Present Value | Net cost to business per year (EANCB on 2009 prices) | In scope of One-In, One-Out? Measure qualifies as One-Out? |
| £NQ | £NQ | £NQ | Yes Zero net cost |

What is the problem under consideration? Why is government intervention necessary?

Night noise from aircraft can impose significant costs on local communities, including health effects and other next day effects associated with sleep disturbance (including fatigue and sleepiness). The Government has been restricting night flights for around 50 years at Heathrow, Gatwick and Stansted, in order to limit the impact of night noise on local residents. These airports are strategically important to the UK economy and it is considered that it is appropriate for the Government to take decisions on the right balance between noise controls and economic benefits, reconciling the local and national strategic interests. Government intervention is required as the impacts to local communities associated with night flights are not fully reflected in the costs airports face and, without intervention, there would be no mechanism or market by which airports and local communities can reach an agreement on the level of night noise from aircraft. The current night flying restrictions at the three airports ("the regime") end in October 2014.

What are the policy objectives and the intended effects?

It is the Department's objective to limit and, where possible, reduce the impact that night noise from aviation has on local residents. However, we also recognise the importance of aviation activity as a major contributor to the country's economic prosperity, and, with regard to night flights, the importance to the UK economy of certain types of flights, such as express freight services, which may only be viable if they operate at night. In current circumstances, it is also the Department's objective to put in place a short regime to allow full consideration of the independent Airport Commission's recommendations on airport capacity for the design of the next full regime. Therefore the Department is introducing a three-year regime with minor changes relative to the current regime.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

The following policy options were considered during the consultation:

- 1) Keep the provisions of the current regime unchanged for a further three years
- 2) as 1) plus extending the existing operating ban of the noisiest (QC8/16) rated aircraft to 23:00-23:30. This is the preferred option.

Do nothing scenario: the impacts of these policy options has been assessed against a 'do-nothing' scenario, which reflects what would happen in the absence of any further Government action and assumes that there are no night flying restrictions beyond October 2014. This scenario is outside the scope of the policy options being considered for the next regime and is used here purely as a consistent baseline against which to compare the impacts of the policy options.

Other key non-monetised benefits by ‘main affected groups’

At Gatwick and Stansted there would be benefits from the regime if the quota limits restricts activity compared with the “do nothing” option. The extent of these benefits will depend on demand for night flights during the three years of the regime. The night noise regime has an observable impact at Heathrow airport forcing air traffic movements out of the night period into the day time. This benefits local residents who would otherwise suffer from higher levels of night noise exposure. The operating ban of QC8/16 aircraft during the time period 23:00-23:30 will not have a significant impact on noise exposure levels of those affected by night noise, since these aircraft movements are now extremely rare. It will however have the benefit of certainty that no such noise events will occur and will prevent any awakenings caused by movements of these noisier aircraft types.

Key assumptions/sensitivities/risks

The key assumptions that affect impacts are: a) whether actual reductions in noise are broadly in line with those expected b) whether planned fleet replacements take place as announced; c) whether demand for night flights exceeds the high growth forecast reported in the impact assessment. If demand for night flights exceeds the growth forecasts reported in this impact assessment, costs would be directly imposed on airlines and airports from restricting night flights at the level set by the regime. Benefits would also be generated for local residents from the restriction on night flights, who would otherwise suffer from higher levels of night noise exposure.

Discount rate

N/A

BUSINESS ASSESSMENT (Option 2)

| Direct impact on business (Equivalent Annual) £m: | | | In scope of OITO? | Measure qualifies as |
|---|--------------|---------|-------------------|----------------------|
| Costs: NQ | Benefits: NQ | Net: NQ | Yes | Zero net cost |

Evidence Base (for summary sheets)

1. Problem under consideration and rationale for intervention

The Government recognises that aviation noise is the primary concern of local communities near airports. It also recognises that the costs on local communities are higher from aircraft noise during the night, particularly the health costs associated with sleep disturbance. There is evidence to suggest that long term exposure to noise at night can lead to adverse health effects, such as hypertension and cardiovascular disease¹. Next day effects of sleep disturbance can include fatigue and sleepiness, which may impact on productivity.

However, the Government also recognise the crucial importance of aviation activity as a major contributor to the country’s economic prosperity. Night flights are a small but important part of the UK’s aviation capacity and play an important role in UK connectivity. This includes express freight and mail services and early morning arrivals favoured by high value business passengers coming in particular from South East Asia. Some freight shipments are only viable at night due to capacity constraints and these can be important to manufacturing supply chains that rely on access to last-minute shipments and to the public and businesses to send and receive first-class mail.

The Government’s Aviation Policy Framework (published in March 2013) therefore states that it wants to strike a fair balance between the negative impacts of noise (on health, amenity (quality of life) and productivity) and the positive economic impacts of flights. The Government’s overall policy on aviation noise is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise. As a general principle, the Government therefore expects that future growth in aviation should ensure that benefits are shared between the aviation industry and local communities. This means that the industry must continue to reduce and mitigate noise as airport capacity grows. As noise levels fall with technology improvements the aviation industry should be expected to share the benefits from these improvements.

The International Civil Aviation Organization (ICAO) recognises the importance of addressing the effects of aviation noise and has established a ‘balanced approach’ principle to aircraft noise management. The Government’s policy fully recognises this approach, which is given effect in EU law (see section 2 below).

Section 78 of the Civil Aviation Act 1982 provides powers to the Secretary of State to set controls connected with the taking off or landing of aircraft at specific airports for the purpose of avoiding, limiting or mitigating the effect of noise. Where these powers are used, the scope of the controls is to prohibit

¹ Civil Aviation Authority ERCD Report 1208 : Aircraft Noise, Sleep Disturbance and Health Effects: A Review; updated by Civil Aviation Authority Report CAP 1164 (June 2014).

aircraft of certain descriptions from landing or taking off during specified periods, and to set a limit on movements by specified aircraft during certain periods. For many years Heathrow, Gatwick and Stansted airports have been designated for these purposes under Section 78 of the Act. The Aviation Policy Framework confirmed that these airports are strategically important to the UK economy and for this reason it is considered appropriate for the Government to take decisions on the right balance between noise controls and economic benefits, reconciling the local and national strategic interests.

The impacts for local residents associated with night flights are not fully reflected in the costs that airlines and freight operators face in deciding whether to operate them. Government intervention has therefore been required to set controls on night flights as a means of balancing the costs and benefits of night flights. There have been restrictions on night flights at Heathrow Airport since 1962, at Gatwick since 1971 and at Stansted since 1976. The current regime governing night restrictions at Heathrow, Gatwick and Stansted came into force in October 2006. It was due to end on 28 October 2012 but on 26 March 2012, the Government announced that it would extend the existing night flying regime at the three airports for a period of 2 years until October 2014.

Since 1993, the restrictions, collectively known as the ‘night flying regime’, have been based on:

- a limit on the overall number of night flights;
- noise quotas which cap the amount of noise energy which can be emitted at night over the course of the regime; and
- restrictions on the noisiest aircraft types.

During the night quota period (NQP) (23:30 to 06:00) aircraft movements² are restricted by numerical movement limits. Current movement limits equate to around 16 movements per night on average at Heathrow, around 40 at Gatwick and 33 at Stansted. Limits are set for each summer and winter season³ and at Gatwick and Stansted they vary considerably between summer and winter in response to demand. Since 1998, movement limits have been unchanged at all three airports, except in the winter at Gatwick where the limits were reduced in 2006. Usage of these movement limits has also varied. Heathrow has generally used most of its quota (88% in summer 2013 and 75% in winter 2013/14). Gatwick and Stansted have used a smaller proportion, particularly in the most recent winter seasons. Table 9 in the DfT’s Stage 1 consultation on night flying restrictions at Heathrow, Gatwick and Stansted (January 2013)⁴ sets out movement limits and usage over the period 2006-2012. These have been updated in Table 1a and 1b below to include winter 2012/13 and winter 2013/14, and summer 2013:

Table 1a: Winter Season

| | Heathrow | | Gatwick | | Stansted | |
|-----------------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| | Movement Limit | Movement Actual | Movement Limit | Movement Actual | Movement Limit | Movement Actual |
| Winter 2006/07 | 2,550 | 2,659 | 3,250 | 2,734 | 5,000 | 3,751 |
| Winter 2007/08 | 2,550 | 2,710 | 3,250 | 2,929 | 5,000 | 3,612 |
| Winter 2008/09 | 2,550 | 2,715 | 3,250 | 2,145 | 5,000 | 3,196 |
| Winter 2009/10 | 2,550 | 2,686 | 3,250 | 2,199 | 5,000 | 3,426 |
| Winter 2010/11 | 2,550 | 2,577 | 3,250 | 2,160 | 5,000 | 2,595 |
| Winter 2011/12 | 2,550 | 2,583 | 3,250 | 1,411 | 5,000 | 2,298 |
| Winter 2012/13 | 2,550 | 2,668 | 3,250 | 1,603 | 5,000 | 2,876 |
| Winter 2013/14 | 2,550 | 2,912 | 3,250 | 1,593 | 5,000 | 3,167 |

² Take-off or landing

³ The seasons are defined by the change of clocks in March and October.

⁴ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66837/consultation-document.pdf, page 43

Table 1b: Summer Season

| | Heathrow | | Gatwick | | Stansted | |
|--------------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| | Movement Limit | Movement Actual | Movement Limit | Movement Actual | Movement Limit | Movement Actual |
| Summer 2007 | 3,250 | 3,053 | 11,200 | 10,173 | 7,000 | 7,307 |
| Summer 2008 | 3,250 | 2,922 | 11,200 | 10,618 | 7,000 | 6,498 |
| Summer 2009 | 3,250 | 2,848 | 11,200 | 9,099 | 7,000 | 5,979 |
| Summer 2010 | 3,250 | 3,033 | 11,200 | 9,875 | 7,000 | 6,081 |
| Summer 2011 | 3,250 | 2,958 | 11,200 | 9,859 | 7,000 | 6,004 |
| Summer 2012 | 3,250 | 2,853 | 11,200 | 9,837 | 7,000 | 5,837 |
| Summer 2013 | 3,250 | 2836 | 11,200 | 9998 | 7,000 | 5614 |

Under the existing regime airports are given flexibility to defer or bring forward movements and quota allowance from one season to the next under the carry-over and overrun arrangements. Currently the following carry-over and overrun provisions apply for movements and noise quota limits:

- If required, a shortfall in use of the movements limits and/or noise quota in one season of up to 10% may be carried over to the next season;
- Conversely, up to 10% of an overrun in movements and/or noise quota usage in one season (not being covered by carryover from the previous season) will be deducted from the corresponding allocation in the following season;
- An overrun of more than 10% will result in a deduction of 10% plus twice the amount of the excess over 10% from the corresponding allocation in the following season; and
- The absolute maximum overrun is 20% of the original limit in each case.

Noise quotas take account of the noise emitted by aircraft type. The present system of noise quotas was based on a 1993 consultation whereby aircraft are classified separately for landing and taking off according to the Quota Count (QC) classification system. The QC system allows each night flight to be individually counted against an overall noise quota (or noise budget) for an airport according to the QC rating (i.e. the noisiness) of the aircraft used. The noisier the aircraft, the higher its QC rating and the fewer that can be operated within the cap, thereby also providing a built-in incentive for airlines to use less noisy aircraft where practicable.

Aircraft are classified on the basis of their noise data (adjusted as appropriate) into seven QC bands. Under the QC system, each aircraft type, including different versions of the same model, is assigned a Quota Count according to its noise performance, separately for arrival and departure, as determined by the International Civil Aviation Organization (ICAO) noise certification process. For example, a Boeing 737-800 is classified as QC/0.5 on arrival and as QC/0.5 or QC/1 on departure (depending on its maximum certificated take-off weight (MTOW)), whereas a much larger and older Boeing 747-200 will vary between QC/2 and QC/8 on arrival, and between QC/4 and QC/16 on departure, depending on engine fit and MTOW.

The Boeing 747-400 is now the noisiest aircraft still in regular operation at any of these airports, and is rated QC/4 on departure and QC/2 on arrival.

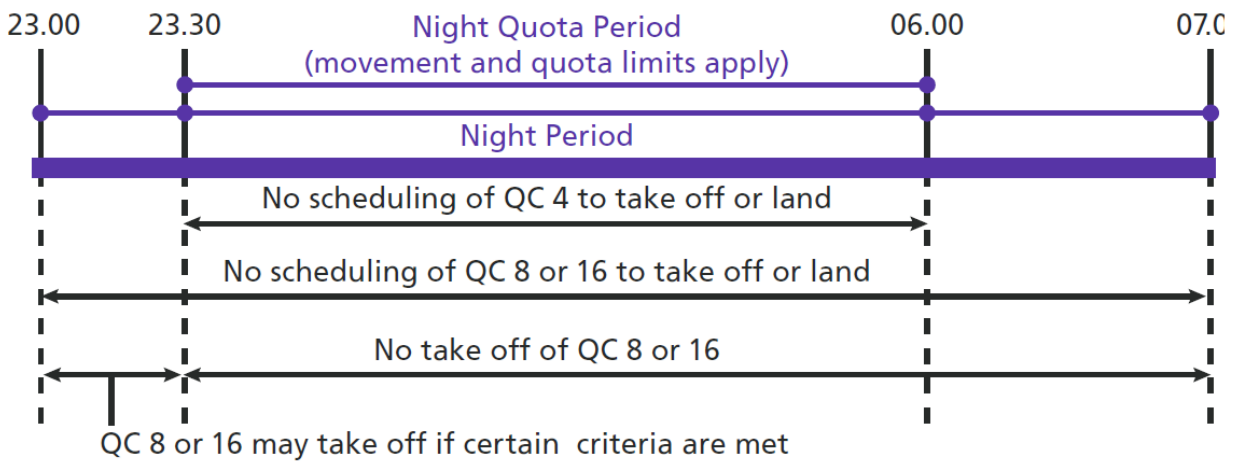
Any aircraft which is rated as QC/8 or QC/16 may not take off in the night period, except in the period 2300-2330 in circumstances where;

- it was scheduled to take off prior to 2300;
- the take-off was delayed for reasons beyond the control of the aircraft operator; and
- the airport authority has not given notice to the aircraft operator precluding take-off.

The figure below, taken from the first stage consultation, shows this more clearly.⁵ There have been very few movements of QC8/16 aircraft in recent years.

⁵Ibid, page 25

Figure 1: The current structure of the night noise regime



Tables 10-12 in the Stage 1 consultation on night flying restrictions at Heathrow, Gatwick and Stansted set out the usage of noise quotas for each of the three airports. Since summer 2007 the quota limits for maximum permitted night noise were not reached at any of the three airports. This is primarily a consequence of the recent prolonged downturn in economic activity.

Unless the Government puts in place a new regime, there will be no restrictions on night flights at these airports after October 2014. This option would not meet the objective of protecting communities from excessive noise impacts (see section 2). It would also not be likely to result in significant benefits to operators and passengers: the consultation responses suggest that neither airports nor airlines are seeking such a removal or restrictions at the current time.

2. Policy objectives

Whilst recognising the important role aviation plays in the UK economy, the Government’s overall policy on aviation noise is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise. The Government recognises the higher impacts night flights have on people and expects the aviation industry to make extra efforts to reduce and mitigate noise from night flights through use of best-in-class aircraft, best practice operating procedures, seeking ways to provide respite wherever possible and minimising the demand for night flights where alternatives are available.

The Government has established the independent Airports Commission to consider how any need for additional capacity should be met in the short, medium and long term. The Commission’s recommendations, if adopted, may potentially affect any or all of the three airports currently subject to night flying restrictions imposed by the Government. The Government does not wish to make significant changes to the night flying restrictions at these airports before the Commission publishes its final report in 2015 and wishes to introduce a short regime (lasting three years rather than five or six years as has been the case in the past) with minimal changes relative to the current regime, including no changes to the permitted number of movements at the three airports.

Establishing a three year regime is intended to provide stability until decisions have been made about any new airport capacity and to ensure operational capacity at these airports is not affected pending such decisions. Following decisions on future airport capacity after publication of the Airports Commission’s final report in summer 2015, the Department expects to consult on a full range of options, potentially including changes to the permitted number of air transport movements, for the next night noise regime. A consultation on the next regime, which would take account of any impacts, is expected to begin in early 2016. The Government will monitor the regime from the outset, as it does for the current regime, and this will provide further evidence on whether operational capacity at these airports is being affected before 2017.

Any proposals to introduce noise related operating restrictions at an airport must comply with European Directive 2002/30/EC which establishes rules and procedures with regard to the introduction of noise-related operating restrictions at the busiest EU airports. This Directive gives effect to the International Civil Aviation Organization’s (ICAO) ‘balanced approach’ to noise management. The balanced approach consists of identifying the noise problem at an airport and then assessing the cost-effectiveness of the various measures available to reduce noise through the exploration of four principal elements which are:

- reduction at source (quieter aircraft);
- land-use planning and management;
- noise abatement operational procedures (optimising how aircraft are flown and the routes they follow to limit the noise impacts); and
- operating restrictions (preventing certain (noisier) types of aircraft from flying either at all or at certain times).

ICAO encourages States to consider operating restrictions only after the benefits from other elements of the balanced approach have been taken into account. The first stage consultation sought evidence on each of these elements to allow us to consider the scope for noise reduction. Our proposals for the new regime take account of this evidence received. We do not consider that the first three of the principal elements set out above are sufficient to meet the objectives we are proposing.

The rules and procedures apply to restrictions of a partial nature including night flying restrictions. The Directive has been implemented into UK legislation by The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003⁵. The Regulations require an environmental objective to be set for airports before the competent authorities adopt any measures to deal with noise problems and state that they shall not impose a measure or a combination of measures which are more restrictive than is necessary to achieve the environmental objective. At Heathrow, Gatwick and Stansted, the Secretary of State is responsible for setting the environmental objectives and the night flight rules. Changes to the current night restrictions will therefore need to be assessed in accordance with this legislation.

As well as the options considered in this IA the Department also consulted on the environmental objectives as part of its stage 2 consultation. Following this consultation the objectives are:

- to limit and where possible reduce the number of people significantly affected by aircraft noise at night;
 - to maintain a stable regulatory regime pending decisions on future airport capacity and, at Gatwick and Stansted in particular, to allow growth in movements within existing night movement limits and noise quotas;
- to encourage the use of quieter aircraft during the night quota period so as to reduce the overall impact of aircraft noise and in particular the likelihood of sleep disturbance.

3. Description of ‘Do-nothing’ scenario and policy options considered

3.1 ‘Do-nothing’ scenario

In line with the Green Book and the IA toolkit⁶, we have assessed the impacts of the policy options under consideration against a ‘do-nothing’ scenario, which represents what would happen in the absence of any further Government intervention. As the existing night flying restrictions at Heathrow, Gatwick and Stansted expire in October 2014, and as Section 78 of the Civil Aviation Act 1982 gives the Secretary of State discretion as to whether to impose night flying restrictions, the ‘do-nothing’ scenario considered here assumes that there are no night flying restrictions beyond October 2014. As noted in section 1, this option is outside the scope of the policy options being considered for the next regime and is used here as a consistent baseline against which to compare the impacts of the policy options.

So our starting point in assessing the impacts of the policy options has been to consider how movements and associated quota usage would be likely to change at each of the three airports under the ‘do-nothing’ scenario in the period to the end of the summer season 2017 (the end of the proposed 3 year regime). We have then considered how the policy options would be likely to affect activity at the three airports over the three year period, before assessing the relevant costs and benefits.

3.1.1 Stansted and Gatwick airports

As explained in section 1, unlike at Heathrow, the current number of movements during the Night Quota Period (NQP) at Stansted and Gatwick are some way below the maximum permitted. For example, for the most recent seasons we could consider in the analysis, in winter 2013/14, movements were approximately 63% of the maximum permitted at Stansted and approximately 49% of the maximum

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/200442/Green_Book_impact_assessment_toolkit.pdf

permitted at Gatwick. In Summer 2013, actual movements were approximately 80% of the maximum permitted at Stansted, and approximately 89% of the maximum permitted at Gatwick.

We do not expect fleet turnover to generate significant reductions in quota usage at Gatwick or Stansted in the next few years. For example, as indicated at Annex G of the Stage 1 consultation document⁷, short-haul narrow body types such as the A320 and B737 families of aircraft account for a significant proportion of all movements during the NQP at these airports. Whilst relatively quiet in QC terms, new and quieter versions of these aircraft are now available to order from the manufacturers. However, only one major operator (easyJet) has so far placed any orders, with first deliveries of the new A320neo expected to occur from 2017 onwards. So in developing our 'do-nothing' scenario we have assumed that fleet turnover results in no net improvement in quota usage in the period to the end of the summer season 2017.

There is inherent uncertainty surrounding future growth in night movements at Stansted and Gatwick. We have developed forecasts of night movements at the two airports in the period to the end of summer 2017, by taking account of:

- 1) observed growth in night movements at the two airports in the period leading up to the recent economic downturn; and
- 2) DfT forecasts of growth in total annual air transport movements in the period to 2020.⁸

In particular, we have defined central forecasts, which assume annual growth in movements of approximately 1.3% at Gatwick and 2.5% at Stansted, based on the average growth in night flights in the period 2000-08 and the DfT's central forecasts in total annual air transport movements in the period to 2020⁹. Our high growth forecasts, which assume 2% annual growth in movements at Gatwick and 4.5% annual growth at Stansted, are based on the average growth in night flights in the high growth period 2002-07 and DfT's high growth forecasts for the period 2013-2020¹⁰.

While there is uncertainty either side of our central forecasts, we have not defined a low growth forecast. This is because the policy options under consideration (see section 3.2) have been defined to avoid restricting activity at any of the airports for the duration of the shorter regime. In light of this we decided to define central and high forecasts only, initially, and to use those to assess the costs and benefits associated with each of the policy options. Had any of the policy options further restricted activity at Stansted and Gatwick under the central growth forecasts, we would have defined a low forecast.

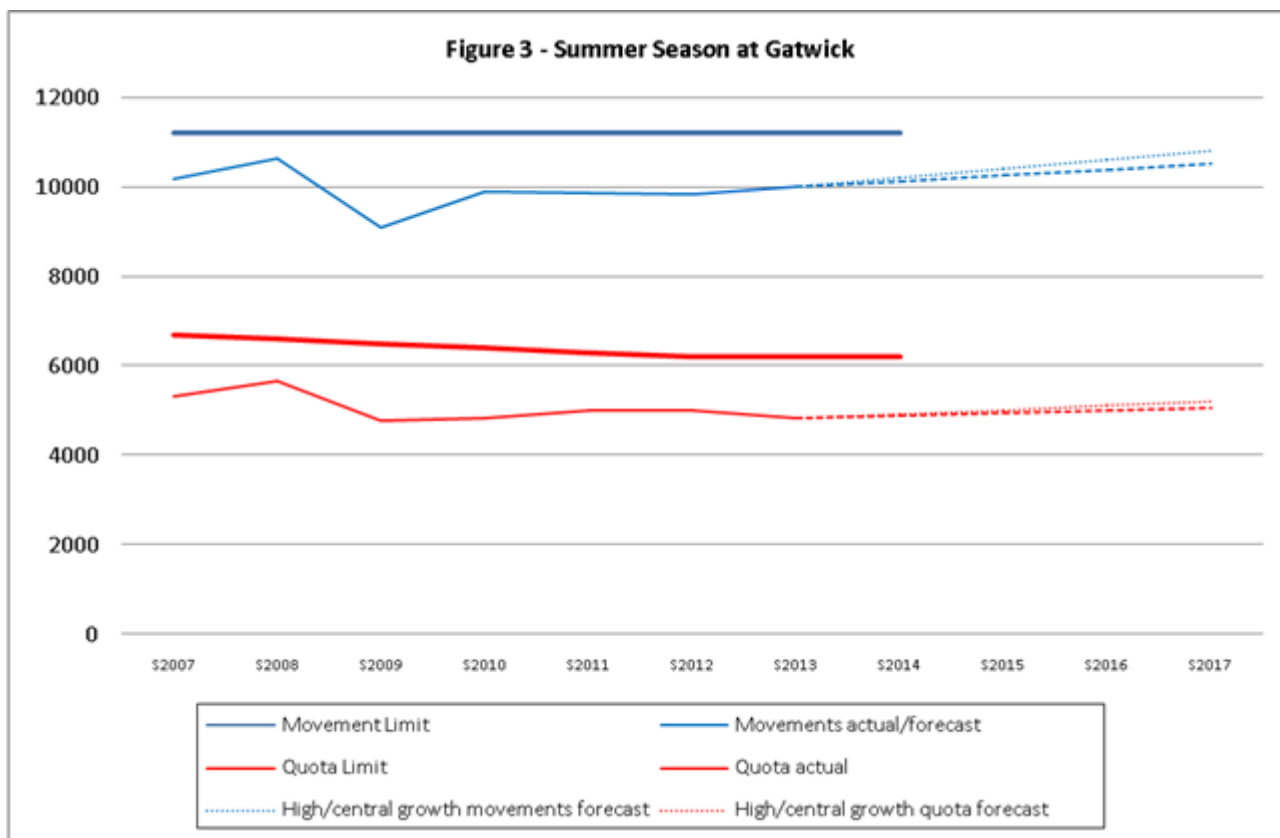
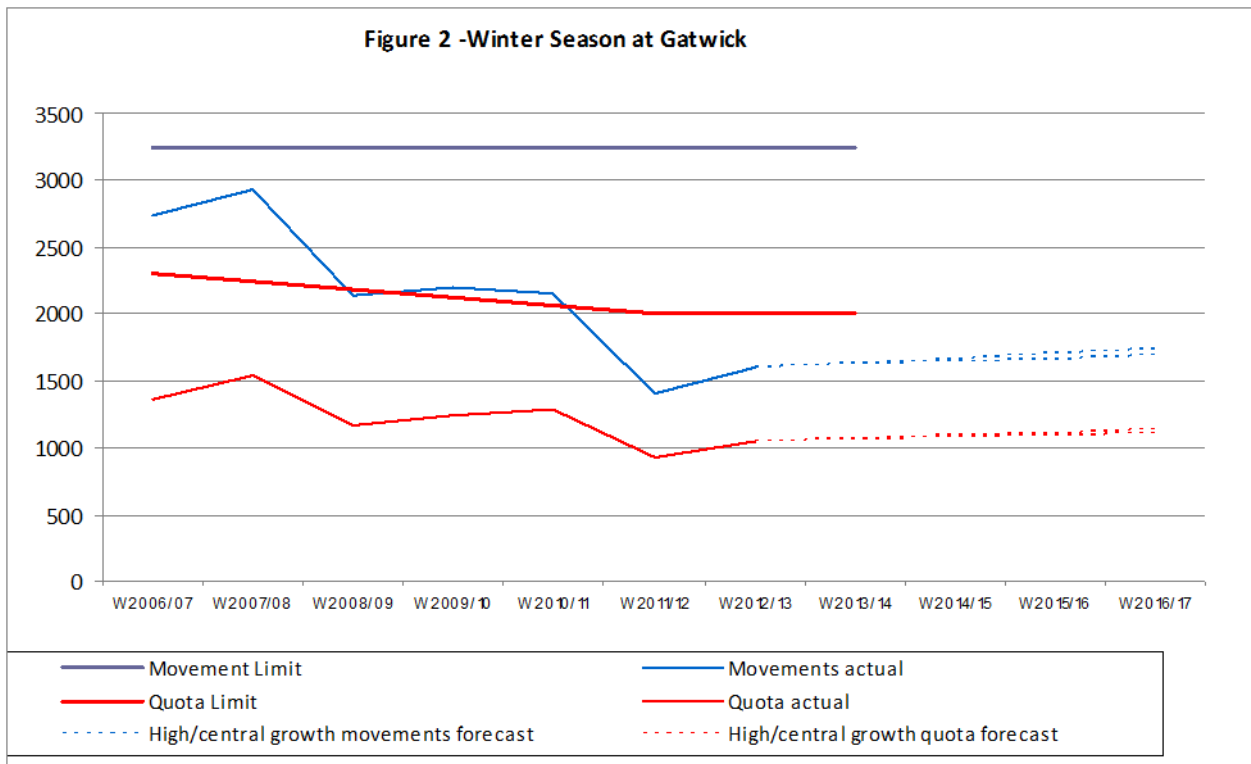
The dotted lines in **Figures 2 and 3** present our forecasts of movement numbers and quota usage at Gatwick under central growth and high growth assumptions, under a 'do-nothing' scenario over the period of the proposed interim regime (2014-2017). Similarly, the dotted lines in **Figures 4 and 5** present our equivalent forecasts at Stansted over the period of the proposed interim regime (2014-2017). Our central forecasts suggest that movements and quota usage will remain below their previous peaks at both Stansted and Gatwick over the period 2014-2017, but our high growth forecasts suggest that movements and quota usage will reach the previous peaks at both airports by the end of the proposed regime. If growth rates were higher we would expect the quota limit to be reached quicker. We should note that relative to previous seasons movements at Gatwick increased in summer 2013, but at the

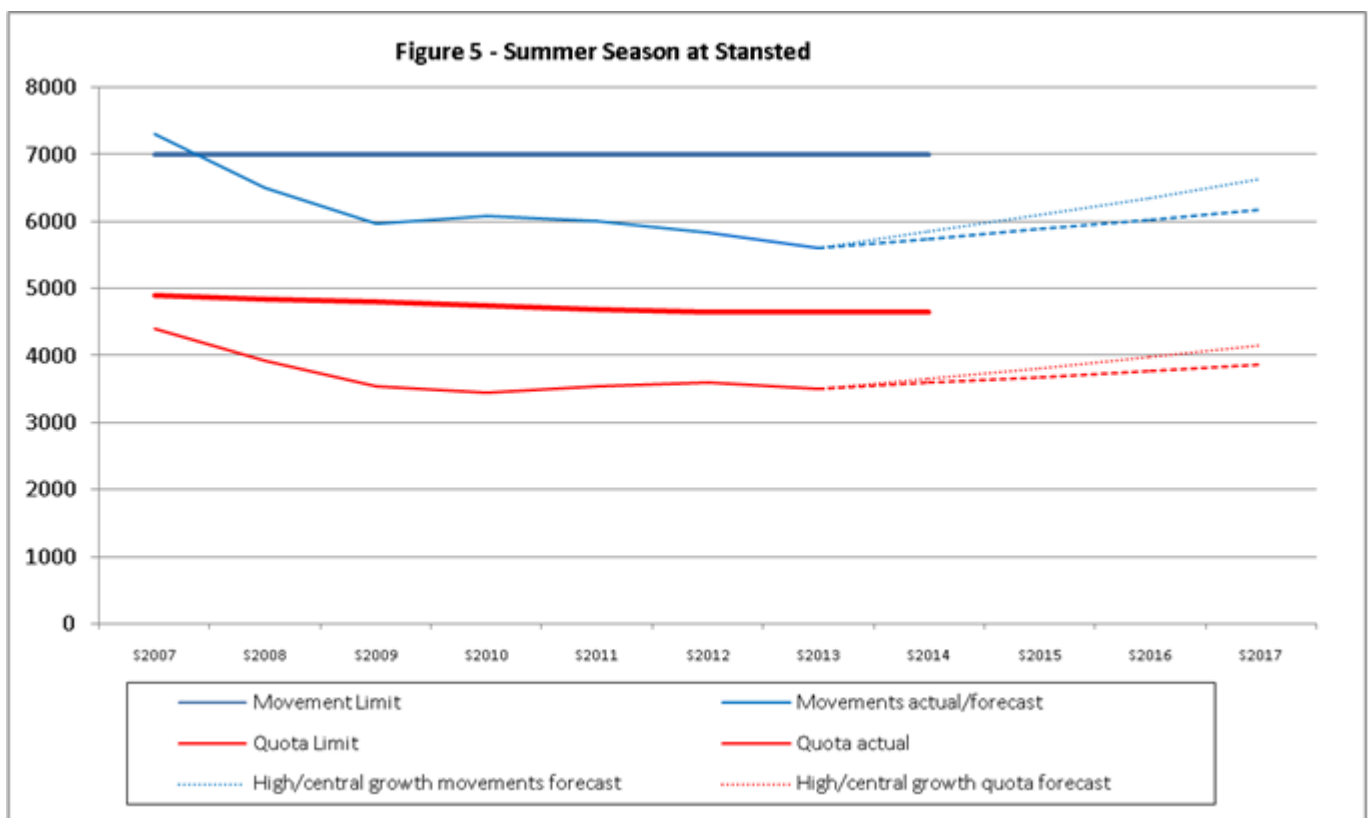
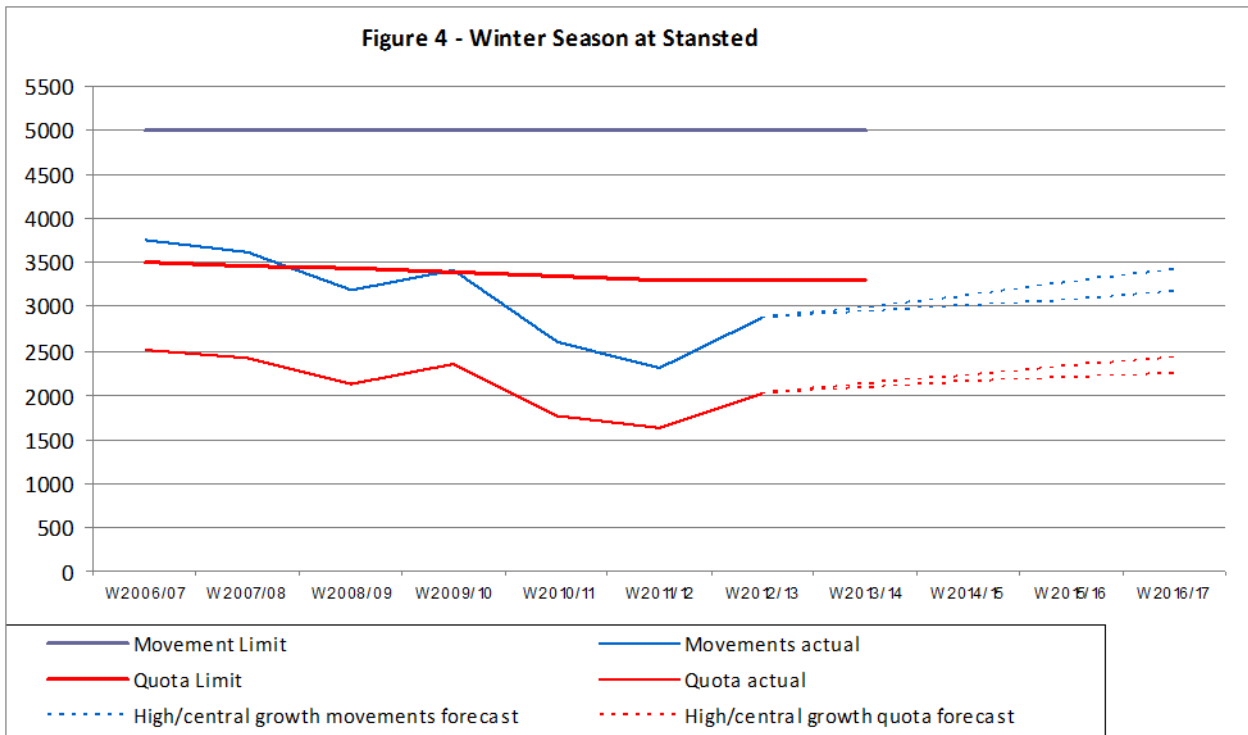
⁷ <https://www.gov.uk/government/consultations/night-flights-consultation>

⁸ See UK Aviation Forecasts, 2013, available at www.gov.uk/government/publications/uk-aviation-forecasts-2013

⁹ The forecasts are for a longer timeframe than the proposed regime period in order to fairly reflect underlying trends.

same time quota use decreased. This can probably be explained by an increase in movements of quieter aircraft over summer 2013.





Responses to the stage 2 consultation indicated that, while some industry respondents expressed they were content with forecasts, several industry respondents disagreed with forecasts at Gatwick and Stansted claiming that forecasts presented in the IA are too low. Specifically respondents highlighted that expected demand for night movements for summer 2014 had already exceeded the forecasts estimated for this impact assessment, and would be close or slightly exceed the movements limit in summer 2014, and were expected to continue to increase in 2015 and subsequent years. Respondents who disagreed with the forecasts stated that they had based their expectations on demand reported by airlines for night flights.

Based on these consultation responses, there is evidence to suggest that the number of night movements in the NQP would increase in the absence of night flying restrictions, but there is uncertainty

about how many additional night flights would take place or the nature of those flights. This indicates that there is a range of possible forecasts for demand for night flights. Given this uncertainty, and the fact that the 'do-nothing' scenario is not within the scope of the options being considered in the consultation, we have not attempted to estimate the number of additional flights nor the impact on night noise levels likely to result from a removal of night flying restrictions.

3.1.2 Heathrow airport

As explained in section 1, the current number of movements during the NQP at Heathrow is close to the maximum permitted. The quota usage for the most recent seasons we could consider in the analysis, winter 2013/14 and summer 2013 seasons, was approximately 80% of the total annual quota available. Airport Coordination Limited (ACL) – the company responsible for co-ordinating slots¹⁰ at Heathrow and other UK airports – has confirmed that there is excess demand for slots during the NQP at Heathrow, especially for arrivals in the early morning period. In addition, Heathrow Airport has indicated that in the absence of any night flying regime, the number of aircraft that could be brought forward from landing in the 06:00 hour to the 05:00 hour would typically be in single figures although may reach up to 12 per day.¹¹ This suggests that the number of night movements at Heathrow would increase in the absence of night flying restrictions.

Under terminal 5 planning conditions, the number of total movements at Heathrow is limited to 480,000 per year. Heathrow is currently operating at approximately 98 % of this capacity. As a result, this planning limit would prevent any material increase in the total number of flights from Heathrow resulting from the removal of night flying restrictions at Heathrow. The lifting of night flying restrictions would, however, provide scope for aircraft operators to replace flights during the day with flights at night.

There is significant uncertainty surrounding how aircraft operators would respond to the removal of night flying restrictions. The excess demand for the early morning slots at Heathrow, significant levels of stacking in the early morning, and the fact that the hour between 06:00 and 07:00, immediately after the NQP, is one of the busiest, all indicate that there would be demand for additional flights in the early morning (between 04:30 and 05:59). It is less clear to us that there would be demand for additional flights in the late evening (after 23:30). For example, the 30 minute period just before the start of the NQP (23:00-23:30) is relatively quiet (see Figure 14). In addition, the airport currently operates a voluntary agreement with airlines whereby no early morning arrivals will be scheduled to land before 04:30 and we have no reason to believe that this arrangement would be removed if night flying restrictions were removed. However, we would expect to see more late running departures in the NQP if existing night flying restrictions were removed, since the incentive to avoid such delays would be reduced.

Again, while there is evidence to suggest that the number of night movements in the NQP would increase in the absence of night flying restrictions, there is little evidence on which to base an assessment of how many additional night flights would take place or the nature of those flights. Given this uncertainty, and the fact that the 'do-nothing' scenario is not within the scope of the options being considered in the consultation, we have not attempted to estimate the number of additional flights nor the impact on night noise levels likely to result from a removal of night flying restrictions.

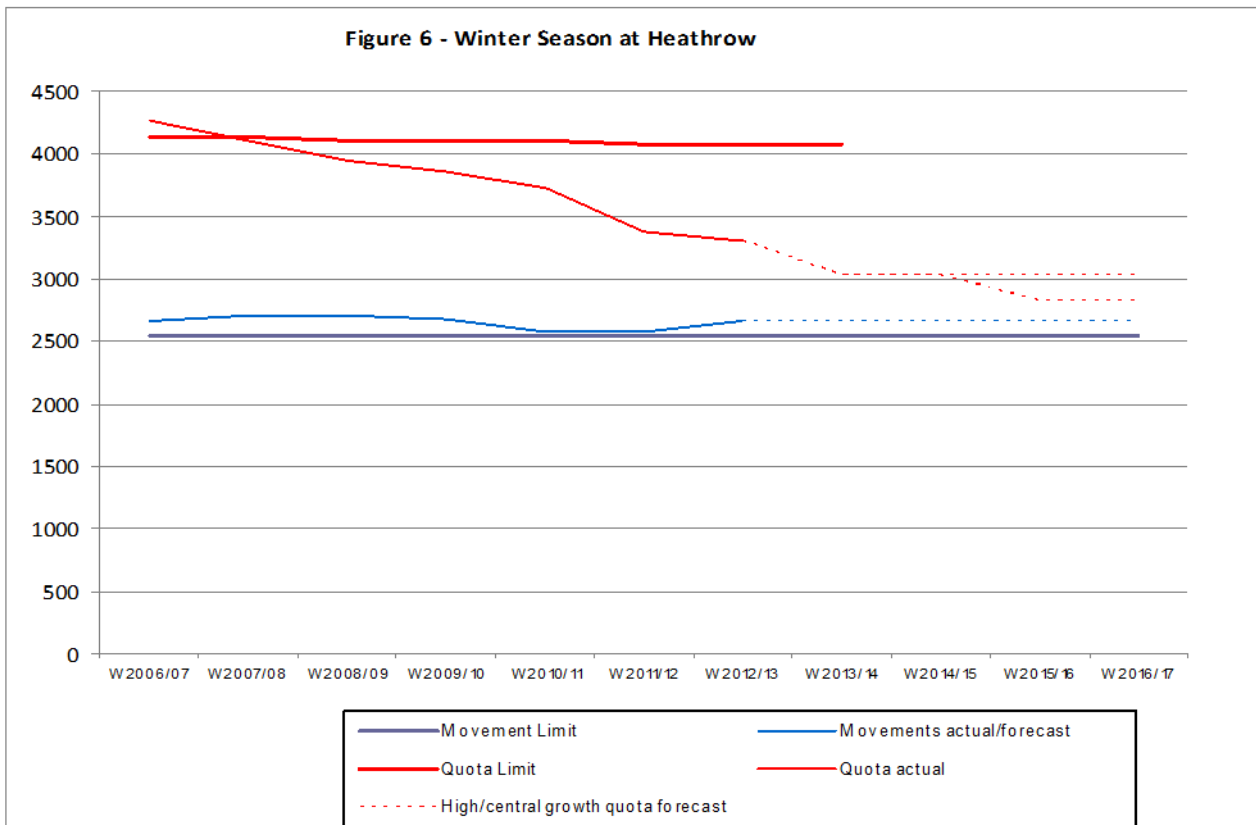
We have, however, developed forecasts of movement numbers and quota usage at Heathrow for the period of the proposed interim regime (2014-2017) assuming the existing movements limit at Heathrow is retained. This is relatively straightforward, as the current movement limit prevents any further growth in night time movements, but has nonetheless required us to carefully consider how fleet turnover might affect actual QC usage over the period.

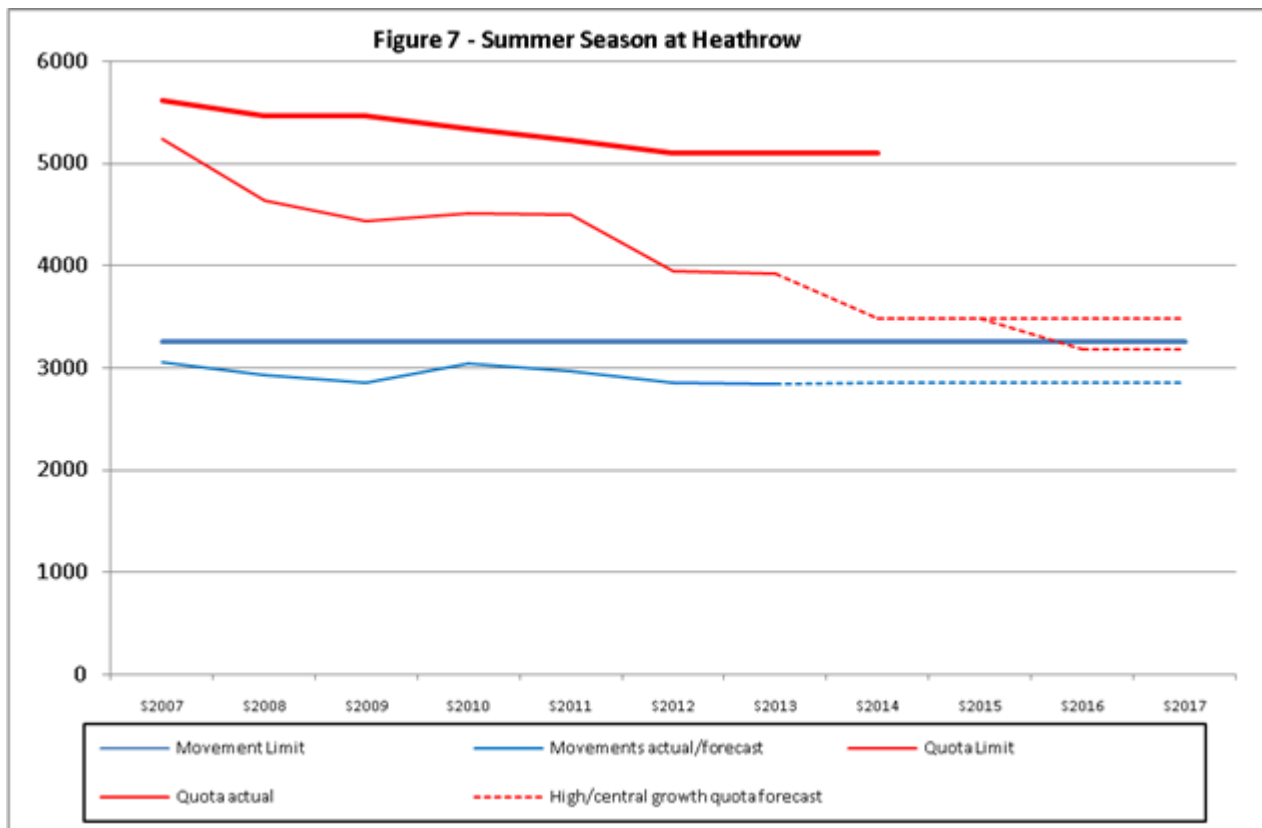
At Heathrow, the majority of the current night-time arrivals fleet could be replaced with larger aircraft with either a reduction, or no overall increase, in quota usage. For example, a Boeing 747-400 (QC/2) or Airbus 340-600 (QC/1) could be replaced with a larger Airbus 380 (QC/0.5), and a Boeing 767-300 (QC/1) could be replaced with a larger Boeing 777-300ER (QC/1) or Airbus 380 (QC/0.5). Currently, the noise dominant aircraft in the NQP is the Boeing 747-400, which is now operated solely by British Airways (BA) on a regular basis, with approximately five or six landings each night before 06:00. BA recently started operating an A380 on one of its existing night-time Hong Kong routes. In addition, in April 2013 International Airlines Group (IAG) announced firm orders for the new A350-1000 and additional orders for the Boeing 787, which would be used to replace existing B747-400 aircraft between 2017 and 2023.

¹⁰ Slots refer to a pair of specific take-off and landing times at an airport

¹¹ www.heathrowairport.com/noise/noise-in-your-area/operational-freedoms-trial/phase-2

The dotted lines in **Figures 6 and 7** present the likely change in quota usage at Heathrow assuming the existing movements limit at Heathrow is retained for the next three years. The central forecasts assume that BA introduce one new A380 on the Hong Kong route at the start of the winter 2013/14 season and one additional A380 to replace an existing B747 service in winter 2015/16. The high forecasts assume that BA introduces the new A380 on the Hong Kong route, as has happened now, but no further improvements. In February, following the 2nd stage consultation, BA have begun operating a partial A380 service on their Johannesburg route, which is approximately 18-months earlier than previously forecast. This does not materially affect the forecast by the end of the regime. However the introduction of a quieter fleet would reduce quota use earlier than previously expected.





3.2 Policy options under consideration

The following policy options have been considered:

- 1) Replicate the current regime for a further three years, until end of summer season 2017¹². While replicating the regime for a further 3 years, this option does not go beyond the restrictions (movement limit and quota restrictions) of the current regime.
- 2) as 1) plus extending the existing operating ban on QC8/16 rated aircraft to 23:00-23:30

Movement limits are the same for both of these two options:

Heathrow

| Winter 2014/15 | Summer 2015 | Winter 2015/16 | Summer 2016 | Winter 2016/17 | Summer 2017 |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 2,550 | 3,250 | 2,550 | 3,250 | 2,550 | 3,250 |

Gatwick

| Winter 2014/15 | Summer 2015 | Winter 2015/16 | Summer 2016 | Winter 2016/17 | Summer 2017 |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 3,250 | 11,200 | 3,250 | 11,200 | 3,250 | 11,200 |

Stansted

| Winter 2014/15 | Summer 2015 | Winter 2015/16 | Summer 2016 | Winter 2016/17 | Summer 2017 |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 5,000 | 7,000 | 5,000 | 7,000 | 5,000 | 7,000 |

¹² See section 1 for an explanation of summer/winter seasons

Noise quota limits are the same for both options:

Heathrow

| Winter 2014/15 | Summer 2015 | Winter 2015/16 | Summer 2016 | Winter 2016/17 | Summer 2017 |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 4,080 | 5,100 | 4,080 | 5,100 | 4,080 | 5,100 |

Gatwick

| Winter 2014/15 | Summer 2015 | Winter 2015/16 | Summer 2016 | Winter 2016/17 | Summer 2017 |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 2,000 | 6,200 | 2,000 | 6,200 | 2,000 | 6,200 |

Stansted

| Winter 2014/15 | Summer 2015 | Winter 2015/16 | Summer 2016 | Winter 2016/17 | Summer 2017 |
|----------------|-------------|----------------|-------------|----------------|-------------|
| 3,310 | 4,650 | 3,310 | 4,650 | 3,310 | 4,650 |

4. Assessment of costs and benefits of each policy option

The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003 require that, in exercising his discretion, the Secretary of State must adopt a “balanced approach”. That is to say, an approach under which the Secretary of State considers the available measures to address noise problems at an airport, namely the foreseeable effect of a reduction of aircraft noise at source; land use planning and management, noise abatement operational procedures and operating restrictions. He is also required to take into account the likely costs and benefits of measures available as well as airport specific - characteristics.

The Secretary of State must also strike, so as to be compliant with Article 8 of the European Convention on Human Rights, a fair balance between the competing interests of the individuals affected by night noise and the community as a whole. So in taking his decision proper account must be taken of on the one hand the economic interests of airlines, other enterprises and the country as a whole and on the other hand the impacts of sleep disturbance and sleep prevention caused by aircraft noise.

The Night Flights Evidence review, published by the Department for Transport, in *Night Flying Restrictions at Heathrow, Gatwick and Stansted* (2013) analysed the types of costs and benefits that may be generated by night flying restrictions¹³. This identified that night flying restrictions could have a range of impacts to:

- Air transport users
- Airline and airport profits
- Noise (potential annoyance, health and productivity impacts)
- Air quality
- Climate Change
- Public accounts (including air passenger duty receipts)
- Wider economy (such as on tourism, trade and productivity)

¹³ Night Flying Restrictions at Heathrow, Gatwick and Stansted Stage 1 Consultation (2013), Department for Transport. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66837/consultation-document.pdf

This impact assessment considers the impacts of the night flights restrictions, taking into account the analysis from the Night Flights Evidence Review and evidence that was obtained during the development of, and consultation on, this impact assessment. The analysis in this impact assessment provides a detailed descriptive assessment of the costs and benefits of the night flights restrictions, to inform a decision between options.

There are currently, as highlighted by responses to the consultation, a range of contrasting sources of evidence, and a range of views from respondents to the consultation, regarding monetary impacts of the restrictions. This impact assessment therefore does not attempt to place monetary values on the impacts, or to calculate monetised net present values for the options.

The following section considers the expected impacts of the policy options.

4.1 Policy option 1): keep provisions of the current regime unchanged

Stansted and Gatwick airports

Figures 8 and 9 (for Gatwick) and **Figures 10 and 11** (for Stansted) show that, even under high growth assumptions, our forecasts of actual movements and quota usage indicated that, under the 'do-nothing' scenario, these would remain below current movement and quota limits at Gatwick and Stansted up to the end of the three year regime. This implied that retaining the current movement and quota limits would not restrict activity in the NQP at Gatwick or Stansted in this period, and therefore the costs and benefits would be likely to be negligible at these two airports. However, responses to the stage 2 consultation indicated that, while some industry respondents expressed they were content with forecasts, several industry respondents disagreed with forecasts at Gatwick and Stansted claiming that forecasts presented in the IA are too low. Specifically respondents highlighted that expected demand for night movements for summer 2014 had already exceeded the forecasts estimated for this impact assessment, and would be close or slightly exceed the movements limit in summer 2014, and were expected to continue to increase in 2015 and subsequent years. Respondents who disagreed with the forecasts stated that they had based their expectations on demand reported by airlines for night flights.

From the consultation responses there is evidence to suggest that the number of night movements in the NQP would increase if not limited at the current level by the night flight restrictions, but there is uncertainty about how many additional night flights would take place or the nature of those flights. Given this uncertainty, we have not attempted to estimate the monetary value of the costs and benefits that are likely to result from the night flying restrictions at Gatwick and Stansted.

We do not expect there to be significant costs associated with maintaining the current restrictions on the noisiest aircraft at Gatwick and Stansted. There are currently very few aircraft in this category operating at these airports. The only regular movements classified as QC/4 are operated by Virgin Atlantic (using Boeing 747-400s) at Gatwick and all are departures scheduled in the morning or early afternoon. There are even fewer movements classified as QC/8 or QC/16 at either airport. (See section 4.2.)

Theoretically there would also be some costs associated with reducing the ability of airlines to put on additional services or to use noisier aircraft during the three year regime. There would also be offsetting benefits associated with options 1 and 2, relative to the 'do-nothing' scenario, in terms of providing certainty for local residents that noise exposure will not increase above certain levels.

Figure 8 - Proposed Winter Quota Constant at Gatwick

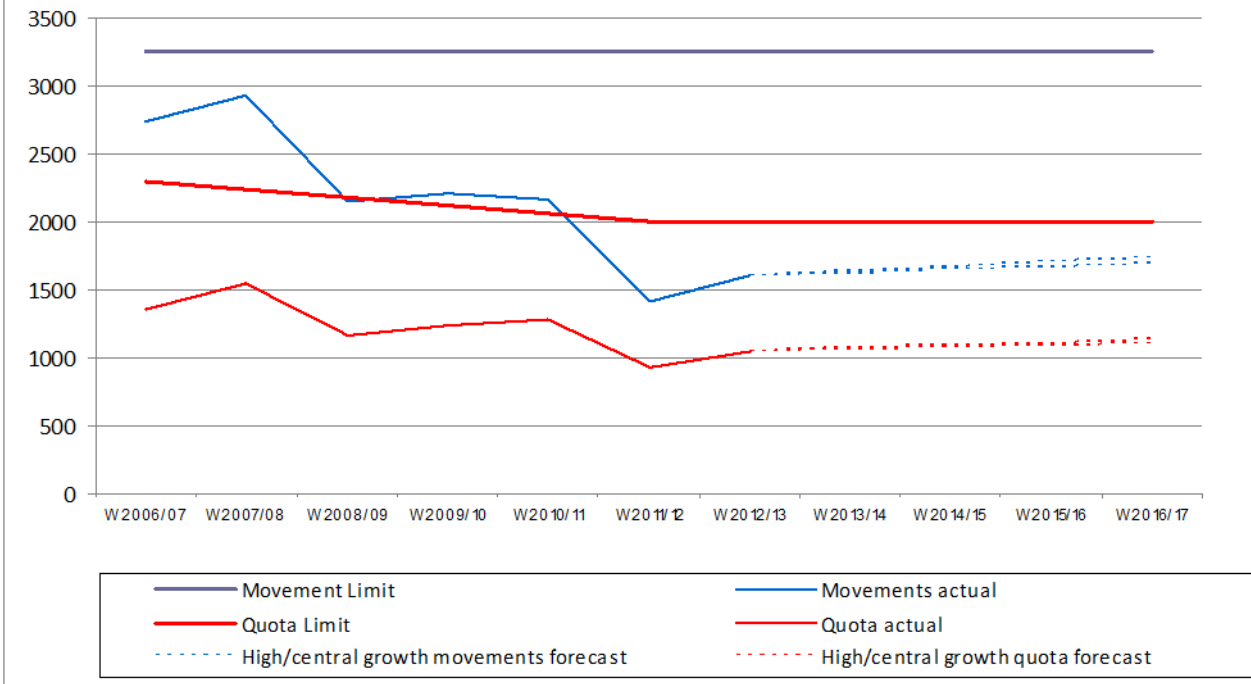


Figure 9 - Proposed Summer Quota constant at Gatwick

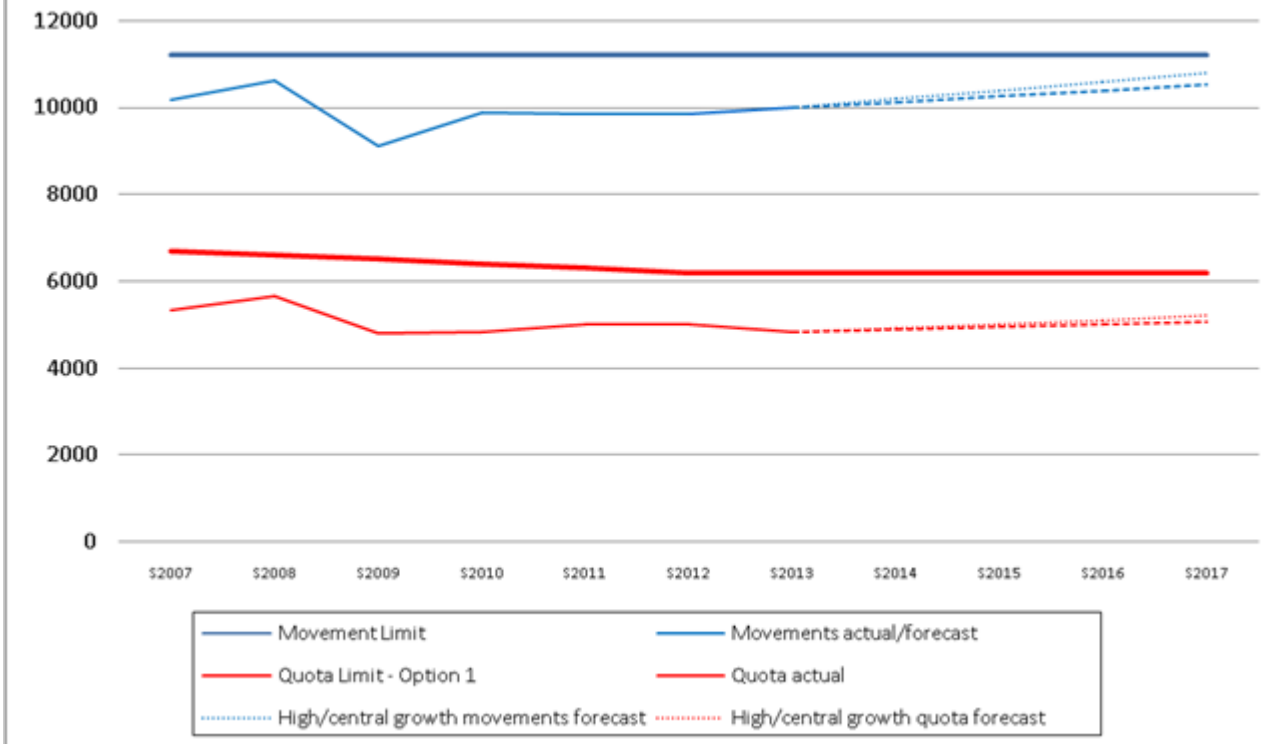


Figure 10 - Proposed Winter Quota constant at Stansted

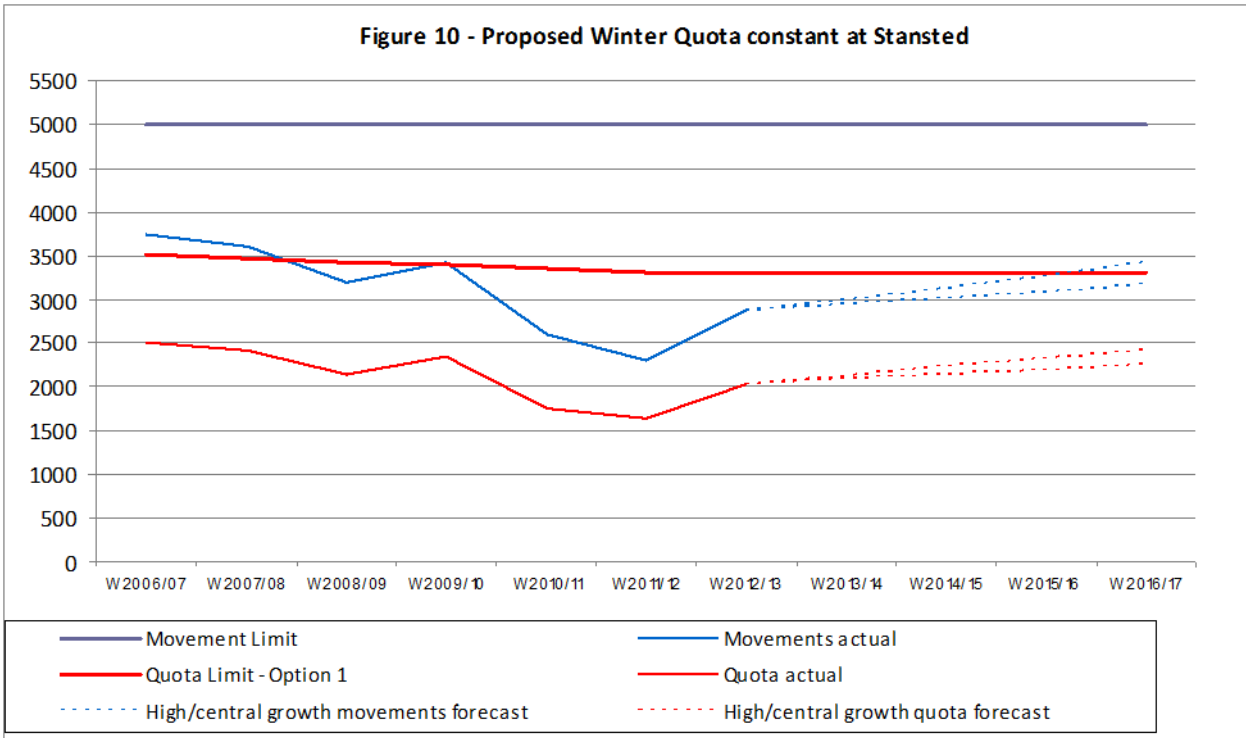
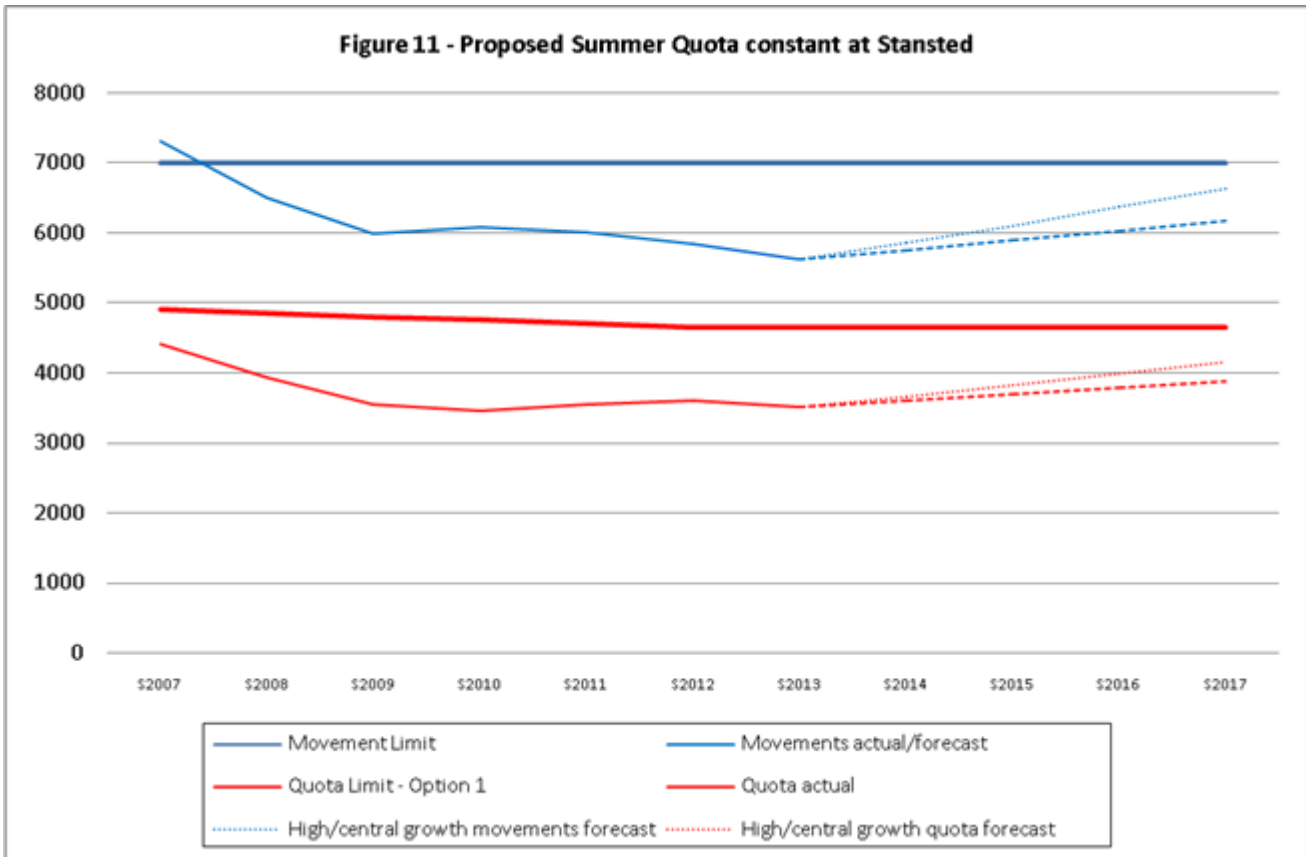


Figure 11 - Proposed Summer Quota constant at Stansted

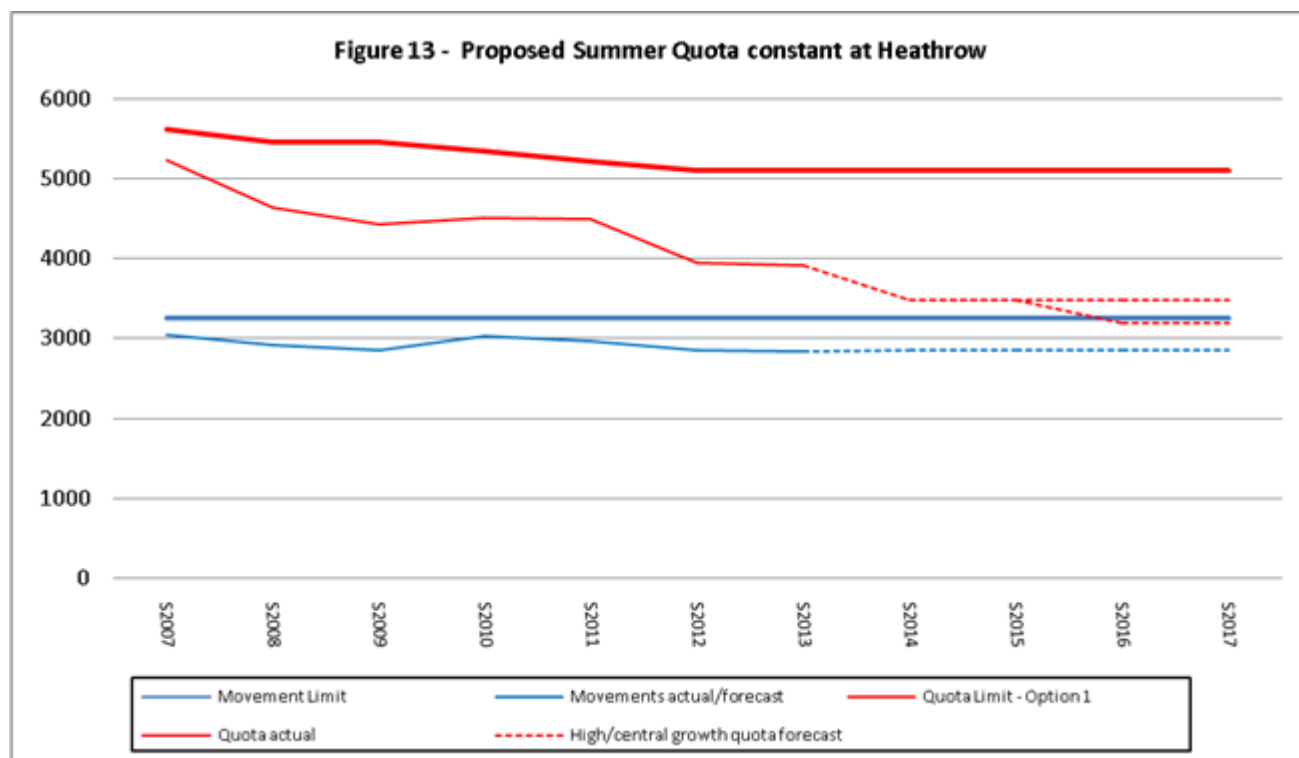
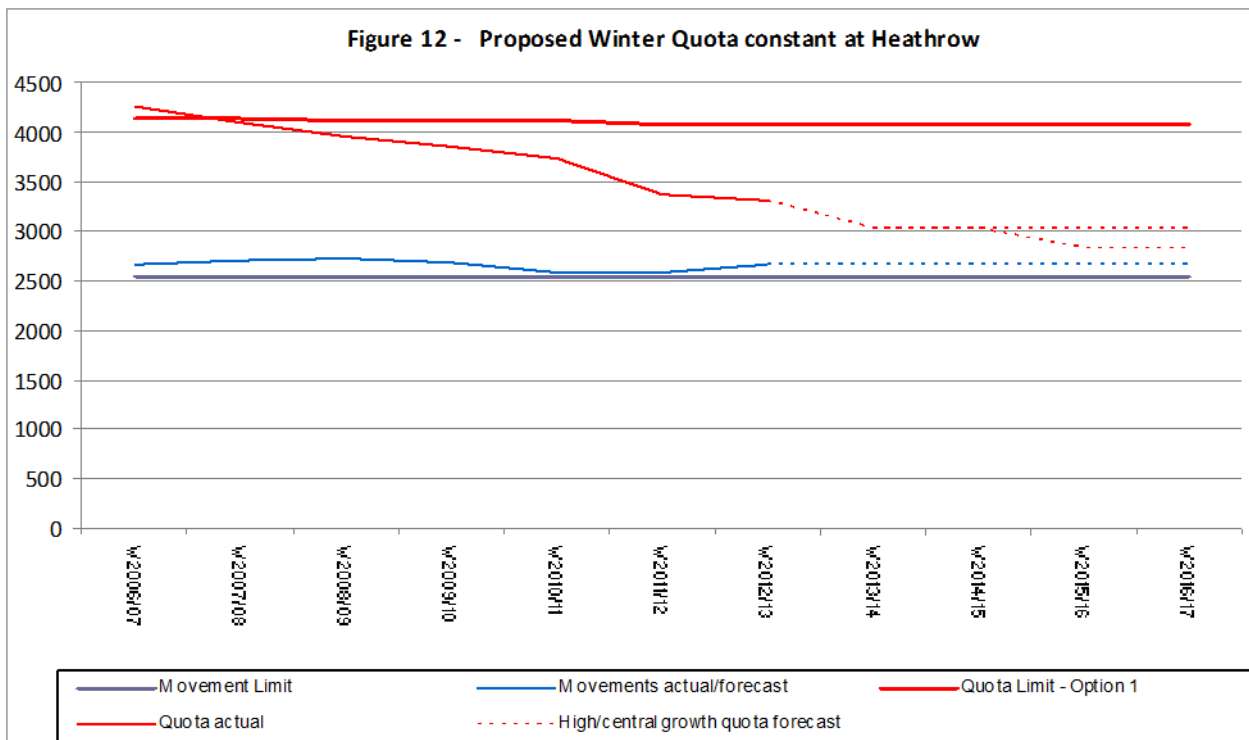


Heathrow airport

As Heathrow is operating at virtually the maximum capacity permitted under the Terminal 5 planning conditions (480,000 movements per year), the current night movement limits do not restrict the total number of movements from Heathrow. However, there is evidence that the current night movement limits are causing some movements to take place during the day when, in the absence of the limits, they would take place during the night quota period (NQP). For the reasons given in section 3.1.2 we think it very likely that there would be additional flights in the early morning (between 4.30 and 5.59am), and possible that there would be demand for additional flights in the late evening (after 23.30). While we think it complex and disproportionate, for the reasons given in section 3.1.2, to try to estimate exactly how many additional movements there would be at Heathrow during the NQP during the three years proposed for

the next regime, or to estimate the consequent impact on quota usage levels, we have assessed the costs and benefits associated with restricting activity at Heathrow during the NQP qualitatively.

We do not expect there to be significant costs and benefits associated with maintaining the current restrictions on the noisiest aircraft at Heathrow. While significant numbers of aircraft classified as QC/4 on departure continue to operate at Heathrow during the daytime, there have been no QC/4 aircraft scheduled to fly at night for a number of years, and the airport maintained a voluntary ban on all new services using aircraft classified as QC/4 or above during the NQP before the Government introduced the existing scheduling ban. The scheduling ban on QC/8 and QC/16 during the night period (23.00 to 7.00) has been in place since 1999. In addition, the operating ban on QC/8 and QC/16 departures during the night quota period 23:30 to 6:00) has been in place since 1993.



4.1.1 Costs

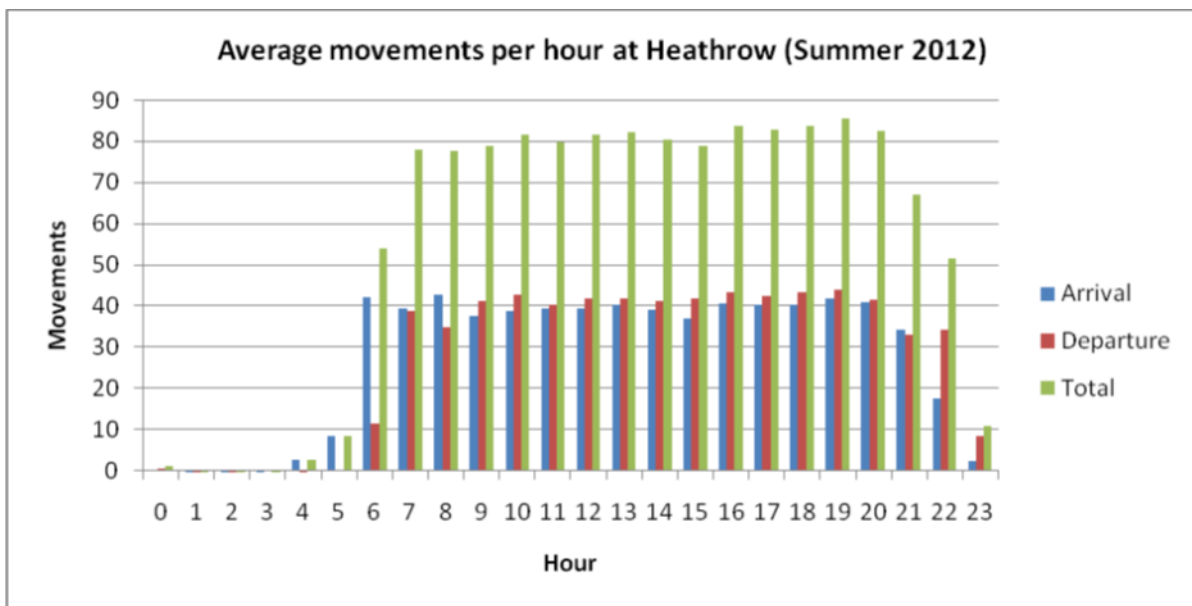
Option 1 is likely to impose a range of costs relative to the ‘do-nothing’ scenario including those on :

Air passengers and air freight service users

While continuing current restrictions on movements in the NQP would not reduce the total number of movements at Heathrow, it would reduce the range of flight departure/arrival times potentially available. This could prevent aircraft operators from scheduling flights at their optimal time from the point of view of their customers. This would impose costs on passengers in terms of departing and/or arriving at less desirable times. Where this significantly reduces passenger and freight demand for a given route it is possible that the reduction in demand would be sufficient to cause an aircraft operator to reduce services on that route, potentially reducing the range of destinations available to passengers and freight service users.

Retaining the restrictions on movements in the NQP over the three year regime would be likely to result in greater levels of ‘stacking’¹⁴ than would be the case if night flying restrictions were removed. Stacks are used throughout the day at Heathrow to maintain air safety by smoothing the flow of arrival traffic and to ensure an efficient and safe use of the available runway capacity. They can be used before the end of the NQP – 6:00am - to manage the early arrival of aircraft scheduled to arrive after the NQP. We would, therefore, expect the overall level of stacking to be slightly lower in the early morning in the absence of night flying restrictions. By restricting the ability of aircraft operators to offer services in the early morning, option 1 would also be likely to contribute to a continuation of the current situation where there is a peak of arrivals scheduled immediately following the NQP. The chart below shows this effect:

Figure 14: Average movements per hour at Heathrow (Summer 2012)



Responses to the first stage consultation indicate that this peak in arrivals results in additional stacking and associated delays, which can last for a significant amount of time and affect flights during the rest of the day. These delays impose a negative impact on passengers. Over the 24 hour period stacking also imposes additional costs on aircraft operators arriving at Heathrow, in additional fuel and other operating costs, CO2 emissions, and causing delays to passengers.¹⁵ We are unable to accurately attribute these costs to the NQP, but these additional costs would represent a small percentage in relation to the whole flight costs.

Aircraft Operators and Airports

Any reduction in demand for flights resulting from the restriction on aircraft operators’ ability to schedule flights at their optimal time would reduce aircraft operators’ and airports’ revenues, which, in turn, would

¹⁴ Stacking refers to the way in which queues of aircraft waiting to arrive at Heathrow and other airports are managed via ‘airborne holding stacks’, or ‘stacks’. A stack is a fixed circling pattern in which aircraft fly whilst they wait to land. There are four stacks at Heathrow. The minimum height of aircraft in the stack is 7000ft.

¹⁵ <http://www.caa.co.uk/docs/2408/FAS%20Deployment%20Plan.pdf>, page 19

affect their profits. The impact of the night flying restrictions in increasing 'stacking' (see above) is likely to impose additional costs on aircraft operators, only a proportion of which we would expect them to be able to pass on to passengers and air freight service users in higher fares. However as noted above these additional fuel impacts due to stacking are negligible in relation to the whole flight costs.

Administrative costs

The administrative requirements of the night flying regime for the industry are minor as there are already procedures in place. For example, slot allocation is already carried out by the independent coordinator and although the slot allocations during the NQP involve allocation of noise quota and movements we do not see this as a significant added burden to the industry.

There will be ongoing costs of monitoring noise which would not be seen under the 'do nothing' scenario, but these are only small marginal costs as the noise monitoring systems are already in place and therefore the costs for these are 'sunk'. In the absence of restrictions, it is extremely unlikely that the three airports would stop monitoring noise levels of aircraft at night as this would be a retrograde step in their communication of noise impacts to local communities. Manchester airport, which is not regulated for noise, has monitored its noise impact for nearly 40 years.¹⁶

Under all of the options (as under the current regime) there will be a cost to the airport operators of providing regular reports to the Department for Transport as well as to their respective Airport Consultative Committees regarding the usage of the movements limit and noise quota. Again, communication with local stakeholders would be expected as a matter of good practice regardless of regulatory requirement.

ERCD/CAA currently keeps the QC list (Part 2 of the Schedule to the Night Noise Supplement) up to date with new aircraft types. There is a very small cost to this which is charged back to DfT. However, this list is also used as a reference source by several of the non-designated UK airports, which have based their airport restrictions on the London airports, and because of this it is expected that the work would continue in the absence of the night restrictions regime.

Other Costs

Any reduction in demand for flights resulting from the restriction on aircraft operators' ability to schedule flights at their optimal time would also affect the public accounts. This is both directly, by reducing the amount of air passenger duty revenue, and indirectly, by supporting economic activity in other sectors, which generate tax receipts, and by reducing the diversion of expenditure from expenditure on goods and services across the rest of the economy.

In so far as the flying restrictions under option 1 were sufficient to cause an aircraft operator to reduce the number of routes they serve, this could affect the international connectivity of the UK. However, given that option 1 would not restrict the total number of movements from Heathrow, we would not expect this effect to be significant.

4.1.2 Benefits

Noise

By reducing the number of air traffic movements during the NQP, option 1 would yield benefits to local residents in reductions in exposure to night-time noise. However, as explained above, the Terminal 5 planning limit means that option 1 would be likely to result in an increase in movements during the day, thereby increasing noise exposure during the day. We believe the net effect of these two effects would be positive, on the basis that there is evidence that the costs on local communities are higher from aircraft noise during the night, particularly the adverse health effects and adverse next day effects of sleep disturbance.¹⁷

4.2 Policy option 2): As option 1) plus extending the existing operating ban on QC8/16 rated aircraft to 23:00-23:30

The number of QC/8 and QC/16 departures between 23:00 and 23:30 at Heathrow, Gatwick and Stansted has been small and decreasing in recent years. During 2010 there were three QC/8 departures

¹⁶

[http://www.manchesterairport.co.uk/manweb.nsf/alldocs/8100FB8EF658808C80257364002D85FA/\\$File/NoisePlan.pdf](http://www.manchesterairport.co.uk/manweb.nsf/alldocs/8100FB8EF658808C80257364002D85FA/$File/NoisePlan.pdf)

¹⁷ See footnote 1.

(all cargo flights) at Heathrow and no QC/8 movements at Gatwick or Stansted. During 2011 there were four QC/8 departures (one cargo and three passenger flights) at Heathrow, one QC/8 departure (cargo) at Stansted, and no QC/8 movements at Gatwick. During 2012, there were two QC/8 departures (one cargo and one passenger flight) at Heathrow, one QC/8 departure at Stansted (passenger), and no QC/8 movements at Gatwick. In 2013, and up to the end of February 2014, there were a further two movements of QC/8 passenger aircraft at Stansted. There was one at Heathrow but none at Gatwick. (These rare passenger flights are not operated by airlines but are privately operated flights.) There were no QC/16 movements at any of the three airports between 2010 and February 2014.¹⁸

Although unscheduled arrivals of QC/8 or QC/16 aircraft in the night are not currently prohibited, an aircraft noisy enough on arrival such that it could only meet QC/8 or QC/16 would in practice usually mean that it was an older Chapter 2 aircraft.¹⁹ Such aircraft were phased out in 2002²⁰ and it is now very unlikely that there are any aircraft in operation that do not meet at least the QC/4 standard on arrival.

Therefore, we do not expect option 2 to result in any significant additional costs or benefits relative to option 1. Responses from the consultations were generally supportive or ambivalent to the proposed ban and we received no evidence which suggested there would be costs. As noted above we expect the likelihood of flights being delayed to be very low given the small number of QC/8 or QC/16 flights seen in recent years. Compared with option 1, the additional costs are therefore expected to be nil or negligible. The operational ban will however have the benefit of certainty that no such noise events will occur and will prevent any awakenings caused by movements (albeit rare) of these noisier aircraft types. This is therefore the preferred option.

5. Rationale and evidence that justify the level of analysis used in the IA (proportionality approach)

We have taken a proportionate approach to defining the 'do-nothing' scenario at Heathrow. This is because 1) the 'do-nothing' approach does not deliver the Government's policy objectives, and is therefore outside the scope of the consultation; and 2) there is significant uncertainty how the level, and nature, of night time activity at Heathrow would change in the absence of any night flying restrictions. For the same reasons, we have taken a proportionate approach to assessing the costs and benefits of each of the options against the 'do-nothing' scenario at Heathrow, assessing costs and benefits qualitatively, rather than quantitatively or using money values.

For Gatwick and Stansted, several consultation responses indicated that they expected demand for night flights to be higher than forecast in the IA, based on information from airlines about demand for night flights during summer 2014. Several responses also indicated they expected demand to increase in the years from 2014 at a faster rate than the forecasts estimated for this impact assessment. However, again there is significant uncertainty how the level, and nature, of night time activity at Gatwick and Stansted would change if night flight restrictions were removed, or if limits were increased. We have therefore taken a proportionate approach to assessing the costs and benefits of each of the options against the 'do-nothing' scenario at Gatwick and Stansted, assessing costs and benefits qualitatively, rather than quantitatively or using money values.

6. Risks and assumptions

Key assumptions are:

- actual reductions in noise are broadly in line with those expected;
- that planned fleet replacements take place as announced;

If demand for night flights at Gatwick and Stansted increase significantly, as some responses to the consultation expected, there is a risk that demand exceeds the available air transport movements (ATMs) and noise quota limits, which would impose additional costs on air passengers, freight service

¹⁸ For operations that take place during the NQP, NTK database entries are linked to actual certificated noise levels by the airport operator to ensure that individual aircraft are classified correctly. Arrival and departure times in the NTK system are also checked against ATC runway logs to confirm that an operation did occur during the night quota period and not, for example, just before 23:30 or just after 06:00. The QC classifications for operations that take place during the night-time shoulder periods on the other hand are not generally subject to the same scrutiny. Therefore, whilst every effort has been made to ensure the operations shown here have been classified correctly, some uncertainty still remains.

¹⁹ Chapter 2 aircraft are "characterised by the noisier, low bypass turbofan aircraft and early high bypass turbofan aircraft" (<http://www.caa.co.uk/default.aspx?catid=68&pagetype=70&gid=69&faqid=33>)

²⁰ Ibid.

users, aircraft operators and airports, whilst providing additional benefits to local residents through lower noise levels and potentially through improvements in local air quality.

7. Direct costs and benefits to business calculations (following OITO methodology)

Both options are considered in scope of OITO, since these are domestic regulations that regulate businesses. However, there will be no overall change in the direct impact on business as a result of the new regime. This is because the proposed policy options to replace the current regime have the same costs and benefits associated with them as the current regime, as set out in sections 3-4. The lapsing of the current regime in October 2014 is an OUT that would be immediately offset by an IN of the same size with the introduction of one of the policy options. Therefore this measure should be counted as a zero net cost measure.

8. Wider impacts

8.1 Small and Micro Business Assessment

Small and micro businesses are not exempt from the regime, but in practice small and micro businesses are very unlikely to be directly affected by the regime as the businesses on which the regime has direct impacts are airports and airlines.

8.2 Competition Assessment

As identified in earlier sections of this impact assessment, it is possible that the options could restrict activity at Gatwick or Stansted. This may put these airports at a competitive disadvantage compared to other airports serving similar markets. This will depend on the growth in demand for night flights from these airports over the three years of the regime. Anecdotally, industry have indicated that aircraft may be based elsewhere if the cap on night movements at Gatwick and Stansted was not raised. A consultation on the next regime, which would take account of any impacts, is expected to begin in early 2016. The Government will monitor the regime from the outset, as it does for the current regime, and this will provide further evidence on whether operational capacity at these airports is being affected before 2017. Night flights at Heathrow are all long haul services which are integrated into hub operations and there is in practice no alternative airport for these flights. The restrictions at Heathrow do not therefore have competitive effects.

8.3 Environmental & Carbon Impact

None of the options will have any adverse environmental or carbon impact above those of the 'do-nothing' scenario. This is because aviation is now part of the European Union's Emissions Trading Scheme and we do not expect any effects such as stacking (see section 4) to have more than a negligible effect on emissions.

8.5 Race, Disability and Gender Impact Assessment

The options have been assessed for relevance but the regime is not going to have any variation in impact on different groups; an Equalities Impact assessment is therefore not required.

8.6 Human Rights

We believe that the Minister would be able to make the following statement: "In my view the provisions are compatible with the Convention rights."

9.1 Implementation plan

An indicative timetable for replacing the Night Flying Regime²¹ was published by the Department for Transport on 26 March 2012.

The new regime will come into effect from 26 October 2014, which is the start of the airlines' winter season. Any changes to the regime will have to be reflected in a Noise Restrictions Notice, a supplement to the UK Aeronautical Information Publication (AIP) which is published by National Air Traffic Services (NATS) and disseminated to the aviation industry.

²¹ <https://www.gov.uk/government/publications/night-flying-restrictions-at-heathrow-gatwick-and-stansted-airports>