AIRPORT EXPANSION CONSULTATION (JUNE 2019)

Heathrow is consulting on proposals for an expanded airport.

The Airport Expansion Consultation is our statutory consultation and we will be seeking your view on four key areas:

- Heathrow’s preferred masterplan for expansion: our proposals for the future layout of the airport including the runway and other airport infrastructure such as terminals and road access. The masterplan will also reveal the airport’s growth in phases – from runway opening in around 2026, to the end masterplan in approximately 2050;

- Plans to operate the future airport: how the future three runway airport will be operated, including important elements such as night flights, as well as how potential additional flights before the new runway opens could be operated on our existing two runways;

- Assessment of impacts of the airport’s growth: our preliminary assessment of the likely impacts of expansion on the environment and local communities;

- Plans to manage the impacts of expansion: we will set out the airport’s plans for mitigating the effects of expansion, including property compensation, our Noise Insulation Policy, a Community Fund, and measures to mitigate against air pollution, carbon, and other environmental effects.

We are grateful for feedback provided at previous consultations, and have considered these responses in developing our proposals. We now ask for your views on our preferred proposals, so that we can further improve our project before we apply for development consent next year. You can provide feedback:

- online using the feedback form on our website aec.heathrowconsultation.com
- complete a feedback form, available at events or on request calling 0800 307 7996
- email us at feedback@heathrowconsultation.com
- write to us at Freepost LHR AIRPORT EXPANSION CONSULTATION

We have set out our proposals in a number of documents covering different topics and different levels of detail. All of these are available on our website, at Document Inspection Locations and at consultation events.
AIRPORT EXPANSION CONSULTATION DOCUMENT
Overview and summary of the below documents

Preferred Masterplan
Future Runway Operations
Preliminary Environmental Information Report – Non Technical Summary
Proposals for Mitigation and Compensation
Consultation One Consultation Feedback Report
Heathrow Expansion and your area – Bedfont and Mayfield Farm

Construction Proposals
Early Growth
Preliminary Environmental Information Report
Draft Code of Construction Practice
Future Operations Consultation Feedback Report
Heathrow Expansion and your area – Brands Hill

Updated Scheme Development Report
Surface Access Proposals
Preliminary Transport Information Report
Noise Insulation Policy
How do we obtain approval to expand Heathrow?
Heathrow Expansion and your area – Coombe and Poyle

Updated Scheme Development Report
Equity Impact Assessment: Initial Findings
Economic Development Framework

Environmentally Managed Growth
Property Policies Information Paper

Property & Land Acquisition and Compensation Policies - Interim Professional Fees
Property & Land Acquisition and Compensation Policies - Interim Property Hardship Scheme

Property & Land Acquisition and Compensation Policies - Interim Property Hardship Scheme Panel Guidance
Property & Land Acquisition and Compensation Policies - Interim Agricultural Land and Property

Property & Land Acquisition and Compensation Policies - Interim Residential Property
Property & Land Acquisition and Compensation Policies - Interim Commercial Property

Heathrow Expansion and your area – Cranford, Hounslow and North Feltham

Heathrow Expansion and your area – Cranford Cross
Heathrow Expansion and your area – Harmondsworth
Heathrow Expansion and your area – Longford and Bath Road
Heathrow Expansion and your area – Richings Park
Heathrow Expansion and your area – Sipson
Heathrow Expansion and your area – Stanwell and Stanwell Moor

FEEDBACK FORM
Have your say on the consultation by using the Airport Expansion Consultation Feedback Form
or on our website: ecc.heathrowconsultation.com
EXECUTIVE SUMMARY

Overview

This document sets out our preferred proposals for operating a three runway Heathrow, and the reasons we have taken these proposals forward to seek your views at consultation. We explain how our proposals are designed to reduce aircraft noise at the airport, particularly how we manage noise, runway alternation and night flights. All of our proposals need to meet a range of requirements; from the fundamental need to operate safely, as well as to operate efficiently so that we meet the needs of our airlines and passengers, whilst being consistent with Government policy set out in the Airports National Policy Statement (Airports NPS).

Whilst noise at Heathrow has reduced over recent decades, we know we need to continue to prioritise measures which improve outcomes for our communities. How we operate - or run - our three-runway airport in the future will be key to how we manage and minimise the effects arising from aircraft arriving or departing at an expanded Heathrow.

With the benefit of what you told us at our previous consultations, we have developed our proposals guided by our committed goal to expand Heathrow whilst affecting fewer people with noise than in 2013. We have also been guided by our proposal for a Noise Objective for Heathrow, which is:

“To limit and, where possible, reduce the effects of noise on health and quality of life and deliver regular breaks from scheduled flights for our communities during the day and night. We need to do this whilst making sure the measures we put in place are in line with the ICAO balanced approach.”

The chapters/sections on future runway operations set out in this document explain how and why we propose:

- a ban on scheduled night flights between 23:00 and 05:30;
- to limit early morning arrivals to using one runway;
- to limit the recovery period up to 23:30 for arrivals and 00:00 midnight for departures; and
- to deliver this whilst still meeting the Airports NPS requirements to deliver much needed airspace capacity in the South East of England and creating a simple and safe operational environment for colleagues and airlines alike.

Runway alternation

Today, Heathrow’s two runways are generally used in ‘segregated mode’, with one runway used for departures and one for arrivals. We operate a ‘westerly preference’, so that for
approximately 70% of the year aircraft approach the airport from the east and take off to the west. During the day, and when we are on westerly operations, we swap the use of the runways at 15:00 to provide a predictable and guaranteed break from aircraft noise (known as respite) for people living close to the arrival or departure flight paths.

A three-runway airport offers greater capacity but also greater flexibility in how the runways are operated, which can be utilised to provide benefits for our communities. For example, two runways would be used in ‘segregated mode’ for either landings or departures with one runway used to operate in ‘mixed mode’ with both landings and departures.

This document sets out how we propose to apply runway alternation in the future, with a new pattern that moves through a sequence of four different runway operating modes. This pattern would change at midnight and again in the afternoon at either 14:00 or 15:00, and the sequence would repeat every four days – guaranteeing predictable respite patterns for all of our communities.

We have also designed our future runway alternation pattern so that during the day – regardless of when we change the direction that planes fly in – the respite periods for communities close to the airport remain the same, something that is not possible today. This would offer more predictable respite that we know our communities value. This key benefit of the new proposals is known as ‘reflective alternation’ and is explained further in this document.

Night flights

Government Policy defines the “Night Period” as 23:00 to 07:00, meaning that flights operating in this period are known as night flights and are usually subject to some restrictions. Today, Heathrow has a more restricted period of airport operation from 23:30 to 06:00 known as the Night Quota Period. Within the Night Quota Period, we have a ‘recovery period’ up to 01:00 for late running flights, disrupted flights or emergencies, with flights allowed after that time only in exceptional circumstances. We also currently operate a voluntary agreement with our airlines not to schedule flights to use the runway before 04:30.

With expansion, we have the opportunity to close our airport earlier and open later compared to today. The Airports NPS sets out the Government’s expectation that with expansion we should have a 6.5 hour ban on scheduled night-flights between the hours of 23:00 and 07:00. We have always agreed that a ban on scheduled night flights is necessary and we are proposing a scheduled night flight ban from 23:00 to 05:30. This document sets out why we are proposing these times and how we propose to manage the overall night flights package for an expanded Heathrow, including our proposals for a new, more restricted recovery period.
Combining runway alternation and night flights

When the new runway alternation pattern is combined with the new night regime, every community can expect at least 7 hours respite between 22:00 and 07:00 every night.

It also allows us to prioritise breaks from noise (respite) during the evening, night time and early morning to avoid prolonged periods of overflight at these valued times, which communities have told us are important to them. Any communities experiencing early morning flights would have far longer periods of respite the previous night (up to $10\frac{1}{4}$ hours). For example, the pattern would mean that communities which experience aircraft overhead during the evening would not have aircraft overhead the following early morning.

Other operational measures

There are a number of other operational measures that we are proposing to introduce to reduce our noise impact, such as slightly steeper approaches, increased departure climb gradients and displaced thresholds\(^1\). We would also be able to offer the full benefits of alternation on easterly operations (when aircraft are landing or taking off to the east) - which we are currently unable to do today due to the legacy of ‘the Cranford Agreement’. We also propose to operate a ‘managed preference’, which would allow us to provide breaks for communities affected by long periods of either westerly or easterly operations.

When these factors are combined with the deliberately westerly location of the new runway to allow flights arriving or departing over London to be higher, we are able to clearly demonstrate that limiting noise impacts on our communities has been central to the way in which we are designing and proposing to operate our three runways for an expanded Heathrow.

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\(^1\) Refer to section 7 for more details of Other measures to limit the noise impacts of operations.
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1. **PURPOSE OF THIS DOCUMENT**

1.1.1 The purpose of this document is to explain Heathrow’s preferred proposals for the operation of the three runway airport.

1.1.2 We have taken careful account of the feedback received from our Airport Expansion Consultation One (January 2018) and Airspace and Future Operations Consultation (January 2019). We are now in a position to set out our preferred operational proposals. That said, this consultation provides an important opportunity to receive further views on those proposals and some outstanding issues and options before we finalise our Development Consent Order (DCO) application for submission next year.

1.1.3 These operational proposals relate to the way in which we intend to use the runways to optimise their operational performance in order to fulfil the Airports National Policy Statement (Airports NPS) requirements for capacity in the South East of England; delivering the economic, consumer and trade benefit needed for UK's ongoing success; whilst limiting and mitigating the environmental and community effects of the increased flight numbers. Clearly, there are numerous other aspects to the operation of the airport but this document is limited to the operation of the runways to manage noise.

1.1.4 This document relates, in particular, to operational issues on which we consulted in January 2019 in relation to:

- Respite and runway alternation;
- Night flights;
- Directional preference; and
- Other operational controls.

1.1.5 In Chapter 7 we explain how these proposals have been developed in accordance with our approach to policy requirements and noise management. Whilst this chapter comes later in the document, so that we can present our operational proposals first, our approach to noise management is led by our proposed Noise Objective and this has informed all of our decision making.

1.1.6 This document is part of a suite of consultation documents, all of which are inter-related. You may also be interested to read the following documents which complement this one and provide more detail on related issues:

- *Early Growth* – our proposals for growth using the existing runways prior to the opening of the third runway;
• **Preliminary Environmental Information Report (PEIR)** – this is a substantial document which sets out in detail our current assessment of the potential significant environmental effects of all aspects of our expansion proposals;

• **Environmentally Managed Growth** – this document sets out the controls we propose to commit to so that the operation of the airport does not exceed the environmental limits specified in the Airports NPS. It also ensures that Heathrow’s environmental effects are monitored, managed and mitigated into the long term;

• **Proposals for Mitigation and Compensation** – this document brings together and summarises all of our proposals to mitigate and compensate for the impact of Heathrow’s expansion, including our proposals for Noise Insulation and for a Community Fund; and

• **Document 5 of the Updated Scheme Development Report (Updated SDR)** – this document explains in more detail the process we adopted to arrive at the proposals set out in this Future Runway Operations document, in particular the other alternative proposals that we considered and the reasons why they were discounted.

1.1.7 This document does not cover our airspace change proposals for an expanded Heathrow, although **Appendix A** does explain the relationship between the DCO application (including the proposals in this document) and the way in which the required airspace changes would be consented through the Civil Aviation Authority’s separate Airspace Change Process.

1.1.8 The effects of the airport’s growth will clearly relate in part to the scale of the airport’s growth over time. Our forecast for growth arising from expansion is set out in **Appendix B**.

1.1.9 In **Appendix C** we set out the principal policy and regulatory requirements that these proposals must observe.

1.1.10 In **Appendix D** we have brought together a graphical summary of the operational proposals set out in this document.

1.1.11 If you would like to read a summary of all of Heathrow’s expansion proposals, please see Heathrow’s **Airport Expansion Consultation Document**. If you would like further technical detail on the expansion proposals as a whole, please see the **Updated Scheme Development Report (Updated SDR)** or the **Preliminary Environmental Information Report (PEIR)**.

1.1.12 The diagram on page 3 shows where this document sits as part of our consultation.
2. **OUR RUNWAYS TODAY**

2.1 **A two runway airport**

2.1.1 Heathrow is the UK’s only hub airport. Hub airports combine direct passengers, transfer passengers and freight to enable long-haul aircraft to fly to destinations all over the world that cannot be served by “point to point” airports, which rely on local demand alone. Today, Heathrow serves over 200 destinations in more than 80 countries, connecting the UK to the world and the world to the UK.

2.1.2 Heathrow is the busiest airport in the UK with approximately 650 arrivals and 650 departures every day. In 2018, the airport handled approximately 80 million passengers and 476,000 air transport movements (ATMs).

2.1.3 Heathrow Airport is currently limited to no more than 480,000 ATMs each year as a condition of the 2001 Terminal 5 planning permission. Heathrow is required to report its ATM numbers annually to the CAA and the local planning authority. These submissions show that ATMs have been close to the capped level for a number of years and Heathrow has effectively been operating at 98% of its permitted runway throughput since 2005.

2.1.4 Heathrow has two runways – the northern runway (known as runway 09L during easterly operations and 27R during westerly operations) is 3,902m in length, whilst the southern runway (runway 09R during easterly operations and 27L during westerly operations) is 3,658m in length. The runways are separated by approximately 1,425m and designed to handle the largest commercial aircraft.

2.1.5 The runways are generally operated in segregated mode, where one runway is used for arriving aircraft and the other is used for departing aircraft. However, during the day, when delays build up in the holding stacks, we can use both runways for landing to minimise delays and the unwanted impacts associated with aircraft stacking.

2.2 **Noise performance**

2.2.1 Heathrow has long been at the forefront of international efforts to tackle aircraft noise. We are proud of the fact that, despite the increase in the number of aircraft movements at the airport, our noise footprint has shrunk considerably over the past few decades. For example, the figure below shows the substantial change in our noise footprint between 1974 and 2013. 2013 is identified as the baseline for noise improvement in the Airports NPS.
Despite these efforts we know that noise remains a concern. We are committed to addressing this and to reducing the effect of noise on local communities and we will work in partnership with our airlines to reduce noise further. Our committed goal is to expand Heathrow whilst affecting fewer people with noise than today.²

2.2.3 This document explains our preferred proposals for achieving that goal within the context of our Noise Objective, which we explain in Chapter 7.

2.2.4 Chapter 6 sets out a summary of our preferred operational proposals, so that they can be understood in the round.

2.2.5 The rest of this document explains how our preferences were arrived at and provides details of how these and our other operational proposals would work together to help us meet our noise management objectives.

² This commitment was given by Heathrow in 2013 in our submission to the Airports Commission ‘Taking Britain Further’ and 2013 is identified as the base year for these purposes in the Airports NPS.
3. RESPITE THROUGH RUNWAY ALTERNATION

3.1.1 Runway alternation is a system where the runways in use for departures and arrivals are switched on the basis of a published schedule to give people living close to the ends of the runways or under a flight path respite from noise.

3.1.2 By respite, we mean predictable relief from aircraft noise for a period of time for local communities. 'Relief' can be defined as a break from or a reduction in aircraft noise. We know from community feedback that many residents affected by aircraft noise value the respite offered by runway alternation.

3.2 Current Operations

3.2.1 We know that noise from planes can be disruptive to communities around Heathrow. During the day, whenever planes are landing and taking off to the west (westerly operations), we alternate the use of our two runways to provide local communities with respite.

3.2.2 Communities around Heathrow place great importance on the alternation system and we make every effort to stick to it. The alternation pattern means that for part of the day we use one runway for landings and the other for departures, then at 3pm we switch over.

3.2.3 This gives some communities approximately 8 hours of respite a day, although some get much less. For example, some communities do not benefit from runway alternation today when we are operating on easterly operations, because we cannot alternate on easterly operations because of the legacy of the Cranford Agreement.3

3.2.4 At the end of each week we switch completely. What we did in the evening during the previous week, we now do in the morning and vice versa. This is so that communities get respite from planes in the morning one week and in the evening the next. This schedule is published in advance on a yearly basis and is available on our website4. Figure 3.1 sets out how the runways are currently alternated to provide this respite5.

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3 See section 3.2.5 below.
4 https://www.heathrow.com/noise/heathrow-operations/runway-alternation
5 For more information on how alternation works today, please see the document Runway Operations - Respite Through Alternation, January 2019 which is appended to Document 5 of the Updated Scheme Development Report.
As shown above, at present runway alternation only occurs during the day when Heathrow is operating on westerly operations, which is approximately 70% of the time. On easterly operations, Heathrow does not alternate the runways during the day because of the legacy of the ‘Cranford Agreement’ which prevented us from using the northern runway for easterly departures during the day. Although the Cranford Agreement has now ended, Heathrow needs to undertake works to the airport’s infrastructure before runway alternation on easterly operations is possible. Such infrastructure has already been consented by planning permission, but as
part of the physical masterplan for expansion, alternative specific infrastructure will be delivered through the DCO process.

3.2.6 With an expanded Heathrow we have the ability to introduce runway alternation on both easterly and westerly modes of operation, giving respite to communities to the east and west of the airport.

3.3 **Consultation and Feedback**

3.3.1 We know from community feedback that the respite offered by runway alternation is highly valued by many. This is recognised in the Airports NPS (at paragraph 5.61), which requires plans for Heathrow’s expansion to include runway alternation schemes that provide predictable periods of respite.

3.3.2 In our Airspace and Future Operations Consultation (January 2019), we consulted on our emerging thinking on runway alternation, with the aim of extending the provision of respite to benefit areas further away from the airport that do not receive respite from runway alternation today.

3.3.3 We asked **Would you prefer to have longer periods of respite less frequently (all day on some days but no relief on other days) or a shorter period of respite (e.g. for 4-5 hours) every day?**

3.3.4 Our documents titled *Consultation One Consultation Feedback Report* and *Future Operations Consultation Feedback Report* set out the details of the responses. More information on how the consultation feedback informed our proposals is also described in Document 5 of the Updated SDR.

3.3.5 Generally, there was widespread support for measures which help to deliver respite.

3.3.6 Of those who responded to the consultation, 44% did not provide an answer to this question, 26% expressed support for a shorter period of respite every day, 17% said they did not know and 13% preferred the option of a longer period of respite, but not every day.

3.3.7 A number of Local Authorities expressed concern that periods of respite would be reduced under the proposals (e.g. Windsor and Maidenhead, Hounslow Councils), with some specifically concerned that there would be reduced respite for those affected by the new third runway and the southern runway.

3.3.8 The most frequent comment from members of the public was a confirmation of the importance of respite. There were a number of comments which said respite must be enforced.

3.3.9 Concerns were raised about the ability to alternate runways and the predictability of respite because of the direction of the wind. Some respondents also considered
that our approach to respite was inadequate, insufficient and/or would not make a difference.

3.3.10 Some did not favour respite because they were opposed to expansion and considered that current respite would be reduced because of the additional runway.

3.3.11 Many responses from community groups stated that respite was essential. However, there was significant divergence of opinion amongst such groups. Egham Residents Association supported the proposals in principle. Harrow U3A Sustainability Group suggested that invoking respite shows a lack of proper planning over many years and Dover House Estate Residents’ Association stated that the concept of insulation implies that respite does not prevent harm arising.

3.3.12 Heathrow Association for the Control of Aircraft Noise requested guaranteed respite for all communities within 25 miles. St Albans Quieter Skies stated that respite is essential for affected residents.

3.3.13 Some groups considered that, as two runways would be used for take-off at the same time, respite for departures was unlikely or would be limited, and others thought that Heathrow had been disingenuous in its approach and that respite would be reduced from 50% to 33% through the introduction of an additional runway.

3.3.14 The Mayor of London said the noise measures appeared largely unchanged and the proposed respite would mean communities under the final approaches would have no aircraft flying overhead for just a quarter of the day, half of what is offered today.

3.3.15 Members of the public made suggestions for periods when respite should be provided or would be most valued. Many respondents expressed support for respite in the mornings, evenings and at night often because this would assist in achieving uninterrupted sleep and avoid being woken up. Some respondents also highlighted the afternoon period, often so that time could be enjoyed outside.

3.3.16 We have also noted that respite at weekends was highly valued by many respondents.

3.3.17 In summary, there was a significantly wide range of opinions on the best solution for respite, in both the consultation feedback responses and also in our focus group sessions and respite research. However, there was greater consistency in the preference for respite during the evenings, night-time and early mornings. We have used this feedback to inform the scenarios we have evaluated with a view to maximising the respite that can be provided across these periods.
Engagement and Focus Groups

3.3.18 Now that the Independent Commission on Civil Aviation Noise (ICCAN) has been established, we are developing an engagement plan with them to seek their guidance on runway alternation. We intend to use any guidance received to inform our DCO Application.

3.4 Three different kinds of alternation

3.4.1 Compared to the relatively straightforward runway alternation pattern in place at today’s two runway airport, operating three runways creates both potential opportunities and increased complexity in the provision of respite through runway alternation.

3.4.2 There are three kinds of alternation which we propose to help provide respite for communities that will be overflown by aircraft from an expanded Heathrow:

Airspace Alternation

3.4.3 In addition to runway alternation, and as described at our previous consultation, we are also seeking to develop a structure for our future airspace that allows the flight paths from each runway to be in their own distinct area (up to 7000ft). This means that when a runway is not being used for departures, its departure flight paths will effectively switch off and so there would be no overflights in the corresponding area. Likewise for arrivals. This would provide periods of respite from overflight much further out from Heathrow than we do today. We call this Airspace Alternation. When runway alternation and airspace alternation are combined we will generate respite that extends to areas well beyond that offered by our current two runway alternation pattern. This combined alternation will operate during both westerly and easterly operations.

3.4.4 The provision for airspace alternation would be driven by the airspace design and is therefore beyond the scope of our DCO application.

3.4.5 More information on the concept of airspace alternation was provided in our Airspace and Future Operations Consultation (January 2019) in the document Runway Operations - Respite Through Alternation, and is contained in Document 5 of the Updated SDR. Appendix A to this document explains the relationship between the DCO and the Airspace Change consenting process.

Flight Path Alternation

3.4.6 We also have potential to provide further opportunities for respite and relief by using additional flight paths within the arrival and departure areas to share aircraft over a wider area. We call this Flight Path Alternation.
3.4.7 The provision of flight path alternation would be driven by the airspace design and is therefore also beyond the scope of our DCO application.

3.4.8 More information on the concept of flight path alternation is provided in our Airspace and Future Operations Consultation (January 2019) in the document *Runway Operations - Respite Through Alternation*, and is contained in Document 5 of the Updated SDR.

3.4.9 Airspace and flight path alternation will be provided for through the airspace change process and so are not explained further in this consultation.

3.4.10 As Appendix A explains, we are required to follow a separate airspace change process to make changes to our flight paths, overseen by the Civil Aviation Authority. As part of that separate airspace change process, there will be separate consultation.

**Runway Alternation**

3.4.11 The remainder of this Chapter therefore focuses on Runway Alternation.

3.5 **Options for Runway Alternation**

3.5.1 We have tested a range of options which would provide respite through runway alternation, having regard to the feedback from consultation and engagement.

3.5.2 This section explains briefly how we have developed options and selected our preference. For full details on this please see Document 5 of the Updated SDR. All of the runway alternation patterns we have tested were built from four main components;

- **runway mode allocation** means how a runway is allocated to be used for landings or departures. If a runway is used for either landings or departures, we call this ‘segregated mode’. If it is used for both landings and departures, we call this ‘mixed mode’. For example, the new third runway might be allocated to a mixed mode (labelled 'M'), the centre runway on a segregated arrivals mode (labelled 'L' for landings) and the southern runway on a segregated departures mode (labelled 'D') running north to south; we would call this mode allocation 'MLD';

- the **sequence** in which the runway mode allocation will cycle between the three runways. As the middle runway cannot be used for mixed mode, there are four possible mode allocations: MLD, MDL, LDM, DLM. The mode

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6 The centre runway cannot be used in mixed mode for safety reasons. This is explained in detail in Document 5 of our Updated Scheme Development Report.
allocation will cycle through at pre-set intervals in order to provide respite for those communities living closest to the airport;

- the **duration** for which a particular runway mode allocation is in place; and
- the **time of day** (or point in a week) when the runway mode allocation changes over to the next in the sequence.

3.5.3 Using these alternation components, numerous options were developed and analysed through our evaluation process. This process was undertaken with input being provided by five key disciplines (Business Case, Community, Operations & Services, Planning and Sustainability).

3.5.4 Details of our evaluation process and the options we considered are described in Document 5 of the Updated SDR. As is set out in that document, we undertook evaluation before our Airspace and Future Operations Consultation (January 2019) and engagement and then carried out further evaluation having regard to the feedback received.

3.6 **Our Preferred Proposals for Runway Alternation**

**Preferred Runway Mode Allocation**

3.6.1 Figure 3.2 sets out the 4 possible mode allocations referred to above, in both westerly and easterly operations. Note that the same communities benefit from respite (no planes overhead) regardless of the direction of operation. For example in Mode 1, communities B and F receive the respite during both westerly and easterly operations. This concept is known as **Reflective Alternation** and allows us to offer predictable respite.
Figure 3.2: Runway Mode Allocations
Sequence of Runway Mode Allocation

3.6.2 Following the evaluation work we have undertaken on mode allocation sequences, we propose that we will move through the mode allocations in the following order:

- Day 1: Allocation 1 first, then Allocation 3 later.
- Day 2: Allocation 4 first, then Allocation 1 later.
- Day 3: Allocation 2 first, then Allocation 4 later.
- Day 4: Allocation 3 first, then Allocation 2 later.

3.6.3 We are proposing a daily runway alternation pattern that will repeat this sequence every 4 days. So on Day 5 we would start again as Day 1.

Duration Allocated per Runway Mode

3.6.4 We propose that the runways alternate once during the day at either 14:00 or 15:00 (see below).

3.6.5 In addition, when operations start in the morning, the runways will start on a different allocation to the one that was in place the night before. The changes will follow the allocation pattern above, and the pattern will be repeated every four days. When combined with our proposals for the night time (see Chapter 4) we can demonstrate that using this pattern and changing at these times will optimise the respite provided to all communities, over the evening, night-time and early morning period as we explain further in Chapter 6.

3.6.6 As explained in Document 5 of the Updated SDR, we propose one mode change per day to ensure deliverability. This means that not every community receives daily daytime respite.

3.6.7 We recognise that the feedback from the Airspace and Future Runway Operations Consultation (January 2019) showed support within the community for shorter periods of respite, every day. Generally, daily respite was important to all communities. However, we have struck a balance of delivering predictable respite with managing the airspace and operational risks that result from multiple daily mode changes, which is explained in more detail in Document 5 of the Updated SDR.

3.6.8 We propose the following:

a) to proceed with an alternation pattern based on one alternation mode change per operational day, reflecting our current understanding of what can be delivered with relative certainty. This will strike a balance between providing predictable respite to communities with maintaining the operational objectives
of the airport such as safety, simplicity and synchronicity with airspace and achieving the Airports NPS capacity targets; and

b) at the same time, to secure in the DCO a provision that a review of alternation patterns be considered in the future as part of the Noise Envelope. This will be a legally enforceable review within the framework of the Noise Envelope. More information on the Noise Envelope is available in Chapter 7 below and in Annex A of Chapter 17: Noise and Vibration of the PEIR.

**Timing of Runway Mode Allocation Changes**

3.6.9 We propose that the runways alternate once during the day at either 14:00 or 15:00. In deciding what time we should alternate the runway, there are technical and operational requirements that we must take into account, however, we are seeking feedback at this consultation as to your views.

**Changing the pattern at 15:00**

3.6.10 Our community evaluation of options has indicated that it may be better for schools if the alternation pattern was to change at 15:00, because it provides a more consistent situation over the course of the school day.

3.6.11 In addition, changing at 15:00 aligns better with Air Traffic Controllers working in the London Terminal Area, because their shift patterns change currently at 14:00, giving more time for controllers to settle into their posts.

3.6.12 Changing the alternation pattern at 15:00 divides the day unequally (05:15 to 23:00) into approximately 9 and 8 hour blocks, but if the recovery period\(^7\) is included, this division is more equal (9 and 9).

3.6.13 Changing the alternation pattern at 15:00 divides the amount of aircraft movements relatively equally. This is shown in Figure 3.3 below.

**Changing the pattern at 14:00**

3.6.14 Changing the alternation pattern at 14:00 divides the day equally (assuming an operation of 05:15 to 23:00) into approximately 8 hour blocks, but if the recovery period is included, less so. Estimated numbers of departures and arrivals are shown in Figure 3.3 below.

3.6.15 If we change our alternation pattern at 14:00, we expect that we would have to ask Air Traffic Control to change their shift patterns, which may be challenging to arrange.

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\(^7\) Explained below in more detail
3.6.16 Changing the pattern at 14:00 divides the amount of aircraft movements relatively equally. This is illustrated in Figure 3.3 below.

**Figure 3.3: Table showing percentage of daily movements occurring before 14:00 and 15:00**

<table>
<thead>
<tr>
<th></th>
<th>% of daily movements occurring before 14:00</th>
<th>% of daily movements occurring before 15:00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Runway</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departures</td>
<td>44%</td>
<td>51%</td>
</tr>
<tr>
<td>Arrivals</td>
<td>51%</td>
<td>57%</td>
</tr>
<tr>
<td><strong>Schedule</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departures</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>Arrivals</td>
<td>50%</td>
<td>56%</td>
</tr>
</tbody>
</table>

What would this pattern mean for me?

3.6.17 How this alternation pattern could work in practice is illustrated in graphics in Appendix D to this document.

3.6.18 What this could mean for the local communities most affected is also shown in the *Heathrow Expansion and your area* documents produced as part of this consultation.
4. NIGHT FLIGHTS

4.1 Why do we have night flights?

4.1.1 Night flights are an important part of operations at airports around the world. The time differences in an inter-connected global transport system mean that it is difficult to avoid night flights. The relationship between flight times and clock times means that early morning arrivals at Heathrow are particularly suited to serving flights from much of China, South East and South Asia. The early arrival permits a full day’s business to be undertaken in the UK and maximises the timing opportunities for those making onward flight connections from London. By feeding other flights, transfer passengers arriving on these early flights play an important role in maintaining the range and frequency of destinations served by Heathrow, and in maintaining connectivity with key destinations.

4.1.2 The scheduled movements that operate at Heathrow today between 23:30 and 06:00 are all early morning arrivals and the majority are scheduled after 05:00. They are mainly long-haul passenger services, with over 70% originating from Asia and the Middle East.

4.1.3 These late evening and early morning flights are also very important for freight, which is carried in the bellyhold of the passenger aircraft, and which in turn supports the viability of connections to long haul routes such as East Asia, the Far and Middle East and also North America.

4.1.4 Independent studies have shown that night flights bring important benefits and are an essential feature of the global aviation market. High passenger demand for flying within the night period is unlikely to change given the markets that the flights operate to and from. A high proportion of passengers on these flights connect at Heathrow onto onward flights – the timing of these connections is important for passengers, especially business travellers for whom arriving early in the morning at their destination is important to complete a full day’s business. Independent studies have shown that night flights at Heathrow make a significant contribution to the economy and contribute to the UK’s long-term economic prosperity.

4.2 Scheduled time and runway time

4.2.1 In considering the exact timings of a ban on scheduled night flights and other proposed night restrictions it is useful to understand that scheduled times and runway times are not the same. Figure 4.1 below shows the difference between the scheduled time (the times shown on arrival and departure boards) and the time planes arrive or depart from the runway.
4.2.2 Using arrivals as an example:

- The scheduled time of an arrival is the time that the plane reaches the airport stand (when the plane stops at the terminal gate and you get off).
- The runway time is the time the plane touches down on the runway.

4.2.3 Today, there is approximately 15 minutes between the plane touching down on the runway and it taxiing to the airport stand (although this will vary between flights and times of the day).

4.2.4 It is the same for departures, the scheduled time is the time the plane will push back from the gate and the runway time will be approximately 15 minutes later when it takes off.

4.2.5 Under expansion, we propose to amend these times to accord with the schedule assumptions used in the PEIR. Therefore we will allow 10 minutes for arrivals taxi time in the daytime and 15 minutes in the night period (when only 1 runway available), and 20 minutes for departures in both the day and night periods.

4.2.6 In relation to current operations at Heathrow, for example, the scheduled time of the first arrival is 04:45 but it is expected on the runway (its runway time) from

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*Figure 4.1: Difference between Runway Time and Schedule Time*
04:30. Equally the last departure will have a scheduled time of 22:50, but it is expected to depart the runway (its runway time) at approximately 23:05.

4.2.7 Schedule times are used to plan operations as runway times are less predictable due to the various factors that can influence exactly when a flight lands or takes off. In establishing restrictions for night flights both scheduled and runway times are important. The schedule time is important in enabling operations to be planned in and around the night period and in relation to delivering the expectation of a ban on scheduled night flights of 6.5 hours. Runway time does however need to be used in setting other rules about when late running aircraft can operate after their scheduled time (see further below).

4.3 Current Operations

4.3.1 Currently at Heathrow there is a combination of mandatory and voluntary measures that are applied to control noise from aircraft operations during the night period. Many of the measures relate to the ‘quota count’ (QC) system which applies to the major London airports (Heathrow, Gatwick and Stansted). The quota count system is imposed by the Secretary of State and classifies all aircraft according to noise criteria for take-off and landing. More information is provided in Document 5 of the Updated SDR.

4.3.2 The measures in place to control noise during the night period are illustrated in Figure 4.2 below.

Figure 4.2: Existing restrictions on night flights
Overview of mandatory restrictions

4.3.3 The current mandatory restrictions directed by the Department for Transport (DfT) are summarised below:

1. The night period is 23:00 to 07:00. There are restrictions on the type of aircraft that can be scheduled or allowed to operate in this period.

2. There is then a more restrictive period (23:30 to 06:00) known as the Night Quota Period (NQP) which has no scheduled ban but has limits on the total number of movements and quota count points which are set by the DfT. The limits are set on a seasonal basis: summer and winter. Heathrow is currently limited to 5,800 night flights a year:
   - 3,250 in the summer season; and
   - 2,550 in the winter season.

3. The effect is that there is no restriction on the number of aircraft permitted between 23:00 and 23:30 or between 06:00 and 07:00.

4. There are also flights which may be allowed to operate during the night period (requiring government approval) if there is disruption, emergency or passenger hardship. These flights are known as dispensed flights and are not subject to the night restrictions (or our voluntary restrictions set out below). There are specific reasons for dispensed flights given in the Civil Aviation Act, for example immediate danger to life or health, air traffic congestion, disruption to air traffic flow or diversions from other airports due to low visibility.

Voluntary restrictions

4.3.4 In addition to the mandatory restrictions Heathrow also employs a range of voluntary measures:

1. Although Heathrow is permitted to schedule flights throughout the night quota period, in fact we voluntarily do not schedule flights between 23:05 and 04:45. (This is subject to our recovery and restricted recovery periods which we describe below in 4.2.9.)

2. There is a voluntary arrangement with relevant airlines that aircraft scheduled to arrive from 04:45 will not land on the runway before 04:30.

3. Although permitted under the existing restrictions there are no scheduled departures or arrivals of freight/cargo flights in the night quota period (23:30 to 06:00).

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8 These are provided in Annex B of the DfT document Night Flying Restrictions At Heathrow, Gatwick and Stansted, July 2014
4. We launched a Quiet Night Charter in October 2018 which includes a number of shared goals with airlines to reduce the number and impact of flights delayed into the night period.

**Current Night Time Operations**

4.3.5 There are primarily two types of operation during the night period (23:00 to 07:00), those that are scheduled and those that are delayed. Aircraft are scheduled up until 23:05 at night, and from 04:45 in the morning.

4.3.6 Delays to aircraft over the course of a day or delays to aircraft scheduled in close proximity to the beginning of the night period can result in aircraft operating after 23:00. The large majority of these (over 80%) will typically operate at the start of the night period before the more restrictive night quota period begins at 23:30.

4.3.7 There are also occasions when aircraft encounter longer delays (late runners) and therefore seek to operate after 23:30. Typically, these aircraft will operate before midnight and certainly before 01:00. There are only rare occasions when flights operate later as explained in Figure 4.3.

4.3.8 There are a number of reasons why an aircraft could be delayed which might include for example an aircraft developing a technical problem, passengers or baggage being offloaded or delays picked up from the originating airport.

4.3.9 If late runners and dispensed flights were not permitted under any circumstance the only alternatives would be to divert arriving passengers to another airport or delay departing flights. This would cause inconvenience, for example, requiring overnight accommodation to be found for passengers or in some circumstances passengers having to wait for several days for another flight for some long-haul destinations.

4.3.10 As such, there are five broad periods of activity through the night period:

1. 23:00 to 23:29 “RECOVERY” - this is the period when the last scheduled departures leave the runway and the airport schedule can recover from any delays that have built up over the course of the day. This period is not subject to movement restrictions, but it falls within the night period and is predominantly a period where no operations are scheduled;

2. 23:30 to 01:00 “RESTRICTED RECOVERY” - this is the period when the airport schedule is continuing to recover from any delays that have built up over the course of the day or any aircraft technical issues that could have occurred. Because this period falls into the night quota period there are restrictions on the type and number of aircraft that can operate in this time. This period will very rarely go beyond 01:00, and there is no guarantee that an
aircraft will be permitted to operate, even if there is quota and movements still available.

3. 01:00 to 04:30 “EXCEPTIONAL CIRCUMSTANCES ONLY” – Typically for over 90% of the time, this period will not have any unscheduled night operations. On the occasions when flights do occur it is for very exceptional reasons.

4. 04:30 to 06:00 “EARLY MORNING SCHEDULED OPERATIONS” – this is the beginning of the operational day when the first aircraft begin to arrive at Heathrow touching down on the runway after 04:30. There may be up to 20 aircraft scheduled to arrive during this period on any one day with an average of 15. This period still falls within the Night Quota Period (NQP), so the number and type of aircraft are tightly controlled, and the airport is responsible for ensuring that the limits are not exceeded.

5. 06:00 to 07:00 “FULL SCHEDULED OPERATIONS” – during this period the airport moves into a full schedule of arrival and departure operations. It is not within the NQP, but the restrictions of the night period still apply as set out at 4.2.2 to 4.2.3.

Figure 4.3: Number of Nights with Flights in the Restricted Period (2010 to 2017)
4.3.11 Figure 4.3 shows flights over the night period each year between 2010 to 2017.

4.3.12 In general, we have been able to drive a reduction in the number of late running aircraft and in the number of aircraft treated as exceptional cases.

4.3.13 In some circumstances, including for example emergency flights, or during times of severe and widespread disruption, Government guidance allows flights to be “dispensed” from the restrictions. Figure 4.4 below shows the number of flights that were exempted in this way over the past 5 years.

Figure 4.4: Annual Count of Dispensed Movements 23:30 to 06:00 from 2014 to 2018

![Annual count of dispensed movements 23:30-06:00](image)

* Large increase in 2018 dispensed flights is due to the high level of regulation in European airspace, e.g. ATC strikes or weather.

Night Flight Restrictions for an Expanded Heathrow

4.3.14 The Airports NPS sets out at paragraph 5.62 that:

“The Government also expects a ban on scheduled night flights for a period of six and a half hours, between the hours of 11 pm and 7am to be implemented. The rules around its operation, including the exact timings of such a ban, should be defined in consultation with local communities and relevant stakeholders, in line
Heathrow Expansion
Airport Expansion Consultation

with EU Regulation 598/2014.9 In addition, outside the hours of a ban, the Government expects the applicant to make particular efforts to incentivise the use of the quietest aircraft at night.”

4.3.15 The NPS, therefore, requires an expanded Heathrow to provide a 6.5 hour ban on scheduled night flights.

4.3.16 The reference to EU Regulation 598/2014 (EU 598) also means that it will be necessary for the Secretary of State to consider the cost effectiveness of the proposed noise mitigation measures for an expanded Heathrow, including the ban on scheduled night flights, before they can be imposed as operating restrictions on the airport through the DCO.

4.4 Consultation and Feedback

4.4.1 Heathrow has publicly supported the proposed ban on scheduled night flights of 6.5 hours during the night time period and we outlined our support in our Airspace and Future Operations Consultation (January 2019) materials. We explained that we believe that a 6.5 hour ban on scheduled night flights strikes the right balance between reducing night time noise impacts and the importance of economic and connectivity benefits.

4.4.2 We asked about how we should use the runways in the early morning, comparing a 05:30 schedule start (05:15 runway time) using one runway (Option 1) to a 05:45 schedule start (05:30 runway time) with two runways (Option 2).

4.4.3 Of those who responded to the consultation, 45% did not respond to this question. 23% indicated that they preferred Option 1, 18% indicated that they preferred Option 2 and 14% indicated that they did not know.

4.4.4 Those that supported Option 1 generally did so on the basis that it would reduce the number of communities overflown in the early morning.

4.4.5 Some members of the public expressed support for Option 1 due to the economic benefits from earlier flights into London for business users, whilst some concern was expressed that not opening earlier would waste the airport resource. Others suggested that an earlier runway opening time would mean there is less impact on surrounding areas and less pressure on public transport as road traffic is likely to be quieter than that experienced at later flight times. Some respondents supported Option 1 to allow for greater flexibility to minimise risks of unplanned or unexpected delays as other runways would be available for use if required.

4.4.6 The Airline Community supported Option 1 due to the critical importance of particular early morning arrivals.

4.4.7 Those that supported Option 2 generally did so on the basis that it would be a later start for all affected communities. A number of respondents supported Option 2 as it would enable the most efficient use of the expanded airport, provide operational flexibility, allow for more arrivals and help to reduce delays. Others commented that Option 2 would help to avoid stacking planes or making them stay in a holding pattern and enable them to land more quickly, quietly and efficiently. Allowing planes to land on two runways was identified by some respondents as being better for the economy.

4.4.8 Overall feedback on this issue was varied. The main criticisms from members of the public regarding night flights and the proposed scheduled night flight ban were that noise disturbs sleep for adults and children; early morning and late-night flights interrupt sleep; night time noise impacts quality of life, health and well-being; and that noise impacts local people and communities.

4.4.9 Many people suggested that the ban should be longer, with many suggesting around 8 hours instead of 6.5 hours. It was also suggested that the ban should include all flights, including unscheduled flights.

4.4.10 Many also said that they thought that 05:30 was too early to start operations. Concerns were also raised over stacking prior to landing, an increased volume of early flights and that the ban only relates to scheduled flights. Comments suggested the ban on scheduled night flights should be in place between 23:00 and 06:00 or 07:00.

4.4.11 However, industry representatives expressed concern over any ban and the potential economic harm and other dis-benefits that it would bring. They highlighted the importance of a collaborative approach to this issue.

4.4.12 Some considered that Heathrow’s preferred night period ban (23:00 to 05:30) was adequate or suitable, that the timing of the ban would suit the working local community and people’s sleep patterns and that the proposals would reduce noise which would benefit local communities.

4.4.13 Other comments suggested the night period ban would improve operational efficiency; be short enough that the airport remains competitive; benefit users of the airport and still allow early morning flights from overseas. A number of responses suggested there should not be a ban at all on night flights.
4.5 Evaluation and Review – Process for Night Flights

4.5.1 Our preferred proposals for night flight arrangements include the following different elements:

- A ban on scheduled flights;
- Changes to the recovery period;
- Arrangements for early morning arrivals; and
- Incentivising the use of quieter aircraft at night.

Ban on Scheduled Night Flights

4.5.2 We started our evaluation considering the ban on scheduled night flights. We have developed our preference for a ban on scheduled flights through a process of evaluation of different options.

4.5.3 The Airports NPS states that the Secretary of State expects a scheduled night flight ban of 6.5 hours. We are required to define the rules around its operation, including its exact timings, in consultation with local stakeholders. Further, we must carry out that evaluation taking account of the requirements of EU 598. As explained in Chapter 7 and Appendix C, EU 598 requires an objective consideration of any proposed operating restrictions, to ensure that any rules which restrict airlines’ access to the airport are ‘cost effective’ having regard to the objectives. As such, we must test options to inform the Secretary of State’s ultimate decision on the best solution for the ban on scheduled night flights.

4.5.4 Our process for the evaluation is explained in full in Document 5 of the Updated SDR but, in summary, we developed and assessed a long list of options using a range of criteria. We also considered the cost effectiveness of the options.

4.5.5 The evaluation process to select our preferred option for a ban on scheduled night flights to present in this consultation was conducted across two phases: Phase One and Phase Two.

Phase One – Overview of Options

4.5.6 In the first phase of evaluation we assessed night flight options that respond to the two questions:

- What is the length of the scheduled night flight ban, i.e the length of period during which no flights are scheduled to arrive or depart?
- What time period is the length of ban applied to, i.e. what time should the ban start and finish?
We looked at 13 options for the duration of a night flight ban. The range of these was from 5 hours 30 minutes to 7 hours. In the Airspace and Future Runway Operations Consultation (January 2019) we explained these options fell into three broad categories: less than 6.5 hours, 6.5 hours exactly and more than 6.5 hours. The details of the 13 options we considered are illustrated in Figure 4.5 below.

In Phase One, we did not evaluate any options which encroached into the 06:00 to 07:00 hour, because this period of time is considered very important economically and to the operation of the airport. We explained in the Airspace and Future Operations Consultation that this is because banning scheduled operations during the 06:00 to 07:00 period would have significant economic implications; would significantly impact on Heathrow’s ability to compete with other European hub airports; and crucially would not enable Heathrow to operate at least 740,000 movements, which is a clear Airports NPS requirement for expansion. Equally this time period is important for both arriving and departing passengers whether travelling for business or leisure.

We also did not consider any options that were shorter than the period in which we have a voluntary ban today, because this would not provide arrangements which were better than today.

Phase 2 – Schedule Ban – Assessment of Options as part of a package

Following Phase One, 11 night flight package options were developed for the second phase of evaluation. In Phase Two we explored different timings for the ban on scheduled night flights as part of a night noise management package that included other components.

These components are shown in Figure 4.6 below.
4.5.12 Into Phase Two we carried forward options for the ban on scheduled night flights which had not been discontinued, along with examples of the other components listed above. We believe that it is important to evaluate proposals for a ban on scheduled night flights in the context of the other components of the night noise management package in order to provide the best situation for local communities whilst adopting a balanced approach.

4.5.13 The 11 night flight options reviewed at Phase Two are summarised in Figure 4.7 below\(^\text{10}\). Please note, the combined package options have different numbering to the numbering set out for the ban options reviewed at Phase One.

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**Figure 4.6: Night noise components**

![Figure 4.6: Night noise components](image)

**Figure 4.7: Night flight options evaluated**

<table>
<thead>
<tr>
<th>Night Flight Option</th>
<th>Schedule ban component</th>
<th>Runway Ban Component</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>NF1</td>
<td>7 hours 50 minutes</td>
<td>8 hours</td>
<td>No night flights between 23:00 and 07:00, first arrival on the runway at 07:01 and last flight at 22:59, no runways used for arrivals or departures between 23:00 and 07:00.</td>
</tr>
</tbody>
</table>

\(^\text{10}\) Further details on each option are presented in Document 5 of the Updated SDR, where the evaluation outcomes are discussed.
<table>
<thead>
<tr>
<th>Night Flight Option</th>
<th>Schedule Ban component</th>
<th>Runway Ban Component</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>NF2</td>
<td>4 hours 40 minutes</td>
<td>3 hours 30 minutes</td>
<td>No change to today's restrictions, first arrival on the runway at 04:30 and last flight at 01:00, one runway used for arrivals before 06:00 and one for flights between 23:00 and 01:00.</td>
</tr>
<tr>
<td>NF3</td>
<td>6 hours 30 minutes</td>
<td>5 hours 15 minutes</td>
<td>No scheduled flights before 05:30, first arrival on the runway at 05:15 and last flight at 00:00, one runway used for arrivals before 06:00 and one for all flights between 23:00 and 00:00</td>
</tr>
<tr>
<td>NF4</td>
<td>6 hours 30 minutes</td>
<td>5 hours 30 minutes</td>
<td>No scheduled flights before 05:45, first arrival on the runway at 05:30 and last flight at 00:00, two runways used for arrivals before 06:00 and one for all flights between 23:00 and 00:00</td>
</tr>
<tr>
<td>NF5</td>
<td>7 hours</td>
<td>6 hours 15 minutes</td>
<td>No scheduled flights before 06:00, first arrival on the runway at 05:45 and last flight at 23:30, three runways used for arrivals before 06:00 and three for all flights between 23:00 and 23:30</td>
</tr>
<tr>
<td>NF6</td>
<td>6 hours 15 minutes</td>
<td>5 hours 15 minutes</td>
<td>No scheduled flights before 05:15, first arrival on the runway at 05:00 and last flight at 23:45, one runway used for arrivals before 06:00 and one for all flights between 23:00 and 23:45</td>
</tr>
<tr>
<td>NF7</td>
<td>6 hours</td>
<td>5 hours 10 minutes</td>
<td>No scheduled flights before 05:10, first arrival on the runway at 04:55 and last flight at 23:45, one runway used for arrivals before 06:00 and two for all flights between 23:00 and 23:45</td>
</tr>
<tr>
<td>NF8</td>
<td>5 hours 45 minutes</td>
<td>5 hours</td>
<td>No scheduled flights before 05:00, first arrival on the runway at 04:45 and last flight at 23:45, one runway used for arrivals before 06:00 and two for all flights between 23:00 and 23:45</td>
</tr>
<tr>
<td>NF9</td>
<td>6 hours 45 minutes</td>
<td>5 hours 30 minutes</td>
<td>No scheduled flights before 05:45, first arrival on the runway at 05:30 and last flight at 00:00, two runways used for arrivals before 06:00 and one for all flights between 23:00 and 00:00</td>
</tr>
<tr>
<td>NF10</td>
<td>7 hours 15 minutes</td>
<td>6 hours 30 minutes</td>
<td>No scheduled flights before 06:15, first arrival on the runway at 06:00 and last flight at 23:30, no runway used for arrivals before 06:00 and one for all flights between 23:00 and 23:30</td>
</tr>
<tr>
<td>NF11</td>
<td>6 hours 45 minutes</td>
<td>6 hours 30 minutes</td>
<td>No scheduled flights before 05:30, first arrival on the runway at 05:15 and last flight at 23:00, two runways used for arrivals before 06:00 and no runways in use after 23:00</td>
</tr>
</tbody>
</table>
**Phase Three**

4.5.14 Feedback from this consultation will be reviewed as part of our Phase Three evaluation to ensure we put forward the optimum proposal in our DCO application.

**4.6 Our Preferred Proposals for a Ban on Scheduled Night Flights**

4.6.1 We are proposing a 6.5 hour ban on scheduled night flights between 23:00 and 05:30.

4.6.2 The Airports NPS sets out an expectation of 6 hours and 30 minutes and scenarios with this length of ban perform better overall across all disciplines than those with longer or shorter lengths. Community and sustainability disciplines tended to favour longer schedule bans whereas business case and operations tended to favour shorter schedule bans.

4.6.3 Economic analysis of the different start/end times indicate that schedule bans ending beyond 05:30 had a disproportionate economic impact compared with schedule bans ending earlier.

4.6.4 Critically, options for a ban on scheduled night flights longer than 6.5 hours and options which do not allow for scheduled flights between 05:30 and 06:00 will mean that we cannot provide 740,000 flights a year at an expanded Heathrow, which is a key requirement of the Airports NPS. This is explained in Document 5 of the Updated SDR.

4.6.5 In response to our previous consultation airlines expressed a strong preference for one runway operating from 05:15 when compared with two runways from 05:30. This was primarily due to the economic impact on their business, the challenge of re-timing multiple slot times at other airports and the increased risk of passengers missing the first wave of connecting flights.

4.6.6 Wider feedback at consultation from community groups and local residents was more mixed in regard to this specific question with the majority not expressing a preference. Of those individuals that did, a slightly larger proportion favoured a later start on two runways, however this was not evident in the focus group feedback where the large majority of residents favoured an earlier start on a single runway. It is therefore not possible to conclude that community stakeholders held a clear preference.

4.6.7 Between now and DCO application we will engage with stakeholders as to how the scheduled ban would be implemented and the changes that will be necessary to the current flight schedule as a result.
4.7 Incentivising the use of quieter aircraft at night

4.7.1 Aircraft have progressively become quieter over time as new technologies have developed. The costs associated with airlines replacing their fleet are significant, and incentives to continue this investment are necessary to ensure Heathrow continues to attract the quietest aircraft. Two mechanisms for incentivising quieter aircraft at night are: firstly the use of a QC limit\(^{11}\) which is regularly reviewed and lowered to reflect improvements in technology but also allow the benefits of that investment to be realised in terms of growth in movements in the 06:00 to 07:00 hour. (We explain how QC limits work at section 4.2 above). Secondly a charging structure that attracts the best noise performing aircraft types by reducing their charges, and penalises the worst performing types with higher ones. We are keen to explore other ideas to help incentivise the use of quieter aircraft at Heathrow. Chapter 7 sets out further detail on how we intend to achieve this through the application of a noise envelope.

4.7.2 We will continue to encourage the use of the quietest aircraft at night based through the use of regularly reviewed QC limits that are in place for the separate periods of the night. A reduction in QC will either see a reduction in movements of the same aircraft types or the adoption of quieter variants to enable the same number of movements to be permitted. This is well illustrated by the current night quota period operations which have had the same movement limits since the early 1990s but have allowed regularly reducing QC limits. This has resulted in no growth in movements in this time period but significant reductions in the average QC of aircraft operating and consequently the noise contours show similar reductions.

4.7.3 For many years we have also operated a differential charging regime which offers reduced charges for quieter aircraft and higher ones for noisier ones. We regularly review and update the charging structure and will continue to do so. We will also continue to encourage all stakeholders, including the airlines, to bring forward ideas on further incentives to help accelerate the development and introduction of quieter aircraft technology at Heathrow.

4.7.4 Feedback to the Airspace and Future Operations Consultation (January 2019) suggested strong support for fines to be levied on airlines breaking noise rules or flying in the restricted period.

4.7.5 The Civil Aviation Act 2006 permits airport operators to levy financial penalties on aircraft operators who breach noise abatement requirements imposed by the Secretary of State. A sum equal to the penalties received must then be paid for the benefit of people who live in the vicinity of the airport. At Heathrow, we already use

\(^{11}\) As explained in Section 4.2 and Document 5 of the Updated SDR
this power to fine airlines. This money has been used for projects in the local community including environmental and noise mitigation projects for local schools and community groups. In 2009 we launched a new large grants scheme for schools, charities and other local groups to bid for funds of up to £50,000 for community and environmental projects. The Heathrow Community Fund has provided £316,000 (2013 to 2017) from noise fines and supported community projects ranging from tree planting to church roof restoration.

4.7.6 Our Noise Action Plan (2018-2023)\textsuperscript{12} commits that from 2019 onwards, we will publish the total and individual fines each year on our Noise website and annual report.

4.7.7 With expansion, we have assumed that these fines would apply at a lower noise level than today. This will be a matter for Government acting on the advice of ICCAN.

4.7.8 With a ban on scheduled night flights in place, our other focus needs to be on considering whether we can also limit the effect of the recovery period in the late evening and the period between 05:15 and 07:00 in the early morning. Our proposals for the use of a QC count in these periods are set out below in the relevant sections.

4.8 \textbf{Changes to Recovery Period}

4.8.1 The recovery and restricted period are the periods when the airport schedule is continuing to recover from any delays that have built up over the course of the day or any aircraft technical issues that could have occurred.

4.8.2 As explained in Section 4.3.9, the recovery period is very important to the airlines and passengers, as it avoids having to divert arriving passengers to another airport or delay departing flights, potentially requiring overnight accommodation to be found for passengers or in some circumstances passengers having to wait for several days for another flight to some long-haul destinations. However, clearly there is a need to balance this with the need to control noise during this period.

4.8.3 There are four main controls that we intend to use to manage aircraft noise during the recovery period. We have evaluated a number of scenarios which consider how these controls can be varied and adjusted to achieve the best outcomes. This was done as part of Phase 2 of the evaluation described above.

4.8.4 Within the recovery period, we considered the following controls:

\textsuperscript{12} https://www.heathrow.com/noise/making-heathrow-quieter/noise-action-plan
**Restricting the whole recovery period**

4.8.5 We believe that continuing with an unrestricted recovery period is incompatible with the concept of a ban on scheduled night flights.

4.8.6 With expansion, we propose that there should be no unrestricted recovery period, and there should only be a recovery period to which restrictions apply.

4.8.7 All references to 'recovery period' below therefore apply to the new recovery period and the restrictions we propose that should apply to it.

**Duration of the recovery period**

4.8.8 We have analysed data on current use of the recovery period and the restricted recovery period and found that generally, most late running arrivals occur within 30 minutes of the start of the night period (i.e. by 23:30) and most departures within 60 minutes (i.e. by 00:00). Other than in very exceptional circumstances all late running flights occur within 120 minutes. We then evaluated a range of night restriction scenarios which included variations in restricted recovery periods from zero to 120 minutes. The results of this evaluation can be found in the Document 5 of the Updated SDR, which support the use of recovery periods of 30 minutes for arrivals and 60 minutes for departures.

4.8.9 With expansion we propose to remove the current recovery period and replace it with restricted recovery period ending at the following times:

- **Departs** - 00:00 (1hr of recovery time beyond schedule ban).
- **Arrivals** - 23:30 (30mins of recovery time beyond schedule ban).

4.8.10 We recognise that these timings are challenging for airlines and operationally but equally we know that providing greater certainty around when aircraft will and won’t be overhead and extending periods of predictable respite are of high importance for our local communities. Based on historic analysis, around 80% of flights after 23:00 occur within 30 minutes and over 90% within an hour. We have worked closely with airlines and NATS to reduce the number of operations after 23:30 in particular and that work will continue.

**QC limits within the recovery period**

4.8.11 We are committed to implementing a specific QC limit for the recovery period that ensures that noise performance will be better than today, but also we will continue to tighten the limit as aircraft become quieter over time with improving technology, to ensure that these benefits are shared with both the communities and the airlines that invest in the improving technology. This will be achieved through the use of a noise envelope, which is explained in more detail in Chapter 7. This will apply in addition to the overall QC limit that will apply for the whole night quota period.
**Movement limits within the recovery period**

4.8.12 Similar to QC limits, we are committed to setting a specific movement limit for operations within the recovery period, that ensures we are better than today in terms of noise, and that is regularly reviewed as part of the noise envelope. Again this will apply in addition to the overall movement limit that will apply for the whole night quota period.

**Aircraft type restrictions**

4.8.13 We intend to work with stakeholders to establish a transparent set of criteria by which aircraft would be permitted to operate. This might include restrictions on specific aircraft types based on their QC value, e.g. a rule that QC4 aircraft cannot operate during the night period.

**Need to use the Recovery Period**

4.8.14 We will also look to establish a transparent set of criteria in which aircraft would be permitted to operate in the recovery period by reference to the circumstances for that flight's need to operate after 23:00 such as the proximity to the recovery period of the scheduled time or a delay caused by a technical problem with the aircraft.

**4.9 Flights in Exceptional Circumstances**

4.9.1 Today, Heathrow may operate aircraft between 23:30 and 06:00, **either** because they have been dispensed (see below) **or** in other very exceptional circumstances at Heathrow's discretion using part of the night quota allocation.

4.9.2 Today, Heathrow has voluntarily established that it will not use its discretion to allow aircraft to operate using the night quota allocation between 01:00 and 04:30 except in very exceptional circumstances (e.g. major widespread disruption or emergencies). This voluntary restriction equates to 3 hours 30 minutes.

**Dispensations**

4.9.3 The Government have established guidelines in relation to the dispensing of flights from the limits under exceptional circumstances such as emergencies or widespread and prolonged disruption, e.g. low visibility operations. At the Airspace and Future Operations consultation (January 2019) we also indicated that we expected that the dispensation guidelines set by Government for Heathrow, Gatwick and Stansted would continue to apply. Given the importance of these

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13 This is described in detail in Annex B of Night Flying Restrictions At Heathrow, Gatwick And Stansted, July 2014.
guidelines this remains our position and we do not intend to propose any changes as this remains a matter for the Secretary of State to determine.

4.9.4 By their very nature the number of dispensed flights cannot be subject to limits and when they do occur they often come in batches since many relate to instances of prolonged and widespread disruption.

4.9.5 To help illustrate this fluctuation in the number of dispensations Figure 4.8 below provides a summary of the dispensed flights between 2013 and 2018 for both the summer and winter seasons.

**Figure 4.8: Summary of the dispensed flights between 2013 and 2018 for both the summer and winter seasons.**

<table>
<thead>
<tr>
<th>Season</th>
<th>Widespread and Prolonged ATC Delays</th>
<th>DfT Issued</th>
<th>Emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2013</td>
<td>143</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Summer 2014</td>
<td>221</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>Summer 2015</td>
<td>158</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Summer 2016</td>
<td>304</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Summer 2017</td>
<td>230</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Summer 2018</td>
<td>405</td>
<td>56</td>
<td>28</td>
</tr>
<tr>
<td>Winter 2013</td>
<td>89</td>
<td>11</td>
<td>71</td>
</tr>
<tr>
<td>Winter 2014</td>
<td>25</td>
<td>2</td>
<td>81</td>
</tr>
<tr>
<td>Winter 2015</td>
<td>94</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Winter 2016</td>
<td>157</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Winter 2017</td>
<td>177</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td>Winter 2018</td>
<td>120</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

**Our Proposal**

4.9.6 With an expanded Heathrow, we propose the following change: the rules in the Government's dispensation regime will continue to apply but only aircraft meeting those rules will be permitted to arrive or depart during the ban period and after the end of the recovery period. We will no longer have any discretion to allow aircraft not meeting the dispensation rules to arrive or depart during the ban period other than in the recovery period. There will be no other exceptions.

4.9.7 This means that we have extended to at least **5 hours 15 minutes** the period in which aircraft will only be allowed to operate if they have been dispensed under the Government's dispensation rules.
4.10 Early Morning Arrivals and the 06:00 to 07:00 periods

Early Morning Arrivals

4.10.1 During the “start up” period we propose to have one runway dedicated for early morning arrivals, for aircraft landing between 05:15 and 06:00 (runway time). We do not intend to allow departures to operate on the runway before 06:00 which responds to a concern expressed by some community stakeholders that full operations would begin at the ending of the scheduled ban period.

4.10.2 A separate movement and QC limit will be established for this period that reflects the existing use and established practice of periodically reviewing and reducing the QC limit to reflect and secure improvements in aircraft technology. This will be in addition to the overall movement and QC limits that apply across the night quota period.

4.10.3 As explained in Section 4.1, the early morning arrivals (landing on one runway between 05:15 and 06:00) are very valuable in terms of the connections and freight that the airport can service. As such, we are dedicated to managing noise during this period to enable us to continue to benefit from operating at these times.

4.10.4 Similar to the recovery period, we intend to use a package of measures to control noise during these times. This will include QC and movement limits based on today’s use and limitations of the specific aircraft permitted to be operate, all of which will be set through the noise envelope and continue to be reviewed and reduced where appropriate. Like today we do not intend to schedule departures to operate on the runway before 06:00.

The 06:00 to 07:00 period

4.10.5 All three runways will then commence operations from 06:00 allowing departures to start leaving the runway.

4.10.6 Like today, we do not propose a movement limit in the 06:00 to 07:00 period because this hour is important for delivering growth through expansion. Instead we will focus on incentivising quieter aircraft so during the 06:00 to 07:00 period we will establish a separate QC only limit that will be regularly reviewed and take account of new technology and enable growth in the number of movements. We expect this to be agreed through the Noise Envelope Design Process.

4.11 Overview - Our Preferred Proposals for Night Flights

4.11.1 Following the evaluations of 8 differing night flight ban durations over 13 differing timing configurations and consideration of the above components, we have arrived
at a preferred package of proposals for night flights, which is summarised below in Figure 4.9.

4.11.2 Figure 4.9 below sets out the preferred proposals compared to the existing operations for reference.

**Figure 4.9: Preferred Proposals for Future Night Flight Operations**

<table>
<thead>
<tr>
<th>Period</th>
<th>Current Arrangements</th>
<th>Proposed Future Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Night Period</td>
<td>Between 23:00 and 07:00 there are restrictions on the type of aircraft that can be operated or scheduled to operate</td>
<td>To retain this but <strong>update the restrictions</strong> on which type of aircraft can be operated or scheduled to operate to make them stricter, reflecting improvements in technology. As part of the Noise Envelope process, we may determine different degrees of restriction on the aircraft type for the 3 different periods affected (Recovery Period, Early Morning Arrivals and 06:00 to 07:00).</td>
</tr>
</tbody>
</table>

4.11.3 Figure 4.10 below sets out the detail of our preferred proposals for night flights.

**Figure 4.10: Preferred Proposals for Night Flights**
<table>
<thead>
<tr>
<th><strong>Overall Night Period</strong></th>
<th><strong>Between 23:00 and 07:00</strong> there are restrictions on the type of aircraft that can be operated or scheduled to operate.</th>
<th>To retain this but update the restrictions on which type of aircraft can be operated or scheduled to operate to make them stricter, reflecting improvements in technology. As part of the Noise Envelope process, we may determine different degrees of restriction on the aircraft type for the 3 different periods affected (Recovery Period, Early Morning Arrivals and 06:00 to 07:00).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Night Quota Period (NQP)</strong></td>
<td><strong>Between 23:30 and 06:00</strong> there are limits not only on the type of aircraft that can operate or be scheduled to operate but also the total number of movements permitted and sum of all the Quota Count (QC) points available.</td>
<td>To extend the overall NQP to reflect the full night period and establish both an overall night period QC point limit (i.e. the sum of the parts of the separate arrangements set out below) for the different operating periods within the night. Limits to be set by the Secretary of State as competent authority on the basis of proposals developed by Heathrow through the noise envelope process and having regard to the advice of ICCAN.</td>
</tr>
<tr>
<td><strong>Recovery Period</strong></td>
<td><strong>Between 23:00 and 23:30</strong> there are no limits on the number of aircraft or total QC points permitted in this time period. This allows aircraft scheduled close to 23:00 and those delayed over the course of the day to operate.</td>
<td>We are proposing to no longer have a separate recovery period and restricted recovery period. Instead we propose to just have one restricted recovery period as detailed below.</td>
</tr>
<tr>
<td><strong>Restricted Recovery Period</strong></td>
<td>From 23:30 until 01:00 any delayed (but not dispensed) flights will count against both the NQP movement and QC limits. To account for this around 5% of the allocation for the whole NQP is held in a “pool” to enable these operations. There is no specific allowance and so “trading” between this period and the “start up” period is permitted.</td>
<td>To move the start of this period to 23:00 and establish separate limits that restrict the number, total QC and time period within which these flights can occur. For arrivals the proposed time limit is 30 minutes (i.e. by 23:30) and for departures 60 minutes (i.e. by 00:00). Limits to be set by the Secretary of State as competent authority on the basis of proposals developed by Heathrow through the noise envelope process and having regard to the advice of ICCAN.</td>
</tr>
<tr>
<td><strong>Flights in exceptional circumstances / dispensation.</strong></td>
<td>Presently there is a Government dispensation regime taking certain flights outside the requirements of the quota regime. In addition to the Government dispensation, Heathrow has its own discretion to allow some flights during its voluntary ban on night flights.</td>
<td>We are proposing that the rules in the Government’s dispensation regime will continue to apply but only aircraft meeting those rules will be permitted to arrive or depart during the ban period outside the recovery period (00:00 to 05:15). We will no longer have any discretion to allow aircraft not meeting the dispensation rules to arrive or depart during the ban period other</td>
</tr>
</tbody>
</table>
### Future Runway Operations

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Description</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>between 01:00 and 04:30.</td>
<td>This equates to a period of 3 hours and 30 minutes.</td>
<td>than in the recovery period. This equates to a period of at least 5 hours 15 minutes.</td>
</tr>
<tr>
<td>Early morning “start up”</td>
<td>As part of the NQP flights during this period count towards both the movement and QC limits. These account for the majority of the flights in the NQP</td>
<td>To establish separate movement and QC limits that cannot be traded with other period limits and are based on historic use. Flights would not be permitted to land until 05:15 (except in exceptional circumstances). The QC limit would be reviewed regularly to reflect and encourage the use of improvements in technology. Limits to be set by the Secretary of State as competent authority on the basis of proposals developed by Heathrow through the noise envelope process and having regard to the advice of ICCAN.</td>
</tr>
<tr>
<td>operations (05:15-06:00)</td>
<td>operations (05:15-06:00)</td>
<td></td>
</tr>
<tr>
<td>Full Operations (06:00-07:00)</td>
<td>Between 06:00 and 07:00 there are no limits on the number of aircraft or total QC points permitted in this time period.</td>
<td>To establish a QC limit based on historic use for this period that will be regularly reviewed to reflect improvements and enable growth in the number of movements. Limit to be set by the Secretary of State as competent authority on the basis of proposals developed by Heathrow through the noise envelope process and having regard to the advice of ICCAN.</td>
</tr>
</tbody>
</table>

4.11.4 As the table shows, we have undertaken a thorough review of our current night time regime and, where practical identified opportunities to improve the night time environment for our communities.

4.11.5 We also believe that there are important opportunities in the way we swap or alternate the use of our runways to significantly extend night time relief to communities for significantly longer periods on a regular basis. This potential is explored in Chapter 6 of this document, which brings together the effect of our proposed night regime and our proposed pattern of runway alternation.

4.11.6 Before we do that, the next chapter considers the directional preference of runway operations – which was the third principal element of runway operations that we consulted on in our Airspace and Future Operations Consultation (January 2019).
5. **DIRECTIONAL PREFERENCE**

5.1 **Current Operations**

*How we operate our runways – wind and directional preference*

5.1.1 For safety reasons, arriving and departing aircraft typically fly into the wind. If the wind direction is from the west, one runway is used for aircraft departing towards the west and the other is used for aircraft arriving from the east. If the wind direction is from the east, then the reverse applies.

5.1.2 As a long term average, the wind requires westerly operations for approximately 50% of the time, and easterly operations for approximately 30% of the time. We currently operate a westerly preference, meaning that the remaining 20% of the time, where wind speeds are low enough to operate in either direction, we choose to operate in a westerly direction. As the figure below shows, this takes the average split that the airport operates in westerly mode to approximately 70% of the time.

*Figure 5.1: Summary of time spent in easterly and westerly operations*
5.2 **Consultation and Feedback**

5.2.1 In January we sought views on "whether, as part of our mitigation proposals, we should investigate airport operating procedures that could share aircraft more equitably between easterly and westerly operations."

5.2.2 We shortlisted four directional preference options to consider in more detail:

- Westerly Preference - up to 5 knots tailwind;
- Easterly Preference - up to 5 knots tailwind;
- No Preference (changes in direction are determined by wind direction); and
- Managed Preference (direction changes are determined by a set of rules designed to manage noise effects on communities). Using rotation at night to share relief more equitably is an example of a managed preference at night.

5.2.3 We proposed that we should move from the current westerly preference to a **managed preference**, so that we could adapt to circumstances and deliver the best noise outcome and we invited your views.

5.2.4 Feedback on the consultation showed widespread support for measures which help to deliver respite, with some stakeholders also stating a preference for a more equitable balance between easterly and westerly directions. However, there were concerns that wind direction would affect the ability to alternate runways and provide predictable periods of respite. This concern has been addressed in Chapter 3 of this report, which explains that our proposed operations will maintain respite regardless of a change in wind direction.

5.2.5 Consultation feedback also indicated that some clarification would be useful about the nature and operation of ‘managed preference’.

5.2.6 Many agreed that we should intervene when we can to change direction if there has been a long period of operations in one direction.

5.2.7 Generally, however, there was also concern at changing the current split, on the basis that less change equals less disruptions from current habits. Where new increased exposure would be expected, there was resistance and where less exposure would result, there was support.

5.2.8 There were also requests for clarity on whether the priority should be reducing the number of people overflown or increasing the period of respite for those already overflown.

5.2.9 The Airline community recognised that Heathrow may need to intervene to change the direction of flights in the interests of noise impacts, resilience, safety and flight planning aspects. However, they said that such interventions, where deemed
operationally necessary, should still give full consideration to maintaining a predictable and reasonably managed operation, and ensuring that this does not introduce complexities and inefficiencies. They also said that any interventions should be sufficiently planned, particularly with regards to their effects on flight planning.

5.2.10 The Airline community also emphasised the importance of ensuring that safety conditions are met whichever option for directional preference is chosen. They also recognised the importance of local community feedback on directional preference within the overall objective of minimising noise impacts.

**Overlap with London City Airport**

5.2.11 In our Airspace and Future Operations Consultation (January 2019) we described an issue that has been raised by certain communities in the East of London where London City Airport and Heathrow flight paths overlap in certain combinations of runway use at each airport.

5.2.12 The issue occurs when there is a light Easterly wind: London City will select Easterly operations (the aircraft come in via the Thames Estuary, route to the south of the airfield and then turn right to align with their easterly runway, usually in the vicinity of Vauxhall) and, due to the Westerly preference, Heathrow will select Westerly operations (landing over London towards the west).

5.2.13 Our initial thoughts were that this could, perhaps, be managed by using a Managed Preference, in which we could decide to adopt easterly operations instead of always applying a westerly preference. Further analysis and development work has shown, however, that Managed Preference is unlikely to be an effective tool to resolve this issue. London City have to take into account a very steep approach angle and a relatively short runway and, therefore, for safety issues they do not operate a Directional Preference – instead they land into the wind whenever possible. This means they change runways far more frequently than Heathrow and they can give little notice to Heathrow of the time of change. In these circumstances, Heathrow would have little opportunity to coordinate the change of runway direction required to provide the respite to the affected communities. It is also extremely difficult to provide assurance, in certain conditions, that the change (and the associated temporary loss of capacity at Heathrow whilst the airspace is reconfigured) would have any sustained benefit, due to the frequent changes made by London City (to ensure the safe operation of their runway).

5.2.14 Heathrow has therefore recommended that the Airspace design teams for both airports work closely together to solve, where practicable, this issue through route and airspace design.
We have sought to take full account of all the issues raised as we have considered our preferred proposals.

**5.3 Our Preferred Proposal for Directional Preference**

5.3.1 Following reviews of the consultation feedback from the Airport Expansion Consultation One (January 2018) and the Airspace and Future Operations Consultation (January 2019), we continue to believe that moving to a managed preference is most likely to support achieving the desired noise outcome and operational efficiencies.

5.3.2 To clarify, the ability to exercise a managed preference relates only to the roughly 20% of the time where wind speeds are typically below 5 knots, which allows for aircraft to use the runways in either direction.

5.3.3 During this time, we believe that a managed preference may allow us to use the direction of operations as a tool, as part of the wider package of noise management measures, to achieve our noise objective. In principle, there must be benefit in being able to interrupt long periods where the current automatic westerly preference prevents full respite being delivered to some communities. However, it will be necessary to develop some clear rules or guidelines around how a managed preference might operate.

5.3.4 Hence, between now and DCO submission we will explore the use of managed preference to reduce the effects of aircraft noise for our communities through engagement with our key stakeholders and communities. Our proposals will be presented at DCO submission.
6. **OUR OVERALL PROPOSAL FOR RUNWAY OPERATIONS**

6.1 **Developing an Operational Framework**

6.1.1 Based on our work through the evaluation process described above, we have identified the preferred components of a night restrictions and runway alternation scheme that we feel should be combined into an operational framework to achieve a balanced and cost effective approach to managing noise from an expanded Heathrow.

6.1.2 As part of our evaluation we assembled components into four operational framework options. The four options combine a runway alternation pattern with elements from the night flight management options.

6.1.3 When components are combined in different ways their respective benefits and dis-benefits, and the benefits of them as an overall package, can be increased or decreased.

6.1.4 Information on the four Options (including the components they included) and the benefits and dis-benefits of each) is set out in *Document 5 of the Updated SDR*.

6.1.5 The following sections describe our preferred option (Option 1), and identify why we believe this is the best option for an expanded Heathrow.

6.2 **Our Preferred Operational Framework**

6.2.1 In designing our preferred Operational Framework we have sought to combine the different components in a way that prioritises respite for communities closest to the airport in the evening, night and early morning period and that best minimises noise impacts.

6.2.2 From a business, planning and operational perspective achieving the wider Airports NPS requirements as to the provision of increased airport capacity that Expansion must deliver, maintaining a recovery period and facilitating the early morning arrival flights were considered highly important. This was supported by the economic analysis of the cost effectiveness of the various night flight scenarios. Equally, the provision of more predictable respite and noise reduction overall were key requirements from the Community and Sustainability evaluators’ perspectives. Further detail on all this is set out in *Document 5 of the Updated SDR*.

6.2.3 Our preferred Option 1 which we believe delivers the best combination of components is set out in figure 6.1 below:
### Figure 6.1: Summary table of our preferred operational proposals

<table>
<thead>
<tr>
<th>Component</th>
<th>Our Preferred Operational Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ban on Scheduled Flights Duration</td>
<td>6 hours 30 minutes</td>
</tr>
<tr>
<td>Hours of Ban</td>
<td>23:00 to 05:30</td>
</tr>
<tr>
<td>Runway Alternation Mode changes in 24 hour Period</td>
<td>2 (one at 14:00 or 15:00, and one at 00:00)</td>
</tr>
<tr>
<td>Runway time of 1\textsuperscript{st} Early Morning Arrival</td>
<td>05:15</td>
</tr>
<tr>
<td>Runways in use Pre 06:00</td>
<td>1</td>
</tr>
<tr>
<td>Communities at runway end overflown before 06:00 (out of 6 communities)</td>
<td>1</td>
</tr>
<tr>
<td>Recovery Period</td>
<td>23:00 to 23:30 (arrivals)</td>
</tr>
<tr>
<td></td>
<td>23:00 to 00:00 (departures)</td>
</tr>
<tr>
<td>Runways in use 23:00 to 23:30</td>
<td>2 (1 departure and 1 arrival)</td>
</tr>
<tr>
<td>Runways in use post 23:30</td>
<td>1 (departures only)</td>
</tr>
<tr>
<td>Communities at runway end overflown after 23:30 (out of 6 communities)</td>
<td>1</td>
</tr>
<tr>
<td>No Operations Period (except in very exceptional circumstances determined by Government Guidance on dispensations)</td>
<td>5 hours 15 minutes</td>
</tr>
<tr>
<td>Recovery Period (23:00 to 00:00) Controls</td>
<td>Restrictions on aircraft types that can be used to prevent noisiest aircraft (e.g. no QC4 aircraft)</td>
</tr>
<tr>
<td></td>
<td>QC Total Point Limit (reducing over time as technology permits)</td>
</tr>
<tr>
<td></td>
<td>Limit on number of aircraft movements (summer / winter limits).</td>
</tr>
<tr>
<td></td>
<td>All to be set and reviewed through the Noise Envelope Process to deliver better noise outcomes than today (2013)</td>
</tr>
<tr>
<td>Early Morning Period (1\textsuperscript{st} arrival to 06:00) Controls</td>
<td>Restrictions on aircraft types that can be used to prevent noisiest aircraft (e.g. no QC4 aircraft)</td>
</tr>
<tr>
<td></td>
<td>QC Total Point Limit (reducing over time as technology permits)</td>
</tr>
<tr>
<td></td>
<td>Limit on number of aircraft movements (summer / winter limits).</td>
</tr>
<tr>
<td>06:00 to 07:00 Period controls</td>
<td>Restrictions on aircraft types that can be used to prevent noisiest aircraft (e.g. no QC4 aircraft)</td>
</tr>
<tr>
<td>Rules on Dispensations</td>
<td>QC Total Point Limit (reducing over time as technology permits)</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Restrictions during Low Visibility (low viz) Conditions</td>
<td>The existing safety based rules regarding flights during low viz conditions would apply – i.e. aircraft scheduled to arrive after 06:00 but which arrive earlier, before 06:00, will in low viz conditions, be permitted to land before 06:00 without being allocated to the movement limits of QC Total Point Limit applicable to the Early Morning Period. The same principle would apply to flights scheduled to arrive after 07:00 but arriving earlier, between 06:00 and 07:00.</td>
</tr>
</tbody>
</table>

### 6.3 Key benefits of our Preferred Operational Framework

6.3.1 We strongly believe that the overall package we are proposing is right because it will:

- give every community at least 7 hours respite between 22:00 and 07:00;
- vary effects between communities on different days to ensure that any early morning, evening and night impacts and respite are shared:
  - the 7 hour period of respite moves within the 22:00 and 07:00 window;
  - the number of communities experiencing early morning operations (pre-06:00) on any particular day is minimised;
  - a community due to experience early morning operations pre 06:00 one day will not experience any operations after 14:00 / 15:00 the previous day; and
  - in normal operations\(^\text{14}\), a community experiencing any night operations (e.g. delayed aircraft) will not experience any operations the following day before 14:00 / 15:00;
- allow us to deliver the required numbers of additional flights in the Airports NPS;
- preserve opportunities for onward connections to and from long-haul flights; and

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\(^\text{14}\) In exceptional circumstances, communities may be overflown by dispensed flights. This is explained in Section 4.9.
• avoid a sudden surge of activity when operations start in the morning with the resultant surface access impacts on the local community.

6.3.2 There will be a hard stop on departures at 00:00 and arrivals at 23:30 meaning that runways will not be in use (other than in exceptional circumstances) between 00:00 and 05:15 i.e. 5hrs 15min, a 1 ¾ hour increase on today’s "no operations" period.

6.3.3 We set out in Appendix D a graphical representation that demonstrates what our preferred package of measures could mean for different communities closest to the airport. Our consultation documents entitled Heathrow Expansion and your area also set out for particular communities close to the airport what the overall package could mean for them.

6.4 Other Operational Framework options considered

2 Runways, Later Start (Scheduled ban ends at 05:45)

6.4.1 As we explained in the Airspace and Future Runway Operations Consultation (January 2019), we know that in order to land all of the current early morning arrivals (those flights scheduled to land before 06:00), we either need to open 1 runway at 05:15 (to land those flights scheduled to arrive at 05:30 onwards) or open 2 runways from 05:30 (to land those flights scheduled to arrive at 0545 onwards). At the Airspace and Future Runway Operations Consultation (January 2019), we asked consultees to feedback on which of these two options they would prefer.

6.4.2 Of those who responded to the consultation, 45% did not respond to the question, 23% indicated that they preferred Heathrow to use one runway to be used for early morning arrivals from 05:15, 18% indicated that they preferred Heathrow to use two runways for early morning arrivals from 05:30am and 14% indicated that they did not know.

6.4.3 We wanted to improve our understanding of how using two runways opening later would operate when combined with our proposals for an alternation pattern. To do this, we developed an alternative ‘Option 2’ in addition to Option 1. Option 2 had a scheduled ban which ended at 05:45, but opened two runways from 05:30 to land the early morning arrivals we need to land pre-06:00.

6.4.4 Option 2 would extend the scheduled ban period by 15 minutes, but would expose more communities to early morning arrivals before 06:00, more often, because more communities would be overflown before 06:00 using two runways.
6.4.5 Scheduled bans ending at 05:45 instead of 05:30 were rated poorly in our evaluation when considering both effects on airlines and the overall cost effectiveness of options.

6.4.6 For airlines, this is because airlines place a lot of value on early morning arrivals from both a revenue generation perspective, but also from a connectivity perspective, as it allows passengers to connect onto the first wave of departures from these flights. From a connectivity perspective, the later the scheduled start time, the more the connectivity value of the first arriving flights is undermined, which would therefore have a direct impact on Heathrow and the first wave departures (including highly valued domestic connections) which rely on passengers transferring from the first early morning arrivals to make them viable. We are doing more work to understand the importance of these early morning arrivals to airlines and the wider economy. This will include consideration of the economic impacts of retiming flights. We expect this to demonstrate that the earliest arrivals have high economic value.

6.4.7 In response to the consultation, the airline community also highlighted that some routes are extremely sensitive to the early morning time slot and operating restrictions (such as a ban) to the extent that moving schedule times is not possible. The suggestion was that this would affect flights from Asia and other regions of expected economic growth. It was highlighted that an operating restriction that prevented certain early morning arrivals would put Heathrow at a competitive disadvantage which would be magnified by the UK’s hour time difference with mainland Western Europe.

6.4.8 We are also aware from engagement feedback and our evaluations that the early morning arrivals are important to freight and cargo businesses, who import time critical goods into the UK in the belly hold of these early morning arrivals. We are doing more work to quantify better the importance of this period to freight, as our initial cost effectiveness assessment has not yet valued this.

6.4.9 Even without accounting for the unique value of early morning flights or the impacts on freight, our cost effectiveness work to date has identified a correlation between a later start of operations in the morning and the negative economic impacts of the ban.

6.4.10 Later end to the ban, later start

In response to feedback from stakeholders, we also tested an option which had a much longer scheduled ban period. We called this Option 3A. In Option 3A, there was no recovery period and it required all the runways to be completely closed between 23:30 and 06:00.
6.4.11 Crucially, our work has shown that achieving the 740,000 ATMs a year required by the Airports NPS is not currently deliverable with a ban timed from 23:30 to 06:00. This is evidenced in Document 5 of the Updated SDR.

6.4.12 In addition, although this option reports better outcomes in noise terms (explained in more detail in Document 5 of the Updated SDR), it carries a disproportionately high economic impact in relation to the noise benefits realised, when compared with other options.

6.4.13 All the arguments in relation to the connectivity importance of early morning arrivals which argue in favour of Option 1 over Option 2 (as set out above) apply in an amplified way when evaluating Option 3. Having no scheduled arrivals before 06:00 was considered to be completely unworkable from an airline perspective as reported by our airline evaluation.
7. **NOISE MANAGEMENT AND THE BALANCED APPROACH**

7.1.1 At Heathrow we are determined to remain at the forefront of international efforts to address the challenge of aircraft noise, while continuing to safeguard the connectivity and economic benefits that the airport provides. Our noise management framework is based on the ICAO Balanced Approach and the requirements of the Airports NPS as well as complying with EU 598.

7.1.2 The operational measures described in this document have all been informed by these policy requirements and their clear objectives.

7.1.3 Appendix C provides further details of these policies and legislation, while Appendix 17 of the PEIR also provides further technical detail of the noise management measures we intend to employ. It is important to start, however, with the Balanced Approach.

7.2 **ICAO Balanced Approach and EU 598**

7.2.1 Heathrow Airport operates in the context of international, European and UK policy and regulatory frameworks.

7.2.2 In particular, the Government fully recognises the International Civil Aviation Organisation’s (ICAO) ‘balanced approach’ to aircraft noise management. The ICAO “Balanced Approach” recommends identifying the noise problem at an airport and analysing the various measures available to reduce noise through the exploration of a sequential approach to four principal elements, namely:

- 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 at certain times or at any time).

7.2.3 The European Regulation which enforces the balanced approach in the UK is called EU Regulation 598/2014 and it requires the Government to go through a process of assessment and evaluation before imposing any ‘operating restrictions’ (such as movement caps, quotas, or limits on operating hours). That evaluation is

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obliged to take account of a number of matters, including the cost effectiveness of any restrictions.

7.2.4 The principles of the balanced approach are a requirement of the Airports NPS. For example, the mitigation section of the Airports NPS states:

“5.54 Noise management at airports where a noise problem has been identified is subject to the concept of a ‘Balanced Approach’, referred to above. EU Regulation 598/2014, which adopts the Balanced Approach, also lays down a procedure for the adoption of noise-related operating restrictions, in particular a requirement for prior consultation.

5.55 The Government recognises that aircraft noise is a significant concern to communities affected and that, as a result of additional runway capacity, noise-related action will need to be taken. Such action should strike a fair balance between the negative impacts of noise and positive impacts of flights.”

7.3 **Noise Objective**

7.3.1 European and UK law requires the Government to ensure that ‘noise objectives’ are set for certain airports (such as Heathrow) where a noise problem has been identified.

7.3.2 In our Airspace and Future Operations Consultation material produced in January 2019 we set out a draft Noise Objective in the document “Developing Our Approach to Noise Management”\(^{16}\)

7.3.3 Our draft Proposal put forward for consultation in January 2019 was:

“To limit and, where possible, reduce the effects of noise on health and quality of life and deliver regular breaks from scheduled flights for our communities during the day and night. We need to do this whilst making sure the measures we put in place are proportionate and cost effective.”

7.3.4 In the previous consultation we explained how we consider this wording captures our commitment to limiting, and where we can, reducing the effects of noise (against a 2013 baseline) and delivering meaningful respite for all affected communities. The final sentence was intended to make clear our obligation to observe policy requirements relating to the balanced approach.

7.3.5 Feedback demonstrated some concerns over the use of “where possible” and “cost effective”.

7.3.6 Concerns about the inclusion of “where possible” in the noise objective wording are noted. We have taken this wording from the Airports NPS which requires that “noise mitigation measures should ensure the impact of aircraft noise is limited and, where possible, reduced compared to the 2013 baseline assessed by the Airports Commission.”

7.3.7 The Government’s noise objective also includes this phrase. The current overarching policy, originally set out in the 2013 Aviation Policy Framework, is “to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise as part of a policy of sharing benefits of noise reduction with industry in support of sustainable development.”

7.3.8 The government’s proposed aviation strategy (Aviation 2050) proposes the following objective: “to limit, and where possible, reduce total adverse effects on health and quality of life from aviation noise”.

7.3.9 It is not always possible to reduce noise. For example, introducing new flight paths may reduce localised noise for some, but will increase localised noise for others. The areas where it increases must be limited, and noise must be reduced where possible. Under the requirements for expansion we must reduce our noise effects overall, but on a local level we must limit our noise effects and reduce them where we can.

7.3.10 On the basis that this wording is aligned with current and proposed government objectives on aviation noise we do not propose to change this in response to this feedback.

7.3.11 We understand that reference to measures being “proportionate and cost effective” is perceived by some to undermine the intent of the objective.

7.3.12 In including this in our objective we were making reference to the requirements of the ICAO Balanced Approach and EU 598, which we explained earlier at paragraph 4.2.15.

7.3.13 Having considered the feedback from the Airspace and Future Operations Consultation (January 2019) we have made an amendment to our proposed Noise Objective.

7.3.14 We propose that the noise objective for expansion should be:

“To limit and, where possible, reduce the effects of noise on health and quality of life and deliver regular breaks from scheduled flights for our communities during the day and night. We need to do this whilst making sure the measures we put in place are in line with the ICAO Balanced Approach.”

7.3.15 Essentially, the Noise Objective is unchanged but the specific purpose of the final sentence is clarified.
Those who supported the Noise Objective supported the principles and aims of limiting and reducing noise for communities.

Some consultees felt that the Noise Objective should go further and many people felt that it should contain limits or specific targets for noise reduction.

However, this is the purpose of more detailed controls that need to be put in place once the Noise Objective has been set. The Noise Objective provides strategic direction which is then used to inform a range of detailed measures.

The operational proposals set out in this document have been closely informed by the principles of our Noise Objective – and further operational measures which will help to meet the objective through the design of the airfield and its operation or through mitigation are set out later in this chapter. One important element that flows from our proposed Noise Objective, however, is a Noise Envelope, and our plans in this respect are explained below.

### 7.4 Noise Envelope

A noise envelope sets parameters for the operation of the airport by establishing the boundaries, rules or limits within which it must operate. The Airports NPS requires Heathrow to put forward plans for a noise envelope in consultation with local communities and relevant stakeholders.

Noise envelopes can be made up of a range of controls and limits within which an airport can grow but must operate within. Our definition of a noise envelope is shown in Figure 7.1.
7.4.3 The CAA has provided guidance on noise envelopes in the Civil Aviation Publication (CAP) 1129 document. This suggests that a noise envelope should be tailored to local conditions and parameters and recommends that airports set up an envelope design team including technical and legal representatives from stakeholder groups.

**Consultation Feedback**

7.4.4 We set out below the feedback received from consultation on proposals for a noise envelope. Subsequent sections of this chapter then address the issues raised.

7.4.5 In our two previous consultations we have set out our thinking on what a noise envelope should be and asked for feedback on the aims and principles of the
envelope and the establishment of a Noise Envelope Design Group. The feedback is summarised below.

7.4.6 In general, there was some confusion about what a Noise Envelope was, particularly where people considered it to be a geographic area.

7.4.7 Some responses made reference to the Airports NPS, which recognises that the assumptions about aircraft noise will be based on indicative airspace for the DCO. Some respondents asked how we could determine a noise envelope without knowing where the flight paths will be.

7.4.8 There was support for a Noise Envelope Design Group to help develop the detail of the Noise Envelope and respondents felt that the membership of this group should be such that it was suitable to represent the views of local communities, local authorities and industry.

7.4.9 Where opinion was expressed on the aims and principles of a Noise Envelope there was broad support for the concept.

7.4.10 In relation to performance indicators and targets, respondents said that performance targets should be challenging and should reduce or tighten over time.

7.4.11 Airlines provided feedback on measures that they considered were true incentives to improve performance, as against those that provide penalties but no reward, such as a simple cap on the number of flights.

7.4.12 On mitigation measures respondents said that the package of mitigation should be considered in totality.

7.4.13 Communities emphasised the need for enforceability and increasing stringency, while industry emphasised the need for some incentive or reward for investment in the improved noise performance of aircraft.

**Noise Envelope Design Group (NEDG)**

7.4.14 Phase 1 of working with the NEDG was convened in March 2019 with representatives of: local residents; local authorities, Local Enterprise Partnerships and third parties through representation from the Heathrow Strategic Planning Group; Air Traffic Control; the London (Heathrow) Airline Consultative Committee; Heathrow Association for the Control of Aircraft Noise (HACAN) and Heathrow. The meetings were chaired by an independent Chair, and were facilitated by an independent third party with expertise in stakeholder engagement.

7.4.15 The initial four sessions held in March and April 2019 were used to discuss how to describe a Noise Envelope, the aims of the envelope and the principles of how it could be implemented. Further details are provided in Annex A of Chapter 17 of the PEIR.
It is proposed to reconvene the group after this consultation has concluded, and to expand the membership to include wider community and passenger interests and to invite business representatives, ensuring that all views are represented.

**The purpose of a Noise Envelope**

The definition proposed by the NEDG for the principle of Heathrow’s noise envelope is presented above in Figure 7.1.

This describes that the Noise Envelope will be a legally binding framework of limits and controls to manage noise, agreed through the DCO process and approved by the Secretary of State for Transport.

The Noise Envelope will provide certainty both now and in the future that the limits and controls it defines will not be exceeded.

It will contain measures to ensure that noise reduces over time, for example through commitments to a tightening of the limits or controls at set intervals. This progressive tightening of the envelope’s controls will drive innovation and best practice and is consistent with the principle set out in the Airports NPS that an envelope can be used to incentivise improved performance from aviation so that “the benefits of future technological improvements could be shared between the airport and its local communities, hence helping to achieve a balance between growth and noise reduction.” In this way, an airport ‘earns the right to grow’ by achieving continuous improvement in the effect of its operations.

This could mean, for instance, that as planes get quieter, more would be able to fly within the same noise envelope. If the benefit of that improved technology is shared, a balance would be struck between an increased number of flights being permitted within a reduced noise envelope, thereby benefitting both the airlines (and their passengers) but also the local communities who would experience a progressively quieter airport.

The opposite of course, is also true. If Heathrow and its airlines do not achieve noise reductions over time, fewer flights would be possible within the constraints of the Noise Envelope.

The details of the Heathrow Noise Envelope will be developed with input from the NEDG between this consultation and the submission of our DCO application. It would then be tested through the examination of our DCO application.

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17 Airports NPS paragraph 5.60.
Aims of the Noise Envelope

7.4.24 Whilst the details of the envelope are yet to be developed, we have proposed that the aims of the noise envelope should be the same as the aims of government policy on noise, specifically:

“…Within the context of Government policy on sustainable development:

• Avoid significant adverse impacts on health and quality of life from noise;
• Mitigate and minimise adverse impacts on health and quality of life from noise; and
• Where possible, contribute to improvements to health and quality of life”

7.4.25 We believe that these aims can be met, for example, by committing to not exceed certain noise contours which are set at noise levels which reflect these important policy aims and we will explore this approach with the NEDG.

7.4.26 In addition to these aims, the NEDG has proposed the following additional aims:

• Sharing of real benefits (with all stakeholders) – the NEDG was clear that this should not only relate to noise but to other benefits such as employment and economic improvements;

• Progressive improvement over time; and

• Deliver predictable and meaningful respite.

Principles of the Noise Envelope

7.4.27 Heathrow has proposed the following principles for the noise envelope. The envelope should:

• Balance the needs of the different stakeholder groups;
• Incentivise quieter technology and share the benefits;
• Provide certainty with clear parameters, metrics and measurable outcomes;
• Be subject to regular review; and
• Be compliant with national and international legal requirements.

7.4.28 In balancing the interests of stakeholders, by way of illustration, we created the diagram below which draws out (by relative size) the principal issues raised by stakeholders in response to our Airspace and Future Operations Consultation (January 2019).
A potential approach to the Noise Envelope

7.4.29 The envelope will need to define some form of limit to the noise effects of the airport’s operations.

7.4.30 NEDG gave initial high-level consideration to the implications of the types of noise envelope described in CAA guidance (CAP1129).

7.4.31 Although details of the approach have not yet been developed, and are therefore not a recommendation of Phase 1 of the NEDG, Heathrow’s preference is for an approach that is based, as a minimum, on the Aviation 2050 strategy green paper, of a quota count limit and / or a contour area cap.

7.4.32 A Quota Count (QC) limit is a system where each type of aircraft is given a number of points based on its noise profile. The airport is then given a QC limit as a whole. A QC limit would incentivise quieter aircraft by limiting the number of movements that could be achieved unless quieter aircraft are used.

7.4.33 A contour area cap could be used to limit the total noise footprint of the airport. The DCO application will be supported by an Environmental Statement which will include a noise assessment based on indicative flight paths. A noise contour area envelope could be an effective method for limiting the extent of the area that can
be impacted by different levels of noise, without being specific about the geography of the effects.

**Defining a geographical area**

7.4.34 As explained in Appendix A, and as required by the Airports NPS, it is for the Airspace Change Process (ACP), rather than the DCO application to define the flight paths that will be used for the expanded Heathrow. Consequently, the Airports NPS requires the DCO application to base its assessment of the likely significant effects of expansion on “indicative flight paths”. It follows that a Noise Envelope proposed for the DCO application cannot commit to limiting noise over a defined geographical area or a specific contour shape. An envelope such as that could only be settled after the DCO and ACP process are complete.

7.4.35 However, the DCO Noise Envelope is expected to commit to important limits, rules and specifications for the effects of operating the three runway airport.

7.4.36 It is these detailed commitments that will be developed through engagement with stakeholders and with advice from the NEDG, NERG and ICCAN so that they can form part of our submitted DCO application. In turn, following approval of the DCO application, the Noise Envelope would form an input into the Airspace Change Process, which could define it more tightly with the benefit of agreed flight paths.

**Enforcing the Noise Envelope**

7.4.37 We propose that the envelope will be enforced as part of our framework for the Environmentally Managed Growth of the airport, the terms of which will be examined and settled as part of the DCO application submitted to the Secretary of State for Transport.

7.4.38 In a separate consultation document *Environmentally Managed Growth*, we have set out proposals for a system of ensuring that the future growth of Heathrow’s operations is managed to ensure that it remains within the boundaries not only of the Noise Envelope but also of envelopes we propose to define for air quality, carbon and traffic – which collectively relate to the principal effects of the growth in airport operations.

7.4.39 The framework document explains the approach in more detail but essentially, once the Noise Envelope is settled through the DCO process, it would be enforced along with other binding commitments as follows:

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18 Airports NPS paragraph 5.52.
19 Heathrow’s Noise Expert Review Group
a series of envelopes or limits would be defined which are consistent with the environmental requirements of the Airports NPS;

Heathrow would publish annual monitoring of the effects of expansion – that monitoring would be independently scrutinised and validated; and

reported to an Independent Scrutiny Panel who would have the power to hold Heathrow to account and to enforce compliance with the limits and envelopes.

With such a framework in place, Heathrow would be directly incentivised to manage the airport’s growth from the outset to ensure that high standards of environmental performance were encouraged in order to allow the airport to grow within its environmental limits.

7.5 Other measures to limit the noise impacts of operations

7.5.1 The operational proposals explained so far in this document are not the only measures we intend to use for managing noise. There are a range of other operational procedures that have been developed to manage and control noise in-line with government policy and the Airports NPS noise requirements. These are briefly set out in this chapter, categorised according to the ‘balanced approach’ explained above. Further mitigation measures are listed in Chapter 17 of the PEIR, and Section 5 of the Updated SDR.

7.5.2 Following the Balanced Approach and in line with our draft Noise Objective, we have been developing a number of measures to limit the noise effects of the expanded airport operations. These are summarised below.

Figure 7.3: List of noise management measures

<table>
<thead>
<tr>
<th>Mitigation measure</th>
<th>Avoid</th>
<th>Reduce / Minimise / Mitigate</th>
<th>Quieter planes / noise at source</th>
<th>Quieter Procedures</th>
<th>Land use planning and mitigation</th>
<th>Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displaced Thresholds</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW Runway Separation &amp; Length</td>
<td>✔</td>
<td>✗</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 7.6 Reduction at source

#### Quieter aircraft

7.6.1 Heathrow is investigating and evaluating a range of options to incentivise the use of quieter aircraft.

7.6.2 In support of our goal to have the quietest aircraft practicable operating at Heathrow we have a long established system of charging more for the older noisier variants of aircraft than their newer quieter counterparts.

7.6.3 This is based on ICAO noise certification standards (known as ‘Chapters’) and the margin by which a specific aircraft exceeds that standard.
We annually review the differential landing charges and track the percentage of our fleet meeting or exceeding the most recent standard (Chapter 14) which was introduced in 2017. We were the first airport to introduce charges in relation to Chapter 14 compliance.

Based on our current landing charges, the highest charge is nearly 12 times higher than the lowest. (More information can be found on our landing charges in our [Conditions of Use document](https://www.heathrow.com/company/partners-and-suppliers/conditions-of-use).

In 2016 Chapter 3 aircraft represented 0.55% of air traffic movements. In 2017 this dropped to 0.4% and August 2017 was the first month in the history of the airport with no Chapter 3 aircraft movements. For 2018, the noise charging rates were revised and the cost of landing a Chapter 3 aircraft became nearly 12 times more expensive than the quietest Chapter 14 aircraft. We continue to work towards our stated target of zero Chapter 3 aircraft movements by 2020.

We also set longer term goals, to allow the airlines long enough timelines to manage fleet purchasing decisions. For example, our current [Noise Action Plan](https://www.heathrow.com/noise/making-heathrow-quieter/noise-action-plan) aims to voluntarily phase out Chapter 4 aircraft by 2045.

Another tool for managing the noise generated by aircraft is the Quota Count (QC) system, which allocates higher levels of points based on how noisy the aircraft are. Heathrow has an overall annual QC budget, and allocates the individual airlines annual budgets within this. We also have scheduling bans on aircraft above certain QC points during the night period. We intend to explore setting a QC budget based on the time of day, meaning that individual aircraft QC values would have to be lower to enable growth during more sensitive time periods in order to incentivise the use of quieter aircraft at these times.

This is already used during the night period where the QC budget is regularly reviewed and reduced as aircraft technology is improved. The following Figure 7.4 show how the average QC values of total flights per season (Winter and Summer) have fallen over the past 15 years.
As well as opportunities to influence the adoption of quieter aircraft (through quotas and incentives), the principle of reducing noise at source has been considered throughout the design of the new runway and the proposals for how it will operate.

**7.7 Reduction by design**

A primary example of our approach is the location of the runway itself. By locating the new runway to the west of the existing runways, Heathrow’s expansion plans limit the air noise impacts of operation by ensuring that aircraft can fly higher over the more densely populated parts of London before descending to land — or would be higher when departing the runway by the time they fly over those densely populated areas.
developed areas. The following diagram submitted by Heathrow to the Airports Commission in 2013 summarises the way in which noise and other environmental issues were taken into account in our expansion proposals. Our preferred masterplan has now evolved but the principle of locating the runway further north and west to limit noise impacts has remained.

*Figure 7.5: Taken from “Taking Britain Further”, 2013*

**Land-use planning and management**

7.7.2 Whilst we believe that the runway is optimally located to limit overall noise impacts, Heathrow cannot control the extent to which population changes may occur over time as a result of new development in the vicinity of the airport. We monitor planning applications and provide advice to the local planning authorities where development is proposed in areas that may be susceptible to aircraft noise.

7.7.3 With the opening of a new runway, close liaison will be necessary and we will encourage the local authorities to put policies in place to protect future as well as current communities.

7.7.4 For more information on our Noise Insulation Policy, please see Section 7.8 below.
**Designing for quieter operations**

7.7.5 Chapters 3 and 4 of this document explain how we have configured the proposed operational procedures to maximise the amount of respite provided to communities in the early morning, evening and night-time. In addition to this, there are a number of additional operational procedures that we propose to implement.

7.7.6 For example, we are encouraging the adoption of new navigation technologies that will enable steeper gradients to be used when descending to land.

7.7.7 We are working hard to implement the use of steeper approach gradients, meaning that aircraft on approach would follow a steeper descent than current procedures. This would mean aircraft are higher above receptors, reducing noise levels on the ground. An example of this is shown in Figure 7.6 below.

![Figure 7.6: Steeper approach angles to reduce noise (indicative at this stage)](image)

7.7.8 The benefit of this approach would be applied not just to the new runway but would also be felt by communities affected by the existing runways.

7.7.9 In addition, a number of other measures are proposed, all of which are designed to limit impacts in accordance with our draft Noise Objective:

- **Displaced thresholds** have been proposed to all runways so that aircraft land further along the runway. This keeps planes higher for longer and therefore reduces noise levels on the ground. These reductions in noise are likely to be most noticeable for people living under the final approach paths to our existing runways.

- **Continuous Descent Operations (CDO)**: we are working on securing CDO at Heathrow so that aircraft follow a continuous descent profile on approach to Heathrow. A continuous descent ensures that aircraft are kept as high as...
possible for as long as possible and generally requires less engine thrust to maintain than level flight, reducing noise levels on the ground. Without CDO some pilots will descend earlier than they need to. CDO means aircraft are higher above many receptors reducing noise levels on the ground.

- **Continuous Climb Operations (CCO):** we are also working on securing CCO, where aircraft would climb continuously following take-off from Heathrow, to a much higher altitude than today, with a minimum climb gradient of 5%. As above, CCO means aircraft are higher above many receptors reducing noise levels on the ground.

- **Brake to Vacate (BTV) procedures:** this allows crews to pre-select a runway exit during the approach phase. The aircraft then manages speed on the runway in the most efficient manner to make the selected exit. BTV results in less reverse thrust requirement and less re-application of power after overbraking reducing overall noise impact.

- **Optimisation of landing gear deployment:** this reduces aircraft noise at source (arrivals) and hence reduces noise at ground level.

### 7.8 Mitigation and compensation

#### 7.8.1
Heathrow's *Proposals for Mitigation and Compensation* document summarises the basis for the Noise Insulation Strategy and the delivery of our Noise Insulation Scheme.

#### 7.8.2
People affected by noise during operation of the airport no matter how carefully the design and operation of the runways is planned. The noise management framework has been developed to avoid, mitigate and minimise noise impacts from aircraft within the context of government policy on sustainable development. We recognise that there will be effects after using the Noise Objective to design and mitigation measures and so we have developed a noise insulation policy to mitigate and compensate those most affected.

#### 7.8.3
As part of our noise assessment for the DCO application we will provide estimates of future noise levels using noise models and the best available data. If any part of a property (including land such as the garden) falls within the area (noise contour) that is above the threshold for sound insulation, that property may be eligible for our Noise Insulation Scheme.

#### 7.8.4
These measures collectively complement the principal runway operation procedures proposed in this document to limit where practical the noise impacts arising from the operation of a three runway Heathrow. Their comprehensive nature demonstrates how noise issues have been at the forefront of our thinking as we have developed our plans to expand Heathrow.
8. **SUMMARY AND NEXT STEPS**

8.1.1 The policy requirements of the Airports NPS are mirrored by Heathrow’s own commitment to sustainable growth and this document has described through its successive chapters how Heathrow’s approach is being guided by a Noise Objective and informed by the output from two rounds of formal consultation and continued engagement with stakeholders.

8.1.2 In summary, this document proposes:

- respite through alternation, which has been co-ordinated with a scheduled night flight ban to optimise respite;
- managed directional preference;
- a noise envelope; and
- a range of other design and operational measures to limit noise impacts.

8.1.3 Collectively, this substantial package of measures demonstrates the strength of Heathrow’s commitment to sustainable growth.

8.1.4 These proposals are coupled with a world class package of noise insulation mitigation and compensation measures set out in the consultation document *Proposals for Mitigation and Compensation*.

8.1.5 In addition, Heathrow has proposed a framework for Environmentally Managed Growth which puts in place a regime in which we will be incentivised from the grant of DCO consent to optimise our environmental performance in order that we can be entitled to grow airport operations. These measures are set out in our consultation document *Environmentally Managed Growth* and they put in place a regime which draws on international best practice to ensure that the environmental impacts of airport operations are at the forefront of decision making throughout the phased expansion and operation of the airport. Independent enforcement powers would be given to ensure that Heathrow is held to account for the measures to which we will commit in our DCO application.

8.1.6 We would be very pleased to hear from you in relation to any matters set out in this document and a series of questions are set out in our *Airport Expansion Consultation Feedback Form*. 
APPENDIX A: AIRSPACE AND THE DCO

For a third runway to be consented, constructed and become operational, two primary consents are required:

- a Development Consent Order (DCO) is required under the Planning Act 2008 for the construction and operation of a new north west runway at Heathrow. The DCO application must be determined by the Secretary of State, primarily in accordance with the Airports National Policy Statement, June 2018 (the Airports NPS), having regard to other important and relevant considerations; and

- consent for an airspace change must be obtained from the Civil Aviation Authority (CAA), by following the Airspace Change Process (ACP). The Secretary of State can decide to call-in the ACP and to make a decision instead of the CAA. Proposals for airspace change are determined in accordance with CAA Guidance set out in CAP 1616 and government policy set out in the draft UK Airspace Policy, February 2017.

In principle, the DCO deals with the design and operation of the airport and the airspace change process is responsible for designing flight paths.

Figure A1 illustrates the different stages of each process and their relative timelines.

The Figure shows that the ACP is longer and more multi-staged than the DCO process and illustrates two important factors:

1. the two processes have started at a similar time, so that the DCO process can be informed by early work on airspace; and

2. the ACP will conclude after and can take account of matters settled in the DCO process.

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22 In the terms confirmed in the Government’s Consultation Response on UK Airspace Policy, October 2017
23 Full details are shown at page 18 of CAP 1616
Against this background, this appendix explains briefly the approach to be taken in the DCO application and explains how this can be aligned with and complementary to the ACP.
The assessment approach to be taken in the DCO application

While the two processes are separate, there are some links between the two. The DCO process requires an assessment of the “likely significant effects” of flight paths which come from the airspace change process. Because this is needed before the airspace change process has completed it will necessarily be based on an ‘indicative’ design, which is an estimate of what the future airspace may be, given the stage of design at the time of the DCO application. The DCO process will complete ahead of the airspace change and while the DCO will not determine the detail of the airspace design, it will set out some of the conditions that the airspace design must meet.

The Airports NPS is clear that “development consent should not be granted unless the Secretary of State is satisfied that the proposals meet the following aims for the effective management and control of noise, within the context of Government policy on sustainable development:

• avoid significant adverse impacts on health and quality of life from noise;
• mitigate and minimise adverse impacts on health and quality of life from noise; and
• where possible, contribute to improvements to health and quality of life.”

The Airports NPS provides guidance and policy on how the applicant’s assessment should be undertaken to address various matters but the first important issue to address is: what assumptions should be made as part of that assessment in relation to airspace?

The Airports NPS recognises that “precise flight designs can only be defined at a later stage after detailed airspace design has taken place” and requires that “the applicant’s assessment of aircraft noise should be undertaken in accordance with the developing indicative airspace design. This may involve the use of appropriate design parameters and scenarios based on indicative flight paths.”

It is, of course, quite likely that the ultimate flight paths may be different when the final airspace change is formally consented through the ACP. The ACP will itself involve further environmental assessment on the specific flight path options then proposed. However, the DCO application will have satisfied the Airports NPS requirements if its assessment demonstrates that the policy requirements quoted above can be met. The DCO application assessment will assess the likely effects of the expansion of Heathrow as a principle, in particular the increased number of flights. There is no requirement for the DCO to include an assessment of the certain, known effects of the flight paths. This assessment will be for the ACP and will be overseen by the CAA.

The scope of the DCO application

The way in which the new airport infrastructure is designed and operated, and any consequent changes to the existing airport operations will affect the nature and extent of the noise effects of Expansion on communities. It is necessary to consider, therefore, the
extent to which matters relating to airport operations or restrictions are matters for the DCO process or for the ACP.

In order to meet obligations under the Airports NPS, it is necessary for the DCO application to put forward proposals to “avoid, mitigate or minimise” the adverse effects of the increased operation of the airport.

The Government’s Airspace Policy confirms the role of the planning process is as follows:

“3.18 The planning process.....identifies and addresses problems by preventing unacceptable impacts from occurring, and by minimising other adverse effects through effective mitigation. This is therefore the best opportunity to consider whether operating restrictions are required to support development of new aviation capacity. Operating restrictions may include a cap on movements, night flight restrictions, or a noise envelope, which can provide certainty to communities about the maximum noise which will be experienced.”

“7.3 The Government believes that the most appropriate way for operating restrictions to be considered is to align decisions with the land use planning process when airport development takes place. The planning process requires a full consideration of the environmental impacts associated with any development, including consideration of the maximum level of noise that communities should be exposed to - and therefore when operating restrictions will be necessary. In practice it has historically been the case that most new or amended operating restrictions at airports have come about through the land use planning process.”

Therefore, operating restrictions must be considered and may be imposed where necessary through the DCO process to ensure that the DCO application complies with the Airports NPS, even if those restrictions could have the effect of influencing, but not dictating, any subsequent airspace design.

Again, this much is directly recognised in the Government’s Airspace Policy which provides:

“3.18 Effective planning sets the parameters for subsequent decisions by ensuring that the environmental impacts which could result from new or increased aviation capacity, or other airport development are properly accounted for at the outset.”

“4.27 The airspace change process will need to consider whether the planning consent included references to airspace matters. If it did, the assumption is that the airspace change process should not override the original planning consent.”

**Confidence in the ACP**

Those affected by increased operations at the airport can have confidence in the combined effect of the DCO and ACP regimes. In terms of consistency, it is helpful to note that:
• both policy regimes adopt the ICAO Balanced Approach at the heart of their policies for noise management;

• the 3 policy tests set out in the Airports NPS derive from the Government’s Noise Policy Statement for England and the same tests are also directly applied in the ACP;

Whilst the airspace design will finally be determined following the grant of DCO consent, the ACP itself is subject to rigorous requirements for consultation and environmental assessment. In particular:

• the objectives of recent changes to the ACP include ensuring the transparency of the process, particularly for affected communities and emphasising that the environmental impact of aviation must be mitigated as much as is practical and realistic;

• an ACP needs to follow the seven-stage process set out in CAA Guidance CAP 1616, which requires regular stakeholder engagement and consultation required throughout;

• at its heart is an Options Appraisal process including comprehensive environmental appraisal. The Government has issued detailed Guidance to inform that appraisal process in the form of the environmental objectives set out in CAP 1616 and the Air Navigation Guidance 2017;

• promoters of airspace change are required to apply that Guidance and the CAA is required to undertake its own assessment using the same Guidance; and,

• more significant airspace change proposals can be called in by the Secretary of State for determination.

Some different considerations do, of course apply to the ACP given its specific purpose. Under the Transport Act 2000, the ACP has a legal obligation to consider certain factors including safety and the needs of the users of airspace, as well as the environment. CAP 1616 also makes clear that the process must apply altitude-based priorities. Above 7,000 feet the primary design objectives relate to minimising aircraft emissions. However, below 4,000 feet the priority in airspace design is to limit and, where possible, reduce the total adverse effects on people and between 4,000 and 7,000 feet the priority is to continue to limit the impacts of aviation noise unless this would disproportionately increase carbon emissions.

The two regimes, therefore, are closely aligned and there should be no concern through the DCO process that the precise extent of flight paths is left to another process. The rigour of that process ensures that all relevant matters will be comprehensively considered within a complementary environmental policy framework and ultimately adjudicated by the
same decision maker, in the likely event that the ACP is “called-in” by the Secretary of State.

**Next steps**

The diagram set out at the beginning of this Appendix shows how the two processes operate together. Heathrow has consulted jointly so far in relation to its DCO proposals and airspace change issues. It is now time for the DCO process to take the lead, however, informed by the continuing work on airspace change and this consultation sets out Heathrow’s preferred proposals for the operation of the airport within the DCO. Work will continue on airspace design and engagement will continue but further formal consultation will not be undertaken until after the grant of DCO consent. At that time, flight path options can be developed, informed by the framework established in the DCO and those options can then be subject to further consultation, assessment and examination.
APPENDIX B: FORECAST GROWTH

The principal purpose and effect of building the third runway, of course, is to allow an increase in aircraft movements. The Airports National Policy Statement was designated by the Government in June 2018 against the background of strong forecast growth and the Airports NPS requires that Heathrow’s expansion should have “a runway length of at least 3,500m and enabling at least 260,000 additional air transport movements per annum”. A footnote to this requirement in the Airports NPS explains that the minimum length of the runway is specified to ensure that the new infrastructure can accommodate the largest commercial aircraft, as they operate many of the long-haul flights that support the UK’s position as a major aviation hub. Government policy, therefore, seeks to encourage growth and to optimise the benefits of the new runway.

The Airports NPS makes clear that the north-west runway at Heathrow was preferred by the Government compared to alternatives at Heathrow or Gatwick partly because the pent-up demand for Heathrow means that the economic benefits of expansion will be experienced more rapidly once the new capacity is operational and partly because Heathrow’s north-west runway offered greater capacity than the alternatives. Against this background of strong forecast growth and a clear policy encouragement to optimise airport capacity, it is necessary to settle on a forecast to be used to plan and assess Heathrow’s expansion.

In identifying a preferred forecast, it is necessary to take account of a wide range of factors. For example, the Government’s forecasts are unconstrained forecasts – in other words, they assume that a new airport could be delivered instantly, whereas it will be necessary to phase construction and this will have an impact on the rate of growth.

Heathrow has undertaken detailed forecasting taking account of a wide range of factors including long term economic forecasts, the configuration of the airline industry and the potential to achieve increased international connectivity through additional runway capacity. In addition, detailed account has been taken of the likely trends in aircraft development.

All of these factors are combined to produce what we call our Assessment Case forecast, the detailed make up of which is explained in our Preliminary Environmental Information Report (PEIR). Key assumptions used to develop the Assessment Case include the following:

- that increased use could be made of the 2 existing runways prior to the opening of the north-west runway;

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24 Airport’s National Policy Statement paragraphs 3.26 and 3.59
25 PEIR Chapter 6.
• that the north-west runway will open for operation in 2026;
• Heathrow’s terminal and apron capacity at runway opening will be c.105 mppa;
• additional terminal capacity will be delivered on a phased basis from 2028.

The principal characteristics of the forecast compared with the Department for Transport’s 2017 unconstrained forecast are as follows:

**Table B1: Heathrow’s Assessment Case forecast, compared with DfT’s 2017 Aviation forecasts.**

<table>
<thead>
<tr>
<th>Year</th>
<th>DfT 2017</th>
<th>Assessment Case</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ATMs</td>
<td>PAX pa</td>
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<td>2016</td>
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<td>76,000,000</td>
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<td>2022</td>
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</tr>
<tr>
<td>2050</td>
<td>756,000</td>
<td>142,000,000</td>
</tr>
</tbody>
</table>

The forecast show:

a. an increase of c.25,000 ATMs using the two existing runways following the grant of DCO consent in 2022 (from a theoretical maximum of 480,000 ATMs, before the grant of the DCO to 505,000 ATMs in 2025. This “early growth” would be introduced in phases following the grant of the DCO consent;

b. some inevitable lag behind the unconstrained DfT forecasts in 2030 to take account of the phased implementation of the masterplan;

c. rapid growth in ATMs and PAX as the new airport infrastructure comes on stream;

d. continued growth through the phased development of terminal and apron capacity through to 2040 where the assessment case forecasts align almost precisely with the DfT forecasts; and

e. continued incremental growth as the phased development is complete by 2050 – again aligned with DfT forecasts of demand.

As we explain in our Masterplan consultation document, our DCO proposals will present a long-term masterplan for growth in order to provide certainty and transparency to our
Heathrow Expansion
Airport Expansion Consultation

community about Heathrow’s long-term intentions. Following the initial expansion of the airport boundaries to construct the new runway, however, incremental additional growth is largely achieved through increasing intensification of the new expanded airfield.

The capacity of the facilities proposed at the expanded airport and our forecast for their use exceeds the minimum requirement of 740,000 ATMs set out in the Airports NPS by 16,000 air transport movements (or 2%).

Any forecasts, however, can only be a forecast. The speed of growth of the airport may be constrained through the regulatory process in which Heathrow applies on a 5-yearly basis to the CAA with our plans for expansion over that 5-year period, under the terms of the Civil Aviation Act 2012. Airport expenditure is closely regulated in the interests of airlines, passengers and freight owners and the Airports NPS requires that expansion must be cost-efficient and sustainable. In particular, the Airports NPS at paragraph 4.37 sets out that a “maximum yield” will be set by the CAA having conducted a process that scrutinises, among other things, the business plan submitted by Heathrow and developed through constructive engagement with airlines and other stakeholders. In order to ensure the continued cost effectiveness of operating from the airport, it will be for the CAA to regulate the pace of growth, although our Assessment Case forecast has attempted to anticipate the likely outcome of that process.

Similarly, it is possible that demand and growth could outstrip the Assessment Case forecast. We recognise in those circumstances that there could be concern that greater or faster growth could have additional environmental or community impacts. In order to address that concern, we propose to put in place a framework for Environmentally Managed Growth.

That framework identifies the environmental criteria within the Airports NPS and expresses them as limits which the growth of Heathrow cannot exceed – most obviously through the use of a defined Noise Envelope. In order to ensure that expansion always remains within the environmental limits set by the Airports NPS, the framework establishes a detailed process of monitoring, reporting and enforcement.

That framework commits Heathrow to operate within clear environmental limits and is directly consistent with the commitments which we gave to our community in our publication Taking Britain Further which was produced for the purposes of the Airports Commission and with our overarching sustainability objectives set out in our publication Heathrow 2.0. Heathrow recognises that expansion should not be a choice between growth and the environment. Properly undertaken, sustainable, responsible growth can observe environmental limits and those limits can be used to further incentivise Heathrow’s commitment to continued environmental improvement.

Our Assessment Case forecasts have informed the environmental assessments set out in our PEIR and they match directly the scale of supporting infrastructure explained in our Preferred Masterplan. Binding measures are proposed, however, to ensure that Heathrow
is bound by our environmental commitments and by the clear environmental criteria set in the Airports NPS.

For more detail of our environmental commitments, please see the consultation document *Environmentally Managed Growth.*
APPENDIX C: POLICY AND COMMITMENTS

Background

Heathrow Airport operates in the context of international, European and UK policy and regulatory frameworks.

In particular, the Government fully recognises the International Civil Aviation Organisation’s (ICAO) ‘balanced approach’ to aircraft 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 exploring a sequence 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 noise impacts); and
- operating restrictions (preventing certain noisier) types of aircraft from flying either at all or at certain times.

The ICAO encourages states not to apply operating restrictions as a first resort but only after consideration of the benefits to be gained from other elements of the balanced approach.

EU Regulation 598 operates to ensure that the ICAO balanced approach is adopted at airports within the European Union. EU Regulation 598 requires the competent authority – in this case the Secretary of State at the Department for Transport (DfT) – to go through a process of assessment and evaluation before imposing any “operating restrictions” (such as movement caps, quotas or limits on operating hours) at an airport for noise abatement reasons.

With the goal of addressing the noise problem in the most cost-effective manner, ICAO has developed policies on each of these elements, as well as on noise charges.

This approach has underpinned our current noise management framework which is available in our Noise Action Plan 2018-2023.

The principles of the balanced approach are a requirement of the Airports NPS. For example, the mitigation section of the Airports NPS states:

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27 Aviation Policy Framework Cm8584 paragraphs 3.7 md 3.8)
“5.54 Noise management at airports where a noise problem has been identified is subject to the concept of a ‘Balanced Approach’, referred to above. EU Regulation 598/2014, which adopts the Balanced Approach, also lays down a procedure for the adoption of noise-related operating restrictions, in particular a requirement for prior consultation.

5.55 The Government recognises that aircraft noise is a significant concern to communities affected and that, as a result of additional runway capacity, noise-related action will need to be taken. Such action should strike a fair balance between the negative impacts of noise and positive impacts of flights.”

EU598 sets out rules and procedures with regard to the introduction of noise-related operating restrictions at airports within a Balanced Approach and we are legally obliged to comply with these rules. In particular, the rules require that any restrictions are cost effective.

**Legislative requirements**

There are some areas where responsibility for noise management is outside Heathrow’s control. Under UK laws, Heathrow is a “designated airport”. This means that the Secretary of State for Transport (the SoS), is responsible for limiting and mitigating the effects of aircraft noise, exercising powers available under the Civil Aviation Act 2006 and associated regulations. For example, the Secretary of State is responsible for setting limits on the number of aircraft movements allowed at night.

The development and preparation of a Noise Action Plan every 5 years is required and is delegated by the UK Government to Heathrow Airport as the “competent authority”. The Secretary of State is required to approve the Noise Action Plan. Heathrow’s most recent Noise Action Plan covers the period 2019/2023 and was published in March 2019.

**Noise Certification Standards**

ICAO has set progressively tighter certification standards for noise emissions from civil aircraft. Aircraft operating in member states must conform to these standards, which are known as “Chapters”. Each Chapter sets tighter noise limits than the previous one.

The vast majority of civil aircraft now operating globally fall within Chapters 3 and 4. Aircraft manufactured from 2006 onwards must meet the requirements of Chapter 4. The newest noise standard (known as Chapter 14) became effective in December 2017. Heathrow has set a target in our Noise Action Plan for all aircraft movements at Heathrow to be Chapter 4 compliant by 2020.

**Noise, health and quality of life**

Exposure to noise from environmental sources such as aircraft noise, road traffic noise and railway noise can influence health and quality of life, and this is recognised in
Government policy such as the Noise Policy Statement for England published by DEFRA in 2010 and recognised through UK Aviation Noise policy.

**UK Aviation noise policy**

The Objective of the UK Aviation Noise policy is to “…limit and where possible, reduce the number of people in the UK significantly affected by aircraft noise as part of a policy of sharing benefits of noise reduction within industry in support of sustainable development.”

This policy has directly informed the environmental noise requirements of the Airports NPS. In particular, the Airports NPS sets a clear policy requirement for our DCO application, as follows:

“5.68 – Development consent should not be granted unless the Secretary of State is satisfied that the proposals will meet the following aims for the effective management and control of noise, within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life from noise;
- mitigate and minimise adverse impacts on health and quality of life from noise; and
- where possible contribute to improvements to health and quality of life.”

The three specified criteria align directly with the same wording which is used to express the three aims of Government noise policy in the Noise Policy Statement for England. The Airports NPS requires that due regard must be given to the Noise Policy Statement for England and the NPSE helps to interpret how the aims should be applied.\(^{29}\)

The NPSE sets out a Noise Policy Vision to promote good health and good quality of life through the effective management of noise “within the context of Government policy on sustainable development”. The meaning of this is explained at paragraph 2.18 of the NPSE as follows:

“There is a need to integrate consideration of the economic and social benefit of the activity or policy under examination with proper consideration of the adverse environmental effects, including the impact of noise on health and quality of life. This should avoid noise being treated in isolation in any particular situation, i.e. only focussing solely on the noise impact without taking into account other relevant factors.”

This guiding in principle of sustainable development is required to be taken into account when considering how to apply the aims of the NPSE\(^ {30} \) (and the Airports NPS).

\(^{29}\) AIRPORTS NPS paragraph 5.67
\(^{30}\) Noise Policy Statement paragraphs 1.8 and 2.23
The NPSE contains a helpful heading “What do the aims of the NPSE mean?” which is clearly useful in interpreting and applying the policies of the NPS. To apply the aims, the NPSE explains three important concepts as follows:

- **NOEL – No Observed Effect Level**
  
  This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise;

- **LOAEL – Lowest Observed Adverse Effect Level**
  
  This is the level above which adverse effects on health and quality of life can be detected;

- **SOAEL – Significant Observed Adverse Effect Level**

  This is the level above which significant adverse effect on health and quality of life occur\(^{31}\).

The first aim of the NPS/NPSE set out above, therefore, is to “avoid” noise levels exceeding SOAEL. To apply this in practice, it is necessary to understand what noise level may represent SOAEL in this case and what the policy means where it states that this level must be “avoided”.

It is clear from the NPSE that “avoid” does not mean refuse permission. National Planning Policy Guidance on Noise provides the definition of a further level of noise exposure above SOAEL known as UAEL or Unacceptable Adverse Effect Level. When this level is reached, the Guidance provides that the appropriate response is to “prevent”.

The PPG is helpful in explaining what is meant by “avoid” in relation to the aims of the NPSE/NPS, as follows:

“If the exposure is above this level (SOAEL) the planning process should be used to avoid this effect occurring, by the use of appropriate mitigation such as by altering the design and layout”.

“appropriate mitigation” is then defined to include mitigation by way of engineering to reduce the noise generated at source, mitigation achieved through layout, the use of planning conditions/obligations to restrict activities or “mitigating the impact on areas likely to be affected by noise including through noise insulation where the impact is on a building.”

In combination, therefore, the aims of the NPSE/NPS require Heathrow to mitigate and minimise the impacts of increased airport operations where practical and then to mitigate residual impacts through measures such as noise insulation. More details of Heathrow’s Noise Insulation proposals are set out in our consultation document *Proposals for Mitigation and Compensation*.

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\(^{31}\) NPSE paragraphs 2.20-2.21
In addition to these criteria, the Airports NPS also sets out some very specific provisions in relation to noise. In particular, the Airports NPS requires:

“The noise mitigation measures should ensure that the impact of aircraft noise is limited and, where possible, reduced compared to the 2013 baseline assessed by the Airports Commission.”

A footnote explains that the 2013 baseline assessed by the Airport’s Commission was assessed using the 54 decibel LAeq, 16h noise contour for the 16-hour period between 07:00-23:00.

In addition, the Airports NPS requires the applicant to put forward plans for a “noise envelope”. The design of the envelope should be defined in consultation with local communities and relevant stakeholders and take account of independent guidance. In designing the envelope, the Airports NPS requires:

“The benefits of future technological improvement should be shared between the applicant and its local communities, hence helping to achieve a balance between growth and noise reduction. Suitable review periods should be set in consultation with the parties mentioned above to ensure the noise envelopes framework remains relevant.”

Chapter 7 of this document explains in detail Heathrow’s proposals for a Noise Envelope. The effect of the requirements set out above, however, is that the operation of the airport should not only ensure that the overall noise impact of Heathrow is no greater than it was in 2013, but that it should improve progressively over time as aircraft technology improves. These issues are addressed in Chapter 7 of this document and also are the subject of proposals for how these requirements may be defined, which are set out in the consultation document Environmentally Managed Growth.

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32 Airports NPS paragraph 5.58
33 Airports NPS paragraph 5.60
APPENDIX D: HOW WE PROPOSE TO OPERATE OUR RUNWAYS IN FUTURE

We’ve worked hard to arrive at our preferred operating proposals for a three runway Heathrow. Your feedback to our previous consultations, specifically our Airspace and Future Operations Consultation (January 2019), has been very helpful in shaping this proposal. Our proposals also meet all legislative and policy requirements. Indeed, in some instances you will see we are exceeding them.

This section provides a graphical summary of what our preferred operating proposals mean for the communities close to the airport (A-F) as illustrated below.
Comparison of respite provided to local communities (future vs. current)

All numbers are percentages of time when a community would potentially experience respite over a 96 hour period (four days and nights).

Communities either side of the new runway currently experience respite 100% of the time (communities A and D). Community E also experience respite 100% of the time during existing operations.

Current respite is calculated based on a typical 96 hour period (4 days and nights). Today’s runway alternation pattern is less predictable than the proposed future runway operation so for simplicity we have presented a typical pattern of overflight today.

Where today’s respite value is shown as a range, this is due to factors such as aircraft operating out of the alternation pattern. The future runway alternation pattern will increase predictability by removing the need for aircraft to land out of alternation.

Key:
- Green: Percentage of respite during future operations
- Yellow: Percentage of respite during current easements
- Olive: Percentage of respite during current westerlies
Understanding the overflight and respite diagrams for local communities

The following diagrams show examples of today’s operation compared with the future operations proposal over a four day period. Once completed, the four day pattern then repeats.

Overflight of local communities today varies according to whether we are operating in an easterly or westerly direction. Therefore the diagrams show a typical four day period for both easterly and westerly operations. However, we have designed our future runway alternation pattern so that during the day – even when we change the direction that planes fly in – the respite periods for each community remain the same. This is why the diagrams show a combined four day pattern for future operations which will be applicable regardless of whether we operate on easterly or westerly operations. This will offer the predictable respite that we know our communities value.

The diagrams show a four day period of time beginning at midnight (00:00) on day 1 and shows the time period during which communities can expect to be overflown. Periods of overflight are shown in orange and periods of respite are shown in green. The yellow period indicates that you might be overflown by early morning arrivals or aircraft operating into the recovery period. The light green period indicates planned respite but with a chance of overflight from aircraft landing out of alternation.
Comparison of overflight and respite for current and proposed future operations:
Communities A – Brands Hill and Langley

**Future Operations (Westerly or Easterly)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 1</th>
</tr>
</thead>
<tbody>
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<td>04:00</td>
<td>06:00</td>
<td>08:00</td>
<td>10:00</td>
</tr>
</tbody>
</table>

**Current Easterly Operations**

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00</td>
<td>06:00</td>
<td>08:00</td>
<td>10:00</td>
<td>12:00</td>
<td>14:00</td>
</tr>
</tbody>
</table>

- Not under existing runway, but may see or hear aircraft

**Current Westerly Operations**

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00</td>
<td>06:00</td>
<td>08:00</td>
<td>10:00</td>
<td>12:00</td>
<td>14:00</td>
</tr>
</tbody>
</table>

- Not under existing runway, but may see or hear aircraft

**Key**
- Westerly operations
- Easterly operations
- Planned respite by aircraft operating out of alternation
- Planned respite (no overflight of aircraft)
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period

14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00.
Future Runway Operations Proposal

Key:
- WEST OR EAST
- Planned respite (no overflight of aircraft)
- Planned respite but chance of overflight by arrivals operating out of alternation
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period

Heathrow Expansion
Airport Expansion Consultation

Future proposed respite and overflight, with explanation:
Communities A – Brands Hill and Langley

Day 1
- 23:00 - 06:00
- Day 4 - Day 1
- Respite 7 hours

Day 2
- 06:00 - 14:00
- Day 1
- Arrivals or departures (depending on wind direction) 8 hours
- 14:00 - 05:15
- Day 1 - Day 2
- Respite
- Respite ends at 05:15
- If easterly operations for Early Morning Arrivals 15 hours 15 minutes
- 05:15 - 06:00
- Day 2
- Early morning arrivals from 5:15am to 6am if easterly operations 45 minutes

Day 3
- 06:00 - 23:00
- Day 2
- Arrivals or departures (depending on wind direction) 10:00pm (arrivals) 11:00pm (departures) 16 hours 30 minutes (A) or 17 hours (B)
- 23:00 - 06:00
- Day 2 - Day 3
- Respite 7 hours
- 06:00 - 22:50
- Day 3
- Arrivals or departures (depending on wind direction) 10:00pm (arrivals) 11:00pm (departures) 16 hours 30 minutes (A) or 17 hours (B)
- 22:50 - 00:00
- Day 3
- Departures recovery period on west runways (23:00 - 00:00, 1 hour)
- Arrivals recovery period on easterlies (22:50 - 23:30, 40 minutes)

Day 4
- 00:00 - 14:00
- Day 4
- Respite 14 hours
- 14:00 - 23:00
- Day 4
- Arrivals or departures (depending on wind direction) 22:50 (arrivals) 23:00 (departures) 8 hours 50 minutes (A) or 9 hours (B)

Day 1
- 23:00 - 06:00
- Day 4 - Day 1
- Respite 7 hours
## Future Runway Operations Proposal

**Future Operations (Westerly or Easterly)**

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00 - 14:00</td>
<td>Day 4 - Day 1</td>
<td>Respite</td>
<td>14 hours</td>
<td>06:00 - 22:50</td>
</tr>
<tr>
<td>01:00 - 05:15</td>
<td>Day 2 - Day 3</td>
<td>Arrivals or departures (depending on wind direction)</td>
<td>22:50 (arrivals)</td>
<td>00:00 - 14:00</td>
</tr>
<tr>
<td>06:00 - 14:00</td>
<td>Day 2 - Day 3</td>
<td>Respite</td>
<td>05:15 (depatures)</td>
<td>06:00 - 22:50</td>
</tr>
<tr>
<td>05:15 - 06:00</td>
<td>Day 3</td>
<td>Early morning arrivals from 5:15am to 6am if on easterly operations</td>
<td>45 minutes</td>
<td>05:15 - 06:00</td>
</tr>
<tr>
<td>22:50 - 00:00</td>
<td>Day 1</td>
<td>Departures recovery period on westaries (23:00 - 23:30, 40 minutes)</td>
<td></td>
<td>22:50 - 00:00</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key**
- W | Westerly operations
- E | Easterly operations
- EO | Easterly or westerly operations
- EO | Planned respite but chance of overflight by arrivals operating out of alternation
- EEO | Planned overflight by arrivals or departures

**Future Runway Operations**

- **D7 © Heathrow Airport Limited 2019**
- **Heathrow Expansion**
- **Airport Expansion Consultation**

**Future Runway Operations Proposal**

- **14:00 is shown to simplify the illustration.**
- We are asking a question about whether we should switch runways at 14:00 or 15:00.
## Heathrow Expansion

**Airport Expansion Consultation**

### Current respite and overflight, with explanation:
**Communities B - Colnbrook, Poyle, Datchet and Horton**

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>06:00 - 15:00</td>
<td>06:00 - 15:00</td>
<td>06:00 - 15:00</td>
<td>06:00 - 15:00</td>
<td>06:00 - 15:00</td>
</tr>
<tr>
<td>Departures</td>
<td>Pattern repeats</td>
<td>Pattern repeats</td>
<td>Pattern repeats</td>
<td>Pattern repeats</td>
</tr>
<tr>
<td>until</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>overflight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 15:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Key**
- **Westerly operations**
- **Easterly operations**
- **Easterly or westerly operations**
- Planned respite (no overflight of aircraft)
- Planned respite but chance of overflight by arrivals operating out of alternation
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period
- 14:00 is shown to simplify the illustration.

We are asking a question about whether we should switch runways at 14:00 or 15:00.

---

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**Future Runway Operations**
## Future proposed respite and overflight, with explanation:

**Communities C – Stanwell Moor, Wraysbury and Old Windsor**

### Future Operations (Westerly or Easterly)

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00 - 05:15&lt;br&gt;Day 4 - Day 1&lt;br&gt;Respite&lt;br&gt;15 hours 15 minutes</td>
<td>06:00 - 23:00&lt;br&gt;Day 1&lt;br&gt;Arrivals or departures&lt;br&gt;(depending on wind direction)&lt;br&gt;10.50pm (arrivals)&lt;br&gt;11.00pm (departures)&lt;br&gt;16 hours 50 minutes (A)&lt;br&gt;or 17 hours (B)</td>
<td>06:00 - 22:50&lt;br&gt;Day 2&lt;br&gt;Arrivals or departures&lt;br&gt;(depending on wind direction)&lt;br&gt;10.50pm (arrivals)&lt;br&gt;11.00pm (departures)&lt;br&gt;16 hours 50 minutes (A)&lt;br&gt;or 17 hours (B)</td>
<td>06:00 - 14:00&lt;br&gt;Day 3&lt;br&gt;Respite&lt;br&gt;14 hours</td>
<td>14:00 - 23:00&lt;br&gt;Day 3&lt;br&gt;Arrivals or departures&lt;br&gt;(depending on wind direction)&lt;br&gt;22:50 (arrivals)&lt;br&gt;23:00 (departures)&lt;br&gt;8 hours 50 minutes&lt;br&gt;(8 hours of alternation)</td>
</tr>
<tr>
<td>05:15 - 06:00&lt;br&gt;Day 1&lt;br&gt;Early morning arrivals&lt;br&gt;from 5:15am to 6am if on&lt;br&gt;easterly operations&lt;br&gt;45 minutes</td>
<td>22:50 - 00:00&lt;br&gt;Day 2&lt;br&gt;Departures recovery period on&lt;br&gt;westeries (23:00 - 00:00, 1 hour)&lt;br&gt;Arrivals recovery period on&lt;br&gt;easteries (22:50 - 23:30, 40 minutes)</td>
<td>23:00 - 06:00&lt;br&gt;Day 3 - Day 4&lt;br&gt;Respite&lt;br&gt;7 hours</td>
<td>06:00 - 14:00&lt;br&gt;Day 4&lt;br&gt;Arrivals or departures&lt;br&gt;(depending on wind direction)&lt;br&gt;8 hours</td>
<td>14:00 - 05:15&lt;br&gt;Day 4 - Day 1&lt;br&gt;Respite&lt;br&gt;15 hours 15 minutes</td>
</tr>
</tbody>
</table>

### Key

- **Westerly operations**
- **Easterly operations**
- **Easterly or westerly operations**
- **Planned respite (no overflight of aircraft)**
- **Planned respite but chance of overflight by arrivals operating out of alternation**
- **Planned overflight by arrivals or departures**

*Early Morning Arrivals or Recovery Period*

- 14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00.
Current respite and overflight, with explanation:
Communities C – Stanwell Moor, Wraysbury and Old Windsor

Key:
- ➡️ Westerly operations
- ➩ Easterly operations
- ➧ Easterly or westerly operations
- ⬇️ Planned respite (no overflight of aircraft)
- ❌ Planned respite but change of overflight by arrivals operating out of alternation
- 🔵 Planned overflight by arrivals or departures
- 🟡 Early Morning Arrivals or Recovery Period

- 🕒 14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00.
### Current respite and overflight, with explanation:
**Communities C – Stanwell Moor, Wraysbury and Old Windsor**

<table>
<thead>
<tr>
<th>Current Westerly Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Day 1</strong></td>
</tr>
<tr>
<td>01:00 - 15:00 Day 1</td>
</tr>
<tr>
<td>Respite until alternation change at 15:00</td>
</tr>
<tr>
<td>14 hours</td>
</tr>
<tr>
<td>22:30 - 01:00 Day 4 - Day 1</td>
</tr>
<tr>
<td>Arrivals recovery period 1 hour</td>
</tr>
<tr>
<td>30 minutes</td>
</tr>
<tr>
<td>15:00 - 23:30 Day 1</td>
</tr>
<tr>
<td>Arrivals until close of operations 8 hours 30 minutes</td>
</tr>
<tr>
<td>Pattern repeats</td>
</tr>
<tr>
<td><strong>Day 2</strong></td>
</tr>
<tr>
<td>01:00 - 15:00 Day 1</td>
</tr>
<tr>
<td>Arrivals until close of operations 8 hours 30 minutes</td>
</tr>
<tr>
<td>Pattern repeats</td>
</tr>
<tr>
<td><strong>Day 3</strong></td>
</tr>
<tr>
<td>01:00 - 15:00 Day 1</td>
</tr>
<tr>
<td>Arrivals until close of operations 8 hours 30 minutes</td>
</tr>
<tr>
<td>Pattern repeats</td>
</tr>
<tr>
<td><strong>Day 4</strong></td>
</tr>
<tr>
<td>01:00 - 15:00 Day 1</td>
</tr>
<tr>
<td>Arrivals until close of operations 8 hours 30 minutes</td>
</tr>
<tr>
<td>Pattern repeats</td>
</tr>
<tr>
<td><strong>Day 1</strong></td>
</tr>
</tbody>
</table>

**Key**
- Westerly operations
- Easterly operations
- Easterly or westerly operations
- Planned respite (no overflight of aircraft)
- Planned respite but chance of overflight by arrivals operating out of alternation
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period
- 14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00.
## Heathrow Expansion

### Airport Expansion Consultation

**Future proposed respite and overflight, with explanation:**

**Communities D – Sipson, Harlington and North Heston**

<table>
<thead>
<tr>
<th>Day</th>
<th>Operations</th>
<th>Respite/7 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Day 1</strong></td>
<td>23:00 - 06:00</td>
<td>Day 1 Respite 7 hours</td>
</tr>
<tr>
<td>06:00 - 22:50</td>
<td>Day 1 Arrivals or departures (depending on wind direction) 10:50pm (arrivals) 11:00pm (departures) 16 hours 50 minutes (A) or 17 hours (D)</td>
<td></td>
</tr>
<tr>
<td>00:00 - 14:00</td>
<td>Day 2 Respite 14 hours</td>
<td></td>
</tr>
<tr>
<td>14:00 - 23:00</td>
<td>Day 2 Arrivals or departures (depending on wind direction) 22:50 (arrivals) 23:00 (departures) 8 hours 50 minutes (A) or 9 hours (D)</td>
<td></td>
</tr>
<tr>
<td><strong>Day 3</strong></td>
<td>23:00 - 06:00</td>
<td>Day 3 Respite 7 hours (A) or 9 hours (D)</td>
</tr>
<tr>
<td>06:00 - 14:00</td>
<td>Day 3 Arrivals or departures (depending on wind direction) 8 hours</td>
<td></td>
</tr>
<tr>
<td>14:00 - 05:15</td>
<td>Day 3 - Day 4 Respite Respite ends at 05:15 if westerly operations for Early Morning Arrivals 15 hours 15 minutes</td>
<td></td>
</tr>
<tr>
<td>06:00 - 23:00</td>
<td>Day 4 Arrivals or departures (depending on wind direction) 10:50pm (arrivals) 11:00pm (departures) 16 hours 50 minutes (A) or 17 hours (D)</td>
<td></td>
</tr>
<tr>
<td><strong>Day 4</strong></td>
<td>05:15 - 06:00</td>
<td>Day 4 Early morning arrivals from 05:15 to 06:00 if on westerly operations 45 minutes</td>
</tr>
<tr>
<td>23:00 - 06:00</td>
<td>Day 4 - Day 1 Respite 7 hours</td>
<td></td>
</tr>
</tbody>
</table>

### Future Runway Operations Proposal

**Key:**
- Westerly operations
- Easestly operations
- Planned respite but chance of overflight by arrivals operating out of alternation
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period

14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00.
Comparison of overflight and respite for current and proposed future operations:
Communities E – Cranford and South Heston

Future Operations (Westerly or Easterly)

Current Easterly Operations

Not overflown on easterly operations due to the legacy of the Cranford Agreement

Current Westerly Operations

* Heathrow has committed to introducing easterly alternation regardless of Heathrow expansion*
Current respite and overflight, with explanation:
Communities E – Cranford and South Heston

Key:
- Westerly operations
- Easterly operations
- Planned respite (no overflight of aircraft)
- Planned respite but chance of overflight by arrivals operating out of alternation
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period

*14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00.
Current respite and overflight, with explanation:
Communities E – Cranford and South Heston

Current Westerly Operations

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>23:30 - 06:00</td>
<td>Day 4 - Day 1 Respite 6 hours 30 minutes</td>
</tr>
<tr>
<td></td>
<td>06:00 - 07:00</td>
<td>Day 1 Arrivals 1 hour</td>
</tr>
<tr>
<td></td>
<td>07:00 - 15:00</td>
<td>Day 1 Respite, but with potential out of alternation landings 8 hours</td>
</tr>
<tr>
<td></td>
<td>15:00 - 23:30</td>
<td>Day 1 Arrivals 8 hours 30 minutes</td>
</tr>
<tr>
<td></td>
<td>06:00 - 07:00</td>
<td>Pattern repeats</td>
</tr>
<tr>
<td></td>
<td>07:00 - 08:00</td>
<td>Pattern repeats</td>
</tr>
<tr>
<td></td>
<td>08:00 - 09:00</td>
<td>Pattern repeats</td>
</tr>
</tbody>
</table>

Key:
1. Westerly operations
2. Easterly operations
3. Easterly or westerly operations
4. Planned respite (no overflight of aircraft)
5. Planned respite but chance of overflight by arrivals operating out of alternation
6. Planned overflight by arrivals or departures

Early Morning Arrivals or Recovery Period
- 14:00 is shown to simplify the illustration.
- We are asking a question about whether we should switch runways at 14:00 or 15:00.
### Future proposed respite and overflight, with explanation:
**Communities F – Hatton and Feltham**

<table>
<thead>
<tr>
<th>Day</th>
<th>00:00 - 14:00</th>
<th>14:00 - 15:00</th>
<th>15:00 - 23:00</th>
<th>23:00 - 06:00</th>
<th>06:00 - 23:00</th>
<th>23:00 - 06:00</th>
<th>06:00 - 22:50</th>
<th>22:50 - 06:00</th>
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<tbody>
<tr>
<td>1</td>
<td>Respite 14 hours</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 2</td>
<td>Day 2</td>
<td>Day 3</td>
<td>Day 4</td>
<td>Day 1</td>
</tr>
<tr>
<td>2</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 2</td>
<td>Day 2</td>
<td>Day 3</td>
<td>Day 4</td>
<td>Day 1</td>
<td>Day 1</td>
</tr>
<tr>
<td>3</td>
<td>Day 3</td>
<td>Day 3</td>
<td>Day 4</td>
<td>Day 4</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
</tr>
<tr>
<td>4</td>
<td>Day 4</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
<td>Day 1</td>
</tr>
</tbody>
</table>

**Key**
- Westerly operations
- Easterly operations
- Mixed or westerly operations
- Planned respite (no overflight of aircraft)
- Planned respite but change of overflight by arrivals operating out of alternation
- Planned overflight by arrivals or departures
- Early Morning Arrivals or Recovery Period
  - 14:00 is shown to simplify the illustration. We are asking a question about whether we should switch runways at 14:00 or 15:00
There are lots of ways you can contact us or find out more

- Find all the consultation information on our website aec.heathrowconsultation.com
- Email any questions about the consultation to info@heathrowconsultation.com
- Follow @LHRconsultation to stay up to date on event details
- Call our freephone number 0800 307 7996 (open Monday to Friday, 9am-6pm)

If you would like a large text or alternative format of this document, please contact 0800 307 7996 or email info@heathrowconsultation.com