OUR APPROACH TO AIR QUALITY

JANUARY 2018

AIRPORT EXPANSION CONSULTATION
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Executive summary

This document explains the context for air quality at Heathrow and outlines potential options and approaches that would help to reduce or mitigate the potential local air quality effects that may arise because of the expansion of Heathrow.

Of necessity, these approaches are of a preliminary nature at this stage and will be refined and developed following this consultation. At Consultation 2 we will provide preliminary environmental information which will be part of the process of fully assessing environmental effects, including air quality. That preliminary environmental information will also include initial information on the necessary mitigation measures. It is not appropriate to do all that until this Consultation 1 is complete as to do so would pre-judge the development of our proposals which we must develop in light of your responses to this Consultation 1.

We recognise that local air quality and the potential effects upon public health are a significant concern to communities around Heathrow. We will continue our work in partnership with the companies operating at Heathrow, local authorities and Government, and we remain fully committed to playing our part in meeting the Government’s national Air Quality Objectives (AQOs) and achieving compliance with European air quality limits.

Heathrow sits within the London Borough of Hillingdon Air Quality Management Area (AQMA). This designation was made because annual average concentrations of nitrogen dioxide (NO₂) were found to be above the AQO at certain locations, including those close to busy roads and motorways. The entire boroughs of Hounslow and Spelthorne, and the Brands Hill Junction in Slough have also been declared as AQMAs. However, the NO₂ concentrations are not above the AQO everywhere in the area and the objective is not exceeded at some locations immediately adjacent to the airport.

Concentrations of the other air pollutants, including PM₁₀ and PM₂.₅, in the boroughs of Hillingdon, Hounslow, Spelthorne and Slough, already meet the relevant air quality limit values and AQOs and are forecast to continue to do so into the future.

It is important to note that non-airport related road traffic is the dominant contributor to ground-level pollutant concentrations outside of the airfield and that international, national and regional actions will play an important role in reducing pollutant concentrations across the UK in the forthcoming years.

We remain confident in the ability of our proposals to expand Heathrow to deliver sustainable growth. With respect to air quality, we stand by our “triple lock” guarantee to deliver the Project in accordance with the UK’s legal air quality obligations. The three elements of the triple lock are:

1. Developing the Surface Access Strategy to deliver a step change in the way people travel to and from Heathrow;
2. Incentivising the use of the cleanest aircraft and cleanest operating procedures;
3. Encouraging the use of the ultra-low emission vehicles on airside;
4. Designing the airport to reduce emissions, including:
   - Efficient airfield design to optimise aircraft taxi paths;
   - Planning road diversions and layouts to reduce impacts on local air quality receptors;
   - Planning land-use to reduce the potential for air quality impacts; and,
   - Managing the air quality impact of freight movements.
5. Managing air quality during construction.

The proposals we are developing and the previous assessment of the implications on local air quality of the expansion of Heathrow, undertaken by the Government and ourselves, gives us confidence that the expanded airport will be delivered in accordance with legal air quality obligations.

This document details the air quality policy context, explains the data we collect on pollutant concentrations in the area today, and describes our current actions to reduce emissions. It also defines the process we will go through as we progress towards expansion and presents the steps we propose to take to ensure compliance with legal air quality obligations.

The document sets out the questions we are asking consultees to consider as part of this consultation.
1 Introduction

1.1 Our approach to local air quality

1.1.1 We recognise that local air quality and the potential effects of pollution upon public health are a significant concern to communities around Heathrow. We have been working to address the air quality impacts of Heathrow for more than 15 years and we, with our partners, have a strong track-record of reducing emissions from airport operations.

1.1.2 We remain fully committed to playing our part in improving local air quality.

1.1.3 It is our ambition to be a world-leading airport in reducing emissions from all our activities, both on and off airport. However, it is important to note that non-airport-related road traffic is the dominant contributor to ground-level pollutant concentrations outside of the airport boundary and that international, national and regional actions (such as those being taken by national government and the global automotive industry) will play an important role in reducing pollutant concentrations across the UK in the forthcoming years.

1.1.4 We will have regard to the concerns of stakeholders throughout the development of our proposals and will continue to engage with local communities, and work with the airport operating community – particularly the airlines, local authorities, the Mayor of London, NATS and others to continue to manage emissions.

1.1.5 We will address our air quality impacts through improving the efficiency of operations to reduce potential fuel use, and by employing the latest technologies to ensure that we are at the forefront of developments in aviation.

1.1.6 We will build on our strong track-record of implementing effective measures to reduce emissions from activities at Heathrow and develop a comprehensive sustainable Surface Access Strategy that will inform the design and operation of the expanded airport.

1.2 Purpose and structure of this document

1.2.1 The purpose of this document is to explain the context for air quality and outline potential options and approaches that would help to mitigate the local air quality impacts that may arise because of the expansion of Heathrow. We will develop our approach further following feedback from this first consultation and provide more detailed information on environmental impacts in our second consultation. We will also provide more detailed information on environmental impacts and the details of necessary mitigation measures in Consultation 2.

1.2.2 The context for air quality is described along with an indication of the key sources of relevant information, policy, legislation and guidance. The effects likely to require further consideration as part of the expansion of Heathrow are identified, and potential options that would help to reduce or mitigate potential impacts in relation to local air quality are discussed along with our current approaches to mitigation. Of necessity, the options and approaches are of a preliminary nature at this stage and will be refined and developed following this consultation ahead of Consultation 2. This document forms part of a suite of materials produced as part of our Stage 1 pre-application consultation and should be read in conjunction with the other documentation produced in support of the consultation (see inside cover for details of other documents).

1.2.3 The remainder of this document is structured as follows:

- Section 2 – Policy context;
- Section 3 – Air quality in the Heathrow area today;
- Section 4 – Our air quality priorities;
- Section 5 – The process we are following; and
- Section 6 – Proposed schemes and initiatives.

1.3 Have your say

We would like to know your views on our proposed approach to air quality for the expansion of Heathrow.

We are seeking your views on any aspect of our proposals and there are prompts throughout the document on aspects you may wish to consider when answering that question. The question we are posing in this document is:

Please tell us what you think about the measures proposed to manage emissions. Are there any other measures that we should consider?

In answering this question you may like to consider:

- The actions we are currently taking to address emissions from airport-related activities;
- The way we are developing our approach to dealing with air quality; and
- Our proposed schemes and initiatives to manage potential air quality impacts.
2 Policy context

2.1 Overview of air pollution in the UK

2.1.1 The air pollutants of most concern to public health in the UK are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM₂.₅), both of which largely arise from the combustion of fossil fuels. In the Heathrow area, and the UK in general, concentrations of NO₂ are an important focus, as there are locations where they exceed the EU limit values and national Air Quality Objectives (AQOs).

2.1.2 NO₂ is considered to be a toxic gas, with adverse health effects when people are exposed to short-term concentrations exceeding 200 micrograms per cubic metre (µg/m³). Studies have shown that long-term exposure may affect lung function and cause respiratory symptoms. The annual mean EU limit value and AQO is set at 40 µg/m³. This concentration is based on World Health Organization guidance. This value was chosen based on the evidence of long-term health effects and to help control complex mixtures of combustion-related pollution (mainly from road traffic).

2.1.3 The range of adverse health effects from particulate matter exposure is broad, but they are predominantly to the respiratory and cardiovascular systems. The risk of various outcomes has been shown to increase with exposure. Particles are deposited selectively throughout the respiratory tract at locations determined primarily by their size. The annual mean EU limit value and AQO for PM₁₀ (particles with an aerodynamic diameter of 10 microns or less) is 40 µg/m³ and the annual mean EU limit value and AQO for PM₂.₅ (particles with an aerodynamic diameter of 2.5 microns or less) is 25 µg/m³.

2.2 European and national policy

2.2.1 The legislative framework for air quality consists of legally enforceable EU limit values set in the European Directive on ambient air quality and cleaner air for Europe. The limit values are transposed into UK legislation as Air Quality Standards.

2.2.2 Action in the UK is driven at a local level by the UK's Air Quality Strategy that sets the AQOs. As part of the Local Air Quality Management (LAQM) process established by the Government, each local authority in the country is required to assess air quality in its area. When a local authority identifies that an AQO is at risk of not being achieved, it is required to declare an Air Quality Management Area (AQMA). The current AQMAs in and around the Heathrow area are described in Section 3 of this document.

2.3 Air quality plan for nitrogen dioxide in the UK (2017)

2.3.1 On 31 July 2017, the Department for Environment Food and Rural Affairs (Defra) published the UK plan for tackling roadside nitrogen dioxide concentrations: detailed plan. This plan details how the Government plans to reduce NO₂ concentrations in those areas where air pollution is above the limit value in the shortest time possible. It lists specific actions that will be taken to address the immediate health risks presented by poor air quality in particular parts of the country.

2.3.2 Defra assesses compliance with the EU limit values using the Pollution Climate Mapping (PCM) model. Concentrations are assessed using the PCM model at locations 4 metres from the kerbsides of major road network links where the public may be exposed. The base year (2015) PCM modelled results are calibrated against measured concentrations from the national air quality monitoring network (Defra’s Automatic Urban and Rural Network (AURN)) and then verified.

2.3.3 In producing the UK Plan, Defra used the PCM model to project NO₂ concentrations for several different future scenarios, in order to consider the measures required to achieve compliance. This included a baseline scenario of measures already proposed, a Clean Air Zone (CAZ) scenario, with road traffic emissions controls being implemented in a variety of locations; and, the CAZ plus additional measures scenario, where the need for further action was identified in certain locations, including London.

2.3.4 Under these modelled scenarios, assuming implementation of the proposed CAZ measures, in the Heathrow area compliance with the EU limit value for annual mean NO₂ is predicted in 2025 as soon as 2023. Compliance with the EU limit value in Greater London is predicted in 2025 in the CAZ plus additional measures (including Central London Zero Emission Zone) scenario.

2.4 Greater London Authority proposals

2.4.1 A number of Zone Plans were published by the Government as part of the UK plan for tackling roadside NO₂ concentrations. These set out what is being done in the different regional areas to improve air quality and reduce NO₂ concentrations. The Zone Plan for the Greater London Urban Area is based upon proposals by the Greater London Authority (GLA).

2.4.2 London currently has a Low Emission Zone (LEZ) covering most of Greater London, including Heathrow, which was introduced to encourage the most polluting heavy diesel vehicles travelling in London to become cleaner. As well as efforts by local Government to encourage the use of sustainable forms of transport, there are several other GLA initiatives that are likely to have an impact on emissions around Heathrow. These include:

- The implementation of an Emissions Surcharge from 23 October 2017. This aims to discourage the use of older, more polluting vehicles driving within central London by requiring most vehicles to meet minimum exhaust emission standards or pay a daily charge;
- The introduction of an Ultra-Low Emission Zone (ULEZ). This will replace the Emission Surcharge and require all cars, motorcycles, vans, minibuses, buses, coaches and HGVs within the zone to meet more stringent exhaust emission standards, or pay a daily charge; and

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• Potential acceleration of the ULEZ introduction. The current plan is for the ULEZ to operate at all times from Autumn 2020. However, the Mayor of London and TfL have proposed the earlier introduction of ULEZ in April 2019.

2.4.3 In addition to the ULEZ scheme, TfL is introducing new licensing arrangements for black taxis which means that, from 1 January 2018, new diesel taxis will no longer be licensed in London and all vehicles which are licensed will need to be zero emissions capable.

2.5 Revised draft Airports National Policy Statement

2.5.1 The revised draft Airports National Policy Statement (ANPS) sets out the Government’s policy on the need for new airport capacity in the South East of England and the preference for a north west runway scheme at Heathrow to deliver new capacity. The Secretary of State will use the ANPS as the primary basis for making decisions on the development consent application for the Heathrow Expansion Project.

2.5.2 Taking Britain Further, our submission to the Airports Commission in June 2014, included an assessment of the potential air quality effects of our proposed scheme. We concluded that, because of the general improvement in air quality and with the implementation of appropriate mitigation, there would be no infringements of the AQO for annual average NO2 at locations outside the airport perimeter, where residents and members of the public may be exposed.

2.5.3 As is acknowledged within the revised draft ANPS, the Airports Commission completed their own extensive air quality analysis. From this they concluded that with mitigation measures in place, the Project could be delivered without delaying the date by which Greater London achieves compliance with the EU limit value for annual mean NO2 concentrations.

2.5.4 Since publication of the Airports Commission’s final report, the Government has undertaken further work on air quality to understand the implications of updates to the tools published by Government to calculate road vehicle emission rates. The Government’s air quality re-analysis and the Appraisal of Sustainability published alongside the revised draft ANPS, are again clear in stating that the Project is capable of being delivered in accordance with legal obligations for air quality.

2.5.5 The revised draft ANPS recognises a range of potential mitigation measures that Heathrow could put in place to help meet legal air quality obligations and improve air quality around the airport. Heathrow is already delivering a number of these measures today. The expansion of Heathrow provides the opportunity to expand these initiatives and develop new ones, as well as a chance to bring major change to the surrounding road and public transport network.

3 Air quality in the Heathrow area today

Emissions vs Concentrations

Pollutant emissions are released from a wide range of sources. In London, the most important sources are related to fuel combustion. This includes petrol and diesel vehicles, power plant, domestic heating, construction equipment, aircraft and other functions. These emissions are released to the atmosphere under different conditions (for example, at height, from tall chimneys and aircraft when in flight, or at ground level, from motor vehicles). To determine how these emissions affect people, we measure pollutant concentrations at locations where people are exposed. We also use computer models to simulate the dispersion of these emissions in the atmosphere (as they are transported by the wind) to predict concentrations where people are exposed. The EU limit values and Air Quality Objectives (AQOs) are expressed as concentrations.

One of the principal pollutants of concern, with regard to exceedances of the annual average limit value and AQO, is nitrogen dioxide (NO2). In terms of emissions, the main pollutant released from combustion sources is nitric oxide (NO). This is not directly harmful to health, but it is converted to NO2 via chemical reactions in the atmosphere. Together, NO and NO2 are referred to as oxides of nitrogen (NOx). Efforts to reduce concentrations of NOx therefore focus on reducing emissions of NOx.

3.1 Air quality in the local context

3.1.1 In the area outside of the airport boundary, the main sources of pollution that influence air quality are non-airport-related. In decreasing order of influence, pollutant concentrations beyond the airport boundary are affected by:

• The ambient background (pollutants transported from elsewhere, including London and northern Europe);
• Non-airport-related road traffic;
• Airport-related road traffic; and
• Emissions from airport activities.

3.1.2 Given that non-airport-related road traffic is a dominant source of emissions around Heathrow, national and regional measures to improve air quality will have an important role in addressing the wider pollution issue across the UK that affects concentrations in the area.

3.1.3 The third runway would lie mainly within the London Borough of Hillingdon, with the western end extending over the M25 into the Borough of Slough. The London Borough of Hillingdon declared an AQMA in 2001, which was then extended in 2003 to cover all parts of the borough south of the Chiltern-Marylebone railway line. Heathrow sits within the southern part of this AQMA. The entire boroughs of Hounslow and Spelthorne, and the Brands Hill Junction in Slough have also been declared as AQMAs.

3.1.4 These AQMAs were declared because annual average concentrations of NO2 were found to be above the AQO at certain locations, including those close to busy roads and motorways. However, the NO2 AQO is not exceeded everywhere in the area.

3.1.5 In terms of the annual limit value for NO2, on the basis of PCM modelling, Defra has reported exceedances locally on the A4 (Bath Road), the M4, the A312 and the A30 (Great South West Road).

3.1.6 Concentrations of the other significant air pollutants that can affect public health, including PM10 and PM2.5, in the boroughs of Hillingdon, Hounslow, Spelthorne and Slough, already meet air quality limit values and AQOs and are forecast to continue to do so into the future.

5. Air quality re-analysis: impact of new pollution climate mapping projections and national air quality plan
6. Please see Heathrow’s Blueprint for Reducing Emissions 2015 and 2016 and Heathrow 2.0 which together set out the measures that Heathrow is taking to improve air quality in the local area by reducing emissions on and off the airport.
3.2 Air quality monitoring

3.2.1 We have carried out continuous air quality monitoring at locations on and around Heathrow since 1993, in addition to the monitoring conducted by the local authorities.

3.2.2 The influence of Heathrow on air quality falls sharply with distance from the airport. This is confirmed by the air quality monitoring undertaken in the area, our modelling of emissions from the different sources which influence pollutant concentrations, and the PCM modelling undertaken by Defra.

3.2.3 The Heathrow Air Quality Working Group (a partnership between ourselves, our neighbouring local authorities – London Borough of Hillingdon, London Borough of Hounslow, Slough Borough Council and Spelthorne Borough Council, the GLA, TfL and the Environment Agency) works collaboratively to monitor, share and publish data from 22 air quality monitoring stations within approximately 20 kilometres (km) of Heathrow. The data collected by us, our surrounding local authorities and Defra is publicly available and can be found on the Heathrow Airwatch website http://www.heathrowairwatch.org.uk/.

3.2.4 Figure 3.1 shows annual mean $\text{NO}_2$ concentrations across London. Within 2km of Heathrow, only two air quality monitoring sites have historically recorded $\text{NO}_2$ concentrations exceeding the AQO – these are located next to the M4 motorway. The exceedance at these locations is predominantly as a result of road traffic, the majority of which is not airport-related. Dispersion modelling indicates that Heathrow (including road traffic generated by the airport) contributes just 16% and 6% of total oxides of nitrogen ($\text{NO}_x$) concentrations at the two air quality monitors known as the ‘Hillingdon’ and ‘Hayes’ stations respectively.

3.2.5 Figure 3.1 also shows that annual mean $\text{NO}_2$ concentrations at the majority of the monitoring sites are generally decreasing. However, there are still many locations in London where the annual mean limit value is exceeded, typically adjacent to busy roads.

3.3 Emissions inventory and dispersion modelling

3.3.1 Our extensive monitoring of air quality around the airport is complemented by rigorous tracking of emissions sources and dispersion modelling, which together inform our strategy.

3.3.2 In order to gain a greater understanding of emissions at Heathrow and consider the contribution of different pollutant sources to the monitored concentrations, we regularly produce airport emission inventories. These allow us to track the progress of our emissions reductions programmes and to compare these to our monitoring results.

3.3.3 The extent to which emissions associated with Heathrow (airport-related road traffic, aircraft and other associated activities) and other sources (non-airport-related road traffic, other combustion sources) contribute to concentrations of $\text{NO}_2$ in the air is then determined using dispersion modelling. Our latest full emission inventory, for 2013, was published in 2015. In addition, an inventory focusing on aircraft related emissions only was produced in 2017. The oxides of nitrogen source contributions ($\text{NO}_x$ – of which $\text{NO}_2$ is one component) at key monitoring locations near Heathrow are shown in Figure 3.2, where the different coloured sections of the pie-charts show the origins of the contributions.

3.4 The limited effect of airborne aircraft emissions on local pollutant concentrations

3.4.1 Aircraft on approach and departure to the airport have a negligible impact on local air quality.

3.4.2 Our dispersion modelling studies enable us to specifically assess the impact of aircraft emissions on pollutant concentrations. Our work, and other work from around the world, shows that although aircraft are a significant source of total NO\textsubscript{X} emissions at Heathrow, because emissions from aircraft in flight are elevated, the effect at ground-level is limited. Road traffic related NO\textsubscript{X} emissions are the most important source in terms of local air quality.

3.4.3 It is customary for studies on air quality around airports to include the whole airport landing and take-off cycle, including operations on the ground and in the air up to 3,000 feet (1,000 metres (m)) above ground level. However, it is generally understood that emissions from aircraft become negligible, in terms of their effect on ground-level air quality, once aircraft are more than approximately 350-650 ft (100-200m) above the ground on departure, and when greater than approximately 160-350 ft (50-100) on arrival. Research and dispersion modelling indicates that any effects on ground level concentrations are too small to meaningfully affect air quality.

3.4.4 Figure 3.3, is an illustration to show the level of influence that aircraft on approach and climb-out have upon ground-level NO\textsubscript{X} concentrations. This is based on an indicative dispersion modelling exercise commissioned by Heathrow. It shows that when aircraft approach Heathrow to land, given the dispersion of emissions at height, the effects on ground level concentrations where people may be exposed is negligible. When taking off, aircraft climb more steeply, when compared to their approach angle, meaning they are on average over 1000ft above the ground when they cross the airport boundary. For these reasons, the effect of emissions from these aircraft in the sky, at locations where people live, is negligible.

3.4.5 The main contribution from aircraft to air pollutant levels beyond the airport boundary is the emissions from aircraft at the ground-level.

Figure 3.2: Contributions of oxides of nitrogen by source at key monitoring locations near Heathrow

Figure 3.3: Illustration of the level of influence of approach and climb-out upon ground-level NO\textsubscript{X} concentrations
4  Our current approach to air quality

4.1  Our commitment to continual emissions improvement

4.1.1  We are committed to working in partnership with local authorities and Government to play our part in improving local air quality. We have a strong track-record in reducing emissions from airport operations. This is supported by the monitoring and modelling that we carry out, as detailed in Section 3.

4.1.2  We implemented our first Air Quality Strategy in 2002, and reviewed and updated it in 2007. Our current Air Quality Strategy runs from 2011 to 2020 and has been designed to complement the measures being implemented by the local authorities in the area surrounding Heathrow, the Mayor of London’s Air Quality Strategy and national initiatives. Each revision of the Air Quality Strategy is produced to reflect the latest understanding of emissions from Heathrow and to ensure that we take advantage of emerging technologies and best practice.

4.1.3  Our 2013 Emissions Inventory showed that the implementation of the Air Quality Action Plan has led to a 430 tonne, or 16%, reduction in total emissions of NO\textsubscript{X} from ground-based sources since the last full inventory for the period 2008/9, as shown in Figure 4.1 below. We have seen concentrations of NO\textsubscript{2} at Heathrow fall by over 20% in the past 20 years\textsuperscript{11}, despite the continued growth of the airport from around 56 million passengers per year to around 76 million passengers per year today. Our actions to reduce operational emissions and our performance on surface access have been influential in driving this reduction. Since 1991, Heathrow’s passenger numbers have almost doubled but the number of airport-related car trips have remained roughly the same, as shown in Figure 4.2.

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\textsuperscript{10} http://www.heathrow.com/filesource/Company/Static/PDF/Communityandenvironmental-quality-strategy_LHR.pdf


\textsuperscript{12} Heathrow (2016). Heathrow’s Blueprint for Reducing Emissions: Our top ten actions to reduce Heathrow’s emissions in 2016

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Figure 4.1: NO\textsubscript{X} emission reductions from airport sources in the period 2008/9 to 2013\textsuperscript{12}

Figure 4.2: Passenger numbers and airport-related car trips
4.2 Action to reduce emissions

4.2.1 Our current Air Quality Strategy\(^3\) contains a number of actions to reduce emissions associated with all airport-related activities.

4.2.2 We take a systematic approach to reducing emissions and our work has the following three key objectives:

1. Accurately quantifying and measuring the contribution to local air quality from airport-related activities, as detailed in Section 3.
2. Effectively reducing the emissions by:
   a. Controlling – airport fixed energy plant and vehicles owned or leased by Heathrow;
   b. Guiding – aircraft ground movements, airside vehicles and staff travel to and from Heathrow; and
   c. Influencing – aircraft fleet mix and passenger travel to and from Heathrow. While emissions from aircraft are the single biggest source at the airport, road traffic emissions have a much greater influence on pollutant concentrations at locations of public exposure.
3. Working with stakeholders to increase understanding and awareness of air quality and how it affects the health and quality of life of local communities.

4.2.3 Since publication of the latest Heathrow Air Quality Strategy 2011-2020, we also published a Blueprint for Reducing Emissions in both 2015\(^4\) and 2016\(^5\). These Emissions Blueprints each comprised a 10-point plan of tangible actions for delivery, to accelerate, stretch and add to existing plans to reduce Heathrow’s NO\(_X\) emissions.

4.2.4 Actions that we have taken over the past few years to reduce emissions from a wide variety of sources are summarised in Figure 4.3. Several measures focus on increasing the usage of Fixed-Electrical Ground Power (FEGP) and Pre-Conditioned Air (PCA) to reduce the usage of the Auxiliary Power Units (APUs) that power air-conditioning whilst aircraft are on stand and are a source of emissions. Others focus on improving the efficiency of Ground Support Equipment (GSE) operations, including pooling of GSE, and reducing emissions by facilitating the transition to Electric Vehicles (EVs).

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Figure 4.3: How we are reducing emissions

Key things to consider

Do you have any views on the actions we are currently taking to address emissions from airport-related activities?
5 Our approach to air quality with expansion: the process we are following

During the development of our expansion proposals, we will be undertaking several key steps to ensure that we deliver on our commitments with regards to local air quality. The key aspects of our plans are:

- Input to masterplan development;
- Stakeholder engagement;
- Air quality assessment and development of mitigation measures; and
- Establishment of an Air Quality Expert Review Group (AQERG).

5.1 Input to scheme development

5.1.1 We are undertaking a robust design optioneering, evaluation and consultation process to establish the optimum layout of the airport and surrounding roads, whilst having regard to land take and environmental effects along with operational, cost, affordability and financeability considerations.

5.1.2 Air quality is and will continue to be, one of the key considerations in developing the design of the expanded airport. The airport infrastructure will be designed in accordance with best practice from airports around the world to reduce potential emissions. This is described further in Section 6.

5.1.3 For more information on the emerging elements of the expansion scheme, see the following consultation documents: Our Emerging Plans and Scheme Development Report.

5.2 Stakeholder engagement

5.2.1 We will continue to engage with local planning authorities, and other organisations such as the GLA, TfL and the Environment Agency in preparing our proposals for the expansion of Heathrow. We will ensure that our approach is discussed and clarified and we will have regard to input from stakeholders. We will seek agreement on our assessment methodology (including potential key sensitivities/effects, study area, emission factors, background concentrations), baseline year and characterisation, and our approach to the assessment and monitoring of construction dust impacts.

5.3 Air quality assessment

5.3.1 Atmospheric dispersion modelling will be used to determine concentrations of airborne pollutants emitted from all significant sources associated with Heathrow. We will use the most up to date emissions factors available at the time of assessment for each source, and we will address uncertainty in the prediction of future pollutant concentrations. The outputs of this work will enable us to understand any changes in pollutant concentrations affecting the health of local communities.

5.3.2 The air quality assessment will be one component of the Environmental Impact Assessment (EIA) undertaken for the expansion of Heathrow. EIA is the process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or ‘baseline’).

5.3.3 The EIA is integral to the development of the design of the airport and the process will ensure that potential air quality impacts inform the design process, and that the final scheme incorporates sustainable and innovative solutions to mitigate the potential effects of the Project on local air quality.

5.3.4 The preliminary findings of the air quality assessment together with further details and development of our proposed mitigation measures will be published as part of our next consultation within our Preliminary Environmental Information Report. That preliminary environmental information will allow us to provide the initial information on the detail, quantity and cost of necessary mitigations.

5.4 Heathrow Air Quality Expert Review Group

5.4.1 We recognise that it is important to demonstrate that our approach is robust and, therefore, we have established the Heathrow Air Quality Expert Review Group (AQERG) to provide a technical check and challenge of our approach to air quality assessment. This group will also provide an independent and expert perspective on reasonable and practicable means of controlling emissions and improving ambient air quality.

5.4.2 The AQERG draws together extensive expertise from across the topic of air quality, with significant experience and recognition in:

- Air quality policy;
- Atmospheric dispersion modelling;
- Air pollution science / atmospheric physics / chemistry; and
- The effects of air quality on health and quality of life.

5.4.3 The AQERG members represent several leading organisations in the field of air quality. They will provide inputs on a range of aspects, including road vehicle emissions, emissions from aviation activities and potential mitigation measures.

Key things to consider

Do you have any views on the way in which we are developing our approach to dealing with air quality?
6  Our approach to air quality with expansion: proposed schemes and initiatives

Our proposal for the expansion of Heathrow presents a transformative opportunity for the way that Heathrow and partner organisations manage their impacts on local air quality.

To underline our commitment to deliver Heathrow Expansion without compromising the UK’s ability to meet legal air quality obligations, we set out a triple lock guarantee to achieve this in three ways:

1  Meeting our existing commitment to improving air quality by: not increasing the amount of airport-related vehicle traffic on the road; by supporting improved surface access that would increase the number of people (both passengers and employees) using public transport; and by encouraging and incentivising the use of new technology and cleaner vehicles;

2  Ensuring further measures are ready to be introduced if required to reduce traffic: Heathrow has identified a number of options available to improve air quality that can be implemented if needed as part of our expansion plans to reduce road journeys, reduce potential emissions and support more sustainable travel patterns. These include, if necessary, the introduction of a road user charge or emission-based access charge; and

3  Binding our commitment by guaranteeing that new capacity at an expanded airport will only be released when it is clear that the airport’s direct contribution to air quality will not delay or cause non-compliance with the UK’s legal air quality obligations.

As we develop the scheme, progress our construction and logistics planning and define operational strategies and standards, the implications for air quality will continue to be at the heart of our decision making.

6.1 Heathrow 2.0 and the future

6.1.1 In early 2017 we published Heathrow 2.0, our new sustainability strategy, which details how we will be a good neighbour, improving local quality of life and making the area a great place to live. It sets out a series of goals that will guide the future of our business as an expanded Heathrow, and will also guide us in the years before we plan to open a new north west runway. This strategy aims to establish Heathrow as a world-leading airport in reducing emissions from all sources of related activity, both on and off airport.

6.1.2 Some of our ambitions for the future are only possible because of the extra revenue and opportunity that the expansion of Heathrow creates. For example, key to our ambitions for air quality are the public transport mode share targets set in Heathrow 2.0 which are at the heart of the Surface Access Strategy for the expanded airport. For further details on how we aim to deliver the best-connected airport in the world, designed around the needs of passengers, the local community, businesses and the environment, please see ‘Our Approach to Developing a Surface Access Strategy for Heathrow Airport’, published as part of this consultation.

6.1.3 Table 6.1 sets out key overarching goals and specific targets within Heathrow 2.0 that aim to ensure that we play our part in improving air quality in the area surrounding Heathrow.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface access strategy</td>
<td>Reduce emissions from road transport by working with partners</td>
</tr>
<tr>
<td></td>
<td>Overall: Reduce NOx emissions from airport related traffic by at least 40% by 2020 and 60% by 2025 (from 2013 baseline)</td>
</tr>
<tr>
<td></td>
<td>50% of airport passenger journeys made by public and sustainable transport by 2030, supporting no more airport-related traffic on the road</td>
</tr>
<tr>
<td></td>
<td>At least 45% of passengers to use public and sustainable transport by 2019 and 50% by 2030.</td>
</tr>
<tr>
<td>Aircraft</td>
<td>Become the world leader in delivering the cleanest aircraft and operations possible</td>
</tr>
<tr>
<td></td>
<td>No flights by pre-Committee on Aviation Environmental Protection (CAEP) standard aircraft by 2020.</td>
</tr>
<tr>
<td></td>
<td>At least 60% of flights by CAEP 6 or newer aircraft by 2020.</td>
</tr>
<tr>
<td>Airside vehicles</td>
<td>Reduce emissions from airside vehicles by working with partners</td>
</tr>
<tr>
<td></td>
<td>Overall: Reduce NOx emissions from airside vehicles by at least 50% by 2020 and 70% by 2025 (from 2013 baseline)</td>
</tr>
</tbody>
</table>

Table 6.1: Goals and targets detailed in Heathrow 2.0

6.1.4 To achieve these targets, we will put a number of focused strategies and measures in place, as outlined in Table 6.2. All of these strategies and measures will be implemented in part or in full in advance of an expanded Heathrow being operational, as we continue to play our part in improving local air quality. Where targets are set prior to 2025, the associated measures will be extended accordingly and applied across the future airport. We will also keep our targets under review, to ensure that we respond to the latest best practice.
## Strategies and measures developed from Heathrow 2.0

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Actions</th>
<th>Indicators</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface access strategy</strong></td>
<td>We will develop infrastructure for Electric Vehicles (EVs) driven by passengers and colleagues. We will develop incentives to encourage the use of low emission and EVs driven by passengers and colleagues, including the salary sacrifice scheme for Heathrow colleagues to facilitate purchase of low emission vehicles and EVs launched in 2017.</td>
<td>Number of EV charging points available to passengers, colleagues, taxis, private hire vehicles, and commercial vehicles kWh consumed at landside EV charging points</td>
<td>Year-on-year increase in EV charging points and kWh consumed at landside EV charging points</td>
</tr>
<tr>
<td><strong>Encourage the use of Ultra-Low Emission Vehicles</strong></td>
<td>Work with rail partners to ensure they prioritise major rail projects that access Heathrow from the north, south, east and west Work with local partners to deliver public transportation priorities and establish safe cycle routes from/to local areas to reduce colleague car journeys, and consider other options such as discounted local bus services for colleagues</td>
<td>% passengers using public and sustainable transport</td>
<td>At least 45% of passengers to use public and sustainable transport by 2019 and 50% by 2030 Reduce the number of single occupancy colleague car journeys by 25% by 2030 and 50% by 2040.</td>
</tr>
<tr>
<td><strong>Develop incentives for mode shift away from private car use</strong></td>
<td>We are preparing a blueprint for a Sustainable Freight Operation that will establish a Heathrow sustainable freight group and use it to develop strategies to improve load factors and emission standards</td>
<td>% of vehicles using logistics centre that are Euro VI or better</td>
<td>Year-on-year increase in percentage of low emission/Euro VI freight trips in Heathrow area</td>
</tr>
<tr>
<td><strong>Establish a Heathrow Sustainable freight group</strong></td>
<td>We will engage at senior levels with airline partners to encourage fleet renewal. This will be supported through the use of our Fly Quiet and Green league table.</td>
<td>% of flights by CAEP 6 or newer aircraft</td>
<td>At least 60% of flights by CAEP 6 or newer aircraft by 2020</td>
</tr>
<tr>
<td><strong>Aircraft</strong></td>
<td>We will develop an airside vehicle emission roadmap and maintain engagement with our stakeholders to ensure that they prepare to meet tighter emission standards</td>
<td>% of airside vehicles that meet latest and most stringent, relevant emission standards (Euro 6/VI, Stage V, etc.)</td>
<td>100% of airside vehicles meet latest and most stringent, relevant emission standards (Euro 6/VI, Stage V, etc.) by 2025</td>
</tr>
<tr>
<td><strong>Airstside vehicles</strong></td>
<td>We will develop an airside vehicle emission roadmap and maintain engagement with our stakeholders to ensure that they prepare to meet tighter emission standards</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.1.5 These strategies and measures will play an important role in managing the potential impacts of the future airport operation and are therefore included in this document to provide the opportunity for comment.

6.2 Potential additional operational strategies

### Reducing emissions through vehicle charging

6.2.1 As older vehicles with higher emissions are replaced by newer ones that meet progressively tighter EU emission standards, air quality is predicted to improve. We are, however, exploring the potential for strategically-managed access charges, low emission zones, and parking charges at Heathrow to further encourage the use of low emissions vehicles, reduce unnecessary highway travel, and generate revenue to invest in public transport.

6.2.2 We envisage that the focus in the early years would be on tackling the existing issues around air quality, encouraging those who drive to the airport to do so in the cleanest possible vehicles. In later years, and as the numbers of passengers increases with expansion, it is likely that there would be a growing emphasis on encouraging unnecessary highway travel and encouraging as many people as possible to use public transport or walk or cycle where these are viable alternatives.

6.2.3 We recognise that for some people, driving is not a choice. If any charges are introduced, we would ensure that appropriate exemptions are made available to ensure that passengers who rely on their car (for instance because of reduced mobility or other disabilities) are not unfairly penalised.

6.2.4 Charges would only be introduced if they are necessary to meet specific requirements, and would be used in conjunction with our sustainable transport initiatives and investment in transport infrastructure to further support a shift away from private highway travel.

6.2.5 Further details on our emerging proposals to reduce emissions through vehicle charging are provided in ‘Our Approach to Developing a Surface Access Strategy for Heathrow Airport’, published as part of this consultation.

### Incentivising cleaner aircraft and operations

6.2.6 We recognise the impacts that Heathrow aircraft operations have on our local community and are committed to reducing these. Through our landing charges we will continue to charge the highest prices to the noisiest and highest emitting aircraft and are considering how our charges should evolve in the future.

6.2.7 As technology develops, even more stringent noise and emission standards can be expected for aircraft – and we will ensure that, in consultation with airlines, we continue to develop our incentive framework to ensure we continue to attract the world’s greenest aircraft.

6.2.8 We are also considering further means of incentivising airlines to prioritize sustainable operations at Heathrow. This may include rewarding airlines that operate aircraft using the ‘greenest’ methods (for example, lower use of Auxiliary Power Units).

6.2.9 We will also work with Government and our regulator (the CAA) to consider the legal framework that would be needed to implement these incentives.

### Independent regulation

6.2.10 We continue to think that there is the potential for an independent regulator to provide scrutiny and further confidence in our air quality plans. We are ready to work with Government should they move to create such a role.

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6 The Fly Quiet and Green programme is one of the steps Heathrow is taking to reduce aircraft emissions, encouraging airlines to use aircraft with lower NOx emissions and operate more efficiently. It includes the UK’s first ever league table which ranks airlines according to their performance.
6.3 Design development

6.3.1 The expanded airport will be designed in accordance with the latest best practice in airport design, and will incorporate all the features and processes that we have developed over recent years to reduce emissions.

6.3.2 Details of the process that we are following to define the scheme that will be the subject of a Development Consent Order (DCO) application by Heathrow and an explanation of the progress we have made to date are contained within the Scheme Development Report published as part of this consultation. Various potential elements of the future scheme are particularly relevant when considering likely impacts on local air quality.

Efficient airfield design

6.3.3 The third runway would be located as close to the existing northern runway as operationally possible. The minimum separation distance of the new runway from the existing runway to achieve safe independent operations is 1,035m. This separation would reduce cumulative air quality effects from aircraft and road traffic at properties located to the north of the M4 motorway.

6.3.4 The layout of aircraft taxiways will be optimised to reduce air quality impacts by ensuring aircraft movements on the ground are highly efficient and engine use is reduced. This can be achieved by keeping distances between runways, taxiways, aprons and stands to a practicable minimum and therefore reducing the distance that aircraft travel when not in flight.

6.3.5 The positioning of taxiways will also consider the proximity of people, such as residential properties to the north of the A4 Bath Road, and we will maintain sufficient separation between these receptors and taxiing aircraft.

What are aprons and taxiways?

- Aircraft require areas for parking, unloading or loading, refuelling and boarding. These are known as aprons and are usually located adjacent to terminals or satellites.

- Taxiways act as the ‘arteries’ of the airport, enabling aircraft to move between the aprons and the runways safely and efficiently.

Road diversions and layout

6.3.6 When evaluating potential diversions to the existing road network in the Heathrow area and the positioning and scale of new highway infrastructure, we have applied a number of high level principles. Those options which provide greater separation between proposed road infrastructure and locations where people could be exposed to associated vehicle emissions have been preferred on air quality grounds. Additionally, when identifying preferred options, we have also considered the likelihood of increases in traffic on existing roads increasing people’s exposure to pollutants.

6.3.7 As we continue to develop the design and refine our modelling and assessment tools, consideration of these variables will help us manage the risk of adverse air quality impacts and reduce these through a considerate design. More details on the road options under consideration are provided in Our Emerging Plans and the Scheme Development Report published as part of this consultation.

Southern Access Road Tunnel

6.3.8 Another intervention under consideration is a new Southern Access Road Tunnel, linking the Southern Perimeter Road with the Central Terminal Area via a new underground road beneath the southern runway. This could provide flexible access options, helping to reduce traffic distances and traffic volumes on parts of the strategic road network, and therefore contributing to the management of emissions from vehicles accessing the airport. The Southern Perimeter Road would provide the main landside connection for vehicles and existing junctions would be upgraded where necessary to accommodate the changes in traffic flows.

6.3.9 A Southern Access Road Tunnel could reduce road based journey distance to the Central Terminal Area (CTA) from the south and west by about five miles, reducing vehicle mileage and potentially helping to contribute to a reduction in emissions to the north west and east of the airport.

6.3.10 It could also reduce journey times for public transport, supporting the creation of more direct and reliable bus routes for Heathrow and the surrounding area. In addition it could create new and more viable opportunities for active travel from the south of Heathrow such as cycling to and from the airport through the tunnel to the central terminal area.

6.3.11 Further details on a potential new southern access tunnel and associated changes to the southern perimeter road are provided in ‘Our Approach to Developing a Surface Access Strategy for Heathrow Airport’, published as part of this consultation.

Land-use planning

6.3.12 During the design development process, the impacts of a wide variety of land-uses on air quality are being considered in relation to the sensitivity of the local area. This process seeks to reduce the risk of uses with the potential to generate additional traffic, affecting areas particularly sensitive to changes in air quality, i.e. roads where high pollutant concentrations have been recorded at receptor locations. Similarly, this process will be used to ensure, where practicable, that activities that could generate emissions with a nuisance value (e.g. odour) are not located close to residential areas.

Parking

6.3.13 The Project provides an opportunity to consolidate existing parking capacity adjacent to the primary access routes to the airport and provide onward transport to the terminal areas via sustainable modes.

6.3.14 At Heathrow today, there are approximately 39,000 Heathrow Airport Limited controlled on-airport car parking spaces for passengers and colleagues. There are a further 12,500 spaces that are under the control of other tenants around the airport including British Airways.
6.3.15 With expansion, it is proposed to keep the number of spaces at a similar level to today and to manage the parking that is available in a way that helps achieve the wider priorities for surface access and therefore manage associated emissions.

6.3.16 Our proposed approach is based on the following:

- **Consolidation of parking for passengers:** clusters of car parks would be grouped together with good access to the road network and direct links to airport terminals. This would help reduce the amount of traffic circulating around the airport reducing emissions and pollutant concentrations adjacent to these road links.

- **Reduction and consolidation of colleague parking:** the amount of parking available for colleagues would reduce with parking for colleagues managed in a more integrated way and priority given to those colleagues who cannot realistically travel to work by public transport or who are prepared to car share.

- **Smart and clean parking:** technology has a role to play in ensuring that car parks operate efficiently, which could also include a form of emissions based pricing for access to car parks, with cleaner, less polluting vehicles paying less and having better access to terminals.

6.3.17 Further detail on existing parking provision at Heathrow and our plans for the future is provided in ‘Our Approach to Developing a Surface Access Strategy for Heathrow Airport’, published as part of this consultation.

**Freight facilities**

6.3.18 In the future, we want to double freight handling capacity, but minimise the number of individual freight journeys on the road network surrounding Heathrow, therefore limiting their contribution to pollutant concentrations. This could be achieved through:

- **Adherence to designated routes:** These routes will be discussed and agreed with the relevant highway authorities and take into consideration local air quality.

- **Use of holding areas and vehicle call off areas:** A commitment to using holding and call off areas can reduce congestion and therefore vehicle emissions.

- **Use of consolidation centres:** The provision of an off-airport consolidation centre could reduce the number of individual vehicle movements to the local warehouses and could therefore cut the number of road miles, fuel costs and vehicle emissions.

- **Freight by rail:** Facilities used for the construction phase could be used in the operational phase for rail freight, thereby reducing the number of freight vehicles on the roads associated with Heathrow and helping to improve air quality.

6.3.19 We have also identified various measures to influence freight vehicles and delivery behaviour in order to reduce the potential impact of Heathrow related freight vehicles on traffic and air quality, including: safety and environmental standards; cleaner vehicle standards; an increase in load factors; delivery scheduling and re-timing for out-of-peak or out-of-hours deliveries; collaboration between businesses on-site; and, smart procurement to manage deliveries.

6.3.20 Further details are provided in ‘Our Approach to Developing a Surface Access Strategy for Heathrow Airport’, published as part of this consultation.

6.4 Air quality management during construction

**Code of Construction Practice**

6.4.1 The air quality impacts during the construction phase of the expansion of Heathrow will be assessed in accordance with guidance produced by the Greater London Authority and the Institute of Air Quality Management. The assessment will consider the application of appropriate management measures that would be put in place to reduce potential emissions of NOx, dust, odours and particulates during the construction phase, to avoid and mitigate potential impacts experienced by local communities.

6.4.2 A Code of Construction Practice (CoCP) will be produced, setting out a series of proposed measures and standards of work that would be applied throughout the construction period. A draft CoCP will be developed for our second consultation, with the overall aim of providing effective planning, management and control during construction, to mitigate potential impacts upon people, businesses and the natural and historic environment.

6.4.3 The CoCP will set out measures for the effective management of contractors including the workforce and deliveries and reducing health, safety and environmental risks and impacts on the local population, businesses and airport operations. The CoCP will also outline the envisaged logistics measures, which will be based on effective vehicle and workforce management, supported by the delivery of temporary infrastructure (for example rail facilities or car parking) and systems (such as delivery management and security) both on and off site.

**Construction logistics hubs**

6.4.4 In April 2017, Heathrow invited communities across Britain to showcase how their area could help build expansion by hosting one of four UK logistics hubs.

6.4.5 These sites would be used to pre-assemble components of the expanded airport before transporting them in consolidated loads to Heathrow. The logistics hubs would therefore play a key role in supporting the project’s efficient delivery, would make the project more affordable and would reduce potential emissions from construction vehicles by transporting assembled components to site in fewer lorries.

6.4.6 Following consideration of over 120 applications to host one of the four Construction Logistics Hubs, we announced our initial long-list of potential sites in November 2017.

**Transport of material by rail**

6.4.7 We are investigating opportunities to maximise the transport of bulk construction materials, such as earthworks fill or aggregate for reinforced concrete, by rail rather than by road. This could reduce potential construction traffic and associated vehicle emissions. This would require the development of a rail terminal, which could potentially be located to the north of the new runway along the Colnbrook branch line. The rail terminal may also include concrete and asphalt batching plants with sufficient material stockpiled to ensure continuous production, as required.

6.4.8 We have also assessed the option of transporting materials by water via the River Thames and/or the Grand Union Canal, but due to distance and lack of water connectivity to the construction site, we have discounted water freight as a viable mode of transport for the construction of the Project.
Traffic management

6.4.9 Road construction freight would be managed using a Delivery Management System that allocates pre-booked delivery slots allowing the time of each delivery to be controlled, managing the flow of heavy goods vehicles (HGVs) arriving at the site entrances, spreading the deliveries through the day and avoiding the peaks where possible. We are also investigating the option of creating a freight parking area near the site, to act as a buffer for parking and holding HGVs when required, therefore reducing the potential circulation of HGVs on the local road network. Additionally, it can offer a security checking facility, so reducing the level of inspection required at the site entrances, reducing the risk of associated congestion.

6.4.10 The routing of construction traffic would also be carefully planned to ensure that, where practicable, construction vehicles are routed away from areas that are more sensitive to changes in air quality and local communities.

6.4.11 The expansion of Heathrow would require a considerable workforce especially during peak construction periods. We are investigating opportunities to reduce the number of workers on site by increasing off site manufacturing and pre-fabrication and improving on-site construction methods.

6.4.12 The majority of the construction workforce would travel to site each day by public and sustainable transport modes but there would be a minority who travel by private car. For public transport, existing bus routes could be supplemented by the Project to preserve capacity for other passengers. Where a route terminates at the CTA, internal bus services could transport the workforce from the CTA to their work location. Workforce Travel Plans will be developed to encourage the use of the public transport and sustainable modes of transport.

6.4.13 For those workers driving to site, car parking will be provided near the site and a shuttle bus service will transport workers to their site offices or workplaces. The parking facilities would be located in strategic locations near the major access routes to Heathrow.

Key things to consider

Do you have any views on our proposed schemes and initiatives to manage potential air quality impacts?

7 Summary

7.1.1 We recognise that local air quality and the potential effects that it has upon public health are a significant concern to communities around Heathrow. We are committed to working in partnership with local authorities and Government to play our part in meeting the Government’s national AQOs and achieving compliance with European air quality standards as soon as possible.

7.1.2 We remain confident in the ability of our proposals to expand Heathrow to deliver sustainable growth. With respect to air quality, we stand by our ‘triple lock’ guarantee that the Project would be delivered in accordance with the UK’s legal air quality obligations. The three elements of the triple lock are:

1. meeting our existing commitment to improving air quality by not increasing the amount of airport-related vehicle traffic on the road, by supporting improved surface access that would increase the number of people (both passengers and employees) using public transport, and by encouraging and incentivising the use of new technology and cleaner vehicles;
2. ensuring further measures are ready to be introduced if required to reduce traffic: Heathrow has identified a number of options available to improve air quality that can be implemented if needed as part of our expansion plans to reduce road journeys, reduce potential emissions and support more sustainable travel patterns. These include, if necessary, the introduction of a road user charge or emission-based access charge; and
3. binding our commitment by guaranteeing that new capacity at an expanded airport will only be released when it is clear that the airport’s direct contribution to air quality will not delay or cause non-compliance with the UK’s legal air quality obligations.

7.1.3 Our strategy for meeting this commitment is informed by our long history of addressing air quality impacts. The expanded airport will be designed in accordance with the latest best practice in airport design, and will incorporate all the features and processes that we have developed over recent years to reduce emissions. We are focusing on the following:

- Developing the Surface Access Strategy to deliver a step change in the way people travel to and from Heathrow;
- Efficient airfield design to optimise taxi paths;
- Planning road diversions and layout to reduce impacts on local air quality receptors;
- Planning land use to reduce the potential for air quality impacts; and
- Managing the air quality impact of freight movements.

7.1.4 The proposals that we are developing, and the previous assessments of the implications on local air quality of the expansion of Heathrow undertaken by the Government and ourselves, give us confidence that the expanded airport will be delivered in accordance with legal air quality obligations.

Have your say

We would like to know your views on our proposed approach to air quality for the expansion of Heathrow.

In answering this question you may like to consider:

- The actions we are taking to address emissions from airport-related activities;
- The way we are developing our approach to dealing with air quality; and
- Our proposed schemes and initiatives set out to deal with air quality.

Please tell us what you think about the measures proposed to manage emissions. Are there any other measures that we should consider?
### Glossary

<table>
<thead>
<tr>
<th>Acronym or Abbreviation</th>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-CDM</td>
<td>Airport Collaborative Decision Making</td>
<td>System aimed at improving the overall efficiency of airport operations by optimising the use of resources and improving the predictability of events. It focuses especially on aircraft turn-round and pre-departure sequencing processes.</td>
</tr>
<tr>
<td>APU</td>
<td>Auxiliary Power Unit</td>
<td>An engine, usually located on the rear of aircraft, which provides electrical power when main engines are switched off.</td>
</tr>
<tr>
<td>AQERG</td>
<td>Air Quality Expert Review Group</td>
<td>A group established to provide a technical check and challenge of our approach to air quality assessment.</td>
</tr>
<tr>
<td>AQMA</td>
<td>Air Quality Management Area</td>
<td>A defined geographical area where a local authority has measured or predicted one or more air quality limit values are exceeded and where action is needed to reduce concentrations.</td>
</tr>
<tr>
<td>AEO</td>
<td>Air Quality Objective</td>
<td>Maximum allowable concentration for a specific air pollutant set by the UK. They are set out in Air Quality Regulations for England, Scotland, Wales and Northern Ireland.</td>
</tr>
<tr>
<td>AURN</td>
<td>Automatic Urban and Rural Network</td>
<td>The DEFRA automatic air quality monitoring network and is the main network used for compliance reporting against the Ambient Air Quality Directives.</td>
</tr>
<tr>
<td>CAEP</td>
<td>Committee on Aviation Environmental Protection</td>
<td>A technical committee of the ICAO Council which formulates new policies and adopts new Standards and Recommended Practices related to aircraft noise and emissions.</td>
</tr>
<tr>
<td>CAZ</td>
<td>Clean Air Zone</td>
<td>An area where targeted action is taken to improve air quality and resources are prioritised and coordinated in order to shape the urban environment in a way that delivers improved health benefits and supports economic growth.</td>
</tr>
<tr>
<td>CoCP</td>
<td>Code of Construction Practice</td>
<td>A series of measures and standards of work to be applied throughout the construction period to provide a consistent approach to the management of construction activities across local authority boundaries.</td>
</tr>
<tr>
<td>CTA</td>
<td>Central Terminal Area</td>
<td>Terminals 1 &amp; 3, as well as the Central Bus Station.</td>
</tr>
<tr>
<td>CVP</td>
<td>Clean Vehicles Partnership</td>
<td>Partnership to facilitate collaborative working among Heathrow fleet operators providing free advice, guidance and training.</td>
</tr>
<tr>
<td>DCO</td>
<td>Development Consent Order</td>
<td>The means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP).</td>
</tr>
<tr>
<td>DEFRA</td>
<td>The Department for Environment Food and Rural Affairs</td>
<td>The UK government department responsible for air quality.</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
<td>The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or “baseline”).</td>
</tr>
<tr>
<td>ES</td>
<td>Environmental Statement</td>
<td>Presents the findings of the EIA.</td>
</tr>
<tr>
<td>EV</td>
<td>Electric Vehicle</td>
<td>A vehicle which uses one or more electric motors or traction motors for propulsion.</td>
</tr>
<tr>
<td>FEGP</td>
<td>Fixed Electrical Ground Power</td>
<td>System for aircraft to plug in to electricity whilst on stand.</td>
</tr>
<tr>
<td>GLA</td>
<td>Greater London Authority</td>
<td>The administrative body for Greater London.</td>
</tr>
<tr>
<td>GSE</td>
<td>Ground Support Equipment</td>
<td>The support equipment found at an airport, usually on the ramp, the servicing area by the terminal. This equipment is used to service the aircraft between flights.</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
<td>A UN specialized agency established to manage the administration and governance of the Convention on International Civil Aviation.</td>
</tr>
<tr>
<td>IAQM</td>
<td>Institute of Air Quality Management</td>
<td>The professional body for air quality professionals.</td>
</tr>
<tr>
<td>LAQM</td>
<td>Local Air Quality Management</td>
<td>The system established under the Environment Act 1995 under which all local authorities in England, Wales and Scotland are required to regularly review and assess air quality in their areas.</td>
</tr>
<tr>
<td>LEZ</td>
<td>Low Emission Zone</td>
<td>A geographical area where certain vehicle use is restricted based on vehicle type and/or exhaust emissions.</td>
</tr>
<tr>
<td>LTO</td>
<td>Landing and Take-Off</td>
<td>The LTO Cycle covers four modes of engine operation, namely idle, approach, climb out and take-off, each of which is associated with a specific engine thrust setting and a time in mode.</td>
</tr>
<tr>
<td>NATS</td>
<td>National Air Traffic Services</td>
<td>NATS Holdings, formerly National Air Traffic Services, is the main air navigation service provider in the UK including provision of en-route air traffic control services to all flights in the UK.</td>
</tr>
<tr>
<td>NOxyz</td>
<td>Nitrogen Oxides</td>
<td>A mixture of gases produced during high temperature combustion and made up of NO and NO₂. Also known as nitrogen oxides.</td>
</tr>
<tr>
<td>NO2</td>
<td>Nitrogen Dioxide</td>
<td>Formed from the oxidation of atmospheric nitrogen during high temperature combustion and via photochemical reaction between nitric oxide (NO) and ozone (O₃) in air.</td>
</tr>
<tr>
<td>NPS</td>
<td>National Policy Statement</td>
<td>Statements produced by Government. They give reasons for the policy set out in the statement.</td>
</tr>
<tr>
<td>PCA</td>
<td>Pre-Conditioned Air</td>
<td>Centralised air conditioning to avoid the requirement for APU operation on individual aircraft.</td>
</tr>
<tr>
<td>PCM</td>
<td>Pollution Climate Mapping</td>
<td>A collection of models designed to fulfill part of the UK’s EU Directive (2008/50/EC) requirements to report on the concentrations of particular pollutants in the atmosphere.</td>
</tr>
<tr>
<td>PM</td>
<td>Particulate Matter</td>
<td>Microscopic portions of solid matter suspended in air. PM₂.₅—microscopic particles with an aerodynamic diameter of 10 microns or less. PM₁₀—microscopic particles with an aerodynamic diameter of 2.5 microns or less.</td>
</tr>
<tr>
<td>ULEZ</td>
<td>Ultra-Low Emission Zone</td>
<td>The proposed London LEZ covering the same area as the Congestion Charge zone.</td>
</tr>
</tbody>
</table>
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There are lots of ways you can contact us and find out more

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