

Environmentally Managed Growth

Topic paper

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1. Introduction

1.1 Overview

- 1.1.1 This **Environmentally Managed Growth*** (EMG) Topic Paper (referred to as ‘the document’) forms part of a set of publicly accessible documents that support the Autumn 2026 Heathrow expansion Consultation (referred to as the ‘2026 Public Consultation’). The 2026 Public Consultation forms part of the Pre Application stage of the **Development Consent Order*** (DCO) process for **Nationally Significant Infrastructure Projects*** (NSIPs).
- 1.1.2 Consultation regarding the expansion of Heathrow Airport (referred to as ‘the Project’ or ‘Heathrow expansion’) is being promoted by Heathrow.
- 1.1.3 As noted within the Consultation Document, following the statutory Airport Expansion Consultation (AEC) undertaken in 2019, Heathrow has reviewed and further refined the Project and is now consulting further on the proposals for Heathrow expansion. Heathrow will continue to evolve its proposals and will undertake further environmental assessment, taking into account ongoing design evolution and the feedback received through this 2026 Public Consultation.
- 1.1.4 This document is supported by a glossary of terms. Where an asterisk (*) is identified, a specific definition is presented in the glossary.

1.2 Heathrow Expansion National Policy Statement

- 1.2.1 The government recently concluded its consultation on proposed amendments to the 2018 Airports National Policy Statement (ANPS), to be known once amended as the Heathrow Expansion National Policy Statement (HENPS). The government is now considering consultation feedback, alongside the outcome of parliamentary scrutiny once concluded, and subject to parliamentary approval of the government’s final form of the proposed amendments, is expected to publish the amended form of what will then be the HENPS by the end of 2026.
- 1.2.2 In preparing its consultation materials, Heathrow has reviewed the proposed amendments to the ANPS and is continuing to consider the potential implications for the Project and accompanying assessments. Where relevant, the requirements of the ANPS are referenced in this document together with any potential changes arising from the proposed ANPS amendments, recognising that current policy in the ANPS remains the starting point for consideration of Heathrow expansion, until the amendments to the ANPS have been finalised and the amended version published as the HENPS. Once the ANPS has been amended and published as the HENPS, we will engage with relevant stakeholders on the policy amendments as part of our ongoing programme of pre-application engagement and also consider if targeted consultation is necessary.

1.3 Environmentally Managed Growth overview

- 1.3.1 This document outlines the principles for the Environmentally Managed Growth (EMG) framework proposed for Heathrow expansion. The proposed approach has been developed following an initial EMG proposal in 2019. The updates take account of feedback, changes to policy and precedent from other DCOs.
- 1.3.2 Airport expansion will deliver social and economic benefits across the UK, enabling the value of increased throughput for the airport, airlines, and the UK economy more widely.
- 1.3.3 While growth is a positive for the UK economy, increases in aircraft throughput without suitable mitigation could also contribute to negative or adverse environmental effects. EMG will be an integral part of the **environmental measures*** (sometimes referred to as mitigation) proposed for Heathrow expansion.
- 1.3.4 The EMG framework outlined in this document will provide a flexible regime through which the four main environmental effects associated with increased throughput will be subject to **monitoring*** and mitigation, to create a dynamic and adaptive approach for growth aligned within clear environmental limits. The EMG framework is designed to complement existing management regimes and provide transparency, supported by a review process and an **independent scrutiny*** body.
- 1.3.5 Heathrow recognises the importance of focusing on environmental outcomes to deliver growth and manage environmental impacts. This framework will provide the flexibility, transparency and processes required to manage environmental effects over the long term.
- 1.3.6 Heathrow proposes that the EMG framework will focus on the four environmental aspects most closely related to the growth in passengers and aircraft movements. The EMG framework has maintained the approach set out in 2019 to include the four main effects most closely relating to growth (noise, surface access, air quality, carbon). This follows precedent from the Luton DCO and seeks to provide a framework for monitoring and managing effects resulting from aspects that are directly associated with forecast growth in passenger and flight activity at the airport.
- 1.3.7 Other environmental aspects will be managed and secured through other more traditional planning and legal controls. The four aspects to be covered in the EMG framework are:
 - Aircraft **air noise***¹.
 - **Surface access** (transport).
 - **Air quality**.
 - **Carbon*** ground emissions².
- 1.3.8 The general principles for the EMG framework are set out in **Figure 1.1**. This topic paper provides additional detail on how EMG is proposed to operate and we welcome feedback on all aspects of the framework.

¹ by way of a Noise Envelope framework (see **Section 3.1**)

² Carbon emissions included in EMG are defined in **Section 3.4**.

Figure 1.1: EMG principles

FOUR ENVIRONMENTAL ASPECTS
• Aircraft noise • Surface access (transport) • Air quality • Carbon emissions
FORWARD PLANNING
• To plan for growth whilst meeting environmental objectives • Existing reporting on environmental effects
AGREED LIMITS AND THRESHOLDS
• Thresholds* act as an early warning for assessment of environmental effects • Limits* set the upper bound of environmental effects assessed in the environmental statement
MONITORING AND REPORTING
• Environmental effects monitored and reported • Reporting against thresholds and limits
INDEPENDENT SCRUTINY
• Independent scrutiny is included to provide transparency for the EMG framework
PREVENTION AND CONTROLS
• Growth will take place whilst meeting the environmental objectives as set out in the forward planning process • If a threshold is exceeded a prevention plan* will be implemented • In the event of a limit exceedance a mitigation plan* will be implemented

1.4 Why is Environmentally Managed Growth proposed at Heathrow?

- 1.4.1 Heathrow first proposed a version of EMG in 2019, as it was recognised that creating a clear framework for managing long-term uncertainty and focusing on delivery of environmental outcomes provides a robust and transparent approach.
- 1.4.2 Supporting growth within clear environmental limits is still the key principle of EMG and feedback from the 2019 version has been taken into account when shaping this proposed version, along with lessons learned from the Luton and Gatwick airport expansion projects. A response to 2019 feedback is provided in Heathrow 2019 Consultation Feedback. [1].

- 1.4.3 Heathrow has a range of existing requirements for environmental monitoring and reporting. EMG will provide a mechanism to bring together existing regimes, to simplify and streamline the processes as far as practicable and ensure transparency and scrutiny.
- 1.4.4 Another benefit of EMG is to provide the long-term, outcome focused commitment to manage growth and environmental objectives. The proposed framework delivers a better approach compared with most NSIPs which are consented based on a fixed assessment and mitigation measures reported at the time of the relevant DCO application.
- 1.4.5 Implementing EMG will mean that management of the environmental effects of Heathrow Expansion will not be solely dependent on the measures identified at the planning stage. Rather, the effects will be reviewed on a regular basis (as shown in **Figure 1.2**) with further mitigation measures implemented if necessary. This adaptive approach allows Heathrow to respond to any changes efficiently and proportionately, while delivering the benefits associated with the Project.
- 1.4.6 EMG does not replace or avoid the need for a robust Environmental Impact Assessment or other environmental measures that seek to avoid, offset or mitigate adverse effects. It gives additional certainty that Heathrow can grow within appropriate environmental limits while working in partnership with other airlines and stakeholders.
- 1.4.7 The proactive approach to management will allow both environmental performance improvements and the economic benefits associated with increased throughput to be shared between stakeholders. The EMG framework therefore provides an ongoing commitment to ensure management remains relevant and is reflective of changing circumstances and knowledge over the long term.

Figure 1.2: Comparison of EMG to traditional approach

Traditional planning approach



Proposed EMG approach

2. Environmentally Managed Growth framework

2.1 Overview

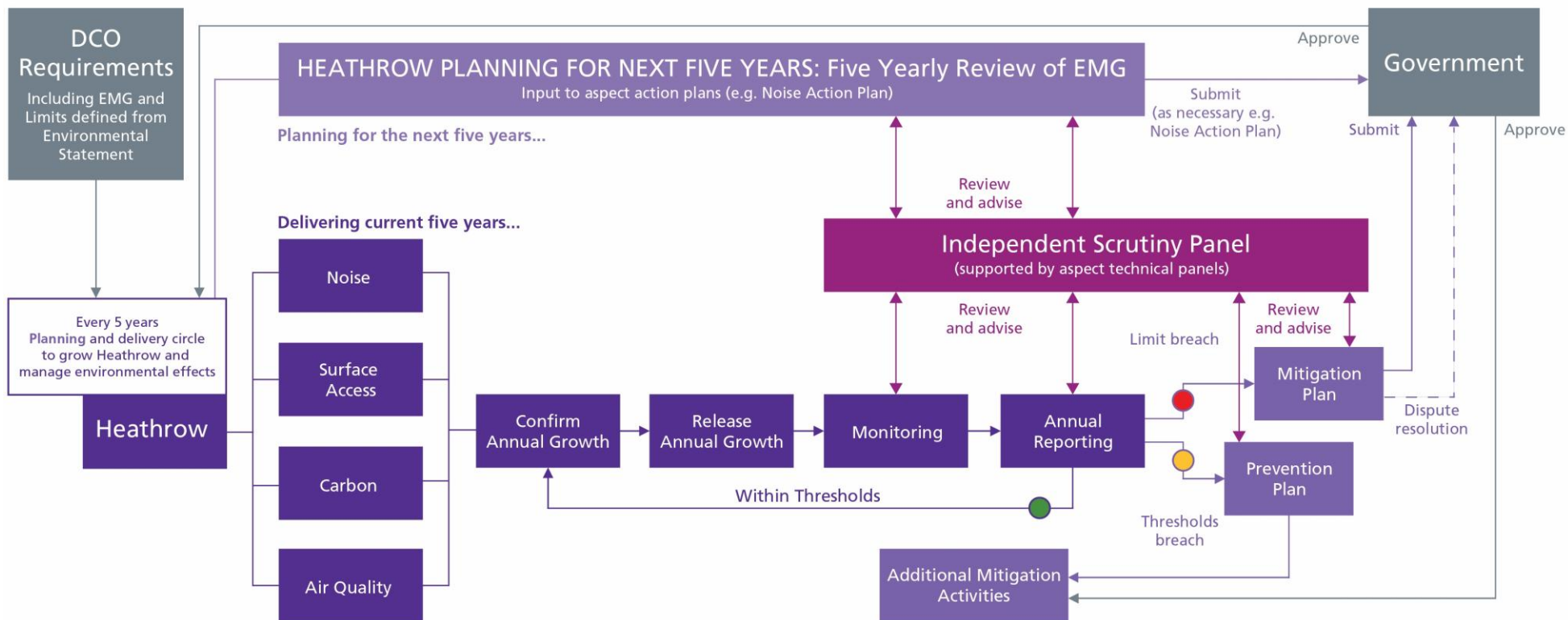
EMG framework commencement

- 2.1.1 The EMG framework will commence in full from the opening of the Northwest Runway. Prior to this, noise controls will start when additional ‘early growth’ flights commence ahead of the Northwest Runway opening (up to 25,000 Air Transport Movements are proposed).
- 2.1.2 As there is less uncertainty in the near term, measures will be introduced to control effects during the ‘early growth’ period. The monitoring equipment, monitoring regimes and EMG processes will be set up and tested, and the full EMG framework will commence when the Northwest Runway is opened.

EMG framework process

- 2.1.3 A summary of the proposed EMG framework process is set out in **Figure 2.1**. This explains how the forward planning process (aligned with existing reporting requirements) is an important first step of an ongoing process, which leads into the operational phase with monitoring and reporting. Forward planning is a critical and ongoing part of the process which will support the management of growth within environmental limits.
- 2.1.4 Regular engagement with an Independent Scrutiny Panel (ISP) is an integral part of the EMG approach and this paper sets out some preliminary ideas about how this could operate to ensure there is clear monitoring, reporting and responsive mitigation.
- 2.1.5 The remainder of **Section 2** sets out further details for Heathrow’s proposals relating to monitoring, independent scrutiny and review, limits and thresholds, and prevention and controls.

Figure 2.1: EMG framework process



2.2 Monitoring

- 2.2.1 Heathrow will monitor the effects associated with the four aspects controlled by EMG. The results of monitoring will be collected at various time intervals dependent on data availability and sampling methods. Results of monitoring undertaken will be reported to the Independent Scrutiny Panel (ISP).
- 2.2.2 The scope of monitoring is defined for each of the environmental aspects over which the EMG framework will have control (see **Table 2.1**).
- 2.2.3 Each aspect will require a different approach to monitoring. Details of how EMG monitoring will be carried out and how this will supplement the existing monitoring and reporting at the airport are provided in **Section 3** for each aspect area.

Table 2.1: Approach to EMG Aspects

Environmental aspect ³	Potential effect	What EMG is proposed to monitor?
Aircraft noise	Increased exposure to aircraft noise for local communities and other noise sensitive receptors.	Total area of specific aircraft noise contours (daytime and night-time) in order to control adverse effects on health and quality of life from aviation noise.
Air quality	Increased exposure to pollutants for local communities.	Concentrations, emissions and population-weighted mean concentrations for nitrogen dioxide (NO ₂) and particulate matter (PM ₁₀ and PM _{2.5}).
Carbon emissions on the ground	Increased carbon emissions, contributing to global warming.	Total carbon emissions per annum in tCO₂e* , grouped by source category: Airport buildings and ground operations - scope 1, 2 & 3 and surface access (scope 3). Air transport emissions are controlled nationally and are excluded (see Section 3.4).
Surface access	Increased congestion on local and strategic road networks, associated with airport-related traffic (air passengers and colleagues).	Air passengers and colleagues mode share** (e.g. the proportion of people travelling by different transport modes).

³ Full detail on each environmental aspect is available in the Environmental information Consultation Documents [2]

2.3 Independent scrutiny and review

- 2.3.1 Heathrow recognises the importance of creating a robust and transparent independent scrutiny body as part of the EMG framework. It is expected that the scrutiny body would be comprised of two elements, a technical panel and a scrutiny panel (the ISP).
- 2.3.2 Many of the environmental effects and, where required, any mitigation of impacts are highly technical in nature. To provide appropriate support to the ISP, it is proposed that each aspect area will have a technical panel made up of independent experts in their field, who will be responsible for supporting technical discussions and providing independent advice to the ISP.
- 2.3.3 The ISP will help provide recommendations, feedback and review of the EMG framework elements. Heathrow aim to create a proactive and positive dialogue with the ISP. The precise details of the membership of the ISP will evolve through consultation feedback and direct discussion with stakeholders and local authorities. The intention is to utilise existing engagement forums where appropriate, for example the Heathrow Strategic Planning Group.
- 2.3.4 Details of roles and responsibilities, terms of reference, composition and quorum will be developed and provided with the DCO application based on discussions with stakeholders.
- 2.3.5 Mitigation plans will be consistent with requirements from any existing national legislation.

2.4 Limits and thresholds

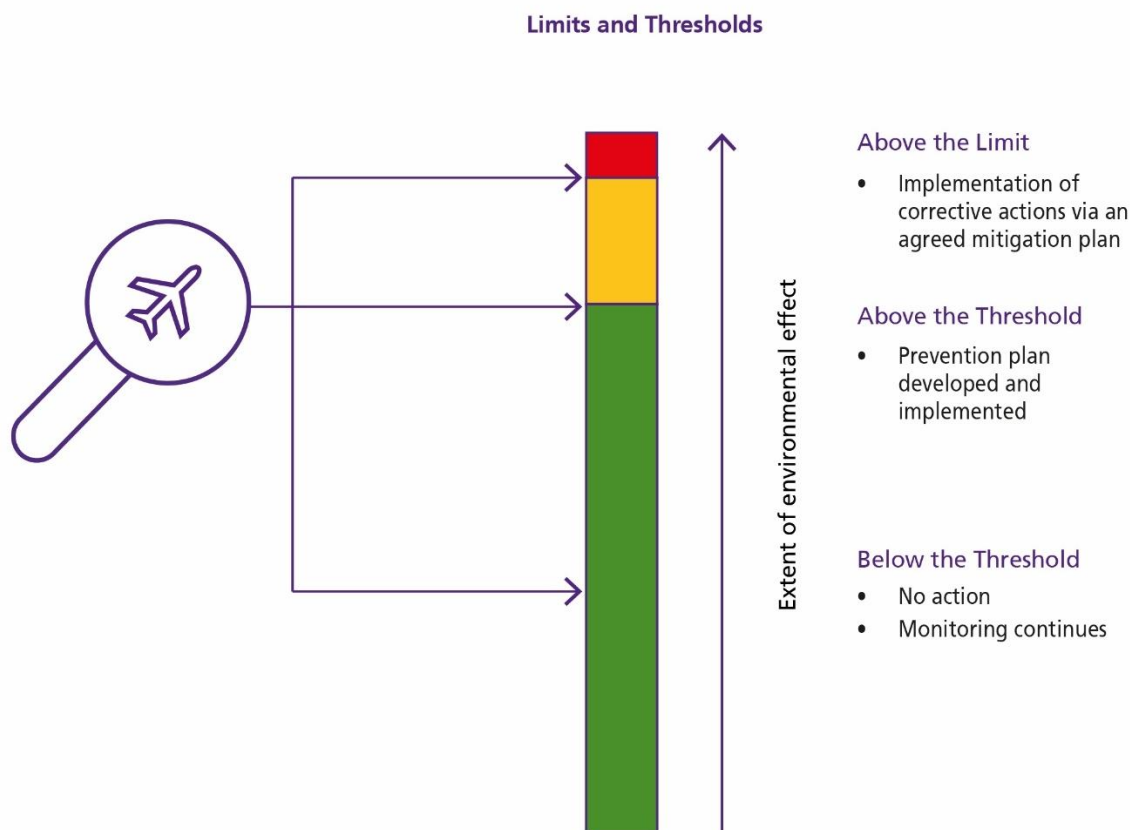
- 2.4.1 Setting limits and thresholds is a core component of the EMG approach. By setting thresholds as well as limits, Heathrow will take a proactive approach to compliance. It is in Heathrow's interest to avoid exceeding a limit, and monitoring against the thresholds will provide an early warning to allow prevention plans to be developed and implemented so as to avoid exceeding a limit.
- 2.4.2 For each environmental aspect, the measured environmental effects of increased throughput can exist in one of three states (shown in **Figure 2.2**):
 - **Below threshold:** The environmental effect is below the threshold. Existing plans are in place and operating to mitigate environmental effects.
 - **Above the threshold:** Expansion of the airport has resulted in an increase in the monitored environmental effects. While these are below the agreed limit, the fact they are above the threshold indicates that increased environmental measures may be required to avoid exceeding a limit. The airport will act accordingly to prepare and implement a prevention plan. In the unlikely scenario that one or more thresholds for separate aspects have been exceeded in the same year, Heathrow may provide either combined or separate prevention plans depending on the nature of the action considered to be required to avoid exceeding a limit.

- **Above the limit:** Expansion of the airport has resulted in an exceedance of a limit. In this unlikely scenario, the airport will act to bring the environmental effects below the limit through preparation and implementation of a mitigation plan, to be approved by government. The mitigation plan will set out clearly, with quantification where possible, what corrective actions will be taken, what effect these actions will have and how long they will take to be effective. The mitigation plan will be aimed at reducing the levels to below the limit in the shortest time reasonably possible, taking into account practicability and technical feasibility. Heathrow will demonstrate how they will do this, using all reasonable actions within their control. In the unlikely scenario that one or more limits for separate aspects have been exceeded in the same year, Heathrow may provide either combined or separate mitigation plans depending on the nature of the actions considered to be required.

Review of threshold and limits

- 2.4.3 It is proposed that the limits and thresholds would be reviewed periodically by Heathrow (proposed every five years). This review would take into account any material changes relevant to EMG that have occurred since the previous review, for example:
- Airspace change approvals.
 - Next generation aircraft specification (e.g. new International Civil Aviation Organisation ‘noise chapters’).
- 2.4.4 Following this review, thresholds and limits may be adjusted, following the rules set by the EMG framework, to make sure the benefits achieved from airport growth are shared between stakeholders, finding a balance between a reduction in environmental effects and the benefits associated with capacity growth. By adjusting the thresholds and limits the airport can take a proactive approach to environmental management. The ISP will provide scrutiny in relation to any proposed changes to limits and thresholds, with the government acting as the ultimate decision maker on any adjusted thresholds or limits.

Figure 2.2: Approach to limits and thresholds



2.5 Prevention and controls

- 2.5.1 The main element of managing growth while meeting the environmental objectives will be via forward planning and forecasting to avoid exceeding limits. It is anticipated that the forward planning process will look ahead five years. Five years is considered a suitable timeframe within which a higher level of certainty can be gained for future effects by working with airlines to understand fleet renewal and to consider other factors likely to influence future conditions.
- 2.5.2 In the event that action is required due to exceedance of either a threshold or limit Heathrow will consider the relevant actions available, which would vary depending on the nature of the exceedance. The measures to be deployed would be implemented by Heathrow, based on its knowledge and expertise, informed by discussions with the technical panels.
- 2.5.3 Due to the nature of the four aspects, there is not a single approach which would apply to all of them and it will be up to Heathrow to manage growth by identifying and implementing appropriate measures from a 'tool-box' of options, and including them in prevention plans and mitigation plans. For each aspect detailed in **Section 3** specific potential mitigation measures that could be implemented, if required, are described.

3. Environmentally Managed Growth aspects

3.1 Noise – the Noise Envelope

Aspect overview

- 3.1.1 The management of air noise for an expanded Heathrow will build on existing, proven and successful management processes, and will align with other noise control requirements for Heathrow such as notices from government under the Civil Aviation Act and the five-yearly Noise Action Plan process. Heathrow's current noise strategy is further described as part of **Environmental Information Consultation Document (EICD) Chapter 8: Noise and vibration**.
- 3.1.2 For air noise, Heathrow is proposing that the DCO primary air noise control measure is the 'Noise Envelope' management process for growth, secured as part of EMG. Other noise associated with the operation of the airport (e.g. ground noise) and the expansion masterplan (e.g. changes in road traffic noise) will be controlled by measures set out in the Environmental Statement (ES), secured by the DCO.
- 3.1.3 The proposed Noise Envelope approach is consistent with the requirements of the ANPS, the draft HENPS and Civil Aviation Authority (CAA) guidance⁴.
- 3.1.4 In line with the DCOs granted for Luton and Gatwick airport expansions, the Noise Envelope framework for Heathrow Expansion will have two parts:
 - Limits to ensure that as the airport grows there are no materially new, or materially different, noise effects as a result of air noise from Heathrow operations in contrast to those reported in the DCO's Environmental Statement.
 - A framework that manages Heathrow's growth, with clear performance targets tailored to local priorities, that shares the benefits of future technological improvements between growth and reduced noise impact on local communities.
- 3.1.5 This approach is to provide confidence that the assessment reported in the ES will not be exceeded, while providing reasonable flexibility in meeting the Noise Abatement Objective in the context of the long-term forecasts, indicative airspace designs and envisaged mitigation plans available at the time of the submission of the DCO application.
- 3.1.6 To support the design of the Noise Envelope, a Noise Envelope Design Group (NEDG) was established and operated from 2017 until 2020 when the group was suspended owing to the onset of Covid. The NEDG has been reestablished in 2026 with updated membership to build upon and complete the work of the previous NEDG. The independently chaired NEDG comprises representatives from local communities, local authorities, regional businesses, airlines, the air navigation service provider and the airport.

⁴ CAP1129 'Noise Envelopes', 2013 [3]

- 3.1.7 Prior to the submission of the DCO, the NEDG is helping Heathrow shape a Noise Envelope framework that:
- Defines key performance indicators that facilitate growth, manage noise performance and inform the limits set by the decision maker. In line with CAA guidance, the NEDG will consider:
 - noise input indicators (e.g. noise Quota Count that could incentivise the procurement and operation of quieter aircraft).
 - noise exposure indicators (e.g. noise contour areas that inform noise control through operating procedures and airspace design).
 - noise impact indicators linked to the impact of noise on health and quality of life (e.g. the proportion of people highly annoyed or highly sleep disturbed by aircraft noise).
 - Understands and responds to local priorities now and in the future (via an engagement process between the NEDG and wider community and stakeholder interests including seldom heard voices).
 - Sets out a mechanism to share the benefits of future technological improvements between growth and local communities.
 - Learns from monitoring and research.
 - Builds on Heathrow's established noise management, monitoring, reporting and engagement processes.
 - Efficiently aligns with other noise control requirements for Heathrow such as notices from government under the Civil Aviation Act and Noise Action Plans.
 - Is subject to regular review, as part of setting five-yearly Noise Action Plans.
- 3.1.8 As a new noise related operating restriction, the Noise Envelope design will need to follow a strict legal process⁵. This legal process is to ensure that the Noise Envelope design is cost-effective and no more restrictive than necessary to achieve the Noise Abatement Objective for the airport.
- 3.1.9 In this context, cost-effectiveness takes into account the anticipated noise benefit of the measures, safety, capacity and any effects on the wider aviation network. Cost-effectiveness can also take account of the health and safety of local residents, environmental sustainability (including interdependencies between noise and emissions) and effects on employment and the wider economy.
- 3.1.10 A new overarching Noise Abatement Objective could guide noise management in the long term following expansion. It is our proposal that the night-time Noise Abatement Objective set by government for Heathrow and the other designated airports would sit under the new overarching Noise Abatement Objective.
- 3.1.11 We are therefore proposing a new overarching Noise Abatement Objective for an expanded Heathrow as part of this consultation, to seek feedback in the widest possible way and at the earliest opportunity, and hence ultimately to assist the DCO

⁵ Regulation EU 598/2014 as made in UK law in 2018 [4]

application decision maker and the competent authority for new noise-related operating restrictions, in setting a new overarching objective.

- 3.1.12 Early establishment of the new overarching Noise Abatement Objective, taking account of responses to this consultation, will assist NEDG's work supporting Heathrow in developing the framework of measurable noise performance targets that could be included in the Noise Envelope and implemented through future Noise Action Plans. These noise performance targets, and the associated indicators, will be developed so that where possible they are 'SMART' (Specific, Measurable, Achievable, Relevant and Time-bound) and will be used to measure Heathrow's noise performance against the new overarching objective. This approach aligns with the government's current approach to night flight restrictions. In line with CAA guidance³, indicators may be noise input, exposure or impact indicators.
- 3.1.13 As an example, a noise performance target that will be tested with NEDG will be for the air noise impact of an expanded Heathrow on health and quality of life to be not materially worse than 2024 (or appropriate and achievable baseline) and, where reasonably practicable, reduced compared to the baseline⁶. NEDG's work will include consideration of the noise impact indicators that would be used to measure noise performance against such a target.
- 3.1.14 The proposed overarching Noise Abatement Objective for an expanded Heathrow is drafted using government's latest Overarching Aviation Noise Policy Statement⁷, only adding the unique opportunity for the expanded airport to provide regular breaks from aircraft air noise, and reversing the order of the paragraphs as requested by NEDG.

The proposed draft overarching Noise Abatement Objective which could apply to an expanded Heathrow is set out below, within the context of Heathrow's sustainable growth:

- The impact of aviation noise must be mitigated as much as is practicable and realistic to do so, limiting, and where possible reducing, the total adverse impacts on health and quality of life from aviation noise including regular predictable breaks from scheduled flights for communities during the day and night.
- This must balance the economic and consumer benefits of aviation against its social and health implications, in line with the International Civil Aviation Organisation's Balanced Approach to Aircraft Noise Management. This should take into account the local and national context of both passenger and freight operations and recognise the additional health impacts of night flights.

Limits and thresholds

- 3.1.15 In line with government policy and precedent, noise limits will be based on data from the noise modelling assessment work to be published in the ES which will include reasonable and foreseeable worst-case assumptions for growth, noise mitigation, future aircraft fleet mix and indicative airspace designs.

⁶ In line with government's proposal in the draft HENPS [5]

⁷ The Overarching Aviation Noise Policy Statement, 2023 [6]

- 3.1.16 Limits could be set using the input, exposure and/or impact indicators reported in the ES.
- 3.1.17 **Contour area**^{8*} is a noise exposure indicator and is the most commonly used indicator to limit the total noise footprint of an airport and hence help control/manage noise effects⁹. Heathrow's current noise limits are defined using contour areas. Heathrow has never exceeded its noise limits in the past and has an excellent track record of continuous noise improvement.
- 3.1.18 Noise contour areas are an effective method for limiting the amount of noise to within that assessed in the ES and have been accepted as being appropriate for other recent UK airport expansion projects. Contour areas provide limits without being specific about the location of the effects, providing reasonable flexibility for future changes including the separately consented airspace change. As noted later, the Noise Envelope process will be reviewed regularly linked to the Noise Action Plan review cycle and these reviews will respond to major changes, such as the approval of the airspace design for the expanded airport. A review may therefore recommend reducing a noise limit based on the approved airspace design compared to the worst-case assumptions in the ES.
- 3.1.19 Heathrow will work with NEDG to test other indicators that could be used by the decision maker to set limits based on the ES. This will include whether, within a contour area, limits could be defined using impact indicators such as the proportion of people experiencing noise at levels likely to cause them to be highly annoyed during the day and highly sleep disturbed at night. Such indicators could take account of the reduction in noise impact provided by Heathrow's plans for a runway alternation scheme that would provide communities affected with predictable periods of respite following expansion, and the proposals for an expanded **Noise Insulation Policy**.
- 3.1.20 A key part of the EMG process for noise will be an annual activity to check and update forecasts for the next five years ahead (as described in the preventative monitoring section below). This is key to ensuring that as the airport grows Heathrow avoids exceeding noise limits and minimises noise as far as is reasonable and practicable. As noted, there is uncertainty at present with airspace design and in the long term regarding future fleet mix and growth forecasting. The annual check and update of forecasts combined with regular Noise Envelope reviews¹⁰ linked to the Noise Action Plan cycle, will allow Heathrow to regularly review and update the limits¹¹ to sharing benefits between growth and communities, and will provide a dynamic approach to limits ensuring they remain relevant and reflect changing circumstances and knowledge over the longer term.

⁸ Contour areas are likely to be defined using the primary indicators defined by government policy (summer average $L_{Aeq,16hr}$ day and $L_{Aeq,8hr}$ night) having regard to government's latest research.

⁹ Heathrow currently have noise contour limits set by existing planning permissions obtained by the airport.

¹⁰ Five-yearly Noise Envelope reviews will also respond, as needed, to external changes such as the noise specification of next-generation aircraft by ICAO, approval of airspace change or force-majeure.

¹¹ Limits may go up and down to accommodate sharing but always within the DCO limit (including as amended by post DCO five-yearly reviews).

- 3.1.21 The noise mitigation that could be implemented as part of EMG long-term planning for growth (informed by the annual check and update of forecasts and linked to the regular reviews) differs compared to corrective action as part of prevention plans or mitigation plans, as explained below.
- 3.1.22 As part of preparing five-yearly Noise Action Plans, long-term planning under the Noise Envelope management process will link with the implementation of all aviation noise mitigation ‘levers’ as they become available as the airport expands. This mitigation, which will follow the ICAO Balanced Approach, may include predictable respite via runway alternation, displaced landing thresholds, airspace design and noise insulation as well as improved aircraft technology. Further information is set out in the following EIC documents:
- **EICD Chapter 8: Noise and vibration.**
 - **Future Runway Operations.**
 - **Noise Insulation Policy.**
- 3.1.23 For prevention plans and in the very unlikely event that mitigation plans are triggered, the aviation noise mitigation ‘levers’ most likely to be used would be local **rules*** linked to capacity declaration and **slot*** management.
- 3.1.24 Heathrow will ensure that any mitigation plan aligns with existing national legislation¹², in consultation with government. This approach is proposed in order to create a streamlined process and avoid creating any conflicts with existing noise legislation.

Monitoring approach

- 3.1.25 There could be a triple-aspect approach to planning and monitoring air noise. The first is ‘forward planning’ which links forecasting growth with a proactive and preventative approach to the management of air noise, so growth is within limits and avoids noise limits being exceeded. The second aspect is ‘compliance monitoring’, reporting what occurred against the noise limits. This ‘compliance monitoring’ uses actual data from what happened at the airport and will allow Heathrow to report against limits, thresholds and the predictions undertaken as part of ‘forward planning’. The third aspect, ‘wider monitoring’, will report for information the airport’s annual noise performance using a wider range of indicators, as the airport currently does. This third aspect will inform improvement in air noise management and reporting.

Forward planning

- 3.1.26 As noted earlier, guidance³ sets out that Noise Envelopes can include controls using three types of indicator – input, exposure and impact. Noise contour area limits and thresholds are exposure controls. These will be converted into **Quota Count (QC)*** budgets – input controls – to support forward planning of airport operations

¹² For example any notice issued pursuant to section 78 of the Civil Aviation Act [7] or in respect of Regulation EU 598 (on the introduction of noise related operating restriction) where Heathrow will request as part of the DCO application that the Secretary of State be the Competent Authority for ‘follow up and monitoring’ as allowed for by the Airport (Noise-related Operating Restrictions) Regulations 2018 [8].

(i.e. growing within limits and preventing limits being exceeded). In line with the guidance, this approach which mirrors the approach approved for London Luton Airport's approved DCO, controls inputs that will in turn help control exposure and impact. As noted earlier, we will work with the NEDG to consider possible noise impact controls.

3.1.27 The forecast QCs will be compared to QC budgets:

- as part of the twice yearly / seasonal capacity declaration and slot allocation processes.
- to inform forward operations planning (annual & five-yearly).
- to incentivise airlines to procure and operate the quietest aircraft available to secure growth within limits.
- to replan growth and airline fleets if necessary to avoid any forecast limit exceedances.
- to trigger a 'prevention plan' where the forward plan exceeds a threshold.

Compliance monitoring

3.1.28 Monitoring against the limits and thresholds would be carried out annually against previous years, using a noise model with 'as-flown' data. The 'as-flown' data will include late-running flights arriving past the start of any scheduled night flight ban included in the submission of the DCO application in response to the expectation in the ANPS¹³, but exclude exempt flights (as defined by DfT¹⁴, as is the case today for the government's night flight restrictions).

3.1.29 The EMG framework will require that the aircraft air noise model used for compliance monitoring be equivalent to that used for the ES, and use set parameters in line with those assumed for the ES. This is to ensure that only differences in contours which arise from changes in airport operations, and not changes in model or underlying parameters outside of the airport's control (e.g. wind direction effecting the proportion of the summer when the airport is operating 'westerly' and 'easterly'), are compared.

3.1.30 Noise monitoring terminals would be used to calibrate the noise model, in line with the CAA's guidance [9]. The number, location & specification of noise monitoring terminals will be reviewed as part of developing the DCO proposals, taking account of the new runway, and ongoing engagement with community stakeholders.

Wider monitoring

3.1.31 Heathrow will annually report the performance of the airport using a wide range of noise performance indicators (including the supplementary indicators set out in government policy, having regard to government's latest research into community attitudes to aviation noise). This wider information will be used to identify trends to assist with improving noise performance and supporting research into new technologies and local priorities.

¹³ Airports National Policy Statement paragraph 5.62 [10]

¹⁴ DfT Night flight dispensations [11]

3.2 Surface access

Aspect overview

- 3.2.1 Heathrow expansion would result in more passengers and colleagues travelling to the airport. Increasing the number of these journeys made by public transport, walking, wheeling and cycling would reduce the impact of more people travelling on the local highway network, helping to manage the amount of traffic and reduce localised pollution, as monitored by other aspects. EMG provides a framework to support this increase in journeys by more sustainable modes of travel over time and ensures that Heathrow operates within agreed surface access limits.
- 3.2.2 Applying the EMG framework to surface access will help Heathrow to align with the Airports National Policy Statement (ANPS) which sets out the government's policy for managing airport growth in the south-east of England. The ANPS sets out the policy test against which surface access outcomes must be assessed. It requires Heathrow to prepare a Surface Access Strategy (SAS) (see **Transport Information Consultation Document (TICD) Part 1** for more information) setting out how travel to and from the airport by surface transport will be managed. The ANPS also establishes surface access targets for air passengers and colleagues and requires Heathrow to demonstrate, through the SAS and supporting measures such as EMG, how it will work towards these targets. The targets include:
- *“Increase the proportion of journeys made to the airport by public transport, cycling and walking to achieve a public transport mode share of at least 50% by 2030, and at least 55% by 2040 for passengers... and*
 - *The applicant should also include details of how, from a 2013 baseline level, it will achieve a 25% reduction of all staff car trips by 2030, and a reduction of 50% by 2040.”*
- 3.2.3 Freight is excluded from the EMG framework. The ANPS establishes the approach Heathrow should take to address freight impacts but does not outline any specific targets for freight. The ANPS states that “Heathrow Airport should also develop and keep under review plans to improve the impact of road freight serving the airport.” To keep alignment with the ANPS, Heathrow is not proposing any surface access limits for freight. The impact of additional freight traffic will be identified in the Transport Assessment (see **TICD Part 7**) and Heathrow is developing a Freight Strategy (see **TICD Part 3**) which will manage the traffic effects of freight. The effects of freight will be managed through the EMG framework within the air quality aspects as part of management of wider air quality emissions. The effects of freight traffic on the highway network will also be considered in measures proposed under the Traffic Related Impacts Monitoring and Mitigation Strategy (TRIMMS) (see **TICD Part 8**).
- 3.2.4 The draft HENPS proposes a potential change in surface access policy. In particular, it proposes linking passenger mode share targets to passenger capacity rather than fixed years, and replacing the requirement for a colleague vehicle trip reduction target with the need to produce a Colleague Travel Plan (CTP), including a target for reduction in single occupancy private car travel. It takes a similar position to ANPS

on freight, with no specific targets set and a requirement to set out plans to manage and mitigate any negative effects arising from increased freight operations. The approach to managing surface access through EMG will continue to be kept under review as policy is updated.

Limits and thresholds

- 3.2.5 The method for defining EMG surface access limits is being developed to ensure that they are robust, evidence-led and capable of being managed effectively over time. It is proposed that limits are informed primarily by strategic transport modelling and the associated assessment presented in the Transport Assessment (refer to **TICD Part 7: Potential implications for roads travel**), alongside wider environmental and policy considerations.
- 3.2.6 The transport modelling will establish a forecast for travel demand and mode share amongst passengers and colleagues, which in turn could provide the basis for defining limits relating to surface access, including traffic levels and associated environmental effects.
- 3.2.7 The approach to setting EMG surface access limits will continue to have regard to the ANPS and emerging HENPS. If new surface access targets are designated through the HENPS, these will be considered as part of the development of the surface access limits. In the interim, a modelling-led approach provides a transparent and evidence-based basis for defining limits that are reflective of forecast conditions and can be effectively monitored and managed through the EMG framework.
- 3.2.8 At the outset, the limits will be set so that as passenger and colleague demand increases, a greater proportion of journeys would need to be accommodated by public transport, walking, wheeling and cycling to manage traffic effects and associated environmental effects.
- 3.2.9 The limits would therefore be informed by factors including the scale and timing of airport growth, the delivery of new and enhanced public transport and active travel infrastructure, and possible future changes in relevant policy expectations. This approach ensures that limits remain aligned with both what is achievable and what would be required to mitigate the effects of the proposed airport expansion over time.
- 3.2.10 To support effective management, thresholds would be set below the limits to provide an early indication of emerging trends. This would enable timely intervention where necessary to avoid exceedance of the limits as detailed in **Section 2.4**.
- 3.2.11 Heathrow will report annually on performance against the surface access limits, in line with the EMG framework and other environmental aspects.

3.2.12 If annual monitoring and reporting identifies a surface access threshold or limit exceedance, an appropriate prevention or mitigation plan would be developed. This process would include identifying any possible cause of the exceedance, such as changes to public transport availability that may limit some people's ability to travel to the airport by more sustainable modes. Heathrow would then develop a tailored plan to incentivise and enable a greater number of passengers or colleagues to travel by more sustainable modes of transport. This could include considering:

- Supporting bus and coach operators to develop routes that reflect passenger needs, expand the airport's catchment through new and enhanced services, and increase service frequency.
- Enhanced active travel interchange facilities alongside improvements to connect between surrounding communities and the airport. We understand that without well-connected and attractive routes, the provision of high-quality on-site facilities alone may not be sufficient to support increases in active travel, and will continue to engage with Transport for London (TfL) and neighbouring authorities with regard to such provisions. This is likely to impact colleague journeys more than passengers.
- Public transport incentives across bus, coach and rail would be considered to encourage a shift from private car use to more sustainable modes. This could include extending existing offers and applying discounts to new or enhanced services as they are introduced.
- Further promoting and incentivising car sharing for colleagues.
- Developing measures such as road user charging and the use of parking charges to rebalance travel costs and encourage greater use of public transport over private vehicles. These measures would seek to influence behaviour rather than restrict access and would be considered alongside improvements to public transport provision.

Monitoring approach

3.2.13 Our approach to monitoring the surface access limits would vary between passengers and colleagues. The proposed approach for each is outlined in the following sections.

Passengers

3.2.14 For passengers, performance against the EMG surface access limit would be monitored using an agreed '**mode share**' metric. This would represent the proportion of passenger journeys to the airport made by different transport modes. The primary data source for this indicator is proposed to be the Civil Aviation Authority (CAA) Departing Passenger Survey, which provides an established and independent dataset based on passenger interviews conducted at Heathrow on a quarterly basis and reported annually. Heathrow would work with the CAA to maintain and, where possible, enhance the accuracy, coverage and timeliness of this data to support ongoing EMG monitoring.

- 3.2.15 The CAA Departing Passenger Survey samples passengers prior to departure, with interviews undertaken at departure gates. As such, the dataset is derived from departing passengers only. The survey applies an assumption that the mode of travel used by departing passengers is representative of that used by arriving passengers, enabling mode share to be estimated across all passenger journeys.
- 3.2.16 In 2024 the CAA recorded that 59% of passengers departing from Heathrow travelled by modes including private car, taxi or motorcycle.
- 3.2.17 For the purposes of the submission of the DCO application, modes captured within the CAA survey will be grouped into categories reflecting public transport and active travel modes, and private vehicle modes. These categories will be defined clearly by reference to the underlying survey classifications to ensure that they are transparent, consistently measurable and capable of being monitored over time.
- 3.2.18 The categorisation is intended to remain sufficiently flexible to accommodate changes in travel behaviour and emerging transport technologies over the lifetime of the Project. Any future changes to these categories would be subject to appropriate governance and oversight.
- 3.2.19 Heathrow also collects passenger travel data through its Heathrow Profiler survey. This dataset is expected to be used as a complementary source of information to support EMG monitoring, providing more frequent insights into passenger travel patterns and enabling comparison with the CAA data. The CAA data is expected, however, to remain the primary basis for assessing performance against the EMG surface access target.

Colleagues

- 3.2.20 For colleagues, EMG could include a surface access limit using a range of potential metrics, including mode share or the number of car trips. The monitoring approach would be expected to draw on a combination of data sources. For example, a mode-share-based approach may use data from staff travel surveys, while a trip-based approach may draw on Automatic Number Plate Recognition (ANPR) systems, staff travel surveys and MAID (Magnetic Anti-Intrusion Device, Heathrow's access control system) data.
- 3.2.21 The process for monitoring car trips by colleagues would be expected to include the following elements:
 - Heathrow could use ANPR cameras at access points on the airport boundary. Additional monitoring infrastructure, such as cameras at colleague car parks, may also be required to support this approach.
 - Use of MAID (access control system) data to provide a comprehensive record of individuals working within the airport boundary. MAID data along with other data sources would be used to determine the total colleague population to support accuracy.

- In the early phases of expansion, it is envisaged that MAID and ANPR data could be used together to validate and improve confidence in the monitoring approach. Over time, the monitoring methodology may evolve, for example through increased reliance on ANPR data. Any such changes would be subject to appropriate governance and oversight, including through the Surface Access Technical Panel.

- 3.2.22 To monitor colleague mode share, Heathrow currently undertakes a Colleague Travel Survey covering all individuals working within the airport boundary. This survey has historically been undertaken every 3–4 years.
- 3.2.23 More frequent monitoring may be required to support an EMG colleague limit, the approach to data collection would be updated to enable more frequent reporting, aligned with the monitoring of other aspects. This could be achieved through a combination of more frequent survey data collection and the use of supplementary datasets, to provide robust interim estimates between survey years.
- 3.2.24 The detailed methodology for this approach is being finalised and would be set out clearly through ongoing engagement. This will ensure that the monitoring framework is transparent, consistent and capable of supporting effective ongoing management of surface access through the EMG.

3.3 Air quality

Aspect overview

- 3.3.1 Air quality has been included in the EMG framework to support the long-term monitoring and management of emissions associated with airport activity, where these have an effect on human or ecological health. The establishment of limits and thresholds under the EMG framework will mitigate against any exceedance of air quality levels as modelled in the ES (which will inform the determination of likely significant effects).
- 3.3.2 The approach proposed is consistent with the requirements of the Airports National Policy Statement (ANPS) [10]. It also takes into account the draft revisions to the ANPS thus amended as the Heathrow Expansion National Policy Statement (HENPS) (**Section 1.2**) while recognising that this has not yet been formally designated or published.

Limits and thresholds

- 3.3.3 A three-stage approach to limits and thresholds is proposed, that addresses legal compliance, incremental changes to pollutant concentrations, improved performance and population exposure. The EMG approach for air quality has been expanded to consider both the highest incremental changes to pollutant concentrations (even if below the legal limits) and population-weighted mean exposure. The latter specifically addresses queries from the 2019 AEC Consultation regarding ‘exploiting the headroom’. Population-weighted mean concentrations reflect changes to population exposure across the entire study area and are better aligned to metrics used by government to inform public health impacts. This metric reflects the effects on ‘headroom’ across the entire study area rather than at isolated receptors.
- 3.3.4 Where limits and thresholds are based on forecasts or predictions in the ES, reasonable worst-case uncertainties in those forecasts or predictions will be taken into account. The focus is on the principal pollutants of concern related to airport operations, which is consistent with the ANPS (with regard to potential impacts on Air Quality Management Areas), and also with the HENPS (**Section 1.2**):
- Nitrogen dioxide (NO₂)
 - Particulate matter (PM₁₀ and PM_{2.5})
- 3.3.5 Ultra Fine Particles (UFPs) are scoped out of the EMG framework as there are no standards, objectives or targets against which any measured data could be compared and, as such, could not be consistent with the approach set out below. There will also be ongoing stakeholder engagement on the matter.
- 3.3.6 With regard to the Environmental Targets (Fine Particulate Matter) (England) Regulations 2023, which sets targets for PM_{2.5} to be achieved by 2040, interim guidance [11, 12] issued by the Department for Environment, Food & Rural Affairs (Defra) moves away from a requirement for planning applications to assess

compliance with the targets, and instead places a focus on environmental measures at the design stage, which will be developed at that phase to support the government meeting the targets.

3.3.7 The proposed approach is:

- **Stage 1 (a)** – determined by direct comparison with the air quality **limit values*** and objectives as defined in the Air Quality Standards Regulations 2010 and the Air Quality (England) Regulations 2000 respectively (i.e. are the limit values and objectives exceeded?). The EMG limits will be equivalent to the limit values and objectives. At present it is proposed to set the thresholds at a level of 10% below the limits, but this will be reviewed and refined in further development of the EMG framework and will be set to reflect an appropriate level above which additional environmental measures may be needed to prevent the limits being exceeded. A level of 10% has been proposed at this stage to provide an early warning indicator to trigger preventative action. The limits and proposed thresholds are set out in **Table 3.1**.

Table 3.1: Air quality proposed limits and thresholds

Pollutant	Limit	Threshold
NO ₂	40 µg/m ³	36 µg/m ³
PM ₁₀	40 µg/m ³	36 µg/m ³
PM _{2.5}	20 µg/m ³	18 µg/m ³

- **Stage 1 (b)** – the limit is equivalent to the highest incremental change(s) (e.g. a predicted increase of X µg/m³) to annual mean nitrogen dioxide, PM₁₀ and PM_{2.5} concentrations predicted in the ES for a sensitive receptor in each modelled year, taking into account reasonable, worst-case uncertainties. As above, the threshold will be set at 90% of the limit. This limit has been set to avoid incremental changes in pollutant concentrations in the communities exceeding those forecast in the ES.
- **Stage 2** – Emissions tracking. An analysis of the emissions will be undertaken by Heathrow and used to support a wider understanding of how the position is changing at the airport e.g. with regard to aircraft operations, surface access etc, and will inform potential prevention measures where needed. There are no limits or thresholds proposed for Stage 2; a principal focus of Stage 2 (and Stage 3 if triggered) is to prevent or mitigate against increased emissions associated with the expansion adversely impacting the improvements in pollutant concentrations delivered by other local, regional and national measures (i.e., by exploiting the headroom in this improvement). If emissions of nitrogen oxides (NOx), PM₁₀ or PM_{2.5} (tonnes / annum) exceed those forecast in the ES, taking into account reasonable worst-case uncertainties, this triggers Stage 3 to determine whether this increase has the potential to adversely impact on communities.

- **Stage 3** – Population exposure. The limit will be set at the predicted population-weighted, annual mean concentration for NO₂, PM₁₀ and PM_{2.5} in the ES in each modelled year, taking into account reasonable worst-case uncertainties. As above, the threshold is set at 90% of the limit. This stage is to mitigate against increased emissions associated with airport expansion exploiting the headroom delivered by other policy interventions.

Monitoring approach

- **Stage 1 (a).** There is an established network of air quality automatic monitoring sites in the vicinity of the airport and annual mean pollutant concentrations are reported in each year (heathrowairwatch.org.uk). The ES assessments will determine if additional monitoring sites are required such as in the vicinity of the Northwest Runway. At the end of each calendar year, the measured concentrations at automatic sites where there is relevant public exposure will be compared to the limits and thresholds defined in **Table 3.1**.
- **Stage 1 (b).** The predicted highest incremental change(s) of NO₂, PM₁₀ and PM_{2.5} in each modelled year will be compared with the measured incremental change in that year. This will require the measured value to be adjusted to account for reductions in background concentrations – the approach for this adjustment will be clearly defined in the EMG framework.
- **Stage 2.** A detailed emissions inventory is compiled for the airport each year. This is based on a detailed analysis of activity data for aircraft, airport operations (e.g. Ground Support Equipment) and surface access. In order to ensure that changes in emissions are not related to changes in inventory approach (e.g. due to changes in emissions factors, or changes in methodology) the approach will be 'benchmarked' in the opening year of the Northwest Runway.
- **Stage 3.** The population-weighted annual mean concentrations (a metric used to explain public exposure to air pollution) will be predicted on a five-yearly basis, or in any year when triggered by a material change to the Stage 2 emissions inventory results (as detailed above) and compared with the limits and thresholds.

3.3.8 If monitoring and reporting identifies an air quality threshold or limit exceedance for Stage 1a, 1b or 3 (there are no thresholds or limits for Stage 2), an appropriate prevention or mitigation plan will be developed. This process would include identifying whether the exceedance is directly related to airport activities and, if so, the principal source of the exceedance so that the prevention or mitigation plan can be targeted e.g. to surface access or aircraft movements. Types of measures to be considered in the prevention or mitigation plan might include (as appropriate):

- Controls on surface access (having regard to the measures described above)
- Controls on Ground Support Equipment, including the use of Auxiliary Power Units
- Management of airport operations and spatial considerations

3.4 Carbon

Aspect overview

- 3.4.1 It is proposed to include carbon emissions within the EMG framework to manage and control emissions associated with the operation of the expanded airport.
- 3.4.2 The carbon emissions included in EMG include all emissions from airport ground operations and surface access of passengers and staff travelling to and from the airport. These emissions are aligned to Heathrow's existing carbon reporting structure and terminology, and include:
 - **Scope 1 & 2 emissions***: Heathrow has control over these emissions. They include energy and fuel used in Heathrow owned assets such as terminals and airport vehicles.
 - **Scope 3 emissions***: Heathrow do not have direct control over these emissions but are able to apply influence to manage emissions, for example through efforts set out in the Surface Access Strategy (see **Transport Information Consultation Document (TICD) Part 3**).
- 3.4.3 It is proposed to exclude emissions from air transport (flights) from EMG as these emissions are managed at national level by government (through its Jet Zero Strategy and other policies and strategies), airlines and industry (see further explanation from paragraph 3.4.13 below).
- 3.4.4 Construction emissions are also excluded from EMG as construction is required to enable growth rather than being a direct measure of growth, and adequate controls on construction carbon will be implemented through the Carbon Management Plan (see **EICD Topic Paper: Carbon Strategy**).

Limits and thresholds

- 3.4.5 The approach to EMG for carbon is to set limits and thresholds for carbon emissions from Airport Buildings and Ground Operations (**ABAGO**)* and surface access transport:
 - ABAGO emissions – separated between:
 - Scope 1 & 2 emissions.
 - Scope 3 emissions.
 - Surface access emissions including passengers and colleagues.
- 3.4.6 It is not proposed to include carbon limits and thresholds for construction and air transport in EMG. **Table 3.2** provides details of the carbon emissions categories included in the EMG framework and the range of emissions sources and activities included in each category.

Table 3.2: Carbon emissions sources and activities included in the EMG framework

Emissions Category	Emissions sources / activities included
ABAGO (scope 1 and 2)	• Generation of grid electricity consumed at the airport by Heathrow ¹ • Combustion of fuels (natural gas, gas oil, LPG, biomass²) in airport buildings and fixed plant (including on-site fire training exercises) • Combustion of fuels (diesel, petrol, LPG, HVO²) consumed by Heathrow operational vehicles and mobile support equipment • On-airport fugitive refrigeration • Heathrow usage of de-icer
ABAGO (scope 3)	• Generation of grid electricity consumed at the airport by tenants and third parties¹ • Transmission and distribution losses associated with grid electricity consumed at the airport by Heathrow and third parties (including that used to charge electrically powered operational vehicles) • Combustion of fuels (diesel, petrol, LPG, HVO²) consumed by third party operational vehicles and mobile support equipment • Well-to-tank emissions of fuels consumed by Heathrow and airport third parties • Business travel by Heathrow colleagues • Processing of on-airport waste • The supply of potable water and processing of on-airport wastewater • Third-party usage of de-icer
Surface Access (scope 3) ³	• Surface transportation of passengers to and from the airport including: ○ Passenger cars and motorbikes ○ Taxis and Private Hire Vehicles (PHVs) ○ Buses and coaches ○ National rail services ○ London Underground services (including Elizabeth Line) ○ Heathrow Express (HEx) services • Transportation of Heathrow and third-party colleagues to and from the airport⁴ • Well-to-tank emissions from surface access transport
¹ In accordance with GHG Protocol[*] and current Heathrow corporate GHG reporting[*], market-based emissions will be reported for the purposes of assessment against limits and thresholds, but location-based emissions will be reported for completeness and transparency. ² In accordance with GHG Protocol and current Heathrow corporate GHG reporting, CO₂ emissions from combustion of biomass and biofuels will be reported as zero for the purposes of assessment against limits and thresholds, but location-based emissions will be reported for completeness and transparency.	

Emissions Category	Emissions sources / activities included
	³ Emissions from freight deliveries to and from Heathrow are not included, but measures to encourage, support and catalyse the decarbonisation of road freight are included in the Freight Strategy (see TICD Part 3) and DCO design proposals for a railhead to serve Heathrow. Freight is managed and handled by third parties outside Heathrow's control or influence, and wide-ranging markets dictate the specific UK origin and destination of freight handled by Heathrow. Freight is part of a global supply chain and management of growth at Heathrow is unlikely to result in a reduction in carbon emissions from freight, which would use alternative routes. ⁴ Emissions from Heathrow and third-party colleague travel will include the same suite of modes of ground transport as for passenger travel.

- 3.4.7 Limits and thresholds will be set for each of the three emission categories set out in **Table 3.2**. They will be set as absolute annual carbon emissions in tonnes (TCO_{2e}).
- 3.4.8 The limits will be set to align with the carbon emissions results presented within the ES and the thresholds will be set at a level below the limits to act as an early warning indicator. Both the limits and thresholds will be set as an early warning indicator and reflect an appropriate level above which additional environmental measures may be needed to prevent the limits being exceeded.
- 3.4.9 If annual monitoring and reporting identifies a carbon threshold or limit exceedance, an appropriate prevention or mitigation plan would be developed. This process would include identifying the main contributory cause of the exceedance in order to develop a tailored plan to incentivise and enable the required reductions in carbon emissions. The measures will depend on the emissions category in which the exceedance occurs and the specific causes of the exceedance, but may include:
- Investment in energy efficiency measures such as technological upgrades, retrofit works and energy efficiency policies and incentives. This would involve accelerated or additional measures above and beyond those already planned.
 - Initiatives to reduce fuel and energy use from Ground Support Equipment and prioritise use of the lowest emissions vehicles and machinery to enhance existing policies and measures.
 - Additional incentives to increase the use of electric vehicles to access the airport, increase passenger car occupancy and reduce empty running.
 - Other surface access measures as described in **Section 3.3**.
- 3.4.10 In addition to annual monitoring of previous year's emissions it is proposed that each year a five-year forward-looking forecast of carbon emissions will be undertaken. The forecast will predict the future carbon emissions based on expected growth activity at the airport in the five years ahead and expected decarbonisation through both Heathrow and national measures. If the forecasting identifies a potential limit breach in coming years, this will also serve as an early warning and trigger the need for a prevention plan, in the same way that a measured exceedance of a threshold will.
- 3.4.11 Many of the carbon emission sources in **Table 3.2** are not entirely within Heathrow's control. For example, while measures can be applied that encourage use of cleaner vehicles to access Heathrow, the behavioural response of passengers is not

guaranteed and the expected carbon reductions may not occur as rapidly as expected. The focus of carbon management at Heathrow will be on eliminating and reducing carbon, however, in order to avoid exceeding the limits, it is proposed to include carbon offsetting within the package of measures available within the EMG Framework.

- 3.4.12 Carbon offsets allow a way for residual carbon emissions to be controlled while measures to eliminate and reduce emissions are taking effect or being developed and implemented.
- 3.4.13 It is proposed that details of the quality and quantity of offsets to be used, if required, will be defined within EMG and will be designed to be flexible to future changes in legislation, policy and technology. The process of setting thresholds and use of five-year forecasting with appropriate prevention plans will allow offsetting to only be used as a last resort measure.

Carbon from Air Transport

- 3.4.14 The EMG framework specifically excludes air transport carbon emissions covering the emissions from aircraft on the ground at the airport and in flight. This approach is consistent with government's existing approach to management of air transport emissions, guidance set out in the draft HENPS, and the approach recently approved by the Secretary of State in the determination of other nationally significant airport sector DCO applications.
- 3.4.15 Aviation is an international sector involving flights between different countries and therefore decarbonisation of air transport emissions requires an international approach involving both international and national based policy. Air transport carbon emissions are accordingly managed and controlled by national and international mechanisms including UK government policy, collaboration with airlines, airline manufacturers, fuel suppliers and industry, and international organisations such as the International Civil Aviation Organization (ICAO).
- 3.4.16 The ANPS acknowledges the role of key government policy mechanisms to manage aviation sector emissions and measures that are outside the control of the airport¹⁵. Consistent with this approach government is clear in the draft HENPS, that operational carbon emissions at an expanded Heathrow will be addressed and managed in an economy-wide manner¹⁶, and that aviation emissions are a matter for national-level decision making¹⁷.
- 3.4.17 Notwithstanding, Heathrow is committed to working with government and the aviation industry to support decarbonisation of air transport. Further details of Heathrow's current measures to help reduce carbon from air transport are set out in the **Carbon Strategy topic paper**.

¹⁵ Airports National Policy Statement paragraph 5.75.

¹⁶ Draft Heathrow Expansion National Policy Statement, paragraph 5.87.

¹⁷ Draft Heathrow Expansion National Policy Statement, paragraph 5.89.

- 3.4.18 In the recent Gatwick Airport DCO, it was concluded that aviation emissions are a matter for government¹⁸ and as such an EMG-style framework was not necessary to manage or control carbon from air transport.
- 3.4.19 In Luton Airport's DCO, the airport brought forward an EMG-type framework called Green Controlled Growth, which included carbon emissions on the ground, but explicitly excluded carbon emissions from air transport. This approach was deemed appropriate by the examining authority and SoS due to the fact that air transport emissions are managed by national, government-led policies and strategies.
- 3.4.20 The government has set out its strategy for decarbonising the UK aviation sector in the 2022 Jet Zero Strategy [13]. The Jet Zero Strategy is the government's plan for achieving net zero in the aviation sector by 2050. It sets out the role of key mechanisms government and industry are delivering to manage and reduce carbon from air transport, including the UK Emissions Trading Scheme (UK ETS), Carbon Reduction Scheme for International Aviation (CORSIA), Sustainable Aviation Fuels (SAF), more efficient aircraft and airspace, Zero Emission Aircraft (ZEA) and greenhouse gas removals.
- 3.4.21 Government has outlined its commitments in respect of mitigating greenhouse gas emissions through policies including its Jet Zero Strategy, which also requires to be reviewed every five years, to identify and implement policies and legislation to keep the aviation sector on track. A full update to the Jet Zero Strategy is expected in 2027.
- 3.4.22 It is therefore not necessary to include air transport emissions in EMG as these emissions are appropriately controlled at an international and national level, the UK government has put in place associated policies for managing air transport emissions consistent with its legally binding carbon obligations.

Monitoring approach

- 3.4.23 Heathrow's annual carbon footprint is currently verified through Airports Council International's Airport Carbon Accreditation Scheme (ACA) accreditation. This provides the robust and credible basis for ongoing validation of Heathrow's carbon footprint.
- 3.4.24 The annual footprint data will be validated by carbon category in gross and net terms and compared to the set EMG limits per emissions category. This will provide the basis for reporting compliance with limit values.
- 3.4.25 The annual footprint is retrospective and provides validation on whether limit and or threshold values have been met. Additionally, Heathrow will produce a five-yearly forward-looking forecast to identify trends and trajectories that support longer-term EMG compliance.

¹⁸ Gatwick Airport Northern Runway Project DCO. Secretary of State Decision Letter, paragraph 190.

4. Next steps

4.1 Feedback

- 4.1.1 Further refined detailed proposals for EMG will be presented along with the submission of the DCO application. In order to help with the development of the EMG framework and aspect details we would welcome feedback on the principles set out within this document.

5. Glossary of terms

Term	Definition
Air noise	Noise associated with aircraft flying to and from the airport. Air noise includes take off as aircraft accelerate along the runway (i.e. from the 'start of roll' on the runway) and landing as aircraft slow down on the runway (including reverse thrust braking).
Airport Buildings and Ground Operations (ABAGO)	Infrastructure and activities within the airport boundary that contribute to operational and energy-related direct emissions. This includes airport buildings (such as terminals, piers, offices and maintenance facilities) and ground-based activities (such as aircraft turnaround, taxiing and ground support equipment use).
Air Transport Movements	The take-off or landing of an aircraft engaged in commercial air transport.
Carbon	The term 'carbon' is used in the EMG Framework to describe all greenhouse gas emissions expressed in carbon dioxide equivalent (CO ₂ e). The use of the term carbon does not mean that management of greenhouse gas emissions will be limited to carbon dioxide.
Contour areas	Mapped geographical areas enclosed by a contour line joining points of equal value for a specified environmental indicator, most commonly aircraft noise exposure (for example, equal L _{Aeq} or L _{den} levels). These areas are used to assess and control airport effects.
Development Consent Order	The statutory instrument made under the Planning Act 2008 that grants development consent for a Nationally Significant Infrastructure Project (NSIP). It sets out the authorised works, powers and requirements in relation to construction, operation and, where relevant, decommissioning.
Environmental measures	Specific mitigation, management, compensation or enhancement actions secured through consent, requirements or other controls. They are used to avoid, reduce, remedy, offset or monitor adverse environmental effects.
GHG Protocol	The internationally recognised greenhouse gas accounting standard that provides principles, boundary-setting approaches and reporting rules for quantifying and disclosing emissions, including classification into Scopes 1, 2 and 3.
Heathrow corporate GHG Reporting	Heathrow Airport Limited's internal greenhouse gas reporting methodology. It uses the GHG Protocol to quantify direct and indirect emissions across the defined reporting boundary.
Independent scrutiny	Examination and review undertaken by a body that is not associated with Heathrow.
Limit	A defined maximum level of an environmental effect or parameter that may trigger a requirement for a Mitigation Plan if it is exceeded.
Limit value (air quality)	Legally binding parameters that must not be exceeded. Limit values are set for individual pollutants and are made up of a concentration value, an averaging time over which it is to be measured, the number of exceedances

Term	Definition
	allowed per year, if any, and a date by which it must be achieved. The limit values are set out in the Air Quality Regulations 2010
Mitigation plan	A plan that must be prepared and implemented by Heathrow for bringing the effects of a relevant environmental aspect within an environmental limit, in the event that an environmental limit is exceeded.
Mode share	The proportion of passenger journeys to the airport made by different types (or 'modes') of transport.
Monitoring	A planned and systematic programme of measurement, observation and reporting used to track environmental conditions or project effects over time. It helps assess compliance with requirements, limits or forecasts.
Nationally Significant Infrastructure Project (NSIP)	A large-scale infrastructure project that meets the thresholds set or directions made under the Planning Act 2008.
Prevention plan	A plan that must be prepared and implemented by Heathrow, aimed at avoiding an exceedance of an environmental limit. It is prepared in the event that an environmental threshold is exceeded.
Quota Count	A numerical classification assigned to an aircraft movement according to the aircraft type's certified noise level, with quieter aircraft receiving a lower value. Quota Counts are used to manage the seasonal night-noise quota at designated airports.
Rules	Prescriptive provisions governing how an activity must be undertaken or controlled. They may arise from legislation, a DCO, a management plan or an operational protocol, and they are capable of objective application.
Scope 1 and 2 emissions	Scope 1 emissions are direct greenhouse gas emissions from sources owned or controlled by the reporting organisation, while Scope 2 emissions are indirect emissions from the generation of purchased electricity, steam, heat or cooling.
Scope 3 emissions	All other indirect greenhouse gas emissions in the reporting organisation's value and supply chains that are not included in Scope 2.
Slots	Permissions allocated at a coordinated airport for use of the necessary airport infrastructure to schedule an arrival and departure on a specified date and time, in accordance with Slot Regulations and coordination rules in place from time to time.
tCO₂e	Tonnes carbon dioxide equivalent. A standard metric unit used to compare the relative warming impact of different greenhouse gases against carbon dioxide.
Thresholds	A specified value, below the environmental limit for each relevant environmental aspect, that triggers a requirement for a Prevention Plan if it is exceeded.

6. References

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