

EMISSIONS STRATEGY AND ACTION PLAN

MAY 2018



Heathrow

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1 INTRODUCTION

1.1 Heathrow Airport

Heathrow is Europe's busiest international airport and the UK's biggest port by value. In 2017 it handled a record 78 million passengers and 1.70 million metric tonnes of cargo. Home to over 80 airlines, Heathrow acts as Britain's front door, connecting people and businesses to more than 180 destinations. With record passenger volumes and strong cargo growth year on year, Heathrow is delivering for Britain's economy.

Located on the western edge of London, Heathrow is close to two motorways, making it in an area of higher emissions. This Strategy represents Heathrow's commitment to manage local air quality and emissions of pollutants that have an impact on climate change. This Emissions Strategy and Action Plan has been produced to help implement our ambitious strategy for sustainability, Heathrow 2.0¹, published in 2017.

1.2 Purpose of the Emissions Strategy and Action Plan

Air quality is an important issue at many locations around the UK and we recognise that local air quality and potential effects on public health are a significant concern to communities around Heathrow. We remain fully committed to playing our part in improving local air quality.

As Heathrow grows to meet demand, we will provide more flights to more people. However, our aspiration is to make growth carbon neutral. In effect, we will attempt to 'decouple' aviation growth from climate change.

We have been working to address emissions from Heathrow for more than 15 years and we, alongside our partners, have a strong track-record of reducing emissions from airport operations.

This Emissions Strategy and Action Plan details how we will drive down harmful emissions, by improving the efficiency of operations to minimise fuel use, and by employing the latest technologies to ensure that we are at the forefront of developments in aviation. We take a logical, systematic approach to reducing emissions which is based upon the monitored and modelled data obtained. We will reduce emissions by:

- a Controlling** – energy plant and vehicles owned or leased by Heathrow;
- b Guiding** – aircraft ground movements, airside vehicles and staff travel to and from Heathrow; and
- c Influencing** – aircraft fleet mix and passenger travel to and from Heathrow.

Heathrow 2.0 details how we will be a good neighbour, improve local quality of life, make the area a great place to live and lead the way towards a more sustainable future of air travel. It sets out a series of goals that will guide the future of our business. Heathrow 2.0 aims to establish Heathrow as a world-leading airport in reducing emissions from all sources of activity, both on and off airport.

This Emissions Strategy and Action Plan builds and supersedes the previous Air Quality Strategy² and our ongoing work. Since publication of our previous Heathrow Air Quality Strategy, we also published a "Blueprint for Reducing Emissions" in both 2015³ and 2016⁴. These "Emissions Blueprints" each comprised a ten-point plan of tangible actions for delivery, to accelerate, stretch and add to existing plans to reduce Heathrow's NO_x emissions and other pollutants. These strategies focused on managing and reducing emissions from aircraft activity, airport traffic and airside vehicles.

This will be a living document and will be regularly updated as we develop new approaches and progress on existing commitments.

1.3 Structure of this document

This document is structured as follows:

- Section 2 – Heathrow 2.0 Overview;
- Section 3 – Outline of relevant of the relevant policy context in relation to local air quality and carbon emissions;
- Section 4 – Our previous work on reducing emissions;
- Section 5 – Key Performance Indicators; and
- Section 6 – The Action Plan.

¹ <https://your.heathrow.com/wp-content/uploads/2017/01/Heathrow2.0.pdf>

² http://www.heathrow.com/file_source/Company/Static/PDF/Communityandenvironment/air-quality-strategy_LHR.pdf

³ http://www.heathrow.com/file_source/Company/Static/PDF/Communityandenvironment/heathrows-blueprint-for-reducing-emissions.pdf

⁴ https://your.heathrow.com/localcommunityinformation/wp-content/uploads/2016/10/Heathrow_Blueprint_for_Reducing_Emissions_2016.pdf

2 HEATHROW 2.0

Heathrow 2.0⁵ (<https://your.heathrow.com/wp-content/uploads/2017/01/Heathrow2.0.pdf>) is our business plan for sustainable growth. For us this means being a place that can inspire and enable a positive future for our industry as a whole.

It is a plan to grow the potential of our colleagues, people and businesses, and help make sure that air travel doesn't come at the cost of the planet, or affect the quality of life of local communities. Our goal is to pioneer more sustainable travel from the beginning to the end of every journey.

Through Heathrow 2.0, we want to lead the way in pioneering exciting new approaches to increase the positive impact we can make, while reducing the negative impacts of aviation. More than a progress update, this report is about sharing our journey in a way that is open, practical and as useful as possible

We've structured Heathrow 2.0 around four key outcomes, each of which contain three objectives:

- **A Great Place to Work** is about helping our people fulfil their potential
- **A Great Place to Live** is about working better with our neighbours to improve their quality of life

STRATEGY	TARGET
Reduce emissions from road transport by working with partners	Overall: Reduce NO _x emissions from airport related traffic by at least 40% by 2020 and 60% by 2025 (from 2013 baseline)
Reduce emissions from airside vehicles by working with partners	Overall: Reduce NO _x emissions from airside vehicles by at least 50% by 2020 and 70% by 2025 (from 2013 baseline)
Work with rail partners to ensure they prioritise major rail projects that access Heathrow from the north, south, east and west	At least 45% of passengers to use public and sustainable transport by 2019 and 50% by 2030
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	No flights by pre-CAEP standard aircraft by 2020 At least 60% of flights by CAEP 6 or newer aircraft by 2020

Table 2.1 Objective 5 key strategies and targets detailed in Heathrow 2.0

- **A Thriving Sustainable Economy** focuses on creating opportunities for business (including SMEs and sustainable business) to deliver a stronger future for the UK
- **A World Worth Travelling** is about working with our industry and regulator to deliver fair and sustainable air travel for future generations to enjoy

Within "A Great Place to Live," Objective 5 is focused on improving local air quality through several measures focused on reducing emissions from road transport and from airside vehicles. Heathrow is committed to creating an airside ultra-low emissions zone by 2025 and facilitating infrastructure to enable 50% of passenger journeys to be made by public and sustainable transport by 2030.

Table 2.1 below sets out key overarching strategies and specific targets within Heathrow 2.0 that aim to ensure that we play our part in improving air quality in the area surrounding Heathrow.

Objectives 10 and 11, in pillar four, "A World Worth Travelling" focus on developing a zero carbon airport and accelerating the era of sustainable flight to deliver carbon neutral growth.

Table 2.2 below sets out key overarching strategies and specific targets within Heathrow 2.0 that aim to ensure that we play our part in maintaining a world worth travelling.

STRATEGY	TARGET
Operate zero carbon airport infrastructure (buildings and other fixed assets) by 2050 with clear interim targets	Zero carbon emissions generated from energy used in fixed infrastructure by 2050 Our 2020 milestone target is a 34% reduction in carbon emissions by 2020 against a 1990 baseline
Develop carbon offsetting as the final step in our hierarchy of measures for residual emissions from energy used in fixed infrastructure	Achieve carbon neutral airport status by 2020 ⁶
Maximise the proportion of energy generated from on-airport or local renewable sources and purchase renewable energy from off-site sources	Power Heathrow with 100% renewable electricity from April 2017 as our first step to operate a zero carbon airport ⁷
Provide support to the UK Government and airlines, to implement the ICAO agreement for growth in air traffic from 2020 to be carbon neutral	Report annually on steps taken
Provide incentives to fuel-efficient and lower carbon planes, by developing proposals for 'green slots' for our new runway, to incentivise the cleanest aircraft to use new capacity	Develop a proposal for 'green slots' as part of development plans for our new runway project
Help accelerate adoption of sustainable fuels by building competence at Heathrow, including through work with our airline partners and the Sustainable Aviation Fuels working group to better understand their alternative fuels strategy	Build competence on Sustainable Aviation Fuels within Heathrow by working with airlines and other business partners and establish a process that provides for relevant infrastructure projects to give due consideration to sustainable aviation fuels in 2018

Table 2.2 Objective 10 and 11 key strategies and targets detailed in Heathrow 2.0

⁵ <https://your.heathrow.com/wp-content/uploads/2017/01/Heathrow2.0.pdf>

⁶ Measured by achieving level 3+ carbon neutrality within the Airports Carbon Accreditation Scheme. This will require us to offset all the residual scope 1 and 2 Heathrow carbon emissions.

⁷ Since April 2017 Heathrow has been powered with 100% renewable electricity and we are working towards our revised goal to be a carbon neutral airport by 2020.

3 POLICY CONTEXT

3.1 Air quality

Overview of air pollution in the UK

The air pollutants of most concern to public health in the UK are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}), both of which largely arise from the combustion of fossil fuels. In the Heathrow area, and the UK in general, concentrations of NO₂ are an important focus, as there are locations where they exceed the EU limit values and national Air Quality Objectives (AQOs).

Local air quality management

As part of the Local Air Quality Management (LAQM) process established by the government, each local authority in the country is required to assess air quality in its area. When a local authority identifies that an AQO is at risk of not being achieved, it is required to declare an Air Quality Management Area (AQMA).

The London Borough of Hillingdon declared an AQMA in 2001, which was then extended in 2003 to cover all parts of the Borough south of the Chiltern-Marylebone railway line. Heathrow sits within the southern part of this AQMA. The entire boroughs of Hounslow and Spelthorne, and the Brands Hill Junction in Slough have also been declared as AQMAs.

These AQMAs were declared because annual average concentrations of NO₂ were found to be above the annual mean AQO of 40µg/m³ at certain locations, including those close to busy roads and motorways. However, the NO₂ AQO is not exceeded everywhere in the AQMAs.

Concentrations of the other significant air pollutants than can affect public health, including PM₁₀ and PM_{2.5} in the boroughs of Hillingdon, Hounslow, Spelthorne and Slough, already meet EU limit values and AQOs and are forecast to continue to do so into the future.

Air quality around Heathrow

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

The Heathrow Air Quality Working Group (a partnership between ourselves, our neighbouring local authorities – London Borough of Hillingdon, London Borough of Hounslow, Slough Borough Council, Spelthorne Borough Council, and Chiltern-South Bucks District Council, the Greater London Authority [GLA], and the Environment Agency) works collaboratively to share best practice, provide updates on emission reduction efforts and discuss local air quality trends. The Heathrow Air Quality Working Group monitors, shares and publishes data from over 20 continuous air quality monitoring stations near Heathrow. The data collected by us, our surrounding local authorities and DEFRA is publicly available and can be found on the Heathrow Airwatch website <http://www.heathrowairwatch.org.uk/>.

In order to gain a greater understanding of emissions at Heathrow and consider the contribution of different pollutant sources to the monitored concentrations, we regularly produce airport emission inventories and dispersion modelling. Full emission inventories are produced every few years, with source specific emissions inventories produced in intervening years. Our latest full emission inventory⁸, for 2013, was published in 2015, with an inventory focussing on sources within Heathrow also produced in 2017⁹. The nitrogen oxides source contributions (NO_x – of which NO₂ is one component) at key monitoring locations near Heathrow are shown in Figure 3.1, where the different coloured sections of the pie-charts show the origins of the contributions.

The impact of onsite activity at Heathrow on air quality falls sharply with distance from the airport. This is confirmed by the air quality monitoring undertaken in the area. Within 2 km of Heathrow, only two air quality monitoring sites have historically recorded NO₂ concentrations exceeding the AQO and these are located next to the M4 motorway. The concentrations at these locations are predominantly due to emissions from road

traffic, the majority of which is not airport related. Dispersion modelling indicates that Heathrow (including road traffic generated by the airport) contributes just 16% and 6% of total NO_x concentrations at the air quality monitors known as ‘Hillingdon’ and ‘Hayes’ respectively.

The figure shows that the contribution of Heathrow to NO_x concentrations at monitoring locations varies between approximately 4% and 31%,

depending upon how close to Heathrow the monitoring stations are, and whether they are situated upwind or downwind of the airport in relation to the prevailing south-westerly wind. Pollution from background sources (where pollutants emitted in the rest of London, England and, occasionally, continental Europe, are blown into the Heathrow region from outside) is the most significant contributor to total NO_x concentrations.

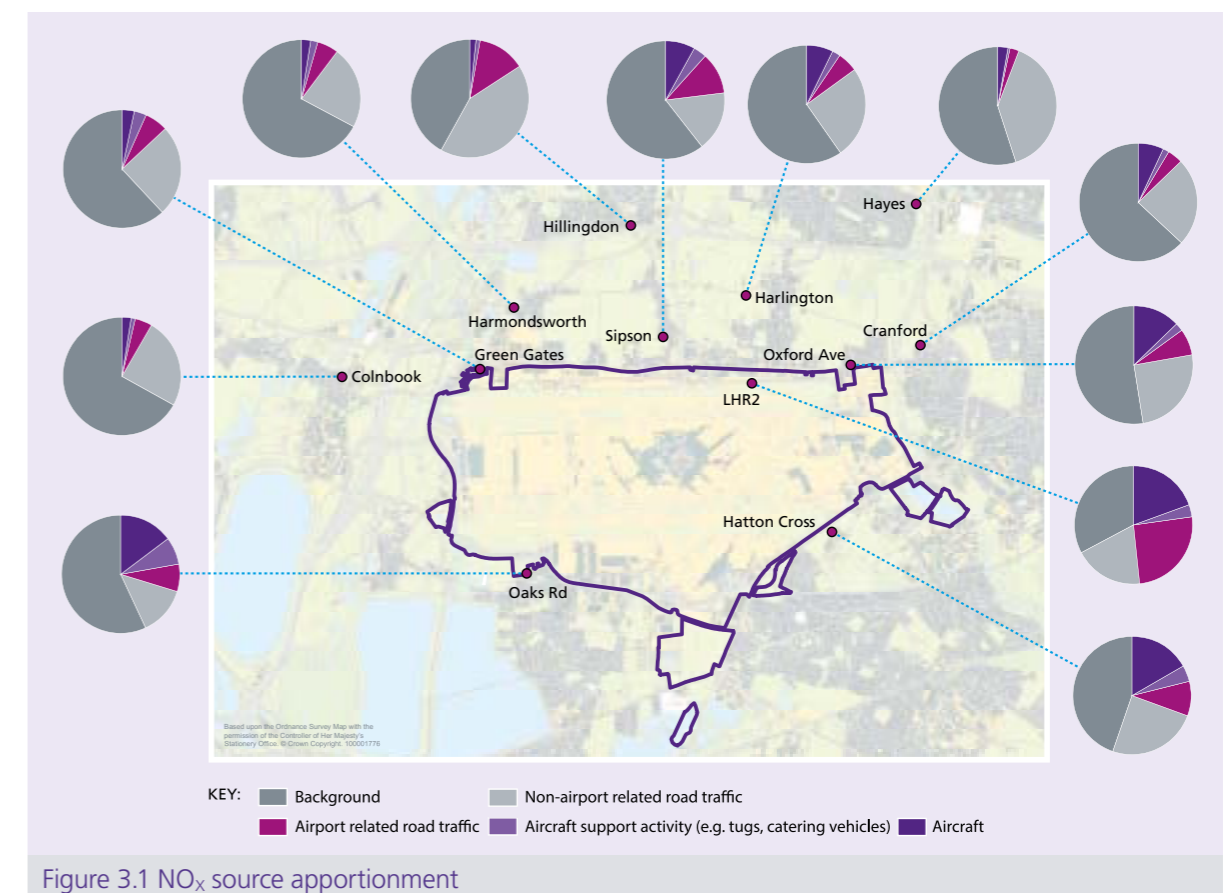


Figure 3.1 NO_x source apportionment

⁸ Ricardo-AEA (2015) Heathrow Airport 2013 Air Quality Assessment – Report for Heathrow Airport - http://www.heathrowairwatch.org.uk/documents/Heathrow_Airport_2013_Air_Quality_Assessment_Detailed_Emissions_InVENTORY.pdf
⁹ Ricardo (2017) Heathrow Airport 2015 Emission Inventory - Report for Heathrow Airport Limited - http://www.heathrowairwatch.org.uk/documents/Heathrow_Airport_2015_Emission_InVENTORY_Issue_1.pdf

3.2 Carbon emissions

The global context

Climate change is widely accepted as one of the greatest global risks facing our planet and the challenge facing all of us is to find a way to cut our emissions of greenhouse gases (GHG)¹⁰ whilst continuing to develop socially and economically.

Alongside all sectors, aviation has an important role to play. The global aviation sector has responded through the setting of three far reaching and challenging targets summarised in Figure 3.2¹¹.



Figure 3.2 Global aviation (including airlines, airports, manufacturers and air transport navigation providers) commitment on climate change

Climate change is a global challenge and it therefore needs a global response. The Paris Climate Agreement, an agreement within the United Nations Framework Convention on Climate Change (UNFCCC), reached in December 2015 represents a significant milestone and led to a global agreement to limit temperature rise associated with climate change to less than 2° Celsius above pre-industrial levels and to strive to limit any such rise to 1.5° Celsius by the end of this century. The challenge remaining is nonetheless nothing short of transformational – limiting temperature rise to 2° Celsius means decarbonising the world economy by the middle of this century.

Carbon emissions policy

The UK is a global leader in managing climate change, as exemplified through the passing by Parliament of the Climate Change Act 2008, which sets legally binding targets to reduce GHG emissions by 80% by 2050 when compared to 1990 levels.

This ambition is consistent with the advice of the Committee on Climate Change¹² (CCC) for the level of reduction needed from a developed nation such as the UK to limit global temperature rise to less than 2° Celsius.

The CCC has recommended that carbon emissions¹³ from UK aviation can grow by 60% whilst still remaining consistent with the UK's long-term climate change goals as set out in the Climate Change Act.

The CCC came to this conclusion based on its groundbreaking report¹⁴ in which it confirmed its view that:

- UK aviation's emissions could be limited to 2005 levels by 2050 through the adoption of more fuel efficient aircraft, more efficient operations and use of sustainable biofuel;
- keeping UK aviation's emissions at 2005 levels by 2050 is considered a proportionate contribution from aviation to meeting the UK's long-term climate change goals (this is also referred to by the CCC as its "planning assumption"); and
- the level of growth consistent with keeping UK aviation emissions at 2005 levels by 2050 is a 60% increase in passengers (relative to 2005).

As aviation is a global sector, the responsibility for managing its international emissions falls to the International Civil Aviation Organisation (ICAO). This body includes membership from 191 countries, including the UK. It has been designated by the

UNFCCC to manage aviation's environmental impacts, as well as to develop an approach for managing aviation's carbon emissions in accordance with international climate agreements such as the recent Paris Climate Agreement.

In October 2016 ICAO announced that it had reached agreement across its 191 member states on the introduction of a global market based emissions offsetting scheme. The agreement, known as CORSIA (Carbon Offsetting Reduction Scheme for International Aviation) is a world first in terms of reaching an agreement for carbon emission reduction for any international sector and is fully supported by Heathrow and UK government, which is a member of ICAO.

CORSIA aims to offset any growth in carbon emissions from international aviation after 2020 that fall within the scope of the scheme¹⁵. It will be implemented¹⁶ over two phases, starting with a pilot phase from 2021 until 2023, followed by two phases of implementation until 2035 by when at least 90% of international aviation activity will come under the scheme (see Figure 3.3 below).

Growth in emissions above those in 2020 will be offset by airlines purchasing emissions reduction credits, which they will then be required to submit

to the government of the country in which the flight originated.

There are many sources and types of carbon emission credits but what they all have in common is that they represent a carbon saving (for example through an investment project in a renewable energy plant, without which the energy would continue to be generated by carbon intensive coal) which can be sold on the open market to allow the new owner to "offset" its own emissions.

The use of carbon credits ensures that the most cost-effective means of reducing global carbon emissions is achieved, since it allows emitters in a range of sectors to benefit from cost effective technologies for reducing carbon that would not otherwise be as attractive to invest in. This is particularly beneficial to aviation, which has fewer options than others sectors for reducing its emissions through technology, whilst also providing finance to enable carbon reductions in sectors and countries that have lower abatement costs.

Alongside the CORSIA agreement, the aviation sector (represented by the International Air Transport Association (IATA)) is also committed to a 50% reduction in net carbon emissions by 2050 and 2% per annum improvement in the fuel efficiency of the fleet.

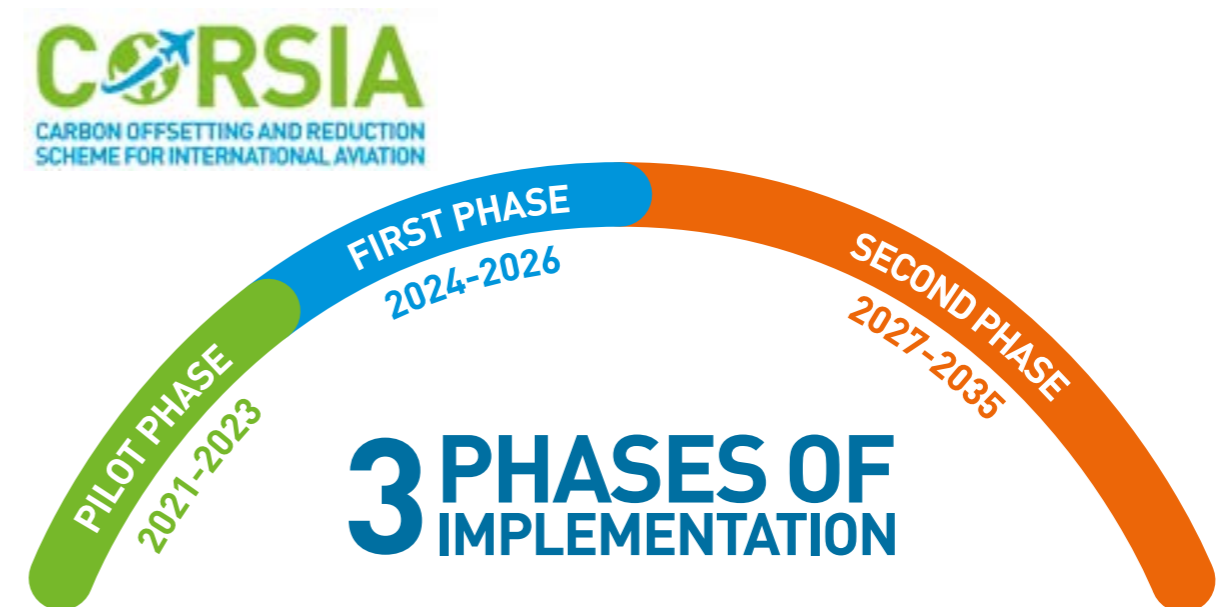


Figure 3.3 CORSIA Implementation¹⁷

¹⁰ The terms greenhouse gases (GHGs) and carbon emissions are often used interchangeably. GHGs are the main gases that contribute to climate change. Carbon dioxide (CO₂) is the most common GHG emitted by human activity in terms of quantity and the focus of this document. Where this document refers to emissions, or carbon this should be read as CO₂.

¹¹ See <http://atag.org/facts-and-figures.html>

¹² Independent advisors to UK government responsible for monitoring and advising on the achievement of the UK's long term climate change targets

¹³ Carbon emissions from domestic and international departures from UK airports including carbon emissions from LTO cycle at UK airports

¹⁴ Committee Climate Change, "Meeting the UK aviation target – options for reducing emissions to 2050", December 2009

¹⁵ Certain states are exempted such as those classified as Least Developed Countries (LDCs) by the United Nations

¹⁶ ICAO have produced a number of informative videos to explain the detailed implementation of CORSIA that can be found at <https://www.icao.int/environmental-protection/Pages/Online-CORSIA-Tutorial.aspx>

¹⁷ Source ICAO, see www.icao.int/environmental-protection/Pages/market-based-measures.aspx

4 OUR PREVIOUS WORK ON REDUCING EMISSIONS

Heathrow carbon emissions

The Intergovernmental Panel on Climate Change¹⁸ (IPCC) has estimated that carbon emissions from international aviation equate to approximately 1.5% of global carbon emissions, whilst carbon emissions from flights leaving the UK equate to approximately 7.5%¹⁹ of the UK's carbon emissions.

Looking more specifically at Heathrow, Table 3.1 below details the activities that result in carbon emissions associated with Heathrow, along with some examples of actions we are already taking to minimise them. Figure 3.4 provides a breakdown of the relative contribution of these different sources of carbon emissions²⁰ and shows that carbon emissions from aircraft (during cruise and LTO phase) dominate, accounting for approximately 95% of all carbon emissions related to Heathrow.

CATEGORY	SOURCE OF CARBON EMISSIONS	EXAMPLES OF ACTIONS TAKEN TO MINIMISE CARBON EMISSIONS AT HEATHROW
Operational and Energy	Electricity use, gas use, fuel used in airport operational vehicles, carbon emissions associated with Heathrow staff business travel, and airport waste, water treatment and refrigerants	Installing 100,000 low energy LED lights across the airport reducing energy use
Travel to and from the airport	Car, bus and train travel by staff and passengers to Heathrow	Operating Europe's largest employment site car share scheme reducing the number of car trips and fuel used
Aircraft: Landing and Take Off cycle (LTO)	Fuel used in aircraft whilst taxiing and holding on the ground and ascending and descending from 3000ft	Reduced aircraft taxiing times through use of improved information sharing reducing fuel used in aircraft
Aircraft: Cruise	Fuel used during the flight (e.g. above 3,000ft) between Heathrow and destination airport	Leadership and support for aviation's inclusion in the EU's emission trading scheme. Leading role in developing Sustainable Aviation UK carbon roadmap

Table 3.1 Our carbon emission sources and management²¹

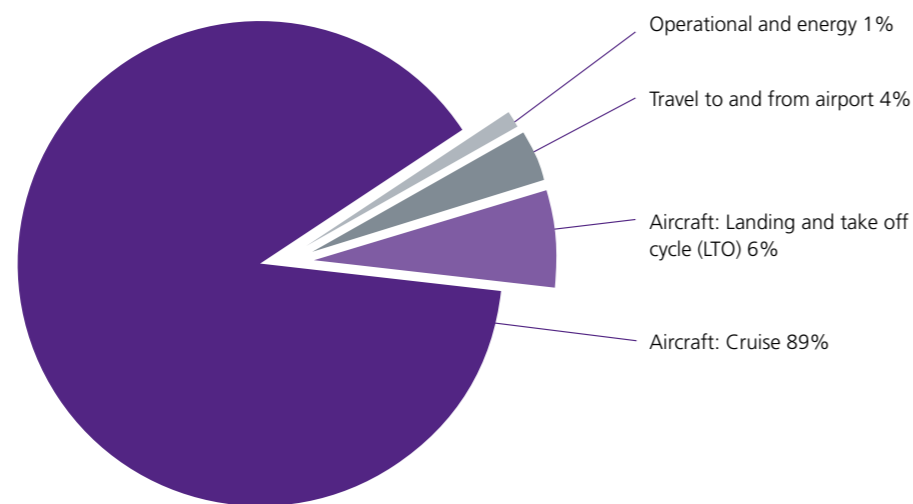


Figure 3.4 Breakdown of carbon emissions from Heathrow in 2016²²

18 The Intergovernmental Panel on Climate Change (IPCC) is a scientific and intergovernmental body under the auspices of the United Nations dedicated to the task of providing the world with an objective, scientific view of climate change and its political and economic impacts
 19 Based on BEIS 2015 UK GHG emissions, Final Figures
 20 We also consider the equivalent carbon emissions (CO₂e) from waste, water supply and treatment and release of refrigerants
 21 Excludes embodied carbon of materials and goods.
 22 Heathrow's cruise emission shown here are for 2010 and based on Annex G.2 Department for Transport, UK Aviation forecast 2013 adjusted to account for Heathrow's LTO emissions

4.1 Air quality

We are fully committed to continuing to work in partnership with local authorities and Government to play our part in improving local air quality. We have a strong track-record in reducing emissions from airport operations.

In 2002 we implemented our first Air Quality Strategy, and we reviewed and updated it in 2007. Our current Air Quality Strategy²³ runs from 2011 to 2020 and has been designed to complement the measures being implemented by the local authorities in the area surrounding Heathrow,

the Mayor of London's Air Quality Strategy and national initiatives. This Emissions Strategy, as well as each of the previous Air Quality Strategies, is produced to reflect the latest understanding of emissions from Heathrow and to ensure that we take advantage of emerging technologies and best practice.

Our 2013 Emissions Inventory showed that the implementation of the Air Quality Action Plan has led to a 430 tonne, or 16%, reduction in annual emissions of NO_x from ground-based sources since the last full inventory for the period 2008/9, as shown in Figure 4.1 below.

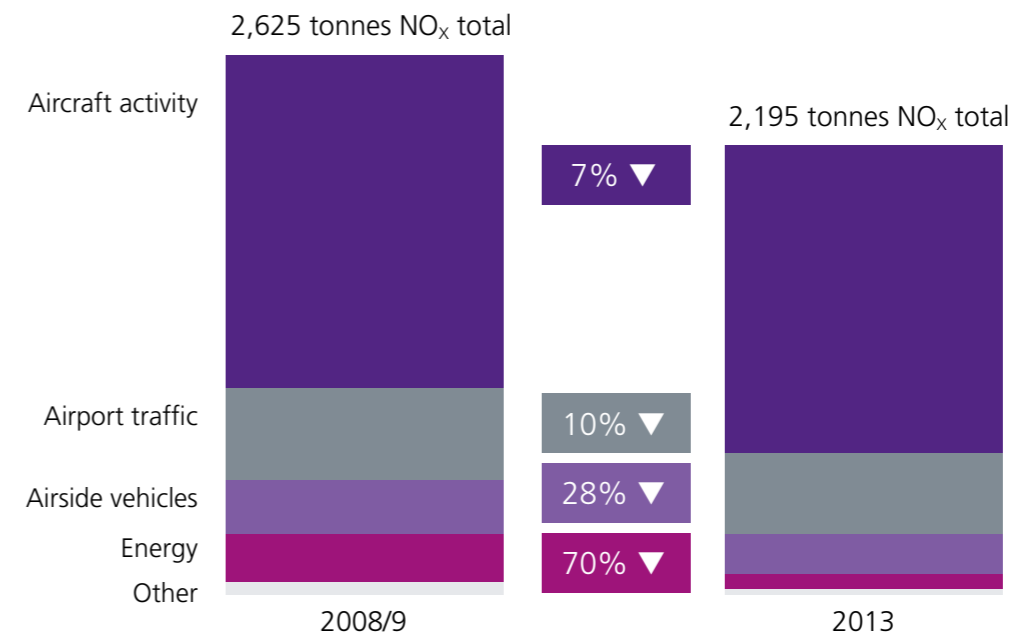


Figure 4.1 NO_x Emission Reductions²⁴

Actions that we have taken over the past few years to reduce emissions from a wide variety of sources are summarised in Figure 4.2. Several measures focus on increasing the usage of Fixed-Electrical Ground Power (FEGP) and Pre-Conditioned Air (PCA) to reduce the usage of the Auxiliary Power Units (APUs) that power air-conditioning whilst

aircraft are on stand and are a source of emissions. Others focus on improving the efficiency of Ground Support Equipment (GSE) operations, including pooling of GSE, and reducing emissions by facilitating the transition to Electric Vehicles (EVs). By reducing fuel use, these measures also help to reduce carbon emissions.

23 http://www.heathrow.com/file_source/Company/Static/PDF/Communityandenvironment/air-quality-strategy_LHR.pdf
 24 Heathrow (2016). Heathrow's Blueprint for Reducing Emissions: Our top ten actions to reduce Heathrow's emissions in 2016

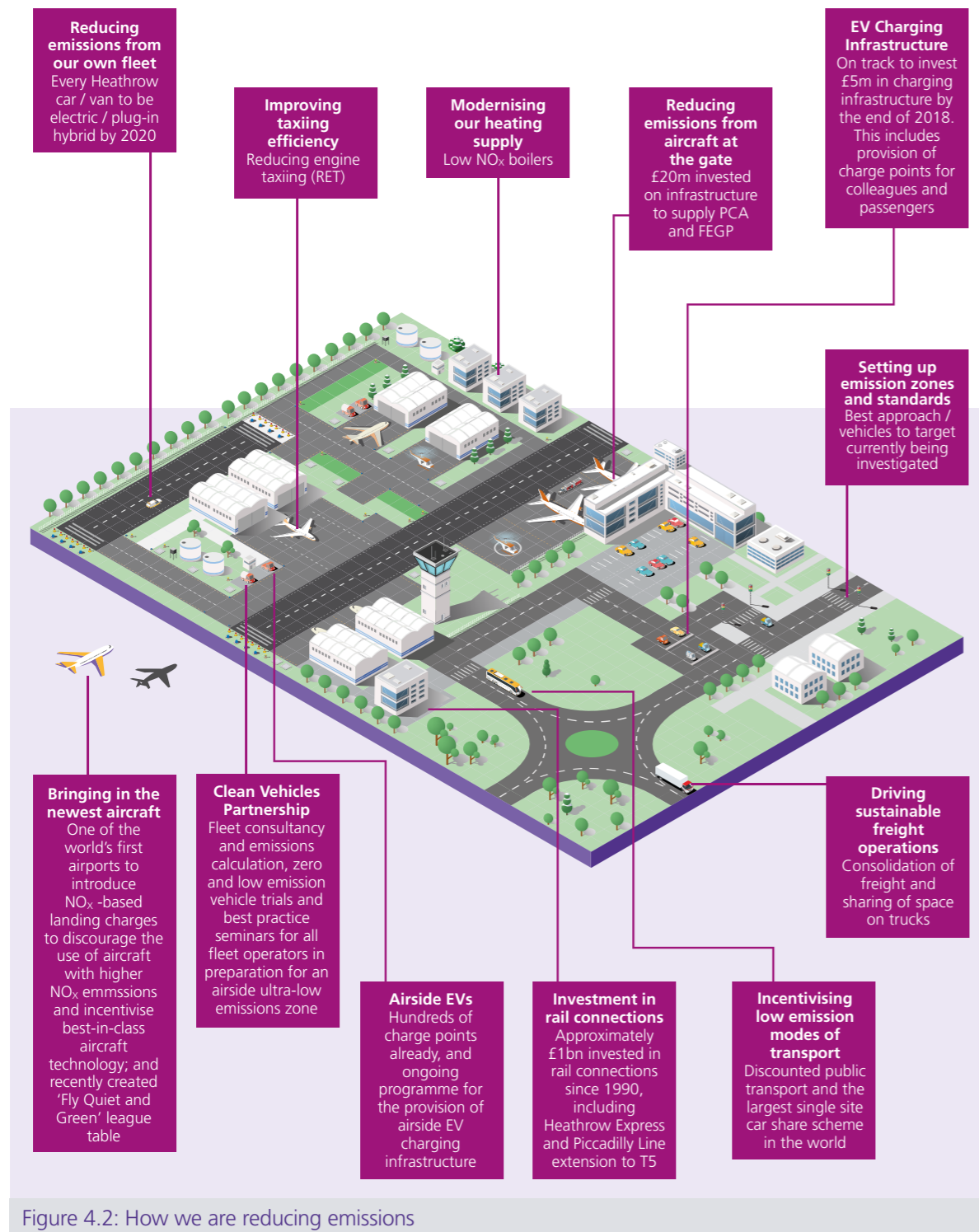


Figure 4.2: How we are reducing emissions

4.2 Carbon emissions

Our approach to the management of carbon reflects the degree of control that we, as an airport operator, have over the many sources of carbon emissions associated with our airport.

As discussed in Section 3, emissions from aircraft at cruise account for the greatest proportion of Heathrow's total carbon emissions. However other contributing sources include ground movements of aircraft, surface access – travel to and from the airport – and from our airport infrastructure, such as the energy used to cool and heat our terminals.

Our overall strategic approach and performance has been recognised by the Airports Council International (ACI). We have maintained Level 3 Optimisation by ACI's Airport Carbon Accreditation Scheme since 2010²⁵. This level of performance is awarded to airports that measure the widest possible scope of their carbon emissions and have performance plans, targets, and verified performance that demonstrates year on year carbon efficiency improvement. Our 2016 carbon footprint showed that we had reduced carbon emissions from energy used in our buildings by 37% from 1990 levels (against a target of 37%). We have achieved this through a renewable energy strategy that includes onsite generation of energy through solar panels and biomass plants. 100% of the electricity we have purchased has been from renewable sources since April 2017. Our energy strategy has been recognised through the Carbon Trust and we are the first airport to simultaneously hold four certifications of the Carbon Trust Standard covering the airport's supply chain, and its carbon, waste and water footprints²⁶.

Heathrow does not design aircraft, fly planes or make aviation fuel – and does not control the businesses that do. Our current approach is therefore based upon working with our partners to find scalable and practical solutions, and advocate change within the sector. Key examples of this approach include:

- Supporting UK government and calling for the inclusion of aviation in the EU Emission Trading System;
- Membership of the Aviation Global Deal Group, which has developed a policy approach for managing aviation's global emissions and has directly influenced negotiations at the UNFCCC;
- Membership of the Prince of Wales' Corporate Leaders Group on Climate Change through which we have lobbied UK and international policy-makers on climate policy; and
- Leadership through our membership of Sustainable Aviation²⁷ and input to the development of the Sustainable Aviation CO₂ emissions roadmap. The Sustainable Aviation CO₂ emissions roadmap shows how, with the aid of technology, improvements in operational efficiency and increased take up of low-carbon alternative fuels, the level of UK air traffic can more than double without increasing the UK's aviation (from domestic and international flights) carbon emissions.

²⁵ The Airport Carbon Accreditation Scheme is an independent programme administered by ACI. Airports must have carbon footprints independently verified in accordance with ISO14064 (Greenhouse Gas Accounting). Evidence of this must be provided to the administrator together with all claims regarding carbon management processes, which must also be independently verified.

²⁶ See <http://mediacentre.heathrow.com/pressrelease/details/81/Corporate-operational-24/6230> for further detail.

²⁷ Sustainable Aviation is a long-term strategy which sets out the collective approach of UK aviation to tackling the challenge of ensuring a sustainable future for our industry. Launched in 2005, it is a world first bringing together major UK airlines, airports, manufacturers and air navigation service providers

5 KEY PERFORMANCE INDICATORS

TITLE	KPI	TARGET
KPI 01: Freight emissions – Logistics	% of vehicles using logistics centre that are Euro VI or better Consolidation factor of delivery trips	Year-on-year increase
KPI 02: Freight emissions – Cargo	% of Cargo vehicles that are Euro VI or better	Year-on-year increase
KPI 03: Surface Access emissions	% of vehicles entering Heathrow that are Euro 6 or better	Year-on-year increase
KPI 04: Airside emissions	Airside vehicle fleet mix by engine standard (Electric, Tier A, B or C)	100% Tier A or electric by 2025
KPI 05: Stand Emissions – APU	% APU compliance	Year-on-year increase
KPI 06: Stand Emissions – PCA	kWh of PCA consumption	Year-on-year increase
KPI 07: Aircraft Taxiing Emissions	% Reduced Engine Taxiing	Set 2020 reduced engine taxiing target
KPI 08: Landing and take-off	% of flights by pre-CAEP standard aircraft % of flights by CAEP 6 or newer aircraft	At least 60% of flights by CAEP 6 or newer aircraft by 2020
KPI 09: EV fuel	EV charging points (Landside and Airside) kWh consumed at landside EV charging points kWh consumed at airside EV charging points	Year-on-year increase
KPI 10: Vehicle fuel	Heathrow vehicle total fuel usage (petrol and diesel)	21% reduction by 2020 (from 2015 baseline)

6 ACTION PLAN

Heathrow 2.0 Goal 5.1

Reduce emissions from road transport by working with partners

REFERENCE	DESCRIPTION	YEAR TO DELIVER
05.1.a	Reduce emissions from road transport by working with partners	
05.1.a.001	NO _x emissions from airport-related traffic	n/a - Indicator
05.1.a.002	Overall: Reduce NO _x emissions from airport related traffic by at least 40% by 2020 (from 2013 baseline)	2020
05.1.a.003	Overall: Reduce NO _x emissions from airport related traffic by at least 60% by 2025 (from 2013 baseline)	2025
05.1.a.004	Trial electric buses for airside passenger and colleague transfers	2018
05.1.b	Develop and consult on plans for a low emissions zone for surface transport to/from Heathrow as part of the planning process for our expansion*	
05.1.b.001	% of vehicles entering Heathrow that are Euro 6 or better	n/a - Indicator
05.1.b.002	Consult on plans for emissions based charging in 2018*	2018
05.1.c	Develop infrastructure for Electric Vehicles (EVs) driven by passengers and colleagues	
05.1.c.001	Number of EV charging points available to passengers, colleagues, taxis, private hire vehicles, and commercial vehicles	n/a - Indicator
05.1.c.002	Year-on-year increase in EV charging points	Every year
05.1.d	Develop incentives to encourage the use of low emission and EVs driven by passengers and colleagues	
05.1.d.001	kWh consumed at landside EV charging points	n/a - Indicator
05.1.d.002	Year-on-year increase in kWh consumed at landside EV charging points	Every year
05.1.d.003	Launch a salary sacrifice scheme for Heathrow colleagues to facilitate purchase of low emission vehicles and EVs by 2017	2017
05.1.d.004	Year-on-year increase in salary sacrifice scheme uptake	Every year
05.1.d.005	Launch a car club for Heathrow passengers that promotes EVs by 2017	2017
05.1.d.006	Investigate feasibility for Team Heathrow for a low emission pool car scheme	2018
05.1.d.007	Implement incentive schemes for low or zero-emission buses, coaches and taxis	2018
05.1.e	Utilise Heathrow's logistics consolidation centre as a gateway to minimise trips and emissions from construction vehicles	
05.1.e.001	% of vehicles using logistics centre that are Euro VI or better	n/a - Indicator
05.1.e.002	Establish baseline and set 2020 and 2025 targets by 2017 for % of vehicles using logistics centre that are Euro VI or better	2017
05.1.e.003	Year-on-year increase for % of vehicles using logistics centre that are Euro VI or better	Every year
05.1.e.004	Consolidation factor of delivery trips	n/a - Indicator
05.1.e.005	Establish baseline and set 2020 and 2025 targets by 2017 for Consolidation factor of delivery trips	2017
05.1.e.006	Year-on-year increase for Consolidation factor of delivery trips	Every year

05.1.f	Establish a Heathrow Sustainable freight group	
05.1.f.001	Establish a Heathrow Sustainable freight group	2017
05.1.f.002	Heathrow Sustainable Freight Group to support delivery of relevant actions from freight blueprint	Every year
05.1.f.003	% of vehicles using logistics centre that are Euro VI or better	n/a - Indicator
05.1.f.004	% of low emission/Euro VI freight trips in Heathrow area	n/a - Indicator
05.1.f.005	Year-on-year increase in percent of low emission/Euro VI freight trips in Heathrow area	Every year
05.1.g	Ensure continued access and use of the Heathrow hydrogen fuelling station	
05.1.g.001	kg of H ₂ filled at Heathrow hydrogen filling station	n/a - Indicator
05.1.g.002	Year-on-year increase in kg of H ₂ filled at Heathrow hydrogen filling station	Every year
05.1.g.003	Number of vehicles using Heathrow hydrogen filling station	n/a - Indicator
05.1.g.004	Year-on-year increase in number of vehicles using station	Every year
05.1.g.005	Trial refitted hydrogen vehicle in partnership with TfL	2018
05.1.g.006	Complete safety assessment and sign-off on a hydrogen vehicle allowed access through the central tunnel	2018

* Goal, strategy or action specific to expansion of Heathrow

Heathrow 2.0 Goal 5.2

Reduce emissions from airside vehicles by working with partners

REFERENCE	DESCRIPTION	YEAR TO DELIVER
05.2.a	Reduce emissions from airside vehicles by working with partners	
05.2.a.001	NO _x emissions from airside vehicles	n/a - Indicator
05.2.a.002	Overall: Reduce NO _x emissions from airside vehicles by at least 50% by 2020 (from 2013 baseline)	2020
05.2.a.003	Overall: Reduce NO _x emissions from airside vehicles by at least 70% by 2025 (from 2013 baseline)	2025
05.2.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	
05.2.b.001	% airside vehicles meeting emission standard	n/a - Indicator
05.2.b.002	Develop a roadmap for the transition of all airside vehicles to ultra-low emissions standards developed by 2017	2017
05.2.b.003	Publish revised Ground Operating Licence setting out requirement for 100% Tier A or electric by 2025. (AC 15MAR18)	2025
05.2.b.004	100% airside vehicles meet latest and most stringent, relevant emission standards (Euro 6/ VI, Stage V, etc.) by 2025	2025
05.2.b.005	Work with our partners to contract a supplier to provide a pooled fleet of baggage belt loaders and aircraft stairs to be used collectively by ground handling companies and ensure that all vehicles provided will be low emission and electric where possible	2018

05.2.c	Develop EV charging infrastructure to support the operational needs of airside vehicles and encourage the uptake of EVs	
05.2.c.001	£ invested in charging infrastructure across the airport	n/a - Indicator
05.2.c.002	kWh consumed at airside EV charging points	n/a - Indicator
05.2.c.003	Invest £5M in EV charging infrastructure throughout the airport by the end of 2018	2018
05.2.d	Monitor the effectiveness of the restructured airside vehicle pass fees to influence the uptake of zero and low emission airside vehicles	
05.2.d.001	% airside vehicles that are low emissions and electric	n/a - Indicator
05.2.e	Implement standards for airside vehicles in line with the London ULEZ	
05.2.e.001	% airside vehicles that meet latest and most stringent, relevant emission standards (Euro 6/VI, Stage V etc)	n/a - Indicator
05.2.e.002	100% of airside vehicles meet latest and most stringent, relevant emission standards (Euro 6/VI, Stage V, etc.) by the end of 2025	2025
05.2.f	Replace all Heathrow cars and small vans with electric vehicles to lead the way for the rest of the fleet	
05.2.f.001	% Heathrow's cars and small vans that are electric or plug-in hybrid	n/a - Indicator
05.2.f.002	100% Heathrow's cars and small vans electric or plug-in hybrid by end of 2020	2020
05.2.f.003	100% Heathrow's vehicles less than 3.5 tonnes electric or plug-in hybrid, and 50% vehicles greater than 3.5 tonnes electric or plug-in hybrid by 2030 (excluding snow kit)	2030
05.2.f.004	Number of Heathrow's cars and small vans that are converted to electric or plug-in hybrid	n/a - Indicator
05.2.f.005	50 Heathrow cars and small vans converted to electric or plug-in hybrid by the end 2017	2017
05.2.f.006	75 Heathrow cars and small vans converted to electric or plug-in hybrid by the end 2018	2018
05.2.f.007	Heathrow vehicle total fuel usage (petrol and diesel)	n/a - Indicator
05.2.f.008	Set targets for Heathrow vehicle total fuel usage (petrol and diesel) for 2020, 2030 and 2040	2018

Heathrow 2.0 Goal 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*

REFERENCE	DESCRIPTION	YEAR TO DELIVER
05.3.a	Work with rail partners to ensure they prioritise major rail projects that access Heathrow from the north, south, east and west	
05.3.a.001	% passengers using public and sustainable transport	n/a - Indicator
05.3.a.002	42.3% passengers using public transport by the end of 2017	2017
05.3.a.003	At least 43% of passengers to use public and sustainable transport by end of 2018	2018
05.3.a.004	At least 45% of passengers to use public and sustainable transport by 2019	2019
05.3.a.005	At least 50% of passengers to use public and sustainable transport by 2030*	2020
05.3.b	Develop incentives for mode shift away from private car use such as discounted local bus services for colleagues	
05.3.b.001	Number of trains per hour arriving at Heathrow (including London Underground)	n/a - Indicator
05.3.b.002	An increase in the number trains arriving at Heathrow from 18/hr in 2017 to 36/hr by 2030*	2030
05.3.b.003	Support delivery of other major rail projects (Crossrail, Western Rail, Southern Rail) delivered by our rail partners by 2030, followed shortly by HS2*	2030
05.3.c	Work with local partners to deliver public transportation priorities and establish safe cycle routes from/to local boroughs	
05.3.c.001	Number of single occupancy colleague car journeys	n/a - Indicator
05.3.c.002	Reduce the number of single occupancy colleague car journeys by 25% by 2030	2030
05.3.c.003	Reduce the number of single occupancy colleague car journeys by 50% by 2040*	2040

* Goal, strategy or action specific to expansion of Heathrow

Heathrow 2.0 Goal 5.4

Become the world leader in delivering the cleanest aircraft and operations possible

REFERENCE	DESCRIPTION	YEAR TO DELIVER
05.4.a	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	
05.4.a.001	% of flights by pre-CAEP standard aircraft	n/a - Indicator
05.4.a.002	3.7% of flights by pre-CAEP standard aircraft by the end of 2017	2017
05.4.a.003	0% of flights by pre-CAEP standard aircraft by 2020	2020
05.4.a.004	% of flights by CAEP 6 or newer aircraft	n/a - Indicator
05.4.a.005	At least 60% of flights by CAEP 6 or newer aircraft by 2020	2020
05.4.b	Add emissions performance to create a combined Fly Quiet and Green League Table of airlines	
05.4.b.001	Emission-based metric added to our Fly Quiet and Green League Table by 2017	2017
05.4.b.002	Undertake an evaluation every three years of the effectiveness of the Fly Quiet and Green League Table, and make recommendations for its improvement, new metrics, and for setting future targets (Noise Action Plan reference 2.3)	2021
05.4.c	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	
05.4.c.001	kWh of PCA consumption	n/a - Indicator
05.4.c.002	Increase annual PCA consumption by 20% in 2017 compared to 2016	2017
05.4.c.003	Set 2020 PCA improvement target by end of 2017	2017
05.4.c.004	Year on year increase in kWh of PCA consumption	Every year
05.4.c.005	Review APU running time allowances in 2018 and if applicable, consult and publish new guidelines	2018
05.4.d	Work in partnership with airlines and ground handlers to address emissions during the landing and take-off cycle	
05.4.d.001	% aircraft using electric towing or single engine taxiing	n/a - Indicator
05.4.d.002	Set a stretch target by end of 2017 to increase the percentage of aircraft using electric towing or single engine taxiing by 2020	2017
05.4.e	Implement new landing charges to incentivise cleaner aircraft. Review and revise regularly	
05.4.e.001	Revise our landing charges to nearly double the price per kg of NO _x per flight in 2017	2017
05.4.e.002	Review landing charges price per kg of NO _x per flight to inform future revisions of charges	Every year

Emission Strategy and Action Plan Goal 5.5

Accurately quantify the contribution from airport sources to emissions and local air quality

REFERENCE	DESCRIPTION	YEAR TO DELIVER
Continue to fund automatic air quality monitoring to national standards around Heathrow		
05.5.a.001	All sites capture a minimum of 90% of possible data	Every year
Undertake occupational exposure monitoring to ensure ongoing compliance with occupational exposure limits		
05.5.a.002	Undertake occupational exposure monitoring to ensure ongoing compliance with occupational exposure limits	Every year
Produce an annual inventory of aircraft emissions		
05.5.a.003	Complete annual aircraft emissions inventory	Every year
Work with our airport partners to develop automatic data collection systems to increase the accuracy of emissions inventories and dispersion modelling		
05.5.a.004	Second phase roll-out of APU monitoring trial by end of 2018	2018
Make monitoring results available on the Heathrow AirWatch website within 24 hours of collection		
05.6.a.001	Data is uploaded within 24 hours after collection 95% of the time	Every year
Continue to engage with BEIS, DfT, DEFRA, GLA, TfL and HAQWG local authorities to:		
<ul style="list-style-type: none"> Review the air quality monitoring performance in the local area Consult on Heathrow's emissions strategy and action plan development and revisions Report progress against the emissions strategy and action plan Provide group updates and share best practice on other activities and projects of relevance Agree approach for development, maintenance and communication of Heathrow Airwatch website Discuss operational air quality impacts of proposed development projects as appropriate 		
05.6.a.002	Host quarterly meetings of the Heathrow Air Quality Working Group	Every year
Continue to engage with BEIS, DfT, & DEFRA to ensure that relevant national regional and local policies help to improve local air quality in the area around Heathrow Airport		
05.6.a.003	Minimum of one meeting per year with each organisation	Every year

Heathrow 2.0 Goal 9.4

Reduce carbon emissions throughout our supply chain, and support our suppliers to prepare for future changes in climate

REFERENCE	DESCRIPTION	YEAR TO DELIVER
09.4.a	Understand our carbon impact from our supply chain and set quantitative reduction targets	
09.4.a.001	Achieve Level 2 Carbon Trust Supply Chain Accreditation by 2018	2018
09.4.a.002	Achieve Level 3 Carbon Trust Supply Chain Accreditation by 2020	2020
09.4.a.003	Set ambitious long-term carbon reduction targets for our supply chain carbon emissions by 2020	2020
09.4.a.004	Support our suppliers through a phased approach to identify and reduce their emissions	Every year

Heathrow 2.0 Goal 10.1

Operate zero carbon airport infrastructure (buildings and other fixed assets) by 2050 with clear interim targets

REFERENCE	DESCRIPTION	YEAR TO DELIVER
10.1.a	Operate zero carbon airport infrastructure (buildings and other fixed assets) by 2050 with clear interim targets	
10.1.a.001	Carbon emissions generated from energy used in fixed infrastructure, as measured by tonnes CO ₂	n/a - Indicator
10.1.a.002	Zero carbon emissions generated from energy used in fixed infrastructure by 2050	2050
10.1.a.003	34% reduction in carbon emissions by 2020 against a 1990 baseline	2020
10.1.a.004	Develop further milestone targets by 2017 for 2030 and 2040	2017
10.1.b	Embed leading edge energy efficiency thinking into the design of new infrastructure	
10.1.b.001	Operational electricity demand kWh/pax	n/a - Indicator
10.1.b.002	Energy efficiency (kWh/m ²)	n/a - Indicator
10.1.c	Invest in improvements to the energy efficiency of existing buildings, assets and other infrastructure	
10.1.c.001	Operational electricity demand kWh/pax	n/a - Indicator
10.1.c.002	Reduce operational electricity demand to 6.3 kWh/pax by the end of 2017	2017
10.1.c.003	Improve energy efficiency to 248 kWh/m ²	2018
10.1.d	Proactively influence business partners' operations and growth to improve energy efficiency	
10.1.d.001	Develop an appropriate measure of energy efficiency for Business Partners operations at Heathrow by 2018	2018
10.1.e	Maximise the proportion of energy generated from on-airport or local renewable sources	
10.1.e.001	Proportion of energy generated from on-airport or local renewable sources (%)	n/a - Indicator
10.1.f	Purchase renewable energy from off-site sources	
10.1.f.001	Proportion of energy sourced from off-site renewable sources (%)	Every year
10.1.f.002	Power Heathrow with 100% renewable electricity from April 2017 as our first step to operate a zero carbon airport ²⁸	2017
10.1.g	Develop carbon offsetting as the final step in our hierarchy of measures for residual emissions from energy used in fixed infrastructure	
10.1.g.001	Achieve carbon neutral airport status by 2020 ²⁹	2020

²⁸ Since April 2017 Heathrow has been powered with 100% renewable electricity and we are working towards our revised goal to be a carbon neutral airport by 2020.

²⁹ Measured by achieving level 3+ carbon neutrality within the Airports Carbon Accreditation Scheme. This will require us to offset all the residual scope 1 and 2 Heathrow carbon emissions.

Heathrow 2.0 Goal 11.1

An aspiration to make growth from our new runway carbon neutral*

REFERENCE	DESCRIPTION	YEAR TO DELIVER
11.1.a.	Provide support to the UK Government and airlines, to implement the ICAO agreement for growth in air traffic from 2020 to be carbon neutral	
11.1.a.001	Report annually on steps taken to provide support to the UK Government and airlines, to implement ICAO agreement for growth in air traffic from 2020 to be carbon neutral	Every year
11.1.b	Develop a strategy to assess the potential mix of advocacy and direct action to support the aspiration for our new runway growth to be carbon neutral	
11.1.b.001	Roadmap for carbon neutral new runway growth aspiration developed*	2018
11.1.c	Take a lead in restoring ecosystem carbon sinks in the UK to contribute to offsetting Heathrow's own emissions and to explore an innovative opportunity for the aviation industry to deliver its goal of carbon neutral growth from 2020	
11.1.c.001	Publish Heathrow's plans for peatland restoration and planned partnerships	2018
11.1.d	Based on learning from practical action, advocate for wider adoption of direct ecosystem restoration as a means for aviation to contribute to the ICAO goal of Carbon Neutral Growth 2020	
11.1.d.001	As part of our carbon roadmap, publish and disseminate initial results from UK peatland restoration programmes*	2018

* Goal, strategy or action specific to expansion of Heathrow

Heathrow 2.0 Goal 11.2

Take the lead in incentivising lower carbon flights

REFERENCE	DESCRIPTION	YEAR TO DELIVER
11.2.a	Provide incentives to fuel-efficient and lower carbon planes, by developing proposals for "green slots" for new runway, to incentivise the cleanest aircraft to use new capacity*	
11.2.a.001	Develop a proposal for "green slots" as part of development plans for our new runway project*	2018
11.2.b	Help accelerate adoption of sustainable fuels by building competence at Heathrow, including through work with our airline partners and the Sustainable Aviation Fuels working group to better understand their alternative fuels strategy	
11.2.b.001	Build competence on Sustainable Aviation Fuels within Heathrow by working with airlines and other business partners	Every year
11.2.c	Ensure sustainable aviation fuels are considered in all relevant infrastructure projects	
11.2.c.001	Establish a process that provides for relevant infrastructure projects to give due consideration to sustainable aviation fuels in 2018	2018
11.2.c.002	% Heathrow infrastructure projects that have given due consideration to sustainable aviation fuels	n/a - Indicator

* Goal, strategy or action specific to expansion of Heathrow

Heathrow 2.0 Goal 11.3

Establish a Centre of Excellence for sustainability at airports and in the wider aviation industry

REFERENCE	DESCRIPTION	YEAR TO DELIVER
11.3.a	Work collaboratively, with leading experts and practitioners, to identify an initial participant group and priority series of challenges	
11.3.a.001	Carry out expert consultation and publish plans for a new Centre of Excellence during 2017	2017
11.3.a.002	Number of sustainability innovations piloted	Every year
11.3.a.003	Pilot 25 sustainability innovations by 2025	2025
11.3.b	Develop and activate funding strategy	
11.3.b.001	Identify first funding source(s) by 2018	2018
11.3.c	Develop launch and development plan	
11.3.c.001	Launch new Centre of Excellence by 2019	2019

Heathrow 2.0 Goal 11.4

Advocate policies that price carbon effectively and contribute to fair and equitable access to air travel for all

REFERENCE	DESCRIPTION	YEAR TO DELIVER
11.4.a	Study and consider measures that ensure that the carbon cost of flights are paid while also contributing to the goal of fair and equitable access to travel for all	
11.4.a.001	Complete carbon costs and equity study	2018

GLOSSARY

ACRONYM OR ABBREVIATION	TERM	MEANING
A-CDM	Airport Collaborative Decision Making	System aimed at improving the overall efficiency of airport operations by optimising the use of resources and improving the predictability of events. It focuses especially on aircraft turn-round and pre-departure sequencing processes
APU	Auxiliary Power Unit	An engine, usually located on the rear of aircraft, which provides electrical power when main engines are switched off
AQMA	Air Quality Management Area	A defined geographical area where a local authority has measured or predicted one or more air quality limit values are exceeded and where action is needed to reduce concentrations
AQO	Air Quality Objective	Maximum allowable concentration for a specific air pollutant set by the UK. They are set out in Air Quality Regulations for England, Scotland, Wales and Northern Ireland
AURN	Automatic Urban and Rural Network	The DEFRA automatic air quality monitoring network and is the main network used for compliance reporting against the Ambient Air Quality Directives
CAEP	Committee on Aviation Environmental Protection	A technical committee of the ICAO Council which formulates new policies and adopts new Standards and Recommended Practices related to aircraft noise and emissions
CTA	Central Terminal Area	Terminals 2 & 3, as well as the Central Bus Station
CVP	Clean Vehicles Partnership	Partnership to facilitate collaborative working among Heathrow fleet operators providing free advice, guidance and training
DEFRA	The Department for Environment Food and Rural Affairs	The UK government department responsible for air quality
EV	Electric Vehicle	A vehicle which uses one or more electric motors or traction motors for propulsion
FEGP	Fixed Electrical Ground Power	System for aircraft to plug in to electricity whilst on stand
GLA	Greater London Authority	The administrative body for Greater London
GSE	Ground Support Equipment	The support equipment found at an airport, usually on the ramp, the servicing area by the terminal. This equipment is used to service the aircraft between flights
ICAO	International Civil Aviation Organization	A UN specialized agency established to manage the administration and governance of the Convention on International Civil Aviation
IAQM	Institute of Air Quality Management	The professional body for air quality professionals
LAQM	Local Air Quality Management	The system established under the Environment Act 1995 under which all local authorities in England, Wales and Scotland are required to regularly review and assess air quality in their areas
LTO	Landing and Take-Off	The LTO Cycle covers four modes of engine operation, namely idle, approach, climb out and take-off, each of which is associated with a specific engine thrust setting and a time in mode
NATS	National Air Traffic Services	NATS Holdings, formerly National Air Traffic Services, is the main air navigation service provider in the UK including provision of en-route air traffic control services to all flights in the UK

ACRONYM OR ABBREVIATION	TERM	MEANING
NO₂	Nitrogen dioxide	Commonly produced from the oxidation of atmospheric nitrogen during high temperature combustion and via photochemical reaction between nitric oxide (NO) and ozone (O ₃) in air
NO	Nitric Oxide	Formed from the oxidation of atmospheric nitrogen during high temperature combustion and the main constituent of NO _x . Also known as nitrogen monoxide
NO_x	Oxides of Nitrogen	A mixture of gases produced during high temperature combustion and made up of NO and NO ₂
PCA	Pre-Conditioned Air	Centralised air conditioning to avoid the requirement for APU operation on individual aircraft
PM	Particulate Matter	Microscopic portions of solid matter suspended in air. PM ₁₀ – microscopic particles with an aerodynamic diameter of 10 microns or less. PM _{2.5} – microscopic particles with an aerodynamic diameter of 2.5 microns or less
RET	Reduced Engine Taxiing	The turning off of one or more engines during taxiing
ULEZ	Ultra-Low Emission Zone	The proposed London LEZ covering the same area as the Congestion Charge zone



CONTACT US

Please let us know what you think about our plan
This document, as well as Heathrow 2.0, is available
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