

# Heathrow Airport Expansion Consultation

## Evidence Base Overview

### 1 CONTENTS

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2	Introduction .....	2
3	Forecast Growth .....	2
4	Modal Shift Objective .....	3
5	Staff Travel Objective.....	7
6	Road User Charging.....	8
7	Car Passenger Travel/Parking .....	8
8	Active Travel.....	9
9	Rail Services.....	9
10	Local Bus Services .....	10
11	Coach Travel.....	10
12	Travel by Taxi or Private Hire Vehicle (PHV) .....	11
13	Traffic Modelling .....	12
14	Construction.....	13
15	Runway Operation and Noise .....	15
16	Air Quality .....	19
17	Greenhouse Gases .....	19

## 2 INTRODUCTION

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- 2.1 This report has been produced to provide a brief overview of the key transport related information contained within the Heathrow Airport Expansion Consultation evidence base. It should be noted that, due to time constraints, this review is not comprehensive in nature and only seeks to highlight some of the key information. This information has been used to help inform the borough's response to the consultation.

## 3 FORECAST GROWTH

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- 3.1 Table 1 shows the increase in air traffic movements (ATM) and annual passenger numbers that is forecast to occur during and beyond the expansion.

Table 1 – Forecast increase in ATMs and passenger numbers with expansion

Year	ATMs	Pax Per Annum	Average Pax/ATM
2022	485,000	82,500,000	170
2023	495,500	84,800,000	171
2024	500,000	86,200,000	172
2025	505,000	86,800,000	172
2026	505,000	87,400,000	173
2027	567,000	98,700,000	174
2028	607,500	106,000,000	174
2029	631,500	110,800,000	175
2030	665,000	115,000,000	173
2031	685,000	118,000,000	172
2032	700,000	121,000,000	173
2033	715,000	124,000,000	173
2034	730,000	127,000,000	174
2035	740,000	130,000,000	176
2036	742,000	131,000,000	177
2037	744,000	132,000,000	178
2038	746,000	133,000,000	178
2039	748,000	134,000,000	179
2040	750,000	135,000,000	180
2050	756,000	142,000,000	188

Source: Preliminary Environmental Information Report Volume 1, Chapter 6 Table 6.14

- 3.2 The data between 2022 and 2026 shows the impact on annual passenger numbers during the early growth period, when Heathrow is proposing a small increase in the number of air traffic movements prior to the opening of the new runway.
- 3.3 Despite this passenger growth, Heathrow have committed to ensuring that landside airport-related traffic is at a level no greater than its current level.

## 4 MODAL SHIFT OBJECTIVE

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- 4.1 In 2018, the Department for Transport released its Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England (NPS)<sup>1</sup>. This document stated that it should be used to provide the primary basis for decision making on development consent applications for a Northwest Runway at Heathrow Airport.
- 4.2 The NPS requires that any application for development consent made by Heathrow must include details of how the Airport will increase the proportion of journeys made to the Airport by public transport, cycling and walking to achieve a passenger public transport mode share of at least 50% by 2030 and at least 55% by 2040. Such a significant modal shift will clearly have a positive impact on both emissions levels and congestion.
- 4.3 In response to this requirement, Heathrow have proposed a ‘toolbox’ approach consisting of a number of fixed initiatives to be implemented in all circumstances and a number of more flexible initiatives that can be scaled up or down as needed to meet their commitments and targets. These initiatives are made up of a mix of ‘pull’ measures designed to encourage the use of public transport or cycling or the use of vehicles in a more sustainable way and ‘push’ measures that dis-incentivise car use, as shown below in Table 2.

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<sup>1</sup> <https://www.gov.uk/government/publications/airports-national-policy-statement>

**Table 2 – Surface access initiatives**

Rail	Active Travel
R1 Maximise the impact and mode share potential of the Elizabeth line	AT1 Provide improved, segregated cycle infrastructure on 'hub' roads around and across the Heathrow campus
R2 Maximise the impact and mode share potential of Heathrow Express	AT2 Develop improved infrastructure on 'spoke' roads serving Heathrow
R3 Maximise the impact and mode share potential of the Piccadilly line upgrade	AT3 Provide crossing improvements at key gateway junctions close to the airport to reduce severance and improve walking and cycling access
R4 Upgrade the customer experience for rail users	AT4 Increase provision of high quality, secure and covered cycle parking at key employment areas
R5 Maximise the impact and mode share potential of the HS2 / Old Oak Common Interchange	AT5 Develop long term strategies for first and last mile walking links, wayfinding and branding
R6 Work with stakeholders to influence the delivery of Western Rail	AT6 Promote and market a cycling culture, including a Cycle Friendly Employer scheme for workplaces, and a driver behaviour campaign
R7 Work with stakeholders to influence the delivery of Southern Rail	AT7 Develop a cycle hire offer for those without access to a bike
Bus	Parking Supply and Management
B1 Optimise bus capacity and operational effectiveness within the Heathrow Campus	P1 Incentivise car sharing
B2 Support and improve local bus services	P2 Reduce colleague parking spaces and introduction of needs-based permit system
B3 Upgrade the customer experience for bus users	P3 Increase passenger parking up to T5 consent
B4 Invest strategically beyond the Heathrow Campus	P4 Construct new multi-storey car park on T4 long-stay site to facilitate future consolidation of parking products
B5 Define the role for increasing provision of express bus routes	Freight
B6 Define the role of demand responsive bus services	F1 Implement virtual consolidation
B7 Ensure the Heathrow bus strategy benefits local communities	F2 Implement vehicle call forward facility
Coach	Intelligent Mobility
C1 Support and improve coach services	IM1 Enhance mobility information services
C2 Develop strategy to enhance coach connectivity to the rail network	IM2 Introduce a colleague travel wallet
C3 Upgrade the customer experience for coach users	Road User Charging
C4 Set out Heathrow's role in the strategic London coach hub market	VP1 Introduce a Heathrow Ultra Low Emissions Zone (HULEZ) charge beginning in 2022
Taxi and Private Hire Vehicles	VP2 Introduce a Heathrow Vehicle Access Charge (HVAC) after opening of the third runway
T1 Improve private hire efficiency	Electric Vehicle
T2 Improve taxi efficiency	E1 Improve EV charging points provision, in the right locations, to meet anticipated growth in demand
T3 Secure appropriate regulation and enforcement powers	E2 Implement a flexible business, commercial, and operational model that allows Heathrow to anticipate and respond to the changing market for EVs, in line with the Expansion Programme
T4 Introduce a first and last mile solution to integrate with public transport services at key rail stations	E3 Introduce smart charging system for Heathrow colleagues and long-stay parking
T5 Improve monitoring and data collection for taxi and PHV movements and operations	E4 Introduce targeted incentives to encourage wider adoption of EVs
T6 Optimise road user charging and airport infrastructure to achieve taxi and private hire vehicle efficiency	E5 Work with freight companies and bus/coach operators to identify the infrastructure and operational models for enabling increased EV adoption for these modes

Source: Surface Access Proposals – Annex Table 1.1

4.4 It is worth noting that public transport is defined as bus, coach, train and underground services that operate for public usage, serving both passengers and workers. It does not include taxis or private hire vehicles.

4.5 The impacts of some of these measures have been modelled in the Heathrow London Airports Surface Access Model (LASAM). The core modelled scenario (the 'Assessment Case') includes only transport initiatives that are committed (i.e. are funded and have all necessary consents in place) or are reasonably capable of being delivered or funded by Heathrow. The assumptions used are set out in Table 3.

Table 3 – Assessment Case modelling assumptions

	2017	2030	2040
<b>Heathrow Express</b>	4tph	4tph	4tph
<b>Piccadilly line</b>	12tph	15tph	15tph
<b>Elizabeth line</b>	2tph TfL Rail service	6tph	6tph
<b>HS2</b>	Not included	Phase 1 to/from Birmingham	Phase 1 to/from Birmingham
<b>Western Rail</b>	Not included	Not included	Not included
<b>Southern Rail</b>	Not included	Not included	Not included
<b>Coach Services</b>	Existing	Improved	Improved
<b>Bus Services</b>	Existing	Improved	Improved
<b>Passenger PT fares</b>	2017 prices	Grow in line with guidance, reduced HEx fare	Grow in line with guidance, reduced HEx fare
<b>Colleague PT fares</b>	Existing system of discounts and railcards	Flat discount	Flat discount
<b>Vehicle Access Charge<sup>46</sup></b>	Not included	£18	£29
<b>Proportion of empty taxi / PHV return trips</b>	70%	60%	60%
<b>Colleague car parking spaces</b>	29,792	17,000	11,600
<b>Agile Working</b>	2017 levels	Colleagues will work remotely where possible	Colleagues will work remotely where possible

Source: Surface Access Proposals – Table 2.9

- 4.6 The performance of the Assessment Case with respect to modal share is shown in Table 4 below, demonstrates that both the 2030 and 2040 modal share targets are achieved, **despite both the Western and Southern Rail Links not being included.**
- 4.7 The mode share targets are predominantly achieved through modal shift from taxis and private hire vehicles (PHV) onto the enhanced and more competitively priced rail services, as the Heathrow Express fare is reduced to be broadly similar to the fare charged on the Elizabeth Line, the Elizabeth Line will provide Heathrow with enhanced connectional opportunities and, as taxis and PHVs will be subject to the additional Heathrow Vehicle Access Charge, users will be encouraged to take a taxi or PHV to Paddington to catch the train, rather than taking a taxi or PHV all the way to the Airport.

Table 4 – Assessment Case passenger mode share

	2017	2030	2040
Piccadilly line	18%	18%	20%
Heathrow Connect / Elizabeth line <sup>48</sup>	0.4%	10%	11%
Heathrow Express	9%	12%	14%
Bus and Coach	11%	11%	12%
<b>PUBLIC TRANSPORT SHARE</b>	<b>38%</b>	<b>51%</b>	<b>57%</b>
Taxi / PHV	33%	23%	18%
Park and Fly	8%	8%	8%
Kiss and Fly	21%	18%	17%

Source: Surface Access Proposals – Table 2.11

- 4.8 It is worth noting that, in the Assessment Case, the Elizabeth Line train pattern was switched from the pattern currently planned for use by Transport for London (TfL) so that 4 trains an hour will serve Terminal 5 and 2 trains an hour will serve Terminal 4. This switch was made to better match the likely passenger demand and Heathrow also state that it is operationally feasible. Whilst it is agreed that such a switch would be sensible, given the projected demands of Terminals 4 and 5, this service pattern has yet to be agreed with TfL.
- 4.9 Also noteworthy is that another modelling scenario has been run that included all anticipated transport measures, including both the Western and Southern Rail Links, and similar levels of modal shift have been achieved in 2040, despite the 2040 Vehicle Access Charge only being set at £13.50, compared with £29.00 in the Assessment Case.

## 5 STAFF TRAVEL OBJECTIVE

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- 5.1 The Airports NPS requires that any application for development consent made by Heathrow must include details of how, from a 2013 baseline level, the Airport will achieve a 25% reduction of all staff car trips by 2030, and a reduction of 50% by 2040.
- 5.2 Currently, 60% of staff drive to work alone and so to achieve the staff car trip reduction targets set in the Airports NPS Heathrow proposes the following five staff travel policies:
- Providing targeted improvements to public and active transport options along corridors where staff live;
  - Developing a public and active transport masterplan to enable sustainable staff travel choices;
  - Providing appropriate parking management in line with the proposed reduction in on-site staff parking;
  - Providing colleagues with a range of accessible, easy to use travel incentives such as the Heathrow Travel Wallet, an incentivised car sharing programme and journey planning tools; and
  - Targeted HR approaches that encourage non-car travel and reduce the need to travel.
- 5.3 Seven key staff commuter corridors have been identified which, when combined, account for around 50% of all staff and therefore have the maximum potential for Heathrow to influence staff commuting behaviour. Along each of these corridors Heathrow have sought to identify public and active transport measures that will optimise the existing and develop new public transport routes, maximise the benefits from committed public transport improvements, support the introduction of new and improved cycle routes and enhance active mode accessibility to rail and underground stations.

## **6 ROAD USER CHARGING**

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- 6.1 A passenger arriving at the Airport by private car is either parking their car and flying (Park and Fly) which would involve two vehicle trips or being dropped off and picked up on their return (Kiss and Fly) which usually involves four vehicle trips. Heathrow is proposing to use road user charging to try to reduce the amount of Kiss and Fly movements in particular, as these are the most inefficient in terms of vehicle movements per passenger and, therefore, they will be subject to two charges instead of one
- 6.2 Two forms of road user charging are proposed by Heathrow, the Heathrow Ultra Low Emission Zone (HULEZ) and the Heathrow Vehicle Access Charge (HVAC). The HULEZ is proposed to open in 2022 and operate until the new runway opens when it will be replaced by the HVAC. Both schemes will be enforced through ANPR technology.
- 6.3 The charge will apply at all times of the day and on all days of the year and it will apply to all vehicles entering the Airport to park, pick-up or drop-off, including black cabs and Private Hire Vehicles.

## **7 CAR PASSENGER TRAVEL/PARKING**

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- 7.1 The staff car parking spaces that were removed as part of the initiatives implemented to meet the staff travel objective will be reallocated to passenger car parking spaces, providing limited extra passenger parking capacity whilst not significantly increasing the total number of staff and passenger spaces. Also, despite the increased passenger numbers at the Airport due to the expansion, the ratio of passenger parking to passenger demand will actually be lower in the future.
- 7.2 Some remaining parking areas will also be relocated to give better highway access and reduce the need to circulate around the Airport. They will also be future proofed with electric vehicle charging points to support the HULEZ and provide easy and efficient transition to terminals.

## 8 ACTIVE TRAVEL

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- 8.1 In and around the Airport itself Heathrow are proposing to adopt a 'hub and spoke' network with high quality cycling infrastructure. The 'hub' network would be the core network used by most people, supplemented by a set of radial 'spoke' routes. At key gateway junctions close to the Airport, crossing points are proposed reducing severance and improving active mode access.
- 8.2 To ensure the proposed cycle mode share is achieved, high quality, secure and covered cycle parking is proposed at key employment and transport hubs.
- 8.3 Promotion of a cycling culture is to be encouraged through a 'Cycle Friendly Employer' recognition scheme and the feasibility of introducing a cycle scheme will be investigated.
- 8.4 The development of the pedestrian network is proposed to focus on a first/last mile strategy, supplemented by wayfinding and branding to ensure ease of use.

## 9 RAIL SERVICES

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- 9.1 As highlighted earlier, rail service enhancements and changes are the key factor that will enable Heathrow to achieve its modal shift objective. The importance of the additional connectivity and enhanced frequency on the Elizabeth Line service, the additional Piccadilly Line services, the ability to dynamically adjust fares on the Heathrow Express and the connection as Old Oak Common to HS2 services have all been highlighted as key drivers facilitating the expansion.
- 9.2 The Western and Southern Rail links were both excluded from the Assessment Case modelling as neither are currently committed schemes. Therefore, Heathrow have been able to demonstrate that expansion is not dependent on either scheme. Heathrow does however state that they 'recognise the importance of the Western Rail Link scheme to the Airport and will therefore contribute to the costs of delivery, based on the benefits to our Airport passengers and in agreement with our regulator'.
- 9.3 The Western Rail Link has been included in their 'Expected Surface Access Case' modelling and they have assumed that Reading will be served every 15 minutes, with Twyford receiving a service every 30 minutes and all services operating as extensions of existing Heathrow Express services, although they note that the future operator of the services has not been determined, should the Western Rail Link be completed.

## 10 LOCAL BUS SERVICES

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- 10.1 Local bus services are identified as playing an important role at Heathrow with an effective peak frequency directly serving at least one terminal of 79 buses per hour across 20 routes. Thirteen routes provide early morning or 24-hour services.
- 10.2 The proposals outline Heathrow's desire to optimise existing services and develop new routes. Proposed new services include routes along the western corridor to Maidenhead and Slough and the south-western corridor towards Crowthorne and Camberley.
- 10.3 The proposed service to Crowthorne may have the potential to serve a very small percentage of Wokingham Borough residents, depending on its routing, although in general the Borough is forecast to remain unserved by direct local bus services to Heathrow.

## 11 COACH TRAVEL

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- 11.1 Heathrow is reviewing how long-distance coach capacity can be maximised prior to expansion and have identified that most coach demand comes from areas west of Heathrow with no rail connection and often these areas have high student populations, such as Bristol and Cardiff.
- 11.2 Therefore, a key coach corridor is identified along the M4 and this corridor is forecast to experience a growth in coach passengers travelling to and from the Airport of in excess of 80% between 2017 and 2035 with the expansion. This could lead to extra coaches serving the Mere oak Park and Ride Coach Stop, as many of the current M4 Corridor services stop en-route to Heathrow at Mere oak and so it is reasonable to assume that some or all of the potential additional services would also stop.
- 11.3 No mention is made, however, of addressing the overnight Reading coach stop issue, whereby the stop moves from Mere oak to the side of a poorly lit playing field next to Calcot Sainsbury's during the overnight hours of 21:31 and 05:59, which acts as a significant deterrent to use for early morning/late night flights due to the lack of any signage or shelter facilities and also safety concerns.
- 11.4 Heathrow also set out their potential to play a more active role in the strategic London coach hub market, given the impending partial or full closure of Victoria Coach Station in London.
- 11.5 Additionally, if neither the Western nor the Southern Rail Links are in place by 2030, Heathrow propose looking at increasing the frequency of RailAir coach services to Reading with a 'turn up and go' style service suggested. A more express RailAir type service to Slough is also proposed for consideration.

11.6 It is worth noting that Heathrow are not proposing any other review of the Reading RailAir service review prior to 2030. Also, Heathrow have not committed to deliver either of the two rail links and, in the event neither rail link is delivered, Heathrow have not committed to delivering any enhanced RailAir services along the M4 corridor beyond 2030.

## **12 TRAVEL BY TAXI OR PRIVATE HIRE VEHICLE (PHV)**

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12.1 Whilst Heathrow's focus is to encourage modal shift to public transport and active modes, taxis and PHVs currently have a significant modal share at Heathrow. To help mitigate the adverse effects of this, the Airport is seeking to increase their operational efficiency by promoting backfilling of journeys, so a taxi or PHV carries a passenger in both directions.

12.2 Consideration is also being given to adjusting the current system where an arriving taxi has to join the back of the queue to get a return fare, as this is leading to taxis returning empty. A system whereby arriving taxis or those with electric vehicles could be given priority for return fares is being investigated.

12.3 PHVs currently pick up passengers from the short-stay car parks and so dedicated pick up zones are currently being created with branding and wayfinding to improve passenger flow and reduce driver dwell time. Along with the Heathrow Vehicle Access Charge, these measures are expected to remove the dis-incentive to backfill a trip.

12.4 Heathrow is also seeking to secure appropriate regulation and enforcement powers, looking to improve monitoring of both operations and movements and developing an integrated PHV / Heathrow Express ticket allowing passengers to cover both elements of the journey at a fixed price.

# 13 TRAFFIC MODELLING

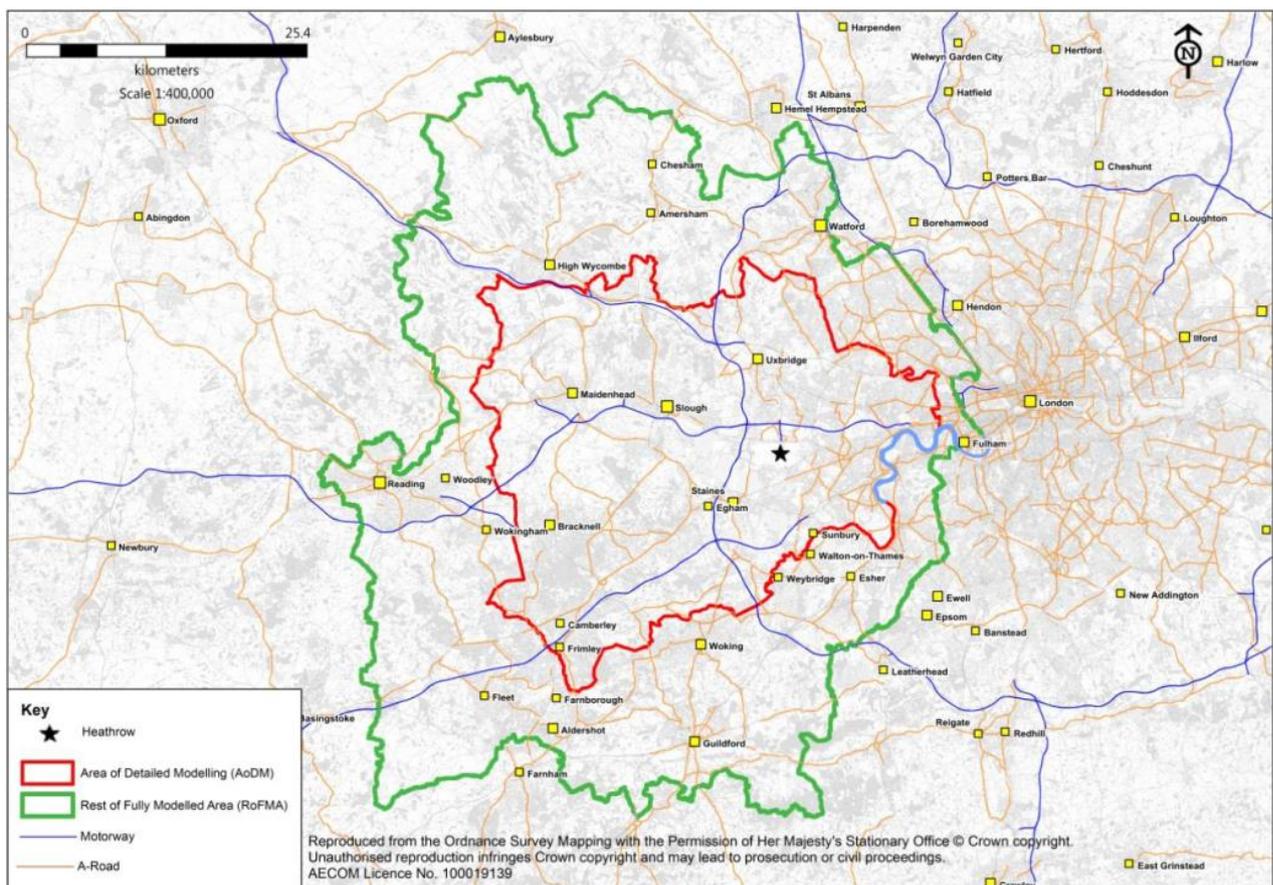
13.1 Figure 1 shows the Area of Detailed Modelling (AoDM) and the Rest of Fully Modelled Area (RoFMA), used within the highway modelling process. The whole of Wokingham Borough falls into the RoFMA, in an area referred to as the North-West (Wider) Area.

13.2 The RoFMA is defined as the area where impacts are quite likely, but are expected to be relatively weak in magnitude. Unfortunately, only very limited detailed traffic modelling results are presented for the RoFMA.

13.3 Comparison plots between the 2035 model scenarios with and without the expansion, provided in the Preliminary Transport Information Report, indicate minimal difference in maximum node and link volume vs capacity ratios across all time periods. 2035 network operation comparisons for neighbouring Windsor and Maidenhead and Bracknell Forest also mostly indicate limited change, although Airport related vehicle-kilometres fell in both areas.

13.4 A comparison of Airport related annual average daily traffic flow in 2035 with and without expansion, shows no noticeable impacts across Wokingham Borough.

Figure 1 – Highway model modelled area definition



Source: Surface Access Proposals – Graphic 4.3

## 14 CONSTRUCTION

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- 14.1 Heathrow state that construction works will be undertaken 24 hours a day, seven days a week with a peak workforce of 14,000 people. The Airport confirm that it will ensure that any works within the existing airfield will not adversely affect Airport operations.
- 14.2 However, specific confirmation that no additional flights will be necessary during respite periods, due to the construction impacting runway movements, is not given.
- 14.3 The new runway and taxiways will take approximately 2.5 years to complete and works are projected to start in 2024 with an opening date of December 2026. Construction will be guided by three strategic principles:
- Low carbon and sustainable construction;
  - Smart and low impact construction; and
  - Collaborative culture with long term opportunities for people and business.

- 14.4 The use of rail to transport materials during construction is proposed which is projected to reduce number of HGV by half. A new railhead is proposed to receive the trains which is scheduled to open on 2023.
- 14.5 With the enhanced Elizabeth Line and GWR services and the existing access restrictions at the West Drayton junction due to its layout, the availability of paths will be even more restricted than at present. Enhancements are proposed in the West Drayton area and these are considered essential, as currently westbound trains from the Airport site normally first travel eastbound to loops at either Hanwell or Hayes and Harlington, before reversing to head westbound again. This takes up valuable rail network capacity and can affect network performance.
- 14.6 Also, 24-hour working and a lack of daytime paths could lead to increased rail movements on the GWR mainline overnight, increasing noise impacts in the Twyford area and reducing the time available for Network Rail to undertake essential engineering works on this section of line.
- 14.7 To optimise deliveries and reduce carbon emissions and local air quality impacts, delivery management systems will be deployed.
- 14.8 16% of all HGV and LGV construction vehicle traffic is forecast to reach Heathrow via the M4 Corridor from the West.
- 14.9 The use of Construction Traffic Management Plans and Construction Workforce Travel Plans is proposed to mitigate impacts during construction with one aim being to achieve a public transport mode share of at least 60% amongst construction workers and it is expected that 60% of the construction workforce will also live within 15 miles of the site.
- 14.10 The modelling of the worker catchment area has demonstrated that some workers will also come from further afield, including Wokingham Borough, and these workers are likely to drive due to their distance from the Airport. As such, Heathrow estimate a requirement for 4,000 to 6,000 temporary workforce parking spaces.
- 14.11 The modelling of traffic impacts during the construction period has been hindered by the fact that traffic forecasts associated with construction activities were not available at the time of the highway assignment model runs and so were prepared using a bespoke spreadsheet-based model, meaning that accurate estimates of all construction impacts on the wider highway network have not been possible.

## 15 RUNWAY OPERATION AND NOISE

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- 15.1 Heathrow are proposing changes to runway operations, including night time flight restrictions. The Airport's preferred runway operational proposals are shown in Table 5 overleaf.
- 15.2 In addition to these proposals, a community due to experience flight operations before 06:00 on one day will not experience any flight operations after 14:00 / 15:00 the previous day and, in normal operations, a community experiencing any night flight operations (e.g. delayed aircraft) will not experience any flight operations the following day before 14:00 / 15:00.
- 15.3 The new proposals contain a period of no operations (except in very exceptional circumstances) lasting 5 hours and 15 minutes from midnight to 05:15 every day. Early morning arrivals will be restricted to one runway starting at 05:15.
- 15.4 During the period of no operations, the Government only permits flights to take off and land during exceptional circumstances such as periods of significant disruption, to help clear the flight backlog ready for the next day's operations
- 15.5 However, currently the Airport has some additional discretion to allow other aircraft not meeting the Government criteria to arrive and depart during this period of no operations. As part of the expansion proposals, Heathrow are proposing to remove this additional dispensation and so, in future, only flights permitted under the Government regulations will be permitted to take off and land and the Airport will have no additional discretion.
- 15.6 Heathrow also state that any proposals that require either a longer scheduled period of no operations or that prevent flight arrivals between 05:30 and 06:00 will lead to the Airport being unable to provide 740,000 flights a year, which was a key requirement of the Airports NPS.

Table 5 – Preferred runway operation proposals

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

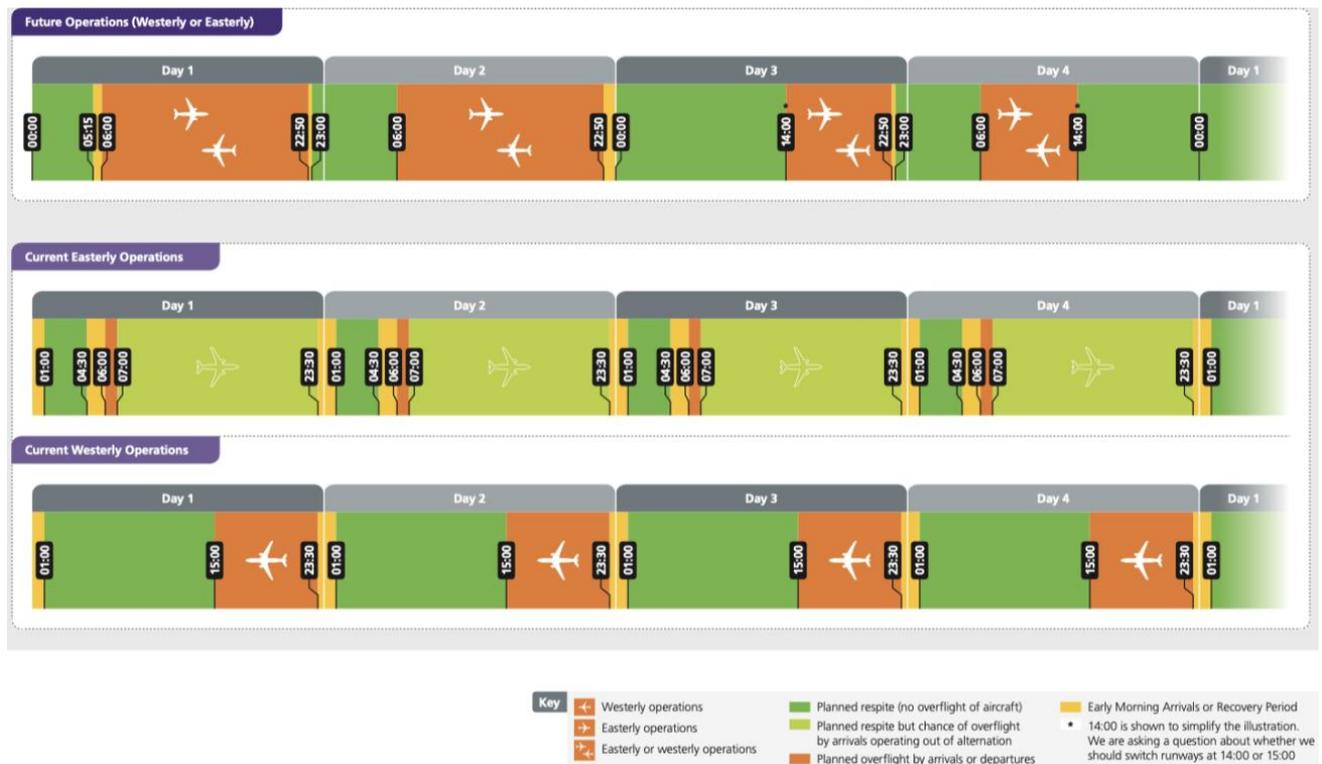
Source: Future Runway Operations – Figure 6.1

15.7 In addition to Heathrow’s preferred runway operational proposals, the Airport is also proposing changes to the runway alternation procedures, which determine the periods of overflight and respite affecting surrounding communities.

15.8 Detailed procedures are set out for communities close to the Airport, to enable them to plan for disturbance. As Wokingham Borough lies over 20km to the west of the Airport, detailed plans for Wokingham Borough were not provided. From the six community areas covered by plans, I estimate that flights passing through Community Area C (covering Stanwell Moor, Wraysbury and Old Windsor) are the most likely to pass through Wokingham Borough.

15.9 A comparison of the current and future proposed 4-day flight operations over Community Area C is shown in Figure 2 below and it shows that the future runway alternation plans appear to represent a significant worsening, with flights operating for more than twice the number of hours they currently do on two of the four days. On the other two days of the cycle the hours of flight operation are slightly longer in the current scenario.

Figure 2 – Community Area C flight operation comparison



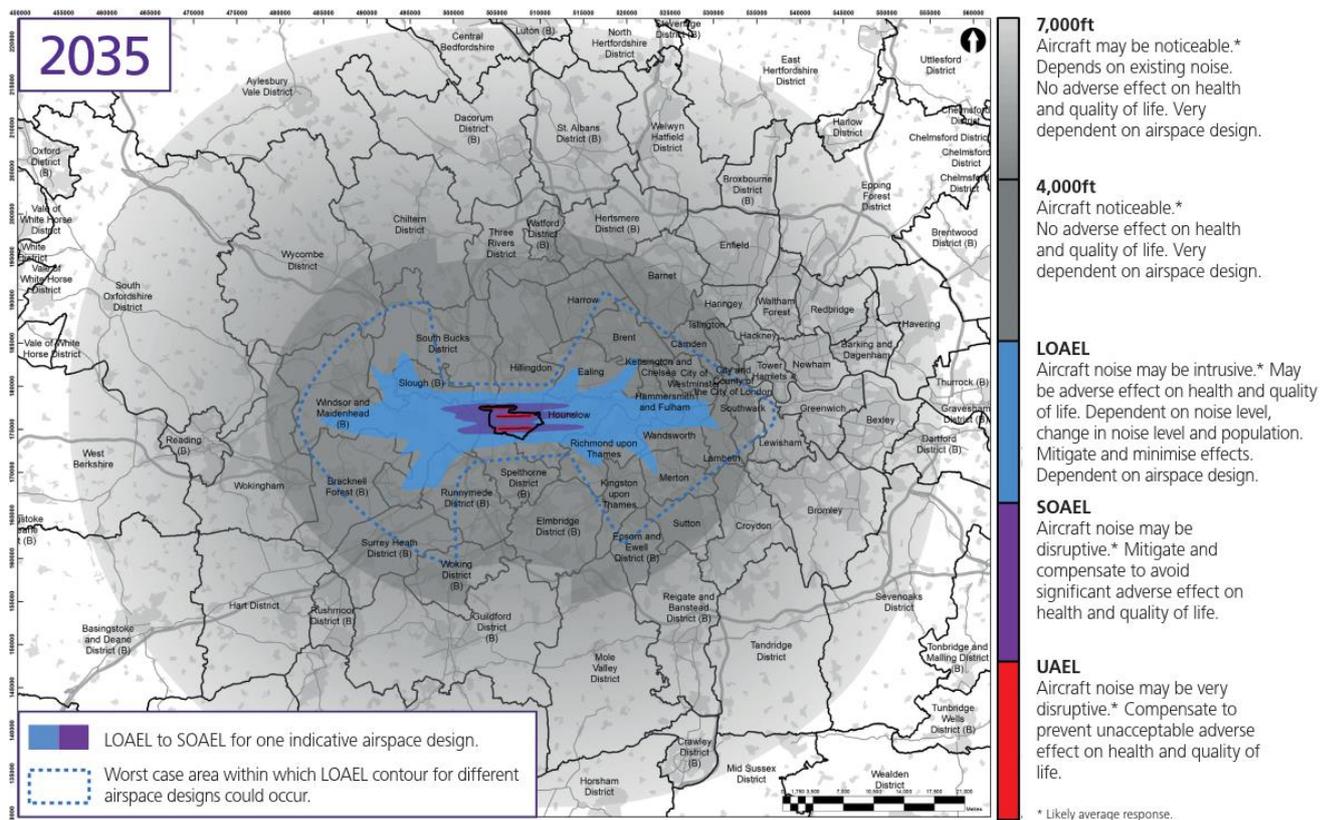
Source: Future Runway Operations – Page D10

15.10 The apparent increase in the time of flight operations is likely to result in increased noise impacts within Community Area C and, depending on flight paths, potentially over Wokingham Borough.

15.11 Figure 3 shows the amount of aircraft noise predicted by Heathrow in 2035 and Wokingham Borough falls outside the area where aircraft noise would be considered intrusive, even in the worst case. However, it does show that noise from aircraft from aircraft at 4,000 feet will be noticeable in some parts of the Borough.

15.12 This noise may potentially be mitigated however, as Heathrow are working on securing permission for Continuous Climb and Descent Operations which will lead to aircraft taking off / landing at steeper gradients then climbing to / descending from a higher altitude and, therefore, the level of aircraft noise at lower altitudes over Wokingham Borough may diminish.

Figure 3 – Predicted aircraft noise level in 2035



Source: Heathrow Airport Expansion Consultation Document - Page 77

## **16 AIR QUALITY**

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- 16.1 In addition to measures already detailed, Heathrow also proposes to design aircraft stands to provide electricity and air for the aircraft which would avoid the need for aircraft to use their engines.
- 16.2 The Airport is also proposing to supply aircraft fuel directly via pipelines to prevent fugitive odour emissions.
- 16.3 In respect of emissions from aircraft, aircraft on approach and departure from Heathrow have a limited impact on ground-level concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> beyond the Airport boundary. This is because aircraft are so high that emissions are dispersed before reaching the ground.
- 16.4 No significant effects are forecast in relation to dust and odour.
- 16.5 Any roads outside of the Airport boundary that require diversion will be aligned to maximise the separation between highway and receptors.

## **17 GREENHOUSE GASES**

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- 17.1 Heathrow have undertaken a preliminary assessment of the likely effects of the expansion project (referred to as the DCO Project in this section) with respect to carbon and greenhouse gas (GHG) emissions and Table 6 shows the preliminary significance of the DCO project without mitigation scenario for each of the assessment criteria.

17.2 Table 6 – Preliminary significance rating of the DCO project without mitigation scenario, with respect to carbon and GHG emissions

Criteria	Significance Rating
Probability that effect will occur based on available evidence	<b>High</b> There is no doubt that the DCO Project will result in GHG emissions
Phase of effect	<b>Multiple phases</b> GHG emissions will be generated through construction and operational activities through all three development phases
Frequency of effect (defined by number of occurrences, for example per annum)	<b>Continual</b> GHG emissions will be generated on an ongoing, continual basis.
Duration of effect	<b>Long-term</b> GHG emissions will be generated for a period exceeding the assessment period.
Permanence of effect	<b>Permanent</b> The DCO Project will be a permanent development and is not expected to be removed. The effects from the operation of the DCO Project are therefore also considered permanent. Effects from construction will be temporary.
Reversibility of effect	<b>Irreversible</b> These effects could be reversed, for example by cessation of operations and removal of infrastructure, however this is not expected
Magnitude of effect	<b>High</b> The magnitude of GHG emissions from the DCO Project are large enough to be noticeable on a national scale.
Spatial extent of effect	<b>Effects extending beyond the UK</b> The receptor is the global atmosphere.

Source: Preliminary Environmental Information Report Volume 1, Chapter 9 Table 9.17

- 17.3 As can be seen, the GHG emissions from the DCO Project without mitigation scenario are characterised as high probability; with long or continuous duration, permanent but potentially reversible and international in extent, with high magnitude. The combined nature of these effects led to the conclusion that the DCO Project without mitigation scenario should be considered to result in a Significant Negative effect.
- 17.4 A framework of potential environmental measures is currently being developed for construction, air transport, airport buildings and ground operations, to ensure reductions in GHG emissions over and above those considered in the without mitigation scenario. As a result, a preliminary assessment of significance has not been made for the DCO Project with mitigation scenario. This assessment will be made in the Environmental Statement, but the Airport consider it likely that it will also result in a significant negative effect.
- 17.5 GHG emission estimates have been calculated for years relating to key stages in the DCO Project without mitigation scenario and these are compared in Table 7 against the Baseline (without expansion) scenario.
- 17.6 As can be seen, the GHG emissions from the DCO Project without mitigation scenario are characterised as high probability; with long or continuous duration, permanent but potentially reversible and international in extent, with high magnitude. The combined nature of these effects led to the conclusion that the DCO Project without mitigation scenario should be considered to result in a Significant Negative effect.
- 17.7 A framework of potential environmental measures is currently being developed for construction, air transport, airport buildings and ground operations, to ensure reductions in GHG emissions over and above those considered in the without mitigation scenario. As a result, a preliminary assessment of significance has not been made for the DCO Project with mitigation scenario. This assessment will be made in the Environmental Statement, but the Airport consider it likely that it will also result in a significant negative effect.
- 17.8 GHG emission estimates have been calculated for years relating to key stages in the DCO Project without mitigation scenario and these are compared in Table 7 against the Baseline (without expansion) scenario.

Table 7 – Annual GHG emission estimates for the Baseline (BL) and DCO Project without mitigation scenarios

Sub-aspect	Annual GHG Emissions (MtCO <sub>2</sub> e)															
	Base Year	First year of construction works		Year of maximum release of first phase of capacity		First full year of third runway operations		Year of minimum ANPS capacity		Year of maximum capacity		Year of maximum GHG emissions over assessment period 2022-2050		Estimated aggregate total over assessment period 2022-2050		
		2017	2022		2025		2027		2035		2050		2022-2050		BL	DCO
		BL	DCO	BL	DCO	BL	DCO	BL	DCO	BL	DCO	BL	DCO	BL	DCO	Diff
Construction	0.14	0.00	0.48	0.00	0.54	0.00	0.14	0.00	0.05	0.00	0.00	n/a	0.64 (2023)	0.00	3.70	3.70
Air transport (including international air transport)	20.09	18.81	19.11	17.98	19.06	17.66	19.95	16.17	25.09	12.37	19.90	18.81 (2022)	25.09 (2035)	456.47	629.25	172.78
Air transport (excluding international air transport)	0.17	0.16	0.16	0.17	0.18	0.17	0.22	0.15	0.21	0.13	0.18	0.17 (2024)	0.22 (2030)	4.30	5.73	1.43
Surface access	0.77	0.95	0.95	0.94	0.97	0.93	1.03	0.92	1.19	0.91	1.26	0.95 (2022)	1.26 (2050)	26.69	33.57	6.88
Airport buildings and ground operations	0.09	0.09	0.09	0.08	0.09	0.08	0.10	0.06	0.09	0.04	0.07	0.09 (2022)	0.1 (2027)	1.72	2.39	0.67
<b>Total (including international air transport)</b>	<b>21.09</b>	<b>19.85</b>	<b>20.63</b>	<b>19.00</b>	<b>20.66</b>	<b>18.67</b>	<b>21.22</b>	<b>17.14</b>	<b>26.42</b>	<b>13.32</b>	<b>21.23</b>	<b>19.85 (2022)</b>	<b>26.42 (2035)</b>	<b>484.88</b>	<b>668.91</b>	<b>184.03</b>
<b>Total (excluding international air transport)</b>	<b>1.17</b>	<b>1.20</b>	<b>1.68</b>	<b>1.19</b>	<b>1.78</b>	<b>1.17</b>	<b>1.49</b>	<b>1.12</b>	<b>1.54</b>	<b>1.07</b>	<b>1.51</b>	<b>1.20 (2022)</b>	<b>1.87 (2023)</b>	<b>32.71</b>	<b>45.39</b>	<b>12.68</b>

Source: Preliminary Environmental Information Report Volume 1, Chapter 9 Tables 9.10 and 9.14

- 17.9 It should be noted that no construction GHG emissions are included in the Baseline scenario for the entire assessment period between 2022 and 2050, as all currently consented development is scheduled for completion before 2022.
- 17.10 The table shows that, over the 2022-2050 assessment period, the total GHG emissions (including international air transport) increase by almost 38%.
- 17.11 Despite this increase, Heathrow consider that CO<sub>2</sub> emissions from air transport from the DCO Project will not have a material impact on the ability of the UK to meet its carbon reduction targets and budgets.
- 17.12 International flights are by far the largest source of emissions. To address these, the international aviation industry has put in place a scheme known as CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation). CORSIA has been set up by the United Nations to deliver “carbon neutral growth” from 2020 by offsetting the growth in emissions from international aviation
- 17.13 Growth in CO<sub>2</sub> emissions from additional flights after expansion will be largely offset through CORSIA but Heathrow are exploring options to offset all the growth in emissions from flights
- 17.14 The Aviation 2050 strategy states that the Government wishes to limit CO<sub>2</sub> emissions from UK aviation to 37.5MtCO<sub>2</sub> by 2050. Based on the above table, Heathrow’s percentage of this target will decrease in the DCO Project without mitigation scenario to 53.1% (19.90MtCO<sub>2</sub>) in 2050, from the 53.6% (20.09MtCO<sub>2</sub>) it was 2017. Emissions from the DCO Project with mitigation scenario are anticipated to be even lower.

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