

# HSPG Position Paper: Low Emission Strategy for Heathrow

## Third Draft for Discussion

8<sup>th</sup> November 2018

This paper has been drafted in response to a request from the HSPG Transport Sub Group to develop a position paper on low emission measures for an expanded Heathrow. The first draft was circulated on 14 Aug 2018 as a starting point for discussion with the HSPG Core Group and Members. Subsequent amendments incorporate feedback from HSPG Members and discussions with HAL.

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# Executive Summary

The impact on air quality due to the proposed expansion of Heathrow by Heathrow Airport Limited (HAL) is a critical issue for Development Consent Order (DCO) approval. Air quality impacts are in large part due to the surface transport of passengers, staff and freight to/from Heathrow. Local transport and air quality outcomes are therefore intrinsically linked.

Air quality impacts can be reduced by:

- (i) reducing the number of trips (e.g. by increasing use of public transport); and
- (ii) improving the emissions from the vehicles that remain.

Other elements also play a part, such as location of development, design/layout, road diversions, speed restrictions and localised congestion relief schemes.

This document provides a detailed review of (ii) above, specifically, low emission transport measures associated with Heathrow expansion, and provides a Position Paper for discussion between HSPG and Heathrow Airport Ltd (HAL). The following topic areas are discussed, with associated recommendations.

## **Ambition**

It is highly uncertain whether London will comply with air quality legal obligations before the third runway is opened. Direction from the High Court requires that action is taken:

- (i) to achieve compliance as soon as possible;
- (ii) to reduce exposure as quickly as possible; and
- (iii) to mean meeting the limit values is not just possible, but likely.

For these reasons, HAL should develop an ambitious programme of action to reduce trips and to incentivise low emission technology. This action should not only mitigate emissions from airport related activity, but also link with and support local action, including early implementation of measures (pre-DCO) to increase the likelihood of compliance and exposure reduction in the shortest possible time.

## **Scope**

HAL should adopt a holistic approach to addressing emissions across all aspects of expansion, including:

- robust trip reduction measures within the Surface Access and Freight Strategies;
- minimising transport emissions from remaining vehicles;
- minimising emissions from the construction phase and airport operations; and
- optimising design and layout to minimise air quality impacts.

## **HAL Measures**

This paper reviews low emission measures proposed by HAL and identifies questions and key issues for HSPG Members. Of the measures proposed, an Airport Low Emission Zone (LEZ), supplemented by a package of complementary additional measures, would provide the broadest controls and seek to incentivise and encourage low emission technology. Early implementation (pre-DCO) could coincide with London ULEZ proposals and help to deliver air quality compliance in the shortest possible time. Paired measures will be required for displaced traffic (e.g. waiting Uber taxis and off-site parking).

## **Additional Measures**

A gap analysis identifies additional low emission measures for consideration by HAL, including:

- investment in low emission bus services;
- electric vehicle (EV) passenger and staff transport;
- minimum emission standards for procured, controlled and licensed vehicles;
- emission-based parking;
- EV infrastructure and incentivisation;

- extension of measures for staff and freight; and
- tightening/earlier implementation of controls on airport operations and construction.

**Assessment**

HAL should provide details on the quantification of emissions impacts, including use of emission damage cost methodologies where relevant. Assumptions should be provided regarding factors such as uptake, probability of success, projected fleets, emission factors, success of initiatives, and likely success. Detailed assessment conducted as early as possible would help to increase confidence and clarity regarding the potential impacts on compliance.

**Relationships**

A working group should be established/continued through the DCO process and beyond, to ensure stakeholders are both represented and able to influence future measures. The following areas of remit should be included:

- (i) establishment and continued coordination of paired measures, to reduce risks of displaced traffic;
- (ii) (ii) post-implementation monitoring of impacts of charging proposals and complimentary measures, with opportunity for improvements and further measures where necessary;
- (iii) (iii) use of ring-fenced revenue stream from charging proposals to include wider offsetting and investment in low emission transport in the local area.

# 1. Context of a Low Emissions Strategy

1.1 Air quality impacts of the proposed expansion are in large part due to the surface transport of passengers, staff and freight to/from the airport<sup>1</sup>. As such, local transport and air quality outcomes are intrinsically linked. The Heathrow Strategic Planning Group (HSPG) Transport Sub Group (TSG) has recognised this, adopting a holistic view of the links between transport, air quality and a low emission approach. In June 2018, the HSPG Transport Sub Group resolved to draft a position paper to review low emission measures associated with Heathrow expansion. This document provides a position paper for discussion between HSPG and Heathrow Airport Ltd (HAL).

## Ambition

1.2 Air quality is a critical issue for Development Consent Order (DCO) approval: development consent will be refused unless the Environmental Impact Assessment demonstrates that expansion “will not affect the UK’s ability to comply with [air quality] legal obligations”<sup>2</sup>. The policy context for this position is described in full in Appendix A. In summary, the most recent Department for Environment Food and Rural Affairs (DEFRA) projections<sup>3</sup> indicate that London will comply with air quality legal obligations by 2026, the year in which the third runway is due to open<sup>4</sup>. This projection assumes full implementation of actions set out in the latest DEFRA Nitrogen Dioxide (NO<sub>2</sub>) Plan (including extension of the London Low Emission Zone (LEZ)), it also incorporates estimates of the impacts of Heathrow expansion. However, compliance is marginal (39.9 µg/m<sup>3</sup> NO<sub>2</sub> against a limit value of 40 µg/m<sup>3</sup>) and uncertainty is large (± 29%, 95% Confidence Interval (CI)).

1.3 To date, the HSPG Transport Sub-group has advocated ambitious action, pressing for air quality improvements in the short term, and moving to zero emissions transport infrastructure over the medium/longer term. Such an approach is supported by the High Court’s direction on the NO<sub>2</sub> Plan<sup>5</sup> that the Secretary of State must:

- aim to achieve compliance by the soonest date possible;
- choose a route to that objective which reduces exposure as quickly as possible; and
- take steps which mean meeting the limit values is not just possible, but likely.

1.4 For these reasons, an ambitious programme of action is required, to minimise air quality impacts, by both reducing trips as well as encouraging and incentivising low emission technology. This action should not only mitigate emissions from airport related activity, but also link with and support local action, to increase the likelihood of compliance and exposure reduction in the shortest possible time.

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<sup>1</sup> Including trips to and from Airport Related Development (e.g. logistics sites, hotels, businesses, etc.)

<sup>2</sup> DfT (Jun 2018) Airports National Policy Statement: <https://www.gov.uk/government/publications/airports-national-policy-statement> Accessed Sept 2018. Paragraph 5.32

<sup>3</sup> DfT (Oct 2017) 2017 Plan update to air quality re-analysis. Impact of 2017 Air Quality Plan and associated Pollution Climate Mapping sensitivity testing. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/653775/2017-plan-update-to-air-quality-re-analysis.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/653775/2017-plan-update-to-air-quality-re-analysis.pdf) . Accessed Sept 2018

<sup>4</sup> Defra projections indicate that delayed opening of the third runway would slightly improve the possibility of compliance, as contributions from other sources are projected to decrease over time. In 2027, projected concentrations at the ‘critical road link’ are 38.8 µg/m<sup>3</sup>, although uncertainty remains large at ± 29%, 95% CI. Further details are provided in Appendix A(0).

<sup>5</sup> High Court Judgement (25 Jan 2018) Before Mr Justice Garnham, between The Queen (on the application of ClientEarth) and (1) the Secretary of State for Environment, Food and Rural Affairs; (2) Secretary of State for Transport; (3) Welsh Ministers. Available online at: <https://www.judiciary.uk/wp-content/uploads/2018/02/clientearth-no3-final-judgmentdocx.pdf> Accessed Sept 2018.

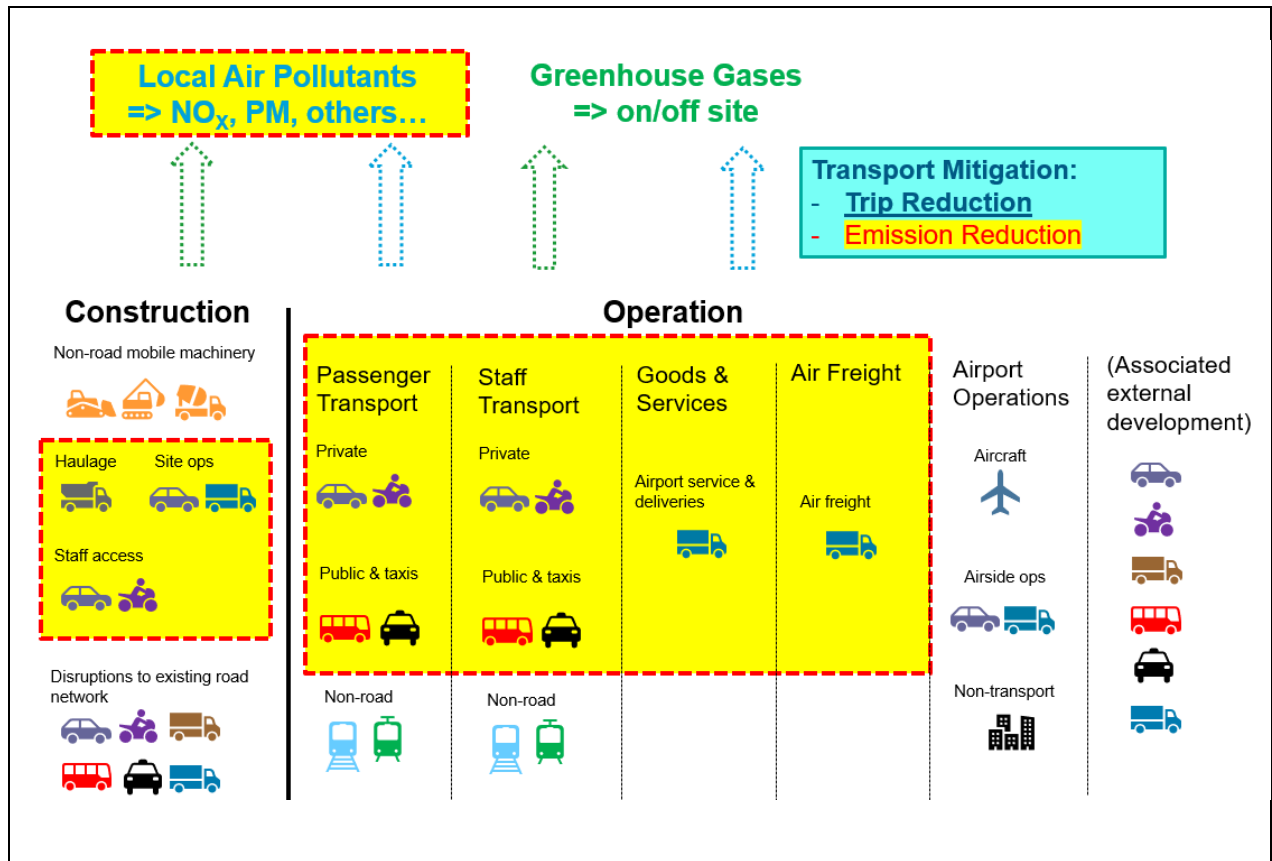
## Scope

- 1.5 This paper only considers emissions from transport which can contribute to local air quality issues during both construction and operation, specifically nitrogen oxides (NOX), causing nitrogen dioxide (NO<sub>2</sub>) pollution, and fine particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>). Figure 1 provides a visual representation of this scope.
- 1.6 A broader definition of a Low Emission Strategy could include:
- (i) emissions from other sources (e.g. construction plant/non-road mobile machinery, airport operations); and/or
  - (ii) emissions of greenhouse gases, which could include, for example, maximising use of clean renewable energy.
- 1.7 Furthermore, within the context of transport emissions, the focus in this paper is specifically on emission reduction measures, rather than trip reduction measures. Trip reduction measures should be addressed separately through a detailed review of the surface access strategy as regards opportunities for modal shift and efficiencies in freight operations. Trip (rate) reduction measures deliver by far the greatest impact on air quality, compared with optimising the emissions performance of the remaining vehicles.
- 1.8 This should therefore be considered as an overarching parallel aim, and there should be close linkages between these two approaches<sup>6</sup>. Other methods also have a role to play, such as design/layout, road diversions, Southern Access Road Tunnel, speed restrictions and localised congestion relief schemes. Any new or amended roads should be designed to minimise pollution, e.g. encouraging smoother driving, discouraging stop start driving and idling. Issues within the broader scope remain important. HSPG and HAL should continue to review where and how these broader issues are considered.
- 1.9 The core focus of this position is predominately on the context of transport emissions, and the potential strategies for reducing these emissions. While there is some reference in the paper to some operational and construction emissions, further engagement with HAL in this area is required.

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<sup>6</sup> Whilst a Low Emission Strategy can help provide incentives and penalties for certain types of travel, these will only be effective if there is a valid alternative available. It can be used to contribute to the package of incentives when people are choosing which car to buy, and which to use for their Heathrow journey. It can also be used to support trip reduction aims by encouraging modal shift, for example by penalising those driving a more polluting car (subject to availability of a convenient alternative). The twin pillars of trip reduction/modal shift and low emission strategy can effectively support each other, but a holistic approach should be taken to ensure that each complements the other, and the interactions are mapped out so that co-benefits are realised.

Figure 1: Schematic to show the scope of the current draft (yellow highlights), and potential scope of broader work



1.10 The Surface Access Strategy will focus on trip reductions, modal shift, and efficiencies in operations. This position paper provides a holistic focus on the emissions from the vehicles that remain. Three distinct aspects are considered:

- (i) **Measures** – practical, on the ground, implementation of measures that will reduce emissions to air – their potential pros and cons as regards HSPG members.
- (ii) **Assessment** – how to account for, and assess, the impact of measures.
- (iii) **Relationships** – recognising the relationships between HSPG members and external organisations.

## 2. Low Emission Measures

2.1 HAL has proposed a range of measures to reduce vehicle emissions. The relevant proposals are considered in this document; HAL's stated goals for current operations (as set out in Heathrow 2.0<sup>7</sup>) are summarised in Appendix D. Others have also implemented or designed measures which will impact on Heathrow. This includes the Mayor of London, through London-wide measures such as the Low Emission Zone and London Plan; other local initiatives, such Slough's Low Emission Strategy document, Surrey County Council's emerging Low Emissions Transport and Electric Vehicle Strategies; and new national policies on air quality and aviation. These are also summarised in Appendix C, E and F.

### Low emission measures proposed by HAL relating to expansion

2.2 Of the various elements of the HAL Surface Access Strategy, emissions are in the final section: enabling more efficient and responsible use of the road network, under G2 (Reducing emissions through vehicle charging) (see Appendix B). The measures suggested are:

- Emission based surcharges
- Blanket or Emission-based drop off charge
- Terminal low emission zone (priority access for LEVs – aimed at fleet operators)
- Airport low emission zone (wider range of users)
- Blanket Airport access charge

2.3 Low Emission Zones (LEZ), and their equivalent Clean Air Zones (CAZ), are currently being promoted by the Government to achieve the UK's legal obligations on air pollution. The government defines a CAZ as a defined geographic area used as a focus for action to improve air quality. This action can take a range of forms including addressing their own and contractor vehicle operations and procurement; implementing bus, taxi and private hire vehicle emission standards using licensing, franchising or partnership approaches; and supporting healthy, active travel. They can also include zones where, in addition to the above, vehicle owners are required to pay a charge to enter, or move within, a zone if they are driving a vehicle that does not meet the particular emission standard for their vehicle type in that zone.

2.4 Preliminary discussions with HAL indicate that the five measures listed above will be considered on a 'sliding scale'. HAL may potentially seek to introduce the first measure (service standards), prior to DCO, linking with timing of the Greater London Authority's (GLA) proposed inner London ULEZ (see Appendix C) to ensure that ULEZ non-compliant taxis are not displaced to Heathrow<sup>8</sup>. Additional measures may then be considered if required.

2.5 Further information is required from HAL on the details and timing of their proposals. This should include emissions and economic modelling to show the impact of modifying variables (vehicle types, emission standards, thresholds for behaviour change related to charging). HAL should also provide details of its proposed post-implementation monitoring strategy, used to assess the impact and effectiveness of the various levers. Subject to this information, Table 1 provides discussion points for each proposed measure.

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<sup>7</sup> HAL (2017) Heathrow 2.0: Our Plan for Sustainable Growth. Available online at: <https://your.heathrow.com/wp-content/uploads/2018/07/Heathrow2.0.pdf>. Accessed Sept 2018.

<sup>8</sup> LEZ and ULEZ standards for HDVs (incl. buses, coaches and HGVs) will match from 2020 at Heathrow.



**Table 1 – Notes on proposed HAL measures**

Measure	Questions for discussion / draft positions
Emission based surcharges	<p>Will this be a significant disincentive as regards parking? How price-sensitive is parking? It may be more so for frequent visitors (staff, frequent flyers), but unlikely to be a major determining factor for occasional visitors.</p> <p>Potential to displace high polluting traffic to surrounding areas, e.g. off-site parking (with air pollution impacts on local roads)</p> <p>If parking is not sensitive to price, what is it sensitive to? One possibility is convenience; could parking areas be allocated on based on emissions, with cleaner vehicles getting better/closer spaces?</p> <p>Early action on emissions should be taken by HAL in parallel with DCO with process. This could start with emission-based parking charges and surcharges for services. (Note, emissions-based parking charges are already in place around Richmond Park.)</p>
Blanket or Emission-based drop off charge	<p>This could help reduce vehicle numbers, but it would need to be emissions based to incentivise low emission vehicles.</p> <p>Would this be a sufficient incentive to affect change at vehicle purchase point? It may have short term benefits for some making vehicle choice on the day).</p> <p>This could also displace high polluting traffic to surrounding areas</p>
Terminal low emission zone (priority access for LEVs – aimed at fleet operators)	<p>More information required on this. Would this cover parking, and terminal suppliers/retailers?</p>
Airport Low Emission Zone (LEZ) (wider range of users)	<p>Of the five options identified by HAL, an Airport LEZ would provide the broadest controls and seek to encourage and incentivise low emission technology. This could be used in addition to emission-based surcharges, e.g. on parking/permitting/facility charges.</p> <p>The government’s Clean Air Zone approach uses all non-charging measures in parallel to a charging zone, like the one described here.</p> <p>Note the terminal access only proposal includes “priority access”, rather than just charging, based on emission standards/LEV. This wider approach may be useful to consider here.</p>
Blanket Airport access charge	<p>This is more of a trip reduction measure. It could help reduce vehicle numbers but won’t reduce emissions beyond this. There is no incentive for low emission vehicles.</p>

- 2.6 An Airport LEZ, supplemented by a package of complementary additional measures, would provide the broadest controls and seek to encourage and incentivise low emission technology.
- 2.7 Table 2 identifies discussion points for various aspects of an Airport LEZ and sets out a provisional position.

**Table 2 - Discussion points and position regarding an Airport LEZ**

<b>Measure / Aspect</b>	<b>Questions for discussion / draft positions</b>	<b>Provisional position</b>
Which vehicles?	HGVs/LGVs/Cars/Taxis/Buses & coaches	All vehicle types
What emission standards?	<p>Euro 4 petrol, Euro 6/VI diesel. (As per ULEZ Inner London – GLA 2021 proposal – see Appendix C). With future year tightening with developments in technology and increase in proportions of EV within the national fleet. Would need to establish a process for this, linking to GLA wherever possible.</p> <p>NB whilst links to GLA has the benefit of being easier to implement and communicate, there are risks, as this is dependent on Mayor who is subject to re-election.</p>	To match GLA's proposed inner London ULEZ (Appendix C)
What geographical area – where is the boundary?	<p>Provisionally airport boundaries and construction site.</p> <p>Expanding the boundary beyond the airport land would mean CAZ proposals for neighbouring LAs, through which separate processes would be required. Need to explicitly consider the extent to which Airport Supporting Facilities (ASF) and Airport Related Development (ARD) are included within LEZ proposals.</p> <p>Need to consider paired measures for displaced traffic, e.g. Uber taxis waiting nearby and off-site parking.</p>	Airport access only (although work with TfL and surrounding LAs to discuss options for extension of ULEZ / voluntary CAZ on specific roads). Explicitly address position as regards Airport Supporting Facilities and Airport Related Development.
What level of charge, for which vehicles?	<p>Will the charge be set at a level which is prohibitive or inconvenient?</p> <p>Economic modelling assumptions – precedents? GLA info?</p> <p>How price-sensitive is access? Different categories may have different sensitivities. If not sensitive to price, what is it sensitive to? E.g. convenience / location of parking?</p>	<p>Results of economic modelling required.</p> <p>Propose charge levels mirror proposed Inner London ULEZ:</p> <ul style="list-style-type: none"> <li>prohibitive for (older) LGVs<sup>9</sup></li> <li>inconvenient for cars and (newer) LGVs</li> </ul>
Use of charging revenue?	<p>Ringfencing of funds received from emissions-based access to support further low emission and modal shift/trip reduction measures (which have air pollution benefits) within or surrounding the airport.</p> <p>These measures should be above and beyond the basic commitments and should add value to the programme. Can HSPG suggest a mechanism and proposed measures?</p>	<p>Ringfenced to support further low emission measures within or surrounding the airport. Include / take account of priorities of LAs / HSPG via working group (potentially via Heathrow Area Transport Forum).</p>

<sup>9</sup> LEZ and ULEZ standards for HDVs (incl. buses, coaches and HGVs) will match from 2020 at Heathrow.

Measure / Aspect	Questions for discussion / draft positions	Provisional position
What monitoring systems will be in place?	<p>Need to proactively assess the impacts of charging proposals (monitoring emission standards of vehicles accessing the airport)? What flexibility is there to subsequently adjust pricing or standards, if the assumed emission reductions are not achieved? What say will local authorities have in adjusting these levers once the development is in place?</p> <p>Establish / continue transport/AQ working group including HAL and LAs/HSPG to share information and partnership to achieve DCO requirements (and beyond). Noting the balance between incentivising low emission transport and generating a revenue stream to fund low emission measures.</p>	<p>Information required from HAL on post-implementation monitoring.</p> <p>HAL should proactively assess the impacts of charging proposals, by monitoring the emission standards of vehicles accessing the airport.</p> <p>Flexibility should be retained to subsequently adjust pricing and/or standards, if further emission reductions are required.</p> <p>Establish / continue transport/AQ working group including HAL and LAs/HSPG to share information and work in partnership to achieve DCO requirements and beyond. (Potentially via Heathrow Area Transport Forum.)</p>
Timing of implementation?	<p>Apply standards to Heathrow now, to help deliver AQ benefits throughout the local area and achieve compliance earlier than otherwise. (Also providing additional development headroom in the near term, to reduce the net AQ impact of construction works.)</p> <p>If the LEZ/ULEZ proposals are introduced at Heathrow before other areas of London, it may be cost-effective to link to TfL Communications programme.</p>	<p>Apply standards to Heathrow now, to help deliver AQ benefits throughout the local area and achieve compliance earlier than otherwise. (Also providing additional development headroom in the near term, to reduce the net AQ impact of construction works.)</p>
Relationships?	<p>What relationships / processes will need to be established? (Largely relates to geographic boundaries and coordination of vehicle types/emission standards with surrounding areas.)</p>	<p>Establish / continue transport/AQ working group – potentially via HSPG, or through Heathrow Area Transport Forum</p>

2.8 When further details of the proposed measures are published by HAL, HSPG should consider the impacts of specific charging proposals on their local authorities. At this stage, potential high-level impacts can be captured (Table 3).

**Table 3 - Pros and cons of HAL emission proposals for HSPG members**

Pros	Cons / Considerations
Air quality benefits – health of population, earlier	Potential financial implications for residents and local businesses which access the airport to provide services, as employees or passengers

<p>compliance with AQOs, additional development headroom for investment within own areas</p>	<p>Unless effectively coordinated regarding vehicle types/emission standards, potential for mismatch with surrounding areas, leading to confusion for the public and businesses</p>
<p>Investment in / incentivisation for low emission infrastructure and modal shift/trip reduction measures (which have air pollution benefits) [Note links to Surrey CC Low Emission Transport and EV strategy]</p>	<p>Risk of displaced traffic detouring into neighbouring authorities if an airport only scheme is progressed. This displacement could have a double impact - moving the most polluting vehicles onto local roads and leading to increased volume of traffic and therefore congestion (and associated air quality impacts).</p>
	<p>Potential impacts of service surcharges on bus services running through surrounding areas – pros and cons as require consideration, incl. economic impact, air quality benefits if applied fleet wide, although potential displacement of air quality impacts if older vehicles are reallocated to different routes.</p>

## Potential Additional Measures

- 2.9 Beyond the measures proposed by HAL within the Surface Access Strategy, the development could further incentivise and potentially directly fund a switch to low emission vehicles in the airport and wider area. Given the nature and scale of the proposed expansion, the legacy could provide a showcase for low emission transport, enabling longer term shifts to low and zero emission transport over the next 30 years.
- 2.10 A gap analysis has been carried out (Table 4), reviewing each aspect of transport associated with the development and noting emission reduction measures that are;
  - (i) are already in place (existing Heathrow 2.0 Strategy, see Appendix D);
  - (ii) proposed through the expansion Draft Surface Access Strategy; and
  - (iii) additional opportunities which could be proposed by HSPG.

**Table 4 – Gap analysis** (text in black is existing/proposed measure within Heathrow 2.0 / Draft Surface Access Strategy (SAS), text in blue indicates additional measures identified by HSPG)

Emission Sources	Potential low emission measures
<b>Passenger travel</b>	
<b>Public transport</b>	
Local Bus Services <sup>10</sup>	<p><u>Additional / extended measures</u></p> <p>Investment in low emission transport (and modal shift to PT, walking and cycling) in the surrounding area – services accessing the airport, but also those operating in neighbouring LAs – ULEV bus routes – <u>early investment</u> (pre-development) to help to achieve compliance with European obligations more quickly</p> <p>Link to an assessment of bus need, to pair trip reduction and modal shift with low emission vehicles.</p> <p>Early action on buses, prior to any Airport-wide LEZ, with implementation of a ‘low emission bus zone’, with buses entering meeting the minimum criteria for the ULEZ.</p> <p>Electrification of the bus fleet, to provide a zero emission bus service is seen as a critical element of the LES.</p>
Coach	<p><u>Additional / extended measures:</u> Emission standards for coach operators accessing the airport – Euro VI or better. Link to expansion of Coach Hub.</p>
Train	<p><u>Additional / extended measures:</u> Liaise rail companies – emission standards for trains</p>
<b>Car</b>	
Private car <ul style="list-style-type: none"> <li>• Park (airport)</li> </ul>	<p><u>HAL existing/proposed measures</u></p> <p>Emission based parking charges [SAS, Section G]</p> <p>Airport low emission zone (all vehicles) [SAS, Section G]</p> <p>EV charging points / valet service for use by passengers / visitors [Heathrow 2.0]</p> <p><u>Additional / extended measures</u></p> <p>Parking charges - consider use of EQUA index<sup>11</sup> as used by GLA for procurement. Consider how sensitive parking is to price, for different users. Also/ alternatively influenced by convenience (e.g. location of parking spaces near to terminal)?</p> <p>EV charging points / valet – Consider use – more likely to be most relevant to short stay visitors, rather than passengers (one car using a charging point for two weeks is not a cost-effective use of the resource), consider whether there is a better way to ensure passengers’ cars are charged when they need them (e.g. EV valet / staged charging service).</p> <p>Expansion of HAL ‘parkways’ concept (to consolidate car parks into a few large sites) – could develop low emission transport hubs, serving airport and non-airport users.</p>

<sup>10</sup> Timetabling, routing, ticketing systems and pricing should be considered under trip reduction measures.

<sup>11</sup> EQUA Index. Data on vehicle performance in real-world driving conditions. <https://equaindex.com/equa-air-quality-index/>

Emission Sources	Potential low emission measures
<ul style="list-style-type: none"> <li>• Kiss &amp; Fly</li>   <li>• Park and ride</li> </ul>	<p><u>HAL existing/proposed measures</u></p> <p>Emission-based drop off charge [SAS, Section G]  Airport low emission zone (all vehicles) [SAS, Section G]</p> <p><u>Additional / extended measures:</u> Emission-based drop off charge – consider use of EQUA index as used by GLA for procurement.</p> <p><u>Additional / extended measures:</u> EV park and ride options</p>
Hire car	<p><u>HAL existing/proposed measures</u></p> <p>Emission based parking / service charges [SAS, Section G]  Airport low emission zone (all vehicles) [SAS, Section G]  Passenger Car Club that promotes EVs [Heathrow 2.0]</p> <p><u>Additional / extended measures</u></p> <p>Emission standards for hire car companies operating out of the airport (investigate use of EQUA index as used by GLA for procurement)  Passenger Car Club promoting promotes EVs – opportunities for extension/increase? (Complimentary to SCC EV strategy). Consider options for one-way car hire / car club operations (review whether car storage/parking would be required.)</p>
Taxi	<p><u>HAL existing/proposed measures</u></p> <p>Emission based parking / service charges [SAS, Section G]  Emission-based drop off charge [SAS, Section G]  Airport low emission zone (all vehicles) [SAS, Section G]</p> <p><u>Additional / extended measures</u></p> <p>Emission based licensing / permitting requirements (investigate use of EQUA index as used by GLA for procurement)  Investment in widespread EV infrastructure for taxis (within airport, but also within the and surrounding area, incl. key transport hubs – e.g. local rail network enabling EV taxis to deliver passengers from home to train stations) – <u>early investment</u> (pre-development) to help to achieve compliance with European obligations more quickly, and deliver year on year reductions by encouraging increase in uptake of low emission vehicles in taxi fleet.</p> <p>Note, there is a direct opportunity to work with Network Rail and develop Langley as an ultra-low emission hub, as Slough has already received £157k in OLEV funding for rapid charging facilities for plug-in taxis and the licensing committee is set to approve plans for all taxis to be ULEV by 2025.</p> <p>Could cleaner London taxis have priority access? This would make it impractical for more polluting taxis to service Heathrow, as wait times for these would increase.</p> <p>Pair control measures with operational measures, such as no idling (but recognising essential taxi drivers’ needs, e.g. heating at pick-up).</p> <p>Incentivise taxis to run with full loads to and from the airport, to reduce incidence of empty journeys. Would require short stay parking/waiting and consolidation space.</p>
Private Hire Vehicles	<p><u>Additional / extended measures:</u> Less controlled than London taxis, as they don’t have to use the Taxi Rank. Instant call PHV companies, e.g. Uber, can cause issues through displacement to the surrounding areas. Paired control measures required.</p>

Emission Sources	Potential low emission measures
<b>Strategic Approach</b>	
Broader offsetting and incentivisation of low emission transport	<p><u>Additional / extended measures:</u> There is a role for HAL to incentivise shift to lower emission vehicles across the wider area, potentially including trips made locally but not airport related. This could include payment to support EV charging points in local town centres etc or a Heathrow top up to the plug-in vehicle grant from government for people within a set distance from the site.</p> <p>Consideration should be given to the establishment of of Low Emission Bus Lanes/EV lanes as part of a local roads strategy, with specific opportunities around the new re-routing of A4/A3044</p>
<b>Staff travel</b>	
Car	<p><u>HAL existing/proposed measures</u></p> <p>Salary sacrifice scheme for staff to facilitate purchase of ULEVs/EVs [Heathrow 2.0]</p> <p>EV charging points for use by staff [Heathrow 2.0]</p> <p><u>Additional / extended measures</u></p> <p>Salary sacrifice – extension/increase funding? Use EQUA index. Scrappage scheme?</p> <p>EV charging points – opportunities for extension/increase?</p>
Public transport	<p><u>Additional / extended measures:</u> Extension of free fare zone, ideally to cover a wide area (Hounslow has suggested out to Feltham/Hounslow) and open to both airport employees and local residents. Inclusion of local residents would provide some compensation for the negatives of being near to the expanding airport, whilst making a significant positive contribution to trip reduction in the area as a whole. Extending in some form the discount that is provided to employees on buses serving outside of London to the London market, and to HEX would be tremendously welcomed and help drive modal shift.</p>
Staff transport	<p><u>Additional / extended measures:</u> EV shuttle buses</p>
Active travel	<p><u>Additional / extended measures:</u> Incentives for electric bikes for staff</p>
<b>Freight and logistics</b>	
Measures applying to all freight and logistics, including air cargo and mail, servicing airport, servicing aircraft	<p><u>HAL existing/proposed measures</u></p> <p>Terminal LEZ (priority access for LEVs – aimed at fleet operators) [SAS, Section G]</p> <p>Sustainable Freight Group [Heathrow 2.0]</p> <p>Goal: yr on yr increase in % LEV/EVI freight trips in Heathrow Area [Heathrow 2.0]</p> <p>Hydrogen fuelling station (existing)</p> <p>Use of Heathrow’s Logistics Consolidation Centre [Heathrow 2.0]</p> <p><u>Additional / extended measures</u></p> <p>Goal to increase in % LEV/EVI freight trips – identify measures to achieve this? Emission standards, and driver behaviour criteria. There are a number of schemes already available to adopt.</p> <p>Incentivise LGVs/HGVs to run with full loads to and from the airport, to reduce incidence of empty journeys. Would require short stay parking/waiting and consolidation space.</p>

Emission Sources	Potential low emission measures
	ULEV and strict emission standards for the consolidated last mile delivery from Consolidation Centre, and incentives for emission standards for freight using Centre.
<b>Airport operations</b>	
<b>Aircraft</b>	
Take off	<p><u>HAL existing/proposed measures:</u> Phase out oldest and dirtiest aircraft – target of 0% flights pre-CAEP standard aircraft by 2020 [Heathrow 2.0]</p> <p><u>Additional / extended measures</u></p> <p>Phase out oldest and dirtiest aircraft – further steps in future years?</p> <p>Requirements for maintenance and testing of aircraft engines?</p>
Landing	<p><u>HAL existing/proposed measures</u></p> <p>Landing charges structured to reward airlines for operating cleaner flights (for example NOx emissions charging) [Draft ANPS] [Heathrow 2.0]</p> <p>Emission-based metric included within Fly Quiet and Clean League Table [Heathrow 2.0]</p> <p><u>Additional / extended measures:</u> Landing charges – future strategy for tightening?</p>
Taxiing	<p><u>HAL existing/proposed measures</u></p> <p>Reduced or single engine taxiing (improved taxiing efficiency) [ANPS]</p> <p>Use of electric towing [Heathrow 2.0]</p>
Idling	<p><u>HAL existing/proposed measures:</u> Reducing emissions from aircraft at the gate (for example installation of fixed electrical ground power and preconditioned air to aircraft stands to reduce the use of auxiliary power unit) [ANPS] [Heathrow 2.0]</p>
<b>Other operations</b>	
Land based activities in support of airport operation (vehicles and ground support equipment, management of waste)	<p><u>HAL existing/proposed measures</u></p> <p>ULEV for airside vehicles by 2025 – 100% airside vehicles meet most stringent relevant emission standards by 2025 (in line with London ULEZ) [Heathrow 2.0]</p> <p>£5M investment in EV charging infrastructure within airport [Heathrow 2.0]</p> <p>Airside vehicle pass fees to influence uptake of zero and low emission airside vehicles [Heathrow 2.0]</p> <p>All Heathrow cars and small vans EV or plug-in hybrid by 2020 [within Heathrow 2.0]</p> <p><u>Additional / extended measures</u></p> <p>ULEV for airside vehicles by 2025 – potential for earlier implementation?</p> <p>Potential for stronger standards, e.g. electric only for certain vehicle types?</p> <p>Could the procurement power of the airport for ULEVs be extended to neighbouring authorities? If all vehicles airside are to be EV, could LAs add to that order for their own uses? Could a leasing arrangement for such vehicles be extended to include employees or even wider community?</p> <p>EV charging infrastructure - Consider use. Where would it be most effective?</p> <p>Airside vehicle pass fees – tightening of standards, incl. use of EQUA index</p> <p>Ban the use of red diesel in airside operations and construction plant.</p>



Emission Sources	Potential low emission measures
Terminals	<p><u>HAL existing/proposed measures</u>: Modernised heating supplies in airport buildings [ANPS]</p> <p><u>Additional / extended measures</u>: Implement energy and heat efficiency measures in all terminal operations.</p>
<b>Construction</b>	
<b>Movement of materials</b>	
Road	<p><u>Additional / extended measures</u></p> <p>Emissions standards for performance of HGVs and LDVs used during construction and for delivery of materials (Euro VI/6 or better), e.g. HS2 provisions:</p> <ul style="list-style-type: none"> <li>• HGVs – at least Euro VI (target 50% ‘cleaner’ than Euro VI by 2020 i.e. lower PM emission through alternative fuel)</li> <li>• LDVs – at least Euro VI</li> <li>• Cars - ULEV</li> </ul>
Rail	<p><u>Additional / extended measures</u>: Emissions standards for diesel engines, based on EU standards (consider accelerated implementation of best practice and stringent standards)</p>
<b>Site operations</b>	
LGVs	<p><u>Additional / extended measures</u>: Electric or ULEVs for on-site operations. E.g. HS2 provisions: LDVs – at least Euro VI, with 75% ULEV vans (2,000 – 2,600 kg)</p>
Cars	<p><u>Additional / extended measures</u>: Electric or ULEVs for on-site operations (use of EQUA). E.g. HS2 provisions: Cars - ULEV</p>
Non-road Mobile Machinery	<p><u>Additional / extended measures</u></p> <p>Commitment to vehicle standards for Non-Road Mobile Machinery (NRMM) meeting GLA guidance – as required for HS2 construction (which brought forward compliance of cleaner engines from 2020 to 2017 – not applicable here due to later construction timeframes)</p> <p>Ban the use of red diesel in airside operations and construction plant.</p>
<b>Construction worker access</b>	
Car	<p><u>Additional / extended measures</u>: See above for staff travel for regular construction workers.</p>
Public transport	<p><u>Additional / extended measures</u>: See above for staff travel for regular construction workers. Also – incentives for PT use for construction workers</p>
Staff transport	<p><u>Additional / extended measures</u>: EV shuttle buses</p>
Active travel	<p><u>Additional / extended measures</u>: Incentives for electric bikes for staff</p>
<b>Other considerations</b>	
Disruptions to existing traffic during construction	<p><u>Additional / extended measures</u>: Minimise congestion on operational traffic, including staff, passengers and freight.</p>

2.11 Additional emission reduction measures identified through the gap analysis are presented separately in Table 5. The additional opportunities identified have regard to HSPG’s ambitious vision to “achieve the biggest step change improvements in key measurable targets, including: a holistic view on air quality and emissions; appropriate measures to target the right sources; and addressing the right organisations to influence local enforcement, including consideration of car use, EV and cycling infrastructure”.

**Table 5 - Additional emission reduction measures (extracts from gap analysis, Table 4)**

Aspect	Proposed additional measures
Investment in local Bus Services	<p>Investment in low emission transport (and modal shift to PT, walking and cycling) in the surrounding area – services accessing the airport, but also those operating in neighbouring LAs – ULEV bus routes – early investment (pre-development) to help to achieve compliance with European obligations more quickly. Link to an assessment of bus need, to pair trip reduction and modal shift with low emission vehicles.</p> <p>Early action could be taken on buses, in advance of any Airport-wide LEZ, with implementation of a ‘low emission bus zone’, with buses entering meeting the minimum criteria for the GLA’s ULEZ.</p>
EV passenger / staff transport	EV park and ride / shuttle buses
Procured / controlled / licensed vehicles	<p>Minimum standards for buses, coaches, taxis, hire car companies, incl. investigate use of EQUA index<sup>12</sup> (as used by GLA for procurement)</p> <p>Could include off-site parking shuttle buses, or airline suppliers (including through procurement)</p> <p>Could go further for vehicles used by HAL, and/or boroughs/TfL/partners (procurement). Could also potentially be driven by incentives rather than penalties</p>
Emission based parking charges	<p>Investigate use of EQUA index as used by GLA for public information and procurement. Consider how sensitive parking is to price, for different users. Could they also/alternatively be influenced by convenience (e.g. emission-based parking space allocation near terminal).</p>
EV infrastructure and incentivisation	<p>Expansion of network within and beyond airport for staff, passengers, taxis and hire car firms (incl. EV taxi hubs at major railway stations). <u>Early investment</u> (pre-DCO).</p> <p>There is a role for HAL to incentivise shift to lower emission vehicles across the wider area, potentially including trips made locally but not airport related. This could include payment to support EV charging points in local town centres etc or a Heathrow top up to the plug-in vehicle grant from government for people within a set distance from the site.</p>
Staff	Extension of salary sacrifice scheme to purchase ULEVs and electric bikes, incl. use of EQUA index, scrappage scheme. Extension of staff free fare zone
Airport operations	<p>Tightening / earlier implementation of existing / proposed controls</p> <p>Ban the use of red diesel in airside operations and construction plant.</p>

<sup>12</sup> EQUA Index. Data on vehicle performance in real-world driving conditions. <https://equaindex.com/equa-air-quality-index/>

Aspect	Proposed additional measures
Freight	Set ULEV and strict emission standards for the consolidated last mile delivery from the Consolidation Centre, and incentives for emission standards for freight using the centre.
Procurement powers	Consider whether the procurement power of the airport for ULEVs could be extended to assist neighbouring authorities, i.e. If all vehicles airside will be EV, could LAs add to that order for their own uses? Could a leasing arrangement for such vehicles be extended to include employees or even wider community?
Construction	Emissions standards for performance of HGVs and LDVs used during construction (Euro VI/6 or better), e.g. HS2 requirements <sup>13</sup> . Commitment to vehicle standards for non-road mobile machinery (GLA guidance or better) Minimise congestion on operational traffic, including staff, passengers and freight.

- 2.12 For some vehicles, emissions-based charging will not change their decisions. This has been observed in a number of other emission reduction measures elsewhere. For example, automated payments hide the cost and therefore the cost-effectiveness of people's choices; also many company car drivers just do whatever is easiest, as the business rather than the individual is affected by the choice.
- 2.13 For these circumstances (and for wider benefits), it may be useful to pair the measures considered above with other options to reduce emissions, such as:
- no idling areas, and penalties;
  - reducing congestion to minimise stop-start driving;
  - encouraging a smoother driving style, e.g. through driver training, or driver monitoring and league tables, for specific groups; and
  - linking emissions to convenience.
- 2.14 There are also some people for whom there isn't an alternative, regardless of the incentives or penalties. For example, some disabled people may not be able to use alternative transport modes and, in this time of austerity, may not be able to drive a vehicle which meets these emission standards. HAL should take equalities issues, such as this, into account in their proposals.

<sup>13</sup> High Speed Two (HS2) Phase 1 Information Paper, Air Quality:  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/672406/E31\\_-\\_Air\\_Quality\\_v1.5.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672406/E31_-_Air_Quality_v1.5.pdf)

### 3. Assessment

- 4.1 Further information is required from HAL regarding various aspects of assessment and methods. Specifically:
- Total emissions (NO<sub>x</sub> and PM) and source apportionment information (i.e. relative contributions to local air pollution from different HAL sources)– broken down by airport operations / access / freight / staff, etc. – see gap analysis table. (Data for both existing Heathrow, as well as Heathrow with expansion.) This will show the relative contribution of different activities to air pollution associated with Heathrow, and provide an indication of the most important areas to address.
  - Details of the methodology by which the impact on air quality emissions and concentrations of mitigation measures will be quantified. What are the assumptions regarding uptake, probability of success, projected fleets, emission factors, success of initiatives, etc? How are these translated into transport and/or the air quality models? (What is the transport input data for the AQ assessment? For trip reduction, does it take no traffic increase targets as written (top down)? Or model specific impacts of mitigation measures (bottom up)?
  - Use of air quality neutral / emissions damage cost approaches (ref. Policy 7.14 within the London Plan and Slough's Low Emission Strategy), for both the construction and operation phases (particularly in light of the wide area that may be affected and thus population exposed, in particular to PM<sub>2.5</sub>). Attributing a monetary cost to the emissions damage would be useful in designing on and off-site mitigation. (Appendix E)

## 4. Relationships and Processes

- 4.1 In developing a holistic approach to low emission measures, it is important to identify the key stakeholders affected by both the air quality impacts of Heathrow Expansion as well as the measures themselves. Table 6 provides an initial list of stakeholders/consultees.

**Table 6 – Key stakeholders regarding air quality impacts and potential low emission measures to be adopted as part of Heathrow Expansion**

Category	Organisation
HSPG Member Organisations	LB Hounslow LB Ealing Spelthorne Borough Council Runnymede Borough Council South Bucks District Council RB of Windsor and Maidenhead Slough Borough Council Thames Valley Berkshire LEP Buckinghamshire and Thames Valley LEP Enterprise M3 LEP Surrey County Council Buckinghamshire County Council Colne Valley Park CIC Elmbridge Borough Council
HSPG Observer Organisations	Old Oak and Park Royal Development Commission (OPDC) MHCLG/BIS West London Alliance Department for Transport Highways Agency
Other local stakeholders / groupings	LB Hillingdon GLA, TfL Dedicated Air Quality/Transport LA groupings, e.g. Surrey Air Alliance Heathrow Area Transport Forum
HAL and their Partners	Including airlines, airline suppliers, terminal businesses (e.g. WHSmith, car hire), associated businesses (e.g. off-site parking), on-site businesses, staff (from HAL and HAL partners)
Transport Operators	Including TfL, non-London council bus operators, Coach operators, Rail companies, Taxi firms, PHV firms including Uber
Wider community	Business users of Heathrow Local Businesses Residents

- 4.2 There are also a range of ongoing processes, which overlap with, and may impact upon measures proposed:
- Specific local policy and initiatives relevant to development of low emission measures and assessment, particularly as regards:
    - Low emission buses
    - Low emission / electric taxis

- Local Clean Air Zone feasibility studies, with emission standards for vehicles
  - Local Air Quality Management
  - London ULEZ/LEZ timescales and extent
    - Important to consider timing and implementation of complementary measures.
    - HSPG also may explore parallel action with GLA/TfL to extend the ULEZ boundary through to Heathrow.
  - Cumulative and Combined effects with other DCOs, related planning applications for Airport Related Development and enabling works
  - External public-sector projects, e.g. any TfL projects on M4, major local schemes
  - Brexit Implications
- 4.3 To ensure due consideration of these issues through DCO and beyond, HSPG recommends the establishment and/or continuation of a working group, to ensure stakeholders are both represented and able to influence aspects of the proposed/future measures. It is important that as well as the stakeholders above this working group liaises within HSPG (different focus groups) to ensure all aspects of concern are covered (e.g. overlaps with trip reduction measures, construction phase, emissions from airport operations).

## 5. Recommendations

- 5.1 Whilst this document considers emission reduction measures, HSPG Transport Group recognises that trip reduction measures deliver by far the greatest impact on air quality, compared with optimising the emissions performance of the remaining vehicles. The two approaches are brought together through the Transport Strategy and travel planning to meet ANPS requirements on modal split, air quality legal obligations and HAL 'pledge' targets. Other elements also play a part, such as location of development, design/layout, road diversions, speed restrictions and localised congestion relief schemes. Consideration of both trip reduction and low emission measures should be central to all major development planning within the local area over the next decades, as expansion is rolled out and combined and cumulative effects are addressed. There will be associated roles for HSPG and HAL in monitoring and compliance.
- 5.2 HSPG is committed to engaging on a continual basis with HAL regarding the approach to low emissions. HSPG promotes the following, as regards low emission measures for expansion of Heathrow.
- 5.3 **Ambition:** It is highly uncertain whether London will comply with air quality legal obligations before the third runway is opened. Direction from the High Court requires that action is taken: (i) to achieve compliance as soon as possible; (ii) to reduce exposure as quickly as possible; and (iii) to mean that meeting the limit values is not just possible, but likely. For these reasons, HAL should develop an ambitious programme of action to reduce trips as well as incentivise low emission technology. This action should not only mitigate emissions from airport related activity, but also link with and support local action, including early implementation of measures (pre-DCO) to increase the likelihood of compliance and exposure reduction in the shortest possible time.
- 5.4 **Scope:** HAL should adopt a holistic approach to addressing emissions<sup>14</sup> across all aspects of expansion, including: robust trip reduction measures within the Surface Access and Freight Strategies, minimising transport emissions from remaining vehicles, minimising emissions from the construction phase and airport operations, optimising design and layout to minimise air quality impacts.
- 5.5 **HAL Measures:** HSPG position on emission charging measures proposed by HAL are set out in Table 1 and
- 5.6 Table 2. An Airport LEZ, supplemented by a package of complementary additional measures (see 5.6, below), would provide the broadest controls and seek to incentivise and encourage low emission technology. Early implementation (pre-DCO) could coincide with London ULEZ proposals and help to deliver air quality compliance in the shortest possible time (see 5.3, above). Paired measures will be required for displaced traffic (e.g. waiting Uber taxis and off-site parking).
- 5.7 **Additional Measures:** HAL should include the additional measures as presented Table 5. Emission based charging should be implemented directly alongside investment and incentivisation of low emission transport in the surrounding area.
- 5.8 **Assessment:** HAL should provide details on the quantification of emissions impacts, including use of emission damage cost methodologies where relevant. Assumptions should be provided regarding factors such as uptake, probability of success, projected fleets, emission factors, success of initiatives, likely success. Detailed assessment conducted as early as possible would help to increase confidence and clarity regarding the potential impacts on compliance (see 5.3, above).

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<sup>14</sup> See Scope. This paper considers only transport emissions of air pollutants. A broader approach could include emissions of air pollutants from all sources, including more detail on airport operations and construction phase. It could also consider greenhouse gas emissions and use of renewable energy. HSPG / HAL to continue to review how these broader aspects are covered.

- 5.9 **Relationships:** A working group should be established/continued through the DCO process and beyond, to ensure stakeholders are represented and able to influence future measures. The following areas of remit should be included: (i) establishment and continued coordination of paired measures, to reduce risks of displaced traffic; (ii) post-implementation monitoring of impacts of charging proposals and complimentary measures, with opportunity for improvements and further measures where necessary; (iii) use of ring-fenced revenue stream from charging proposals to include wider offsetting and investment in low emission transport in the local area.
- 5.10 Although the paper does reference some potential emission reduction measures from construction and operation of the airport, the core focus of this paper has been around the emission strategy relating to surface transport. Further work and understanding is needed around the operational and construction emissions strategies, and HSPG would like to engage further with HAL in this area.



# Appendix A:

## Policy context for Air Quality Compliance at Heathrow

### Requirements of the Airports National Policy Statement

Presenting the Airports National Policy Statement to parliament (5 June 2018), the Secretary of State for Transport, Chris Grayling said<sup>15</sup>:

*“We will grant development consent [for Heathrow expansion] only if we are satisfied that a new runway would not impact the UK’s compliance with air quality obligations.”*

He went on to add:

*“The runway cannot be opened if it does not meet air quality rules, but I have been clear all along that the air quality issues around Heathrow are much more than issues of the airport itself; they are typical of the air quality issues that face metropolitan areas in this country and elsewhere in the world, which is why my right hon. Friend the Environment Secretary has brought forward an air quality plan.*

*In addition, Heathrow Airport is consulting on a low emissions zone that would make it impossible, without a substantial charge, to bring a higher-emission vehicle into the airport when the runway is open—assuming that the parliamentary and development processes go according to plan. So that has to be addressed; it is not an optional extra for the airport—it has to happen.”*

The precise wording within the ANPS<sup>16</sup> itself is:

*[Para 2.18] “Expansion must be deliverable within national targets on greenhouse gas emissions and in accordance with legal obligations on air quality.”*

*[Para 5.32] “The applicant should undertake an assessment of the project, to be included as part of the environmental statement, demonstrating to the Secretary of State that the construction and operation of the Northwest Runway will not affect the UK’s ability to comply with legal obligations. Failure to demonstrate this will result in refusal of development consent.”*

Note, more broadly, the ANPS sets out the focus of the Secretary of State, on the impacts of the use of the land, rather than the control of the processes, emissions or discharges themselves.

*[Para 4.54] “In deciding an application, the Secretary of State should focus on whether the development is an acceptable use of the land, and on the impacts of that use, rather than the control of processes, emissions or discharges themselves. The Secretary of State should assess the potential impacts of processes, emissions or discharges to inform decision making, but should work on the assumption that, in terms of the control and enforcement, the relevant pollution control regime will be properly applied and enforced. Decisions under the Planning Act 2008 should complement but not duplicate those taken under the relevant pollution control regime.*

<sup>15</sup> <https://hansard.parliament.uk/Commons/2018-06-05/debates/ED5F2A14-318D-4A18-8414-E472C9608DD2/AirportsNationalPolicyStatement>

<sup>16</sup> Para 2.18. Department for Transport (June 2018) Airports National Policy Statement: <https://www.gov.uk/government/publications/airports-national-policy-statement>

### Legal obligations on air quality

“*Legal obligations on air quality*” refers specifically to requirements set out in the EU Air Quality Directive (2008). Member States are required to meet limit values for a range of pollutants, including nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>10</sub>). Member States are required to meet limit values in all outdoor areas (excluding certain workplaces). However, they are not required to **report** air quality in all of these areas, due to different sampling and reporting requirements. Member States must split their area into zones and agglomerations, based on population density, and report on compliance (or non-compliance) for each zone/agglomeration.

Under the EU AQ Directive, the deadline for meeting NO<sub>2</sub> limit values was 1 January 2010. If, in a particular zone / agglomeration, NO<sub>2</sub> concentrations do not meet the limit values, a Member State may postpone the deadlines for up to five years for that particular zone agglomeration, on condition that an air quality plan is developed and agreed to show how it will be met.

The UK’s last compliance report noted that the limit value for annual mean NO<sub>2</sub> was exceeded in 37 out of 43 zones<sup>17</sup>. Although the UK government requested a time extension, it has not submitted a plan that would show how the NO<sub>2</sub> limit value could be met in all non-compliant zones by the extended deadline, and is currently subject to infraction proceedings for breaching the EU Directive.

The National Plan on NO<sub>2</sub> which the government submitted was ruled inadequate by the English High Court, following a case brought by ClientEarth. This resulted in a subsequent plan being submitted to the European Commission, which the High Court again judged to be inadequate. In the latest judgement (2017)<sup>18</sup>, the judge, Mr Justice Garnham, stated:

*“the proper construction of Article 23 imposes a three-fold obligation on the Secretary of State; he must aim to achieve compliance by the soonest date possible; he must choose a route to that objective which reduces exposure as quickly as possible; and that he must take steps which mean meeting the value limits is not just possible, but likely. It follows that the Secretary of State must ensure that there is in place a plan for each zone which meets the three-fold obligation.”*

In addition to the EU limit values, the UK has set national air quality objectives. These were set out in the first National Air Quality Strategy (1997) and reiterated in the next (2007)<sup>19</sup>. The 2007 Strategy states:

*“The air quality objectives in the Air Quality Strategy are a statement of policy intentions or policy targets. As such, there is no legal requirement to meet these objectives except in as far as these mirror any equivalent legally binding limit values in EU legislation.”*

### Identifying compliance

The UK government assesses the air quality using a combination of monitoring and modelling. The Automatic Urban and Rural Network (AURN) of monitoring sites all meet the EU Directive requirements for location, siting and quality, and are part of the UK’s submission to the EU.

The UK’s submission also includes the results of modelling, using the bespoke Pollution Climate Mapping (PCM) model<sup>20</sup>. Defra describes this as

<sup>17</sup> <https://uk-air.defra.gov.uk/library/annualreport/>

<sup>18</sup> <https://www.judiciary.uk/wp-content/uploads/2018/02/clientearth-no3-final-judgmentdocx.pdf>

<sup>19</sup> [https://uk-air.defra.gov.uk/assets/documents/National\\_air\\_quality\\_objectives.pdf](https://uk-air.defra.gov.uk/assets/documents/National_air_quality_objectives.pdf)

<sup>20</sup> The PCM is also used for policy development, scenario assessment, population exposure assessments and to provide maps of background pollution. Under the Local Air Quality Management framework, local authorities are also required to assess their air pollution, including modelling. This local modelling does not always agree with the overview national modelling, due to the additional detail in local sources, urban geometry and other characteristics.

*“a collection of models designed to fulfil part of the UK's EU Directive (2008/50/EC) requirements. There is one model per pollutant (NO<sub>x</sub>, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, CO, benzene, ozone, As, Cd, Ni, Pb and B[a]p) each with two parts: a base year model and a projections model. The PCM provides outputs on a 1x1 km grid of background conditions plus around 9,000 representative road side values.”*

### Projected air quality in London

In 2015, the Airports Commission undertook a Sustainability Appraisal to support its examination of three shortlisted options to increase aviation capacity in the UK (Gatwick Second Runway, Heathrow Northwest Runway, and Heathrow Extended Northern Runway). This included a detailed assessment of the impacts of the options on air quality. This analysis was subsequently updated in October 2017<sup>21</sup> to include the UK Government's 2017 Air Quality Plan and associated PCM projections, and the latest aviation demand forecasts.

Heathrow's third runway is anticipated to become operational in 2026/2027. By this time, PCM modelling estimates that all (modelled) road links in London will comply with the NO<sub>2</sub> annual mean limit value. This assumes that the UK Government's Air Quality Plan is fully implemented, including the proposed extension of the London LEZ.

According to the model outputs, the 'critical link' for compliance in all years is the A40 (Westway, link 70181) in central London, over 15 km from Heathrow. Impacts on the A4 (Bath Road, link 16112) and the A312 (links 18727, 26914) are assessed, but not identified as 'critical', in that they do not trigger non-compliance of the London Zone. The results of the analysis are reproduced below. The graph and tables identify (i) the PCM model projected concentration for each link, after implementation of the Air Plan; and (ii) the additional contribution to concentrations on each link, as a result of traffic associated with the third runway.

The impact of airport related traffic is proportionally higher for links adjacent to the airport (1.4-1.5 µg/m<sup>3</sup> for 2026-2030 on the A4). Whereas the contribution to links in central London is lower (0.3 µg/m<sup>3</sup> for 2026-2030 on the A40). Nevertheless, links in central London that are affected by the airport (albeit by a relatively small impact, <1µg/m<sup>3</sup>) coincide with the maximum concentration in the zone or have concentrations very close to the maximum in the zone.

In 2026, the A40 'critical link' is modelled as having a concentration of 39.9 µg/m<sup>3</sup>, with full implementation of the Air Quality Plan, and including the impacts of Heathrow Expansion (Figure 2 and Figure 3). Given the limit value is 40 µg/m<sup>3</sup>, and the estimated uncertainty in the air quality modelling conducted for the Air Quality Plan as stated by Defra is ± 29% (95% confidence interval), the risk of impacting on compliance is high. Indeed, the analysis concludes that *“taking into account uncertainties in the PCM modelling on a link-by-link basis, it should, therefore, be assumed that wherever PCM concentrations in central London exceed the limit value, the option is at risk of causing a delay to the compliance of the zone”*.

In 2027, the A40 'critical link' is modelled as having a concentration of 38.8 µg/m<sup>3</sup>, with full implementation of the Air Quality Plan, and including the impacts of Heathrow Expansion (Figure 2 and Figure 3). However, the estimated uncertainty remains large, at ± 29% (95% confidence interval), and the risk of impacting on compliance is high.

<sup>21</sup> DfT (2017) 2017 Plan update to air quality re-analysis. Impact of 2017 Air Quality Plan and associated Pollution Climate Mapping sensitivity testing. Available online at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/653775/2017-plan-update-to-air-quality-re-analysis.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/653775/2017-plan-update-to-air-quality-re-analysis.pdf) . Accessed Sept 2018

SCENARIO	CRITICAL PCM LINK	CHANGE IN CONC DUE TO OPTION (AC MODELLED IMPACT)	PCM MODEL PROJECTED CONC	TOTAL NO <sub>2</sub> CONC	%HEAD-ROOM (AS % OF LIMIT VALUE)
<b>2026 Scenarios</b>					
Baseline	16112	1.4	35.4	36.8	8
	70181	0.3	<b>44.6</b>	<b>44.8</b>	-12
With CAZ	16112	1.4	34.8	36.2	10
	70181	0.3	39.7	39.9	0
<b>2027 Scenarios</b>					
Baseline	16112	1.5	35.0	36.5	9
	70181	0.3	<b>42.4</b>	<b>42.7</b>	-7
With CAZ	16112	1.5	34.6	36.1	10
	70181	0.3	38.5	38.8	3

Figure 2: Extract from DfT (2017) 2017 Plan update to air quality re-analysis<sup>21</sup>

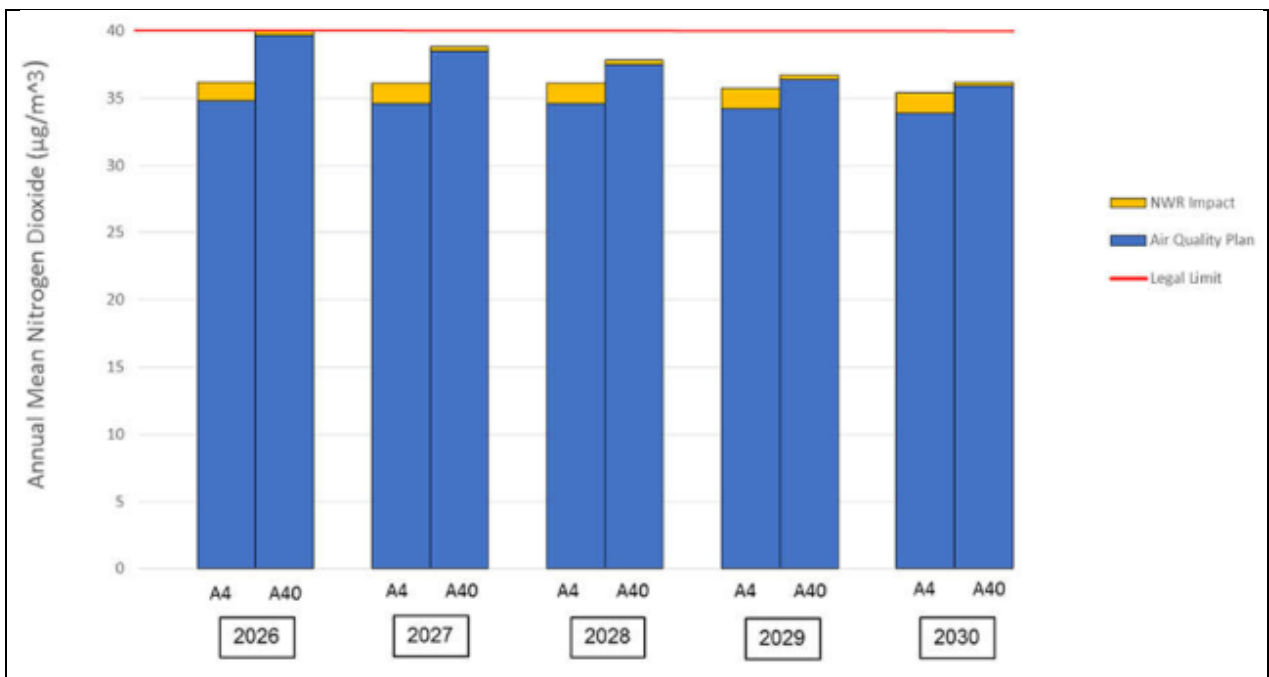


Figure 3: Extract from DfT (2018) Heathrow north-west runway air quality explanatory note<sup>22</sup>

**Summary**

The wording of the ANPS, that the airport must “not impact the UK’s compliance” could be interpreted as meaning that Heathrow must not be the difference between the London Zone complying and not complying with the EU Limit Values. The current modelling indicates that London will comply by 2026, albeit very marginally and with a high risk of non-compliance. Delayed opening would slightly improve the possibility of air quality compliance, as contributions from other sources are projected to decrease over

<sup>22</sup> DfT (2018) Heathrow north-west runway air quality explanatory note. Published 21 June 2018. Available online at: <https://www.gov.uk/government/publications/heathrow-north-west-runway-and-air-quality/heathrow-north-west-runway-air-quality-explanatory-note>. Accessed Sept 2018.

time. For example, in 2027, projected concentrations at the 'critical link' are 38.8 µg/m<sup>3</sup>, although uncertainty remains large at ± 29%, 95% CI.

This analysis is consistent with the UK methods of *reporting* compliance, using the PCM modelled road links to project future concentrations. However, actual compliance with the EU Directive, requires that limit values apply almost everywhere. When considering the most recent National NO<sub>2</sub> Plan, the High Court stated that the Secretary of State must:

- aim to achieve compliance by the soonest date possible;
- choose a route to that objective which reduces exposure as quickly as possible; and
- take steps which mean meeting the limit values is not just possible, but likely.

For these reasons, an ambitious programme of action is required. Not only to mitigate emissions from airport related activity, but also to link with and support local action to increase the likelihood of compliance and exposure reduction in the shortest possible time.

# Appendix B:

## Measures proposed by HAL (Surface Access Strategy)

	<p><b>Putting Heathrow at the heart of the rail network</b></p>		<p><b>Creating a public transport focused airport</b></p>
<p>Improve rail access to Heathrow to encourage more passengers to travel by train and increase sustainable travel</p>	<p>Improve on-campus transport facilities to encourage the use of public transport and provide an easy passenger experience.</p>		
	<p><b>Strengthening the coach hub at Heathrow</b></p>		<p><b>Making public transport easier to use</b></p>
<p>Improve coach and bus access and frequency to Heathrow</p>	<p>Improve ticketing, promote affordable fares and longer public transport operating hours.</p>		
	<p><b>Investing in local transport solutions</b></p>		<p><b>Providing a resilient and reliable road network</b></p>
<p>Invest in local transport solutions that support airport colleagues on their journeys to work and support local communities travelling sustainably</p>	<p>Provide a road network to allow for airport expansion and provide reliable journeys for all users.</p>		
	<p><b>Building on the success of our commuter programme</b></p>		<p><b>Enabling more efficient and responsible use of the road network</b></p>
<p>Support and provide incentives for colleagues to travel to work in sustainable ways</p>	<p>Implement innovative initiatives to optimise road usage around the airport, minimising the number of vehicles driving around Heathrow</p>		

**Enabling more efficient and responsible use of the road network**

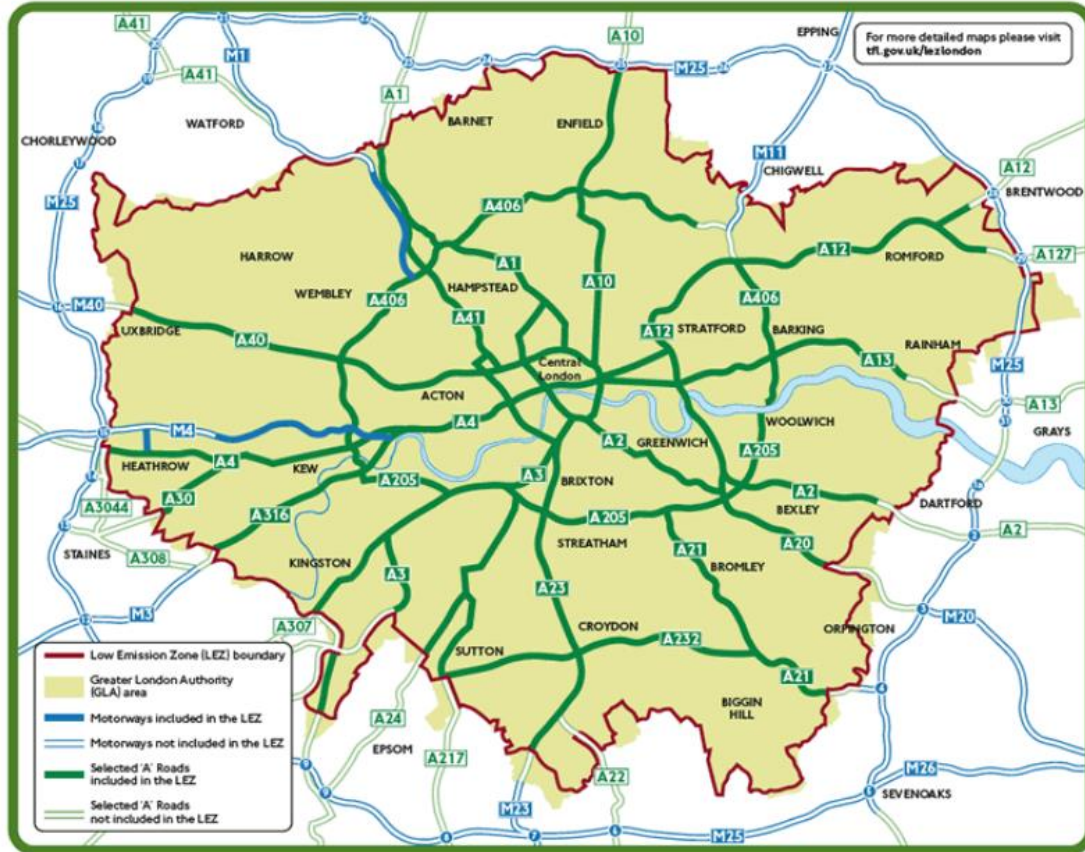
- G1 Efficient use of taxis
- G2 Reducing emissions through vehicle charging
- G3 Intelligent Mobility
- G4 Consolidation and prioritisation of parking
- G5 Measures to influence freight vehicles and delivery behaviour

- **Emissions based surcharge** – Utilising existing charging structures at the airport (such as car parking, permits, facility charges) we would introduce a supplementary charge for the most polluting vehicles. This could mirror the Mayor of London’s proposals for an Ultra Low Emission Zone.
- **Drop off charge** – Similar to several airports around the world, Heathrow is considering applying a charge to vehicles that are dropping off passengers directly outside the terminal buildings. This charge could apply to all vehicles that drop off/ pick up or be based on the vehicle emission standards.
- **Terminal low emission zone** – This would allow priority access to the terminal areas for low emission vehicles or those that operate in the most efficient way. This would encourage fleet operators and regular users to shift to low emissions vehicles.
- **Airport low emissions zone** – This would require all vehicles accessing the airport to be charged based on the emissions standard of the vehicle. This would target a wider range of users than the terminal low emission zone.
- **Airport access charge** – If there needed to be further shift towards public transport to reduce congestion, then a broader charge based on vehicle access could be applied to encourage passengers to shift onto public transport. This charge would apply regardless of the emission standard of the vehicle. This would be similar to the London congestion charge. However, this charge would be introduced in conjunction with major improvements to public transport connections to Heathrow, and strong support to find convenient alternative modes of transport for all Heathrow users.

# Appendix C:

## London LEZ – Summary of Proposals<sup>23</sup>

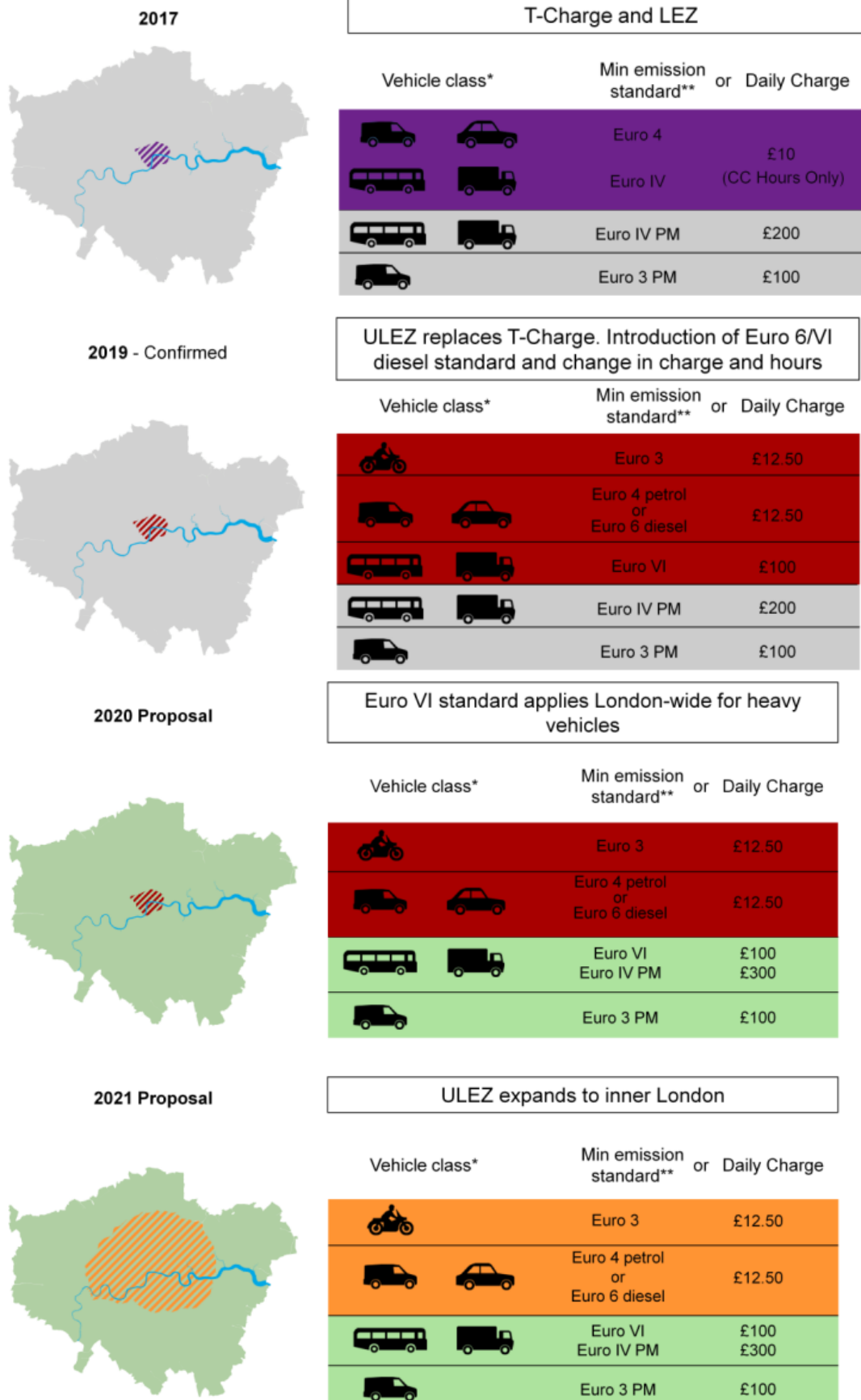
Figure 1: The area covered by the LEZ



<sup>23</sup> [https://consultations.tfl.gov.uk/environment/air-quality-consultation-phase-3b/user\\_uploads/ulez-consultation-appendix-i.pdf](https://consultations.tfl.gov.uk/environment/air-quality-consultation-phase-3b/user_uploads/ulez-consultation-appendix-i.pdf)



**Figure 11: Summary of proposals for the future of the LEZ and ULEZ**



# Appendix D:

## Goals for current operations within Heathrow 2.024

5.1 Reduce emissions from road transport by working with partners		
STRATEGIES	INDICATORS	TARGETS
<b>Reduce emissions from road transport by working with partners</b>	NOx emissions for airport-related traffic	Overall: Reduce NOx emissions from airport-related traffic by at least 40% by 2020 and 60% by 2025 (from 2013 baseline)
Develop and consult on plans for a <b>low emissions zone for surface transport</b> to/from Heathrow as part of the planning process for our expansion	% of vehicles entering Heathrow that are Euro 6 or better	
Develop <b>infrastructure for Electric Vehicles (EVs)</b> driven by passengers and colleagues.	Number of EV charging points available to passengers, colleagues, taxis, private hire vehicles, and commercial vehicles	Year-on-year increase in EV charging points
Develop <b>incentives to encourage the use of low emission and EVs</b> driven by passengers and colleagues	kWh consumed at landside EV charging points	Year-on-year increase in kWh consumed at landside EV charging points
		Launch a salary sacrifice scheme for Heathrow colleagues to facilitate purchase of low emission vehicles and EVs by 2017
		Launch a car club for Heathrow passengers that promotes EVs by 2017
Utilise <b>Heathrow's logistics consolidation centre</b> as a gateway to minimise trips and emissions from construction vehicles	% of vehicles using logistics centre that are Euro VI or better  Consolidation factor of delivery trips	Establish baseline and set 2020 and 2025 targets by 2017
Establish a <b>Heathrow Sustainable freight group</b>	% of vehicles using logistics centre that are Euro VI or better	Establish Heathrow sustainable freight group by 2017
	% of low emission/Euro VI freight trips in Heathrow area	Year-on-year increase in percent of low emission/Euro VI freight trips in Heathrow area
Ensure continued access and use of the Heathrow hydrogen fuelling station	kg of H <sub>2</sub> filled at Heathrow hydrogen filling station	Year-on-year increase in kg of H <sub>2</sub> filled at Heathrow hydrogen filling station
	Number of vehicles using Heathrow hydrogen filling station	Year-on-year increase in number of vehicles using station

<sup>24</sup> HAL (2017) Heathrow 2.0: Our Plan for Sustainable Growth. Available online at: <https://your.heathrow.com/wp-content/uploads/2018/07/Heathrow2.0.pdf>. Accessed Sept 2018.

# 5.2

## Reduce emissions from airside vehicles by working with partners

STRATEGIES	INDICATORS	TARGETS
<b>Reduce emissions from airside vehicles by working with partners</b>	NOx emissions from airside vehicles	Overall: Reduce NOx emissions from airside vehicles by at least 50% by 2020 and 70% by 2025 (from 2013 baseline)
★ <b>Develop an ultra-low emissions zone for airside vehicles by 2025 to improve quality of life through cleaner air with the highest possible % of electric and other clean fuel vehicles</b>	% airside vehicles meeting emission standard	Develop a roadmap for the transition of all airside vehicles to ultra-low emissions standards developed by 2017  100% airside vehicles meet latest and most stringent, relevant emission standards (Euro 6/ VI, Stage V, etc.) by 2025
<b>Develop EV charging infrastructure</b> to support the operational needs of airside vehicles and encourage the uptake of EVs	£ invested in charging infrastructure across the airport	Invest £5M in EV charging infrastructure throughout the airport by 2018
	kWh consumed at airside EV charging points	
<b>Monitor the effectiveness of the restructured airside vehicle pass fees</b> to influence the uptake of zero and low emission airside vehicles	% airside vehicles that are low emission and electric	
<b>Implement standards for airside vehicles in line with the London ULEZ</b>	% airside vehicles that meet latest and most stringent, relevant emission standards (Euro 6/ VI, Stage V, etc.)	100% of airside vehicles meet latest and most stringent, relevant emission standards (Euro 6/ VI, Stage V, etc.) by 2025
<b>Replace all Heathrow cars and small vans with electric vehicles</b> to lead the way for the rest of the fleet	% Heathrow's cars and small vans that are electric or plug-in hybrid	100% Heathrow's cars and small vans electric or plug-in hybrid by 2020
	Number of Heathrow's cars and small vans that are converted to electric or plug-in hybrid	50 Heathrow cars and small vans converted to electric or plug-in hybrid by 2017

5.3 ★ 50% of airport passenger journeys made by public and sustainable transport by 2030, supporting no more airport-related cars on the road, so local areas can thrive without increased congestion and halve today's colleague car journeys		
STRATEGIES	INDICATORS	TARGETS
Work with rail partners to ensure they prioritise major rail projects that access Heathrow from the north, south, east and west	% passengers using public and sustainable transport	At least 45% of passengers to use public and sustainable transport by 2019 and 50% by 2030 42.3% passengers using public and sustainable transport by 2017
Develop incentives for mode shift away from private car use such as discounted local bus services for colleagues	Number of trains per hour arriving at Heathrow (including London Underground)	An increase in the number trains arriving at Heathrow from 18/hr in 2017 to 36/hr by 2030
		Major rail projects (Crossrail, Western Rail, Southern Rail) delivered by our rail partners by 2030
Work with local partners to deliver public transportation priorities and establish safe cycle routes from/to local boroughs	Number of single occupancy colleague car journeys	Reduce the number of single occupancy colleague car journeys by 25% by 2030 and 50% by 2040

5.4 Become the world leader in delivering the cleanest aircraft and operations possible		
STRATEGIES	INDICATORS	TARGETS
Engage at senior levels with airline partners to encourage the early phase-out of the oldest and dirtiest aircraft whilst bringing in the newest and cleanest aircraft in class	% of flights by pre-CAEP standard aircraft	0% of flights by pre-CAEP standard aircraft by 2020 3.7% of flights by pre-CAEP standard aircraft by 2017
	% of flights by CAEP 6 or newer aircraft	At least 60% of flights by CAEP 6 or newer aircraft by 2020
Add emissions performance to create a combined Fly Quiet and Clean League Table of airlines		Emission-based metric added to create our Fly Quiet and Clean League Table by 2017
Work in partnership with airlines and ground handlers to increase the use and performance of pre-conditioned air (PCA) at aircraft stands in order to reduce APU emissions by aircraft parked at gate	kWh of PCA consumption	Increase annual PCA consumption by 20% in 2017 compared to 2016 Set 2020 PCA improvement target by 2017
Work in partnership with airlines and ground handlers to address emissions during the landing and take-off cycle	% aircraft using electric towing or single engine taxiing	Set a stretch target by of 2017 to increase the percentage of aircraft using electric towing or single engine taxiing by 2020
Implement new landing charges to incentivise cleaner aircraft. Review and revise regularly		Revise our landing charges to nearly double the price per kg of NOx per flight in 2017

# Appendix E:

## Emission and damage cost methodology in Local Policy

- Emission and damage costs calculation methodology – Slough Draft LES<sup>25</sup>

**B.** The pollutant emissions costs calculation will identify the health and environmental damage costs associated with the proposal and will assist SBC in assessing the overall impacts on air quality arising from major developments. SBC **may** use the damage costs in considering the appropriate scale and kind of mitigation that is required to make certain major schemes acceptable in terms of air quality. The overall benefit of the scheme will be taken into account in making the site acceptable. The calculation utilises the most recent DEFRA Emissions Factor Toolkit<sup>35</sup> to estimate the additional pollutant emissions from a proposed development and the latest DEFRA IGCB Air Quality Damage Costs for the specific pollutant of interest, to calculate the resultant damage cost<sup>36</sup>. The calculation process includes:

- Identifying the additional trip rates generated by the proposal (from the Transport Assessment);
- The emissions calculated for the pollutants of concern (NO<sub>x</sub> and PM<sub>10</sub>) [from the Emissions Factor Toolkit];
- The air quality damage costs calculation for the specific pollutant emissions (from DEFRA IGCB);
- The result is totalled for a five-year period to enable mitigation implementation.

The calculation is summarised below. Further information can be obtained from the SBC Environmental Quality Team. **Should there be no net increase in trips arising from a development scheme then the damage costs are zero.**

**Road Transport Emission Increase =**  
 $\Sigma[\text{Estimated trip rate for 5 years X Emission rate per 10 km per vehicle type X Damage Costs}]$

<sup>25</sup> SBC (2017) Draft LES. Accessed Jul-18: [http://www.slough.gov.uk/downloads/LES\\_final\\_draft\\_23Nov.pdf](http://www.slough.gov.uk/downloads/LES_final_draft_23Nov.pdf)

- London Plan (current)<sup>26</sup>

### **POLICY 7.14 IMPROVING AIR QUALITY**

#### **Planning decisions**

- B** Development proposals should:
- c** be at least 'air quality neutral' and not lead to further deterioration of existing poor air quality (such as areas designated as Air Quality Management Areas (AQMAs)).
  - d** ensure that where provision needs to be made to reduce emissions from a development, this is usually made on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, and that it is possible to put in place measures having clearly demonstrated equivalent air quality benefits, planning obligations or planning conditions should be used as appropriate to ensure this, whether on a scheme by scheme basis or through joint area-based approaches

- London Plan (draft new)<sup>27</sup>

### **Policy SI1 Improving air quality**

- A** London's air quality should be significantly improved and exposure to poor air quality, especially for vulnerable people, should be reduced:
- 1) Development proposals should not:
    - a) lead to further deterioration of existing poor air quality
    - b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
    - c) reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality
    - d) create unacceptable risk of high levels of exposure to poor air quality.
  - 3) The development of large-scale redevelopment areas, such as Opportunity Areas and those subject to an Environmental Impact Assessment should propose methods of achieving an Air Quality Positive approach through the new development. All other developments should be at least Air Quality Neutral.
  - 6) Development proposals should ensure that where emissions need to be reduced, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated.

<sup>26</sup> GLA (2016) The London Plan. Accessed Jul-19: <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan>

<sup>27</sup> GLA (2017) The New Draft London Plan. Accessed Jul-19: <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan>

# Appendix F:

## National Policy on Emissions

### Draft Clean Air Strategy (2018)

#### 5.6 Aviation

Aircraft contribute to air pollution while in the air, during take-off and on the ground. The biggest domestic impact of aircraft is during take-off and landing (1% of total NO<sub>x</sub> and SO<sub>2</sub> national emissions<sup>64</sup>). In addition, airports are large, complex sites with a range of emission sources and so can be of concern for local air quality. They also generate significant land journeys by passengers, workers and freight transport.

##### 5.6.1 Action to date

The government works to improve international standards on emissions from aircraft and to challenge airports and local authorities (as appropriate) to improve local air quality.

The industry is taking action to cut airport-related emissions by operating aircraft more efficiently, introducing new lower emission technologies and practices, reducing vehicle emissions within the airport boundary, and improving public transport links to airports. The government published a call for evidence for a new aviation strategy in July 2017 and, building on this, will consult on a new Aviation Strategy later this year.

##### 5.6.2 Taking further action

- Government will consult on an Aviation Strategy in 2018 which will include measures to improve air quality.

64 Defra, 'UK Emissions inventory submission under NECD and CLRTAP' (2018), [http://cdr.eionet.europa.eu/gb/eu/nec\\_revised/inventories/envwnwqzg/Annex\\_I\\_Emissions\\_reporting\\_template2018\\_GB\\_v1.0.xls](http://cdr.eionet.europa.eu/gb/eu/nec_revised/inventories/envwnwqzg/Annex_I_Emissions_reporting_template2018_GB_v1.0.xls)

### UK plan for tackling roadside nitrogen dioxide concentrations (2017)

#### Aviation

240. Emissions at airports are a small proportion of overall UK emissions, with aircraft contributing 1% of UK NO<sub>x</sub> emissions. Road transport sources are the main contributor of emissions around airports so airport surface access strategies are important in tackling air quality around airports, as well as all other measures to reduce emissions from road vehicles travelling to and from airports.
241. UK government policy on aviation-related air quality is to seek improved international standards to reduce emissions from aircraft and to encourage the aviation industry to put in place measures to reduce emissions for which it is responsible. Industry is working together to reduce airport-related emissions through measures including operating aircraft more efficiently, introducing efficient new technology, using landing charges to incentivise cleaner aircraft, reducing vehicle emissions within the airport boundary and sustainable surface access.<sup>92</sup>

<sup>92</sup> Sustainable Aviation: UK Aviation and Air Quality [www.sustainableaviation.co.uk/wp-content/uploads/2017/01/SA-A4\\_UK-Aviation-and-AirQuality\\_Report1.pdf](http://www.sustainableaviation.co.uk/wp-content/uploads/2017/01/SA-A4_UK-Aviation-and-AirQuality_Report1.pdf)

## Clean Air Zone Framework Principles for setting up Clean Air Zones in England (2017)

### 1.1. “What is a Clean Air Zone?”

8. A Clean Air Zone defines 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.
  9. Clean Air Zones aim to address all sources of pollution, including nitrogen dioxide and particulate matter, and reduce public exposure to them using a range of measures tailored to the particular location.
  10. Within a Clean Air Zone there is also a particular focus on measures to accelerate the transition to a low emission economy. This will ensure improvements are ongoing and sustainable, support future development and decouple local growth from air pollution.
  11. Clean Air Zones bring together local measures to deliver immediate action to improve air quality and health with support for cities to grow while delivering sustained reductions in pollution and a transition to a low emission economy. Where there are the most persistent pollution problems, this is supported by restrictions to encourage only the cleanest vehicles to operate in the city. This is summarised in the diagram below.
  12. Clean Air Zones fall into two categories:
    - Non-charging Clean Air Zones – These are defined geographic areas used as a focus for action to improve air quality. This action can take a range of forms including, but not limited to, those set out in Section 2 but does not include the use of charge based access restrictions.
    - Charging Clean Air Zones – These are zones where, in addition to the above, vehicle owners are required to pay a charge to enter, or move within, a zone if they are driving a vehicle that does not meet the particular standard for their vehicle type in that zone. Clean Air Zone proposals are not required to include a charging zone.”
- “27. As a minimum any Clean Air Zone is expected to:
- be in response to a clearly defined air quality problem, seek to address and continually improve it, and ensure this is understood locally;
  - have signs in place along major access routes to clearly delineate the zone;
  - be identified in local strategies including (but not limited to) local land use plans and policies and local transport plans at the earliest opportunity to ensure consistency with local ambition;
  - provide active support for ultra low emission vehicle (ULEV)2 take up through facilitating their use;
  - include a programme of awareness raising and data sharing;
  - include local authorities taking a lead in terms of their own and contractor vehicle operations and procurement in line with this framework;
  - ensure bus, taxi and private hire vehicle emission standards (where they do not already) are improved to meet Clean Air Zone standards using licensing, franchising or partnership approaches as appropriate; and
  - support healthy, active travel.”



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2 The Office for Low Emission Vehicles currently considers ultra low emission vehicles to be new cars or vans that emit less than 75 grams of CO<sub>2</sub> from the tailpipe per kilometre driven. They will typically include an electric powertrain.

## Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England (2018)

- 3.6 “The work on air quality, which demonstrated that expansion (with mitigation) is capable of taking place within legal limits, is outlined in the Government’s air quality reanalysis<sup>58</sup> and the Appraisal of Sustainability. Both documents contain a worst case scenario.”

### “Air quality

#### Introduction

- 5.23 Increases in emissions of pollutants during the construction or operational phases of the scheme could result in the worsening of local air quality. Increased emissions can contribute to adverse impacts on human health and on the natural environment.
- 5.24 The European Union has established common, health-based and ecosystem based ambient concentration limit values for the main pollutants in the Ambient Air Quality Directive (2008/50/EC) (‘the Air Quality Directive’),<sup>139</sup> which member states are required to meet by specified dates.
- 5.25 Where compliance by those dates has not been achieved, the member state is required to put in place an action plan showing how the period of exceedance in each non-compliant area will be kept as short as possible. In December 2015, the UK submitted its national air quality plan for nitrogen dioxide, including a zonal plan for Greater London and the South East, for the approval of the European Commission.
- 5.26 In November 2016 the High Court ordered the Government to produce a modified air quality plan that delivers compliance in the shortest possible time. The Government published a final, modified air quality plan on 26 July 2017. The European Commission were notified of this plan on 31 July 2017.<sup>140</sup>
- 5.27 Other relevant legislation includes the fourth daughter Air Quality Directive (2004/107/EC), which sets targets for levels in outdoor air of certain toxic heavy metals and polycyclic aromatic hydrocarbons, and the National Emission Ceilings Directive (2016/2284/EU),<sup>141</sup> which sets national emission limits for a range of atmospheric pollutants.
- 5.28 Air quality impacts are generated by all types of infrastructure development to varying degrees, and the geographical extent and distribution can cover a large area. At Heathrow Airport in 2015, aircraft movements were modelled to have contributed 17% on average to local NO<sub>x</sub> concentrations at nearby roadside locations. Road transport, by comparison, accounted for 64% of NO<sub>x</sub> concentrations in the same areas. Off-road transport and mobile machinery (a category which would include airside vehicles) contributed 5%<sup>142</sup>.
- 5.29 The Airports Commission identified (and in some cases quantified the impact of) a number of measures that would help mitigate any negative impacts on air quality.<sup>143</sup> In addition, for the Heathrow Northwest Runway scheme, the Airports Commission recommended the following supporting measures:
- That Heathrow Airport should be held to performance targets to increase the percentage of employees and passengers accessing the airport by public transport; and
  - That the introduction of a congestion or access charge for road vehicles should be considered.
- 5.30 The Airports Commission undertook extensive analysis on air quality and concluded that expansion could take place within legal obligations (including in a high demand growth scenario). The Department for Transport conducted a study of the implications of the Government’s 2015 national air quality plan on the conclusions of the Airports Commission’s air quality assessment.<sup>144</sup>
- 5.31 Since this work was completed in June 2016, updated international evidence on vehicle emission forecasts was published at the end of September 2016. The Department for Transport has conducted further analysis to assess the impact that this updated evidence base would have on estimated compliance with EU limit values of expansion options at Heathrow Airport and Gatwick Airport. This

analysis has been updated to take account of the revised aviation demand forecasts and the Government's final air quality plan. The result of this analysis helped inform the Government's view that, with a suitable package of policy and mitigation measures, including the Government's modified air quality plan, the Heathrow Northwest Runway scheme would be capable of being delivered without impacting the UK's compliance with air quality limit values.

### **Applicant's assessment**

- 5.32 The applicant should undertake an assessment of the project, to be included as part of the environmental statement, demonstrating to the Secretary of State that the construction and operation of the Northwest Runway will not affect the UK's ability to comply with legal obligations. Failure to demonstrate this will result in refusal of development consent.
- 5.33 The environmental statement should assess:
- Existing air quality levels for all relevant pollutants referred to in the Air Quality Standards Regulations 2010 and the National Emission Ceilings Regulations 2002 (as amended) or referred to in any successor regulations;
  - Forecasts of levels for all relevant air quality pollutants at the time of opening, (a) assuming that the scheme is not built (the 'future baseline'), and (b) taking account of the impact of the scheme, including when at full capacity; and
  - Any likely significant air quality effects of the scheme, their mitigation and any residual likely significant effects, distinguishing between those applicable to the construction and operation of the scheme including any interaction between construction and operational changes and taking account of the impact that the scheme is likely to cause on air quality arising from road and other surface access traffic.
- 5.34 Defra publishes future national projections of air quality based on evidence of future emissions. Projections may be updated as the evidence base changes. The applicant's assessment should, in so far as practicable, be based on the latest available projections. Mitigation
- 5.35 The Secretary of State will need to be satisfied that the mitigation measures put forward by the applicant are acceptable, including at the construction stage. A management / project plan may help record and secure mitigation measures.
- 5.36 Mitigation measures may affect the project design, layout, construction and operation, and / or may comprise measures to improve air quality in pollution hotspots beyond the immediate locality of the scheme.
- 5.37 While the precise package of mitigations should be subject to consultation with local communities and relevant stakeholders to ensure the most effective measures are taken forward, an extensive range of mitigation measures is likely to be required.
- 5.38 In addition, Heathrow Airport should continue to strive to meet its public pledge to have landside airport-related traffic no greater than today. To achieve this, it should set out and regularly review its plans to meet the mode share targets set at paragraph 5.17 above. Heathrow Airport should also develop and keep under review plans to improve the impact of road freight serving the airport.
- 5.39 Other mitigation measures which may be put forward by the applicant could include, but are not limited to:
- Landing charges structured to reward airlines for operating cleaner flights (for example NO<sub>x</sub> emissions charging);
  - Zero- or low-emission hybrid or electric vehicle use (ultra-low emission vehicles), charging and fuel facilities;
  - Reduced or single engine taxiing (improved taxiing efficiency);

- Reducing emissions from aircraft at the gate (for example installation of fixed electrical ground power and preconditioned air to aircraft stands to reduce the use of auxiliary power unit);
- Modernised heating supplies in airport buildings;
- Changes to the layout of surface access arrangements;
- Traffic restrictions and / or traffic relocation around sensitive areas;
- An emissions-based access charge; and
- Physical means, including barriers to trap or better disperse emissions and speed control on roads.

5.40 Mitigation measures at the construction stage should also be provided and draw on best practice from other major construction schemes, including during the procurement of contractors. Specific measures could include but are not limited to:

- Development of a construction traffic management plan (which may include the possible use of rail and consolidation sites or waterways);
- The use of low emission construction plant / fleet, fitting of diesel particulate filters, and use of cleaner engines;
- The use of freight consolidation sites;
- Active workforce management / a worker transport scheme;
- Construction site connection to grid electricity to avoid use of mobile generation; and
- Selection of construction material to minimise distance of transport and increase recycling percentages of the material where appropriate.

5.41 The implementation of mitigation measures may require working with partners to support their delivery. Decision making

5.42 The Secretary of State will consider air quality impacts over the wider area likely to be affected, as well as in the vicinity of the scheme. In order to grant development consent, the Secretary of State will need to be satisfied that, with mitigation, the scheme would be compliant with legal obligations that provide for the protection of human health and the environment.

5.43 Air quality considerations are likely to be particularly relevant where the proposed scheme:

- is within or adjacent to Air Quality Management Areas, 145 roads identified as being above limit values, or nature conservation sites (including Natura 2000 sites and Sites of Special Scientific Interest);
- would have effects sufficient to bring about the need for new Air Quality Management Areas or change the size of an existing Air Quality Management Area, or bring about changes to exceedances of the limit values, or have the potential to have an impact on nature conservation sites; and
- after taking into account mitigation, would lead to a significant air quality impact in relation to Environmental Impact Assessment and / or to a deterioration in air quality in a zone or agglomeration.”

### EU Air Quality Directive 2008

The EU Air Quality Directive requires:

“Member States shall ensure that, throughout their zones and agglomerations, levels of sulphur dioxide, PM<sub>10</sub>, lead, and carbon monoxide in ambient air do not exceed the limit values laid down in Annex XI. In respect of nitrogen dioxide and benzene, the limit values specified in Annex XI may not be exceeded from the dates specified therein.”

Annex XI states that the LIMIT VALUES FOR THE PROTECTION OF HUMAN HEALTH are:

Nitrogen dioxide

- 200 µg/m<sup>3</sup>, not to be exceeded more than 18 times a calendar year as a one hour average, to be met by 1 January 2010
- 40 µg/m<sup>3</sup> as a calendar year average, to be met by 1 January 2010

PM<sub>10</sub>

- 50 µg/m<sup>3</sup>, not to be exceeded more than 35 times a calendar year as a one day average, to be met by 1 January 2005
- 40 µg/m<sup>3</sup> as a calendar year average, to be met by 1 January 2005

### National Emission Ceiling Directive

Under the EU National Emission Ceiling Directive (2016/2284/EU) and the UK National Emission Ceilings Regulations 2018<sup>28</sup>, the UK is committed to the following limits and reductions (for the total of the UK, excluding Gibraltar). There are also limits for sulphur dioxide, ammonia and non-methane volatile organic compounds (NMVOC).

NOx	National emission ceilings to be achieved in each of 2018 and 2019	1167 Kilotonnes
	National reduction commitments in 2020 and in each subsequent year up to and including 2029	55%
	National reduction commitments in 2030 and in each subsequent year	73%
PM <sub>2.5</sub>	National reduction commitments in 2020 and in each subsequent year up to and including 2029	30%
	National reduction commitments in 2030 and in each subsequent year	49%

The government has to produce a National Air Pollution Control Programme to outline how these limits and reductions will be met. It has started this process, with the publication and consultation on a draft Clean Air Strategy, which:

“shows how we will tackle all sources of air pollution, making our air healthier to breathe, protecting nature and boosting the economy... This consultation will inform the final Clean Air Strategy and detailed National Air Pollution Control Programme, to be published by March 2019. .... This strategy sets out our commitment to cut our national emissions to reduce population exposure.”

### Greenhouse Gas Commitments

In addition to the various obligations on air quality, there are a number of greenhouse gas and climate change commitments which affect Heathrow.

- The UN Paris Climate Agreement (commits to keeping global warming below 2°C);

<sup>28</sup> <http://www.legislation.gov.uk/ukxi/2018/129/made>

- The 2008 Climate Change Act (requires at least an 80 per cent reduction in CO2 emissions (compared to 1990 levels) for the whole of the UK, includes statutory carbon budgets) ;
- Carbon Reduction Pathways, including the 2050 Pathways toolkits and documents;
- The Mayor of London’s commitment and pathway for London to be zero carbon by 2050;
- The Energy Performance of Buildings Directive (2010/31/EU) and the Energy Efficiency Directive (2012/27/EU);
- UK National Energy Efficiency Action Plan, 2014;
- The government’s 2017 Clean Growth Strategy (CGS);
- Programmes such as the Carbon Disclosure Project, RE:FIT (supporting the commercial sector) and government guidance on Measuring and Reporting Greenhouse Gas Emissions;
- The EU Emissions Trading System.