Heathrow

EASTERLY ALTERNATION INFRASTRUCTURE PROJECT

Environmental Impact Assessment
Environmental Statement, Volume III
Appendix 1.5 Scoping Report

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Heathrow

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EASTERLY ALTERNATION INFRASTRUCTURE PROJECT

ENVIRONMENTAL IMPACT ASSESSMENT SCOPING REPORT

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CONTENTS

Appendices

Graphics

Tables

Abbreviations

Abbreviation	Definition
AADT	Annual Average Daily Traffic
ACOG	Airspace Change Organising Group
ACP	Airspace Change Proposal
ADMS	Atmospheric Dispersion Modelling System
AHE	Assessment of Health Effects
AIP	Aeronautical Information Publications
ALARP	As Low as Reasonable Practicable
ANG	Air Navigation Guidance
ANM	Aviation Noise Metric
ANPS	Airports National Policy Statement
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
APF	Aviation Policy Framework
AQMA	Air Quality Management Area
ATM	Air Transport Movement
BAA	British Airports Authority Limited
BGS	British Geological Survey
BOA	Biodiversity Opportunity Area
$C0_2$	Carbon Dioxide
CAA	Civil Aviation Authority
CAS	Clean Air Strategy
CCAR	Climate Change Adaptation Report
CCC	Climate Change Committee
CCR	Climate Change Resilience
CDM	Construction (Design and Management)
CEA	Cumulative Effects Assessment
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeologists

Abbreviation	Definition
CoCP	Code of Construction Practice
COMAH	Control of Major Accident Hazards
CRoW	The Countryside and Rights of Way Act 2000
CTMP	Construction Traffic Management Plan
DCLG	Department of, Communities and Local Government
DCO	Development Consent Order
Defra	Department of Environment, Food and Rural Affairs
DfT	Department for Transport
DHCLG	Department of Housing, Communities and Local Government
DoH	Determinants of Health
DPD	Development Plan Document
EASA	European Aviation Safety Agency
EEA	European Economic Area
EIA	Environmental Impact Assessment
FRA	Flood Risk Assessment
FTF	Flightpath to the Future
GCN	Great Crested Newt
GHG	Greenhouse Gas
GLA	Greater London Authority
GLAAS HER	Greater London Archaeology Advisory Service Historic Environment Record
HGV	Heavy Goods Vehicle
HIA	Guidance for Health Impact Assessment
HLP	Hillingdon Local Plan
HPA	Health Protection Agency
HPI	Habitats of Principle Importance
HRA	Habitats Regulations Assessment
ICAO	International Civil Aviation Organization
ICE	Inventory of Carbon and Energy
IEMA	Institute of Environmental Management and Assessment
IMD	Index of Multiple Deprivation
IPCC	Intergovernmental Panel on Climate Change

Abbreviation	Definition
JZSNZA	Jet Zero: Strategy for Net Zero Aviation by 2050
KPI	Key Performance Indicator
LAeq	Equivalent Continuous Sound Pressure Level
LAQM	Local Air Quality Management
LBH	London Borough of Hillingdon
LCRM	Land Contaminated Risk Management
LDD	Local Development Document
LiDAR	Light Detection and Ranging
LLFA	Lead Local Flood Authority
LOAEL	Lowest Observed Adverse Effect Level
LTO	Landing and Take-Off
LWS	Local Wildlife Site
MA&D	Major Accidents and Disasters
MAGIC	Multi Agency Geographic Information for the Countryside
NERC	Natural Environment and Rural Communities Act 2006
NGO	Non-Governmental Organisations
NH_3	Ammonia
NHS	National Health Service
NLA	Natural Landscape Areas
NO_2	Nitrogen Dioxide
NOTAM	Notices to Airmen
NPPF	National Planning Policy Framework
NPSE	Noise Policy Statement for England
NVQ3	National Vocational Qualification 3
OANPS	Overarching Aviation Noise Policy Statement
OEP	Office for Environmental Protection
OHSMS	Occupational Health and Safety Management System
ONS	Office for National Statistics
OS	Ordnance Survey
Pa	Per annum
PEA	Preliminary Ecological Appraisal

Abbreviation	Definition
PHE	Public Health England
$PM_{2.5}$	Particulate Matter with a diameter of 2.5 microns or less
PM_{10}	Particulate Matter with a diameter of 10 microns or less
PPE	Personal Protective Equipment
PPG	Planning Practice Guidance
PRoW	Public Right of Way
RICS	Royal Institute of Chartered Surveyors
RoFSW	Risk of Flooding from Surface Water
RoSPA	Royal Society for the Prevention of Accidents
SAC	Special Area of Conservation
SFRA	Strategic Flood Risk Assessment
SMI	Site of Metropolitan Importance
SMR	Standardised Mortality Ratio
SMS	Safety Management System
SOAEL	Significant Observed Adverse Effect Level
SPA	Special Protection Area
SPI	Species of Principal Importance
SRO	Single Runway Operations
SSSI	Site of Special Scientific Interest
SuDs	Sustainable Drainage Systems
TCPA	Town and Country Planning Act
TfL	Transport for London
TORA	Take-Off Run Available
UDP	Unitary Development Plan
UFP	Ultra Fine Particles
WCA	The Wildlife and Countryside Act 1981 (as amended)
WHO	World Health Organisation
ZoI	Zone of Influence

1. Introduction

1.1 Overview of the Proposed Development

1.1.1 This Scoping Report constitutes a request to the London Borough of Hillingdon (LBH) for its formal opinion on the scope, level of detail and methodology in respect of the information to be provided in the Environmental Statement which will accompany a planning application that will be made by Heathrow Airport Limited ("Heathrow").

1.1.2 Specifically, Heathrow intends to seek planning permission for development of infrastructure that will facilitate full runway alternation when Heathrow Airport ("the Airport") is operating in an easterly direction ("the Proposed Development"). This will mean departures and arrivals in an easterly direction can alternate between the northern and southern runways, as they currently do on westerly operations. Runway alternation in an easterly direction has not occurred at the Airport routinely because it was prevented by a historic agreement known as the Cranford Agreement. The Cranford Agreement was ended by the Government in January 2009, and the Proposed Development will provide the infrastructure required to enable full alternation of the runways during easterly operations. Full runway alternation would provide a fairer, more equitable distribution of noise around the Airport.

1.1.3 Further information on the Cranford Agreement is set out in **Section 2.1** and further information on the infrastructure requirements is set out in **Section 2.**

1.2 The Applicant and the Project Team

1.2.1 This Scoping Report has been prepared on behalf of the Applicant ("Heathrow") by WSP UK Ltd (WSP) and Logika Group (Logika).

1.2.2 WSP and Logika are experts in the environmental assessment of aviation activities having significant experience of working with airports globally to help support them achieve more sustainable operations. WSP is also registered with the Institute of Environmental Management and Assessment (IEMA)'s Environmental Impact Assessment (EIA) Quality Mark scheme. The IEMA scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.

1.3 Purpose of the Scoping Report

1.3.1 This Scoping Report has been prepared to inform the Environmental Statement that will form part of the EIA supporting a planning application relating to the Proposed Development. EIA is required because the Proposed Development is EIA development under *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No. 571)* ("the EIA Regulations").

1.3.2 Specifically, the Proposed Development falls within Schedule 2 of the EIA Regulations and is likely to have significant effects on the environment. Heathrow will therefore submit

an Environmental Statement to accompany its planning application for the Proposed Development.

1.3.3 This Scoping Report has been issued to LBH as part of a request for a scoping opinion. In accordance with regulation 15(2) of the EIA Regulations, this request includes the following information:

- a plan sufficient to identify the land (see **Figure 2.1**);
- a brief description of the nature and purpose of the development, including its location and technical capacity (see **Section 2**);
- an explanation of the likely significant effects of the development on the environment (see **Sections 5** to **14**); and
- other information or representations which the Applicant wishes to provide or make.

1.3.4 Under the EIA Regulations, once a request for a scoping opinion has been issued to the relevant planning authority, that authority is required to consult the consultation bodies (as defined in the EIA Regulations). Within five weeks of receiving the request (or such longer period as may be agreed with the Applicant), the relevant planning authority must adopt a scoping opinion and send a copy to the Applicant.

1.3.5 An opinion from LBH is being sought, in particular, on the following:

- the environmental features likely to be significantly affected by the Proposed Development that should be assessed within the Environmental Statement;
- the approach to defining the study areas for each environmental aspect;
- the data that has been gathered (and will be gathered);
- the assessment methods that will be used to identify likely significant effects;
- the approach to determining the environmental measures that could be incorporated into the Proposed Development to avoid, reduce or, as a last resort, compensate for significant effects; and
- developments that, together with the Proposed Development should be subject to Cumulative Effects Assessment (CEA).

1.3.6 Discussions about the scope of the assessment may be held between Heathrow and LBH during preparation or following receipt of the scoping opinion.

1.4 Structure of this Scoping Report

1.4.1 The remainder of this Scoping Report is structured as follows:

- **Section 2** provides a description of the Proposed Development.
- **Section 3** provides an overview of the legislation and policies that are relevant to the Proposed Development.

- **Section 4** provides an overview of the EIA methodology and issues relevant to the Proposed Development.
- **Sections 5 – 11** set out the proposed scope and methodology for each technical aspect where, at this stage, a significant environmental effect is considered likely to arise as a result of the Proposed Development.
- **Section 12** identifies those effects that Heathrow considers should be scoped out of the EIA and provides justification for this approach.
- **Section 13** summarises the scope of the EIA.

1.4.2 The Scoping Report also contains an appendix which is referenced within the document.

2. The Proposed Development

2.1 The Cranford Agreement and restrictions on the use of the northern runway

2.1.1 In 1952 a Ministerial undertaking was given to use best endeavours to avoid using the northern runway for departures in an easterly direction over Cranford. This became known as the Cranford Agreement. In January 2009, after public consultation, the Government decided to end the Cranford Agreement. Ending the Agreement would allow runway alternation to be introduced when the Airport is on easterly operations and, therefore, distribute noise more equitably around the Airport, providing affected communities that surround the Airport predictable periods of relief from arriving and departing aircraft. The Government reaffirmed its support for the ending of the Cranford Agreement in September 2010.

2.1.2 Although the Cranford Agreement has ended, Heathrow has not yet implemented runway alternation during easterly operations. This is because ground-based infrastructure (such as new taxiways) is required to allow regular and scheduled departures on the northern runway in an easterly direction. Regular and scheduled departures on the northern runway in an easterly direction (Runway 09L) will mean regular and scheduled arrivals occurring on the southern runway (Runway 09R) from the west.

2.1.3 **Graphic 2.1** illustrates the numbering of the runways.

Graphic 2.1 Numbered runways at Heathrow Airport.

2.1.4 The additional infrastructure will allow the runways to alternate between departures and arrivals on easterly operations (as they do on westerly operations) at 15:00 each day. If, for instance, on easterly operations the morning sees the southern runway being used for departures and the northern runway being used for arrivals, after 15:00 the northern runway will switch to being used for departures and the southern runway will then be used for arrivals.

2.1.5 These operational changes would distribute noise more equitably around the Airport, providing greater predictability and extending the benefits of runway alternation to communities under the flight paths during easterly operations. Periods of relief would be provided for all affected communities but the communities living west of the northern runway and east of the southern runway would experience respite from what have for decades been continuous overflying on easterly operations.

2.1.6 The environmental effects that result from these operational changes need to be identified and assessed as part of the EIA (as set out in **Section 4**).

2.1.7 It should be noted that flight paths and procedures already exist for Heathrow to use the northern runway for departures over Cranford (from Runway 09L) albeit in practice this only happens on a limited basis. Runway 09L has published departure routes and Runway 09R also has published arrival routes. These pre-defined departure routes are known as Standard Instrument Departures (SIDs)[1]. In 2020 and 2021, due to the global pandemic and subsequent reduction of operations at Heathrow, the southern runway was closed and these routes were used together with the northern runway as part of Single Runway Operations (SRO).

2.1.8 However, under normal circumstances when the Airport is operating close to capacity, the infrastructure serving Runway 09L would be insufficient for full runway alternation during easterly operations. The key reason for this is that the existing layout of the Airport has been influenced by the establishment of the Cranford Agreement, and as such the taxiway system for allowing easterly departures from the northern runway (Runway 09L) has not developed as it has to serve the other runway ends. This is particularly well illustrated by comparing the taxiway infrastructure at the western end of the northern runway with that at the western end of the southern runway, and the eastern ends of both runways. There is a lack of infrastructure at the western end of the northern runway, and in particular a lack of a Runway Access Taxiway(s) (RATs)[2], which would facilitate the efficient operation of departures in an easterly direction from the runway. This can be seen in **Graphic 2.2**.

[1] Aircraft taking off from Heathrow follow pre-defined routes known as Standard Instrument Departures (SIDs). The choice of SID used is decided by the airline and is predominately dictated by the destination of the aircraft. A SID includes a profile and a minimum rate of climb and will avoid obstacles (such as., tall buildings) and SIDs from other airports which means they don't always follow the most direct route.
[2] A Runway Access Taxiway (RAT) facilitates departures by allowing aircraft to access the runway safely and efficiently.

Graphic 2.2 Taxiway infrastructure at each runway end

Northern runway (western end) 09L

Southern runway (western end) 09R

Northern runway (eastern end) 27R

Southern runway (eastern end) 27L

2.2 Need for the Proposed Development

2.2.1 The Airport operates two parallel runways, the northern runway (Runway 09L/27R), and the southern runway (Runway 09R/27L) in segregated mode. This means that arriving aircraft are assigned to one runway and departing aircraft to the other. The direction of arrivals and departures is dictated by the wind direction, as aircraft depart and arrive into a headwind because this is optimal for aerodynamic and safety reasons. For this reason, the Airport operates in two directions. These are 'easterly operations' for when the wind direction is from the east and 'westerly operations' when the wind direction is from the west.

2.2.2 The UK's prevailing wind is from a south westerly direction, meaning the Airport is on westerly operations for most of the time. Over the last 20 years (2003-2022) westerly operations have occurred on average approximately 72% of the time meaning the arrivals and departures to the east have occurred around 28% of the time[3]. The split between westerly and easterly operations varies year to year, with generally a higher proportion of westerly operations occurring in the summer months[4].

2.2.3 To distribute noise effects more equitably and provide respite to surrounding communities, on westerly operations, Heathrow alternates the runways used for departures and arrivals once a day. Operationally this means that from 06:00 to 15:00 departing aircraft are scheduled on one runway and arriving aircraft are scheduled on the other. The schedules are then alternated to the other runway from 15:00 until the final movement in order to provide predictable periods of respite to residents surrounding the Airport. This has been successfully utilised for westerly operations providing communities with relief from aircraft arrival and departure noise. However, the Cranford Agreement and the airfield layout which resulted from it has prevented runway alternation from being implemented while the Airport is on easterly operations. Consequently, residents living in areas such as Windsor and Hatton experience noise from arrivals and departures without respite when the Airport is on easterly operations.

2.2.4 The decision to end the Cranford Agreement by the Government in 2009 was based on the desire "*to distribute noise more fairly around the airport and extend the benefits of runway alternation to communities under the flight paths during periods of easterly winds*"[5]. This approach is consistent with government policy set out in the Aviation Policy Framework (2013), which refers directly to the Cranford Agreement, stating:

"*To further improve operations and resilience at Heathrow we confirmed the ending of the Cranford Agreement. This is an informal but long-standing agreement not to use the northern runway for departures when the wind was from the east (roughly 30% of the*

[3] Based on data published by Heathrow – Heathrow Airport Ltd., (n.d.)., 'Operational Data' Available at: https://www.heathrow.com/company/local-community/noise/data/reports/operational-data (Accessed: 3 July 2023)

[4] Based on Table 1 of ERCD Report 2001 – CAA, (2021), 'Heathrow Airport 2021 Summer and Noise Action Plan Contours', *ERCD Report,* Available at: https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/local-community/noise/reports-and-statistics/reports/noise-action-plan-contours/LHR_2021_Summer_and_NAP_Contours.pdf) (Accessed: 3 July 2023)

[5] Department for Transport, (2010)., 'Heathrow Operations' Available at: https://www.gov.uk/government/speeches/heathrow-operations (Accessed: 3 July 2023)

time). This decision needs to be implemented by Heathrow Airport Limited and the planning application will shortly be submitted for the necessary changes to airport infrastructure. Following implementation, noise will be distributed more fairly around the airport, extending the benefits of runway alternation to communities under the flight paths during periods of easterly winds".

2.2.5 It should be noted that Heathrow previously submitted a planning application to the London Borough of Hillingdon in 2013 (41573/APP/2013/1288) to construct an additional taxiway at the western end of the northern runway to enable full runway alternation on easterly operations. Planning permission was granted on appeal by the Secretary of State in February 2017. However, the development did not proceed given the need for Heathrow to address the implications of the Airports National Policy Statement (ANPS), which was published in 2018 and which supports the development of a third runway at the Airport. A recent review of the requirements for the infrastructure to enable runway alternation on easterly operations has determined that the location and layout of the physical infrastructure set out in the previous planning application is no longer optimal and other alternatives need to be considered.

2.2.6 Heathrow remains committed to providing predictable and meaningful respite for communities whilst on easterly operations and therefore intends to submit a Planning Application for the Proposed Development.

2.3 The Consequences of the Proposed Development

2.3.1 The Proposed Development would lead to regular and scheduled departures from Runway 09L (the northern runway over Cranford) and regular and scheduled arrivals on Runway 09R (the southern runway) when the wind is coming from the east. This change to the use of the runways will change the pattern of aircraft noise. This is likely to lead to a decrease in noise effects for some surrounding communities and an increase in others. However, overall, the Proposed Development will enable a more equitable distribution of noise arising from the aircraft operations of the Airport than currently exists.

2.3.2 The Proposed Development is comprised of the infrastructure (including taxiways and hold areas) necessary to allow aircraft to efficiently and routinely use the northern runway for departures when the airport is on easterly operations. It is important to note that the Proposed Development will not result in any changes to the operating hours of the Airport. Furthermore, the annual cap of 480,000 Air Transport Movements (ATMs) imposed as part of the planning permission for Terminal 5 will also remain the same.

2.3.3 The addition of the proposed taxiways and hold areas on Runway 09L will allow regular and scheduled flights to occur with easterly alternation, as well as providing easy access for aircraft to queue and be subsequently placed in the right sequence, to maintain the overall efficiency and operational resilience of the Airport. These changes will not affect the mode of operation of the runways, which will continue to operate in segregated mode.

2.3.4 Heathrow Airport is located approximately 15 miles west of Central London and lies within the administrative boundary of LBH. The Airport also borders the London Boroughs of Hounslow and Spelthorne. The Airport is situated on approximately 1,227

hectares (ha) of land and operates two parallel runways with four operational terminals (Terminal 2, Terminal 3, Terminal 4 and Terminal 5).

2.3.5 Please refer to **Figure 2.1** and **Figure 2.2** for the location of the Proposed Development in relation to the wider context of the Airport and the surroundings.

2.3.6 There are approximately 650 arrivals and 650 departures every day at Heathrow Airport. In 2019, prior to the Covid-19 pandemic, the airport handled approximately 81 million passengers[6] and 476,000 Air Transport Movements (ATMs)[7]. In 2020, as a result of the pandemic, annual passenger numbers fell to approximately 22 million and around 201,000 ATMs with most of this activity occurring in January and February 2020. In 2021, annual passenger numbers were approximately 19.4million with around 190,000 ATMs occurring that year. In 2022, the Airport had recovered to 61.6 million passengers, operating approximately 377,000 movements (see **Table 2.1**). Heathrow expects its post-Covid recovery to continue in 2023.

Table 2.1 Annual Passenger Numbers, Air Transport Movements and Total Aircraft Movements since 2017 at London Heathrow.

Year	Annual Passenger	Air Transport Movements	Total Aircraft Movements
2017	78,012,825	474,119	475,783
2018	80,124,537	475,714	477,604
2019	80,890,031	475,957	478,059
2020	22,111,326	201,029	204,730
2021	19,393,886	190,229	195,336
2022	61,611,838	377,240	380,305

Surroundings

2.3.7 The Airport is broadly bounded to the north by the A4, to the west by the A3044, to the east by the A30 and to the south by the Duke of Northumberland's River, as well as smaller connecting roads. Approximately 600m from the western perimeter of Heathrow lies the M25, with a direct link to Terminal 5 (T5) and the perimeter road from Junction 14a. The M4 provides an additional direct link to the Airport's central terminal area and the perimeter road from Junction 4 via a 'spur'.

[6] Based on CAA reporting – CAA, (2019)., 'Terminal Passengers 2009 – 2019' Available at: https://www.caa.co.uk/Documents/Download/3951/e925ed1f-e4b5-4d12-ad1c-e95e0b5b3307/1333 (Accessed 28 March 2023)
[7] Based on CAA reporting - CAA, (2019)., 'Aircraft Movements 2019' Available at: https://www.caa.co.uk/Documents/Download/3951/e925ed1f-e4b5-4d12-ad1c-e95e0b5b3307/1322 (Accessed 28 March 2023)

2.3.8 The Airport sits in two main river catchments, namely the catchment of the River Colne in the west and of the River Crane to the east. It is bounded by a number of associated watercourses west of the Airport – these include the River Colne, the Colne Brook and the Wraysbury River. In addition, the Duke of Northumberland's River and the Longford River flow around the Airport's western and southern boundaries. To the west and south of the Airport are a series of water reservoirs supplying London, namely the Queen Mother, Wraysbury, King George VI and Staines Reservoirs.

2.3.9 The Airport lies within a semi-urban area with several settlements bordering the perimeter. Longford, Harmondsworth, Harlington and Sipson villages lie to the north, Poyle and Colnbrook to the west, while Stanwell Moor, Stanwell, Hatton and East Bedfont lie to the south[8] (see **Figure 2.1**). Cranford village is situated to the east. Despite the largely urban nature of its immediate surrounds, to the north-west, south-west and west, the Airport surroundings become much less developed and are more rural in character.

2.3.10 The topography of the Airport and surrounding areas is relatively flat, ranging from around 19m in elevation to the west, to 26m in the east.

Existing Infrastructure

2.3.11 The land on the Airport is largely comprised of hardstanding in the form of runways, terminal buildings, taxiways, aprons, and auxiliary buildings, as well as 'airfield' grassland that is heavily managed to avoid attracting birds and other wildlife. Further details on this infrastructure are set out below.

Runways:

- Heathrow has two runways: the northern runway (09L/27R) being 3,902m long and the southern runway (09R/27L) being 3,660m long. Both are oriented east to west.

Terminals:

- Heathrow operates four terminals, referred to as T2, T3, T4 and T5, where passengers arrive at and depart from the Airport. Terminal 1 is no longer in use for passenger and aircraft operations. Specifically: T2 and T3 form a cluster of terminal buildings known as the Central Terminal Area (CTA), which is situated in the central part of the Airport between the northern and southern runways. T5 is in the west of the Airport, with T4 being found in the southeast. The location of these terminals are visible in **Figure 2.2**.

Taxiways:

- Heathrow has a taxiway network to circulate aircraft between the terminals and the runways under the guidance of air traffic control. This is shown on **Figure 2.2**. The taxiway network comprises four parallel taxiways (two serving each of the runways), which are linked by cross field taxiways. There are also taxiways south of the southern runway, including one parallel taxiway, connecting T4 and the cargo area

[8] Greater London Authority, (n.d.)., 'London Development Database' Available at: https://maps.london.gov.uk/map/?ldd (Accessed: 3 July 2023)

to the rest of the Airport. Runway links, including exit taxiways and Runway Access Taxiways (RATs), connect the parallel taxiways to the runways and are used by aircraft entering and exiting the runways. More minor taxiway links and cul-de-sac taxi lanes connect all the taxiways to the aircraft stands.

Aprons:

- Aprons are a designated space on an airfield for the parking of aircraft, refuelling, and the loading and unloading of passengers and freight. Each terminal building at Heathrow has its own aprons. Additionally, there is a cargo apron in the south of the Airport for designated freight aircraft and maintenance aprons in the east of the Airport.
- The aprons provide parking space for a wide range of passenger and cargo aircraft, from the smaller turboprop ATR72 or Boeing 737 up to large aircraft such as the Airbus A380 or Boeing 747.

Ancillary facilities:

- Ancillary facilities support the operation and maintenance of the Airport and are shown in **Figure 2.2**. They include maintenance and repair facilities, warehousing and cargo storage facilities and other airport operational land (such as surface water pollution control, balancing ponds, construction compounds for ongoing work, in–flight catering facilities, air traffic control, baggage and parking for service equipment). These are located throughout the Airport.

2.4 A Description of the Proposed Development

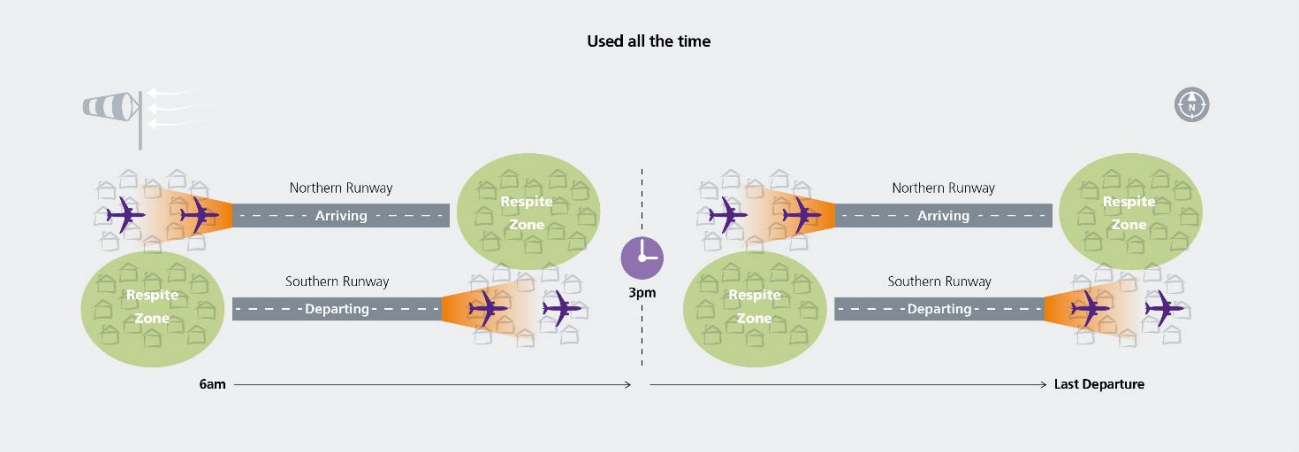
2.4.1 As described in **Section 2.1** the Airport's runways are numbered to reflect the compass heading for aircraft using the runway, (090 or 270 degrees), along with the orientation of the runway, L for left and R for right as observed by the pilot. As set out in **Section 1**, the Airport operates either on 'easterly' or 'westerly' operations, dictated by the wind conditions. During easterly operations, all aircraft movements (arrivals and departures) are in an easterly direction. During westerly operations, all aircraft movements are in a westerly direction.

2.4.2 **Graphic 2.3** illustrates the layout of the Airport's runway system over a two-week period for each runway during westerly operations. **Graphic 2.4** illustrates the existing operations during easterly operations. **Graphic 2.5** illustrates how the runway system will alternate, with the Proposed Development over a two-week period during easterly operations. The designators for each runway are:

- Runway 09L = northern runway on easterly operations;
- Runway 27R = northern runway on westerly operations;
- Runway 09R = southern runway on easterly operations; and
- Runway 27L = southern runway on westerly operations.

Graphic 2.3 Direction of arrivals and departures on 27R and 27L during westerly operations (over a two week period)

Graphic 2.4 Direction of arrivals and departures on 09R and 09L during easterly operations (existing)



Graphic 2.5 Direction of arrivals and departures on 09R and 09L during easterly operations (proposed)

New airfield infrastructure

2.4.3 The extent of the new airfield infrastructure works is relatively limited, although the exact requirements are still being determined as part of an ongoing design process. Infrastructure works are likely to comprise the construction of the following components:

- Taxiways and links to comprise a hold area(s) at the western end of Runway 09L.
- New Runway Access Taxiway(s) (RATs) on Runway 09L.
- Other associated airfield works, e.g. new connector taxiways or crossing points.
- Areas of additional pavement may also be developed to enable aircraft to access and exit the runways.
- Changes to layout of aircraft stands (501 – 505) to the north of Terminal 5.

2.4.4 **Figure 2.2** shows the indicative areas for this infrastructure.

2.4.5 In addition to the infrastructure proposed above, the Applicant may need to break out existing areas of redundant pavement on the existing airfield. This is to prevent a net increase in the proportion of paved areas across the Airport which could lead to increased run-off and flood volumes.

2.4.6 The need for an acoustic barrier to the south of the village of Longford is uncertain at this early stage and will be dependent on the results of ground noise modelling, landscape

and visual assessment and stakeholder engagement. The approximate extent of the potential acoustic barrier is illustrated in **Figure 2.2**.

Construction

2.4.7 It is anticipated that approximately 20 to 25 people will be required on site to complete the construction of the Proposed Development.

2.4.8 The construction period is expected to be approximately 18-24 months. Further details of construction hours will be detailed within the supporting Construction Environmental Management Plan (CEMP) when a contractor is appointed. The CEMP will include measures to control and mitigate the risk of adverse environmental effects arising from construction activities. An outline CEMP will be submitted as part of the Environmental Statement.

Construction Traffic

2.4.9 A Construction Transport Management Plan (CTMP) will be developed with the contractor once appointed to ensure that vehicle movements and any associated adverse effects are minimised. It should be noted that, at this stage, the levels of construction traffic are unknown, but any exhaust emissions from offsite construction traffic is expected to be a very low percentage of total traffic movements and considered insignificant in relation to the baseline.

2.4.10 The majority of Heavy Good Vehicles (HGVs) movements associated with the Proposed Development are likely to occur within or immediately surrounding the airport. This is in part due to the presence of the Colnbrook Logistics Centre and concrete batching and recycling facilities close to the Airport, which would lead to limited traffic movements associated with the proposed construction activities. However, these details, including the preferred routes for HGV access will be set out within the supporting CTMP.

Access by road and other transportation modes

2.4.11 Whilst passenger numbers are starting to return to pre-pandemic levels the Proposed Development itself will not generate any additional passengers and the number of flights will remain under the annual cap of 480,000 ATMs. There are no proposed changes to any of the road infrastructure surrounding the Airport.

Site Preparation

2.4.12 Existing areas of hardstanding that are considered redundant may be ‘broken-out’ to prevent an increase in the volume of paved area across the Airport and to avoid interfering with the ongoing surface water and flood management of the Airport.

2.4.13 Changes to the layout of aircraft stands (501 to 505) located north of Terminal 5 may be required. Other site preparatory works would be undertaken to establish and delineate individual work sites on the airfield, where appropriate. This would include the erection of temporary safety fencing, signage and markers, and mobile lighting to illuminate the work sites during night-time working. This is in line with standard working practice and already occurs at the Airport.

Proposed working hours

2.4.14 The Proposed Development will require construction activities to occur on an active airfield. A large proportion of the works will therefore be undertaken at night, with limited work in the daytime (approximately 30% of the construction programme). A significant proportion of the construction is anticipated to be carried out during weekdays. However, there may be some weekend and bank holiday working.

Development timescales

2.4.15 Currently, the dates associated with the Proposed Development are estimated, with the assumption that a Planning Application will be submitted early in 2024. Construction of the physical infrastructure will commence within the lifespan of the planning permission.

2.5 Consideration of alternatives

2.5.1 Regulation 18(3)(c) of the EIA Regulations provides that an Environmental Statement must include, amongst other things, *"a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the significant effects of the development on the environment…".*

2.5.2 This requirement is reflected in Schedule 4 to the EIA Regulations, which sets out additional information which must be included in an ES where relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected (see regulation 18(3)f)). In particular, paragraph 2 of Schedule 4 states: *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

2.5.3 A description of the reasonable alternatives considered will be set out in the Environmental Statement, including the main reasons for selecting the chosen option for which planning permission will be sought.

2.6 Airspace modernisation

2.6.1 Separately from the Proposed Development, Heathrow is sponsoring an Airspace Change Proposal for the modernisation of the airspace design at and around Heathrow airport ("the Heathrow ACP")[9]. This is being progressed under the separate regulatory process for approval of changes to the design of UK airspace administered by the Civil Aviation Authority (CAA). The CAA has the statutory function of deciding whether to

[9] Reference ACP-2021-056 – CAA, (2022)., 'Heathrow Airspace Modernisation (FASI South)', Available at: https://airspacechange.caa.co.uk/PublicProposalArea?pID=386 (Accessed: 3 July 2023)

approve changes to airspace design and has published guidance on this regulatory process in CAP 1616.[10]

2.6.2 The Heathrow ACP was initiated in July 2021 and forms part of a wider programme to redesign and modernise airspace across the South East of England, called the Future Airspace Strategy Implementation (FASI). FASI is a subset of the wider Airspace Modernisation Strategy which is co-sponsored by the Department for Transport and the CAA. The Airspace Modernisation Strategy sets out a strategic plan for modernising UK airspace with the aim of delivering *"quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace."* A single coordinated masterplan for the interdependent Airspace Change Proposals is being created by the Airspace Change Organising Group (ACOG)[11]. The masterplan will identify where airspace changes are required to support the delivery of the Airspace Modernisation Strategy.

2.6.3 The Heathrow ACP involves the redesign of the airspace around Heathrow based on a two runway operation, including the introduction of Performance Based Navigation. The Heathrow ACP will incorporate changes to flight paths and procedures for Heathrow as a whole, including its operation during easterly operations.

2.6.4 It should be noted that, at the point the planning application for the Proposed Development will be submitted, the Heathrow ACP will still be at an early stage of the CAP 1616 process with a multitude of early airspace design options still under consideration. Those airspace design options will not yet have been assembled into system-wide options and will be dependent on what other airports and NATS propose as part of their ACPs. Consequently, the outcome of the Heathrow ACP and the wider FASI modernisation will not be known during the preparation and consideration of the planning application for the Proposed Development. As the proposals for the Heathrow ACP develop, they will be subject to their own process of consultation and environmental assessment as detailed in CAP 1616.

2.6.5 Therefore, recognising the significant uncertainties about what the future airspace design might be, the EIA will be based on the existing airspace design which, as identified in **Section 2.1** is already established for the purposes of easterly operations. The current airspace design provides a good representation of airspace for the purposes of assessing the effects of easterly alternation.

[10] CAA, (2021)., 'Airspace Change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information', *CAP 1616,* Available at: https://publicapps.caa.co.uk/docs/33/CAA_Airspace%20Change%20Doc_Mar2021.pdf (Accessed 3 July 2023)
[11] ACOG, (n.d.)., 'Airspace Masterplan' Available at: https://www.acog.aero/airspace-masterplan/masterplan/ (Accessed: 2 July 2023)

3. Policy context

3.1 Introduction

3.1.1 This section presents the key policy context that will be given due consideration during the preparation of the Environmental Statement and supporting documents. It has also been used within this report to inform the scoping exercise undertaken. The aspect-specific sections of this report (**5** to **12**) include a summary of the relevant legislation and planning policies at national and regional/local levels.

3.1.2 This Scoping Report identifies all the relevant policies that have been used to inform the scope and assessment of each environmental aspect.

3.1.3 Any relevant new policy or legislation that emerges following the submission of this Scoping Report will be considered, where appropriate within the Environmental Statement.

3.2 Outline of relevant policy documents

3.2.1 Planning applications must be determined in accordance with the relevant Development Plan 'unless material considerations indicate otherwise' (Section 38(6) of the Planning and Compulsory Act 2004).

3.2.2 In the context of Section 38(6) of the 2004 Act, the following formally adopted documents have been reviewed owing to the location of the Proposed Development:

- The Hillingdon Local Plan: Part 1 (2012) and Part 2 (2020); and
- The London Plan (2021).

3.2.3 Additionally, the following documents have been reviewed and considered:

- *National Policy:*
  - National Planning Policy Framework (2021);
  - Decarbonising Transport: A Better, Greener Britain (2021);
  - Clean Air Strategy (2019); and
  - Noise Policy Statement for England (2010).
- *Aviation Policy:*
  - Overarching Aviation Noise Policy Statement (2023);
  - Jet Zero: Strategy for Net Zero Aviation by 2050 (2022);
  - Flightpath to the Future (2022);
  - Aviation Strategy 2050: The Future of UK Aviation (2018);
  - Airports National Policy Statement (2018);

- Strategic Case for Airspace Modernisation (2017);
- Aviation Policy Framework (2013); and
- South East Airports Taskforce Report (July 2011).

3.2.4 The Airport is bordered by both the London Borough of Hounslow and Spelthorne Borough Council. In addition, as a result of the airport location and that many aviation effects are wide ranging, other authorities also produce plans and policies which are of relevance and have therefore been considered. These include:

- *Greater London:*
  - The London Plan 2021.
- *London Borough of Hounslow:*
  - Hounslow Local Plan Volume One (2015); and
  - Hounslow Local Plan Volume Two (2015).
- *London Borough of Ealing:*
  - Draft Local Plan (Regulation 18) (2022);
  - Development Sites DPD (2013); and
  - Development Strategy Development Plan Document (DPD) (2012).
- *London Borough of Richmond Upon Thames*
  - Pre-Publication Draft Local Plan (2021); and
  - Local Plan (2018).
- *Slough Borough Council:*
  - Draft Proposed Spatial Strategy (2020);
  - Slough Local Plan (2010); and
  - Slough Core Strategy (2008).
- *Buckinghamshire Council*
  - Draft Local Plan for Buckinghamshire (2024);
  - Draft Chiltern and South Bucks Local Plan 2036 (2019);
  - Wycombe Local Plan (2019);
  - Vale of Aylesbury Local Plan (2013);
  - South Bucks Core Strategy Development Plan Document (2011);
  - South Bucks District Local Plan (2011); and
  - Chiltern Local Plan (1997).

- *Royal Borough of Windsor and Maidenhead Councils:*
  - Borough Local Plan (2022).
- *Spelthorne Borough Council:*
  - Draft Pre-submission Spelthorne Local Plan (2022); and
  - Development Plan (2009).

3.3 Relevant National Planning Policy

National Planning Policy Framework (2021)

3.3.1 The National Planning Policy Framework[12] (NPPF) was initially published in March 2012 and has undergone many revisions, with the most recent occurring in July 2021. The NPPF details the Government's planning policies and forms a material consideration in the determination of planning applications.

3.3.2 **NPPF Paragraph 7** states that the overriding purpose of the planning system is to contribute towards the '*achievement of sustainable development'* and reference the UK's alignment with the 17 Global Goals for Sustainable Development

3.3.3 **NPPF Paragraph 8** provides the following three overarching objectives for achieving sustainable development which are interdependent and need to be pursued in mutually supportive ways to ensure that opportunities can be taken to secure net gains across each of the different objectives:

'a) an economic objective – to help build a strong, responsive, and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation, and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) a social objective – to support strong, vibrant, and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful, and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

c) an environmental objective – to protect and enhance our natural, built, and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'

3.3.4 **NPPF Paragraph 11** provides that decision makers should apply a presumption in favour of sustainable development.

3.3.5 **NPPF Paragraph 81** places particular importance on supporting existing businesses and notes that decisions should encourage investment, expansion, and adaptation. The

[12] MHCLG, (2021)., 'National Planning Policy Framework' Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 (Accessed: 3 July 2023)

NPPF advises that '*significant weight'* should be placed on supporting economic growth and productivity whilst both local, business needs, and wider opportunities for development are taken into account.

3.3.6 **NPPF Paragraph 83** emphasises that decisions should recognise the locational requirements of various sectors. **NPPF Paragraph 104** emphasises the importance of addressing transport related issues early on in the planning process to ensure a holistic approach is adopted and to consider potential opportunities and environmental / traffic related impacts.

3.3.7 **NPPF Paragraph 106(e)** details that planning policies should provide for any large scale transport facilities in the area and the infrastructure and wider development needed to support their operation.

3.3.8 **NPPF Paragraph 152** advises that developments supporting the transition to a low carbon future through the reduction of greenhouse gases and encouraging resource re-use should be supported.

3.3.9 **NPPF Paragraph 174** aims to ensure decisions contribute and enhance the natural and local economy, specifically by protecting and enhancing valued landscapes, minimising impacts on and providing net gains for biodiversity and preventing new and existing developments affecting the soil, air, water, noise environments or land stability, and that developments should seek to improve the local environmental conditions.

3.3.10 **NPPF Paragraph 185** states that decisions should ensure that new development is appropriate for its location with regards to its likely effects, cumulative effects of pollution on health, living conditions and the natural environment. Additionally, it highlights the importance of mitigating and reducing the potential adverse impacts that arise from noise relating to proposed development.

3.3.11 **NPPF Paragraph 186** seeks to ensure decisions sustain and contribute towards compliance with limit values or national objectives for air pollutants.

3.3.12 **NPPF Paragraph 188** states that the focus of decisions should be based on the acceptability of a proposed development within the context of the land's use rather than the control of process or associated emissions, which are subject to other regulatory controls. The NPPF is clear that planning decisions should assume that these other regimes will operate effectively.

Decarbonising Transport: A Better, Greener Britain (2021)

3.3.13 The Decarbonising Transport: A Better, Greener Britain[13] (DTABGB) was published by the Department for Transport (DfT) on 14 July 2021. The DTABGB details the Government's overall commitments and intended actions that are required to decarbonise the UK's entire transport system.

[13] Department for Transport, (2023)., 'Transport decarbonisation plan' Available at: https://www.gov.uk/government/publications/transport-decarbonisation-plan (Accessed: 3 July 2023)

3.3.14 In July 2022 the Decarbonising Transport: one-year-on-review was published which summarised the Government's progress since the DTABGB emerged as well as projecting future milestones.

Planning Practice Guidance (2014)

3.3.15 Planning Practice Guidance (PPG) was published by the Department for Levelling Up, Housing and Communities and the Ministry of Housing, Communities and Local Government on 6 March 2014. PPGs form an extension to the NPPF and, as such they should be read in conjunction with each other. PPGs relate to specified aspects of the planning framework and the PPG relating to noise was updated on 22 July 2019. Specifically, Paragraph 006 Reference ID: 30-006-20190722[14] notes which factors influence whether noise should form a material concern.

Noise Policy Statement for England (2010)

3.3.16 The Noise Policy Statement for England[15] (NPSE) was published by Defra on the 15 March 2010. It sets out the Government's long term vision with regards to noise policy ensuring the promotion of good health and a good quality of life through the management of noise. The first aim of the NPSE states that significant adverse effects on health and quality of life should be avoided while also taking into account the guiding principles of sustainable development (paragraph 1.8).

3.4 Relevant National Aviation Policy

Overarching Aviation Noise Policy Statement (2023)

3.4.1 The Overarching Aviation Noise Policy Statement[16] (OANPS) was published on 27 March 2023 and aims to detail the Government's revised overarching aviation noise policy statement. Its revision is linked to the FTF (see below), which acknowledged that the Government would set out next steps on noise policy in 2022 to 2023.

3.4.2 The publication of the OANPS supported the night-time noise abatement objective consultation whilst providing clarity for both airports and their stakeholders when preparing or responding to noise action plan consultations.

3.4.3 The OANPS sets out the Government's revised overarching aviation noise policy relating to aviation, as follows: "The Government's overall policy on aviation noise is to balance the economic and consumer benefits of aviation against their social and health implications in line with the International Civil Aviation Organisation's Balanced Approach to Aircraft Noise Management. This should take into account the local and national

[14] DLUHC and MHCLG, (2019)., 'Noise' Available at: https://www.gov.uk/guidance/noise--2
[15] https://www.gov.uk/government/publications/noise-policy-statement-for-england#:~:text=The%20Noise%20Policy%20Statement%20for%20England%20was%20published%20on%2015,through%20the%20management%20of%20noise (Accessed: 3 July 2023)
[16] DfT, (2023), 'Overarching aviation noise policy', Available at: https://www.gov.uk/government/publications/aviation-noise-policy-statement/overarching-aviation-noise-policy (Accessed: 3 July 2023)

context of both passenger and freight operations, and recognise the additional health impacts of night flights.

The impact of aviation noise must be mitigated as much as is practicable and realistic to do so, limiting, and where possible reducing, the total adverse impacts on health and quality of life from aviation noise."

3.4.4 The OANPS also refers to a previous consultation, as part of Aviation 2050, on setting a new objective "to limit, and where possible, reduce total adverse effects on health and quality of life from aviation noise." This was to bring national aviation noise policy in line with airspace policy updated in 2017. In that context, the OANPS explains:

"*We consider that "limit, and where possible reduce" remains appropriate wording. An overall reduction in total adverse effects is desirable, but in the context of sustainable growth an increase in total adverse effects may be offset by an increase in economic and consumer benefits. In circumstances where there is an increase in total adverse effects, "limit" would mean to mitigate and minimise adverse effects, in line with the Noise Policy Statement for England*."

Jet Zero: Strategy for Net Zero Aviation by 2050 (2022)

3.4.5 Jet Zero: Strategy for Net Zero Aviation by 2050[17] (JZSNZA) was published on the 19 July 2022 by the DfT, it was later updated on 2 August 2022. JZSNZA sets out how the UK's aviation industry will achieve net zero emissions by 2050, with a focus on rapidly developing technologies whilst ensuring opportunities from decarbonisation are maximised.

Flightpath to the Future (2022)

3.4.6 Flightpath to the Future[18] (FTF) was published by the DfT on 26 May 2022. FTF sets out the DfT's visions and strategic framework to modernise, innovate and improve the efficiency of the UK's aviation industry over the next ten years. FTF encompassed a ten-point plan to establish the ambitions and commitments for the aviation industry.

Aviation Strategy 2050: The Future of UK Aviation (2018)

3.4.7 The Aviation Strategy 2050: The Future of UK Aviation[19] (Aviation Strategy) was published by the DfT on 17 December 2018. The Aviation Strategy sets out the challenges and opportunities for the aviation industry to 2050 and specifically emphasises the significance of aviation to the UK's economy. Overall, the Aviation Strategy has various overriding strategic aims, however that of most relevance to this

[17] DfT, (2022)., 'Jet Zero Strategy: delivering net zero aviation by 2050', Available at: https://www.gov.uk/government/publications/jet-zero-strategy-delivering-net-zero-aviation-by-2050 (Accessed: 3 July 2023)
[18] DfT, (2022)., Flightpath to the future: a strategic framework for the aviation sector', Available at: https://www.gov.uk/government/publications/flightpath-to-the-future-a-strategic-framework-for-the-aviation-sector (Accessed: 3 July 2023)
[19] DfT, (2022)., 'Aviation strategy', Available at: https://www.gov.uk/government/collections/aviation-strategy (Accessed: 3 July 2023)

Proposed Development aim to build the industry sustainability by meeting rising demand whilst balancing environmental and community impacts.

Airports National Policy Statement (2018)

3.4.8 The ANPS[20] was published by the Secretary of State for Transport on 26 June 2018. It detailed the increasing need for additional airport capacity in the south east of England and supported the development of a north west runway at Heathrow Airport. Whilst it specifically provides the planning policy framework for the determination of applications relating to a north west runway at Heathrow Airport, it also forms a relevant consideration with regards to applications relating to airport infrastructure across the south east of England.

3.4.9 The ANPS forms part of the overall framework of national policy and may be a material consideration in making decisions on Town and Country Planning Act (TCPA) planning applications.

Aviation Policy Framework (2013)

3.4.10 The Aviation Policy Framework[21] (APF) was published on 22 March 2013 by the DfT. The APF sets out the Government's objectives and policies relating to the impacts of aviation.

3.4.11 The APF forms a sustainable framework for the industry and as such it explores the growth of aviation as a sector as well as its wider connectivity, as well as recognising the climate change, noise and other environmental impacts associated with this industry.

3.4.12 Reference is made specifically to 'ending the Cranford agreement' in paragraph 1.63, which states:

"To further improve operations and resilience at Heathrow we confirmed the ending of the Cranford agreement. This is an informal but long-standing agreement not to use the northern runway for departures when the wind was in from the east (roughly 30% of the time). This decision needs to be implemented by Heathrow Airport Ltd and a planning application will shortly be submitted for the necessary changes to airport infrastructure. Following implementation, noise will be distributed more fairly around the airport, extending the benefits of runway alternation to communities under the flight paths during periods of easterly winds, and delivering operational benefits by letting the airport operate consistently whether there are easterly or westerly winds."

CAP1616 (2021)

3.4.13 The CAA has published guidance (CAP 1616[22]) on the regulatory process for changing the notified airspace design and certain related matters. The regulatory process that

[20] DfT, (2018)., Airports National Policy Statement' https://www.gov.uk/government/publications/airports-national-policy-statement (Accessed: 3 July 2023)
[21] DfT, (2013)., 'Aviation policy framework' Available at: https://www.gov.uk/government/publications/aviation-policy-framework (Accessed: 3 July 2023)
[22] https://publicapps.caa.co.uk/docs/33/CAA_Airspace%20Change%20Doc_Mar%202021_INTERACTIVE.pdf

applies to Airspace Change Proposals (ACP) under CAP 1616 includes requirements for options appraisal and environmental assessment, as well as engagement and consultation. It should be noted that this Scoping Report is not concerned with an application for an ACP, but where relevant, specific reference may be made within the technical chapters that follow.

3.4.14 Environmental metrics required to be assessed as part of an ACP under CAP1616 and considered within the Airspace Modernisation Strategy (AMS)[23] include noise, CO_2 emissions, local air quality, biodiversity and tranquillity. In contemplating any Airspace Change Proposal, the change sponsor must *"consider the impacts on others and the implications those impacts may have, and engage with them appropriately. Depending on the level of the change, this may include the general public, their elected representatives, community leaders, airport consultative committees, government organisations and industry/environmental representative groups; other airspace users; airport operators; and air navigation service providers".*

3.5 Relevant Local Planning Policy

3.5.1 The location of the Proposed Development falls within the administrative boundary of LBH, as such its policies have been reviewed within the context of this development. Additionally, the London Plan has also been reviewed in relating to the Proposed Development.

Hillingdon Local Plan (2012)

3.5.2 The Hillingdon Local Plan[24] Part One (HLP) is the key strategic planning document for Hillingdon and it was adopted in 2012.

3.5.3 The HLP Part One Strategic Policies details the long-term spatial vision and objectives for the LBH, detailing the broad policies which aim to guide and shape development. The HLP Part One aligns with the Sustainable Community Strategy which aligns Place and Prosperity at the core of its strategy.

3.5.4 The HLP Part Two Development Management Policies was adopted in January 2020 and provides detailed policies that form the basis of and guide LBH decisions with regards to planning applications.

3.5.5 On the 27 September 2007, the LBH specified policies that were retained from the Unitary Development Plan (UDP). As such, saved policies from Hillingdon's UDP have been gradually superseded by policies from HLP documents.

3.5.6 As such, the relevant policies from both Part One and Two of the HLP are detailed below and will be taken into account with regards to the progression, scoping and design of the Proposed Development.

[23] https://www.caa.co.uk/commercial-industry/airspace/airspace-modernisation/airspace-modernisation-strategy/ (Accessed: 3 July 2023)
[24] Hillingdon Council, (2012)., 'Local Plan: Part 1 – Strategic Policies' Available at: https://www.hillingdon.gov.uk/local-plan (Accessed: 3 July 2023)

3.5.7 LBH is preparing for a partial review of the HLP to combine the two Parts of the Local Plan, which will cover the period 2023 to 2038. The review will conclude with the adoption of a revised Local Plan by December 2023.

3.5.8 **Table 3.1** lists policy guidance and policies relevant to the Proposed Development.

Table 3.1 Policies Relevant to scoping process: Aviation

Policy	Policy Issues
HLP Part One Strategic Objective 25	Aims to maintain support for operational uses that do not increase environmental impacts within Heathrow's existing boundary.
HLP Part One Policy E3	Aims to manage development and protect land within the Heathrow Airport boundaries for airport-related activities through the Local Development Document for the Heathrow Area. Which ensures local people benefit from sustainable economic growth located both within the Airport boundaries and in the Perimeter areas.
HLP Part One Policy T4	Recognises the economic importance of the airport and aims to support the sustainable operation of Heathrow within its present boundaries and growth in the Heathrow Opportunity Area by encouraging improvements to public transport and cycle links, enhancing the public transport whilst improving environmental conditions.
HLP Part Two Policy DMAV 2	Encourages proposals within the Airport boundary which directly relate to airport development, where there is no detrimental impact to the safe and efficient operation of local transport networks or the environment. Additionally, such proposal will be supported where they demonstrate compliance with DMEI 14 (see **Table 3.2** below) and will require an Environmental Impact Assessment and the identification of mitigation measures.

3.5.9 **Table 3.2** lists policies relevant to the assessment of effects that need to be considered when determining the scope of this assessment.

Table 3.2 Policies Relevant to Scoping

Health & Equalities	
HLP Part One Strategic Objective SO6	To ensure an equitable distribution of opportunity and equality of access relating to social, educational, health, employment, recreational, green space, and cultural facilities across the Borough.
Carbon & Climate	
HLP Part One Policy EM1: Climate Change Adaptation and Mitigation	To ensure climate change mitigation is addressed.
HLP Part Two DMEI 2: Reducing Carbon Emissions	Minimising carbon dioxide emissions in line with London Plan targets.

Air Quality	
HLP Part One Policy EM8: Land, Water, Air and Noise	To ensure local air quality does not deteriorate.
HLP Part Two Policy DMEI 14: Air Quality	To ensure that developments, as a minimum, be at least “air quality neutral”, include sufficient mitigation to ensure there is no unacceptable risk from air pollution to sensitive receptors and actively contribute to the improvement of air quality, especially within Air Quality Management Areas.
Noise & Vibration	
HLP Part One Policy EM8: Land, Water, Air and Noise	To ensure that noise generating development are adequately controlled and mitigated.
Historic Environment	
HLP Part One Policy HE1: Heritage	To ensure the conservation and enhancement of heritage relevant to the boroughs historic environment, including historic village cores, designate heritage assets, locally listed buildings and archaeologically significant areas.
HLP Part Two Policy DMHB 1: Heritage Assets	To ensure that harm to the historic environment is prevented.
HLP Part Two Policy DMHB 2: Listed Buildings	Ensures that substantial harm to or total loss of significance of a statutory Listed Building only occurs in exceptional circumstances.
HLP Part Two Policy DMHB 3: Locally Listed Buildings	Presumption in favour of the retention of Locally Listed Buildings.
HLP Part Two Policy DMHB 7: Archaeological Priority Areas and Archaeological Priority Zones	Archaeological Priority Areas, Archaeological Priority Zones and requirements for archaeological investigation and recording. Provides To ensure that archaeological remains within areas designated as Archaeological Priority Areas should not be disturbed.
HLP Part Two Policy DMHB 8: Registered Historic Parks, Gardens and Landscapes	To ensure the special character, environmental quality, views and vistas of Registered Historic Parks, Gardens and Landscapes are preserved.
Landscape and Visual	
HLP Part One Policy EM2: Green Belt, Metropolitan Open Land and Green Chains	To preserve Green Belt setting and character, particularly the extent, hierarchy and strategic functions.
HLP Part Two Policy DMEI 4: Development in	Outlines permitted Green Belt development relating to the visual amenity and character of the Green Belt and Metropolitan Open Land

the Green Belt or on Metropolitan Open Land	
Biodiversity	
HLP Part One Policy EM1: Climate Change Adaptation and Mitigation	To ensure climate change mitigation is addressed.
HLP Part One Policy EM7: Biodiversity and Geological Conservation	To ensure that biodiversity and geodiversity value of Sites of Importance for Nature Conservation will be protected and enhanced.
HLP Part Two Policy DMEI 7: Biodiversity Protection and Enhancement	To ensure any features of biodiversity or geological value within the site are retained and enhanced.
Water Environment	
HLP Part One Policy EM1: Climate Change Adaptation and Mitigation	To ensure climate change mitigation is addressed and requiring a consideration of the whole water cycle effects including flood risk management, foul and surface water drainage, and water consumption.
HLP Part One Policy EM6: Flood Risk Management	To ensure development is directed away from Flood Zones 2 and 3 in accordance with the NPPF. Encourages the use of Sustainable Drainage Systems unless demonstrated that it is not viable.
HLP Part Two Policy DMEI 8: Waterside Development	To ensure the relevant provisions of the Thames River Basin Management Plan and any other relevant Catchment management Plans are considered with regards to the Proposed Development.
HLP Part Two Policy DMEI 9: Management of Flood Risk	To ensure that development within Flood Zones 2 and 3a had no other suitable sites of lower flood risk and provides a requirement to submit a Flood Risk Assessment to demonstrate the resilience of the Proposed Development.

3.5.10 HLP Part One: Strategic Policies (**Table 5.3**) provides the current position and the future growth within the key Heathrow Opportunity sub-areas which "*will be focused on sustainable locations such as town centres and areas with good access to public transport"* (**Paragraph 5.31**).

3.5.11 The Airport and Perimeter sub-area identified in **Table 5.3** of the HLP Part One sets out that *"Heathrow is a crucial influence in attracting new investment to the area and this [HLP Part One] Policies will ensure that land within the Airport boundary continues to be protected for activity directly related to the Airport. The Council are broadly supportive of the aspirations to deliver a programme of renewal at Heathrow, subject to no further expansion of the Airport. Detailed projects are set out in Appendix 2 (Infrastructure Schedule). The Council will continue its collaborative working with the Airport regarding future uses within its boundaries"*.

3.5.12 Appendix 2 of the HLP Part One identifies the list of schemes that are considered within the LBH's Infrastructure Schedule. The infrastructure schedule includes the 'Enabling works for implementation of full runway alternation (ending Cranford agreement)' as a project to be delivered by British Airports Authority Limited ('BAA')[25]. The infrastructure schedule sets out as justification the need of the scheme to provide 'operational reliability' and, as requirements, the provision of additional taxiways and associated mitigation.

London Plan (2021)

3.5.13 The London Plan 2021[26] represents the Spatial Development Strategy for Greater London and projects London's development over the next 25 years. It forms part of the statutory development plan for London, it guides planning applications across the city and forms the basis of Local Plan development across London.

3.5.14 The following policies are relevant to the Proposed Development:

- **Policy D14 – Noise** which aims to reduce, manage, and mitigate noise to improve overall health and quality of life whilst listing ways in which a development should manage noise.
- **Policy SI1 – Improving Air Quality** lists the criteria which should be addressed in order to tackle poor air quality, protect health, and meet the legal obligations relevant to air quality. Developments must also demonstrate their impacts on air quality during construction and demolition through a Non-Road Mobile Machinery Low Emission Zone and by following best practice guidelines.
- **Policy SI2 – Minimising Greenhouse Gas Emissions** emphasises the importance of reducing greenhouse gas emissions noting that carbon emissions should be minimised during all aspects for the development.
- **Policy T8** – **Aviation** stipulates that environmental and health impacts must be fully considered and mitigated, specifically with respect to noise, air quality and climate change whilst noting that developments should make better use of existing airport capacity.

[25] It should be noted that BAA plc changed its name to Heathrow Airport Holdings Limited in 2012. Heathrow Airport Limited, the Applicant, is a subsidiary of Heathrow Airport Holdings Limited.
[26] https://www.london.gov.uk/programmes-strategies/planning/london-plan/new-london-plan/london-plan-2021 (Accessed: 3 July 2023)

4. The Environmental Impact Assessment Process

4.1 Overview

4.1.1 EIA is a systematic process that must be followed for certain categories of development before they can receive planning permission. It aims to identify a development's likely significant effects through the scoping process, and then assess those effects in an Environmental Statement.

4.1.2 The EIA process should be systematic, analytical, impartial, consultative, and iterative allowing opportunities for environmental concerns to be addressed in the design of a project. Typically, a number of design iterations take place in response to environmental constraints identified during the EIA process prior to the final design being reached.

4.1.3 The EIA process will identify the different methodologies used for the assessment and these should be based on recognised good practice and guidelines specific to each technical area.

4.2 EIA Terminology

Impacts and Effects

4.2.1 The terms *impact* and *effect* are often used synonymously, and this can lead to confusion. For clarity, a cause and effect logic will be applied to the EIA of the Proposed Development, whereby impacts are the changes that arise as a result of the development (such as, changes in drainage pattern) and effects are the consequences of those changes (such as, habitat becomes degraded by the altered drainage pattern).

Types of effects

4.2.2 Regulation 4(2) of the EIA Regulations makes clear that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on certain specified environmental factors.

4.2.3 Regulation 18(3) of the EIA Regulations requires the Environmental Statement to include a description of the likely significant effects of the proposed development on the environment, and paragraph 5 of Schedule 4 states that:

> *"The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development."*

4.2.4 The Environmental Statement will consider each of these types of effects where relevant. Whilst some terms are self-explanatory, to assist we have provided a definition of most types of effects here to explain how these terms will be applied throughout the Environmental Statement, with cumulative effects being dealt with separately.

Direct effects

4.2.5 Direct effects are those that result directly from the development proposals.

Indirect and secondary effects

4.2.6 Indirect and secondary effects are those that result from consequential change caused by the development, as such they would normally occur later in time or at locations farther away than direct effects.

Transboundary effects

4.2.7 Transboundary effects are those effects that would affect the environment in another state within the European Economic Area (EEA).

4.3 Spatial and Temporal scope

4.3.1 Spatial scope is the area over which changes to the environment are predicted to occur as a consequence of the Proposed Development. In practice, an EIA should focus on those areas where these effects are likely to be significant.

4.3.2 The spatial scope will vary between environmental aspects and has been described in this report, where appropriate, with relation to each aspect based on the information currently available. For example, the spatial effects of a development on landscape and visual amenity will likely cover a much greater area to that affected by dust. The spatial scope of each assessment may be refined for the Environmental Statement in response to comments from consultees or further assessment work.

4.3.3 The temporal scope covers the time period over which changes to the environment and the resultant effects are predicted to occur and are typically defined as either being temporary or permanent.

4.4 EIA Scoping

4.4.1 As set out in the Planning Practice Guidance, EIA scoping determines the extent of issues to be considered in the assessment and reported in the Environmental Statement. The scoping process enables an applicant to ask the local planning authority for its formal opinion on the information to be supplied in the Environmental Statement. It allows the local planning authority to clarify what it considers the main effects of the development are likely to be and, therefore, which aspects of the environment the Environmental Statement should focus on. Scoping involves identifying the following:

- the people and environmental resources (collectively known as 'receptors') that are likely to be significantly affected by the Proposed Development; and
- the work required to take forward the assessment of these potentially significant effects.

4.4.2 The Applicant proposes that scoping should be started at the outset of work on the EIA, with the initial conclusions about the likely significant effects of the development being set out in this Scoping Report.

4.4.3 The preparation of this Scoping Report has been informed by information about the policy context relevant to the scheme (set out in **Section 3**). Judgements on significance are based upon professional judgement, with reference to the project description, and available information about:

- The magnitude and other characteristics of the potential changes that are expected to be caused by the Proposed Development;

  The sensitivity of receptors to these changes;

- The effects of these changes on relevant receptors (where relevant); and
- The value of receptors.

4.4.4 If the information that is available at this stage does not enable a robust conclusion to be reached that a potential effect is not likely to be significant, then by adopting a precautionary approach, the effect is taken forward for further assessment[27].

4.4.5 Subsequent to the issue of this Scoping Report, the scope of the assessment may be progressively refined in response to comments from LBH and from consultation bodies, together with environmental information resulting from survey or assessment work carried out in relation to the EIA, and the evolution of the development proposals.

4.5 Overview of significant evaluation methodology

4.5.1 The receptors that are likely to be significantly affected, and therefore taken forward for consideration in further detailed assessment in the Environmental Statement, are identified within each aspect section of this Scoping Report. The approach that has been adopted to determine whether the effects on these receptors are likely to be significant is to apply a combination of professional judgement and an aspect-specific significance evaluation methodology.

4.5.2 In applying this approach to significance evaluation, it is necessary to ensure that there is consistency between each environmental aspect in the level at which effects are considered to be significant. Thus, it is inappropriate for the assessment of one aspect to conclude that minor effects are significant, when, for another aspect, only comparatively major effects are treated as significant.

4.5.3 For some of the aspects to be assessed in the Environmental Statement, there is published guidance available about significance evaluation. Where such guidance exists, even if in draft, it will be used to inform the development of the significance evaluation methodologies to be used in the Environmental Statement. For other aspects, it will be necessary to develop methodologies without the benefit of guidance. This will

[27] Where an effect cannot be confirmed as being ‘not significant’ these will be ‘scoped in’ to the assessment.

involve technical specialists drawing on their previous experience of significance evaluation in EIA.

Evaluation matrices

4.5.4 Significance evaluation involves combining information about the sensitivity or value of a receptor, and the magnitude and other characteristics of the changes that affect the receptor. The approach to using this information for significance evaluation is outlined below.

Receptor sensitivity of value

4.5.5 The sensitivity or value of a receptor is largely a product of the importance of an asset, as informed by legislation and policy, and as qualified by professional judgement. For example, receptors for landscape, biodiversity or the historic environment may be defined as being of international or national importance; lower value resources may be designated as being sensitive or important at a county or district level.

4.5.6 The use of a receptor would also play a part in its classification. For example, when considering effects on the amenity of a human population, a receptor used for recreational purposes may be valued more than a place of work as the environmental quality of the recreational receptor is more likely to be an important part of that receptor's use.

Magnitude of change

4.5.7 The magnitude of change affecting a receptor that would result from the development proposals would be identified on a scale from minor alterations or change, up to major changes or the total or substantial loss of the receptor. For certain aspects, the magnitude of change would be related to guidance on levels of acceptability (such as for air quality or noise), and be based on numerical parameters, whilst for others it will be a matter of professional judgement to determine the magnitude of change, using descriptive terminology.

Determination of significance

4.5.8 The determination of significance is derived with reference to information about the nature of the development, the receptors that could be significantly affected and their sensitivity or value, together with the magnitudes of change that are likely to occur.

4.5.9 Other than for environmental aspects for which significance evaluation does not involve the use of matrices, sensitivity or value and the characteristics of environmental changes can be combined using a matrix (see **Table 4.1**). In addition, professional judgement is applied because, for certain environmental aspects, the lines between the sensitivities or magnitudes of change may not be clearly defined and the resulting assessment conclusions may need clarifying.

4.5.10 Variations to this approach, which may be applicable to specific environmental aspects, will be detailed in the relevant 'Assessment methodology' sub-section contained in each aspect section of this Scoping Report.

4.5.11 Definitions of how the categories that are used in the matrix are derived for each aspect are also set out in each environmental aspect section, along with the relevant explanation and descriptions of receptor sensitivity, magnitude of change and levels of effect that are considered significant in terms of the EIA Regulations.

4.5.12 Within the matrix, reference is made to:

- Major effects, which will always be determined as being significant in EIA terms.
- Moderate effects that are likely to be significant, although there may be circumstances where such effects are considered 'not significant' based on specific scenarios and professional judgement.
- Minor or negligible effects, which will always be determined as 'not significant'.

Table 4.1 Significance Matrix

		Magnitude of change				
		Very high	**High**	**Medium**	**Low**	**Very low**
Sensitivity/importance/value	**Very high**	Major (**Significant**)	Major (**Significant**)	Major (**Significant**)	Major (**Significant**)	Moderate (**Potentially significant**)
	High	Major (**Significant**)	Major (**Significant**)	Major (**Significant**)	Moderate (**Potentially significant**)	Minor (**Not significant**)
	Medium	Major (**Significant**)	Major (Significant)	Moderate (**Potentially significant**)	Minor (**Not significant**)	Negligible (**Not significant**)
	Low	Major (**Significant**)	Moderate (**Potentially significant**)	Minor (**Not significant**)	Negligible (**Not significant**)	Negligible (**Not significant**)
	Very Low	Moderate (**Potentially significant**)	Minor (**Not significant**)	Negligible (**Not significant**)	Negligible (**Not significant**)	Negligible (**Not significant**)

Note: Significant effects are those identified as 'Major'. 'Moderate' effects have the potential to be significant, and indeed they would normally be deemed to be significant. However, there may be some exceptions, depending on the environmental aspect and the application of professional judgment.

4.6 Environmental measures

4.6.1 Regulation 18(3)(c) of the EIA Regulations requires an Environmental Statement to include *"a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment…".* Paragraph 7 of Schedule 4 to the EIA

Regulations provides further specification of the information on mitigation measures to be included in an Environmental Statement:

"A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases."

4.6.2 The Institute of Environmental Management and Assessment (IEMA) provides guidance[28] on three broad categories of mitigation measures:

1. Primary (inherent): Modifications to the location or design of the development made during the pre-application phase that are an inherent part of the Proposed Development, and do not require additional action to be taken.

2. Secondary (foreseeable): Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the Environmental Statement.

3. Tertiary (inexorable): Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.

4.6.3 Primary mitigation is described as 'embedded measures' in the context of this Scoping Report and the Environmental Statement that will follow. Embedded mitigation relates to opportunities to avoid or reduce significant effects through design that are taken where possible. Subsequent environmental assessment will take these measures into account as part of the application.

4.6.4 Secondary mitigation is described as 'additional mitigation' in the context of this Scoping Report and the Environmental Statement that will follow. It is mitigation not related to the design but imposed only to reduce a defined environmental effect.

4.6.5 Tertiary mitigation is described as 'best practice' in the context of this Scoping Report and the Environmental Statement that will follow. An example would be measures such as recognised means of dust control on construction sites, controlled within an overall Code of Construction Practice (CoCP).

4.6.6 The approach to embedded measures means that primary and tertiary mitigation will form an integral part of the Proposed Development and therefore an 'unmitigated scheme' will not be assessed or considered in the Environmental Statement. Therefore, likely significant effects arising from the Proposed Development (with primary and tertiary mitigation assumed to be in place) will be presented initially. Further (secondary) mitigation that may be required to address any significant adverse effects remaining will

[28] Institute of Environmental Management and Assessment, (2016)., 'Delivering Quality Development' Available at: file:///C:/Users/ben.quilter/Downloads/Delivering-Quality-Development%20(7).pdf (Accessed: 3 July 2023)

be identified and residual effects assessed with such additional mitigation in place as a second stage.

4.7 Cumulative effects

Introduction

4.7.1 Paragraph 5(e) of Schedule 4 of the EIA Regulations refers to the need to consider *"the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources"*.

4.7.2 The requirement to consider 'existing and/or approved' development is echoed within PPG, which notes:

"There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development."

4.7.3 Two types of cumulative effects will be considered in the Environmental Statement, as set out below.

Inter-project effects (with other existing and/or approved development)

4.7.4 An assessment will be undertaken of how the environmental effects resulting from the Proposed Development could combine with environmental effects generated by other existing or approved developments. This will be undertaken for each environmental aspect considered in the Environmental Statement.

4.7.5 The starting point for this is to determine the Zone of Influence (ZoI) from the Proposed Development for each receptor that may be significantly affected. Other existing or approved developments, where they are located within the ZoI for a given environmental aspect, should be subject to CEA. **Table 4.2** provides an example of ZOI for Environmental Aspects.

Table 4.2 Example of ZoI for Environmental Aspects

Environmental aspect	Zone of Influence (example)
Air quality	Such as construction dust and vehicle emissions – ZOI defined by relevant institute guidelines. Such as operational plant emissions – ZOI identified by air quality modelling.
Heritage	Such as physical effects on buried archaeology – ZOI defined by relevant institute guidelines.

4.7.6 Other existing or approved developments may include those types set out in **Table 4.3.** A full list of the developments will be set out in the Environmental Statement.

Table 4.3 Other Existing or Approved Developments

Other Existing or Approved Developments	
1.	Infrastructure works undertaken by Heathrow around the same time (including those for which Heathrow has permitted development rights, such as runway resurfacing).
2.	Major projects/infrastructure works within any of the communities that may be significantly affected (positively or negatively). This may include new residential development under the flight path of aircraft departing from 09L, arriving on 09R, or within Cranford or Longford.

ii. Inter-related (intra-project) effects

4.7.7 The second type of cumulative effects involves assessing whether any of the environmental effects resulting from the Proposed Development could combine with other environmental effects, to create effects that are greater than the sum of the individual effects on a given receptor.

4.7.8 The first step will be to identify the environmental aspects that have common receptors, and then to consider whether the aspect effects on any common receptors are likely to combine. As this combined assessment involves different environmental aspect assessments, the outcome of this assessment in the Environmental Statement will be reliant on the application of professional judgement from, potentially, several different technical specialists.

4.7.9 An example of inter-related effects may include the assessment of noise and air quality on residential receptors.

4.8 Parameter Based Assessments

4.8.1 To identify and assess likely significant effects, the Environmental Statement requires clearly defined parameters as the setting for the EIA. This is commonly referred to as ‘parameter based’ assessment (or use of the Rochdale Envelope) where details of the whole project are not available when the application is submitted. The level of detail of the proposals must enable a proper assessment of the likely significant environmental effects - if necessary, considering a range of possibilities. In assessing the likely significant effects, it is consistent with the objectives of the EIA Directive to adopt a precautionary ‘worst case’ approach so that the maximum potential adverse impacts of the project are properly assessed.

4.9 Future Baseline and Assessment Years

4.9.1 A description of the baseline and future baseline conditions will be set out in the Environmental Statement, i.e. the current situation and anticipated changes over time without the Proposed Development. This is a critical part of the EIA process as it provides a measure against which the likely significant effects of the Proposed Development on the environment are assessed.

4.9.2 For this project, the ‘baseline’ is the current state of the environment based on how the Airport operates today, including all current Airport operations (see assumptions set out

in **Table 4.4**). However, there is also a requirement (para 3 of Schedule 4 to the EIA Regulations) to establish a future baseline (i.e. the likely evolution of the environment without implementation of the Proposed Development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge).

- **Current baseline** – reflecting the 'current' baseline at the point of submission.
- **Future baseline (without the Proposed Development)** – this would be the opening year of the development. No further assessment years are required since the environmental effects associated with the proposals would get no worse and in actual fact are likely to reduce over time as aircraft become cleaner and quieter. As a result, the opening year is considered to be the worst-case year as regards environmental effects.
- **Opening year of operations**[29].

4.10 Key assumptions

4.10.1 The key airport operational assumptions identified at this scoping stage are set out in **Table 4.4**. Any changes to these assumptions will be set out in the Environmental Statement. These assumptions are intended to inform the aspect-specific assessment work (in particular noise, carbon and air quality).

Table 4.4 Assumptions that inform the EIA

Proposed Assumptions for Assessment Purposes	
ATM cap	The EIA assumes that the ATM cap will remain at 480,000 per annum (pa).
Westerly preference	The EIA assumes that westerly preference will continue to form part of standard operating procedures. When winds are light (below 5 knots) the rules set by Government determine the direction of operations. This is called a "directional preference". At Heathrow, when winds are light a 'westerly preference' is operated. This means that even during periods of light easterly winds aircraft will continue to land in a westerly direction, making their final approach over London. This was introduced in the 1960s to reduce the number of aircraft taking off in an easterly direction over London, the most heavily populated side of the airport.
Maintain runway alternation at 3pm each day	The EIA assumes that Heathrow will maintain runway alternation on westerlies and introduce on easterlies at 3pm each day in line with its current published patterns.
Airspace redesign as part of UK's Airspace Modernisation Strategy	The EIA assumes that the existing airspace will be used to inform the assessment (see **Section 2.6**).
Noise Preferential Routes (NPRs)	The EIA assumes that the published flight paths and associated NPRs will remain unchanged.

[29] The opening year of operations is currently expected to be 2028.

4.11 End of life decommissioning

4.11.1 Given that the Proposed Development is comprised of infrastructure changes within an existing airport, it is considered that the infrastructure would be maintained in the long-term and indefinitely. Consequently, decommissioning is not considered relevant to the EIA of the Proposed Development.

5. Air quality

5.1 Introduction

5.1.1 The Proposed Development will lead to a change in aircraft movement patterns on the ground and in the air, during easterly operations only. The main effect in air quality terms would be the increase in the number of aircraft departing on the northern runway (09L) and arriving on the southern runway (09R) during easterly operations and the decrease in the number of aircraft departing on the southern runway (09R) and landing on the northern runway (09L) during the same mode of operations. The number of aircraft movements will be unchanged by the Proposed Development, and there will be no change during westerly operations.

5.1.2 The quantity of air pollutants emitted may change slightly, but the principal impacts will be associated with the change in the spatial distribution of emissions across the airfield. Sources other than aircraft, including landside road vehicles, airside vehicles and ground support equipment, and stationary combustion plant, will be unchanged.

5.1.3 The principal air pollutants of concern are nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$).

5.1.4 Health issues related to air quality will be considered in the Health Section of the Environmental Statement with the proposed scope for Health found in **Section 8** in this document.

5.2 Relevant legislation, planning policy, technical guidance

5.2.1 Full details of relevant legislation, policy and technical guidance will be given in the ES. The key items which relate to air quality are:

- National planning policies:
  - Air Quality Strategy: Framework for Local Authority Delivery 2023;
  - Environmental Improvement Plan 2023;
  - National Planning Policy Framework (NPPF) (2021);
  - Planning Practice Guidance (PPG) (2019);
  - Clean Air Strategy 2019; and
  - Air Quality Strategy 2007.
- London planning policies:
  - The London Plan 2021;
  - London Environment Strategy 2018;
  - Greater London Authority (GLA) Supplementary Planning Guidance (SPG): The Control of Dust and Emissions During Construction and Demolition 2014; and

- Air Quality Focus Areas.

- Local planning policies:
  - London Borough of Hillingdon Local Plan (2012 and 2020).
- Legislation:
  - The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No. 96);
  - Environment Act 2021;
  - The Air Quality Standards Regulations (2010);
  - Air Quality (England) (Amendment) Regulations (2002);
  - Air Quality (England) Regulations (2000); and
  - Environmental Protection Act 1990.
- Technical guidance:
  - DLUHC (2023) 'Planning Newsletter';
  - Review & Assessment: Technical Guidance LAQM.TG22 August 2022 Version;
  - International Civil Aviation Organization (ICAO), Airport Air Quality Manual, Doc 9889, Second Edition, 2020; and
  - Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM), Land-Use Planning & Development Control: Planning for Air Quality. V1.2, January 2017.

5.3 Baseline conditions

Data gathering methodology

5.3.1 Baseline conditions in the study area (see **Section 5.4.17**) will be determined by collating information from a number of sources. Local monitoring data will be taken from local authorities' Air Quality Review and Assessment reports and from Heathrow Airwatch (which compiles monitoring data from around Heathrow Airport).

5.3.2 To further characterise air quality conditions at locations most likely to be affected by the Proposed Development, an air quality monitoring survey using passive nitrogen dioxide diffusion tubes has been initiated and will be carried out for a minimum of three months. Monitoring locations will be selected to establish baseline conditions in key parts of the study area. Some diffusion tubes will be colocated with the Green Gates continuous air quality monitor to verify the diffusion tube monitoring. The baseline monitoring data will

be bias adjusted and annualised following Defra's Local Air Quality Management Technical Guidance LAQM.TG22[30].

5.3.3 Background concentrations (intended to be representative of concentrations away from major roads or point sources) will be defined using the national pollution maps published by Defra[31]. If appropriate, these will be adjusted using background monitoring.

5.3.4 The Lakeside Energy from Waste (EfW) facility is located approximately 1200 m north-west of Heathrow Airport and is a potential source of air quality emissions. The contribution from this facility will be taken into account as an operational facility its contribution to local concentrations is included in monitoring data and the Defra background maps. A search of the UK Pollutant Release and Transfer Register[32] has not identified any other significant industrial or waste management sources that are likely to affect the Proposed Development, in terms of air quality.

Current baseline

5.3.5 Heathrow Airport is located within the London Borough of Hillingdon (LBH), at the southern end of the borough. Other local authority administrative areas which have the potential to be affected by the operation of the Airport include the London Borough of Hounslow (to the east and south-east of the airport), Spelthorne Borough Council (to the south and south-west of the airport) and Slough Borough Council (to the west of the airport).

5.3.6 Air quality has been an issue of concern in the Heathrow region for the last two decades and has been extensively examined using both ambient air quality monitoring and modelling studies. As well as Heathrow Airport, significant sources of air pollution in the region include the M4 and M25 motorways, traffic on other roads, and domestic, commercial and industrial activities. In 2003, LBH declared an Air Quality Management Area (AQMA) covering the southern half of the borough, which included the Airport itself, due to exceedances of the air quality objective for annual mean nitrogen dioxide. Other AQMAs have been declared for areas in the vicinity of the Airport by South Buckinghamshire District Council, London Borough of Ealing, London Borough of Hounslow, and Spelthorne Borough Council, all for annual mean nitrogen dioxide.

5.3.7 The Proposed Development is located within the Heathrow air quality Focus Area. Focus Areas are declared by the GLA as locations in London that not only exceed the EU annual mean limit value for nitrogen dioxide but also have high levels of human exposure. There are 160 designated air quality Focus Areas as of the latest update.

5.3.8 Currently, there are fourteen continuous monitoring sites within about 2 km of the Airport, each monitoring a range of pollutants including NOx (NO + NO_2), PM_{10}, $PM_{2.5}$ and ozone (not all at each site). Of these, one (LHR2) is on the airfield (and therefore not

[30] Defra (2022) 'Review & Assessment: Technical Guidance LAQM.TG22' Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf (Accessed: 3 July 2023)
[31] Defra (2023)., 'Local Air Quality Management (LAQM) Support Website' Available at: https://laqm.defra.gov.uk/ (Accessed: 3 July 2023)
[32] Defra (2022b)., 'UK Pollutant Release and Transfer Register'. Available at: http://prtr.defra.gov.uk/map-search., (Accessed: 3 July 2023)

representative of public exposure) and five are within about 300 m of the airport boundary. Two of these are operated by national government as part of the Automatic Urban and Rural Network; the others are operated by the various local authorities, in some cases with funding from the Airport. Locations of continuous monitors close to the Airport are shown in **Graphic 5.1**

5.3.9 In addition, there are many sites using passive diffusion tubes to monitor nitrogen dioxide, with diffusion tubes at some 45 locations within about 2 km of the Airport. These are operated by local authorities and are also shown in **Graphic 5.1.**

5.3.10 A focused campaign of diffusion tube monitoring is also underway in support of the Proposed Development (see **paragraph 5.3.2**). Details of diffusion tube locations and results will be reported in the Environmental Statement.

Baseline Air Quality Conditions

5.3.11 Concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ measured at the continuous monitors within about 2 km of the Airport are given in **Table 5.1** to **Table 5.5** (note: some concentrations for 2022 are not ratified and are subject to change). Monitors are listed in order clockwise from northwest of Heathrow Airport. To present the monitoring data spatially, **Graphic 5.2** shows the concentrations of nitrogen dioxide in 2019 measured by continuous monitors and diffusion tubes (2019 is the most recent year that is considered representative of long-term concentrations, since 2020–2022 were affected by the Covid-19 pandemic which reduced activity on the Airport and more widely).

5.3.12 Data are taken from local authorities air quality Review and Assessment reports[33,34,35,36,37,38,39] with additional data for 2022 from Heathrow Airwatch[40]. Data are given to one decimal place or to the nearest whole number, depending on how they are reported in the source documents.

5.3.13 While 2020–2022 results have been presented in this Section for completeness, they should be given limited weight as they will not be representative of 'typical' air quality conditions due to the considerable impact of the Covid-19 pandemic on road, airport and other activity and thus pollutant concentrations. Consequently, the baseline year for the air quality assessment will be considered as 2019.

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[33] London Borough of Hillingdon (2021). 'Air Quality Annual Status Report for 2020' Available at: http://www.hillingdon-air.info/pdf/LB_Hillingdon_ASR_2020_final.pdf (Accessed: 3 July 2023)
[34] London Borough of Hillingdon (2022). 'Air Quality Annual Status Report for 2021'. Available at: http://www.hillingdon-air.info/pdf/LB_Hillingdon_ASR_2022.pdf (Accessed: 3 July 2023)
[35] London Borough of Hounslow (2021). 'Air Quality Annual Status Report for 2020' Available at: https://www.hounslow.gov.uk/downloads/file/3303/2020_annual_staus_report_published_2021 (Accessed: 3 July 2023)
[36] London Borough of Hounslow (2022). 'Air Quality Annual Status Report for 2021' Available at: https://www.hounslow.gov.uk/downloads/file/3710/2021_annual_status_report_published_2022 (Accessed: 3 July 2023)
[37] Slough Borough Council (2020). '2020 Air Quality Annual Status Report' (ASR)' Available at: https://www.slough.gov.uk/downloads/file/160/asr-2020 (Accessed: 3 July 2023)
[38] Spelthorne Borough Council (2020). '2020 Air Quality Annual Status Report (ASR)'. Available at: https://www.spelthorne.gov.uk/media/23036/Annual-Status-Report-2020/pdf/Spelthorne_ASR_2020_FINAL.pdf?m=637328279940200000 (Accessed: 3 July 2023)
[39] Spelthorne Borough Council (2022). '2022 Air Quality Annual Status Report (ASR)'. Available at: https://www.spelthorne.gov.uk/media/25543/Annual-Status-Report-2022/pdf/Spelthorne_ASR_2022_FINAL.pdf?m=638162839741870000 (Accessed: 3 July 2023)
[40] Heathrow Airwatch (2023). Air quality at Heathrow. http://www.heathrowairwatch.org.uk/

Table 5.1 Annual Average Nitrogen Dioxide Concentrations at Selected Continuous Monitors (µg/m^3)

Site Name	Type	Measured Annual Average Nitrogen Dioxide Concentration (µg/m^3)							
		2015	2016	2017	2018	2019	2020	2021	2022
T55 Heathrow Green Gates	Airport	32.2	34.4	32	30	31	19	20	26
HIL1 London Harmond sworth	Roadside	28	27	27	25	28	18	16	19
HIL London Hillingdon	Urban back-ground	51.9	51.2	53	46	45	28	25	28
SIPS Hillingdon Sipson	Urban back-ground	33.7	35.2	34	30	30	19	19	24
HRL London Harlington	Airport	32	34	32	30	31	20	20	24
LHRBR Heathrow Bath Road	Roadside	-	-	-	-	-	44.5	34	36
LHR2 Heathrow LHR2	Airport	44.2	47	48	43	42	25	25	30
HI3 Hillingdon 3 Oxford Avenue	Urban centre	34.5	41.9	35	35	33	22	25	29
HIL5 Hillingdon Hayes	Roadside	46.2	45.9	47	43	41	31	34	34
HS2 Hounslow 2 Cranford	Urban back-ground	30.2	30.8	30	26	27.2	25	-	-
HS7 Hounslow Hatton Cross	Back-ground	29.7	31.6	33	28	27.3	17	18.2	20
BAA_OAKS Heathrow	Urban back-ground	27.6	31.3	25.8	27.8	26.3	16.8	18.1	20

Site Name	Type	Measured Annual Average Nitrogen Dioxide Concentration (µg/m^3)							
		2015	2016	2017	2018	2019	2020	2021	2022
Oaks Road									
SLH3 Slough Colnbrook Pippins	Suburban	28.6	29	25	22	26.1	N/A	N/A	N/A
SLH8 Slough Lakeside 2	Industrial	29.2	32.4	26	26	27.6	N/A	N/A	N/A
Air Quality Objective		40							

Exceedances of the air quality objective are shown in **bold**.

Years when the monitoring site was not operational are shown with dashes.

Years for which data are not available are shown as N/A.

Table 5.2 1-hour Mean Nitrogen Dioxide Concentrations, Number of Hours > 200 µg/m^3

Site Name	Type	Measured Number of 1-hour Nitrogen Dioxide Means Greater Than 200 µg/m^3							
		2015	2016	2017	2018	2019	2020	2021	2022
T55 Heathrow Green Gates	Airport	0	0	0	0	0	0	0	0
HIL1 London Harmondsworth	Roadside	1	0	0	0	0	0	0	0
HIL London Hillingdon	Urban back-ground	1	2	0	0	0	0	0	0
SIPS Hillingdon Sipson	Urban back-ground	3	0	0	0	0	0	0	0
HRL London Harlington	Airport	0	0	0	0	0	0	0	0
LHRBR Heathrow Bath Road	Roadside	-	-	-	-	-	0	0	0

Site Name	Type	Measured Number of 1-hour Nitrogen Dioxide Means Greater Than 200 µg/m^3							
		2015	2016	2017	2018	2019	2020	2021	2022
LHR2 Heathrow LHR2	Airport	2	8	12	0	1	0	0	0
HI3 Hillingdon 3 Oxford Avenue	Urban centre	2	0	1	0	0	0	0	0
HIL5 Hillingdon Hayes	Roadside	2	1	12	0	0	0	0	0
HS2 Hounslow 2 Cranford	Urban back-ground	0	2	10	0	0	0	-	-
HS7 Hounslow Hatton Cross	Back-ground	0	0	0	0	0	0	0	2
BAA_OAKS Heathrow Oaks Road	Urban back-ground	0	0	0	0	0 (110)	0	0	0
SLH3 Slough Colnbrook Pippins	Suburban	0 (111)	0	0	0	0	N/A	N/A	N/A
SLH8 Slough Lakeside 2	Industrial	0 (109)	0	0	0	0	N/A	N/A	N/A
Air Quality Objective		18 (200)							

Where the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

Years when the monitoring site was not operational are shown with dashes.

Years for which data are not available are shown as N/A.

Table 5.3 Annual Average PM_{10} Concentrations at Selected Continuous Monitors ($\mu g/m^3$)

Site Name	Type	Measured Annual Average PM_{10} Concentration ($\mu g/m^3$)							
		2015	2016	2017	2018	2019	2020	2021	2022
T55 Heathrow Green Gates	Airport	14	14	13	14	13	12	12	13
HIL1 London Harmondsworth	Roadside	22	23	23	18	15	16	14	16
HIL4 London Harmondsworth Osiris	Urban back-ground	17	16	14	16	14	15	13	14
HIL London Hillingdon	Urban back-ground	-	-	-	-	-	-	-	14
HRL London Harlington	Airport	16	15	15	15	15	14	13	13
LHRBR Heathrow Bath Road	Roadside	-	-	-	-	-	14	14	16
LHR2 London Heathrow	Airport	13	15	15	14	13	11	11	13
HI3 Hillingdon 3 - Oxford Avenue	Urban centre	21	20	19	24	24	23	20	22
HIL5 Hillingdon Hayes	Roadside	28	28	27	30	28	25	26	30
HS2 Hounslow	Urban back-ground	17	17	18	15	18	18	-	-

Site Name	Type	Measured Annual Average PM_{10} Concentration ($\mu g/m^3$)							
		2015	2016	2017	2018	2019	2020	2021	2022
2 Cranford									
HS7 Hounslow Hatton Cross	Back-ground	18	19	18	21	20	18	19	23
BAA_OAKS Oaks Road	Urban back-ground	13.5	14.5	14.2	15.3	14.9	12.7	12.3	13
SLH3 Slough Colnbrook Pippins	Suburban	16.7	18	16	18	16.4	N/A	N/A	N/A
SLH6 Slough Colnbrook Pippins Osiris	Suburban	20	15	16	10.3	15	N/A	N/A	N/A
SLH5 Slough Colnbrook Lakeside Tan House Farm	Industrial	18.7	14	14	14.4	12	N/A	N/A	N/A
SLH8 Slough Lakeside 2	Industrial	13.9	15	14	13.7	15.0	N/A	N/A	N/A
SLH9 Slough Lakeside 2 Osiris	Industrial	11	11	17	14.8	14	N/A	N/A	N/A
Air quality objective		40							

Years when the monitoring site was not operational are shown with dashes.

Years for which data are not available are shown as N/A.

Table 5.4 24-hour Mean PM_{10} Concentrations, Number of Days > 50 µg/m^3

Site Name	Type	Measured Number of 24-hour PM10 Means Greater Than 50 µg/m3							
		2015	2016	2017	2018	2019	2020	2021	2022
T55 Heathrow Green Gates	Airport	3	3	3	1	4	0	0	2
HIL1 London Harmonds worth	Roadside	4	4	6	1	0	0	0	
HIL4 London Harmonds worth Osiris	Urban back-ground	17	0	1	0	1	0	0	0
HIL London Hillingdon	Urban back-ground	-	-	-	-	-	-	-	0
HRL London Harlington	Airport	3	5	3	1	6	1	0	2
LHRBR Heathrow Bath Road	Roadside						0	0	4
LHR2 Heathrow LHR2	Airport	3	3	7	1	6	0	0	2
HI3 Hillingdon 3 Oxford Avenue	Urban centre	3	11	4	2	4	6	0	1
HIL5 Hillingdon Hayes	Roadside	14	32	26	22	25	16	25	23
HS2 Hounslow 2 Cranford	Urban back-ground	4	8	5	0 (23)	7	0	-	-
HS7 Hounslow Hatton Cross	Back-ground	4	6	3	2	7	4	2	2

Site Name	Type	Measured Number of 24-hour PM10 Means Greater Than 50 µg/m3							
		2015	2016	2017	2018	2019	2020	2021	2022
BAA_OAKS Heathrow Oaks Road	Urban back-ground	5	2	4	1	4 (30)	0	0	2
SLH3 Slough Colnbrook Pippins	Suburban	3	5	5	1	3	N/A	N/A	N/A
SLH6 Slough Colnbrook Pippins Osiris	Suburban	3	1	5	0	0 (24)	N/A	N/A	N/A
SLH5 Slough Colnbrook Lakeside Tan House Farm	Industrial	0	1	1	1	0 (19)	N/A	N/A	N/A
SLH8 Slough Lakeside 2	Industrial	1	1	3	1	3	N/A	N/A	N/A
SLH9 Slough Lakeside 2 Osiris	Industrial	1	3	9	1	0 (24)	N/A	N/A	N/A
Air quality objective		50 (35)							

Where the period of valid data is less than 85%, the 90th percentile of 24-hour means is provided in brackets.

Years when the monitoring site was not operational are shown with dashes.

Years for which data are not available are shown as N/A.

Table 5.5 Annual Average $PM_{2.5}$ Concentrations at Selected Continuous Monitors ($\mu g/m^3$)

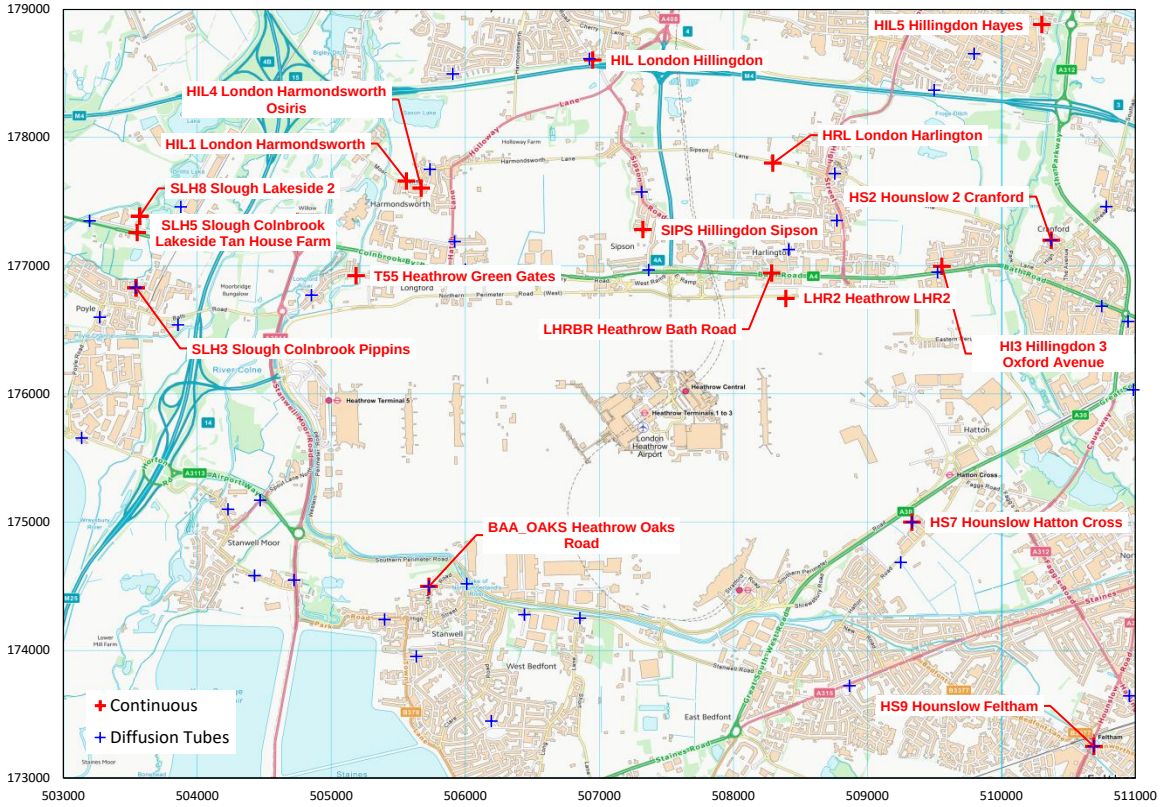
Site Name	Type	Measured Annual Average PM2.5 Concentration (µg/m3)							
		2015	2016	2017	2018	2019	2020	2021	2022
T55 Heathrow Green Gates	Airport	9	10	8	7	8	7	7	8
HIL4 London Harmondsworth Osiris	Urban background	7	6	7	6	5	7	6	7
HIL London Hillingdon	Urban background	-	-	-	-	-	-	-	7
HRL London Harlington	Airport	10	10	9	9	10	8	8	8
LHRBR Heathrow Bath Road	Roadside	-	-	-	-	-	11	8	9
LHR2 Heathrow LHR2	Airport	9	10	9	8	9	7	7	8
BAA_OAKS Heathrow Oaks Road	Urban background	9.6	10.0	9.2	9.1	9.5	7.2	7.5	8
SLH6 Slough Colnbrook Pippins Osiris	Suburban	7	6	7	6.1	7	N/A	N/A	N/A
SLH5 Slough Colnbrook Lakeside Tan House Farm	Industrial	7.1	6	6	6.2	6	N/A	N/A	N/A
SLH9 Slough Lakeside 2 Osiris	Industrial	5.2	5	7	6.9	7	N/A	N/A	N/A
Air Quality Objective		20 / 10a							

[a] The 20 $\mu g/m^3$ $PM_{2.5}$ objective is not in Regulations and there is no requirement for local authorities to meet it. 10 $\mu g/m^3$ is the GLA target for annual mean $PM_{2.5}$; again, there is no requirement for local authorities to meet this

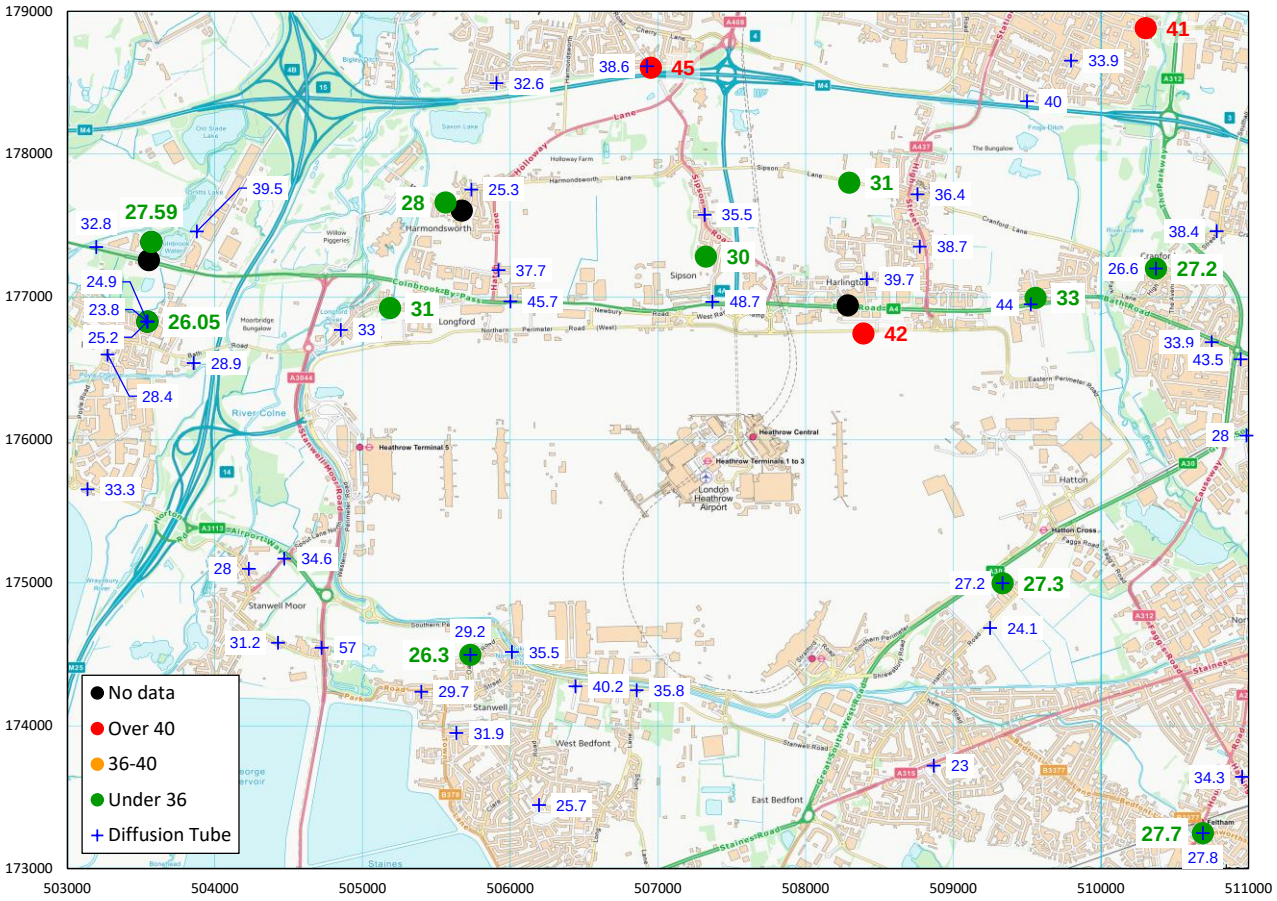
Years when the monitoring site was not operational are shown with dashes.

Years for which data are not available are shown as N/A.

Graphic 5.1 Locations of Continuous Monitors and Diffusion Tubes near Heathrow Airport



Graphic 5.2 Annual Average Nitrogen Dioxide Concentrations at Continuous Monitors and Diffusion Tube Monitors, 2019 (µg/m3)



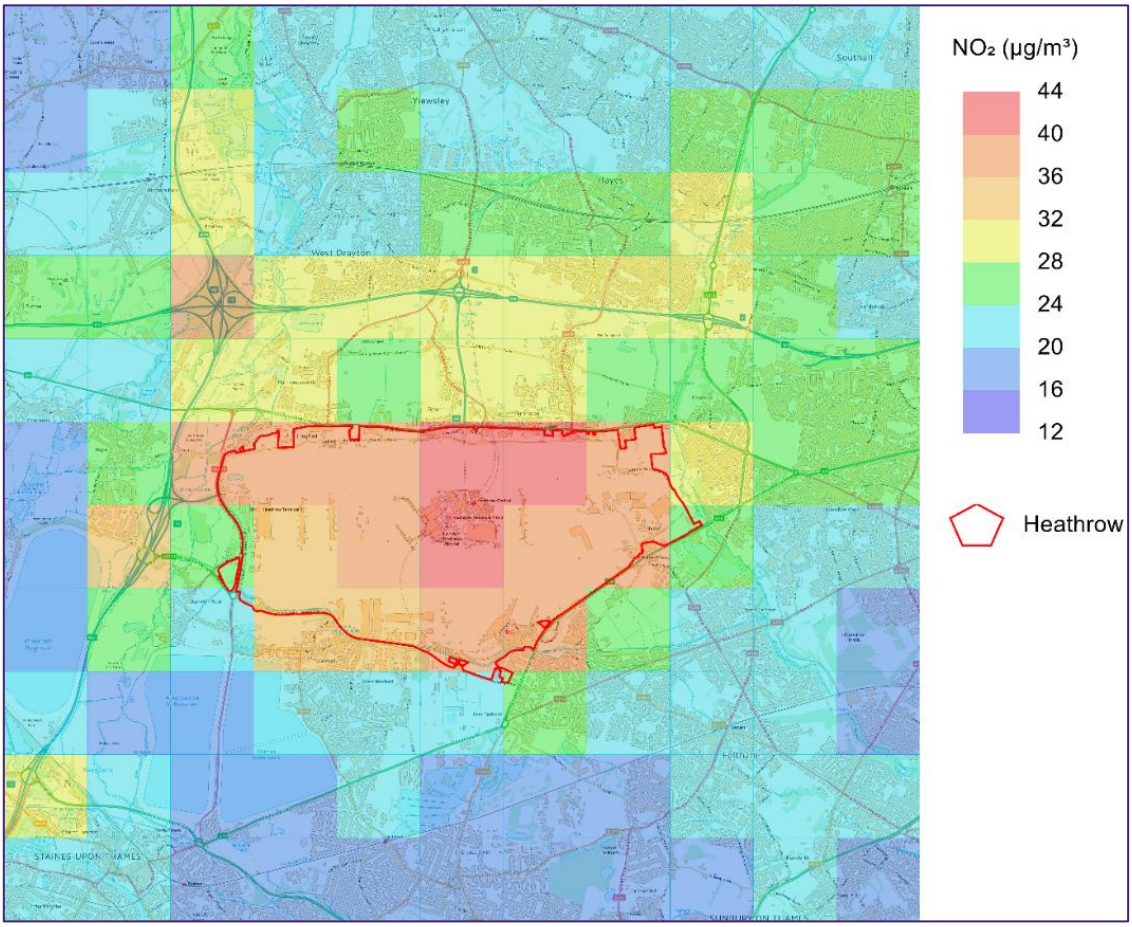
5.3.14 The Defra background maps[41] provide estimates of concentrations of pollutants at background locations (away from major roads or point sources) on a 1 km grid square basis, derived from national-scale modelling. Maps are available for years 2018–2030. The maps were produced in 2019–2020 using 2018 baseline data, and therefore do not include any allowance for changes in activity due to the Covid pandemic; they are therefore expected to be pessimistic and over-estimate background concentrations of air pollutants to the extent that activity is affected by the pandemic in any year. Estimated background concentrations in the area around Heathrow Airport have been determined for 2019 (for comparison with monitoring data) and the opening year for the scheme. The background concentrations are shown in **Graphic 5.2** Beyond the airfield, the background concentrations are all below the objectives, with relatively high concentrations associated with the M4 and M25 motorways. The objectives do not apply on the airfield because there is no relevant exposure.

[41] Defra (2023)., 'Local Air Quality Management (LAQM) Support Website' Available at: https://laqm.defra.gov.uk/ (Accessed: 3 July 2023)

Table 5.6 Estimated Annual Mean Background Pollutant Concentrations in the baseline and opening year

	Nitrogen Dioxide (µg/m^3)	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
Baseline year	17.3 - 41.0	14.8 - 18.3	10.2 - 12.7
Opening year	13.1 - 37.1	13.6 - 16.9	9.3 - 11.5
Objectives	40	40	20

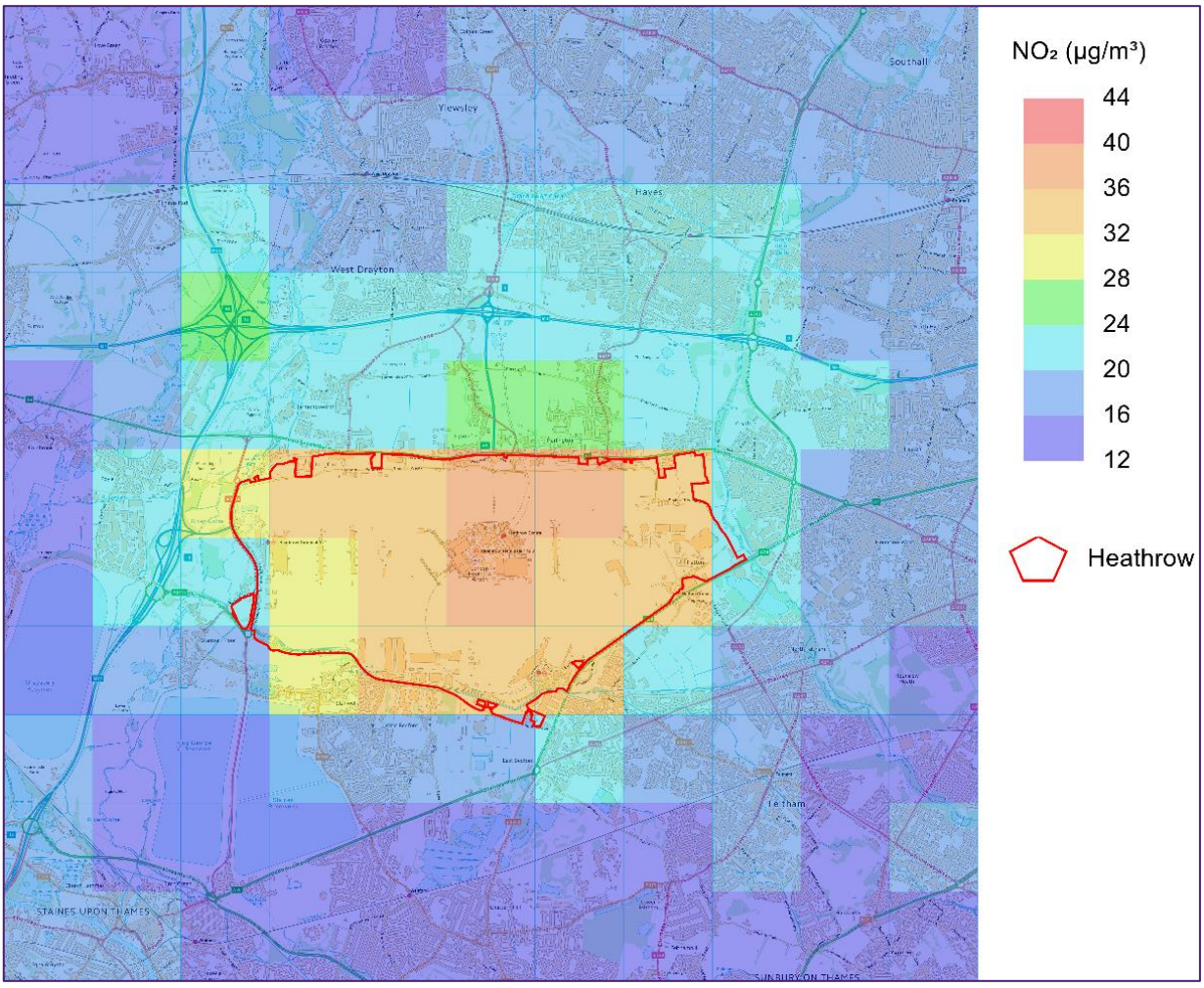
Graphic 5.3 Estimated Annual Mean Background Nitrogen Dioxide Concentrations in 2019 (µg/m^3)



Future baseline

5.3.15 Background concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ are expected to decline in the future, in response to a variety of actions internationally, nationally and locally. This can be seen in the Defra background maps, which show a reduction of around 4 µg/m^3 in annual mean nitrogen dioxide between baseline year (2019) and opening year (2028), and smaller but consistent reductions in PM_{10} and $PM_{2.5}$ (**Table 5.6**). Background nitrogen dioxide concentrations in 2028 are illustrated in **Graphic 5.4**, which may be compared with **Graphic 5.3**.

Graphic 5.4 Estimated Annual Mean Background Nitrogen Dioxide Concentrations in the opening year (µg/m^3)



5.3.16 The trend of reducing concentrations can also be seen in the monitoring data (**Table 5.1**) which shows that annual mean nitrogen dioxide concentrations declined at all locations between 2015 and 2019, with an average linear regression trend of about 1 µg/m^3 per year. For PM_{10} and $PM_{2.5}$, the trend was less strong and more variable between sites, but still shows a reduction on average.

5.3.17 The future air quality baseline will be quantified as part of the assessment, as the "do minimum" scenario against which the impacts of the Proposed Development will be assessed.

Summary of baseline conditions

5.3.18 Air quality around the Airport generally meets the air quality objectives (**paragraph 5.4.2**), except close to major roads where there are some exceedances. At receptors in Longford, which are expected to experience the greatest adverse impacts from the Proposed Development, the available information indicates that baseline concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ are within the air quality objectives, and baseline concentrations of $PM_{2.5}$ meet the Mayor of London's target.

5.4 Scope of the assessment

Policy Context and Assessment Criteria

5.4.1 A summary of all relevant national and local policy and guidance will be provided in the Environmental Statement. Any local policies or guidance (such as Supplementary Planning Guidance (SPG)) relating to air quality will also be considered.

5.4.2 Air pollutants will be assessed against the air quality objectives, limit values and targets set out in regulations and policy. The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002).

5.4.3 The UK-wide objectives for nitrogen dioxide and PM_{10} were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter. Measurements across the UK have shown[42]that the 1-hour nitrogen dioxide objective is unlikely to be exceeded at roadside locations where the annual mean concentration is below 60 µg/m^3. Therefore, 1-hour nitrogen dioxide concentrations will only be considered if the annual mean concentration is above this level. Measurements have also shown[43] that the 24-hour mean PM_{10} objective could be exceeded at roadside locations where the annual mean concentration is above 32 µg/m^3. The predicted annual mean PM_{10} concentrations are thus used as a proxy to determine the likelihood of an exceedance of the 24-hour mean PM_{10} objective. Where predicted annual mean concentrations are below 32 µg/m^3 it is unlikely that the 24-hour mean objective will be exceeded.

5.4.4 For $PM_{2.5}$, the objective set by Defra for local authorities is to work toward reducing concentrations without setting any specific numerical value. In the absence of a numerical objective, it is convention to assess local air quality impacts against the limit value (see **Paragraph 5.4.10**), originally set at 25 µg/m^3 and currently set at 20 µg/m^3.

5.4.5 Defra has also recently set two new targets, and two new interim targets, for $PM_{2.5}$ concentrations in England. One set of targets focuses on absolute concentrations. The long-term target is to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by the end of 2040, with the interim target being a value of 12 µg/m^3 by the start of 2028[44]. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. By the end

[42]Defra (2023) *Local Air Quality Management (LAQM) Support Website*.
[43] Ibid.
[44] Meaning that it will be assessed using measurements from 2027. The 2040 target will be assessed using measurements from 2040. National targets are assessed against concentrations expressed to the nearest whole number, for example a concentration of 10.4 µg/m^3 would not exceed the 10 µg/m^3 target.

of 2040, overall population exposure to $PM_{2.5}$ should be reduced by 35% compared with 2018 levels, with the interim target being a reduction of 22% by the start of 2028.

5.4.6 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. Furthermore, all four new targets provide metrics against which central Government can assess its own progress. While local authorities have an important role delivering the required improvements, these are expected to relate to controlling emissions and not to directly assessing $PM_{2.5}$ concentrations against the targets.

5.4.7 In March 2023, the Department for Levelling Up, Housing and Communities[45] explained that the new $PM_{2.5}$ targets will:

"need to be integrated into the planning system, and in setting out planning guidance for local authorities and businesses, we will consider the specific characteristics of $PM_{2.5}$. The guidance will be forthcoming in due course, until then we expect local authorities to continue to assess local air quality impacts in accordance with existing guidance."

5.4.8 For the time being, therefore, no assessment is required, and indeed no robust assessment is possible, in relation to the new $PM_{2.5}$ targets and they are not considered further.

5.4.9 As part of the London Environment Strategy, the GLA has set a target to achieve an annual mean $PM_{2.5}$ concentration of 10 µg/m^3 by 2030. This target was derived from an air quality guideline set by WHO in 2005. In 2021, WHO updated its guidelines, but the London Environment Strategy considers the 2005 guideline of 10 µg/m^3. While there is no explicit requirement to assess against the GLA target of 10 µg/m^3, it will nevertheless be included within the assessment.

5.4.10 EU Directive 2008/50/EC sets limit values for nitrogen dioxide, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010). The limit values for nitrogen dioxide and PM10 are the same numerical concentrations as the UK objectives, but achievement of the limit values is a national obligation rather than a local one and concentrations are reported to the nearest whole number. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit.

5.4.11 The relevant air quality criteria for the assessment are summarised in **Table 5.7**.

[45] DLUHC (2023)., 'Planning Newsletter'. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1158088/Chief_Planners_Newsletter_May_2023.pdf Accessed: 3 July 2023

Table 5.7 Air Quality Criteria for Nitrogen Dioxide, PM10 and PM2.5

Pollutant	Time Period	Value
Nitrogen Dioxide	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year [a]
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3 [b]
$PM_{2.5}$	Annual Mean	20 µg/m^3 [c]
	Annual Mean	10 µg/m^3 by 2030
	Annual Mean	12 µg/m^3 before 2028 [d]
	Annual Mean	10 µg/m^3 by 2040 [d]

a. A proxy value of 60 µg/m^3 as an annual mean will be used to assess the likelihood of the 1-hour mean NO_2 objective being exceeded (see paragraph 5.5.9).
b. A proxy value of 32 µg/m^3 as an annual mean will be used to assess the likelihood of the 24-hour mean PM_{10} objective being exceeded (see paragraph 5.5.9).
c. There is no numerical $PM_{2.5}$ objective for local authorities. Convention is to assess against the UK limit value which is currently 20 µg/m^3.
d. Expressed to the nearest whole number. Defra has explained in the 2023 Environmental Improvement Plan[46] that local authority responsibilities in relation to these targets relate to controlling emissions and not determining concentrations.

5.4.12 In addition to the criteria set out above, the World Health Organization (WHO) publishes air quality guidelines which aim to provide targets for governments to work towards, in order to reduce the impacts of poor air quality on citizens. The latest WHO guideline values for outdoor air quality were published in 2021[47] and included reductions in target values for nitrogen dioxide, PM_{10} and $PM_{2.5}$ to levels below the UK government's air quality objectives. Whilst it is recognised that lower concentrations of all pollutants are desirable, the WHO guidelines are not part of English or London policy, there is no explicit requirement to assess against them and it is not best practice to do so. They will therefore not be assessed against.

Pollutants

5.4.13 The following pollutants will be assessed for their impacts on human health: nitrogen dioxide (NO_2), PM_{10} and $PM_{2.5}$.

5.4.14 Ammonia (NH_3) is emitted by road traffic and may have adverse impacts on human health and nature conservation sites. However, the Proposed Development will not affect road traffic and therefore ammonia has been scoped **out** of the assessment.

[46] Defra (2023)., 'Environmental Improvement Plan 2023'. Available at: www.gov.uk/government/publications/environmental-improvement-plan (Accessed: 3 July 2023)
[47] World Health Organization (2021)., 'WHO global air quality guidelines'. *Particulate matter ($PM_{2.5}$ and PM_{10}), ozone, nitrogen dioxide, sulphur dioxide and carbon monoxide.* Available at: https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf?sequence=1&isAllowed=y (Accessed: 3 July 2023)

5.4.15 Oxides of nitrogen (NOx, the sum of NO_2 and nitric oxide (NO)), nitrogen deposition and acid deposition will be assessed for their impacts on designated nature conservation sites.

5.4.16 Aircraft, and other airport-related combustion sources, also give rise to emissions of Ultra Fine Particles (UFP), i.e. particles which are below 100 nanometres in diameter. However, there is currently no robust manner by which to quantify UFP emissions from aircraft or other combustion sources, and it is not possible to quantify the impacts of these sources using traditional modelling approaches. In addition, there are no guidelines or standards against which to compare UFP concentrations. The issue of UFP was recently discussed at the Stansted Airport appeal (Ref. APP/C1570/W/20/3256619), where the Planning Inspector concluded that: *"there was no reliable methodology for assessing the quality of UFPs that would result from the development"*, but that *"the Health Impact Assessment considered epidemiological research which includes the existing health effects of $PM_{2.5}$ and thus UFPs as a subset; this concluded there would be no measurable adverse health outcomes per annum"*. For this reason, predictions of UFP concentrations will not be included in the assessment.

Study area

5.4.17 Previous assessments of air quality at Heathrow Airport have shown that concentrations of air pollutants from the airfield (including aircraft) decrease to background levels within a short distance of the airfield boundary. Impacts from airport-related road traffic may be experienced at greater distances from the airport boundary alongside major roads, but these are unchanged by the Proposed Development.

5.4.18 The study area for the assessment will therefore be the 9 km × 9 km region between 503000–512000 easting and 172000–181000 northing. This is the study area used in previous assessments of air quality around Heathrow, including the assessment carried out for the previous easterly alternation application.

5.4.19 The impacts of the Proposed Development are expected to be greatest in Longford, immediately north-west of the western end of the northern runway, with beneficial impacts expected in Stanwell to the south-west of the airport. These will therefore be the key parts of the study area that will be the focus of attention. Other parts of the study area are expected to experience smaller impacts (both adverse and beneficial).

Potential receptors

5.4.20 Concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ will be predicted at a number of locations close to the Proposed Development. Receptors will be chosen to reflect locations where the Air Quality Objectives apply. These are locations where members of the public are likely to be regularly present and are likely to be exposed over the averaging period of the objective. The GLA explains where these objectives will apply in London[48]. The annual mean objectives are considered to apply at the façades of residential properties, schools, hospitals and care homes etc., the gardens of residential properties, school playgrounds and the grounds of hospitals and care homes. The 24-

[48] GLA (2019). 'London Local Air Quality Management Technical Guidance 2019'. Available at: https://www.london.gov.uk/sites/default/files/llaqm_technical_guidance_2019.pdf (Accessed: 3 July 2023)

hour mean objective for PM_{10} is considered to apply at the same locations as the annual mean objective, as well as at hotels. The 1-hour mean objective for nitrogen dioxide applies wherever members of the public might regularly spend 1 hour or more outside, including outdoor eating locations and pavements of busy shopping streets.

5.4.21 The objectives do not apply at places of work where members of the public do not have regular access. They therefore do not apply on the airfield.

5.4.22 Specific receptors will be identified at representative locations throughout the study area, with the greatest emphasis on the key parts of the study area, namely Longford and Stanwell. A range of other receptors elsewhere around the Airport will be modelled in order to quantify impacts across the study area.

5.4.23 Selected receptors may be representative of air quality conditions at a number of properties, and some properties are modelled by the inclusion of more than one receptor. Consideration will be given to how many sensitive locations each modelled receptor represents when considering the impacts of the Proposed Development and the overall significance of effects.

5.4.24 Concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$ will also be predicted at each continuous air quality monitor and diffusion tube location in the study area.

5.4.25 NOx concentrations and levels of nitrogen and acid deposition will be predicted at statutory designated nature conservation sites in the study area.

Likely significant effects

Construction phase

5.4.26 There will be requirements to undertake airfield engineering works to facilitate the increase in departures and the reduction in arrivals on Runway 09L, combined with a decrease in departures and an increase in the number of arrivals on Runway 09R. The works are summarised in the early sections of this Scoping Report.

5.4.27 During these airfield engineering works, exhaust emissions from road vehicles accessing the Proposed Development area and plant operating on site will occur. Emissions of dust and particulate matter may occur during earthmoving and stockpiling activities, or when vehicles drive over unmade haul roads.

Operational phase

5.4.28 From an air quality perspective, the key characteristics of the Proposed Development are:

- During easterly operations:
  - An increase in the annual number of departures on Runway 09L (northern runway), matched by a decrease in the annual number of departures on Runway 09R (southern runway).
  - A decrease in the annual number of arrivals on Runway 09L, matched by an increase in the annual number of arrivals on Runway 09R.

- During westerly operations:
  - There will be no change from the current operations.

5.4.29 Note that Heathrow Airport operates in westerly mode for about 70% of the time and in easterly mode for about 30% of the time, depending on wind conditions.

5.4.30 As a result of the Proposed Development, there will be no change in the number of aircraft movements, no change to the aircraft fleet, and no change to landside road traffic or any sources of emissions other than aircraft.

5.4.31 The principal effect of the Proposed Development from an air quality perspective derives from changes in the spatial distribution of pollutant emissions from aircraft during the various phases of the landing and take-off cycle, and the consequent effect this has on the airborne concentrations of the key pollutants in residential areas around the airport perimeter. There would be no material change in the overall total emissions (although there would be small changes in total emissions due to the different balance of aircraft taxiing routes).

5.4.32 Air quality emissions are potentially significant for their effect on human health. In addition, there is potential for these emissions to affect statutory designated nature conservation sites in close proximity to the airport.

5.4.33 Ecological receptors can be sensitive to deposition of pollutants, particularly nitrogen and sulphur compounds, which can affect the character of the habitat through eutrophication (nutrient enrichment) and acidification. Eutrophication derives from the deposition of nitrogen, whilst acidification is the result of nitrogen and sulphur compounds forming acid solutions which result in a loss of nutrients from the soil.

Effects scoped in

5.4.34 The potential likely significant air quality effects that will be taken forward for assessment in the Environmental Statement are summarised in **Table 5.8**.

Table 5.8 Likely significant air quality effects

Activity	Effect	Receptor
Operation	Air quality as a result of changes to aircraft ground movements: Concentrations of nitrogen dioxide, PM_{10} and $PM_{2.5}$	Locations of relevant human exposure within study area
Operation	Air quality as a result of changes to aircraft air movements: NOx concentrations and nitrogen and acid deposition rates	Designated nature conservation sites within the study area

Effects scoped out

5.4.35 The following effects are scoped out from further assessment in the Environmental Statement.

Construction phase – emissions of dust and exhaust gases

5.4.36 Unlike other airfield developments that have taken place at the Airport, such as Terminal 5 and the Terminal 2 replacement programme, the Proposed Development does not include for the provision of extensive ground-based engineering works. The Proposed Development is principally an operational change with limited physical development works, as described in the preceding sections, and on this basis it is not considered that construction related air quality effects would be significant and they are therefore scoped out.

5.4.37 With regards to dust, construction activity is expected to be at least 350 m from the nearest sensitive receptor. Under GLA guidance[49], impacts above this distance can be screened out from detailed assessment. Construction activity will take place in accordance with GLA requirements and guidance, which will serve to ensure that impacts are minimised. The impacts of the construction of the Proposed Development on dust soiling and concentrations of PM_{10} during the construction period have therefore been scoped out.

5.4.38 In terms of exhaust emissions from off-site construction traffic during construction, any additional vehicle movements on the local road network are expected to be a very small percentage of total movements. Any increase in exhaust emissions from on-site plant and machinery would be very small and insignificant above the baseline, and the distance between on-site emission sources and receptors is also sufficient for effects to be not significant. Again, the GLA guidance states that impacts from construction plant and equipment on air pollutants are normally not significant, and controls under GLA requirements and guidance will ensure that this is the case. These construction phase emissions are short-term and temporary in nature and would not affect the ability of the local authorities to meet the air quality objectives; air quality effects with regard these activities have therefore been scoped out.

Operational phase — Odour

5.4.39 Heathrow receives a limited number of odour complaints each year. It is possible that a significant shift in the spatial distribution of aircraft emissions towards the western end of Runway 09L during easterly operation and less towards the western end of Runway 09R, may increase incidences of odours reported from Longford and reduce the same in Stanwell. However, odour from aircraft is mainly associated with low-thrust activities, which are focused on the central apron areas of the airfield and are therefore largely unaffected by the Proposed Development. The impacts of the Proposed Development on odour have therefore been scoped out.

[49] GLA (2014) 'The Control Of Dust And Emissions During Construction And Demolition: Supplementary Planning Guidance'. Available at: https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Dust%20and%20Emissions%20SPG%208%20July%202014_0.pdf?token=zV3ZKTpP (Accessed: 3 July 2023)

Air Quality Neutral and Air Quality Positive

5.4.40 The Proposed Development does not incorporate any new buildings and will not generate any building-related emissions from combustion plant. It will also not result in any increase in road traffic. Air Quality Neutral is therefore not relevant.

5.4.41 The Environmental Statement will be accompanied by an Air Quality Positive Statement to demonstrate how the Proposed Development would lead to positive outcomes for air quality. Since two of the four themes for Air Quality Positive ("building emissions" and "[surface] transport emissions") are not relevant to the Proposed Development, the Statement would focus on the "better design and reducing exposure" and "innovation and futureproofing" themes. However, since the Applicant is already actively working to manage and improve air quality locally, and since the Proposed Development is motivated by environmental impacts other than air quality, scope for additional Air Quality Positive actions is limited.

5.5 Assessment methodology

Scenarios To Be Assessed

5.5.1 The following scenarios will be assessed:

- Three historical scenarios, for the years 2017, 2018 and 2019. These will be used for model verification;
- Opening year With Development scenario, assuming full alternation in easterly operations is implemented; and
- Opening year Without Development scenario, assuming the current mode of easterly operation is retained.

5.5.2 In early 2020, activity in the UK was disrupted by the COVID-19 pandemic. As a result, concentrations of traffic-related air pollutants fell appreciably[50]. While the pandemic may cause long-lasting changes to travel activity patterns, it is reasonable to expect a return to more typical activity levels in the future. 2020 is thus likely to present as an atypically low pollution year for roadside pollutant concentrations, as is 2021. Concentrations in 2022 were generally lower than in 2019; there is still some uncertainty about the extent to which this represents a return to business as usual, or whether activity levels might continue to rebound in 2023 and subsequent years.

5.5.3 It is not currently possible to make robust predictions of the rate at which travel activity patterns will return to historically-normal levels; or the extent of any long-lasting changes to travel behaviour. The most robust approach to making future-year projections is thus to base these on measurements made during pre-pandemic years, and to use activity forecasts made before the impact of the pandemic was understood. For these reasons,

[50] Defra Air Quality Expert Group (2020)., 'Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK- Rapid evidence review', Available at: https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2007010844_Estimation_of_Changes_in_Air_Pollution_During_COVID-19_outbreak_in_the_UK.pdf (Accessed: 3 July 2023)

the historical scenarios will be based on 2017–2019 rather than more recent years which are likely to be atypical.

5.5.4 The future year scenarios will be used to determine the impacts of the Proposed Development and provide the basis for the assessment of significance.

5.5.5 It is best practice for air quality assessments that use dispersion modelling to either verify and, if necessary, adjust the model using monitoring data, or to use at least three years of meteorological data and use the year which gives the highest concentration at each receptor. Using several years of meteorological data ensures that normal year-to-year variation is captured, and the assessment is worst-case. For aircraft sources, there is a particular issue in that the direction in which aircraft land and take off is strongly related to the weather: they normally land and take off into the wind. This means that the location of emissions, as well as their dispersion, depends on the weather. For this reason, it is proposed to use at least three years of meteorological data for the baseline modelling.

Overview of emissions assessment

5.5.6 The operational assessment will involve the use of dispersion modelling techniques to quantify ground-level concentrations of air pollutants in the opening year. The assessment will compare the opening year With Development scenario against the opening year Without Development scenario, to determine the impacts arising from the Proposed Development. The assessment will also compare both scenarios against the air quality objectives. As ambient air quality is expected to continue improving into the future and owing to the progressive reduction in emissions from aircraft, it is anticipated that the opening year will represent a worst-case assessment of air quality impacts.

5.5.7 For each scenario, the calculation will involve the quantification of annual emissions for all key sources based on forecast activity data (with output providing the magnitude, spatial distribution and temporal profile of emissions) and subsequent dispersion modelling to calculate concentrations at key receptors. In addition, a forecast will be made of the 'background' contribution in the assessment year (i.e. the contribution from all sources not modelled explicitly).

5.5.8 The air quality assessment will include the pollutants nitrogen dioxide (NO_2), PM_{10}, $PM_{2.5}$, NOx and nitrogen and acid deposition. Concentrations of nitrogen dioxide will be calculated from concentrations of NOx using the Defra NOx to NO_2 calculator[51].

5.5.9 The air quality assessment will lead directly to forecasts of annual mean concentrations of the identified pollutants. Shorter-period concentrations, which feature in some air quality objectives, will be compared against proxy values which have been shown to correlate to the risk of exceedances of the short-term objectives[52]. Specifically, the 1-hour mean nitrogen dioxide objective will be assessed by comparing the annual mean nitrogen dioxide concentration against a proxy value of 60 µg/m^3, and the 24-hour mean

[51] Defra (2020)., 'NOx to NO_2 Calculator. https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/' Available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/nox-to-no2-calculator/ (Accessed: 3 July 2023)

[52] Defra (2022)., 'Local Air Quality Management: Technical Guidance (TG22)' Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf (Accessed: 3 July 2023)

PM_{10} objective will be assessed by comparing the annual mean PM_{10} concentration against a proxy value of 32 µg/m^3.

5.5.10 These steps enable total annual-mean concentrations of the key pollutants to be calculated for both the opening year With and Without Development scenarios, and hence the change in concentration due to the Proposed Development at the key receptors. The effect of the change will be assessed at the key receptors, taking into account both the magnitude of the concentration change and the total predicted concentration (see **paragraph 5.5.23**).

5.5.11 The methodologies used to carry out these calculations are summarised below.

Emission source groups

5.5.12 Emission sources that will be explicitly modelled include:

- Aircraft main engines in the landing and take-off cycle on the ground and up to an altitude of 914 m (3000 feet);
- Aircraft brake and tyre wear;
- Aircraft Auxiliary Power Units (APU);
- Aircraft handling emissions generated by ground support equipment;
- Airside traffic operating within the airport perimeter fence;
- Infrastructure or stationary sources such as power generating plant and heating / cooling plant for airport buildings;
- Road vehicles on airport landside roads and on the major road network around the airport; and
- Other sources that contribute to the background concentrations.

5.5.13 Note that, apart from aircraft main engines and aircraft brake and tyre wear, all these sources will be identical between the With and Without Development scenarios.

Aircraft modelling

5.5.14 Aircraft emissions will be calculated in line with the recommendations of the International Civil Aviation Organization's (ICAO) Airport Air Quality Manual[53] and current best practice for airport inventories and modelling studies. For each element of the methodology, the ICAO Manual suggests three approaches, called simple, advanced and sophisticated. All three approaches are largely focused on historic inventories rather than future scenarios, and the sophisticated approaches in particular often require extremely detailed data which is not available for future operations. Therefore, the assessment will be largely based on the advanced approaches, but for some parts of the calculation, the simple or sophisticated approaches may be used where they are more

[53] ICAO (2020). 'Airport Air Quality Manual. Doc 9889', *Second Edition*, Available at: https://www.icao.int/publications/documents/9889_cons_en.pdf (Accessed: 3 July 2023)

appropriate. The approach taken for each part of the calculation will be determined primarily by the availability of suitable data.

5.5.15 Emission factors for aircraft engines will be taken from the latest version of the ICAO databank of engine certification data[54]. The ICAO databank includes manufacturers' measurements of non-volatile particulate matter (nvPM) for the most recent engines, and this will be used in preference to the First Order Approximation (FOA) method for calculating nvPM emissions set out in the ICAO Airport Air Quality Manual for those engines for which data are available. Volatile PM emissions will be calculated using the FOA method.

5.5.16 The historical scenarios will be based on actual aircraft and passenger data. The future scenarios will use forecast aircraft and passenger data provided by specialist aviation forecasters.

Road traffic modelling

5.5.17 Road vehicle emissions will be unchanged by the Proposed Development, but they contribute to the overall air pollutant concentrations and therefore affect the significance of any changes due to the Proposed Development. They therefore need to be included in the model. Road vehicle emissions will be calculated using the latest version of the Emission Factors Toolkit (EFT) issued by Defra[55]. The EFT includes emission factors and road vehicle fleet projections. For PM_{10} and $PM_{2.5}$, the emissions quantification includes not only exhaust emissions but also fugitive emissions from brake and tyre wear and from re-suspended road dust.

5.5.18 The Applicant maintains a model of road traffic flows on the road network around the airport, called the Heathrow Highway Assignment Surface Access Model (HHASAM). This is considered the best quality of road traffic data available, notwithstanding that the baseline predates the Covid-19 pandemic. A new forecast of road traffic in the opening year will be prepared to support the assessment.

5.5.19 HHASAM includes both airport-related and non-airport traffic. The forecasts include traffic growth from non-airport activity, and therefore incorporate the cumulative impact of other plans, projects and developments.

Atmospheric dispersion modelling

5.5.20 Dispersion modelling will be carried out using ADMS-Airport and ADMS-Roads. ADMS-Airport has a specific module for handling the near-field dispersion and plume rise of exhaust plumes from moving jet aircraft. This model has been used for numerous airport air quality assessments following the Project for the Sustainable Development of Heathrow[56]. ADMS-Airport also includes the same representation of road traffic induced turbulence as in ADMS-Urban and ADMS-Roads, which have been shown to give a realistic assessment of near-road concentrations.

[54] European Union Aviation Safety Agency (2023), 'ICAO Aircraft Engine Emissions Databank', Available at: https://www.easa.europa.eu/en/domains/environment/icao-aircraft-engine-emissions-databank (Accessed: 2 July 2023)
[55] Defra (2021) 'Emissions Factors Toolkit. Version 11.0.' https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/ (Accessed: 3 July 2023)
[56] DfT (2006) Project for the Sustainable Development of Heathrow. Report of the Airport Air Quality Technical Panels.

Meteorology

5.5.21 Meteorological conditions, especially wind speed and direction, affect both the dispersion of air pollutants and the use of the runways, since aircraft normally take off and land into the wind. It is therefore necessary to ensure that when modelling aircraft emissions, the emissions calculation is aligned with the meteorological conditions used in the dispersion modelling.

5.5.22 Modelling for the future assessment year will be carried out using hourly meteorological data from the Heathrow Airport meteorological station for each of 2017, 2018 and 2019. At each receptor, the modelled concentration from the year giving the highest concentration will be considered in the assessment, to ensure that a worst-case assessment is carried out.

Evaluation of Significance

5.5.23 The approach developed jointly by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM)[57] [58] will be used in describing air quality impacts. The approach will identify impacts at individual receptors based on the percentage change in concentrations relative to the relevant air quality objective, rounded to the nearest whole number, and the absolute concentration relative to the objective.

5.5.24 **Table 5.9** sets out the method for determining the impact descriptor for annual mean concentrations at individual receptors, adapted from the table presented in the EPUK/IAQM guidance document. For the assessment criterion the term Air Quality Assessment Level or AQAL has been adopted, as it covers all pollutants, i.e. those with and without formal standards. Typically, the AQAL will be the air quality objective value or the GLA target. Note that impacts may be adverse or beneficial, depending on whether the change in concentration is positive or negative.

Table 5.9 Air Quality Impact Descriptors for Individual Receptors for All Pollutants [a]

Long-Term Average Concentration At Receptor In Assessment Year [b]	Change in concentration relative to AQAL [c]				
	0%	1%	2-5%	6-10%	>10%
75% or less of AQAL	Negligible	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Negligible	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Negligible	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Negligible	Moderate	Substantial	Substantial	Substantial

a. Values are rounded to the nearest whole number.
b. This is the “Without Scheme” concentration where there is a decrease in pollutant concentration and the “With Scheme” concentration where there is an increase.
c. AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, GLA target or an Environment Agency ‘Environmental Assessment Level (EAL)’.

[57] The IAQM is the professional body for air quality practitioners in the UK.
[58] EPUK and IAQM (2017), ‘Land-Use Planning & Development Control: Planning For Air Quality. Version 1.2’, Available at: https://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf (Accessed: 20 June 2023)

5.5.25 There is no official guidance in the UK in relation to development control on how to assess the significance of air quality impacts. The approach developed jointly by EPUK and IAQM will therefore be used. The potential significance of effects will be determined by professional judgement, based on the frequency, duration and magnitude of predicted impacts and their relationship to appropriate air quality objectives.

6. Noise and vibration

6.1 Introduction

6.1.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The potential effects in noise and vibration terms would be the increase in the number of aircraft departing on the northern runway (09L) and arriving on the southern runway (09R) during easterly operations and the decrease in the number of aircraft departing on the southern runway (09R) and landing on the northern runway (09L) during the same mode of operations. The number of aircraft movements will be unchanged by the Proposed Development. Therefore, sources other than aircraft, including landside road vehicles, airside vehicles and ground support equipment, and stationary combustion plant, will be unchanged.

6.1.2 The assessment of noise and vibration considers any likely significant effects arising from the construction and operation of the Proposed Development on:

1. People, primarily where they live ('residential receptors') on an individual dwelling basis and on a community basis, including any shared community open areas.
2. Community facilities such as schools, hospitals, places of worship, and commercial properties such as offices and hotels, collectively described as “non-residential receptors”.

6.1.3 This section of the Scoping Report describes the assessment methodology to be used in the EIA, an overview of the study area for the baseline conditions, sources of data used for scoping, the potential likely significant effects of the Proposed Development arising from noise and vibration, effects not requiring assessment and how these likely significant effects will be assessed for the purposes of an EIA. The direct effects of noise on the health of people and communities are set out in this section and include effects on residential and community facilities. The direct effects of noise are those whereby the noise exposure, or change thereof, could potentially influence the health or quality of life of the population.

6.1.4 Indirect effects of noise are those whereby the noise exposure, or change thereof, could potentially influence the determinants of health (e.g., employment or engaging in physical activity or availability of recreational spaces). Indirect effects of noise on people and communities are set out in **Sections 7 (People and Communities)** and **Section 8 (Health)**.

6.1.5 This section sets out how the effects of construction noise will be assessed using BS5228-1. This section also assesses the effects of aircraft noise effects on health, including AMI (Acute Myocardial Infarction), hypertension (stroke & dementia), annoyance, and sleep disturbance. This section presents the TAG (Transport Analysis Guidance) analyses for the effect of noise change associated with the Proposed Development on these health effects, alongside sensitivity analyses examining estimates for effects using the World Health Organization (WHO) annoyance and sleep disturbance relationships. Sensitivity analyses for TAG using the annoyance relationships from CAP2250 accounting for respite will also be undertaken.

6.1.6 Analyses will also assess effects on mental health, wellbeing and quality of life, as well as effects on children's learning. The direct effect of noise on a range of community facilities including hospitals, schools and amenity areas affected by the Proposed Development will also be assessed.

6.1.7 **Section 7 (People and Communities)** will assess the indirect effect of noise on community facilities, that is facilities that can potentially indirectly influence health, for example, by providing social support via activities or employment or impacting socioeconomic factors.

6.1.8 **Section 8 (Health)** will assess the indirect effect of noise on determinants of health, as well as identifying vulnerable populations for consideration in the assessment of both the indirect and direct effects of noise. Following IEMA guidance this will include health-related activities, the social environment, the economic environment, biophysical environment (noting that for noise and vibration this would only address indirect and not direct effects), and institutional and built environment.

6.1.9 The assessment of likely significant effects from noise and vibration on ecological, heritage and tranquillity receptors are presented in **Section 9: Historic environment, Section 11: Biodiversity**, **Section 10: Landscape and visual** and **Section 8: Health** of this Scoping Report and have been informed by the technical detail presented in this section.

6.1.10 In this assessment 'sound' is used to describe the acoustic conditions that people experience as a part of their everyday lives. The assessment considers how those conditions may change through time and how sound levels and the acoustic character of community areas is likely to be modified by the Proposed Development. Noise is taken as unwanted sound and hence negative effects are termed noise effects rather than sound effects. In line with the *Control of Pollution Act 1974 (COPA 1974)*[59] and the *Environmental Protection Act 1990 (EPA 1990)*[60], use of the term 'noise' in this assessment includes 'vibration' unless otherwise stated or vibration is considered in isolation.

6.1.11 In this assessment there are a number of different noise or vibration effect characteristics:

- Negative from an increase in noise levels or positive from a decrease in noise levels caused by the Proposed Development.
- Permanent from operation of the Proposed Development.
- Direct, resulting from the operation of the Proposed Development.

6.1.12 The significance criteria proposed to assess likely significant effects from noise or vibration are summarised in **Section 6.6**. The section should be read in conjunction with the description of the Proposed Development presented in **Section 2**.

[59] *Control of Pollution Act 1974, England, Scotland, Wales*
[60] *Environmental Protection Act 1990, England, Scotland, Wales*

6.2 Relevant legislation, policy, technical guidance

6.2.1 A summary of the relevant documents is given in **Table 6.1**.

Table 6.1 Planning policy issues relevant to noise and vibration

Policy reference	Overview	Considered in section
National planning policies		
National Planning Policy Framework (2021)	Describes how noise should be considered in planning policies and decisions to ensure that new development is appropriate.	All sections
The Airports National Policy Statement: new runway capacity and infrastructure at airports in the south east of England[61]	The Airports National Policy Statement (ANPS) forms part of the overall framework of national policy. It sets out the Government's expectations with regard to aircraft noise management and assessments. The ANPS also sets out the Government's expectations in relation to noise mitigation at an expanded Heathrow Airport. This includes the provision of respite for local communities through runway alternation.	All sections
National Noise Policy		
Noise Policy Statement for England (NPSE), Defra, March 2010	The NPSE sets out the long-term vision of Government noise policy: to "*Promote good health and a good quality of life through the effective* management *of noise within the context of Government policy on sustainable development.*"[62] The aims of the policy are "*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:* *Avoid significant negative impacts on health and quality of life* *Mitigate and minimise negative impacts on health and quality of life* *Where possible, contribute to the improvement of health and quality of life."*[63] To identify *"significant negative" and "negative"* impact in line with the three aims of NPSE, the policy statement notes that "*there are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organization. They are:* 4. NOEL – No Observed Effect Level: This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise	All sections

[61] DfT, (2018)., Airports National Policy Statement' https://www.gov.uk/government/publications/airports-national-policy-statement (Accessed: 3 July 2023)
[62] Defra, (2010)., 'Noise policy statement for England' (NPSE) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/pb13750-noise-policy.pdf (Accessed: 3 July 2023)., p.8
[63] Ibid.

Policy reference	Overview	Considered in section
	5. LOAEL – Lowest Observed Adverse Effect Level: This is the level above which negative effects on health and quality of life can be detected. *Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed negative effect level. SOAEL – Significant Observed Adverse Effect Level. This is the level above which significant negative effects on health and quality of life occur.*"[64] The policy states "*The second aim of the NPSE refers to the situation where the impact lies somewhere between LOAEL and SOAEL. It requires that all reasonable steps should be taken to mitigate and minimise negative effects on health and quality of life while also taking into account the guiding principles of sustainable development (paragraph 1.8). This does not mean that such negative effects cannot occur.*"[65] The NPSE notes that "*it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant negative impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.*"[66]	
Aviation Policy		
Flightpath to the Future: a strategic framework for the aviation sector (2022)	'Flightpath to the future' is a Department for Transport policy document that sets out a strategic framework for the aviation industry over the next 10 years, building on responses to the Aviation 2050 consultation. It supports the use of noise management practices to reduce and mitigate aircraft noise.	All sections
Overarching Aviation Noise Policy (2023)	The Overarching Aviation Noise Policy is a policy paper which sets out the Government's overarching noise policy statement as reproduced below. *"The government's overall policy on aviation noise is to balance the economic and consumer benefits of aviation against their social and health implications in line with the International Civil Aviation Organisation's Balanced Approach to Aircraft Noise Management. This should take into account the local and national context of both passenger and freight operations, and recognise the additional health impacts of night flights."*	All sections

[64] Ibid.
[65] Ibid.
[66] Ibid.

Policy reference	Overview	Considered in section
	In relation to aviation noise, the policy statement recognises that: "*The impact of aviation noise must be mitigated as much as is practicable and realistic to do so, limiting, and where possible reducing, the total adverse impacts on health and quality of life from aviation noise.*" This policy takes in consideration the Aviation 2050 Green Paper, the 2020 consultation on night flight restrictions, and the Air Navigation Guidance 2017. The policy statement acknowledges the need to *"limit, and where possible reduce"* as the appropriate wording for the policy. However, the policy statement elaborates that "*An overall reduction in total adverse effects is desirable, but in the context of sustainable growth an increase in total adverse effects may be offset by an increase in economic and consumer benefits.*" It continues to state that: *"In circumstances where there is an increase in total adverse effects, "limit" would mean to mitigate and minimise adverse effects, in line with the Noise Policy Statement for England."*	
Aviation Policy Framework (APF), DfT, March 2013[67]	The APF, as amended by the *Consultation Response on UK Airspace Policy,* DfT, October 2017[68] set the framework for noise management at UK Airports. The policy refers to the ending of the Cranford agreement so as to distribute noise more fairly around the airport.	All sections
Aviation 2050: The Future of UK Aviation (2018)	Aviation 2050 is a draft strategy document prepared by the Government for consultation in 2018. The document focuses on providing Government thinking on the interaction between its noise policy and its wider airspace modernisation policies and proposals. It encourages aircraft noise to be considered in the context of sustainable development whilst describing a range of policy changes that the Government is considering such as a national noise indicator, and noise insulation eligibility criteria.	All sections
Consultation Response on UK Airspace Policy, DfT, October 2017	This Consultation Response confirms values for daytime and night-time LOAEL for aircraft noise consistent with overarching noise policy as set out in the Noise Policy Statement for England (NPSE).	All sections
Open consultation: Night-time noise abatement objectives	The Government has commenced a 2023 consultation on night flying restrictions at designated airports (Heathrow, Gatwick and Stansted). The consultation seeks to set changes to night-time	All sections

[67] DfT, (2013)., 'Aviation policy framework' Available at: https://www.gov.uk/government/publications/aviation-policy-framework (Accessed: 3 July 2023)

[68] Department for Transport, (2017)., 'Consultation Response on UK Airspace Policy: A framework for balanced decisions on the design and use of airspace' Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918784/consultation-response-on-uk-airspace-policy-web.pdf (Accessed: 3 July 2023)

Policy reference	Overview	Considered in section
for the designated airports (March 2023)	noise objectives from October 2025. The Government's proposed night-time noise abatement objective is: *"Whilst supporting sustainable growth and recognising the importance to the UK of maintaining freight connectivity, to limit and where possible reduce, the negative effects of aviation noise at night on health and quality of life."*	

Legislation

6.2.2 The following legislation is relevant to the assessment of effects arising from Aircraft Noise and Vibration are:

- Transport Act 2000;
- Environmental Protection Act 1990;
- Civil Aviation Act (1982, 2006, 2012);
- The Environmental Noise (England) Regulations 2006; and
- EU Regulation 598/2014 and the Airports (Noise-related Operating Restrictions) (England and Wales) Regulations 2018 (as amended by the Aviation Noise (Amendment) (EU Exit) Regulations 2019).

6.2.3 The Secretary of State for Transport has various statutory powers to regulate and control noise and vibration from aircraft at certain designated aerodromes, including Heathrow Airport. These powers are contained in section 78 of the Civil Aviation Act 1982.

6.2.4 In particular, the Secretary of State can impose duties on aircraft operators to comply with specified noise abatement requirements for the purpose of limiting or mitigating the effect of noise and vibration from aircraft. Implementation of this power is facilitated through penalty schemes established and maintained by the manager of the airport under s78A of the Civil Aviation Act 1982, requiring a penalty to be paid by an operator of an aircraft which does not comply with a noise abatement requirement imposed by the Secretary State. An airport manager must make payments equal to the amount of any penalties received under such a scheme for purposes which benefit local residents.

6.2.5 The has established and administers a penalty scheme under s78A for aircraft departing Heathrow Airport. The Government sets the noise limits on departing aircraft and noise is measured at fixed monitors around the airport. Departures are continually monitored and if an aircraft creates more noise than is allowed, the airline is fined. Money received has been used for projects in the local community including environmental and noise mitigation projects for local schools and community groups.

6.2.6 The Secretary of State also has the power to prohibit or restrict the number of aircraft able to take off or land at Heathrow during certain periods where that is considered appropriate for the purpose of avoiding, limiting or mitigating the effect of noise and vibration (s78(3) Civil Aviation Act 1982). The Applicant as the airport operator has the

duty of securing compliance with any such prohibitions or restrictions. Night flight restrictions have been established at Heathrow Airport under this statutory power. This night flying regime is based on setting a limit on the overall number of night flights, placing restrictions on the noisiest aircraft types and setting noise quotas which cap the amount of noise energy which can be emitted at night. In addition to the mandatory restrictions imposed by the Government, the Applicant also employs a range of voluntary measures to limit the effects of night flights.

6.2.7 The Secretary of State also has power to give the Applicant such directions as considered appropriate for the purpose of avoiding, limiting or mitigating the effect of noise and vibration from the taking off or landing of aircraft at the aerodrome, and can require the Applicant to measure noise in the vicinity of the aerodrome and report on measurements taken (section 78(6) and (8) of the Civil Aviation Act 1982).

6.2.8 Statutory provisions also enable the provision of noise insulation schemes. Specifically, under section 79 of the Civil Aviation Act 1982, the Secretary of State has power to make a scheme requiring the operator of a designated aerodrome (including Heathrow Airport) to make grants towards the cost of insulating buildings from noise and vibration. The Applicant has noise insulation schemes in place, comprising the Community Buildings Noise Insulation Scheme, the Home Relocation Assistance Scheme, the Quieter Homes Scheme, the Night Noise Insulation Scheme and the Residential Day Noise Insulation Scheme. In practice, however, these schemes are provided on a voluntary basis.

6.2.9 There are also obligations as to noise-related operating restrictions at airports under EU Regulation 598/2014 and the Airports (Noise-related Operating Restrictions) (England and Wales) Regulations 2018. The Secretary of State for Transport is designated as the relevant 'competent authority' for these purposes. This legislation ensures that ICAO's 'Balanced Approach' is adopted in respect of aircraft noise management and sets out the process to be followed in the implementation of an operating restriction which might restrict access to the airport. It requires that noise related operating restrictions cannot be introduced as a first resort – a range of other mitigation measures must be considered first. If a noise related operating restriction is considered necessary, it can only be imposed after the 'cost effectiveness' of the restriction has been considered.

6.2.10 Under the Environmental Noise (England) Regulations 2006 (as amended), major airports with more than 50,000 movements per year are required to produce strategic noise maps and associated noise action plans every 5 years. Heathrow's current Noise Action Plan for the period 2019 – 2023 and was approved and adopted by the SoS for Environment, Food and Rural Affairs (Defra) in February 2019. Heathrow is currently in the process of revising its Noise Action Plan which if approved will cover the period 2024 to 2028.

6.2.11 The following legislation is relevant to the assessment of effects arising from construction Noise and Vibration:

- Control of Pollution Act 1974; and
- Land Compensation Act (LCA) 1973.

Technical guidance

Table 6.2 Technical Guidance issues relevant to noise and vibration

Document	Overview	Considered in section
CAP 2250 Survey of Noise Attitudes 2014: Aircraft Noise and Annoyance, Further Analysis (2022)	Reports evidence of reduced annoyance response as a result of runway alternation and noise respite during westerly operations at Heathrow Airport.	All sections
CAP2091 CAA Policy on Minimum Standards for Noise Modelling (2021)	Describes the minimum acceptable approach to developing noise models for different airports taking into consideration the number of people exposure to aircraft noise above daytime and night-time LOAELs.	All sections
CAP 1506: Survey of Noise Attitudes 2014: Aircraft Noise and Annoyance, Second Edition (2021)	Presents research carried out by the CAA on behalf of Government to obtain and update the evidence base relating to noise and annoyance from aircraft noise in England.	All sections
CAP 2161 Survey of Noise Attitudes 2014: Aircraft Noise and Sleep Disturbance (2021)	Presents further analysis of the research carried out and reported as part of CAP 1506. The further analysis focusses on the effect of aircraft noise on sleep disturbance.	All sections
CAP1616 Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements (CAP1616), CAA, December 2017	Describes the process and methods for assessing the environmental impacts of airspace changes. The document provides helpful context in the use of various noise assessment methods and whether these should be used for decision making, or to support community engagement activities in the context of airspace change proposals. Further information on the supporting environmental requirements for noise assessments made under the CAP1616 process are set out in CAP1616a 'CAP1616a Airspace Design: Environmental Requirements Technical Annex (2020)'. As explained above in section 2.6, the separate regulatory process for approving changes to the design of airspace includes detailed requirements for environmental assessment of proposed airspace changes.	All sections
Independent Commission on Civil Aviation Noise (ICCAN) A Review of Aviation Noise Metrics (ANM) and Measurement (2020)	Reviews aviation noise metrics and measurement practices.	All sections

Document	Overview	Considered in section
WHO Environmental Noise Guidelines for the European Region (2018)	Presents the recommendations of the World Health Organisation and associated dose-response relationships for long-term noise exposure from transportation sources, including aircraft.	All sections
Air Navigation Guidance 2017 (ANG), DfT, October 2017	Provides guidance to the CAA on its environmental objectives when carrying out its air navigation functions and on airspace and noise management[69]. The CAA is required to take the ANG into account when exercising its air navigation functions, including when deciding on whether to approve airspace change proposals under the separate regulatory process for airspace change. The ANG sets out guidance on assessing the noise implications of proposed airspace changes including on the methodology and noise metrics to be used when undertaking assessments in that context.	All sections
Planning Practice Guidance (Noise) (2019)	The Planning Practice Guidance (PPG-Noise) provides further detail about how the effects of noise can be described in terms of perception and outcomes. It aligns this to increasing effect levels as defined in the NPSE. In addition, the PPG(Noise) adds a fourth term and corresponding effect level: UAEL – 'Unacceptable Adverse Effect Level' PPG-Noise also provides guidance in terms of what factors may influence whether noise could become a concern, and how adverse effects of noise can be mitigated.	All sections
Professional Practice Guidance: Planning and Noise (ProPG) (2017)	Guidance for professionals practicing in the field of environmental noise assessment. Provides guidance for addressing impacts on new residential developments from airborne noise. Offers additional guidance in relation to residential land use planning around airports.	All sections
Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Noise Impact Assessment (2014)	The IEMA Guidelines provide key principles and methodological guidance on environmental noise impact assessment and how to effectively integrate noise impacts into the consenting process of all types of development.	All sections

[69] DfT, (2017b), 'Air Navigation Guidance', Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918507/air-navigation-guidance-2017.pdf (Accessed: 3 July 2023)

Document	Overview	Considered in section
BS 5228-1:2009+A1: 2014 Code of practice for noise and vibration control on construction and open sites: Part one – Noise (BS 5228-1) (2014)	Part one of BS 5228 relates to the potential effects of existing noise sensitive human receptors as a result of noise arising from construction activities. This includes construction vehicles travelling on haulage routes to and from the construction site.	All sections
BS 5228-2 Code of Practice for Noise and Vibration Control on Open Construction Sites – Part 2: Vibration	Part 2 of BS 5228 relates to the potential effects of existing noise sensitive human receptors as a result of vibration arising from construction activities. This includes construction vehicles travelling on haulage routes to and from the construction site.	All sections
BS 8233:2014 Guidance on sound insulation and noise reduction for buildings	BS8233 Provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use.	All sections
World Health Organisation Night Noise Guidelines for Europe (2009)	Provides guidance on the potential health effects arising from long-term night-time noise exposure and the effects this can have on sleep.	All sections
BS 7445-1:2003. Description and measurement of environmental noise. Guide to quantities and procedures	BS 7445-1 defines the basic quantities to be used for the description of noise in community environments and describes basic procedures for the determination of these quantities.	All sections
World Health Organization (WHO) Guidelines for Community Noise (1999)	The WHO Guidelines for Community Noise are partially superseded by the WHO Environmental Noise Guidelines for the European Region, 2018 (see following entry). However, the guideline values for internal noise and maximum noise levels from regular noise events remain relevant in the 1999 WHO guidelines.	All sections
BS 7385-2:1993 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground-borne vibration	BS 7385-2 gives guidance on the assessment of the possibility of vibration-induced damage in buildings due to a variety of sources, and identifies the factors which influence the vibration response of buildings.	All sections
ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors - Part 2: Calculation of the absorption of sound by the atmosphere.	ISO 9613 defines a method for predicting the propagation of noise outdoors. It accounts for distance attenuation, air absorption, topography, ground cover and screening and reflections caused by buildings and other features.	All sections

Document	Overview	Considered in section
Building Bulletin 93: Acoustic design of schools: performance standards. (BB93)	BB93 provides guidance on the minimum acoustic performance standards for schools. It includes setting out upper limits for internal noise levels for rooms of specific uses.	All sections
BS 7385-2:1993 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground-borne vibration	BS 7385-2 gives guidance on the assessment of the possibility of vibration-induced damage in buildings due to a variety of sources, and identifies the factors which influence the vibration response of buildings.	All sections

6.3 Baseline conditions

6.3.1 This section describes the existing baseline conditions around Heathrow Airport.

6.3.2 The ongoing process of baseline data collection that will support the noise assessments is described in section “Data gathering Methodology”, below.

6.3.3 The existing operation of Heathrow is described in **Section 2**. As a result of its operation, airport related development and access to major transport modes, existing receptors in the area are currently exposed to varying levels of noise from the following sources:

- Aircraft ‘air’ noise – noise from aircraft on the runway and in the landing and take-off cycle;
- Aircraft ‘ground’ noise – noise from aircraft operating on the ground i.e. whilst at stand, holding or traversing the airfield; and
- Surface access transport noise (road and rail).

Study Areas

6.3.4 This section sets out the study areas for the noise and vibration assessment for the construction and operation phases of the Proposed Development. As the design and consultation processes progress and the details of the Proposed Development are refined, the study areas may evolve to accommodate changes that are needed. If the study areas change, the scope of the data collection will also be reviewed and updated if appropriate.

Operational noise

6.3.5 The operational noise assessment study areas for the different sources of noise are defined as:

- Aircraft ‘air noise’ (from Heathrow Operations): Based on consideration of today’s operation and the current understanding of the future operation, the study area will be defined by the extent of the daytime and night-time LOAELs. This results in an

area of approximately 40 nautical miles west-east and approximately 20 nautical miles north-south, centred on the airport.

- Aircraft 'ground noise': This is scoped in up to 1km from any aircraft ground operations or where ground noise, when combined with air noise, will result in exposure above the daytime and night-time LOAELs.

Data gathering methodology

6.3.6 Baseline information will be obtained in two rounds of data gathering exercises. Each round of baseline data collection will gather data both in terms of baseline noise levels (using a range of metrics) and acoustic character.

6.3.7 Baseline data will be gathered across the study area for aircraft noise and aircraft ground and field noise. Contextual baseline data will also be gathered including data presenting noise exposure levels from road and railway noise sources around the airport (refer to **para 6.3.4 - 6.3.5**).

Noise

6.3.8 The information used to define the baseline will be obtained in two rounds of data gathering exercises. Round one will gather information from a variety of existing sources across the aircraft noise study area. This information will be reviewed to identify locations requiring further assessment because there is a lack of existing information, or where more detailed information is required. These areas will be subject to a further round of baseline data gathering where increasing baseline detail will be collected in Round 2.

6.3.9 Round one baseline data collection comprises publicly available measurement and prediction data such as:

- Noise monitoring data from Heathrow;
- Aircraft noise contours and exposure data published by Heathrow; and
- The results of noise mapping published by the Department for the Environment, Food and Rural Affairs.

6.3.10 The data sources used for Round one baseline collection are set out in **Table 6.3**.

Table 6.3 Round one baseline data sources

Origin	Title(s)	Dates	Content and metrics
Heathrow Modelling (Environmental Research and Consultancy Department (ERCD), CAA)	Summer and Noise Action Plan and Noise Action Plan Contours for Heathrow	From 2006, latest 2021	The most recently published report, ERCD Report 2201[70] presents noise exposure contours and noise exposure statistics for the 'annual average' and 'average summers day' situation in 2021. The 'average summers day' situation is presented for the $L_{Aeq,\ 16hr}$ and $L_{Aeq,8hr}$ metrics, with the 'annual average' situation presented for the L_{day}, $L_{evening}$, L_{night}, L_{den} and $L_{Aeq,6.5h}$ metrics.
Community monitoring (Heathrow)[71]	Heathrow Fixed and Mobile Noise Monitoring data	2007 onwards	L_{Aeq}, SEL, L_{Amax}, L_{A90}, L_{A10}
Community monitoring (Heathrow)[72]	Heathrow WebTrak	2008 onwards	Instantaneous Sound Pressure Level, historic data for previous 12 months

6.3.11 For Round two baseline, any major sources of sound, not already covered by the data collected in Round 1, will be modelled, where practicable. This will focus on 'air noise' and 'ground noise' and will include forecast baseline conditions in the absence of the Proposed Development. Combined with the Round one Baseline, these data obtained from noise modelling will form the Round 2 Baseline.

Aircraft noise

6.3.12 Heathrow is designated a major airport for the purposes of *the Environmental Noise (*England) Regulations (as amended)[73].

6.3.13 The most recent published noise exposure data available for Heathrow is for 2021 and is published in 'ERCD Report 2022: Heathrow 2021 Summer and Noise Action Plan Contours, CAA (September 2021)[74]. However, as indicated in **Table 2.12**, aircraft operations in 2021 at Heathrow were significantly affected by Covid-19 pandemic. **Table 6.4** therefore presents a summary of noise exposure statistics for Heathrow over the

[70] CAA, (2022), 'Heathrow Airport 2021 Summer and Noise Action Plan Contours', Available at: https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/local-community/noise/reports-and-statistics/reports/noise-action-plan-contours/LHR_2021_Summer_and_NAP_Contours.pdf (Accessed: 15 May 2023)

[71] Reports available from: Community Noise Reports https://www.heathrow.com/noise/reports-and-statistics/reports/community-noise-reports (accessed 15 May 2018)

[72] Tracking available at: Track flights on maps https://www.heathrow.com/noise/what-you-can-do/track-flights-on-maps (accessed 15 May 2018)

[73] The Environmental Noise (England) Regulations 2006 (as amended)

[74] CAA, ERCD Report 2201: Heathrow Airport 2021 Summer Noise Contours and Noise Action Plan Contours, November 2017 (CAA, 2017b)

period 2017 to 2021. Total Aircraft Movements for each year are also presented for context. It should be noted that the future baseline will reflect what is likely to occur, taking into account the impact the Covid 19 pandemic may have had on any baseline information collected.

Table 6.4 Summer Day and Summer Night Noise Exposure Statistics for Heathrow Airport over the period 2018 to 2021

Year	Total Aircraft Movements	Summer Day 'standard' ($L_{Aeq,16hr}$) > 54dB			Summer Night 'actual' ($L_{Aeq,8hr}$) > 48dB		
		Area (km^2)	Population (thousands)	Households (thousands)	Area (km^2)	Population (thousands)	Households (thousands)
2018	477,604	158.5	501.8	204.6	106.6	417.5	174.2
2019	478,059	156.1	492.7	193.4	105.4	428.5	172.4
2020	204,730	50.1	119.5	41.5	26.7	96.1	33.3
2021	195,336	70.9	182.6	66.9	49.7	148.6	54.7

6.3.14 The noise metrics presented in **Table 6.4** for daytime summer standard and the night-time summer standard are 3 dB higher than the daytime and night-time LOAEL values of 51dB $L_{Aeq,\ 16hr}$ and 45dB $L_{Aeq,\ 8hr}$ respectively, as set out in the UK Air Navigation Guidance[75] and adopted by the CAA as part of the airspace change process[76]. The ERCD reports used to monitor changes in annual noise exposure at Heathrow do not currently report to these values. These higher values are used to the approximate onset of significant community annoyance rather than the point at which adverse effects begin, as defined by the LOAEL.

6.3.15 There are many operational factors which affect aircraft noise baseline conditions. These include: the proportion of westerly and easterly operations which is determined by the prevailing wind direction, along with the 'westerly preference' measure; runway alternation; the use and bias of scheduled operations on Heathrow's departure routes; the point at which aircraft join the final approach, and operating restrictions on night flights[77]. These operational parameters will not change as a result of the Proposed Development. The Proposed Development seeks only to introduce enabling

[75] Department for Transport, 2017, 'Air Navigation Guidance', Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918507/air-navigation-guidance-2017.pdf (Accessed: 2 July 2023)

[76] CAA, (2021)., 'Airspace Change: Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information', *CAP 1616,* Available at: https://publicapps.caa.co.uk/docs/33/CAA_Airspace%20Change%20Doc_Mar2021.pdf (Accessed 3 July 2023)

[77] Department for Transport, (2021), 'Night Flying Restrictions at Heathrow, Gatwick and Stansted', Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004311/night-flight-restrictions-at-heathrow-gatwick-and-stansted-decision-document.pdf (Accessed: 3 July 2023)

infrastructure to allow easterly alternation. All other operational measures will remain unchanged.

Aircraft ground noise

6.3.16 For areas in the immediate vicinity of the Airport, noise from the airfield and aircraft operating on the ground also contributes to the baseline noise environment. These receptors are typically located close to areas where aircraft ground movements take place, for example near to taxiways, runway hold and exit points, engine testing facilities and parking stands.

6.3.17 Ground noise is likely to be noticeable at the airport boundary and in surrounding areas of Sipson, Harmondsworth, Harlington Cranford, Hatton, East Bedfont, West Bedfont, Stanwell, Stanwell Moor and Longford.

6.3.18 Quantitative baseline data for ground noise will be gathered and generated as part of the Round 2 baseline methodology set out above and will thus inform the assessment to be made.

Future baseline

6.3.19 To facilitate assessment, future baseline conditions will be established for air and ground noise. A single future baseline year will be considered which will reflect opening year. This will assume that the airport has fully recovered from the impact of Covid-19 and is operating towards its permitted ATM cap of 480,000.

6.3.20 Without the proposed development, noise exposure is expected to reduce from the levels reported in **Table 6.4.** This is due to the continued modernisation, and improved noise emissions of aircraft operating at the Airport.

6.4 Consultation

6.4.1 The introduction of easterly alternation is discussed in Heathrow's draft Noise Action Plan 2024 – 2028 consultation[78]. This draft Noise Action Plan commits to progressing a planning application for the enabling infrastructure, with Action 4C of the draft plan committing to introduce easterly alternation by the end of 2028.

6.5 Scope of the assessment

Policy Context and Assessment Criteria

6.5.5 A summary of all relevant national and local policy and guidance will be provided in the Environmental Statement. Any local policies or guidance (such as Supplementary Planning Guidance (SPG)) relating to noise and vibration will be considered. Relevant aircraft noise assessment guidance will also be set out.

[78] Information about this consultation can be found here: https://www.heathrow.com/company/about-heathrow/consultation/heathrow-noise-action-plan-consultation. This consultation was launched on 5 June 2023 for a period of six weeks concluding on 17 July 2023.

Potential receptors

6.5.6 In line with policy and guidance, the main receptors that will be covered in the noise and vibration assessment are:

- People, primarily residential receptors living at dwellings; and
- Community facilities such as schools, hospitals, and places of worship collectively described as 'non- residential receptors', and 'quiet areas'[79]

6.5.7 The effects of noise on human health are covered in **Section 8: Health**

6.5.8 Noise and vibration may also result in effects on other receptors. These effects on non-human receptors are covered in:

- **Section 9:** Historic environment;
- **Section 10:** Landscape and visual; and
- **Section 11:** Biodiversity.

Potential likely Significant Effects

Scoped In Effects

Health and Quality of Life Effects from Construction Noise

6.5.9 The Proposed Development will require engineering works to facilitate the airfield operations required to implement full easterly alternation operations. The works are summarised in **Section 2** of this document.

6.5.10 During engineering works, construction noise will be generated from the plant and construction equipment operating on airfield. However, construction may also occur landside depending on the need and location of any noise barriers.

6.5.11 Construction noise has the potential to affect people, both on an individual basis and on a community basis, including any shared community open areas[80] [81]. Effects may also occur at community facilities such as schools, hospitals, and places of worship collectively described as 'non-residential receptors'.

[79] 'Quiet areas' comprise areas designated under Local Plans or Neighbourhood Development Plans as Local Green Spaces and areas identified as Quiet Areas through implementation of the Environmental Noise (England) Regulations 2006.
[80] Shared community open areas' are those that the national planning practice guidance identifies may partially offset a noise effect experienced by residents at their dwellings and are either a) relatively quiet nearby external amenity spaces for sole use by a limited group of residents as part of the amenity of their dwellings or b) a relatively quiet external publicly accessible amenity space (for example park to local green space) that is nearby.
[81] Department for Communities and Local Government*, National Planning Practice Guidance: Noise, 2014 (DCLG, 2014).*

Health and Quality of Life Effects arising from a redistribution of Aircraft Noise

6.5.12 During operation, the Proposed Development will result in a redistribution of noise from ground operations (ground noise) and from changes in the pattern of aircraft arrivals and departures during easterly operations. These changes are expected to result in:

- An increase in the annual number of departures on Runway 09L (northern runway), together with a decrease in the annual number of departures on Runway 09R (southern runway) and associated increases in aircraft noise exposure under 09L departure routes and around the 09L Runway end; and
- A decrease in the annual number of arrivals on Runway 09L, together with an increase in the annual number of arrivals on Runway 09R and associated decreases in aircraft noise exposure under 09R departure routes and around the 09R Runway end.

6.5.13 The Proposed Development will not change aircraft operations or aircraft noise during westerly operations.

6.5.14 The Proposed Development will not lead to a change in the number of aircraft movements, nor will it change landside road traffic or any sources of noise other than aircraft.

6.5.15 The principal operational effect therefore of the Proposed Development from a noise perspective relates to a redistribution of noise exposure from aircraft during the various phases of the landing and take-off cycle, and the consequential effect this has on noise-sensitive receptors.

6.5.16 Change in operational noise has the potential to effect people, both on an individual basis and on a community basis, including any shared community open areas[8283]. The following health outcomes and effects will be assessed in line with Government policy metrics and dose-response relationships:

- Annoyance;
- Acute Myocardial Infarction;
- Sleep Disturbance; and
- Hypertension – (stroke/dementia).

6.5.17 Effects may also occur at community facilities such as schools, hospitals, and places of worship collectively described as ‘non- residential receptors’.

[82] Shared community open areas’ are those that the national planning practice guidance identifies may partially offset a noise effect experienced by residents at their dwellings and are either a) relatively quiet nearby external amenity spaces for sole use by a limited group of residents as part of the amenity of their dwellings or b) a relatively quiet external publicly accessible amenity space (for example park to local green space) that is nearby.

[83] *Department for Communities and Local Government, National Planning Practice Guidance: Noise, 2014 (DCLG, 2014).*

Effects Scoped Out

6.5.18 The following effects are scoped out from further assessment in the Environmental Statement.

Hearing Loss

6.5.19 The evidence for environmental noise effects from sources such as aircraft suggests that there would be no effect of environmental noise exposure on hearing loss.[84,85]

6.5.20 Hearing loss is associated with long-term exposure to very high noise levels, such as occupational and industrial noise exposures higher than LA 75-85dB[86] or through exposure to an intense impulse sound, such as gunfire.

Health and Quality of Life Effects from Surface Access

6.5.21 As outlined above, the Proposed Development will not give rise to changes in landside vehicle access and movement (such as road and rail). Effects from landside road and rail sources are therefore scoped out.

Health and Quality of Life Effects from Construction Traffic

6.5.22 The Proposed Development does not require any extended periods of ground-based engineering works which have the potential to generate discernible volumes of construction traffic. As such, off-site construction traffic during construction of the Proposed Development along with any additional vehicle movements on the local road network are expected to be a very small percentage of total movements. Noise effects from construction traffic have therefore been scoped out.

Direct and Indirect Effects on Quiet Areas[87]

6.5.23 There are unlikely to be any formally designated Quiet Areas within the study area. This will be confirmed within the Environmental Statement.

6.6 Assessment methodology

Scenarios To Be Assessed

6.6.1 The following future assessment year scenarios will be assessed within the Environmental Statement:

[84] Sliwinska-Kowalska, M. & Zabrowski, K, WHO Environmental Noise Guidelines for the European Region: A systematic review on environmental noise and permanent hearing loss and tinnitus. International Journal of Environmental Research and Public Health, 14, 1139, 2017

[85] Basner, M. et al. Auditory and non-auditory effects of noise on health. Lancet, 383, 1325-32, 2014

[86] Op.Cit.

[87] 'Quiet areas' comprise areas designated under Local Plans or Neighbourhood Development Plans as Local Green Spaces and areas identified as Quiet Areas through implementation of the Environmental Noise (England) Regulations 2006.

- Opening year With Development scenario, assuming full alternation in easterly operations is implemented.
- Opening year Without Development scenario, assuming the current mode of easterly operation is retained.

6.6.2 The future year scenarios will be used to determine the impacts of the Proposed Development and provide the basis for the assessment of likely significant effects.

Overview of Construction Noise Assessment Methodology

6.6.3 This section sets out the methodologies that will be employed to forecast levels of noise and vibration as part of construction activities associated with the construction of the Proposed Development.

Input information

6.6.4 For all construction activity, the following information will be used to calculate construction noise.

- Outline construction methodologies including inventories of plant / equipment, their location and their percentage on-times. These will be used to determine activity noise levels for different construction activities with reference to source sound level data for plant and equipment.
- Locations and specification of specific construction activities.
- Construction working hours.

Prediction Methods

6.6.5 Noise from construction sites will be predicted using models according to the methods set out in BS5228-1[88].

Initial reporting in line with standards and guidance

6.6.6 For construction site noise, the BS5228-1 methodology will be used to predict external noise levels during construction at noise sensitive receptors within 1km of the airfield, based on reasonably foreseeable worst-case assumptions derived from the available construction information. At all identified noise sensitive receptors the daytime, evening and night time period noise levels for a worst case ($L_{Aeq,T}$) will be calculated at various points across the construction programme for comparison with impact criteria set out in BS5228-1.

6.6.7 Direct impacts will be assessed at residential noise sensitive receptors using the impact criteria defined using Method 2 (the 'ABC method') described in Annex E of BS5228-1 (refer to **Table 6.5**). Method 2 sets impact thresholds for construction noise depending on baseline ambient noise levels at the noise sensitive receptors.

[88] BSI, 2014

Table 6.5 Assessment Metrics for Construction Noise

Period	Impact Category		
	Category A	Category B	Category C
Daytime	65dB $L_{Aeq,12hr}$	70dB $L_{Aeq, 12hr}$	75dB $L_{Aeq, 12hr}$
Evening	55dB $L_{Aeq, 4hr}$	60dB $L_{Aeq, 4hr}$	65dB $L_{Aeq, 4hr}$
Night-time	45dB $L_{Aeq, 8hr}$	50dB $L_{Aeq, 8hr}$	55dB $L_{Aeq, 8hr}$

Definitions and Notes:

- **Daytime – Weekdays (0700-1900) and Saturdays (0700-1300).**
- **Evening – Weekdays (1900-2300), Saturdays (1300-2300), Sundays and Bank Holidays (0700-2300) Night-time – Weekdays, Weekends and Bank Holidays (2300-0700).**
- **Category A –threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.**
- **Category B –threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as Category A values.**
- **Category C –threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.**

Overview of Operational Noise Assessment Methodology

6.6.8 This section sets out the methodologies that will be employed to forecast levels of noise and vibration during the operational phase of the Proposed Development for the following sources:

- Aircraft ‘air’ noise; and
- Aircraft ‘ground’ noise.

6.6.9 For each source the following are set out:

- The standards and guidance for the prediction of noise relevant to the source;
- The input information, such as aircraft operating parameters, that will be used to forecast noise for that source;
- The prediction methods that will implement the relevant standards and guidance to predict noise from the source using the available input information; and
- The form of initial reporting in line with standards and guidance that will be fed into the assessment of significance which is defined in ‘methodology for identifying significant effects’.

Aircraft 'Air' Noise

Standards and guidance

6.6.10 The following standards and guidance are relevant to the prediction of air noise:

- The European Civil Aviation Conference report on Standard Method of Computing Noise Contours Around Civil Airports[89].
- AIR1845 Procedure for the Calculation of Airplane Noise in the Vicinity of Airports[90].
- CAP 2091 CAA Policy on Minimum Standards for Noise Modelling[91].
- Civil Aviation Authority's CAP1616a Airspace Change: Environmental Requirements Technical Annex[92].
- Air Navigation Guidance 2017[93].

Input information

6.6.11 Air noise will be calculated taking into account the current design and use of Heathrow's existing airspace arrangements for the two scenarios that are to be assessed along with other operational parameters. The parameters are set out below. Relevant and non-commercially sensitive information will be included within the Environmental Statement.

- 24hr "busy day" flight schedules for each assessment year;
- Forecast number of annual ATMs for each assessment year;
- Aircraft fleet mix for each assessment year;
- Aircraft type noise performance information;
- Airfield parameters – including runway length, location, arrival threshold locations and positions of start of take-off roll;
- Assignment of aircraft movements to routes, runways for each operational mode;

[89] European Civil Aviation Conference Doc 29 (4th Edition) Report on Standard Method of Computing Noise Contours around Civil Airports (4th edition, as adopted by DGCA/147 on 7 December 2016). Vol 1-3, 2016

[90] Society of Automotive Engineers, SAE-AIR1845 Procedure for the Calculation of Airplane Noise in the Vicinity of Airports, 1995

[91] CAA, (2021)., 'CAA Policy on Minimum Standards for Noise Modelling', Available at: https://publicapps.caa.co.uk/docs/33/CAA%20Policy%20on%20Minimum%20Standards%20for%20Noise%20Modelling%20(CAP2091).pdf (Accessed: 2 July 2023)

[92] CAA, (2020), 'Airspace Change: Environmental requirements technical annex' Available at: https://publicapps.caa.co.uk/docs/33/CAP1616A%20Environmental%20requirements%20technical%20annex%20second%20edition.pdf (Accessed: 3 July 2023)

[93] Department for Transport (2017)., 'Air Navigation Guidance 2017: Guidance to the CAA on its environmental objectives when carrying out its air navigation functions, and to the CAA and wider industry on airspace and noise manag', Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918507/air-navigation-guidance-2017.pdf (Accessed: 19 July 2023).

- The ‘modal split’ between easterly and westerly operations;
- Aircraft flight profiles; and
- Airspace ground tracks and dispersion (such as flight paths).

Prediction methods and metrics

6.6.12 Noise models will be prepared by the CAA Environmental Research and Consultancy Department (ERCD) using their ANCON 2.4 software. ANCON will be used to calculate noise exposure levels and contours for all scenarios.

6.6.13 Overflight calculations will be prepared using Noise Consultants Limited ‘OnTrack’ proprietary software.

6.6.14 For assessing the potential effects of aircraft noise, the models will be used to predict the 92-day average summer[94] daytime $L_{Aeq,16hr}$ (the 16hr daytime period is 07:00 to 23:00 local time) and night-time $L_{Aeq,8hr}$ (the 8hr night-time is 23:00 to 07:00 local time) noise metrics. These are the primary metrics for assessing likely significant effects from aircraft noise.

6.6.15 Outputs will generally take the form of the relevant noise exposure and event values at grid centroids (to meet relevant standards and guidance) and noise contours.

6.6.16 Noise levels will also be assigned to postcode points to enable a population-based assessment of effects. This will consider population forecasts for the assessment year of the opening year using data obtained from CACI.

6.6.17 Demographic data for each of the forecast years will be used to count population, households, schools, hospitals, place of worship (and other noise sensitive receptors) at each postcode centroid.

6.6.18 The models will be used to calculate the $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$ primary assessment metrics as adopted within Government aviation noise policy. These will provide the basis of evaluating the likely significant effects of the Proposed Development.

6.6.19 The models will also be used to predict secondary metrics to support the assessment of significant effects from aircraft noise. These will include:

- 92-day average summer day number of events above 65dB L_{Amax} (N65).
- 92-day average summer night number of events above 60dB L_{Amax} (N60).
- Overflight.

6.6.20 In line with airspace change policy and guidance, the above metrics will provide additional understanding of how the proposal development will affect locations around the airport. This will be supplemented through the use of 100% mode (or ‘single mode’) metrics which will also be prepared.

[94] The 92-day summer period referred to in Government noise policy is from 16 June to 15 September inclusive. (CAP1616a, Paragraphs 1.13 and 1.14)

6.6.21 Models adopting the L_{den} and L_{night} metrics will also be prepared for the purpose of providing supporting sensitivity tests. These will be used to provide an informative assessment of the Proposed Development taking into account both the WHO Environmental Noise Guidelines 2018 from 45 dB L_{den} and 40 dB L_{night}.

6.6.22 An overview of the noise metrics that will be prepared to support assessment and sensitivity testing is provided in **Table 6.6.**

Table 6.6 Assessment Metrics for Aircraft Noise

Mode	Primary Metrics		Secondary Metrics						For Sensitivity Testing	
	$L_{Aeq,16hr}$ (0700-2300)	$L_{Aeq,8hr}$ (2300-0700)	N65 (0700-2300) [95]	N60 (2300-0700)[96]	Overflight (0700-2300) [97]	Overflight (2300-0700) [98]	$L_{Aeq,8hr}$ (alt)[99]	N65 (alt) [100]	L_{den}[101]	L_{night}[102]
Average Summer (standard mode)	✓	✓	✓	✓	✓	✓				
Annual Average (standard mode)									✓	✓
Single Mode (09R Dep, 09L Arr)							✓	✓		
Single Mode (09L Dep, 09R Arr)							✓	✓		
Single Mode (27R Dep, 27L Arr)							✓	✓		
Single Mode (27L Dep, 27R Arr)							✓	✓		
Westerly Average	✓	✓					✓	✓		
Easterly Average	✓	✓					✓	✓		

[95] To be prepared from a value of ten events

[96] To be prepared from a value of five events

[97] To be prepared from a value of ten events

[98] To be prepared from a value of five events

[99] To be prepared for an 8-hour period reflecting a period of single mode operations from either 0700-1500 or 1500-2300hrs, and modelled to presented from a value of 51dB $L_{Aeq,16hr}$

[100] To be prepared for an 8-hour period reflecting a period of single mode operations from either 0700-1500 or 1500-2300hrs, and modelled to presented from a value of ten events

[101] To be prepared from a value of 45dB L_{den} to so align with recommendations set out in the WHO ENG18

[102] To be prepared from a value of 40dB L_{night} to so align with recommendations set out in the WHO ENG18

Aircraft ground Noise

Standards and guidance

6.6.23 There are no current standards or guidance available specific to modelling and assessment of aircraft ground noise. However, Annex II of the Environmental Noise Directive[103] states that the noise produced during aircraft ground operations may be considered to be transport infrastructure and that the attenuation due to atmospheric absorption may be predicted using ISO 9613-2: 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: general Method of Calculation (ISO 9613-2)[104]. The approach to predicting aircraft ground noise will therefore be to characterise the sources of noise using information known about the aircraft and operational parameters, and to predict the noise at sensitive receptors away from the airfield using ISO9613-2.

Input information

6.6.24 Aircraft ground noise will be calculated using aircraft ground operations data simulated in CAST. CAST is simulation software which utilises the following information to simulate aircraft ground movements and activities:

- Location and naming convention of taxiways;
- Average taxi speeds / engine on-times per metre length of taxiway;
- Movements by aircraft type on the taxiways;
- Location of aircraft holding and hold points and time in hold;
- Stand locations and names; and
- Stand turnaround times.

6.6.25 Noise emission datasets for aircraft ground activities will be established from a combination of measurements surveys and literature review. This data will describe:

- Noise emissions levels of aircraft in the form of sound power levels;
- Directivity patterns relating to aircraft noise emissions; and
- Data describing the spectral content of aircraft noise emissions.

6.6.26 Finally, calculations at noise sensitive receptors will be undertaken using ISO9613-2[105] taking account of geometrical parameters defined in the ground model which includes:

- Ground level;
- Buildings and their elevations;

[103] Commission Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council

[104] International Standards Organisation, Acoustics – Attenuation of sound during propagation outdoors – Part 2: general Method of Calculation, International Standard ISO 9613-2:1996 E, (ISO,1196)

[105] ISO, 1996.

- Purpose-built screens; and
- Locations of acoustically absorbent and reflective ground types.

6.6.27 This information will be prepared using digital mapping data.

Prediction methods

6.6.28 Aircraft ground noise will be predicted by defining noise source characteristics of aircraft on the ground and predicting noise propagation away from sources in accordance with ISO 9613-2. This will be carried out in noise calculation software.

Initial reporting in line with standards and guidance

6.6.29 For assessing the potential effects of aircraft ground noise, the models will initially be used to calculate the same metrics reported in **Table 6.6** for air noise, with the exception of the N65, N60 and overflight metrics. This will allow ground noise to be combined, as necessary, with air noise in the vicinity of the Airport to facilitate the identification and magnitude of effects.

Residential Receptors - Methodology for identifying significant effects

6.6.30 This section sets out the approach to identifying the significance of noise effects, positive and negative, that arise from the Proposed Development.

6.6.31 The overarching concepts covered in this section are as follows:

- Significant effects on health and quality of life.
- Likely significant effects (negative and positive).

6.6.32 These concepts are introduced further down in the document.

Significant effects on health and quality of life

6.6.33 The Government's overarching aviation noise policy is:

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

6.6.34 The objective of the policy statement to *"limit, and where possible reduce"* is in line with the Noise Policy Statement for England (NPSE). The NPSE has three aims which are to:

- Avoid significant negative impacts on health and quality of life;
- Mitigate and minimise negative impacts on health and quality of life; and

- Where possible, contribute to the improvement of health and quality of life."

6.6.35 The first aim of the NPSE is aligned to where noise exposure is above the Significant Observed Adverse Effect Level (SOAEL), with the second aim of the NPSE applying to where noise exposure is above the Lowest Observed Adverse Effect Level (LOAEL). The third aim of the NPSE applies to all levels of noise exposure.

6.6.36 LOAEL and SOAEL values for the assessment are reported in **Table 6.7** and **Table 6.8** for the construction and operational noise assessments respectively.

6.6.37 In line with the first aim, significant effects on health and quality of life will be identified where forecast noise exposure from the Proposed Development newly exceeds SOAEL.

6.6.38 The reasonable and practicable means envisaged for avoiding significant effects on health and quality of life will be presented in the Environmental Statement. In line with precedent in planning decision making, the means to avoid significant effects on health and quality of life include both mitigation incorporated into the Proposed Development and noise insulation provided at receptors.

6.6.39 In line with the second and third aims of Government noise policy, the assessment will also identify:

- Negative effects on health and quality of life (i.e. Where exposure from the proposed development is forecast to exceed the LOAEL value but is below the relevant SOAEL).
- How mitigation is to be used to minimise such negative effects.
- Where it is possible for the proposed development and its associated mitigation to contribute to the improvement of health and quality of life (measurable using the Government's TAG methodology for aircraft noise).

Table 6.7 LOAEL and SOAEL values for construction noise assessment

Noise Source(s)	LOAEL			SOAEL		
	Daytime (0700-1900)	Evening (1900-2300) / Weekends	Night-Time (2300-0700)	Daytime (0700-1900)	Evening (1900-2300) / Weekends	Night-time (2300-0700)
Construction Noise	65dB $L_{Aeq, T}$	55dB $L_{Aeq, T}$	45dB $L_{Aeq,T}$	75dB $L_{Aeq,T}$	65dB $L_{Aeq, T}$	55dB $L_{Aeq,T}$

Notes:

Values based on BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 1: Noise. The LOAEL and SOAEL correspond to Category A and Category C of the 'ABC method' respectively.

Table 6.8 LOAEL and SOAEL values for operational aircraft noise assessment

Noise Source(s)	LOAEL		SOAEL	
	Daytime (0700-2300)	Night-Time (2300-0700)	Daytime (0700-2300)	Night-time (2300-0700)
Air Noise **Ground Noise** **Combined Air and Ground Noise**	51dB $L_{Aeq, 16hr}$ [a]	45dB $L_{Aeq,8hr}$ [a]	63dB $L_{Aeq,16hr}$ [b]	55dB $L_{Aeq, 8hr}$ [c] & Number of N60 events and a risk assessment of objective sleep disturbance

Notes:
a. Department for Transport, Air Navigation Guidance 2017, 2017
b. Department for Transport, Aviation Policy Framework, 2013 and Aviation 2050, 2018 (the threshold of exposure where noise insulation is required)
c. WHO, Night Noise Guidelines for Europe, 2009

Likely significant effects (negative and positive)

6.6.40 Where the calculated noise exposure arising from the Proposed Development lies above the relevant LOAEL value, then likely significant effects (negative or positive) on individual receptors or on an area basis may be identified taking account of a number of factors for each noise source being considered.

6.6.41 Likely significant effects for the purpose of the *EIA Regulations* are identified separately from and in addition to significant effects on health and quality of life that are identified in line with Government noise policy[106].

6.6.42 The primary factors considered (in combination) in the identification of likely significant effects are:

- The calculated 'noise exposure' compared to the relevant LOAEL and SOAEL Values.
- The calculated 'change in noise level' and the associated magnitude of change (see **Table 6.9**).
- The population (number of people) in an area exposed to the calculated 'noise level' and 'change in noise level' (likely significant effects are identified on individual receptors where the calculated exposure exceeds the relevant SOAEL value).

6.6.43 These primary factors are supported by a number of additional factors that take in to account the local context of the receiving environment and the noise arising from the Proposed Development.

[106] As recognised in the decision letter of 2 February 2017 for the previous planning application to allow implementation of full runway alternation during easterly alternation (Application Reference: 41573/APP/2013/1288)

Table 6.9 Classification of the magnitude of change in noise exposure (negative and positive)

Change in Noise Exposure (dB)	Magnitude of Change (negative / positive)
0	No change
0.1-0.9	Negligible
1.0-1.9	Slight
2.0–2.9	Minor
3.0-5.9	Moderate
> 6 dB	Major

6.6.44 Where a noise exposure is between the LOAEL and SOAEL a likely significant effect will be identified where at least 'moderate' change in noise exposure is forecast to occur as a result of the Proposed Development. Where noise exposure is forecast to be above the SOAEL, receptors that experience a 'slight' change in noise exposure as a result of the Proposed Development will be identified as those with likely significant effects.

6.6.45 Where likely significant effects are identified, secondary metrics along with other additional factors will be considered to confirm whether the effect may be significant on a community basis or may require further consideration due to context. These considerations are:

- The level of noise exposure that the effect is forecast to occur[107]
- Whether receptors would be afforded respite through runway alternation[108]
- The monetised value of the effect as evaluated using WebTAG including any adjustments to annoyance that can be made having regard to respite provision as described in CAP2250[109]
- Changes in overflight and aircraft noise events using the overflight, number-above metrics[110]
- Likely levels of ambient noise from non-aviation sources in the area[111]
- Whether receptors are likely to already have benefits from the Airport's existing insulation programmes[112].

[107] Using the primary metrics summarised in **Table 7.6**.

[108] Having regard for the L_{Aeq}-based noise level differences described in Table 15 of CAP2250 using the $L_{Aeq, 8hr}$ alternation period metrics summarised in **Table 7.6.**

[109] Taking into account the 'Percentage Highly Annoyed' ERFs presented in Tables 16 and 17 of CAP2250.

[110] Utilising the overflight, N60 and N65 metrics summarised in **Table 7.6.**

[111] Using published data, notably strategic noise maps as published by Defra.

[112] Based on the boundaries and uptake of the Airport's existing noise insulation schemes.

Health Effects

6.6.46 Consideration will be given to the effect of the Proposed Development on the direct effects of noise on health. The following direct effects will be calculated and presented:

- Annoyance
- Sleep Disturbance
- Acute Myocardial Infarction (AMI)
- Hypertension (Stroke and Dementia)

6.6.47 In line with Government aviation noise policy, the above direct health effects will be assessed using the Government's WebTAG methodology.

6.6.48 Further to this, additional assessments will be carried out using alternative and modified Exposure Response Functions (ERF). An ERF illustrates the relationship between noise exposure and a health or quality of life outcome: for example, annoyance ERFs plot the impact of an increase in noise exposure (assessed using standard metrics such as $L_{Aeq, 16hr}$) and the percentage highly annoyed in the population, as is used in WebTAG.

6.6.49 Two key publications will be considered in this regard, namely:

- WHO Environmental Noise Guidelines for the European Region (2018) which presents alternative dose-response relationships for annoyance and sleep disturbance effects from aircraft noise using the L_{den} and L_{night} metrics; and
- CAP 2250 Survey of Noise Attitudes 2014: Aircraft Noise and Annoyance, Further Analysis, which provides alternative dose-response relationships for annoyance for situations where receptors receive noise level differences that can be considered to provide respite between modes of operation.

6.6.50 Consideration will also be given to effects on mental health and wellbeing using the findings of the NORAH study[113].

Modal Split Sensitivity Analysis

6.6.51 Sensitivity analysis will be performed having regard for extreme westerly and easterly modal splits over the last 20 years. This sensitivity analysis will help identify how average noise exposure as described by the primary metrics may vary year on year around the average.

Non-Residential Receptors - Methodology for identifying significant effects

Screening Assessment

6.6.52 The methodology for identifying significant effects at non-residential noise-sensitive receptors will commence with a screening assessment having regard to acoustic design guide values used for such receptors such as schools.

[113] The effects on mental health and wellbeing will be assessed using data from the NORAH study estimating the effects of change in aircraft noise exposure ($L_{Aeq,24h}$) on clinical depression (Seidler *et al 2017).*

6.6.53 For non-residential receptors and land-uses the screening criteria set out in **Table 6.10** will be used to identify where there is the potential for significant effects to occur. Note that the screening criteria do not identify that there will be a likely significant effect. These screening criteria are used to determine which non-residential receptors and land-uses will be investigated for potentially significant effects. Screening is therefore undertaken on a precautionary basis and where receptors are 'screened in' they will be subject to a receptor specific assessment. This approach is necessary as there are wide variations in layout, design, use and hence noise sensitivity of different receptors within the same building.

Table 6.10 LOAEL and SOAEL values for operational aircraft noise assessment

Receptor Use	Daytime (0700-2300)	Night-Time (2300-0700)
Large and small auditoria; concert halls; sound recording and broadcast studios; and theatres[a]	60dB L_{Amax} or 50dB $L_{Aeq, 16h}$	60dB L_{Amax} or 50dB $L_{Aeq, 8h}$
Places of meeting for religious worship; courts; cinemas; lecture theatres; museums; and small auditoria or halls[b]	50dB $L_{Aeq, 16h}$	N/A
Hospitals; and hotels[57]	50dB $L_{Aeq, 16h}$	45dB $L_{Aeq, 8h}$
Schools; colleges; and libraries[58]	50dB $L_{Aeq, 16h}$	N/A
Offices[d]	55dB $L_{Aeq, 16h}$	N/A
External amenity spaces[e]	55dB $L_{Aeq, 16h}$	N/A

Notes:

a) Based on an internal level of 25 $L_{Aeq,T}$ and 35dB L_{Amax} consistent with BS8233[114]. To require these criteria the internal sound levels due to existing sources (internal and external) must already be reduced to these criteria or lower. Given typical environments this would suggest any such receptor would have a level of sound insulation from the building shell (including windows and ventilation penetrations) that would reduce external levels by at least 25 to 30dB

[114] *British Standards Institute, (2014), 'BS 8233: 2014. Guidance on sound insulation and noise reduction* for buildings', Available at: https://www.omegawestdocuments.com/media/documents/43/43.20%20BS%2082332014%20Guidance%20on%20Sound%20Insulation%20and%20Noise%20Reduction%20for%20Buildings.%20London%20BSi.pdf (Accessed\; 3 July 2023)

Receptor Use	Daytime (0700-2300)	Night-Time (2300-0700)
b) Based on an internal level of 35dB $L_{Aeq,T}$ consistent with Building Bulletin 93[115] and BS8233. Equivalent external level assuming 10-15dB for a partially open window		
c) Based on an internal level of 30dB $L_{Aeq,T}$ consistent with BS8233, WHO guidelines. Equivalent external level assuming 10-15 dB for a partially open window		
d) Based on an internal level of 40dB $L_{Aeq,T}$ consistent with BS8233, BCO guidelines etc. Equivalent external level assuming 10-15dB for a partially open window		
e) Based upon guidance from WHO Guidelines for community noise.		

Significance Criteria

6.6.54 For non-residential receptors and land uses, if the screening criteria set out in **Table 6.10** are exceeded, the likely significant effects (positive or negative) will be determined as follows:

- The calculated 'change in noise level' for the source being considered and the associated magnitude of change (see **Table 6.10**).
- Whether receptor would be afforded respite through runway alternation[116].
- Likely levels of ambient noise from non-aviation sources in the area[117].
- The design of the receptor affected.
- Whether the receptor has already benefited from Heathrow's existing noise insulation schemes.
- Whether the receptor will be subject to mitigation as part of the Proposed Development i.e. embedded mitigation.

6.6.55 Unlike a proposal for airport expansion, the application will be concerned with a redistribution of existing activity. The assessment, therefore, will apply the same criteria to assess the beneficial as well as negative effects of the proposals, and report both equally.

6.6.56 In the case of schools, the potential effects of the Proposed Development on children's learning will be assessed using the findings of the RANCH study[118].

[115] Department for Education and Education Funding Agency, (2015)., Building Bulletin 93. Acoustic design of schools: performance standards' Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/400784/BB93_February_2015.pdf (Accessed: 20 June 2023)

[116] Having regard for the L_{Aeq}-based noise level differences described in Table 15 of CAP2250 using the $L_{Aeq,8hr}$ alternation period metrics summarised in **Table 7.10**.

[117] Using published data, notably strategic noise maps as published by Defra.

[118] Effects on children's learning will be assessed using data from a meta-analysis of three studies conducted around Heathrow airport, including the RANCH study, estimating the effects of change in aircraft noise ($L_{Aeq,16h}$) on children's reading comprehension (Clark et al, 2021).

7. People and communities

7.1 Introduction

7.1.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The number of aircraft movements will be unchanged by the Proposed Development.

7.1.2 The potential effects on 'people and communities' would arise from the increase in the number of aircraft departing on the northern runway (09L) and arriving on the southern runway (09R) during easterly operations, and the decrease in the number of aircraft departing on the southern runway (09R) and landing on the northern runway (09L) during the same mode of operations. These changes may result in both positive and negative effects on 'people and communities' in the local area.

7.1.3 The socio-economic assessment considers the likely significant effects arising from the construction and operation of the Proposed Development on:

1. People, primarily where they live ('residential receptors') on an individual dwelling basis and on a community basis, including any shared community open areas.
2. Community events, activities, working locally, outdoor recreation and health conditions.

7.1.4 This section of the Scoping Report identifies the scope of the assessment of likely significant effects on people and communities arising from the Proposed Development. It describes the assessment methodology to be used within the EIA, an overview of the baseline conditions, the datasets to be used to inform the EIA, the likely significant effects to be considered within the EIA, and how these likely significant effects will be assessed for the purpose of an EIA. The potential effects on Health are considered separately in **Section 8: Health**.

7.2 Relevant legislation, planning policy, technical guidance

7.2.1 Summary of the relevant aviation and planning policies is given in **Table 7.1.**

Table 7.1 Planning policy issues relevant to effects on people and communities

Policy reference	Policy issue	Considered in Section
Aviation Policy Framework (APF), DfT, March 2013	The APF identifies the need for a "*fair balance between the negative impacts of noise (on health, amenity (quality of life) and productivity) and the positive economic impacts of flights*" with benefits shared between the aviation industry and local communities, particularly as noise levels fall with technology improvements.	Relevant to methodology for all sub-topics
The Airports National Policy Statement: new runway	The ANPS was published by the Secretary of State for Transport on 26 June 2018 and addresses airport capacity in the south east of England and a new north west runway at Heathrow.	Relevant to methodology for all sub-topics

Policy reference	Policy issue	Considered in Section
capacity and infrastructure at airports in the south east of England	Whilst it specifically provides planning policy on applications relating to a north west runway, it also states that the ANPS covers "*important and relevant considerations*" in the determination of other applications, "*particularly where it relates to London or the South East of England*" (Para 1.41). The ANPS notes (para 2.9) the strategic importance of aviation to the UK and its role as a hub. It reports (para 2.5) that "*in 2014 the UK aviation sector generated around £20 billion of economic output, and directly employed around 230,000 workers*". It identifies (para 2.8) value added economic benefits of £59 billion in the tourism sector, with £22 billion related to inbound tourism and reliant on air travel.	
Health Impact Analysis, Shortlisted Schemes For ANPS[119]	A comprehensive comparison of alternative UK airport expansion schemes which provides comparators and precedents specifying receptors affected by operational change at UK airports. The ANPS forms part of the overall framework of national policy and may be a material consideration in making decisions on Town and Country Planning Act (TCPA) planning applications.	Relevant to methodology for all sub-topics
Flightpath to the Future: a strategic framework for the aviation sector (2022)	Number 4 of the 10 point plan in Flightpath to the Future states that: *"[..] We will also continue to work with the sector to reduce the localised impacts of aviation from noise and air pollution."* The document also commits to new policy proposals reflecting aspects covered in the Aviation 2050 consultation (2018) related to noise.	All sections.
National Planning Policy Framework[120]	Paragraph 92(c) of the National Planning Policy Framework (NPPF) states that: *"Planning policies and decisions should aim to achieve healthy, inclusive and safe places which:[..] (c) enable and support healthy lifestyles."* Paragraph 93(a) of the National Planning Policy Framework (NPPF) states that: *"To provide the social, recreational and cultural facilities and services the community needs, planning policies and decisions should:(a) plan positively for the provision and use of shared spaces, community facilities (such as local shops, meeting places, sports venues, open space, cultural buildings, public houses and places of worship) and other local services to enhance the sustainability of communities and residential environments."*	Relevant to methodology for all sub-topics
The London Plan (2021)[121]	Policy GG3 Creating a healthy city states that:	Relevant to methodology

[119] Department for Transport (2018). Health impact analysis for the proposed Airports National Policy Statement. (Online) Available at: https://www.gov.uk/government/publications/health-impact-analysis-for-the-proposed-airports-national-policy-statement (Accessed April 2023).

[120] Department for Levelling Up, Housing and Communities (2021). (Online) Available at: https://www.gov.uk/guidance/national-planning-policy-framework (Accessed April 2023).

[121] Mayor of London (2021). The London Plan (March 2021). (Online) Available at: https://www.london.gov.uk/programmes-strategies/planning/london-plan/new-london-plan/london-plan-2021 (Accessed April 2023).

Policy reference	Policy issue	Considered in Section
	"Those involved in planning and development must: (A) ensure that the wider determinants of health are addressed in an integrated and co-ordinated way, taking a systematic approach to improving the mental and physical health of all Londoners and reducing health inequalities and [..] *(D) assess the potential impacts of development proposals and Development Plans on the mental and physical health and wellbeing of communities, in order to mitigate any potential negative impacts, maximise potential positive impacts, and help reduce health inequalities, for example through the use of Health Impact Assessments."* Policy T8 (Aviation) states that: *"(B) The environmental and health impacts of aviation must be fully acknowledged and aviation-related development proposals should include mitigation measures that fully meet their external and environmental costs, particularly in respect of noise, air quality and climate change* and *(E) Development proposals that would lead to changes in airport operations or air traffic movements must take full account of their environmental impacts and the views of affected communities. Any changes to London's airspace must treat London's major airports equitably when airspace is allocated."* Paragraph 10.8.2 states that: *"London's major airports provide essential connectivity for passengers and freight, support vital trade, inward investment and tourism, generate prosperity, and provide and support significant numbers of jobs. The aviation industry must fully address its environmental and health impacts. Government and industry must also recognise local communities' concerns about aviation noise and pollution, consult fully with those affected, and use new technologies to deliver tangible reductions in noise exposure and pollution."*	for all sub-topics
Hillingdon Local Plan: Part 1[122]	The Hillingdon Local Plan: Part 1- Strategic Policies Para 3.6 states that the plan: *"Seeks to maximise the economic benefits of Heathrow, reduce any negative environmental impacts of the airport and secure improvements for local communities*." In addition, policy SO6 aims to: *Promote social inclusion through equality of opportunity and equality of access to social, educational, health, employment, recreational, green space and cultural facilities for all in the borough, particularly for residents living in areas of identified need* and policy SO10 aims to: "*Improve and protect air and water quality, reduce adverse impacts from noise including the safeguarding of quiet areas [..].*" Policies under the heading of Recreation, Leisure and Community Facilities (Category 9 covering UDP saved policies) provides general requirements which may be affected by the Proposed Development. More specifically: - Policy EM1 and EM8 refer to the need to control, reduce and mitigate noise and air quality impacts especially around Heathrow and the major road network.	Relevant to methodology for all sub-topics

[122] Hillingdon Local Plan: Part 1. (Online) Available at: https://www.hillingdon.gov.uk/local-plan (Accessed April 2023).

Policy reference	Policy issue	Considered in Section
	- Policy EM4 states that: "*The Council will work with DEFRA to identify and protect open spaces that provide quiet areas and will also consider whether other areas merit protection of relative tranquility.*"	
Hillingdon Local Plan: Part 2[123]	Policy DMAV 2: Heathrow Airport states that: "*Development proposals within the Heathrow Airport boundary will only be supported where*: [..] *iv) there are no other significant adverse environmental impacts; "*	Relevant to methodology for all sub-topics
London Borough of Hounslow Local Plan 2015-2030 volume one[124]	Policy CI3 (Health facilities and healthy places) states that: *"We will expect development proposals to (d) Contribute to the health and well-being of the local community where possible, using guidelines such as Active Design; and (e) Where required, use the outcomes of a Health Impact Assessment (HIA) to mitigate negative impacts and health risks arising from the scheme."* Policy EQ5 (Noise) states that: *"We will seek to reduce the impact of noise from aviation, transport and noise-generating uses, and require the location and design of new development to have considered the impact of noise, and mitigation of these impacts, on new users and surrounding uses according to their sensitivity."*	Relevant to methodology for all sub-topics

Legislation

7.2.2 There are no specific requirements for socio-economic assessments set out in any statutory provisions regarding the preparation of Environmental Impact Assessments (EIA). However, the EIA Regulations[125] state an overall requirement to identify, describe and assess the likely significant effects of the proposed development on population and human health, as well as other features of the environment which have relevance to the environment in which people and communities live and work. Common practice has established that such assessment should include a description of the direct socio-economic consequences of the effects on the environment as experienced by communities locally and, where appropriate, more widely. The method adopted is therefore one of determining the existing and future circumstances for these communities (the baseline) followed by the assessment of relevant topics and effects on individual receptors. The approach uses desk-based analysis, drawing on statistical information and professional judgment/opinion as well as relevant government and other guidance.

Technical guidance

7.2.3 A summary of relevant technical guidance is provided in **Table 7.2.**

[123] Hillingdon Local Plan: Part 2. (Online) Available at: https://www.hillingdon.gov.uk/local-plan (Accessed April 2023).
[124] London Borough of Hounslow Local Plan 2015-2030 volume one. (Online) Available at: https://www.hounslow.gov.uk/info/20167/local_plan/1108/local_plan (Accessed April 2023).
[125] Town and Country Planning Act (Environmental Impact Assessment) Regulations 2017, Available at: https://www.legislation.gov.uk/uksi/2017/571/contents/made (Accessed: 5 July 2023)

Table 7.2 Technical guidance relevant to effects on people and communities

Policy reference	Issue	Considered in Section
United Nations Environment Programme: EIA Training Resource Manual[126]	A well-established and extensive resource with a range of guidance on many elements of EIA implementation.	Relevant to methodology for all sub-topics.
International Association for Impact Assessment: Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects[127]	The guidance provides a thorough source of detailed methodologies for conducting activities supporting social assessment particularly those for identifying and representing community issues and assessing methods of resolution.	Relevant to methodology for all sub-topics.
The Green Book (and supplementary guidance) published by UK government[128]	Published by UK government's HM Treasury ministry, the set of advice in The Green Book advice provides a broad framework for how policies, programmes and projects in the UK should be appraised and evaluated to inform decision making. It sets out guidelines for how the economic and social effects of policy should be assessed. It contains advice on the scoping of costs and benefits to be included in assessment, the time period for assessment and the use of discount rates. It contains various supplementary guidance on specific assessment of environmental effects, for example of health, crime and air quality.	Relevant to methodology for all sub-topics
The Additionality Guide, published by UK government[129]	Provides more specific guidance on how to assess impact of a policy intervention (or a private sector investment) on the local, regional and national economy. Additionality is the "extent to which something happens as a result of an intervention that would have not occurred in the absence of intervention."	Relevant to methodology for all sub-topics

[126] United Nations Environment Programme (2002). Environmental Impact Assessment Training Resource Manual. 2nd Edition. (Online) Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/26503/EIA_Training_Resource_Manual.pdf?sequence=1&isAllowed=y (Accessed April 2023).
[127] International Association for Impact Assessment (2015). Social Impact Assessment: Guidance for Assessing and Managing the Social Impacts of Projects. (Online) Available at: https://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf (Accessed April 2023).
[128] HM Treasury (2018). The Green Book Central Government Guidance on Appraisal and Evaluation. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938046/The_Green_Book_2020.pdf (Accessed April 2023).
[129] Homes & Communities Agency (2014). Additionality Guide Fourth Edition. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf (Accessed April 2023).

Policy reference	Issue	Considered in Section
The DLUHC appraisal guide, published by UK government[130]	This is a guidance document provided by the Department for Levelling Up, Housing and Communities (previously Department of, Communities and Local Government (DCLG) and Department of Housing, Communities and Local Government (DHCLG)) directed at Government economists in their assessment of economic appraisal of development proposals, including housing and other commercial development. Whilst not aimed at socio-economic assessment in EIA which does not involve cost benefit analysis calculations or assessing value for money, it contains relevant technical guidance for socio-economic impact assessment and links to data sources. It replaces "The DCLG Appraisal Guide" which was withdrawn on 31st March 2023.	Relevant to methodology for all sub-topics

7.3 Baseline conditions

Data gathering methodology

7.3.1 The Proposed Development will redistribute aircraft noise and hence the increases and decreases in effects experienced by specific populations are of most relevance.

7.3.2 The estimated area in which the footprint of air noise occurs is a rectangle 20nm by 40nm (nautical miles) (see **Section 6: Noise and vibration**). The more specific distribution of air noise effects will occur within a smaller footprint for which the Noise Preferential Routes (NPR) provide a general indication of the location of effects arising with easterly operations[131]. The current NPR pattern is shown in **Graphic 7.1** in order to provide a visual reference in the figures that follow but the pattern is noted as established based on past practices not on effects anticipated for the Proposed Development. Ground noise is assessed within an area of up to 1km from the source and so within a maximum of 1km distance from the Airport boundary.

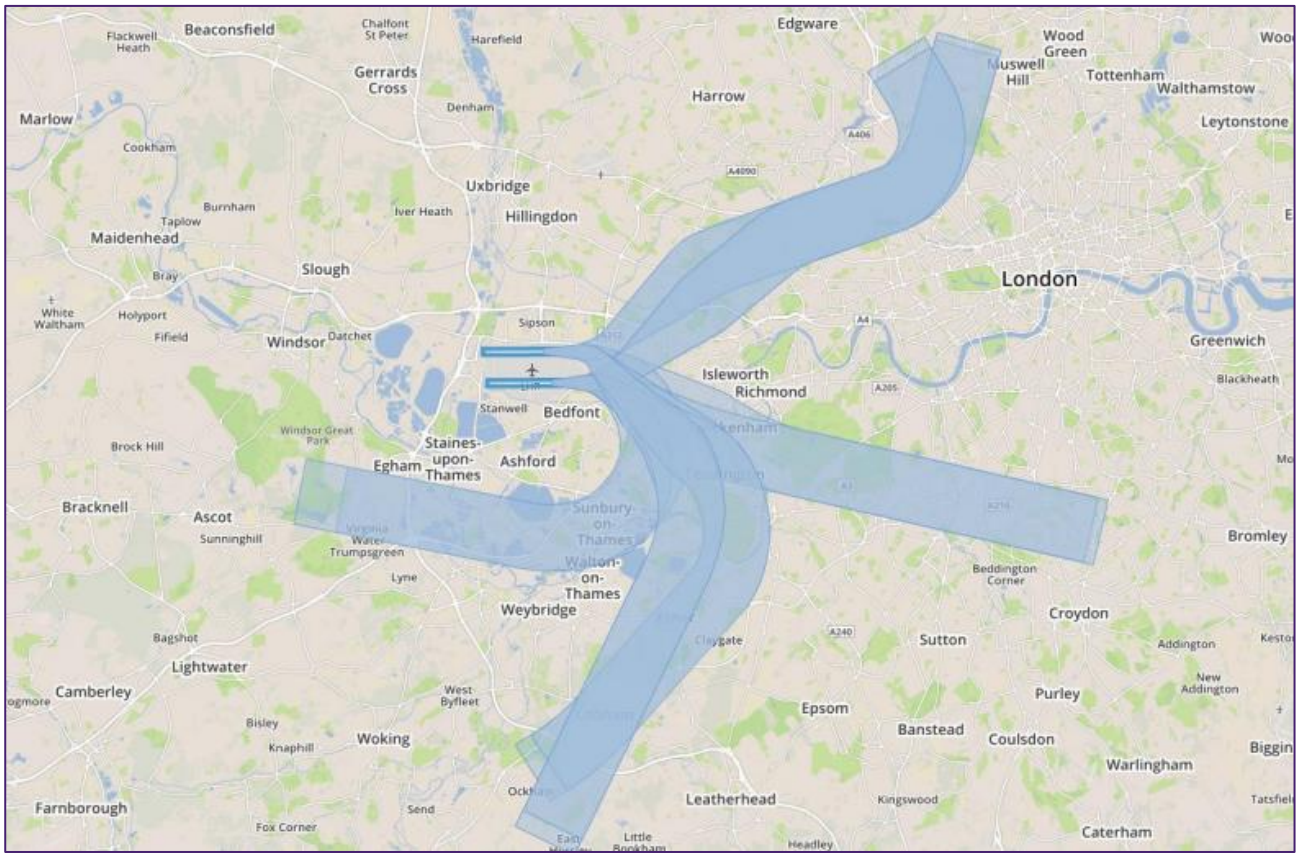
7.3.3 The estimated spatial area in which air quality impacts are assessed at scoping is based on review of monitoring data including continuous monitoring[132] (see **Section 5: Air Quality**). There are fourteen continuously monitored locations within 2km of the Proposed Development, which lies within the Heathrow air quality Focus Area and is also relevant to Air Quality Management Areas (AQMA) in surrounding local authority areas[133] because of possible exposure to elevated nitrogen dioxide levels. The spatial area in the air quality assessment will be more specifically defined using additional dispersion modelling.

[130] Department of Communities and Local Government (2016). The DCLG Appraisal Guide. (Online) Available at: https://www.gov.uk/government/publications/dluhc-appraisal-guide (Accessed April 2023).

[132] Local authorities' Air Quality Review and Assessment reports and Heathrow Airwatch.

[133] Air Quality Management Areas are defined for the southern half of Hillingdon, South Buckinghamshire District Council, London Borough of Ealing, London Borough of Hounslow, and Spelthorne Borough Council (see **Section 6: Air Quality**)

Graphic 7.1 – The 6 easterly departure routes known as 'Noise Preferential Routes', set by the Government and have been in place since the 1960s[134]



7.3.4 The spatial extent applicable to noise effects goes beyond the extent for air quality effects and so the larger 20 by 40 nm rectangle and the indication of the footprint provided by the NPRs are used for scoping effects on people and communities. The methodology is dependent on the methodology for noise and air quality and more specific monitoring and modelling work will be undertaken and presented in the Environmental Statement and used to refine and coordinate selection of spatial scopes.

7.3.5 The 20 by 40 nm rectangle is a conservative spatial scope which is expected to include significantly smaller areas of likely significant effects which will be defined through noise modelling work. In general, both positive and negative effects of the Proposed Development will be greater nearer to the airport. The majority of the concentrated populations likely to be affected are within Hillingdon and Hounslow borough council areas. A further outer ring of boroughs are likely to include almost all other effects (see **Figure 7.2**)[135].

7.3.6 **Figures 7.2, 7.6, 7.7, 7.8** and **7.9** show a broadly similar range in socio-economic conditions within each borough. Indicators across either borough are considered to identify a range covering both boroughs to a degree sufficient for this scoping

[134] Buckinghamshire, Ealing, Hillingdon, Hounslow, Richmond upon Thames, Runnymede, Slough, Spelthorne, Windsor and Maidenhead
[135] Buckinghamshire, Ealing, Hillingdon, Hounslow, Richmond upon Thames, Runnymede, Slough, Spelthorne, Windsor and Maidenhead

assessment while later spatial modelling of noise and air quality effects in the EIA will allow consideration of more detailed geographical areas affected across both boroughs.

7.3.7 As such, the baseline is developed with the aim of identifying vulnerable groups of receptors to be assessed for possible effects.

7.3.8 The data used to define the baseline is obtained from a variety of referenced sources, with the majority from:

- Office of National Statistics (ONS); and
- Hillingdon and Hounslow Local Plans and supporting borough data and analysis.

7.3.9 The baseline data is presented at borough level and shown at more disaggregated levels for more localised effects.

7.3.10 The data gathered aims to be sufficient to confirm the scoping of receptors. A fuller description of the baseline will be provided in the Environmental Statement. More specific definition of groups of receptors and Proposed Development effects is required to better identify priority receptors.

7.3.11 Data indicating the health of the general population is provided in the baseline. Effects on human health are covered in **Section 8**.

Current baseline

Summary

7.3.12 There are relatively minor differences across the area in average socio-economic indicators, with an appreciably narrower range of effects than the range seen at national level. There is a relatively homogeneous residential character across the area. Other statistics indicate a younger than average population, employed in occupations reflecting an average for England. There are more inactive people, as well as overcrowding, which would indicate women and children on this evidence alone are a vulnerable receptor. The pattern of pocket parks and green space also indicates widespread amenity use. Journeys to work are short and people will experience outdoor effects potentially both at work and at home. Consideration of the interaction between socio-economic patterns in the community and the effects of the Proposed Development is used to guide the selection of baseline data below.

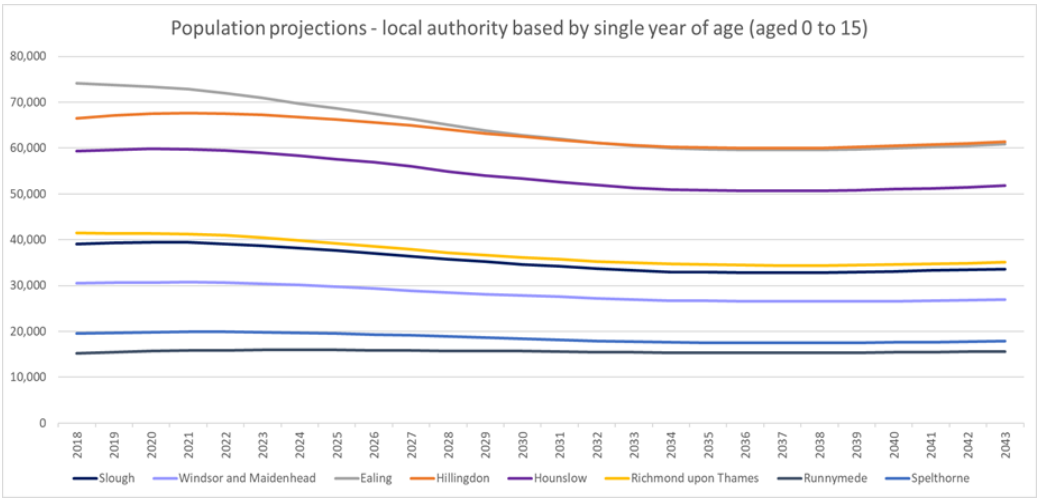
Baseline

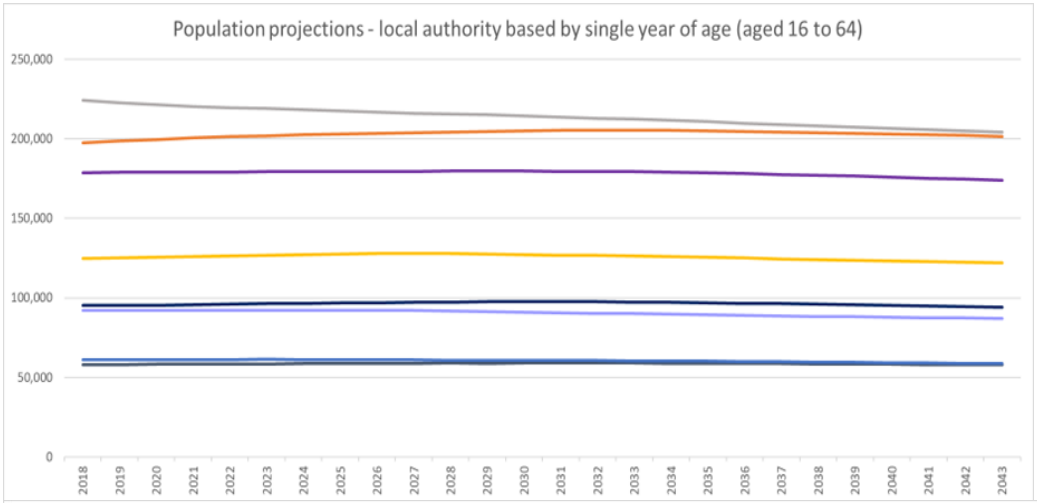
7.3.13 The populations for the boroughs that are provided as part of the supporting context range from 88,100 (Runnymede) to 553,100 (Buckinghamshire). Hillingdon and Hounslow have populations of 305,900 and 288,200 respectively.[136] Population projections for the boroughs providing supporting context are shown in **Graphic 7.2** The boroughs show similar population projections over time, with the population aged 0 to 15

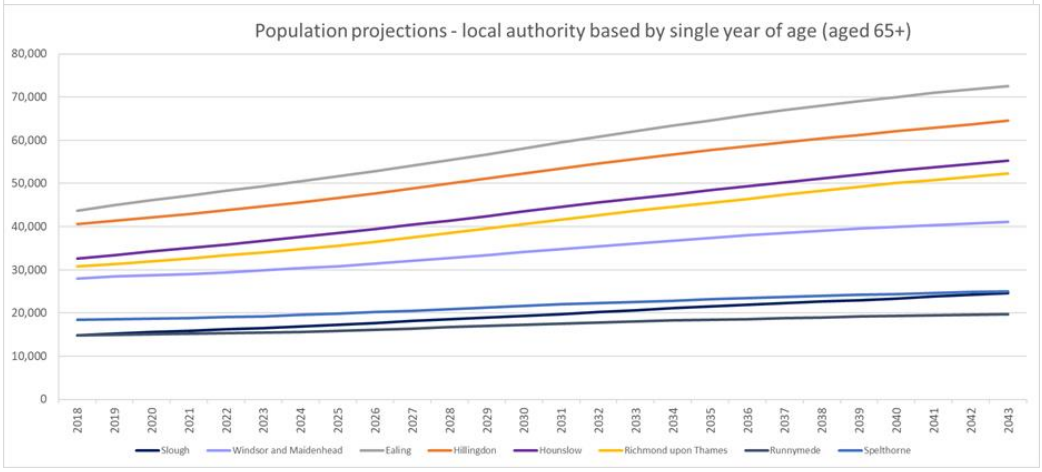
[136] ONS, (2021)., 'Census 2021' Available at: https://www.ons.gov.uk/census (Accessed 5 July 2023)

declining, the population aged 16 to 64 staying relatively stable, and the population aged 65 and over increasing.

Graphic 7.2 – Population projections – local authority based by single year of age.137,138







[137] Nomis, (2020)., 'Population projections - local authority based by single year of age' Available at: https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&dataset=2006&version=0 (Accessed 5 July 2023)

[138] Note that data for Buckinghamshire has been excluded from this graphic for improved readability, however it follows a similar projection.

7.3.14 The higher number of people in Hounslow of working age and lower than average number in older age groups is noticeable compared to England (see **Figure 7.2**). A similar pattern can be seen graphically in the higher number of people in Hillingdon and Hounslow in the main working age group (25-64) that live near the airport[139] (see **Figure 7.2**).

7.3.15 The information for other boroughs regarding age-distribution of the population is also provided in **Figure 7.3[140].** The higher number of people in Ealing and Slough of working age and the lower than average number in older age groups is also noticeable compared to England. Spelthorne, Buckinghamshire, Richmond upon Thames, Windsor and Maidenhead, and Runnymede have a similar proportion of older people and people of working age compared to England. Slough and Richmond upon Thames have a noticeably higher proportion of people aged 14 years and under compared to England.

7.3.16 Employment levels for Hounslow are below the levels for London and for England by 2 to 3 percentage points[141] (see **Graphic 7.3**). Noting the higher number of people of working age, this implies an appreciably above average unemployed or inactive population. Employments levels for men are closer to levels for London and for England than employment levels for women, who have the greatest difference (3.9 percentage points) below the national rate. For Hillingdon, employment levels for men are also closer to levels for London and for England (however, not as close as Hounslow), and women have the greatest difference (7.2 percentage points) below the national rate.

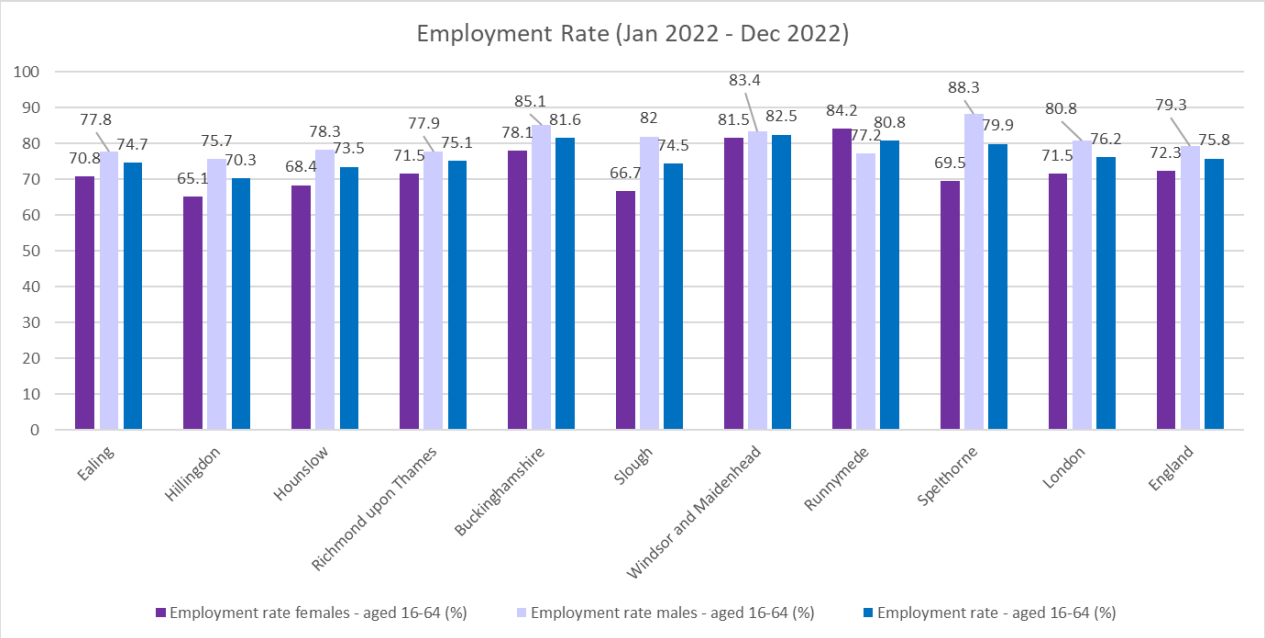
7.3.17 Of the other boroughs provided for supporting context, Slough, Ealing and Richmond upon Thames also have employment levels below London and England. The boroughs with the highest overall employment levels are Buckinghamshire, Windsor and Maidenhead, and Spelthorne. Boroughs with the greatest difference in employment levels for men and women are Spelthorne (18.8 percentage points difference between male and female employment rate) and Slough (15.3 percentage points difference).

[139] Office for Health Improvement and Disparities, (2020)., 'Percentage of the total resident population who are 16 to 24 years of age, 2020 (%)' Available at: https://www.localhealth.org.uk/#bbox=491411,185886,30482,18196&c=indicator&i=t1.pop_16_24&selcodgeo=E02000524&view=map7 (Accessed 5 July 2023)

[140] ONS, (2023)., '2021 Census' Available at: https://www.ons.gov.uk/datasets/create (Accessed 5 July 2023)

[141] Nomis, (2022)., 'Annual population survey' Available at: https://stats.hounslow.gov.uk/economy-and-employment/#/view-report/9e93e3faae4c449084e459fcd86e88d0/___iaFirstFeature/G3 (Accessed 5 July 2023)

Graphic 7.3 – Employment Rate[142]

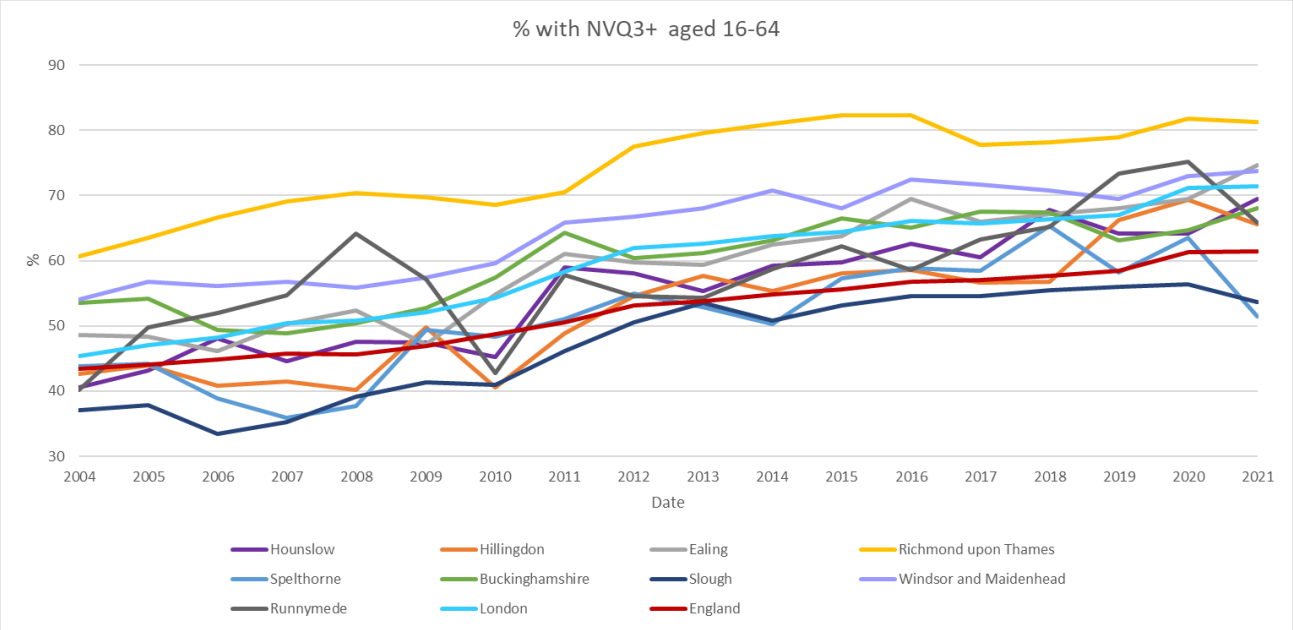


7.3.18 Education standards have broadly followed the upward increase seen in London and England. In Hounslow qualification levels at NVQ3 and above are higher than in England but lower than in London[143] (see **Graphic 7.4**). Hounslow occupies a similar midway position for other NVQ levels of qualification.

7.3.19 Of the other boroughs provided for supporting context, Richmond upon Thames has a higher percentage of people aged 16-64 with NVQ3 and above. Most boroughs have qualification levels above those in England, other than Slough and Spelthorne.

[142] Nomis, (2022)., 'Annual population survey' Available at: https://www.nomisweb.co.uk/datasets/apsnew (Accessed 5 July 2023)
[143] ONS (2021)., 'Annual Population Survey' Available at: https://www.nomisweb.co.uk/datasets/apsnew (Accessed 5 July 2023)

Graphic 7.4 – Percentage of 16-64 age group with qualifications of NVQ3 and above[144]



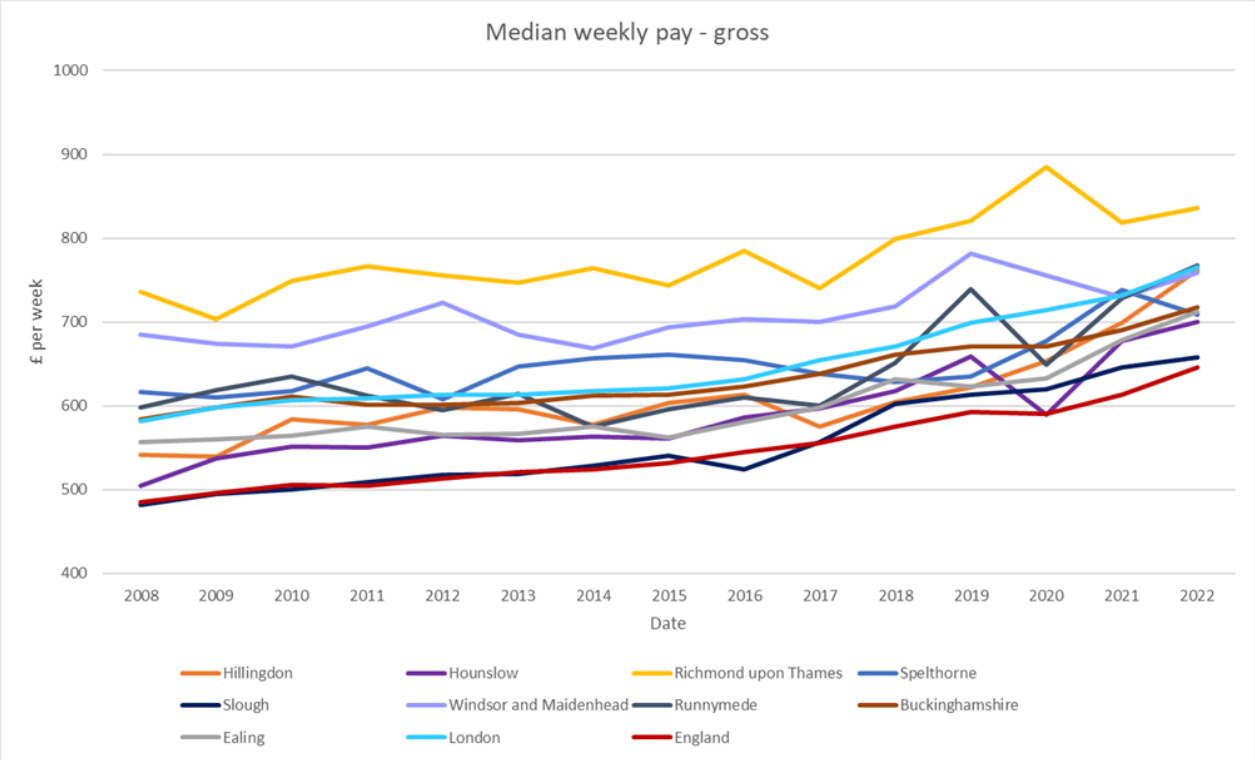
7.3.20 Hounslow maintains a middle position between England and London as pay levels have increased over time (see **Graphic 7.5**). The dip in 2020 reflects Covid-19[145]. Hillingdon also maintains a middle position between England and London.

7.3.21 For the other boroughs provided for supporting context, pay levels for Richmond upon Thames and Windsor and Maidenhead are typically above London pay levels (despite the occasional falls below the London level in 2021 and 2022 likely to be Covid-related).

[144] ONS, (2021)., 'Annual Population Survey' Available at: https://www.nomisweb.co.uk/datasets/apsnew (Accessed 5 July 2023)

[145] It may indicate a particular type of vulnerability in the community such as a high proportion of short-term contracts but also may be due to vulnerability of the statistical method to Covid-related features such as smaller sample sizes.

Graphic 7.5 – Gross weekly pay all fulltime workers (£/week)



7.3.22 The structure of employment in Hillingdon, Hounslow, and the boroughs provided for supporting context is shown in **Figure 7.4**. Hounslow is very close to the average for England[146]. Hillingdon has a slightly greater proportion of workers in administrative and secretarial occupations compared to the average for England.

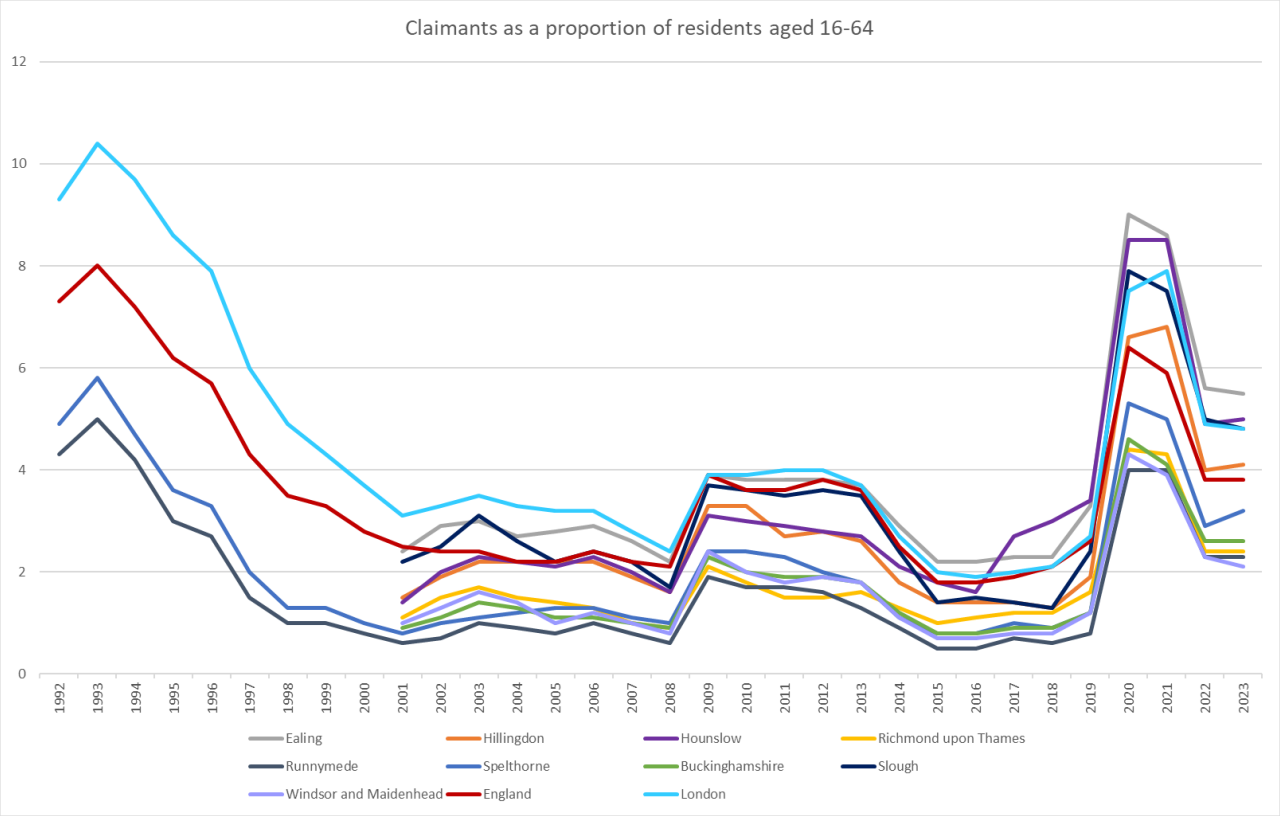
7.3.23 The employment pattern by industry (see **Figure 7.5**[147] for Hillingdon, Hounslow and boroughs provided for supporting context) shows Hounslow as having the greatest proportion employed in the public administration and health sectors, though less than the national average. There is also a strong representation in the transport and communication sectors likely to reflect supply chains serving the airport[148].

7.3.24 A general social indicator is provided by the number of claimants making use of social funds and services. **Graphic 7.6** provides the number of claimants as a proportion of residents aged 16-64.[149] In Hounslow this was noticeably below trends for London and

[146] ONS, (2021)., 'Annual Population Survey' Available at: https://www.nomisweb.co.uk/datasets/apsnew (Accessed 5 July 2023)
[147] ONS, (2021)., 'Business Register and Employment Survey' Available at: https://www.nomisweb.co.uk/datasets/newbres6pub (Accessed 5 July 2023)
[148] ONS, (2021)., 'Annual Population Survey' Available at: https://www.nomisweb.co.uk/datasets/apsnew (Accessed 5 July 2023)
[149] Nomis, (2023),. 'Claimant count by sex and age' Available at: https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=162 (Accessed 5 July 2023)

England until 2017 but since has risen above[150]. The higher rate as well as the sudden change may indicate vulnerability in the workforce.

Graphic 7.6 – Claimant count – claimants as a proportion of residents aged 16-64. Data is for May of each year (%) in Hounslow (%)[151,152]



7.3.25 Vulnerable receptors more generally are often indicated through socio-economic metrics which record levels and causes of deprivation. The levels of deprivation are relatively similar across the Hillingdon and Hounslow boroughs (see **Figure 7.2**[153] and **Figure 7.3**).

7.3.26 The population, particularly in the centres to the east, lives and works in nearby areas with a significant majority travelling less than 10km to work as shown in **Graphic 7.7**.

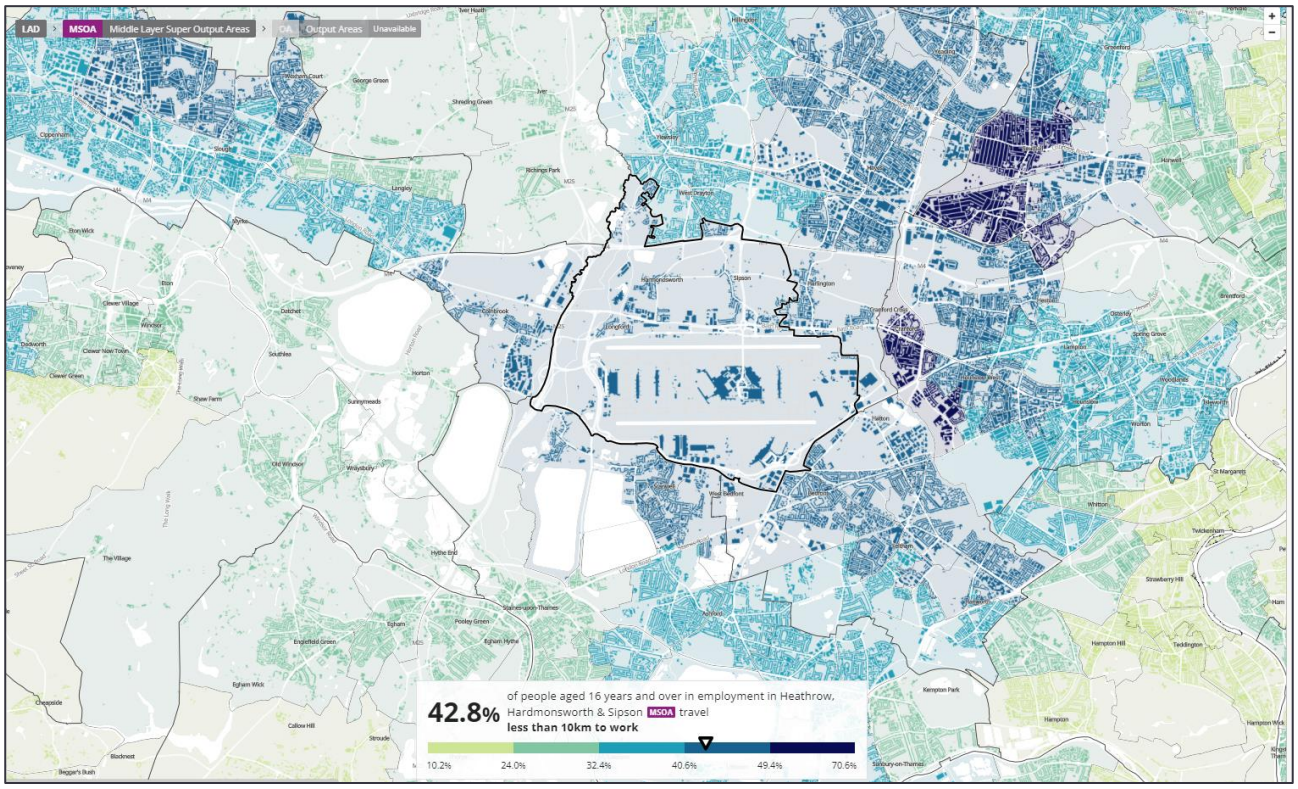
150 https://www.nomisweb.co.uk/reports/lmp/la/1946157272/subreports/cc_time_series/report.aspx?c1=2013265927&c2=2092957699

151 "% is the number of claimants as a proportion of resident population of area aged 16-64 and gender" (nomis)

152 Nomis, (2023),. 'Claimant count by sex and age' Available at: https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=162 (Accessed 5 July 2023)

153 Medium Super Output Areas (MSOAs).

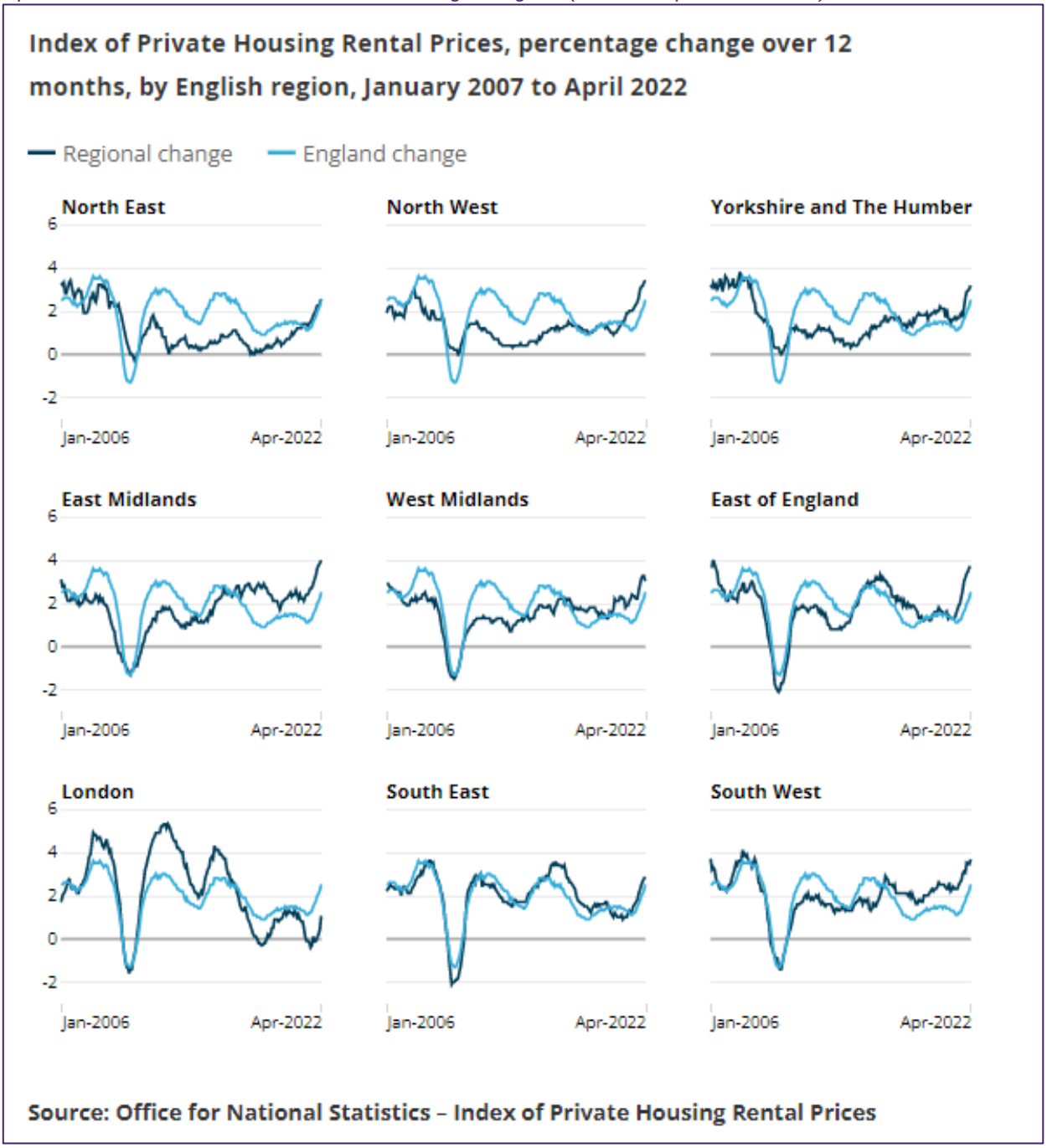
*Graphic **7**.7 – Proportion of people travelling less than 10km to work.*



7.3.27 The potential ability for people to change their circumstances through access to housing is recorded in a 'barriers to housing' indicator which is one of the elements in the overall index of multiple deprivation. The areas within Hillingdon and Hounslow show high deprivation in access to housing (see **Figure 7.8)**.

7.3.28 In the housing market, private rental rates have increased least compared with other English regions and have also shown wider swings[154] (see **Graphic 7.8**).

Graphic 7.8 – House Prices in London and other English regions (dates as reported in source)



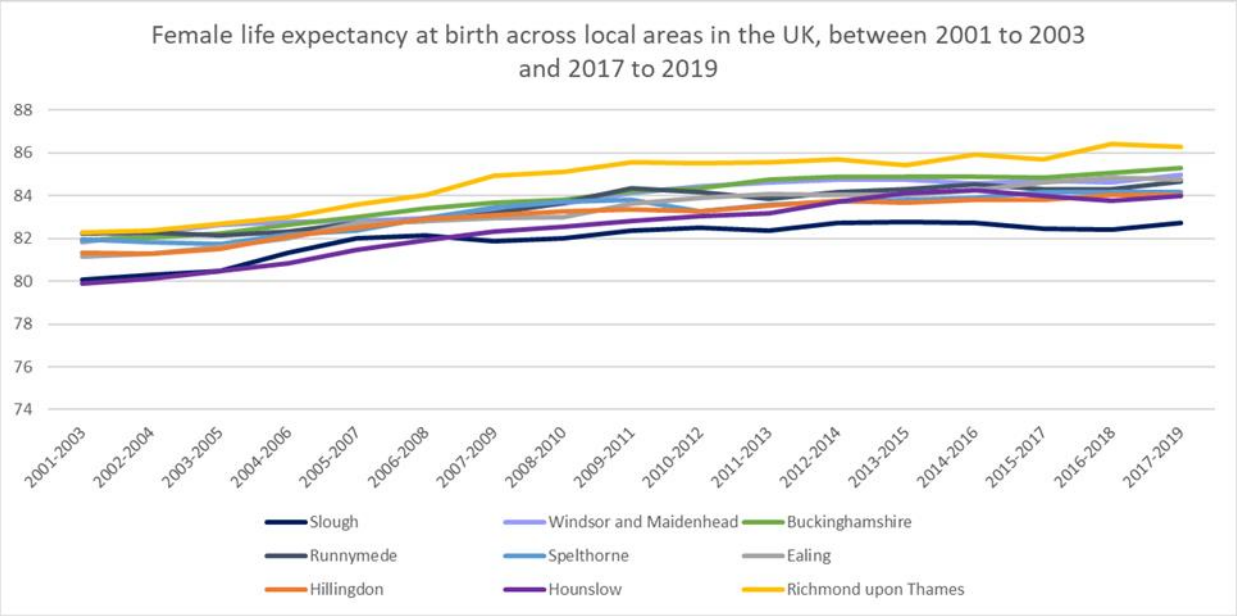
7.3.29 The mixed residential character of the neighbourhood is shown by the widely distributed locations of environmental importance across the area.

[154] Office for National Statistics (2023). Index of Private Housing Rental Prices, UK Statistical bulletins. (Online) Available at: https://www.ons.gov.uk/economy/inflationandpriceindices/bulletins/indexofprivatehousingrentalprices/previousReleases (accessed April 2023).

7.3.30 There are a number of public rights of way (PRoWs) within and around the Proposed Development and their widespread distribution indicates a similarly widespread set of potential users both geographically and by type[155] (see **Figure 7.9**). The same is expected for other areas affected by the Proposed Development.

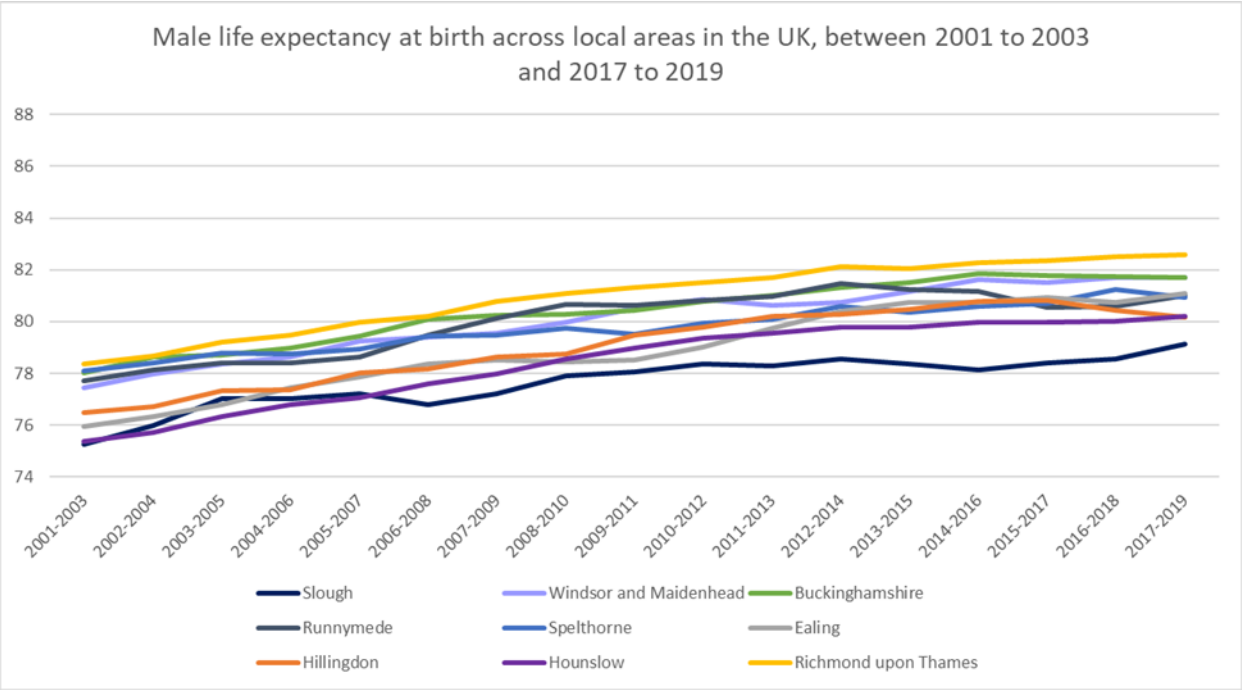
7.3.31 The general health of the population as indicated by life expectancy at birth has increased (see **Graphic 7.9** and **Graphic 7.10**). In Hillingdon and Hounslow life expectancy is now effectively identical, whereas previously life expectancy in Hounslow was noticeably poorer.[156] There is a relatively constant difference in life expectancy between the other boroughs, with Slough the lowest and Richmond upon Thames the highest.

Graphic 7.9 - Life expectancy at birth across local areas in the UK, between 2001 to 2003 and 2017 to 2019 (female)[157]



[155] Definitive Map and Statement - Hillingdon Council
[156] ONS (2020) Life Expectancy by Local Authority. Available (online) https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/lifeexpectancyforlocalareasoftheuk/between2001to2003and2017to2019
[157] ONS. (2020). Life expectancy for local areas of the UK: between 2001 to 2003 and 2017 to 2019. (Online). Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/lifeexpectancyforlocalareasoftheuk/between2001to2003and2017to2019 (Accessed 5 July 2023).

Graphic 7.10 - Life expectancy at birth across local areas in the UK, between 2001 to 2003 and 2017 to 2019 (male)[158]



7.3.32 Further detail regarding health effects is provided in **Section 8.**

Future baseline

7.3.33 The future baseline reflects anticipated demographic change as reported in UK national projections. A growth in the proportion of older people within a steadily but relatively slow-growing population is an indicator of increasing potential vulnerability for older age groups as the future unfolds. In assessment, these would be experienced according also to a changing noise profile.

7.4 Scope of the assessment

7.4.1 The general approach to the EIA is set out in **Section 4: The EIA process**. However, whilst this has informed the approach that has been used in this Section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the People and Communities Assessment in the Environmental Statement.

Potential receptors

7.4.2 This Section details the approach to identifying receptors that could be significantly affected by the Proposed Development and therefore need to be considered.

[158] ONS. (2020). Life expectancy for local areas of the UK: between 2001 to 2003 and 2017 to 2019. (Online). Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/lifeexpectancyforlocalareasoftheuk/between2001to2003and2017to2019 (Accessed 5 July 2023).

7.4.3 Receptors are generally defined for socio-economic assessment as any individuals or groups of people who may potentially experience significant effects.

7.4.4 The areas specified in the noise and air quality chapters are used as the main geographic delimiters for the areas of assessment for effects on people and communities. Within these areas, all socio-economic effects are assumed scoped-in until further assessed.

7.4.5 Identification of socio-economic receptors takes account of the representation of the characteristics and behaviours of receptors defined under relevant technical topics and is coordinated with the methodology development in the other chapters of this Environmental Statement, with specific reference to:

- Receptors identified in other chapters (including noise and air quality) which are also socio-economic receptors.
- Receptors identified in relevant precedent assessment.
- Central and local government socio-economic data, including recent 2021 Census results.

7.4.6 For this scoping assessment, two receptors are defined and used to cover all the receptors in the area experiencing the effects of the Proposed Development:

- General public; specific and potentially vulnerable receptors.
- Workers in the vicinity.

Effects on Receptors

7.4.7 The types of activities that may be subject to likely significant effects are grouped into seven:

- Community activities with regular temporal patterns.
- Community events, scheduled and ad-hoc.
- Working in the local area.
- Outdoor use of amenity, recreational and cultural facilities.
- Economic activities and employment.
- Activities affecting health or health conditions.
- Passenger use of airport terminals.

7.4.8 The following broad categories of effects with socio-economic outcomes on resident populations are scoped in, noting that some effects may fall in more than one category:

- Effects related to noise, vibration and air quality.
- Effects arising during working, such as where ambient noise levels affect safety.
- Effects related to use of amenity, recreational and cultural facilities.

- Effects dependent on patterns of community behaviour (including religious calendars; school timetables, entertainment and sports schedules) and community events (including religious festivals, sports days and street parties)
- Effects related to traffic and use of transport (including peak/school times and at certain locations)
- Effects on vulnerable health groups, based on general health and prevalence of particular conditions. Health effects are considered in more detail in **Section 8**.

7.4.9 In addition, change in effects over time, such as related to an aging demography, will be considered as well as specific effects on passengers and effects which may arise outside the 20 * 40 nm rectangle, such as use of longer supply chains for construction materials.

7.4.10 Effects on community facilities such as schools, health, social, and retail centres, are not considered separately but as locations where effects on people may be more concentrated.

7.4.11 **The Effects on Economy and Employment (inc. GVA effects[159]) are scoped out** based on simple comparison of supply chain requirements with the size of nearby London markets. Furthermore, the main intention of the Proposed Development is to redistribute noise. The intention of the Proposed Development is not primarily economic. There are no additional revenues generated and the financial effects arise from the costs of implementing the Proposed Development - a medium sized construction project on a constrained site within a large regional construction market. For these reasons, all market-based effects from labour and materials are scoped out as well as their potential economic effects. The total project value is a very small percentage of the London investment market. Supporting reasons for expecting no significant effects are:

- The mobility of employment in the London construction market, which makes it a large market in which demand from the Proposed Development will not have a significant effect.
- People living locally with construction skills and without work will be few in number (also due to mobility) and so will not be affected by demand from the Proposed Development.
- The skills in the transport and communication sectors of the local economy are higher than in England, consistent with a local supply chain supporting Heathrow (see **Figure 7.5)**.
- People are working locally and travelling short distances to work. Compared to England, the area has a higher proportion of people commuting less than 10km a day. This means economic effects are likely to be retained in the area.
- No specialised supply chains are required to a degree sufficient to affect patterns of supply in upstream industries significantly or have significant indirect effects. Heathrow also has established supply chain and logistics mechanisms due to the near constant improvement and asset replacement works at the airport.

[159] Gross Value Added (GVA) is an indicator of economic performance.

Requirements for materials and services are standard and volumes are small compared to market sizes.

- If a further comparator is used of the scale of change during Covid-19, the economic and employment effects would be hardly noticeable.

7.4.12 Effects arising from the following groups of activities are scoped in (see **Table 7.3** – People and communities).

Table 7.3 Likely significant effects – People and communities

Activity	Effect	Receptor
Community events	Patterns of air noise and other operational effects which coincide with planned or seasonal schedules of events. Schedules for cultural, religious, sporting, and entertainment events will be confirmed with local councils.	General public; specific and potentially vulnerable receptors
Community activities with regular temporal patterns	Patterns of air noise and other operational effects may coincide with temporal patterns of behaviour for people in communities. Regular activities fall under similar headings to those used for community events (cultural, religious, sporting, and entertainment). Schedules relevant to the community may include: markets; religious calendars; food preparation; sports practices; ecological/astronomical calendars; nature-watching; travel/commuting patterns.	General public; specific and potentially vulnerable receptors
Working locally	Patterns of air noise and other operational effects may affect capability in performing some types of work or tasks. While workers are visitors and would be covered anyway, there may be particular types of work where noise may have specific effects such as safety when working in the construction sector.	Workers in the vicinity
Outdoor recreation	Patterns of air noise and other operational effects may coincide with periods and locations of community activity such sports or recreational events (park sports festivals, sports fields, playgrounds).	General public; specific and potentially vulnerable receptors
Health conditions (addressed in Section 9)	Patterns of air noise and other operational effects may increase the prevalence of certain health conditions and the possible effects are addressed in **Section 8**.	General public; specific and potentially vulnerable receptors

7.5 Assessment methodology

7.5.1 The proposed generic project-wide approach to the assessment methodology is set out in **Section 4.3.** However, whilst this has informed the approach that has been used in this section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the People and Communities assessment in the Environmental Statement.

7.5.2 The assessment methodology continues the approach used to identify receptors described above. The largest group of receptors are all people within a geographic distance of noise effects and the assessment methodology is similarly geographically based. For these receptors, all socio-economic effects scoped-in above are included.

7.5.3 If areas all have the same socio-economic characteristics, then a redistribution of noise will lead to no aggregate socio-economic effect and the Proposed Development would logically be considered neutral overall[160]. The scale of disaggregation likely to be required to clarify differences between communities and areas was not established for this scoping study and will depend on noise modelling and results.

7.5.4 The identification of the types of activities, receptors and effects and required level of detail is affected by community characteristics including local authority planning and by dataset availability. The groups of receptors defined above are considered appropriate for covering the relevant effects.

7.5.5 In this assessment, likely significant health effects occur for similar reasons as socio-economic effects and a common methodology is adopted and described below. The health chapter provides further description of the application of the common methodology.

7.5.6 The socio-economic and health impact assessment of People and Communities is the systematic analysis of the effects of the Proposed Development on society resulting from changes to the circumstances in the environment of affected populations. The assessment has the objective of structuring both the analysis and the underlying information for decision-making within an overall aim of identifying the consequences from all types of effects on all participants in society. Both beneficial and adverse effects are assessed together with measures providing associated embedded or additional enhancement or mitigation.

7.5.7 The basis of good practice in socio-economic assessment is commonly understood to be the implementation of a structured approach to answering the types of questions that arise from an overarching and general concern with people and communities in society. Questions are potentially wide-ranging and include those that individuals from any background might themselves raise due to direct effects on themselves or on people of concern to them.

- Will the Proposed Development result in material changes to the local, regional, or national demography, economy, economic sectors, employment opportunities or community characteristics, environment, amenities and facilities?

[160] Note that an area ‘receiving noise’ could also be characterised as ‘providing tranquillity’ to other areas.

- Will a small number of people be affected in a significant way (changes to transport, employment prospects, amenity) or will significant numbers of people be affected?
- Will people be affected over a long timescale?
- Will there be involuntary displacement of people and businesses?
- Will the Proposed Development result in a change similar to or larger than that experienced in the area over a similar time period in the past?
- Does the nature of effects caused by the Proposed Development or characteristics of people affected mean they would be particularly vulnerable or particularly advantaged?
- Ultimately, should the issue have a bearing on the decision whether to grant approval of the Proposed Development or not?

7.5.8 Effects are defined in terms of their consequences on “receptors”. The objective in assessment is to cover all potential effects on all affected receptors, and to establish those likely to be significant. Each effect will have one or more receptors.

7.5.9 The simplest specification of socio-economic receptors is ‘people’, but more specific characterisations may also be used such as groups or organisations they belong to (for example, ‘workforce’ or according to religious belief). An individual may appear under more than one receptor heading (for example, as a member of the workforce and as a local resident).

Identification of effects

7.5.10 The identification of possible effects follows the principles underpinning EIA, particularly the principle of scoping. The effects resulting from the activities related to the Proposed Development are identified and described according to knowledge of how activities related to it will occur. Such knowledge is continuously evolving as the design and understanding of the Proposed Development advances. Socio-economic effects may also arise from specific changes to the environment and be assessed using evidence provided in support of assessment of other EIA topics.

7.5.11 The activities which lead to potential significant effects are presented in **Table 7.3** and comprise those that are currently understood to require assessment. The list is based on review of current documentation of the Proposed Development, review of previous impact assessments for similar developments, and consideration of the range of potential socio-economic and health effects that may occur. This includes, for example, the possible outcomes of the air quality modelling, noise attenuation modelling, and traffic and transport studies.

Assessment of Significance

7.5.12 The assessment of the significance of the effects is the primary concern and main output of the analysis. Significance will be assessed with and without additional mitigating measures implemented as part of the Proposed Development which are intended to enhance beneficial effects or mitigate adverse effects. The assessment will first assess

effects according to the estimated magnitude of change from the baseline and the sensitivity of receptors. Mitigating measures that enhance or mitigate socio-economic and health effects will then be used to derive the net residual effects used for the final assessment of significance.

7.5.13 Criteria for significance will be developed alongside the estimates of effects to meet the requirements for assessment of the specific types of effects according to the characteristics of receptors, as well as meeting good practice for criteria (such as being easy-to-use). Outcomes for assessments of significance will use the categories defined in the generic project-wide approach of 'Major', 'Moderate', 'Minor' or 'Negligible'. Effects can be either beneficial or adverse.

7.5.14 The significance of effects will be assessed through the evaluation of the combination of the magnitude of effects and sensitivity of receptors using the matrix defined in the generic project-wide approach. Determination of magnitudes of change and of receptor sensitivity will similarly use the generic categories of 'Very high', 'High', 'Medium', 'Low', and 'Very low'.

7.5.15 The magnitude of change is a summary term used to describe the features of an effect which can be represented as varying over a range. Straightforward effects may be represented with quantitative indicators, such as employment relative to a national average, but other effects may need a semi-quantitative or qualitative approach to account for variation that covers features such as:

- A more general concept of scale or extent (for example, number of groups and/or people, households or businesses affected; spatial area affected).
- The duration and frequency of effects and whether they are permanent or time-limited (short, medium, long).
- The direction of change and its reversibility.
- The probability of occurrence.

7.5.16 The assessment of the magnitude of change is based on a comparison with baseline conditions which show outcomes without the Proposed Development, and with comparators from similar developments or modelled scenarios.

7.5.17 The sensitivity of a receptor is a summary term that describes the ability of the receptor to withstand or absorb change within the period of time the effects is expected to occur and without a fundamental change to its character or attributes. Sensitivity to socio-economic and health effects has no single interpretation and can be seen as capturing the concept of a value that is potentially threatened or enhanced.

7.5.18 Sensitivity of receptors may depend on their current and future characteristics as well as the nature of the effect, reflecting aspects such as:

- Capacity and availability of community resources.
- Previous experience of socio-economic change.
- Vulnerability from pre-existing social circumstances or health conditions.

- Cultural values, including public interest, perceptions towards a risk or potential change, and acceptability.
- Environmental vulnerability of habitats important to the socio-economic and health context (such as open space and public parks).
- The direction, duration and reversibility of the specific effects.

7.5.19 The evaluation of significance will be based on a set of customised criteria which:

- Are easy-to-use, explain, and are widely agreed, such as legal and physical thresholds including health and environmental standards.
- Can be consistently and rationally applied and documented.
- Meet public concerns (particularly over health and safety).
- Reflect procedure and guidance.
- Reflect precedent experience.

7.5.20 Quantitative thresholds for criteria related to specific effects supplemented by precedents from other relevant assessments will be used where available. Where this is not possible, professional judgement will be used to apply criteria in a manner that aims to reflect whether the general population would judge the effect to be of concern or not, taking into account aspects of demography, employment, economic effects, accommodation pressure, and social conditions and services.

7.5.21 While specific reference to available criteria will be made, an indication of their application can be seen by noting that an effect would be considered significant if, in the professional judgement of the expert undertaking the assessment, it would meet at least one of the following more general criteria:

- It leads to an exceedance of a defined standard or guideline used in determining what is considered an acceptable change in environmental conditions regarding socio-economic or health outcomes.
- It is likely that the Local Planning Authority would reasonably consider applying a planning condition to the consent to require specific mitigation to reduce or overcome the effect.
- It threatens or enhances the socio-economic conditions, health or quality of life by leading to beneficial or negative socio-economic, health or quality of life effects that are quantifiable and/or noticeable to the affected population (and that where data is available, is statistically significant).
- It is otherwise likely to form part of the Local Planning Authority's assessment of material considerations relevant to their determination of the application.

7.5.22 The summary of significance will be presented in a table showing each effect identifying whether it is beneficial or adverse together with additional summary information (see **Section 4.5** for further information). Rows will divide by both categories of receptor and

type of effect. Where there are multiple effects on communities each may be further subdivided.

COVID-19

7.5.23 The methodology needs to account for sensitivities arising from the COVID-19 pandemic in two main ways:

- Statistics from periods before COVID-19 may be more representative of the baseline than recent statistics; and
- Past COVID-19 and future pandemics may bring additional future vulnerability to receptors also affected by the Proposed Development.

7.5.24 The variation in indicator statistics over the COVID-19 period provides a reference for the additional future vulnerability of receptors which can be compared to the magnitudes of change arising from the Proposed Development (or other causes) to assess their relative significance.

Information sources

7.5.25 The socio-economic characteristics will be assessed based on available government statistical data and use the associated definitions. Where appropriate, more detailed assessment will be made taking account of the data availability, scale of potential effect and achievable accuracy.

8. Health

8.1 Introduction

8.1.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The number of aircraft movements will be unchanged by the Proposed Development.

8.1.2 The potential effects in health terms would arise from the increase in the number of aircraft departing on the northern runway (09L) and arriving on the southern runway (09R) during easterly operations, and the decrease in the number of aircraft departing on the southern runway (09R) and landing on the northern runway (09L) during the same mode of operations. These changes may result in both positive and negative effects on health and health-related behaviours.

8.1.3 The assessment of health considers the likely significant effects arising from the construction and operation of the Proposed Development on:

1. People, primarily where they live ('residential receptors') on an individual dwelling basis and on a community basis, including any shared community open areas.
2. Community facilities such as schools, hospitals, places of worship, and commercial properties such as offices and hotels.

8.1.4 This section of the Scoping Report identifies the scope of the assessment of effects on health arising from the likely significant effects of the Proposed Development.

8.1.5 This section comprises scoping considerations for an Assessment of Health Effects (AHE) which has the overall objective of meeting the requirements of UK EIA legislation for consideration of likely significant health effects[161]. It describes the assessment methodology to be used within the EIA, an overview of the baseline conditions, the datasets to be used to inform the EIA, the likely significant effects to be considered within the EIA, and how these likely significant effects will be assessed for the purpose of an EIA.

8.1.6 This section is aligned with the corresponding sub-sections of **Section 7 People & Communities** which include further detail on the socio-economic context including potential wider determinants of health and potential effects for relevant communities. The AHE follows a very similar methodology to **Section 7**. In particular, the use of the noise[162] and air quality footprints as a key reference for determining the spatial scope and of a temporal scope that includes all phases of construction and operation.

8.2 Relevant legislation, planning policy, technical guidance

8.2.1 Health is set within a wider legislative and policy context which is established in **Section 7**. This context is assumed to apply when assessing the wider socio-economic context

[161] Note that this chapter follows the DoH HIA guidance in treating “health” as synonymous with “health and wellbeing”.
[162] “noise” is to be assumed synonymous with “noise and vibration” throughout this chapter.

and the factors relevant to the wider determinants of health. Additional policy references with specific relevance to health and wellbeing are identified in **Table 8.1**.

Table 8.1 Planning policy issues relevant to AHE

Policy reference	Policy issue	Considered in section
Aviation Policy Framework (APF)	The APF identifies the need for a "*fair balance between the negative impacts of noise (on health, amenity (quality of life) and productivity) and the positive economic impacts of flights"* with benefits shared between the aviation industry and local communities, particularly as noise levels fall with technology improvements. It states that *"planning policies and decisions should aim to avoid a situation where noise gives rise to significant adverse impacts on health*" and mitigation should *"reduce to a minimum other adverse impacts on health".*	
Airports National Policy Statement (ANPS)	As well as covering the wider effects on people and communities as identified in Section 8, the ANPS specifically addresses health stating that *"any environmental statement should identify and set out the assessment of any likely significant health impacts".* It notes that airports infrastructure may have both direct and indirect effects on health arising from "*traffic, noise, vibration, air quality and emissions, light pollution, community severance, dust, odour, polluting water, hazardous waste and pests"* with effects on *"access to key public services, local transport, opportunities for cycling and walking, or the use of open space for recreation and physical activity"* and notes that effects should be mitigated (Paras 4.70-4.72).	
Planning Practice Guidance (PPG)[163]	The Planning Practice Guidance (PPG) states that Local Planning Authorities should ensure that health and wellbeing, along with health infrastructure, are considered in both local and neighbourhood plans and when making planning decisions (Paragraph: 001 Reference ID: 53-001-20140306).	All sections
National Health Service (2019) *NHS Long Term Plan*[164]	The plan covers a 10-year programme of phased improvements to NHS services and outcomes and has an emphasis on the NHS and built environment sectors working together to improve health and wellbeing.	All sections

[163] https://www.gov.uk/government/collections/planning-practice-guidance
[164] https://www.longtermplan.nhs.uk/

Policy reference	Policy issue	Considered in section
Public Health England (2019) *PHE Strategy 2020 to 2025*	The PHE Strategy includes the aims of reducing air pollution, promoting good mental health and contributing to the prevention of mental illness.	All sections
Hounslow Council (current in 2023) *Joint Strategic Needs Assessment*[165]	Hounslow Council state that material related to the Joint Strategic Needs Assessment can be accessed through the *Hounslow Data Hub website* which is stated to support commissioning and health planning to 1) Reduce health inequalities in the borough, 2) Assess current and future health care and wellbeing needs of the local population; and 3) Improve service access and delivery.	All sections
Hillingdon Council (2021) *Joint Health and Wellbeing Strategy 2022-2025*[166]	The Joint Health and Wellbeing Strategy provides summary information on the health characteristics of the current population and objectives (key metrics) over the three-year period to 2025.	All sections

Legislation

8.2.2 Effects on health should be assessed as part of EIA, as required by the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. The 2017 Regulations implements *the EU EIA Directive 2011/92/EU (as amended by 2014/52/EU)* in the UK. It states that:

- The objective of EIA is to "*to ensure a high level of protection of the environment and of human health*" (Recital 41).
- The EIA shall *"identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on population and human health…"* (Article 3).

8.2.3 Reporting for EIA must present the 'likely significant' human health effects of the project which, due to uncertainty at the early scoping stage, may be able only to identify whether population health effects are 'potentially significant'[167]. Common practice has established that assessment should include a description of the consequences of the effects on the environment as experienced by communities locally and, where appropriate, more widely. The method adopted is therefore one of determining the existing and future health conditions and effects on these communities (the baseline) followed by the assessment of relevant aspects and effects on individual receptors. The approach uses desk-based analysis, drawing on statistical information and professional judgment/ opinion as well as relevant government and other guidance.

165 https://www.hounslow.gov.uk/info/20122/joint_strategic_needs_assessment/1513/what_is_the_joint_strategic_needs_assessment

166 Joint Health and Wellbeing Strategy 2022-2025, Hillingdon Council.

167 The IEMA 2022 Guidance (see Table 4.2 Technical guidance)

8.2.4 IEMA 2022 Guidance[168] states that a high-level approach based on available information can be used at the scoping stage with effects deemed 'likely' or 'not likely' and 'potentially significant' or 'not significant' in order to ensure focus and proportionality in application.

Technical guidance

8.2.5 Health is set within a wider socio-economic context which has sources of general assessment guidance as identified in **Section 7.** These sources set out guidance which is assumed to apply when assessing the wider socio-economic context and the factors relevant to the wider determinants of health. **Table 8.2** sets out additional technical guidance relevant to health and the AHE.

Table 8.2 Technical guidance relevant to AHE

Technical Guidance	Summary	Considered in section
The World Health Organization Health Impact Assessment guidance, tools and methods[169]	The guidance, tools and methods are recognised as the leading international source for the completion of human health impact assessments. The guidance covers a number of topic areas that are linked to health impacts from projects, including transport, housing, and water and sanitation.	Relevant to methodology for all sub-aspects related to health.
IEMA (2022) *Effective Scoping of Human Health in Environmental Impact Assessment* and *Determining Significance for Human Health in EIA* ("IEMA 2022 Guidance")	The most recent guidance and directly relevant to this assessment.	Relevant to methodology for all sub-aspects related to health.
Health Impact Assessment of Government Policy, Department of Health ("DoH HIA guidance")[170] **Including the supporting HIA guidance documents:** • **Evidence on health** • **Case studies from government departments**	Guidance for Health Impact Assessment (HIA) but which is intended to "*be helpful for assessing the health impacts of policy more generally".*	Relevant to methodology for all sub-aspects related to health.

[168] See Table 9.2.
[169] World Health Organisation (2021). Health impact assessment (HIA) tools and methods. (Online) Available at: https://www.who.int/tools/health-impact-assessments (Accessed April 2023).
[170] UK Department of Health (2010). Health Impact Assessment of Government Policy, (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/216009/dh_120110.pdf (Accessed April 2023).

Technical Guidance	Summary	Considered in section
A guide to quantifying health impacts of government policy		
Public Health England (2021) ***Getting Research Into Practice A resource for local authorities on planning healthier places***[171]	The Getting Research Into Practice (GRIP) aims to facilitate use of the Public Health England (PHE) 'Spatial Planning and Health: evidence resource' published in 2017 and to provide evidence-informed resources to assist local areas in improving health and wellbeing for their communities.	Relevant to methodology for all sub-aspects related to health.
NHS London Healthy Urban Development Unit (2019) ***Planning for Health, Rapid Health Impact Assessment Tool (fourth edition)***[172]	This tool aims to identify health determinants potentially influenced by a specific development proposal. The latest edition is consistent with the new National Planning Policy Framework, the London Plan, the NHS Long Term Plan, the Public Health England Strategy 2020 to 2025 and the 25 Year Environment Plan.	Relevant to methodology for all sub-aspects related to health.
Town and Country Planning Association (TCPA) (2018) ***Securing constructive collaboration and consensus for planning healthy developments, a report from the Developers and Wellbeing project***[173]	This report results from engagement with the development industry to incentivise the creation of healthy developments and achieve shared ambitions for quality of place for local communities.	Relevant to methodology for all sub-aspects related to health.
Public Health England (2017) ***Spatial Planning for Health, An evidence resource for planning and designing healthier places***	The report summarises a literature survey of links between spatial planning and health across five thematic areas: neighbourhood design, housing, healthier food, natural and sustainable environment, and transport.	Relevant to methodology for all sub-aspects related to health.
Guidance produced by the United Kingdom Public Health England: Health and Environmental Impact Assessment: ***A Briefing for***	This guidance is targeted towards national and regional public authorities in the assessment of future policies and plans but is also relevant to development projects.	Relevant to methodology for all sub-aspects related to health.

[171] https://www.gov.uk/government/publications/spatial-planning-and-health-getting-research-into-practice-grip
[172] https://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2019/10/HUDU-Rapid-HIA-Tool-October-2019.pdf
[173] https://tcpa.org.uk/wp-content/uploads/2021/11/TCPA-Securing_Constructive_Collaboration.pdf

Technical Guidance	Summary	Considered in section
Public Health Teams in England (2017)[174]		

8.3 Baseline conditions

Data gathering methodology

8.3.1 The Proposed Development will redistribute aircraft noise and hence the increases and decreases in effects experienced by specific populations are of most relevance.

8.3.2 The estimated area in which the footprint of air noise occurs is a rectangle 20nm by 40nm (nautical miles) (see **Section 6: Noise and vibration**). The more specific distribution of air noise effects will occur within a smaller footprint for which the Noise Preferential Routes (NPR) provide a general indication of the location of effects arising with easterly operations[175]. Ground noise is assessed within an area of up to 1km from the source and so within a maximum of 1km distance from the Airport boundary.

8.3.3 The estimated spatial area in which air quality impacts are assessed at this scoping stage is based on review of monitoring data including continuous monitoring[176] (see **Section 5: Air Quality**). There are fourteen continuously monitored locations within 2km of the Proposed Development, which lies within the Heathrow air quality Focus Area and is also relevant to Air Quality Management Areas (AQMA) in surrounding local authority areas[177] because of possible exposure to elevated nitrogen dioxide levels. The spatial area in the air quality assessment will be more specifically defined using additional dispersion modelling.

8.3.4 The spatial extent applicable to noise effects goes beyond the extent for air quality effects and so the larger 20 by 40nm rectangle and the indication of the footprint provided by the NPRs are used for scoping effects on people and communities. The methodology is dependent on the methodology for noise and air quality and more specific monitoring and modelling work will be undertaken and presented in the Environmental Statement and used to refine and coordinate selection of spatial scopes.

8.3.5 The 20 by 40 nm rectangle is a conservative spatial scope which is expected to include significantly smaller areas of likely significant effects which will be defined through noise modelling work. In general, both positive and negative effects of the Proposed

[174] Public Health England (2017). Health and Environmental Impact Assessment: A Briefing for Public Health Teams in England. (Online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/629207/Health_and_environmental_impact_assessment.pdf (Accessed April 2023).
[175] Noise Preferential Routes (NPRs) https://www.heathrow.com/company/local-community/noise/operations/departure-flight-paths
[176] Local authorities' Air Quality Review and Assessment reports and Heathrow Airwatch.
[177] Air Quality Management Areas are defined for the southern half of Hillingdon, South Buckinghamshire District Council, London Borough of Ealing, London Borough of Hounslow, and Spelthorne Borough Council (See **Section 6: Air Quality**)

Development will be greater nearer to the airport. The majority of the concentrated populations likely to be affected are within Hillingdon and Hounslow borough council areas. A further outer ring of boroughs are likely to include almost all other effects[178]. Hillingdon and Hounslow have the most potential to experience significant effects and are used below in identifying the potential impacts to be scoped in and type of assessment required. Additional information affecting the wider determinants of health across all boroughs is provided as part of the supporting context in **Section 7**.

8.3.6 Indicative figures, graphics and extracts are presented below and are mainly from government sources. Receptors of concern to this AHE and also identified in other sections include those affected by environmental thresholds such as health-derived noise and air quality standards. Receptors within these groups may be more or less vulnerable according to their existing health status.

8.3.7 The baseline data includes maps of indicators of potential health vulnerabilities. The areas where these coincide with areas with significant positive and negative changes in noise and air quality impacts will be of highest concern to the AHE.

8.3.8 The data gathered aims to be sufficient to confirm the scoping of receptors. A fuller description of the baseline will be provided in the Environmental Statement. More specific definition of groups of receptors and Proposed Development impacts is required to better identify priority receptors.

Current baseline

Summary

8.3.9 Health is set within the wider socio-economic context described **in Section 7**. There is broad similarity between areas in which significant health effects are likely to be experienced as shown in the relatively minor differences in the levels of socio-economic indicators informing the general context of the wider determinants of health, with an appreciably narrower range of effects in Hillingdon and Hounslow than the range seen at national level.

Baseline

8.3.10 The age-distribution of the population in Hillingdon and Hounslow and other boroughs are covered in **Section 7** and presented in **Figure 7.7**. Hillingdon and Hounslow have populations of 305,900[179] and 288,200[180] respectively and the higher number of people in of working age and lower than average number in older age groups is noticeable compared to England.

[178] Buckinghamshire, Ealing, Hillingdon, Hounslow, Richmond upon Thames, Runnymede, Slough, Spelthorne, Windsor and Maidenhead
[179] [2021] https://www.ons.gov.uk/visualisations/censuspopulationchange/E09000017/
[180] https://stats.hounslow.gov.uk/census-2021/

8.3.11 The population density in both boroughs is high under all flight paths to the east of Heathrow[181] (seen in the darker areas of the map of **Figure 8.1**) with the resulting effects also likely to be higher than elsewhere and so used here for identifying the types of effects to be scoped in.

8.3.12 The general health of a population can be seen in indicators of more prevalent health conditions. Life expectancy at birth in Hillingdon and Hounslow is similar and is currently slightly above the average for England for males and females in both boroughs. Across all included boroughs only male life expectancy in Slough is below the average for England (see **Table 8.3)**.

181 www.localhealth.org.uk/#bbox=485130,183491,30525,18196&c=indicator&i=t1.popden&selcodgeo=E02000524&view=map7

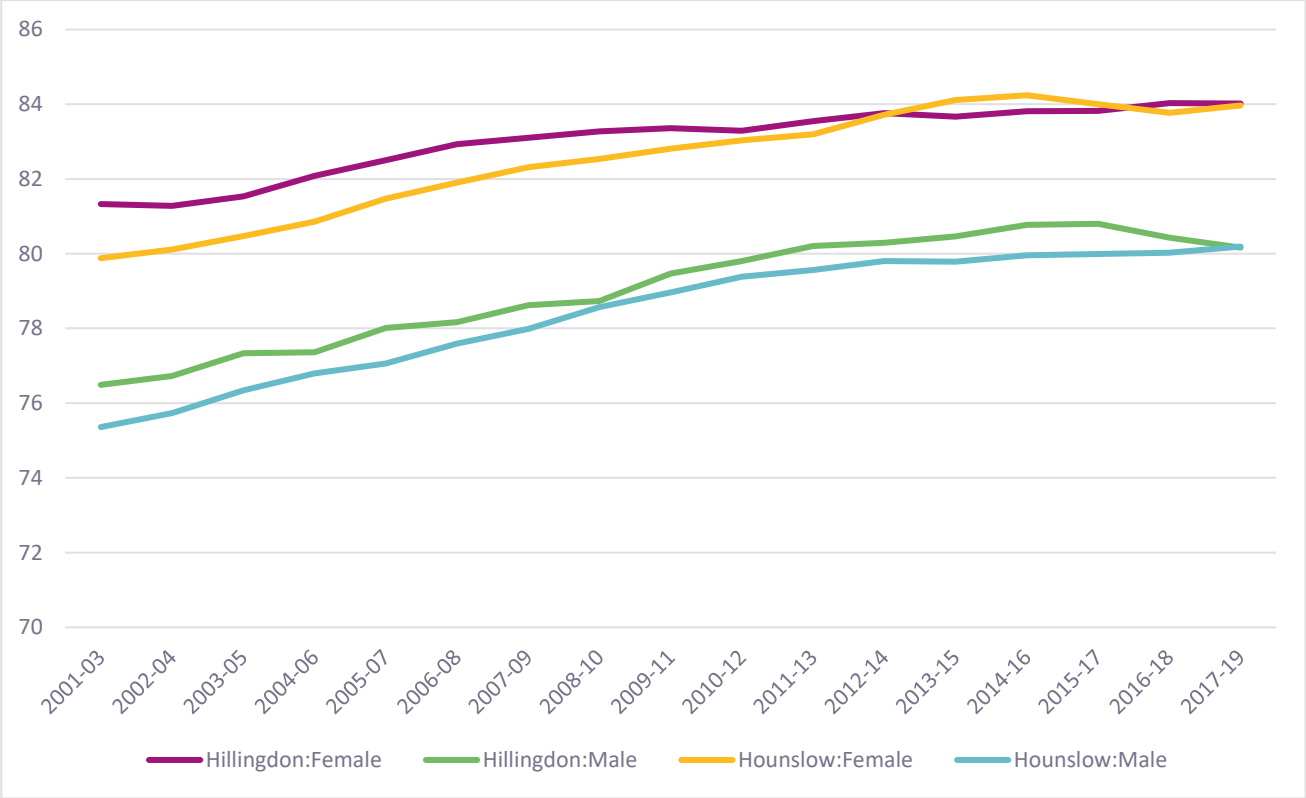
Table 8.3 Life expectancy at Birth[182]

Life expectancy (2016-2020)	*Hillingdon*	***Hounslow***	***Buckinghamshire***	***Ealing***	***Richmond upon Thames***	***Runnymede***	***Slough***	***Spelthorne***	***Windsor and Maidenhead***	***London NW CCG***	***England***
Life expectancy at Birth (years) - Male	80.2	79.7	81.6	80.3	82.4	80.8	78.9	80.7	81.6	81.1	79.5
Life expectancy at Birth (years) – Female	83.9	83.7	85.1	84.4	86.3	84.4	83.6	84.2	84.7	84.9	83.2

[182] Local Health - Office for Health Improvement and Disparities (https://www.localhealth.org.uk/#c=home)

8.3.13 The general health of the population as indicated by life expectancy at birth has increased in both Hillingdon and Hounslow and is now effectively identical, whereas previously life expectancy in Hounslow was noticeably poorer[183] (see **Graphic 8.1**). Comparison of the same statistic for other boroughs is shown in **Section 7** (see **Figure 7.12**).

Graphic 8.1 Life expectancy at birth for people in Hillingdon and Hounslow, between 2001 to 2003 and 2017 to 2019



8.3.14 Considering deaths from all the main causes, north west London[184] has an appreciably lower prevalence than England (SMR of 84.5 compared to 100) however Hillingdon and Hounslow have less of a difference from England (94.1 and 96.4 respectively). Furthermore, for coronary heart disease and circulatory disease both boroughs are worse than England and Hounslow is also worse for stroke (shown by values greater than 100) (see **Table 8.4**).

[183] ONS (2020) Life Expectancy by Local Authority. Available (online) https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/lifeexpectancyforlocalareasoftheuk/between2001to2003and2017to2019

[184] Represented by statistics for *NHS North West London Clinical Care Group (CCG)*

Table 8.4 Mortality by cause of death[185]

Causes of deaths - all ages (2016-2020)	*Hillingdon*	***Hounslow***	***Buckinghamshire***	***Ealing***	***Richmond upon Thames***	***Runnymede***	***Slough***	***Spelthorne***	***Windsor and Maidenhead***	***London NW CCG***	***England***
Deaths from all causes, all ages (Standardised mortality ratio (SMR))	94.1	96.4	83.8	89.8	75.6	90.8	101.2	92.1	86	84.5	100
Deaths from all cancer, all ages (Standardised mortality ratio (SMR))	90.3	86.9	88.4	86.3	81.1	100.3	105.3	92.6	85.9	82.7	100
Deaths from circulatory disease, all ages (Standardised mortality ratio (SMR))	102.8	106.6	82.9	95.2	75.6	91.4	109.5	91.6	81.9	94.3	100
Deaths from coronary heart disease, all ages (Standardised mortality ratio (SMR))	105.8	115.6	80.4	95	73.7	83	109.9	88.5	80.4	91.9	100

[185] Local Health - Office for Health Improvement and Disparities (https://www.localhealth.org.uk/#c=home)

Causes of deaths - all ages (2016-2020)	*Hillingdon*	***Hounslow***	***Buckinghamshire***	***Ealing***	***Richmond upon Thames***	***Runnymede***	***Slough***	***Spelthorne***	***Windsor and Maidenhead***	***London NW CCG***	***England***
Deaths from stroke, all ages (Standardised mortality ratio (SMR))	93.3	110.4	79.4	94.5	75.5	97.5	92.9	91	93.1	86.6	100

8.3.15 The spatial distribution of the most prevalent cause of death in Hillingdon and Hounslow (coronary heart disease) is higher in a band to the east of the Airport[186] (see darker areas of **Figure 8.2**).

8.3.16 Deaths from respiratory diseases are shown on **Figure 8.3[187].** The differences in the patterns of mortality by different causes shown in **Figure 8.2** and **Figure 8.3** provide additional evidence that the spatial extent of both noise and air quality impacts need to be considered when determining the spatial extent of the health assessment.

8.3.17 Health effects are affected by wider determinants of health which are characterised in general terms in the description of the socio-economic conditions (see **Section 7**). Indicators of conditions which more specifically affect health outcomes are listed in **Table 8.5**.

[186] 2011 Deaths from coronary heart disease, all ages, Indirectly standardised ratio, 2016 to 2020 (Standardised mortality ratio (SMR) https://www.localhealth.org.uk/#bbox=485130,183491,30525,18196&c=indicator&i=t4.allages_chd&selcodgeo=E02000524&view=map7

[187] Deaths from respiratory diseases, all ages, Indirectly standardised ratio, 2016 to 2020 (Standardised mortality ratio (SMR) https://www.localhealth.org.uk/#bbox=485130,183491,30525,18196&c=indicator&i=t4.allages_respdis&selcodgeo=E02000524&view=map7

Table 8.5 Wider determinants of health[188]

Indicators for wider determinants of health	*Hillingdon*	***Hounslow***	***Buckinghamshire***	***Ealing***	***Richmond upon Thames***	***Runnymede***	***Slough***	***Spelthorne***	***Windsor and Maidenhead***	***London NW CCG***	***England***
Unemployment 2021/22 (%)*	5.5	7.5	3.5	8.1	3.4	3	4.3	4.1	3.2	-	5
Long term unemployment 2021/22 (Crude rate per 1,000)*	1.5	0.8	1.2	3.2	0.9	0.8	2.5	0.8	0.4	-	1.9
Income deprivation (%)**	11.4	12.9	6.6	14.1	6.4	6.6	10.2	7.9	5.8	13.1	12.9
Child Poverty, Income Deprivation Affecting Children (%)**	15.7	17	8.5	16.6	7	10.3	13.3	12.3	6.7	16.3	17.1
Older People in poverty, Income deprivation	14.5	19.7	7.7	22.3	9.4	8.9	11.4	8.4	8	20.7	14.2

[188] *Source: NOMIS Labour Market Statistics
**Source: Ministry of Housing and Local Government 2019, Office for National Statistics, (ONS) 2014. Deprivation indicators 2019. Households in poverty 2014
*** Source: Public Health Outcomes Framework - Children in relative low income families

Indicators for wider determinants of health	*Hillingdon*	***Hounslow***	***Buckinghamshire***	***Ealing***	***Richmond upon Thames***	***Runnymede***	***Slough***	***Spelthorne***	***Windsor and Maidenhead***	***London NW CCG***	***England***
affecting older people (%)**											
Children in relative low income families 2021/22 (%)***	15.9	16.2	13.5	15.7	5.4	11.6	23.2	11.7	9.1	-	19.9

8.3.18 Unemployment is close to the national rate of 5% in Hillingdon (5.5%) but a third higher in Hounslow (7.5%). In contrast, long term unemployment is lower in both Hillingdon and Hounslow at almost half the national rate of 1.9% in Hounslow (0.8%) and three quarters in Hounslow (1.5%). It is probable, referring also to other evidence on unemployment (in Section 8), that employment levels are vulnerable to short term change with health effects such as increased anxiety.

8.3.19 Income deprivation levels are identical to the national average in Hounslow (both 12.9%) and slightly lower (better) in Hillingdon (11.4%). Although there is a higher level of short-term unemployment, the lack of a simple correlation with income deprivation may indicate the underlying demand for labour expected around a major infrastructure site such as Heathrow.

8.3.20 Incidence of child poverty broadly aligns with that for Income deprivation, identical in England and Hounslow, and slightly lower in Hillingdon. The number of children in low-income families compared to England (19.9%) is also noticeably lower, 16.2% in Hounslow and 15.9% in Hillingdon.

8.3.21 Levels of older people in poverty are almost half as much again in Hounslow (19.7%) as nationally (14.2%) and in Hillingdon (14.5%).

8.3.22 The wider determinants of health show similarity in spatial patterns with a distinct emphasis of prevalence to the east of the site. **Figure 8.4** and **Figure 8.5** show unemployment together with, respectively, the number of older people in deprivation[189] and number experiencing child poverty[190], which are all higher in areas to the east of the Site where overcrowding is also widely observed[191]. These indicators imply general socio-economic and health vulnerability. In addition, the proportions of the populations with an ethnicity which is not 'White UK' are higher in these areas which indicates the potential need to consider health conditions affected by genetic and cultural background.

8.3.23 Deprivation is indicated by the Index of Multiple Deprivation (IMD). The general levels of deprivation are relatively similar across the Hillingdon and Hounslow boroughs (see **Graphic 8.2**).

8.3.24 The components of the IMD which particularly relate to health[192] show wider variation and clustering (see **Graphic 8.2**).

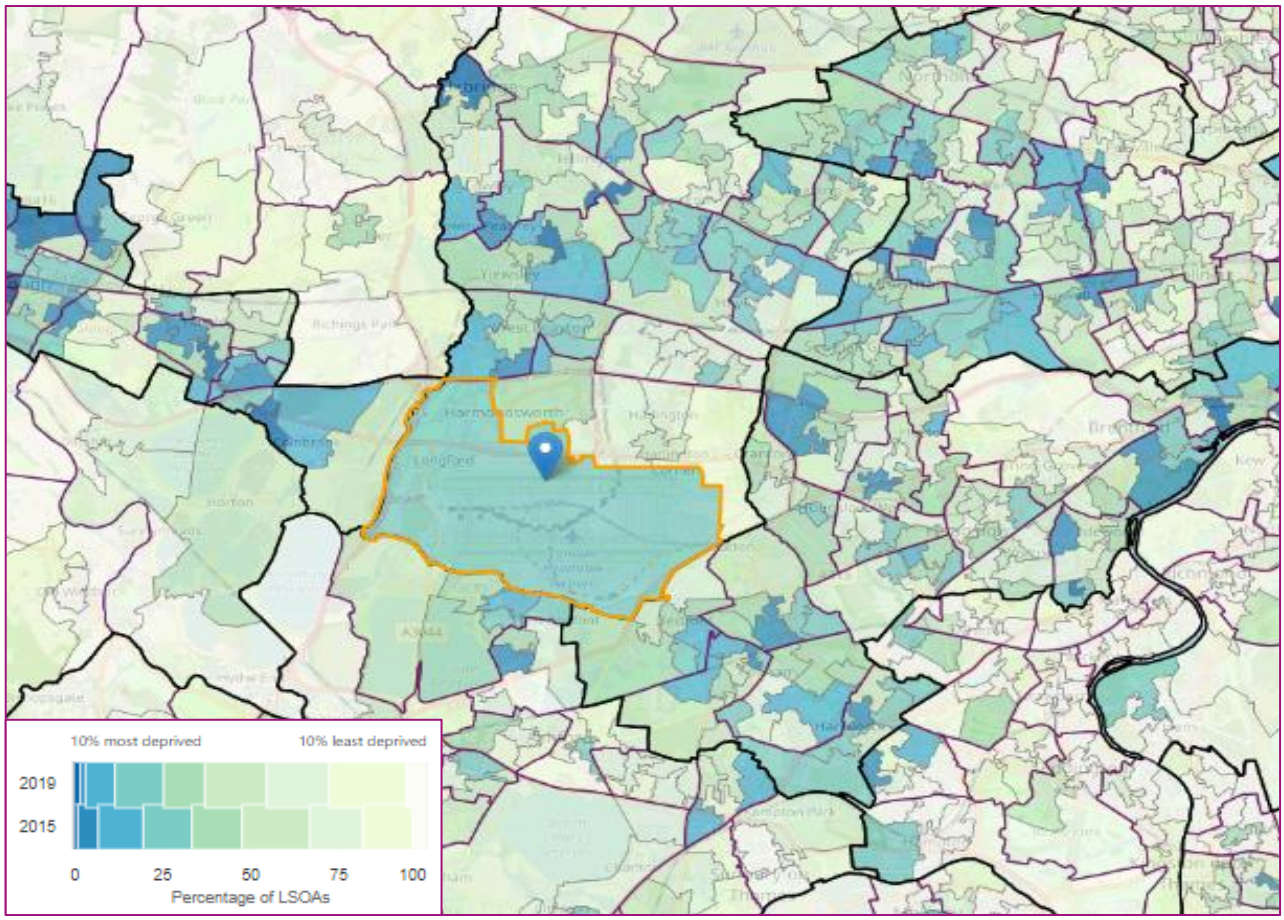
[189] Office for Health Improvement and Disparities, (n.d.), 'Unemployment and number of older people deprivation, Hillingdon 031' Available at: https://www.localhealth.org.uk/#bbox=492055,185886,29195,18196&c=indicator&i=t1.older_dep_n&i2=t1.unem_v&selcodgeo=E02000524&view=map7 Accessed 3 July 2023)

[190] Office for Health Improvement and Disparities, (n.d.), 'Unemployment and child poverty, number of children 2019', Available at: https://www.localhealth.org.uk/#bbox=492055,185886,29195,18196&c=indicator&i=t1.child_dep_n&i2=t1.unem_v&selcodgeo=E02000524&view=map7 (Accessed: 3 July 2023)

[191] Ibid. Map available at reference.

[192] Identified as "*the risk of premature death and the impairment of quality of life through poor physical or mental health*"

Graphic 8.2 Mapping of Index of Multiple Deprivation (Health domain) within local government administrative boundaries[193]



Future baseline

8.3.25 The size and nature of the population experiencing health effects reflects forecasts of projected numerical stability and a gradually aging demography (see **Section 7**). These forecasts will be used to estimate the size of the population in age groups with particular vulnerability.

8.4 Scope of the assessment

8.4.1 The AHE aims to inform the environmental assessment of health effects from the Proposed Development by identifying the potential positive and negative health effects associated with the changes resulting from the Proposed Development and identifying opportunities to mitigate negative effects on health.

8.4.2 This AHE uses the World Health Organisation's (WHO) definition of health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". The AHE methodology uses approaches and procedures recommended in

[193] Indices of Deprivation (2019) http://dclgapps.communities.gov.uk/imd/iod_index.html

DoH HIA guidance which also uses the same definition of health. This scoping assessment is implemented following IEMA 2022 guidelines. In particular:

- *Deciding if there are wider health determinants and population groups to include in the assessment;*
- *Deciding the correct spatial and temporal assessment boundaries;*
- *Specifying assessment methods sufficient to the complexity and importance of the impact; and*
- *Clarifying governance and engagement arrangements.*

8.4.3 In ending the Cranford Agreement the government intended to achieve a fairer distribution of aircraft noise around the Airport. The areas where potential health vulnerabilities coincide with the noise footprint will be of highest concern to the AHE.

8.4.4 In considering the health issues that arise from the Proposed Development, the AHE applies the following supplementary principles:

- Use of a wide definition of health and wellbeing[194].
- Identify vulnerable populations.
- Follow an evidence-based approach.
- Identify significant effects related to the specific proposals.
- Quantify effects where possible.
- Engage with stakeholders and reflect concerns in the assessment.

Potential receptors

8.4.5 The groups of receptors identified in **Section 7** include all people who could experience health effects and so are receptors relevant to this AHE. Where **Section 7** scopes effects in, the AHE will provide further detail on specific health impacts. Where People and Communities effects have been scoped out, they are either not relevant to AHE and so are also scoped out (such as. Economy), or will be reconsidered in the Health assessment (e.g. effects on passengers).

8.4.6 The spatial scope for receptors (their location) will depend on the specific areas identified in the People and Communities[section], particularly in relation to patterns of community behaviour affecting health such as the use of environments which experience change in levels of noise and air quality (see **Section 6: Noise and vibration, Section 5: Air quality** and **Section 7: People & Communities**).

8.4.7 The scoping of health effects in this chapter is informed by use of the list of high-level wider determinants of health in Table 5.1 of the IEMA 2022 Guidance (see **Table 8.6**).

8.4.8 IEMA 2022 Guidance advises the use of proportionality and against over-cautious inclusion of possible effects noting that EIA legislation has the objective of presenting

[194] Noting that in IEMA 2022 ‘Health’, ‘human health’ and ‘health and wellbeing’ are used interchangeably.

likely significant effects not potential effects. For effects which are proposed to be scoped out in **Table 8.6**, possible links to the Proposed Development can be imagined but are considered to be negligible, recognising that further Scoping Opinion or evidence also allows the possibility of revision.

8.4.9 A cautious approach is applied in that effects are proposed to be scoped out only on the basis of consideration of their magnitude not on the vulnerability of receptors. Where effects are identified in the column *Proposed Scoping* as scoped in **Table 8.6**, they are considered likely to be significant until further assessment confirms otherwise.

8.4.10 The Proposed Development results in a temporal pattern of effects on communities from aviation. The redistribution arising from the Proposed Development will lead to potential beneficial and adverse effects depending on changes in conditions at individual locations. Effects which are scoped in may result from direct or indirect effects. Indirect effects, such as resulting from change in socio-economic conditions, will be first assessed through consideration of the direct effect on the socio-economic characteristics and then consideration of this direct effect on health. The direct socio-economic effects will be assessed in **Section 7: People & Communities**.

Table 8.6 Categories of EIA wider determinants of health from IEMA 2022 Guidance for and their proposed scoping

IEMA 2022 Guidance - Categories for wider determinants of health	***Potential health-related effects of Proposed Development and justification for Proposed Scoping***	***Proposed Scoping***
Health-related behaviours		
Physical activity	Operation of the Proposed Development may affect incentives to take physical activity (both positively and negatively)	In
Risk taking behaviour	Negligible effect of Proposed Development	Out
Diet and nutrition	Negligible effect of Proposed Development	Out
Social environment		
Housing	Operation of the Proposed Development may affect investment needs (e.g. in soundproofing)	In
Relocation	Operation of the Proposed Development may affect incentives for relocation	In
Open space, leisure and play	Operation of the Proposed Development may affect the quality of the outdoor environment (both positively and negatively)	In
Transport modes, access and connections	Negligible effect of Proposed Development	Out

IEMA 2022 Guidance - Categories for wider determinants of health	*Potential health-related effects of Proposed Development and justification for Proposed Scoping*	*Proposed Scoping*
Community safety	Negligible effect of Proposed Development	Out
Community identity, culture, resilience and influence	Operation of the Proposed Development may affect environmental characteristics influencing community identity and health resilience (both positively and negatively)	In
Social participation, interaction and support	Operation of the Proposed Development may affect regular and ad-hoc community events (both positively and negatively)	In
Economic environment		
Education and training	Operation of the Proposed Development may affect educational attainment and child development (both positively and negatively)	In
Employment and income	Negligible effect of Proposed Development (See **Section 8**)	Out
Bio-physical environment		
Climate change mitigation and adaptation	Negligible effect of Proposed Development	Out
Air quality	Operation and construction effects in Longford (see Air Quality chapter)	In
Water quality or availability	The Proposed Development is not expected to affect the water regime	Out
Land quality	The Proposed Development will result in effects which are above the surface and do not affect land quality	Out
Noise and vibration	Operation and construction effects directly and indirectly through influence on wider determinants of health	In
Radiation	Negligible effect of Proposed Development	Out
Institutional and built environment		
Health and social care services	Spatial distribution of heath needs affected by new pattern of noise and air quality	In

IEMA 2022 Guidance - Categories for wider determinants of health	*Potential health-related effects of Proposed Development and justification for Proposed Scoping*	*Proposed Scoping*
Built environment	Negligible effect of Proposed Development	Out
Wider societal infrastructure and resources	Operation of the Proposed Development may affect incentives for investment	In

8.4.11 The identification of the health effects of the Proposed Development on the relevant types of receptors will be informed by the evidence for the relationships between health, noise and air quality identified within the respective sections.

8.4.12 Effects may also result from the combined impacts of noise and air quality at places where both occur. People in housing at Longford are identified as those who may experience effects of combined impacts during both construction and operation. The assessment of combined impacts will be undertaken using assessment information from the noise and air quality sections in the Environmental Statement.

Potentially significant effects

8.4.13 The specific potentially significant health effects that reflect the scoping categories identified in the IEMA 2022 Guidance in **Table 8.6** and will be taken forward for assessment in the Environmental Statement are summarised in **Table 8.7**.

The intention of the Proposed Development to redistribute impacts more fairly results in both positive and negative effects dependent on the type of activity. The identification of activities which lead to potential health effects will be coordinated with the noise and air quality sections with the lists in **Table 8.7**. providing an initial indication.

Table 8.7 Likely significant health effects

Activity	Effect	Receptor
Health of population primarily related to respiratory and cardiovascular functions	Redistribution of emissions with potential air quality effects on health	General public; specific and potentially vulnerable receptors
Health of population primarily related to: annoyance, sleep deprivation, hearing damage, morbidity, coronary health, changes in wellbeing, changes in educational attainment and child	Redistribution of ground and air noise with potential effects on health	General public; specific and potentially vulnerable receptors

Activity	Effect	Receptor
development, changes in hospital recovery rates		
Mental health related to environment	There are impacts from noise, AQ, and possible changes in visual amenity from barriers, which may affect mental health	Groups vulnerable to impacts on mental health
Provision of health and social care	Geographic distribution of heath needs affected by new pattern of noise and air quality	Providers of health and social care services
Health of population related to indirect effects from wider determinants of health	Change to socio-economic conditions which lead to effects on health	General public; specific and potentially vulnerable receptors

8.4.14 For the categories in **Table 8.7**. which are scoped in, the specific types of activity, effect and receptor will determine the appropriate detailed assessment methods for estimating levels of effects and selecting comparators, taking into account a review of the evidence base.

8.5 Assessment methodology

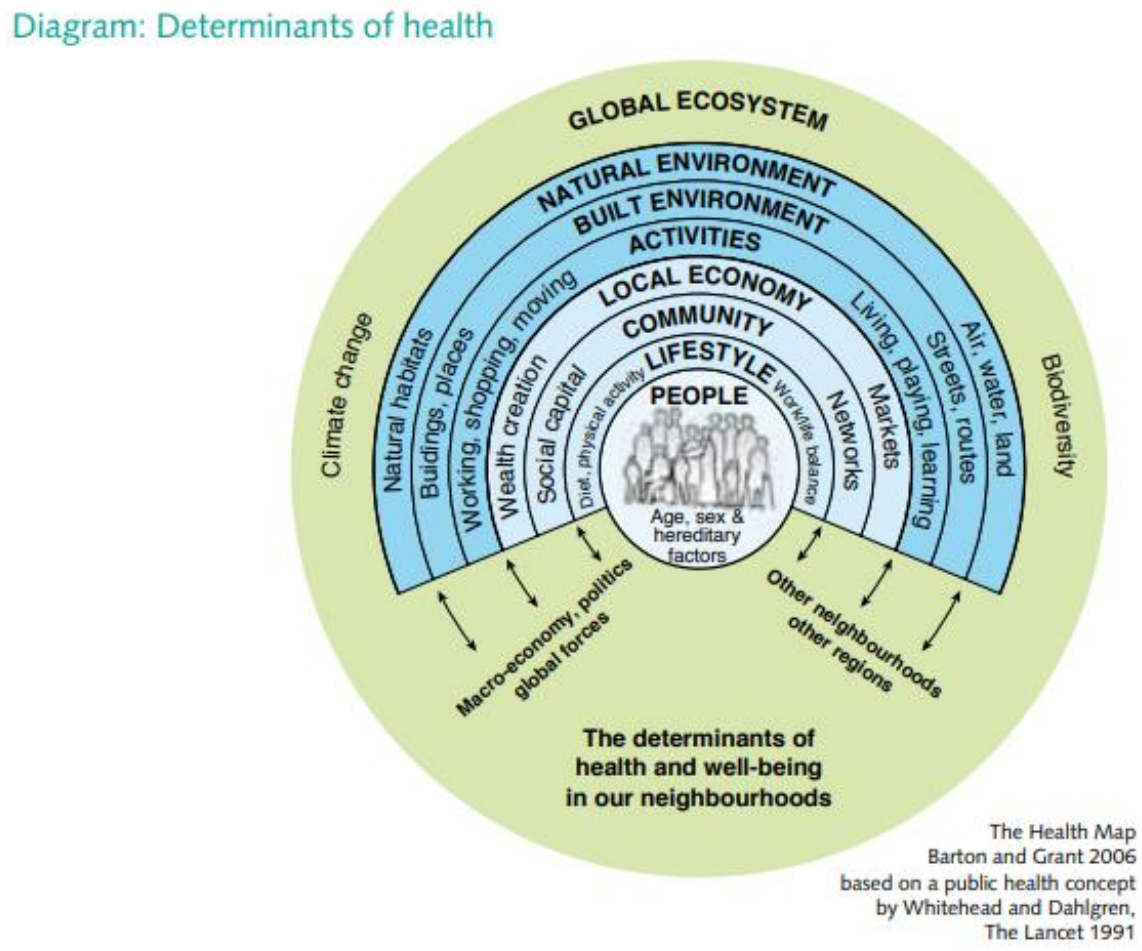
8.5.1 The assessment methodology will follow the same approach as described in **Section 7** and otherwise will be applied in line with the IEMA 2022 Guidance.

Identification of effects

8.5.2 The identification of effects will be informed by combining information on the receptors in areas affected by changes from the Proposed Development. For populations in these areas, effects will be identified according to noise, air quality, visual amenity and combined impacts and the health and vulnerability of people and communities as well as other wider determinants of health. For receptors such as healthcare providers, effects will be identified according to the potential changes in levels of demand arising from spatial redistribution of need.

8.5.3 The determinants of health are identified in an early reference source which influenced much of the later technical guidance. The determinants range from the individual level to the wider context of the global ecosystem and can be identified and assessed for the circumstances of the Proposed Development (see **Graphic 8.3**).

Graphic 8.3 Determinants of Health (as reported in DoH HIA Guidance)



8.5.4 The DoH HIA guidance sets out five screening questions which enable more specific identification of determinants and hence receptors[195]:

- **Question1:** *Will the proposal have a direct impact on health, mental health and wellbeing?* - For example would it cause ill health, affecting social inclusion, independence and participation?
- **Question 2:** *Will the proposal have an impact on social, economic and environmental living conditions that would indirectly affect health?* For example would it affect housing, transport, child development, education, good employment opportunities, green space or climate change?
- **Question 3:** *Will the proposal affect an individual's ability to improve their own health and wellbeing?* For example will it affect their ability to be physically active, choose healthy food, reduce drinking and smoking?

[195] DoH HIA guidance questions for screening

- **Question 4:** *Will there be a change in demand for or access to health and social care services?* For example: Primary Care, Hospital Care, Community Services, Mental Health and Social Services?
- **Question 5:** *Will the proposal have an impact on global health?*

8.5.5 In this scoping exercise, the Proposed Development is considered to result in potential effects in response to the first four screening questions. As a result, potential impacts on global health (the fifth question) will not be covered in the AHE.

8.5.6 The DoH HIA guidance provides a framework for recording the health impacts for the population within the spatial scope of the Proposed Development. The framework is based on answers to the following questions[196]:

- Will the health impacts affect the whole population, or will there be differential impacts within the population?
- Will the health effects be difficult to remedy or have an irreversible effect?
- Will the health impacts be medium to long term?
- Are the health effects likely to generate public concern?
- Are the health effects likely to generate cumulative and/or synergistic effects?

8.5.7 The data available regarding determinants and the effects of the Proposed Development will be used to identify receptors for the AHE, taking account methodologies used for assessment of noise, air quality and visual amenity impacts.

Assessment of Significance

8.5.8 The significance of effects will be assessed against statutory or mandatory thresholds and comparison with precedents. The IEMA 2022 Guidance provides tables which indicate suggested levels of sensitivity and magnitude. An additional category for sensitivity of “Very high” is proposed to be added to the four in the guidance (of “High, Medium, Low, Very Low”) for consistency with **Section 7** and the default categories used for other EIA aspects. For consistency, the magnitude of change will be assessed using a scale with these same five named levels rather than the four in the guidance.

COVID-19

8.5.9 The methodology needs to account for COVID-19 in two main ways:

- Statistics from periods before COVID-19 may be more representative of the baseline than recent statistics; and
- Past COVID-19 and future pandemics may bring additional future vulnerability to receptors also affected by the Proposed Development.

[196] DoH HIA guidance questions for recording impacts

8.5.10 The variation in indicator statistics over the COVID-19 period provides a reference for the additional future vulnerability of receptors which can be compared to the magnitudes of change arising from the Proposed Development (or other causes) to assess their relative significance.

Information sources

8.5.11 The socio-economic characteristics will be assessed based on available government statistical data and use the associated definitions. Where appropriate, more detailed assessment will be made taking account of the data availability, scale of potential effect and achievable accuracy.

8.5.12 Data sources identified in DoH HIA guidance at UK level include:

- Gateway to UK National Statistics – Health and Social Care.
- Office for National Statistics (ONS).
- The Health and Safety Executive.
- The Royal Society for the Prevention of Accidents (RoSPA).
- Departments of public health at regional and district level.
- Public health observatories (e.g. www.apho.org.uk).
- University departments of public health, institutes of public health, and voluntary organisations.

8.5.13 Data sources identified in DoH HIA guidance at England level include:

- Department of Health statistics.
- Tackling health inequalities: a programme for action.
- Health Protection Agency (HPA).
- The English Indices of Deprivation report.
- Healthcare Statistics, Guidance and Performance Indicators (e.g., Public Health England Fingertips Statistics).

9. Historic environment

9.1 Introduction

9.1.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The potential effects in historic environment terms would be the disturbance of archaeological remains during the construction phase, impacts on the character of the Longford Conservation area from the erection of the potential noise barrier and the change to the setting of heritage assets arising from their proximity to increased or decreased aviation noise. The number of aircraft movements will be unchanged by the Proposed Development. Therefore, risk of effects on heritage assets from sources other than aircraft, including landside road vehicles will be unchanged.

9.1.2 This Section considers the effects that may arise on the historic environment. The National Planning Policy Framework (NPPF) defines the Historic Environment as:

'All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.'

9.1.3 The assessment of the Historic Environment will consider the potential effects of the Proposed Development with respect to cultural heritage. This Section of the Scoping Report describes the methodology for identifying and assessing potential effects on the historic environment, gives an overview of the baseline conditions, the datasets to be used to inform the EIA, the potentially significant effects to be considered within the EIA, and how these potentially significant effects will be assessed for the purpose of the Environmental Statement.

9.1.4 The aim of the assessment of the Historic Environment is to determine the effects that may arise both by physical alteration, disturbance or loss of historic structures and building fabric or of archaeological remains, or by perceptual change that affects the ability to understand or appreciate the physical remains of the past.

9.2 Relevant legislation, planning policy, technical guidance

9.2.1 A summary of the relevant planning policies is given in **Table 9.1**.

Table 9.1 Planning policy issues relevant to historic environment

Policy reference	Policy issue	Considered in Section
National planning policies		
National Planning Policy Framework Paragraphs. 126 - 136[197] (Historic Environment)	Government policy recognising that heritage assets, including those which have not been designated, are a non-renewable resource and requires a unified approach to the management of the historic environment. Requiring sufficient evidence of the assessment of significance and appropriate measures to mitigate negative effects on heritage assets and their setting.	All sections
The Airports National Policy Statement: new runway capacity and infrastructure at airports in the south east of England[198]	The Airports National Policy Statement (ANPS) forms part of the overall framework of national policy and may be a material consideration in making decisions on Town and Country Planning Act (TCPA) planning applications. The following paragraphs are most relevant to historic environment: Paragraphs 5.193 to 5.195 (Applicants Assessment); 5.196 to 5.208 (Decision-making) and 5.209 to 5.212 (Recording).	All sections
Development plan policies		
London Borough of Hillingdon LP Strategic Policy HE1[199]	The London Borough of Hillingdon (LBH) has a commitment to the conservation and enhancement of heritage of the borough's historic environment, including historic village cores, designated heritage assets, locally listed buildings and archaeologically significant areas. This includes actively encouraging the regeneration of heritage assets, promoting public awareness and encouraging the re-use and modification of heritage assets where appropriate.	All sections
London Borough of Hillingdon LP Development Management Policy DMHB 1	LBH will expect development proposals to avoid harm to heritage assets except where: development sustains an asset and puts it into a viable and appropriate use; the development will result in a public benefit which outweighs any harm.	All sections

[197] Ministry of Housing, Communities and Local Government (2021). The National Planning Policy Framework (NPPF). (online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf (Accessed 11 May 2023)
[198] DfT, (2018)., Airports National Policy Statement' https://www.gov.uk/government/publications/airports-national-policy-statement (Accessed: 11 May 2023)
[199] London Borough of Hillingdon (2012) Hillingdon Local Plan. Available at: https://www.hillingdon.gov.uk/local-plan (Accessed 11 May 2023).

Policy reference	Policy issue	Considered in Section
	Developments affecting heritage assets should make a positive contribution to the local character and should respect the character of the asset and its setting.	
London Borough of Hillingdon LP Development Management Policy DMHB 2	Listed Buildings and Listed Building Consent. Substantial harm to or total loss of significance of a statutory Listed Building will only be permitted in exceptional circumstances	All sections
London Borough of Hillingdon LP Development Management Policy DMHB 3	Presumption in favour of the retention of Locally Listed Buildings.	All sections
London Borough of Hillingdon LP Development Management Policy DMHB 7	Archaeological Priority Areas, Archaeological Priority Zones and requirements for archaeological investigation and recording. LBH will ensure that archaeological remains within areas designated as Archaeological Priority Areas should not be disturbed. Where this cannot be avoided, satisfactory measures must be taken to ensure the completion of archaeological investigation and recording in advance of development works.	All sections
London Borough of Hillingdon LP Development Management Policy DMHB 8	Registered Historic Parks, Gardens and Landscapes. States that "*applications which impact detrimentally on the significance of a registered park or garden will normally be refused".*	All sections
The London Plan 2021 **Policy HC1 Heritage conservation and growth**	Concerns the treatment of heritage assets in development and states that "Development proposals affecting heritage assets, and their settings, should conserve their significance, by being sympathetic to the assets' significance and appreciation within their surroundings". Heritage assets need to be identified and this information should be used to inform measures to avoid or minimise harm.	All sections
The London Plan 2021 **Policy HC2 World Heritage Sites**	States that "Development proposals with the potential to affect World Heritage Sites or their settings should be supported by Heritage Impact Assessments".	All sections

Legislation

9.2.2 The following legislation is relevant to the assessment of the effects on historic environment receptors:

Table 9.2 Legislation relevant to historic environment

Legislation	Policy issue	Considered in Section
Planning (Listed Buildings and Conservation Areas) Act (1990)[200]	Provides for buildings and areas of special architectural or historical interest to be given statutory protection. Section 66 of this Act requires planning authorities to have special regard for the desirability of preserving listed buildings and their settings or any features of special architectural or historic importance they possess. Under this Act, areas of special architectural or historic interest can be designated as conservation areas. Section 72 of this Act requires Planning Authorities to have special regard to the desirability of preserving or enhancing the character or appearance of conservation areas.	All sections
Ancient Monuments and Archaeological Areas Act (1979)[201]	Allows for sites assessed of national importance to be given statutory protection. Scheduled Monument Consent is required before any works are carried out which would have the effect of damage a Scheduled Ancient Monument.	All sections

Technical guidance

Table 9.3 Technical guidance relevant to historic environment

Guidance reference	Issue	Considered in Section
Historic England Guidance		
Historic Environment Advice Note 12: Statements of Significance[202]	Provides guidance on understanding significance and setting out the effects of development on significance.	All sections
The Aviation Noise Metric (ANM)[203]	Provides guidance on assessing the effects change to setting of heritage assets arising through changing levels of aviation noise.	All sections

[200] *Planning (Listed Buildings and Conservation Areas) Act 1990*., (1990), Available at: https://www.legislation.gov.uk/ukpga/1990/9/contents (Accessed: 2 May 2023)
[201] *Ancient Monuments and Archaeological Areas Act 1979*., (1979), Available at: https://www.legislation.gov.uk/ukpga/1979/46 (Accessed: 2 May 2023)
[202] Historic England, (2019)., 'Statements of Heritage Significance: Analysing Significance in Heritage Assets' (online) Available at: https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/ (Accessed: 2 May 2023)
[203] Temple Group/Cotswold Archaeology (2017), 'Aviation Noise Metric - Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England, Project

Guidance reference	Issue	Considered in Section
Good Practice Advice Note 2: Managing Significance in Decision-Making (GPA 2)[204]	Sets out principles for understanding the significance of heritage assets and how this may be changed by development	All sections
Good Practice Advice Note 3: The Setting of Heritage Assets (GPA3)[205]	Defines setting and sets out how it contributes to significance and offers a methodology for assessing the effects of changing aviation noise in the settings of heritage assets.	All sections
Chartered Institute for Archaeologists (CIfA) Standards and Guidance		
Standard and guidance for archaeological desk-based assessment.[206]	Sets out standards for the production of desk-based assessments	All sections

9.3 Baseline conditions

Data gathering methodology

Study areas

9.3.1 A preliminary study area of 500m from the Proposed Development has been adopted to consider potential effects arising from the construction of the infrastructure, either from direct disturbance or from a change in setting.

9.3.2 The settings of designated heritage assets in proximity to the flight paths the use of which may be subject to change could be affected by an increase (or decrease) in aviation noise. The study area to consider these potential effects will be determined by the calculated noise contours for the proposed easterly operations, with reference to criteria set out in the Aviation Noise Metric (ANM).

No. 6865' (online) Available at: https://historicengland.org.uk/research/results/reports/6934/AviationNoiseMetric-ResearchonthePotentialNoiseImpactsontheHistoricEnvironmentbyProposalsforAirportExpansioninEngland (Accessed: 11 May 2023)

[204] Historic England, (2015)., 'Managing Significance in Decision-Taking in the Historic Environment', (online) Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/gpa2/ (Accessed: 2 May 2023)

[205] Historic England, (2011), 'The Setting of Heritage Assets', (online) Available at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/ (Accessed 2 May 2023)

[206] Chartered Institute for Archaeologists, (2014), 'Standard and Guidance for Historic Environment Desk Based Assessment', (online) Available at: https://www.archaeologists.net/sites/default/files/CIfAS&GDBA_2.pdf (Accessed: 2 May 2023)

Data sources

9.3.3 For the purposes of the Scoping Report, characterisation of the baseline draws on publicly accessible studies carried out for previous phases of work at Heathrow Airport, searches of the National Heritage List for England and information published by the relevant local planning authorities on Conservation Areas. More detailed and focused data gathering will be undertaken to support the assessment conducted for the Environmental Statement and methods for this data gathering are set out in this document.

9.3.4 Understanding of baseline archaeological conditions will be developed in line with the Chartered Institute for Archaeologists (CIfA) Standard and guidance for archaeological desk-based assessment on a search of the Greater London Archaeology Advisory Service Historic Environment Record (GLAAS HER) for recorded archaeological features and interventions within 500m of the Airport boundary, supported by reference to the reporting from the Heathrow Terminal 5 investigations and other relevant archaeological reporting identified by searches of the GLAAS HER.

9.3.5 In this case, it is considered that pre-determination evaluation of the Proposed Development through intrusive trenching would not be safely practicable given the need to maintain the runway and associated taxiways in full operational use during the application period. The limited scale of the Proposed Development, the prior disturbance caused by the construction of the Airport and the extensive understanding provided by the Terminal 5 investigations means that a sufficient and robust evidence base for the assessment of effects on archaeological remains already exists.

9.3.6 Searches will be undertaken of the National Heritage List for England to identify designated heritage assets within the study area defined with reference to the calculated noise contours for the proposed easterly operations.

Current baseline

9.3.7 The Heathrow area is located within a rich and comparatively well-understood archaeological landscape, with recorded evidence for activity from the Palaeolithic period onwards, although the principal archaeological interest comes from the potential survival of elements of the late prehistoric (Neolithic to Iron Age) and Romano-British landscape investigated during the Heathrow Terminal 5 project, and further evidenced by potentially related scheduled monuments and records of non-designated archaeological remains in the wider area around the Airport. This archaeological potential is reflected by the designation of the Airport as an Archaeological Priority Zone. The physical elements of the Airport itself hold a certain degree of archaeological interest, although the elements present within the Airport boundary are of very limited intrinsic value.

9.3.8 The location of the Airport on the fringes of London means that there are a wide variety of designated heritage assets in the wider area. These features date from later prehistory onwards but are primarily non-designated buildings and listed buildings of post-medieval or later date, with medieval and post-medieval heritage assets reflecting the historic village cores in the area around the Airport and later structures reflecting the growth of London’s suburbs and the industrial and aviation heritage of the area.

9.3.9 Discussion of heritage assets in this section is intended to set out key characteristics of the historic environment of the area and is by no means a comprehensive discussion nor a statement of the specific heritage assets that may be affected by the Proposed Development, which would be determined in line with advice in GPA3 and ANM. Distances from the Airport are cited for orientation and are taken from the perimeter road surrounding the Airport.

Overview

9.3.10 There are no designated heritage assets within areas of the Airport that would be affected by any physical changes resulting from the Proposed Development, although there are two Grade II listed buildings within the Airport, 1268530 *Technical Block A, Heathrow Airport* and 1119717 *Monument at north western end of General Roys Survey Base.*

World Heritage Sites

9.3.11 The closest World Heritage Site to the Proposed Development is 1000102 *Royal Botanic Gardens, Kew*, which encompasses the extent of the Grade I registered parks at 1000830 *Royal Botanic Gardens, Kew* and 1000148 *Syon Park*. At its closest, the World Heritage Site is approximately 7.5km east of the Airport.

Scheduled Monuments

9.3.12 The closest scheduled monuments to the Airport are to the south, including 1005920 Schoolhouse (Lord Knyvett's) at Stanwell, 1002042 Romano-British site 1,000yards (910m) W of East Bedfont parish church and 1002043 Part of a causewayed enclosure, 632m north-east of Mayfield Farm, which are approximately 100m from the Airport, though significantly further from any proposed works. Any negative or positive change to setting, however, is most likely either below or in close proximity to the flightpaths of aircraft arriving or departing the Airport to and from Runways 09L and 09R. To the east of the Airport, the closest such features are 1435957 London's Early Porcelain Industries: The Isleworth Pottery and 1412036 The Shene Charterhouse, which are approximately 7.5km and 8km east of the Airport respectively. To the west, the closest scheduled monument is 1006995 Early medieval and medieval palace and associated monuments, Kingsbury, which is approximately 5km west of the Airport perimeter, and 1006996 Windsor Castle is located approximately 7.5km from the Airport perimeter.

Conservation Areas

9.3.13 There are numerous conservation areas close to the Airport and under existing flight paths, the closest of which are Longford (London Borough of Hillingdon) and Stanwell (Spelthorne Borough Council), which are each within 100m of the Airport. More distant conservation areas which are closer to or beneath the approach and departure routes include Cranford Park (London Borough of Hillingdon), Colnbrook (Slough Borough Council), Old Windsor, Datchet, Windsor Town Centre, Inner Windsor and Eton (Royal Borough of Windsor and Maidenhead) and Cranford Village, Hounslow Barracks, St Paul’s Church and Heston Village (London Borough of Hounslow). These range in character, with examples of the following:

- Historic town and village centres where there are a good survival of older structures and clearly discernible time depth, such as Windsor town centre;
- More discernibly planned areas such as Hounslow cavalry barracks; and
- Those which include substantial areas of historic parkland such as Cranford Park.

Listed Buildings

9.3.14 Listed buildings under existing flight paths or potentially affected by ground noise include those at Longford and Colnbrook, which are predominantly Grade II listed village buildings of post-medieval date but include the Grade II* listed 1124367 Ostrich Public House and 1280920 King John's Palace. Further listed buildings of all grades are located in proximity of the approach and departure routes, and notably include the Grade I 1117776 Windsor Castle including all the buildings within the walls, 1080318 Syon House, 1080321 Flora's Column in Syon Park, 1262590 Temperate House, 1262593 The Pagoda (Royal Botanic Gardens Kew).

Other Designated Heritage Assets

9.3.15 There are numerous designated parks and gardens to east and west of the Airport; to the west, the closest Park and Garden is the Grade II listed 1001290 *Ditton Park*, which is approximately 4.5km from the Airport although the Grade I 1001434 *The Royal Estate, Windsor: Windsor Castle and Home Park* are approximately 6km from the Airport, along with 1000592 *The Royal Estate, Windsor: Windsor Great Park* and 1000587 *The Royal Estate, Windsor: Frogmore Gardens*. To the east, in addition to 1000148 *Syon Park* and 1000830 *Royal Botanic Gardens, Kew*, the Grade II* *Osterley Park* is approximately 4.5km from the Airport.

Previous On-Site Archaeological work

9.3.16 Previous archaeological work within the Proposed Development area and the wider Airport has mostly resulted from the long-running programmes of archaeological evaluation and mitigation for Heathrow Terminal 5 and associated developments. In the area of the proposed noise barrier (should such be required), works were carried out as part of an evaluation of the car park site (site code NPC06) and investigation of the areas to the south of Bath Road and along the Western Perimeter Road (site code PSH02). The taxiways immediately to the north of Terminal 5 were also investigated under site code PSH02. These investigations identified elements of the coherent late prehistoric and Romano-British archaeological landscape, and the specific results of these works will be considered in more detail in the Environmental Statement.

Other Known or Anticipated Historic Environment Features

9.3.17 Any archaeological remains present within the Proposed Development area are anticipated to form part of this late-prehistoric and Romano-British landscape or to derive from past use of the Airport.

Future baseline

9.3.18 No significant change is anticipated in the existing baseline. Archaeological remains of the nature evidenced within the Airport are generally stable and their condition is not expected to change in the absence of intrusive development.

9.4 Scope of the assessment

Potential receptors

9.4.1 There is a potential that archaeological remains could be affected by disturbance caused by intrusive groundworks. Any such effects would occur only where archaeological remains survive within areas that would be subject to intrusive works. Previous archaeological work within the Airport boundary has demonstrated that while substantial development has taken place, archaeological remains may still survive in less disturbed parts of the Airport. These remains are most likely to comprise elements of the later prehistoric and Romano-British landscapes most comprehensively investigated during the Heathrow Terminal 5 excavations. Individually, these remains are most likely to be of limited importance, but they may take on greater significance as part of a more coherent historic landscape. Specific receptors will be identified with reference to the Heathrow Terminal 5 excavation results and desk-based assessment of parts of the Airport considered likely to be affected.

9.4.2 Intrusive works for the Runway Access Taxiways have the potential to disturb archaeological remains. These works are close to areas investigated in the Terminal 5 excavations and there is a demonstrable potential for the presence of related archaeological remains, to be present. However, any such remains are likely to survive as small and disturbed elements of a much wider group of features as previous development will have disturbed and fragmented archaeological remains in the area. Further assessment of potential effects on these remains will be undertaken.

9.4.3 Harm to heritage assets may arise as a result of a change in setting. This may arise during construction, as a result of permanent development or a change in aviation operations.

- Construction of any noise barrier near Longford may give rise to a change in the character of the nearby conservation area and change to the settings of listed buildings in Longford. The conservation area and designated heritage assets within it will therefore be considered for more detailed assessment within the Environmental Statement.
- A change in intensity of aircraft along existing flight paths has the potential to give rise to change in setting, as an increase or reduction in the frequency and number of overflights of heritage assets.

9.4.4 The Aviation Noise Metric (ANM) sets out clear parameters for understanding where potential change to setting of heritage assets may arise considering both the nature of the assets involved, setting out types of heritage asset that would normally be considered sensitive to change in sound environment, and noise levels that might be considered intrusive in this context.

9.4.5 To summarise, designated heritage assets which are within the four categories of heritage asset that might be considered sensitive to aviation noise as defined by ANM and are within the relevant minimum noise parameters for an effect to arise through change to setting will be considered for more detailed assessment within the Environmental Statement.

Potentially significant effects

9.4.6 The potentially significant historic environment effects that will be taken forward for assessment in the Environmental Statement are summarised in **Table 9.4.**

Table 9.4 Potentially significant historic environment effects

Activity	Effect	Receptor
Construction of Runway Access taxiways	Disturbance of archaeological remains	Archaeological remains of past activity
Construction of noise barrier at Longford (if required)	Potential effects on the character of the conservation area and the setting of heritage assets	Longford Conservation Area and listed buildings at Longford
Easterly operations from Runways 09L (departures) and O9R (arrivals)	Change to setting of heritage assets arising from increased or decreased aviation noise	Heritage assets identified as having heritage significance sensitive to changed sound environment in line with ANM and within the minimum noise parameters set in ANM

9.4.7 The effects scoped out from further assessment in the Environmental Statement are:

- Disturbance of archaeological remains at Longford during potential breaking out of hardstanding:
  - The area of the noise barrier should such be required, near Longford was evaluated before the construction of the existing car park and further archaeological work was not carried out as a result of the demonstrably low potential. Any archaeological remains that might have been present would have been substantially disturbed by construction of the car park and it is not considered that any archaeological remains are present in this area.
  - The potential breaking out of hardstanding to prevent a net increase in the proportion of paved areas on the airfield would be in an area where potential survival of archaeological remains is very limited as a result of the previous disturbance and compaction caused by the construction of this hardstanding. Intrusive works would also be limited to the removal of existing hardstanding and make up and it is not considered that any coherent archaeological remains would be affected.
- Change to setting of heritage assets:
  - Change to setting, including visibility of operations and construction noise, arising from construction of Runway Access Taxiways and potential breaking out of

hardstanding would be experienced in the context of the operational Airport and no negative effect would arise.

- Westerly operations from Heathrow will not be changed as a result of the proposed operational change, which applies only to easterly operations. Consequently, no assessment will be undertaken of westerly operations.
- Designated heritage assets which do not meet the tests set out in ANM to determine their sensitivity to changed aviation noise will not be assessed for change to setting arising from aviation noise.
- Designated heritage assets where the threshold of a predicted change in aviation noise of +/- 3dbLAEQT from baseline with a minimum predicted aviation noise level of 54dB LAEQT (as set in ANM) is not exceeded will not be assessed for change to setting arising from aviation noise.

9.5 Assessment methodology

9.5.1 The proposed generic project-wide approach to the assessment methodology is set out in **Section 4**. However, whilst this has informed the approach that has been used in this historic environment section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the historic environment assessment in the Environmental Statement.

Disturbance of Archaeological Remains

9.5.2 An assessment will be made of the potential significance of archaeological remains that can be reasonably predicted within the footprint of the proposed Runway Access Taxiways, based on the results of previous phases of fieldwork and contextual material from the Greater London Historic Environment Record (GLHER) and readily available secondary, cartographic, documentary and archival sources. Any loss of any heritage significance will be considered and an assessment of significance of effect made. Recommendations for investigation and recording in line with NPPF Paragraph 205[207] will be made where appropriate.

Change to Setting of Heritage Assets

9.5.3 Change to setting of heritage assets will be carried out in line with advice contained in GPA3 (Historic England 2017). Change to the contribution of setting to the heritage significance of heritage assets arising as a result of the perceptibility of construction activity, completed development or aviation noise will be assessed and any resulting loss of, or benefit to heritage significance will be considered and an assessment of significance of effect made.

[207] Ministry of Housing, Communities and Local Government, (2021)., 'The National Planning Policy Framework'., p.58.

Valuation of Receptors

9.5.4 The NPPF requires change to the significance of heritage assets (positive or negative) to be considered in developing an understanding of the potential effects of Proposed Development. The significance of a heritage asset is a product of the value which it holds to this and future generations as a result of its historic, archaeological, architectural or artistic interest, and these provide the basis for considering the significance of each heritage asset (including the contribution of its setting to those interests). These interests are set out in NPPF (Annex 2) and discussed in more detail in Conservation Principles (English Heritage 2008) and GPA2 (Historic England 2017):

- Archaeological – the ability of a heritage asset to hold information about the past which can be retrieved through specialist investigation;
- Historical – which can be through association with past events or people, or where a heritage asset is illustrative of a particular asset type, theme or period; and
- Architectural/Artistic – values which derive from a contemporary appreciation of a heritage asset's aesthetics.

9.5.5 For the purposes of assessing the significance of effects in EIA terms, heritage significance will also be assigned to one of four classes, with reference to the heritage interests described previously and relying on professional judgement as informed by policy and guidance. The hierarchy given in **Table 9.5** reflects the NPPF distinction between designated and non-designated heritage assets. The NPPF further distinguishes between designated assets of the highest heritage significance (i.e. scheduled monuments, protected wreck sites, battlefields, Grade I and II* listed buildings, Grade I and II* Registered Parks and Gardens, and World Heritage Sites) and other designated heritage assets.

Table 9.5 Definition of Heritage Significance

Heritage Significance	Summary Rationale	Example Asset Class
Very High	Asset has significance for an outstanding level of archaeological, architectural, historic and/or artistic interest	Designated Heritage Assets of 'the highest significance' 208
High	Asset has significance for a high level of archaeological, architectural, historic and/or artistic interest	Other Designated Heritage Assets 209
Medium	Asset has significance for elements of archaeological architectural, historic or artistic interest	Regionally significant non-designated archaeological sites.

[208] Defined in NPPF paragraph 200 as '…scheduled monuments, protected wreck sites, registered battlefields, Grade I and II* listed buildings, Grade I and II* Registered Parks and Gardens, and World Heritage Sites.'
[209] Following NPPF paragraph 200, these designated heritage assets comprise grade II listed buildings, grade II registered parks or gardens and conservation areas.

Heritage Significance	Summary Rationale	Example Asset Class
Low	Asset has limited significance for elements of archaeological architectural, historic or artistic interest	Locally significant archaeological site Locally listed parks and buildings
Very Low	Due to its nature of form/condition/survival, cannot be considered as an asset in its own right	Non-extant Historic Environment Record (HER) record

Characterisation of effect

9.5.6 The magnitude of change of an effect is based on a number of factors:

- The permanence of the effect (temporary or permanent);
- Physical changes caused by the effect (both positive and negative);
- The extent of the heritage asset that would be affected (such as the whole or a very small part);
- The nature of the heritage asset that would be affected; and
- The overall effect of changes on the values and significance of the heritage asset (including its setting).

9.5.7 In this context, the effects of change in the setting of a heritage asset may depend on individual aspects of that setting, and assessments must be, by their nature, specific to the individual assets being considered. GPA3 (Historic England 2017) advises that the following aspects of setting should be considered in addition to any identified key attributes:

- the physical surroundings of the asset, including its relationship with other assets;
- the way the asset is appreciated; and
- the asset's associations and patterns of use.

9.5.8 It should also be noted that not all change necessarily detracts from the heritage significance of the asset. In the assessment of effects on the setting of heritage assets, the nature of the effect, (either positive, negative or neutral) of development is a subjective matter, usually taken to constitute a negative effect where change will constitute new and different elements to the setting of designated features, either to an imagined 'contemporary' setting or to their existing setting.

9.5.9 Effects on receptors are assigned to one of four classes of magnitude, defined in **Table 9.6**. Effects can be negative or positive.

Table 9.6 Methodology Criteria for magnitude of change

Magnitude	Summary Rationale (negative)	Summary Rationale (positive)
Very High	Loss of significance of an order of magnitude that would result from total or substantial demolition/disturbance of a heritage asset or from the disassociation of an asset from its setting.	Sympathetic restoration of an at-risk or otherwise degraded heritage asset and/or its setting and bringing into sustainable use with robust long-term management secured.
High	Loss of significance of an order of magnitude that would result from partial demolition/disturbance of a heritage asset or from the partial disassociation of an asset from its setting.	Sympathetic restoration of an at-risk or otherwise degraded heritage asset and/or its setting.
Medium	Loss of significance arising from partial disturbance or inappropriate alteration of an asset which will negatively affect its importance. Change to the key characteristics of an asset's setting, which gives rise to harm to the significance of the asset, but which still allows its archaeological, architectural or historic interest to be appreciated.	Appropriate stabilisation and/or enhancement of a heritage asset and/or its setting that better reveal the significance of the asset or contribute to a long-term sustainable use or management regime.
Low	Minor loss to or alteration of an asset which leave its current significance largely intact. Minor and short term changes to setting which do not affect the key characteristics and in which the historical context remains substantially intact.	Minor enhancements to a heritage asset and/or its setting that that better reveal its significance or contribute to sustainable use and management.
Very Low	Minor alteration of an asset which does not affect its significance in any discernible way. Minor and short term or reversible change to setting which does not affect the significance of the asset.	Minor alteration of an asset which does not affect its significance in any discernible way. Minor and short term or reversible change to setting which does not affect the significance of the asset.

9.5.10 The significance of an effect will then be determined in accordance with the significance matrix in **Section 4**.

10. Landscape and visual

10.1 Introduction

10.1.1 This section identifies the landscape resource and visual amenity of relevance to the Proposed Development and considers the potential effects arising from the construction and operation of the Proposed Development. This section describes the methodology to be used within the Landscape and Visual Impact Assessment (LVIA). It provides an overview of the baseline conditions, the data sources to be used to inform the EIA, the potential likely significant effects to be considered, and how these will be assessed for the purpose of an EIA.

10.1.2 The aim of the LVIA is to determine the likely significant effects arising from the construction and operation of the Proposed Development.

10.1.3 The only element of the Proposed Development that would likely have an effect on the landscape resource and visual amenity of the surrounding area is the acoustic barrier to the south of the village of Longford. However, the need for an acoustic barrier to the south of the village of Longford has not yet been determined and will be dependent on the results of ground noise modelling. If the acoustic barrier is not required, an LVIA is proposed to be scoped out of the assessment. If required, any landscape and visual effects associated with the construction and operation of the potential noise barrier will be assessed by all the relevant technical aspects in the Environmental Statement.

10.1.4 The Proposed Development would also result in fewer aircraft arrivals from the west and fewer aircraft taxing off in an easterly direction (when the airport is on easterly operations). As such, there will be fewer aircraft overflying the landscape to the south-east and north-west of the airport. There is therefore likely to be a beneficial effect experienced from these areas. However, because changes are considered to be minor, this beneficial effect would not be significant, and is therefore scoped out of the assessment.

10.2 Relevant legislation, planning policy, technical guidance

10.2.1 The European Landscape Convention (ELC) is devoted exclusively to the protection, management and planning of all landscapes in Europe. Landscape is described as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and / or human factors"* (Council of Europe Landscape Convention, 2000, Article 1a[210]). The definition applies to all urban and peri-urbans landscapes, towns, villages, rural areas, the coast and inland areas. In addition, it applies to ordinary or even degraded landscape as well as those areas that are of outstanding value or protected.

10.2.2 As a signatory to the ELC, the UK Government has undertaken to adopt general policies and measures to protect, manage and plan landscapes as follows (Article 5 a-d):

[210] CETS 176 - Draft European Landscape Convention as amended by the 2016 Protocol (coe.int), available at: https://rm.coe.int/16807b6bc7 (Accessed: 3 July 2023)

a) *"To recognise landscapes in law as an essential component of people's surroundings, an expression of the diversity of their shared cultural and natural heritage, and a foundation of their identity;*

b) *To establish and implement landscape policies aimed at landscape protection, management and planning through the adoption of the specific measures. These include awareness-raising, training and education, identification and assessment of landscapes, definition of landscape quality objectives and the implementation of landscape policies;*

c) *To establish procedures for the participation of the general public, local and regional authorities, and other parties with an interest in the definition and implementation of the landscape policies mentioned above;*

d) *To integrate landscape into regional and town planning policies and in cultural, environmental, agricultural, social and economic policies, as well as in any other policies with possible direct or indirect impact on landscape*."

10.2.3 Landscape policy in the UK is already closely aligned with the ELC, and before UK ratification a Regulatory Impact Assessment had demonstrated that existing procedures and practice (through the work over many years of Government agencies, Local Government and Non-Governmental Organisations (NGOs) such as the National Trust) are compliant with the ELC's formal requirements. Given the UK's adoption of the ELC and its aims, the ELC gives an appropriate basis for the importance placed on the UK landscape.

10.2.4 A summary of the relevant planning policies is provided in **Table 10.1.**

Table 10.1 Planning policy issues relevant to landscape and visual effects

Policy reference	Policy issue	Considered in section
International planning policy		
European Landscape Convention (ELC)	The ELC was signed by the United Kingdom Government in February 2006, ratified in November 2006 and came into effect in March 2007. The ELC is a European Treaty which encourages the integration of landscape considerations into all relevant areas of policy.	All sections
National planning policy		
National Planning Policy Framework	The NPPF advises that the planning system should protect and enhance the natural environments of international, national, regional, and local valued landscapes and green infrastructure. The NPPF notes that the planning system should take account of the different roles and character of different areas.It indicates local planning authorities should plan positively to retain and enhance landscapes and visual amenity within Green Belts.	**Section 11.4**

Policy reference	Policy issue	Considered in section
The Airports National Policy Statement: new runway capacity and infrastructure at airports in the south east of England	The Airports National Policy Statement (ANPS) forms part of the overall framework of national policy and may be a material consideration in making decisions on Town and Country Planning Act (TCPA) planning applications. The following paragraphs are most relevant to landscape and visual effects: 5.213 to 5.225.	All sections
Development plan policy		
The London Plan	The London Plan includes policies relating to the conservation and enhancement of landscapes and visual amenities, green infrastructure, Green Belts and Metropolitan Open Land.	**Section 11.4**
Hillingdon Local Plan (HLP) **Part One Policy EM2**	Policy EM2 advises a preservation of current Green Belts, particularly the 'extent, hierarchy and strategic functions' (p. 94).	**Section 11.4**
HLP Part One Policy EM4	Policy EM4 aims to safeguard, enhance and extend the network of open spaces, informal recreational and environmental opportunities. The policy also seeks to protect existing tree and landscape features and enhance open spaces with new areas of vegetation cover. The Council will work with other local authorities and agencies to pursue the key aims of the Colne Valley Park. (p.103)	**Section 11.4**
HLP Part Two Policy DMEI4	*Policy DMEI4* outlines permitted Green Belt development with regards to the visual amenity and character of the Green Belt and Metropolitan Open Land. (p.72)	**Section 11.4**

Technical guidance

10.2.5 In addition to the Landscape Institute's and Institute of Environmental Management and Assessment (IEMA) Guidelines for Landscape and Visual Impact Assessment, Third Edition, (GLVIA3) (2013), other key methodological guidance for the LVIA, but not limited to, are included below.

- *Landscape Institute (2019). Visual Representation of Development Proposals;*
- *Natural England, (2019). An Approach to Landscape Sensitivity Assessment;*
- *IEMA, (2019). EIA Quality Mark Article – Predicting the growth of tree and hedge planting when determining the effectiveness of mitigation;*
- *IEMA, (2017). Delivering Proportionate EIA. A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice;*
- *IEMA, (2015). Environmental Impact Assessment Guidance to Shaping Quality Development;* and
- *Natural England, (2014). An Approach to Landscape Character Assessment.*

10.3 Baseline conditions

Spatial scope and study area

10.3.1 *IEMA Guidance (IEMA, 2015 and 2017[211])* recommends a proportionate assessment focused on the likely significant effects of the Proposed Development, and a proportionate technical aspect written Section as a result. The LVIA study area must therefore be large enough to capture all likely significant effects. However, an overly large LVIA study area may be considered disproportionate if it makes understanding the key effects of the Proposed Development more difficult by including extraneous baseline information, and receptors which are unlikely to be significantly affected by the Proposed Development.

10.3.2 This is supported by the Landscape Institute (GLVIA3)[212] (Landscape Institute & IEMA, 2013) (paragraph 3.16) which recommends that "*The level of detail provided should be that which is reasonably required to assess the likely significant effects." Paragraph 5.2 also states that "The study area should include the Site itself and the full extent of the wider landscape around it which the Proposed Development may influence in a significant manner*."

10.3.3 The LVIA study area therefore defines a limit, based on professional judgement, beyond which it is considered unlikely for significant effects to arise.

10.3.4 For the purposes of the LVIA, the proposed study area extends to a 2km buffer beyond the potential acoustic barrier. Beyond this area, significant landscape and visual effects as a result of the acoustic barrier are unlikely due to the scale of the intervening distance and screening from existing and future built-form and, or vegetation.

Data gathering methodology

10.3.5 Information on the existing landscape resource or baseline conditions included in the Scoping Report has been collected from various desk-based sources. Local plans were consulted to identify areas of landscape and visual importance for receptors, including the Hounslow Local Plan 2015-2030 (London Borough of Hounslow, 2014), Hillingdon Local Plan Part 1 and 2 (London Borough of Hillingdon, 2012), West of Borough Local Plant Review (London Borough of Hounslow, 2020), and The London Plan (Mayor of London, 2021). The guidance documents on *National Character Area 115: Thames Valley* (Natural England, 2014) and *London's Natural Signatures: The London Landscape Framework* (Natural England, 2011) provided descriptions and analysis of the key features and opportunities of the local landscape. Ordnance Survey maps were used to identify local areas of interest, including green spaces and waterbodies. Other information was gathered from the Airport site and Study Area surveys. This baseline

[211] IEMA, (2015). 'Environmental Impact Assessment Guidance to Shaping Quality Development' Available at: https://www.iema.net/download-document/7014 (Accessed: 3 July 2023)
IEMA, (2017). 'Delivering Proportionate EIA. A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice' Available at: https://www.iema.net/document-download/33945 (Accessed: 3 July 2023)
[212] Landscape Institute's and Institute of Environmental Management and Assessment (IEMA) Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013).

information is set out as an inventory of the existing landscape resources and focuses on those landscape and visual receptors with the most potential to be significantly affected.

Current baseline

10.3.6 With the exception of the potential acoustic barrier south of Longford, the remaining components of the Proposed Development would be contained within the boundary of the Airport. The baseline conditions within this boundary are characterised largely by hardstanding (runways, aprons, taxiways, and buildings or infrastructure associated with airport activities such as car parks, terminals and aircraft hangars). Additionally, the landscape within is characterised by significant movement of aircraft, ground handling equipment and operatives and various vehicular traffic. Apart from the hardstanding, areas of airfield grassland, this being grassland managed to be of low species diversity and with a uniform sward height of 15-25 cm, occur between the runways and taxiways. These areas of grassland contribute little to the overall landscape character and are not considered to be sensitive receptors in landscape terms. Near the potential acoustic barrier is the settlement of Longford which includes Longford 'pocket park' alongside the Duke of Northumberland River and the Heathrow Terminal 5 Business Car Park.

Landscape Character

10.3.7 The entire 2km Study Area is located within the *National Character Area 115: Thames Valley*. Broadly, this National Character Area (NCA) is characterised by numerous streams, tributaries, lakes, and other waterbodies. Despite the predominantly urban character of the area, there are pockets of semi-natural open spaces and tranquil patches, particularly in lowland heath and riparian zones around waterways.

10.3.8 The Local Borough of Hillingdon (LBH) and London Borough of Hounslow have no detailed Landscape Character Assessments. However, Natural England has produced *London's Natural Signatures: The London Landscape Framework* (2011) which characterises the Natural Landscape Areas (NLAs) adjacent to Heathrow as the following:

- NLA1 – Colne River Valley: west of Heathrow:
  - This NLA is characterised by dense residential and industrial development interrupted by the River Colne, along with marginal wetlands and occasional woodlands.
- NLA10 – Hayes Gravel: north of Heathrow, including a small section of the northern runway:
  - The western portion of this NLA (split by the Brent River Valley) is characterised by limited areas of remaining 'natural' landscape. Smaller, semi-natural spaces include enclosed meadows with hedgerows and copses, as well as riparian zones denoted by trees and some planted woodlands.
- NLA12 – Hounslow Gravel: the "host" landscape area of Heathrow, including the south of Longford village:

- The Hounslow Gravel NLA is characterised by substantial suburban development with occasional areas of semi-natural space, as well as wetlands that comprise ecologically significant corridors. This largely flat area is host to heath- and grassland, with some scrub and mid-height wooded areas.

10.3.9 The far western section of the 2km Study Area is located partly within South Bucks District Council and partly within Berkshire (Slough Borough Council). The landscape character of this area is assessed within the 'Berkshire Landscape Character Assessment' which defines 53 LCAS in total, one (C4: Wraysbury Thames) of which falls within the Study Area.

Landscape Character of Longford

10.3.10 Longford is the closest settlement to the northern boundary of the Airport. It is on the southern edge of this settlement that the acoustic barrier would be built if it is deemed to be required. Longford was originally a village, and although it is now surrounded by other development, the core of the settlement retains its village character including a number of residential buildings dating from the medieval and post medieval period.

10.3.11 Longford is a linear settlement centred on part of Bath Road. Many of the oldest buildings are located on this road. Newer residential development fills the gaps in-between and also extends northwards to an area known as 'The Island'. Although within the historic core of Longford a village like character is retained, there is not a sense of tranquillity as may often be associated with a village. When within Longford, Heathrow is a prominent part of the village character, particularly when aircraft are taking off from, or landing on, the northern runway. When aircraft are taking off from the northern runway to the west, they are frequently visible flying over Longford. Views of the low flying aircraft and the noise associated with the aircraft are a distracting characteristic. Other detractors from the sense of tranquillity include noise from the nearby M25, A4 and A3044. The footprint of the potential acoustic barrier itself within Longford would be very small and does not in itself have a specific landscape character. However, it would have the potential to contribute to, or detract from, the character of the settlement of Longford.

Landscape Designations

10.3.12 There are no designated landscapes within the Study Area including National Parks, Areas of Outstanding Natural Beauty or Registered Parks and Gardens. However, the Colne Valley Regional Park is located within the Study Area. This Park covers approximately 110km^2 of varied scenery ranging from semi-urban to unspoilt countryside. The southern section of the Colne Valley Regional Park is located closest to Heathrow. It consists of a flat plain created by the convergence of the flood plains of the River Colne and River Thames.

Views and Visual Amenity

10.3.13 Information on visual receptors included in this assessment has been collected from local development plans, OS maps, relevant tourist literature and a site visit in March 2023. This baseline information is set out as an inventory of the visual receptors focusing on those most likely to be affected.

10.3.14 The baseline inventory includes the following visual receptors:

- Views from settlements and residential properties;
- Views experienced whilst travelling through the landscape (road users, rail users, pedestrians, ramblers, horse riders and cyclists for example); and
- Views from tourist and recreational destinations such as the nearby Harmondsworth Country Park.

10.3.15 Within the LVIA Study Area, the following principal visual receptors include:

- Settlements of Longford, Harmondsworth and Sipson which are to the north of Heathrow. The village centres of Longford and Harmondsworth are Conservation Areas.
- Transport routes include the M25 and M4, as well as busy A-roads and Bath Road within Longford. Additionally, the Personal Rapid Transport System connecting Terminal 5 Business Car Park to the terminal runs alongside a section of the potential acoustic barrier.
- Recreational routes, including Public Rights of Way (PRoWs), National Trails, Sustrans Cycle Routes, Bridleways (statutory) and Byways Open to All Traffic (BOATs) including the Colne Valley Way, the interconnected BOATs, bridleways, and sections of the footpaths through Harmondsworth Moor from West Drayton to Longford Moor, the footpaths from Harmondsworth to Longford and from Harmondsworth to Bath Road ending at the Compass Centre and the Sustrans Cycle Route link to Route 61 along the A4.
- Colne Valley Regional Park including Harmondsworth Moor.

Future baseline

10.3.16 Landscape change is an ongoing process and would continue across the LVIA Study Area irrespective of whether the Proposed Development would proceed. Change can arise through natural processes or as a result of human activity, including land use and land management.

10.3.17 Land management, and consequently landscape character, is dependent on a number of economic and environmental factors, including the future effects of climate change and human adaptation, which are difficult to predict at a local level and not a matter for this assessment.

10.3.18 It is important to consider however in the context of a commercial airport such as Heathrow, the landscape will continue to be heavily managed so as to facilitate its efficient operation. Therefore, any significant character changes are unlikely and so the assessment will not consider any alternative future scenarios.

10.4 Scope of the assessment

Potential receptors

10.4.1 Landscape and visual receptors within the LVIA Study Area that are most likely to incur a direct or indirect significant effect by a development tend to be those which are of higher sensitivity or are located within the close proximity to it. Viewpoint analysis and site surveys, which include an assessment of sensitivity and magnitude, will be used as part of the assessment to identify those receptors which are most likely to be significantly affected.

10.4.2 There is potential that a small number of landscape and visual receptors could be affected by the construction and operation of the potential acoustic barrier component of the Proposed Development to the south of Longford. These effects would be localised due to the limited visibility of the acoustic barrier from the surrounding landscape.

10.4.3 As noted previously, effects caused by other components of the Proposed Development within the Heathrow boundary are unlikely to be experienced by landscape or visual receptors outside of the context of the Airport itself.

10.4.4 Due to the developed urban character of the landscape within the Study Area, there are no landscape character receptors deemed sensitive to the Proposed Development. Landscape character receptors are therefore scoped out of the assessment.

10.4.5 The potential acoustic barrier south of Longford would be likely to be experienced from visual receptors to the north and west of Heathrow, as well as travellers on the Personal Rapid Transport System and those within the Terminal 5 Business Car Park. The latter two receptors are likely to view the barrier as fitting in the context of the existing landscape and therefore effects on these receptors have been scoped out of this assessment. Likewise, road users on the M25 and M4 are likely to attribute the Proposed Development as characteristic of the surroundings. Due to the intervening built-form and vegetation, the residential receptors in Harmondsworth (including the Conservation Area) and Sipson have been scoped out.

10.4.6 As a result, the following receptors will be included in the assessment:

- Residential receptors in Longford;
- Recreational users of the Colne Valley Way and other Public Rights of Way (PRoWs);
- Recreational users of Harmondsworth Moor and Colne Valley Regional Park; and
- Road users of Bath Road.

10.4.7 A review of planning applications within the 2km Study Area did not identify any features which are likely to significantly alter the baseline landscape character or visual context. It is not anticipated that the proposed acoustic barrier will result in any significant cumulative effects due to intervening land cover, and as such, this is scoped out of the assessment.

Viewpoint Selection and Visualisations

10.4.8 Six viewpoints are proposed to be assessed. It should be noted that the proposed viewpoints are the same as those set out in the 2013 planning application *(41573/APP/2013/1288)* which were agreed with consultees at the time to illustrate visibility of the then proposed acoustic barrier.

- Viewpoint one: From the bridge over the Duke of Northumberland River;
- Viewpoint two: From the eastern section of the 'pocket park' within Longford;
- Viewpoint three: From the western section of the 'pocket park' within Longford;
- Viewpoint four: From the car park within the Padbury Oaks office complex;
- Viewpoint five: From Weekly House Listed Building within the Padbury Oaks office complex; and
- Viewpoint six: From King's Bridge on Bath Road.

10.4.9 Visualisations would be prepared to illustrate winter and summer views for each viewpoint in accordance with the Landscape Institute technical guidance note: *Visual Representation of Development Proposals, TGN 06/19.*

Potentially significant effects

10.4.10 The potentially significant landscape and visual effects that will be taken forward for assessment in the Environmental Statement are summarised in **Table 10.2**.

Table 10.2 Potentially significant landscape and visual effects

Activity	Effect	Receptor
Construction of acoustic barrier south of Longford	Significant landscape effects not likely due to low sensitivity of receptors and surrounding urban context. Significant visual effects likely resulting from visibility of the acoustic barrier in close proximity, subject to detailed viewpoint analysis.	Residential receptors within Longford including Longford Pocket Park. Recreational receptors within Colne Valley Regional Park including along Colne Valley Way and other PRoWs to the north.
Operational phase	Significant landscape effects not likely due to low sensitivity of receptors and surrounding urban context. Significant visual effects likely resulting from visibility of the acoustic barrier in close proximity, subject to detailed viewpoint analysis.	Residential receptors within Longford including Longford Pocket Park. Recreational receptors within Colne Valley Regional Park including along Colne Valley Way and other PRoWs to the north.

10.5 Assessment methodology

Introduction

10.5.1 The proposed generic project-wide approach to the assessment methodology is set out in **Section 4**, and specifically in **Section 4.3**. However, whilst this has informed the approach that has been used in this Section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the LVIA in the Environmental Statement.

10.5.2 The assessment will be undertaken in accordance with *the Landscape Institute and IEMA (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3),* and other best practice guidance listed in **Section 10.2**.

Summary of LVIA Methodology

10.5.3 Essentially, the landscape and visual effects (and whether they are significant) is determined by an assessment of the nature or 'sensitivity' of each receptor or group of receptors and the nature of the effect or 'magnitude of change' that would result from the Proposed Development. The evaluation of sensitivity takes account of the value and susceptibility of the receptor to the Proposed Development. This is combined with an assessment of the magnitude of change which takes account of the size and scale of the proposed change, the geographical extent, and the duration of that change. By combining assessments of sensitivity and magnitude of change, a level of landscape or visual effect can be evaluated and determined.

10.5.4 The resulting level of effect is described in terms of whether it is significant or not significant and the type of effect is described as either direct or indirect; temporary or permanent (reversible); cumulative; and positive, neutral or negative.

10.5.5 The time period for the assessment covers the construction period of the Proposed Development, its subsequent operation and the implementation and establishment of embedded landscape measures which are likely to overlap with the construction and/or operation periods.

10.5.6 The landscape and visual assessment unavoidably involves a combination of quantitative and qualitative assessment and wherever possible a consensus of professional opinion will be sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach.

Determining the significance of effects

10.5.7 The matrix presented in **Table 10.3** is used as a guide to illustrate the LVIA process. In line with the emphasis placed in GLVIA3 upon the application of professional judgement, an overly mechanistic reliance upon a matrix is avoided through the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor. Such narrative assessments provide a level of detail over and above the outline assessment provided by use of the matrix alone. Wherever possible cross references will be made to baseline figures and/or to photomontage visualisations to support the rationale. The matrix as presented in **Table**

10.3 should therefore be considered as a guide and any deviation from this guide will be clearly explained in the assessment rationale.

10.5.8 Significant landscape and visual effects are highlighted in bold and shaded in dark grey in **Table 10.3** and relate to all those effects that result in a **'Major'** or a '**Major/Moderate'** level of effect. In some circumstances, 'Moderate' levels of effect (shaded grey) also have the potential, subject to the assessor's opinion, to be considered as significant and these exceptions are also highlighted with an asterisk and will be explained as part of the assessment, where they occur. White or light grey boxes in **Table 10.3** indicate a non-significant effect.

10.5.9 The type of effect will also be described and may be direct or indirect; temporary or permanent (reversible); cumulative; and positive, neutral, or negative.

Table 10.3 Evaluation of landscape and visual effects

Sensitivity	Magnitude of change					
	High	**Medium-high**	**Medium**	**Medium-low**	**Low**	**Very Low - Zero**
High	**Major** (Significant)	**Major** (Significant)	**Major / Moderate** (Significant)	Moderate*	Moderate*	Minor
Medium-high	**Major** (Significant)	**Major / Moderate** (Significant)	Moderate*	Moderate*	Minor	Minor
Medium	**Major / Moderate** (Significant)	Moderate*	Moderate*	Minor	Minor	Negligible
Medium-low	Moderate*	Moderate*	Minor	Minor	Negligible	Negligible
Low	Moderate*	Minor	Minor	Negligible	Negligible	Negligible

* Note: Moderate levels of effect may be significant subject to the assessor's opinion, which shall be clearly explained.

11. Biodiversity

11.1.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The potential effects in biodiversity terms in the construction phase would be a permanent or temporary changes to habitat, disturbance from changes in noise or vibration and possible dust emissions. Risks around disturbance and atmospheric conditions from changes in operational airspace are possible during the operation phase.

11.1.2 The number of aircraft movements will be unchanged by the Proposed Development. Therefore, the risks on biodiversity from sources other than aircraft, including landside road vehicles, airside vehicles and ground support equipment, and stationary combustion plant, will be unchanged.

11.1.3 The biodiversity assessment will consider the potential effects of the Proposed Development with respect to terrestrial ecology and ornithology. This section of the Scoping Report describes the methodology to be used within the EIA, an overview of the baseline conditions, the datasets to be used to inform the EIA, the likely significant effects to be considered within the EIA, and how these likely significant effects will be assessed for the purpose of an EIA. Details of the data and sources of information used to inform this assessment can be found in **Table 11.4**.

11.1.4 This section should be read in conjunction with the description of the Proposed Development provided in **Section 2.6: A Description of the Proposed Development**.

- **Section 5: Air Quality**.
- **Section 6: Noise and Vibration**.

11.1.5 A Habitat Regulations Assessment (HRA) screening report of the effects of the Proposed Development on nearby European designated sites has also been completed.

11.2 Relevant legislation, planning policy, technical guidance

11.2.1 This section identifies the legislation, planning policy and technical guidance that has informed the assessment of effects with respect to biodiversity. Further information on policies relevant to the Proposed Development is provided in **Section 3: Legislation and Policy overview.**

11.2.2 A summary of the relevant planning policies is given in **Table 11.1.**

Table 11.1 Planning policy issues relevant to biodiversity

Policy reference	Policy issue	Considered in Section
National planning policies		
National Planning Policy Framework (NPPF)[213]	Section 15, paragraph 174 requires planning policies and decisions to contribute and enhance the local and natural environment by minimising impacts on these features and providing net gains for biodiversity. Paragraph 179 states that plans should protect and enhance biodiversity through identifying and safeguarding *"local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national, and locally designated sites of importance for biodiversity; wildlife corridors, and stepping stones that connect them, as well as areas identified for habitat management, enhancement, restorations or creations."* And promote *"The conservation, restoration, and enhancement of priority habitats, ecological networks, and the protection and recovery of priority species ...."* Paragraph 180 states that when determining planning applications, if significant harms to biodiversity cannot be avoided, mitigated, or compensated for, then planning permission should be refused. Planning permission should also be refused if irreplaceable habitats are lost or deteriorate as a result of a development.	All sections
The Airports National Policy Statement: new runway capacity and infrastructure at airports in the south east of England	The Airports National Policy Statement (ANPS) forms part of the overall framework of national policy and may be a material consideration in making decisions on Town and Country Planning Act (TCPA) planning applications. The following paragraphs are most relevant to biodiversity: Paragraphs 5.84 to 5.105. Of particular note is paragraph 5.85 which states: '*The Government's biodiversity strategy is set out in Biodiversity 2020: A Strategy for England's wildlife and ecosystem services. Its aim is to halt overall biodiversity loss, support healthy, well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people*.'	All sections
Local planning policies		

[213] Ministry of Housing, Communities and Local Government (2021). The National Planning Policy Framework (NPPF). (online) Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004408/NPPF_JULY_2021.pdf (Accessed 05 May 2023)

Policy reference	Policy issue	Considered in Section
The London Plan 2021[214] **Policy G6**	Under Policy G6 require protection of protected species and habitats as follows; *"A - Sites of Importance for Nature Conservation (SINCs) should be protected. And.* *C - Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:* *1) avoid damaging the significant ecological features of the site* *2) Minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site* *3) deliver off-site compensation of better biodiversity value.* *D - Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process."*	All sections
Hillingdon Local Plan Policy EM1[215]	The London Borough of Hillingdon (LBH) will ensure that climate change mitigation is addressed at every stage of the development process.	All sections
Hillingdon Local Plan Policy EM7	LBH will ensure that biodiversity and geodiversity value of Sites of Importance for Nature Conservation will be protected and enhanced. Populations of protected species/species and habitats identified on Biodiversity Action Plans will be protected and enhanced. The council will look for biodiversity improvements to be made as part of all developments where feasible.	All sections
Hillingdon Local Plan Strategic Objective SO8	Supporting the key policies are a number of strategic objectives including; *"SO8: Protect and enhance biodiversity to support the necessary changes to adapt to climate change. Where possible, encourage the development of wildlife corridors."*	All sections
London Borough of Hillingdon Local Plan	This policy states that:	All sections

[214] Mayor of London (2021) The London Plan – The Spatial Development Strategy for Greater London. Available at https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf
[215] London Borough of Hillingdon (2012) Hillingdon Local Plan. Available at: https://www.hillingdon.gov.uk/local-plan (Accessed 05 May 2023).

Policy reference	Policy issue	Considered in Section
Part 2[216]. Policy DMEI 7: Biodiversity Protection and Enhancement	a) *"The design and layout of new development should retain and enhance any existing features of biodiversity or geological value within the site. Where loss of a significant existing feature of biodiversity value is unavoidable, replacement features of equivalent biodiversity value should be provided on-site. Where development is constrained and cannot provide high quality biodiversity enhancements on site, then appropriate contributions will be sought to deliver off-site improvements through a legal agreement.* b) *If development is proposed on or near to a site considered to have features of ecological of geological value, applicants must submit appropriate surveys and assessments to demonstrate that the Proposed Development would not have unacceptable effects. The development must provide a positive contribution to the protection and enhancement of the site or feature of value.* c) *All development alongside, or that benefits from a frontage on to a main river or the Grand Union Canal will be expected to contribute to additional biodiversity improvements.* d) *Proposals that result in significant harm to biodiversity which cannot be avoided, mitigated, or, as a last resort, compensated for, will normally be refused."*	
London Borough of Hillingdon Local Plan Part 2. Policy DMAV 2: Heathrow Airport	Development proposals within the Heathrow Airport boundary will only be supported where: *iv) "there are no other significant adverse environmental impacts; where relevant, an environmental impact and/or transport assessment will be required with appropriate identification of mitigation measures; and* *v) they comply with all other relevant policies of the Local Plan."*	All sections

Legislation

11.2.3 The following legislation, as presented in **Table 11.2** is relevant to the assessment of the effects on identified biodiversity receptors:

[216] London Borough of Hillingdon (2020) Local Plan Part 2. Available at: https://www.hillingdon.gov.uk/local-plan. [Accessed 17/05/2023].

Table 11.2 Summary of biodiversity legislation relevant to the Proposed Development

Legislation	Issue	Considered in Section
The Environment Act 2021[217]	*The Environment Act* (passed in November 2021) translates aspects of the government's "A Green Future: Our 25 Year Plan to Improve the Environment" plan into legislation. *The Environment Act* will make it mandatory, once the relevant secondary legislation has passed pursuant to the Act (scheduled for late 2023), for the vast majority of development projects to deliver a 10% Biodiversity Net Gain (BNG) as a requirement of their consent.	All sections
The Conservation of Habitats and Species Regulations 2017 (as amended)[218]	*The Conservation of Habitats and Species Regulations 2017 (as amended)* transposes Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') and elements of Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive') in England. The Regulations provide for the designation and protection of "European sites", the protection of "European protected species", and the adaptation of planning and other controls for the protection of European Sites. Under the Regulations, competent authorities have a general duty to have regard to the EC Habitats Directive. Provides legal protection of animals listed in schedule two and plants in schedule five of the legislation. The Regulations are amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[219] following the United Kingdom's withdrawal from the EU. These changes, allow for new administrative and regulatory arrangements and the creation of a national site network comprising the protected sites already designated under the Nature Directives, and any further sites designated under these Regulations.	All sections
Natural Environment and Rural Communities (NERC) Act 2006[220]	Section 40 states "*every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.*"	All sections

[217] UK Government (2021). Environment Act 2021, c. 30. (Online) Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted. (Accessed 05 May 2023).
[218] UK Government (2017). The Conservation of Habitats and Species Regulations 2017 (No. 1012). (online) Available from https://www.legislation.gov.uk/uksi/2017/1012/contents. (Accessed 05 May 2023).
[219] UK Government (2019). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. (Online) Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573 (Accessed 05 May 2023).
[220] UK Government (2006). Natural Environment and Rural Communities Act 2006, c.16. (online) Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents. (Accessed 05 May 2023).

Legislation	Issue	Considered in Section
	The NERC Act also places a duty on the Secretary of State to maintain lists of species and habitats which are regarded as being of principal importance for the conservation of biodiversity in England. These Habitats of Principal Importance (HPI) and Species of Principal Importance (SPI) are used to guide decision makers in implementing their duties to have regard to the conservation of biodiversity in England when carrying out their normal functions.	
Countryside and Rights of Way Act (CRoW) 2000[221]	*The CRoW Act 2000*, amongst other elements, details further measures for the management and protection of Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.	All sections
Badger Act 1992[222]	This act provides legal protection for badgers by making it illegal to kill or injure a badger, disturb a badger while occupying a sett, or to damage or obstruct a badger sett.	All sections
Wildlife and Countryside Act (WCA) 1981 (as amended)[223]	*The WCA 1981 (as amended*) is the principal mechanism for the legislative protection of wildlife in England and is the mechanism by which the Convention on the Conservation of European Wildlife and Natural Habitats (the "Bern Convention") is implemented in England. The Act affords various levels of protection to species of plants and animals listed in Schedules one, five, six, and eight of the Act, with Schedule nine listing species which it is an offence to allow to spread in the wild.	All sections

Technical guidance

11.2.4 A summary of the technical guidance for assessing biodiversity is given in **Table 11.3**.

[221] UK Government (2000). Countryside and Rights of Way Act 2000, c.37. (online) Available from https://www.legislation.gov.uk/ukpga/2000/37/contents (Accessed 05 May 2023).
[222] UK Government (1992). Badger Act 1992, c.51. (online) Available from https://www.legislation.gov.uk/ukpga/1992/51/contents (Accessed 05 May 2023).
[223] UK Government (1981). Wildlife and Countryside Act 1981, c.69. (online) Available from https://www.legislation.gov.uk/ukpga/1981/69/contents (Accessed 05 May 2023).

Table 11.3 Summary of technical guidance for biodiversity relevant to the Proposed Development

Reference	Issue	Considered in section
Chartered Institute of Ecology and Environmental Management (CIEEM) (2018, updated 2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, and Coastal. Second Edition v1.1	Provides guidance that is relevant to the assessment of potential significant effects on biodiversity.	All sections
Guidelines for Preliminary Ecological Appraisals (PEA): Second Edition (2017)	Provides best practice guidance for those undertaking Preliminary Ecological Appraisals within the UK.	All sections
Collins, J. (ed) (2016) Bat Survey Guidelines for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London	Provides guidance on the recommended level of bat survey effort to fully assess project impacts on roosting and foraging/commuting bats within the UK.	All sections
Chanin, P. (2003) Ecology of the European Otter. Conserving Natura 2000	Provides guidance on otter ecology and habitat requires within the UK, including within freshwater and coastal habitats.	All sections
Gilbert, G., Gibbons, D. & Evans, J. (1998) Bird Monitoring Methods: A Manual of Techniques for Key UK Species.	Provides guidance for surveying and monitoring techniques to assess breeding success and monitor population levels for UK bird species.	All sections
Harris, S., Cresswell, P. & Jeffries, D. (1989) Surveying Badgers, The Mammal Society, London	Provides best practice guidance for surveying for and assessing badger activity within the UK.	All sections

11.3 Baseline conditions

Data gathering methodology

11.3.1 The potential for effects on biodiversity receptors depends upon the geographical "Zone of Influence" (ZoI); the area within which the environmental changes could affect receptors. In establishing the extent of the ZoI for biodiversity, consideration has been paid to the nature of the activities associated with the Proposed Development both at the construction and operational stages.

11.3.2 For the purposes of this Scoping Report section, two separate Study Areas, a "Core Biodiversity Study Area" and an "Extended Biodiversity Study Area", have been used when identifying potential effects relating to the construction and operational phases of the Proposed Development, in particular, with respect to European Sites.

11.3.3 The Proposed Development Area includes a relatively small area for construction works and are restricted to areas within the operational airfield to facilitate changes to taxiways and a small area for the potential construction of a noise barrier at the north-western end of the northern runway. For effects during construction, the ZoI has been defined as follows:

- Those areas that will be directly affected by the enabling works.
- The land surrounding the Proposed Development Area to a radius of 2 km so that biodiversity receptors that could be affected by construction activities can be considered (this being a precautionary distance for which it is considered that such activities could result in changes to the baseline biodiversity environment).

11.3.4 **Figure 11.1** shows the survey area and the defined ZoI for the construction phase of the Proposed Development and is defined as the "Core Biodiversity Study Area".

11.3.5 During operation, the proposed changes would result in changes to aircraft movements on both the northern and southern runways, as such the redline boundary has been defined as the current Heathrow Airport boundary. For effects during operation, the ZoI has been defined as follows:

- For protected species and habitats not associated with European Sites, a ZoI of 2km (from the Survey area shown on **Figure 11.1**), is used for the construction phase has been applied.
- In consideration of effects on European Sites only (and as detailed in the HRA Report), the potential ZoI has been extended to a wider and more precautionary distance of up to 18km from the airport boundary. This has been derived from peer-reviewed scientific literature, and systematically collected and verified data (See **HRA Screening Report Appendices A** and **C**) and is only used when considering the potential for effects related to air quality, disturbance of species associated with European Sites due to increased noise levels and other effects from over flying, and the risk of bird strike.

11.3.6 **Figure 11.2** shows the airport boundary and the defined ZoI for the operational phase of the Proposed Development and is defined as the "Extended Biodiversity Study Area".

11.3.7 It was determined that the desk study should include an ecological data search which aimed to collect information on:

- European (protected) Sites up to 18km from airport boundary;
- National Statutory and non-statutory nature conservation sites and UK Biodiversity Action Plan priority habitats occurring either on the airport, or within a 2km radius of the enabling works; and
- Legally protected or otherwise notable species that occur either on the airport, or within a 2km radius of the enabling works.

11.3.8 In addition to the desk-based information gathered, an extended Phase 1 Habitat survey was completed on 03 March 2023 within the area required for the enabling works (the "Survey Area"). This only included access to the areas outside of the operational airfield. Full details of this survey are provided in the PEA (included as **Appendix A**). **Figure 11.3** shows the area subject to habitat survey and is defined as "the Survey Area".

Sources of Information

11.3.9 Sources of desk study biodiversity information to be used to further inform the assessment are summarised in **Table 11.4.**

Table 11.4 Summary of sources of desk study biodiversity information

Data	Data source
Statutory biodiversity sites	Joint Nature Conservation Committee (JNCC) and the Multi-Agency Geographic Information for the Countryside (MAGIC) website.
Non-statutory biodiversity sites	Greenspace Information for Greater London / Thames Valley Environmental Records Centre
Ancient woodland	MAGIC website (https://magic.defra.gov.uk/MagicMap.aspx)
Records for priority species	Greenspace Information for Greater London / Thames Valley Environmental Records Centre
Records of granted European Protected Species Licenses	MAGIC website (https://magic.defra.gov.uk/MagicMap.aspx)
Ponds – (potential great crested newt (Triturus cristatus) breeding habitat	The geographical context of the Proposed Development area was examined using the relevant Ordnance Survey 1:10 000 scale maps and freely available satellite imagery. These were used to identify key landscape features that may be important for great crested newts. In particular, the location and connectivity of ponds and other waterbodies within 500m of the Proposed Development area to be determined.

Current baseline

11.3.10 A summary of the statutory and non-statutory designated sites present within the Core Biodiversity Study Area and the Extended (European Sites only) Biodiversity Study Area is provided in **Table 11.5.** The current baseline for the area surrounding the Proposed Development is summarised in **Table 11.6** The biodiversity data used in the preparation of this section has been sourced from:

- An extended phase 1 habitat survey undertaken in August 2011 which accompanied the 2013 application submission;
- A desk study conducted in 2012;
- Data collected as part of the Heathrow Expansion Project (HEP) (collected between 2017 and 2019);
- An updated PEA conducted in March 2023, comprising an extended phase 1 habitat survey and assessment of the potential to support protected/notable species within the Proposed Development (excluding areas within the operational airport boundary); and
- Data and supporting information collated as part of the production of the HRA Screening Report.

Table 11.5 Summary of baseline ecological information

Designated Site	Distance from Airport	Summary of Designation
European/International Statutory Designated Sites present within Extended Biodiversity Study Area		
Burnham Beeches SAC	12.5km from Heathrow Airport Boundary	**Annex I Habitats:** 9120 Atlantic acidophilous beech forests with *ilex* and sometimes also *Taxus* in the shrub layer *Quercion robori-petraeae* or *Ilici-Fagenion*
Thames Basin Heaths SPA	12km from Heathrow Airport Boundary	**Article 4.2 species:** **Annex II migratory:** European nightjar *Caprimulgus europaeus* Woodlark *Lullula arborea* Native: Dartford warbler *Sylvia undata*
Wimbledon Common SAC	12km from Heathrow Airport Boundary	**Annex I Habitats:** 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths **Annex II species:** 1083 Stag beetle *Lucanus cervus*
Thursley, Ash, Pirbright & Chobham SAC	11.6km from Heathrow Airport Boundary	**Annex I Habitats:** 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths 7150 Depressions on peat substrates of the Rhynchosporion
Richmond Park SAC	9km from Heathrow Airport Boundary	**Annex II species:** 1083Stag beetle *Lucanus cervus*
Windsor Forest & Great Park SAC	6.8km from Heathrow Airport Boundary	**Annex I Habitats:** 9190 Old acidophilous oak woods with *Quercus robur* on sandy plains **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** 9120 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) **Annex II species:** 1079 Violet click beetle *Limoniscus violaceus*

Designated Site	Distance from Airport	Summary of Designation
South West London Waterbodies Ramsar	0.7km from Heathrow Airport Boundary	**Criterion 6** Gadwall *Anas strepera* Shoveler *Anas clypeata*
South West London Waterbodies SPA	0.7 km from Heathrow Airport Boundary	**Criterion 6** Gadwall *Anas strepera* Shoveler *Anas clypeata*
National Statutory Designated Sites present within Core Biodiversity Study Area		
Staines Moor SSSI	1.7 km from enabling works	The largest area of alluvial meadow in Surrey, supporting important populations of wintering wildfowl. Waterbodies within the site support a diverse range of wetland plants, many of which are nationally or locally uncommon.
Wraysbury Reservoir SSSI	1.9 km from enabling works	The reservoir regularly supports nationally important numbers of wintering cormorant, great crested grebe, gadwall and shoveler.
Non-statutory Designated Sites present within Core Biodiversity Study Area		
Lower Colne (M059) Site of Metropolitan Importance (SMI)	0.14 km from enabling works	The site is roughly 140ha in area and consists of one of the finest river systems in London, including sections of the rivers Colne, Wraysbury and Frays which collectively support a diverse aquatic and marginal flora, including several plants with a restricted London distribution.
Old Slade Lake LWS	1.3 km from enabling works	The site consists of a complex of flooded gravel pits fringed by secondary woodland, scrub, ruderal grassland, tree planting and a stretch of the Colne Brook.
Colne Valley Reservoirs and Gravel Pits Biodiversity Opportunity Area (BOA)	1.9 km from enabling works	An area of extensive standing water present in the reservoirs and gravel pits (includes Staines Moor SSSI and Wraysbury Gravel Pits SSSI) which are important sites for birds.

Table 11.6 Identified ecological features and current Proposed Development area baseline

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
Habitats (On airfield)	The habitat survey conducted within the Heathrow Airport boundary as part of the 2013 application identified the presence of species poor grassland and hard standing. All grassland present within the airfield is managed to a maximum sward height of 15-20 cm, which is in line with the airport's bird strike management policy.	The habitat surveys conducted in 2018 did not extend to any habitat located within the airfield boundary.	The PEA conducted in 2023 did not extend to any habitat located within the airfield boundary. A review of aerial imagery of on airfield areas did not find any obvious difference from the habitats recorded previously, with the airfield habitats consisting of grassland with large areas of hard standing present. Given that the grassland is managed in the same way as it was in 2013, it is considered that there will have been no change in the grassland type and quality.	On airfield habitats were considered to be of low quality overall and of limited conservation value.
Habitats (Off Airfield)	The desk study identified the presence of reedbeds, purple moor grass and rush pasture, floodplain grazing marsh, lowland meadow, wood pasture and parkland, woodland, acid grassland, standing water, and fen	Habitats identified during the 2018 surveys comprised broad-leaved plantation woodland, amenity grassland, semi-improved grassland, scattered scrub, tall ruderal and dense, continuous scrub.	The PEA undertaken in 2023 identified a range of habitats within the Survey Area. Broadleaved woodland with dense mixed scrub bordering was present along the north-eastern site	Habitats within the Survey Area were identified to be common and widespread within the surrounding area. The habitats identified have remained consistent between survey years and are subject to regular

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	within the Core Biodiversity Study Area. A habitat survey conducted of the Survey Area in 2013 identified areas of scattered hazel, crack willow, English oak, and field maple scrub, bordered by species poor grassland. Occasional semi-mature trees were present within the survey area, of the same species composition as the scattered scrub. Patches of emergent and marginal vegetation were present along the edges of the Duke of Northumberland's River. No habitats were identified within the Survey Area that qualified as Habitats of Principal Importance.		boundary. The Duke of Northumberland's River flows through the centre of the northern part of the Survey Area, flowing from east to west. It has some small areas of marginal vegetation present within the channel; however, the banks are mostly steep and lacking in dense vegetation. Modified grassland is present adjacent to both sides of the watercourse within the Survey Area.	anthropogenic disturbance and management. The Twin Rivers are part of Heathrow's network of biodiversity sites which provided over 175ha of habitat which is managed for biodiversity and are accredited under the Wildlife Trusts Biodiversity Benchmark.
Notable plant species	No notable plant species were observed within the Survey Area during surveys in 2013 with habitats	No notable plant species were observed within the 2023 Survey Area during surveys in 2018 with	Records of seven notable plant species were returned within the 2023 desk study, including bluebell, cornflower, and yellow vetchling. The closest	The habitats present are considered to be of low ecological value, subject to regular anthropogenic disturbance and management and therefore

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	identified unlikely to support such species.	habitats identified unlikely to support such species.	record is that of a cornflower located 850 m north of the Survey Area boundary. The 2023 PEA did not identify any notable plant species within the Survey Area and the habitats present were subject to regular disturbance and management making the presence of notable plant species unlikely.	unlikely to support notable or protected plant species.
Invertebrates	The 2013 application did not identify any protected or notable invertebrate species within the Survey Area, neither was any suitable habitat to support these species identified.	Although detailed invertebrate surveys were conducted as part of the Heathrow Expansion Project, survey areas did not overlap with the 2023 Survey Areas associated with the Proposed Development.	Records of 30 notable invertebrate species were returned within the 2023 desk study, including small heath, stag beetle, cinnabar, bearded chestnut, buff ermine, sallow, small squared-spot, and white ermine were returned within the desk study. The closest record is that of a small heath located approximately 250 m north-east of the Survey Area boundary. Full details of all records	The habitats present are considered to be of low ecological value, subject to regular anthropogenic disturbance and management and therefore unlikely to support notable or protected invertebrate species.

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
			received is provided within the PEA. The closest record was of a small heath located within the Lower Colne River Site of Metropolitan Importance. The 2023 PEA identified common and widespread habitats within the Survey Area that are unlikely to provide suitable habitat to support a significant population of notable invertebrate species.	
Common Amphibians	The 2013 application identified suitable habitat to support common amphibians such as common toad.	Smooth newt and common toad were identified within waterbodies located approximately 200m north of the 2023 Survey Area.	No records of common amphibians were returned within the 2023 desk study. Broadleaved woodland and scrub identified within the Survey Area during the 2023 PEA provides suitable terrestrial habitat for common amphibians, additionally the PEA identified eight waterbodies within 500 m of the Survey Area. There is therefore a	No water bodies were identified within the 2023 Survey Area, and terrestrial habitats present are of limited value to amphibians as a commuting and foraging resource. The 2023 application site is isolated due to the presence of major roads limiting potential for amphibian presence within Proposed Development.

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
			low risk of common amphibians being present within the Survey Area.	
Great crested newts	The 2013 application did not identify any ponds within the Survey Area or within 500 m of the Survey Area and the high density of major roads makes the Survey Area unsuitable for great crested newt (GCN) colonisation. A search of MAGIC returned the presence of no granted European Protected Species Licenses for GCN within 2 km of the Survey Area.	Great crested newt (GCN) surveys undertaken in 2017 and 2018 identified GCN within 2.5 km of the 2023 Survey Area. Metabarcoding and eDNA analysis identified the presence of GCN within one pond, present 2.2 km south-west. Presence and absence surveys undertaken in 2019 confirmed the presence of GCN within five ponds present south of the airport, with breeding confirmed in two of these ponds. These ponds are located approximately 2.4 km south of the Proposed Development.	No records of great crested newt were returned in the 2023 desk study. Broadleaved woodland and scrub identified within the Survey Area during the 2023 PEA provides suitable terrestrial habitat for GCN, however these habitats are isolated from the wider environment due to major roads and watercourses.	No water bodies were identified within the Survey Area, and terrestrial habitats present are of limited value to GCN as a commuting and foraging resource. The Proposed Development is isolated due to the presence of major roads limiting potential for GCN presence within the Proposed Development.

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
Reptiles	The 2013 application identified suitable habitat to support grass snake within the Proposed Development and identified this species as being present within the local area through desk study records.	Reptile surveys conducted in 2017 and 2018 as part of the Heathrow Expansion project did not record any reptile species within the 2023 Survey Area. Juvenile grass snake were identified at survey locations approximately 1 km north and 500 m south-west of the Proposed Development.	Seven records of grass snake were returned within the 2023 desk study, all located approximately 700 m south west of the Survey Area boundary. The 2023 PEA found some areas of suitable habitat to support reptiles present within woodland margins and scrub, however this habitat was small in extent and subject to some disturbance.	The Proposed Development is isolated from reptile populations present within the surrounding areas due to the presence of major roads, the village of Longford and the Airport itself, limiting opportunities for colonisation by reptiles. The Duke of Northumberland's River offers the only viable pathway by which reptiles could colonise the Proposed Development.
Birds	The 2013 application identified suitable habitat to support notable nesting bird species within the scrub and marginal/aquatic vegetation.	Bird surveys were conducted as part of the assessment for the Heathrow Expansion project in 2017 and 2018. Scoping surveys conducted identified habitats within the Survey Area as being suitable to support notable breeding bird species and provide suitable habitat to support over wintering bird species as well.	Records of 30 bird species were returned within the 2023 desk study, including records of kingfisher located within the Airport. Other species recorded in the area surrounding the Airport include song thrush, skylark, house sparrow, dunnock, kestrel, snipe, little ringed plover, and lapwing. The closest record was that of a kingfisher, which was located approximately 330 m east of the Survey Area	The Proposed Development includes relatively small areas of habitat which have the potential to support small numbers of breeding birds. Notable bird species are likely to be restricted to those associated with the riparian habitats and could include species such as kingfisher and Cetti's warbler and other species associated with scrub and

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
		Targeted Kingfisher surveys were undertaken along watercourses during 2017 - 2019 which overlap the 2023 Core Biodiversity Study Area. No Kingfisher were recorded associated with the Duke of Northumberland's River or River Colne within the Survey Area, however Kingfisher were observed both upstream and downstream of the Survey Area on these watercourses. Twenty species of bird were recorded breeding within the Core Biodiversity Study Area during surveys conducted as part of the HEP in 2018. Of these 20, five SPI were recorded (dunnock, house sparrow,	boundary. Full details of all records received is provided within the PEA. A range of habitats were identified within the Survey Area during the 2023 PEA that could support notable nesting bird species. These habitats however were limited in extent and unlikely to support significant numbers of any single species.	woodland habitats such as song thrush and dunnock. Management of the airfield and surrounding areas is determined by CAA guidance described in CAP772 – Birdstrike Management for Aerodromes (CAA 2017)[224] and includes specific measures to discourage certain bird species from congregating on or near the airport. At Heathrow, measures include a "long grass policy" which maintains the sward at a height of 150-200mm and the use of netting over the Duke of Northumberland and Longford Rivers where they pass directly adjacent to the airfield in the west.

[224] Civil Aviation Authority (2017) Wildlife Hazard Management at aerodromes. CAP 772. https://publicapps.caa.co.uk/docs/33/CAP772_Issue2.pdf

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
		skylark, starling, and song thrush).		
Bats	The 2013 application did not identify any trees with potential to support a bat roost, however the Survey Area was assessed as being of potential value to commuting/foraging bats.	Bat activity surveys conducted in 2017 and 2018 as part of the HEP recorded at least eight species of bat using the 2023 Survey Area. Common and soprano pipistrelle were the most frequently recorded species, followed by the "big bat" species group (noctule, serotine, and Leisler's bat), with low levels of *Myotis* species, Nathusius pipistrelles and long-eared bats also recorded. No roosts were identified within the 2023 Survey Area; however, four confirmed roosts were identified within the residential houses located south of Bath Road (approximately 100m north of the Proposed Development). These roosts were confirmed to all be in use by soprano pipistrelle.	An updated search of MAGIC was conducted in 2023 which returned one granted European Protected Species License within 2 km of the Survey Area. This allowed for the damage and destruction of a resting place for brown long-eared bat and soprano pipistrelle. Records of brown long-eared bat, common pipistrelle, Daubenton's bat, noctule, Leisler's bat, soprano pipistrelle, and an unidentified *Myotis* species were returned within the 2023 desk study. The closest record related to a soprano pipistrelle located approximately 10 m north-east of the Survey Area boundary. Full details of all records received is provided within the PEA. No information was returned as to indicating whether these records relate to bat roosts.	The Survey Area provides limited value to roosting bats due to an absence of suitable features such as buildings or mature trees. The watercourses and linear habitat features present provide value as a commuting and foraging resource for local bat populations known to be present within the local area.

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
			No features were identified within the 2023 survey area that could support roosting bats. Habitats within the Survey Area were considered to provide value to commuting and foraging bats through the major watercourses and linear habitat features such as scrub and woodland edge.	
Brown hare	One record of brown hare was returned within the desk study, located within the Airport. The 2013 application did not identify any suitable habitat to support this species within the Survey Area.	No signs of brown hare were identified within the 2023 Survey Area during surveys conducted as part of the Heathrow Expansion Project.	The 2023 PEA did not identify any evidence of this species present within the Survey Area, with the major roads and watercourses present acting as a barrier to brown hare dispersal onto the Survey Area. No records of this species were returned during the desk study conducted of the Core Study Area.	No evidence of this species was identified during surveys conducted and given the lack of connectivity to more suitable habitat within the local area, it is considered highly unlikely that brown hare will be found on the Proposed Development area.
Water vole	Records of water vole were returned within the desk study, located within the Airport, north-west of Terminal 3.	No signs of water vole were recorded during transect surveys, boat survey transects, and during water vole raft checks. Water vole	The extent of canalisation within the Survey Area was found to be unchanged during the 2023 PEA, with areas of the watercourse	No evidence of this species was identified during surveys conducted and habitat present on site was largely considered to be

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	The 2013 application assessed The Duke of Northumberland's River as being unsuitable for water vole due to the high level of canalisation present.	rafts were located on the Duke of Northumberland's River within the Core Study Area.	outside of this area having steep banks and limited foraging material present making it unsuitable to support water vole.	unsuitable to water vole due to the level of canalization present within the Survey Area.
Otter	Records of otter were returned within the desk study, located on the eastern edge of Harmondsworth. The 2013 application identified that The Duke of Northumberland River has the potential to support otter and is located immediately adjacent to the location of the new noise barrier.	Otter transect surveys were conducted on the River Colne and Duke of Northumberland River in 2018. No signs of otter were identified within the 2023 Survey Area, however signs were identified on the River Colne north of the Colnbrook By-Pass.	The 2023 PEA did not identify any signs of otter using the watercourse and no records of this species were returned during the desk study. The Duke of Northumberland River was assessed as providing potential value as a commuting and foraging route for otter.	Otter are known to be present on the River Colne both downstream and upstream of the 2023 survey area. It is therefore likely that otter do commute through the Survey Area and could potentially be impacted by the Proposed Development.
Badger	Records of badger were returned within the desk study, located at the eastern edge of Harmondsworth. The 2013 application did not identify any signs of badger or evidence of badger setts, however suitable habitat for badger foraging and sett	The desk study conducted in 2019 identified 15 records of badger. Survey conducted did not identify any signs of badger activity or the presence of any badger setts within the 2023 Survey Area. The closest badger sett	No evidence of badger activity within the Survey Area was identified during the 2023 PEA and no records were returned of this species during the desk study. Habitats within the Survey Area were considered to offer limited value to badger as a	Badger are known to be present within the area surrounding the Proposed Development however the Survey Area is isolated due to the presence of major roads, limiting badger dispersal onto the Survey Area.

Ecological Receptor	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	creation is present on Survey Area.	identified was located approximately 800m from the Proposed Development, which was classified as a partially used outlier sett.	commuting and foraging resource, such as the woodland and scrub. Major barriers to badger dispersal are present within the surrounding area, such as major roads and watercourses and the potential for this species to be present within the Survey Area is limited.	
Invasive Species	The desk study returned records of five species listed on Schedule 9 of the WCA 1981 (as amended), comprising chinese muntjac, demon shrimp, false acacia, Japanese knotweed, and ring-necked parakeet. The closest record was that of ring-necked parakeet which was located approximately 650 m north-east of the Survey Area.	No invasive non-native species were identified within the 2023 Survey Area during surveys conducted as part of the Heathrow Expansion Project.	The 2023 PEA did not identify any evidence of invasive non-native species present within the Survey Area, however records of species listed on Schedule 9 of the WCA were returned during the desk study. The closest plant record was that of Japanese knotweed located approximately 1.26 km from the Survey Area boundary. The closest fauna record was that of a ring-necked parakeet located approximately 650 m north-east of the Survey Area boundary.	No evidence of invasive non-native species were identified during surveys conducted and is not considered to be a constraint to the Proposed Development.

Future baseline

11.3.11 Determining a future baseline draws upon information about the likely future use and management of the site in the absence of development, known population trends (for species) and climate change

11.3.12 In this instance the future baseline in the absence of the Proposed Development is unlikely to be markedly different from the current baseline, as land use/management around the airport is anticipated to remain largely unchanged. Areas within and adjacent to the airport itself are subject to long term management to reduce the risk of wildlife hazards (in particular bird strikes)[224]. This includes adoption of a long grass policy and active management of river corridors using netting. Whilst some species are subject to population contractions or expansion, prediction of population decreases or increases specific to the areas immediately surrounding the Proposed Development cannot be made. Therefore, it is reasonable to use the existing baseline as the basis of assessment.

11.4 Scope of the assessment

Potential receptors

11.4.1 The starting point for defining which ecological features will be taken forward to the detailed assessment stage will be to use the baseline data collected in the desk study and field surveys to determine which of the identified ecological features are 'important' at the level of the project. Following CIEEM (2019) guidance, the importance of ecological features will be determined using a geographic scale and described in relation to UK legislation and policy, and with regard to the extent of habitat or size of population that may be affected by the Proposed Development.

11.4.2 The importance of ecological features can therefore differ from that which would be conferred solely by legislative protection or identification as a conservation notable species. For example, a small length of hedgerow (a Section 41 habitat – see table 12.2), even if deemed to be 'important' with regard to The Hedgerows Regulations, is unlikely to be considered to have greater than 'local' importance due to the extent of this habitat type across a given county.

11.4.3 Wherever possible, information regarding the extent and population size, population trends and distribution of the ecological features will be used to inform the categorisation and determine importance at the project level. Where detailed criteria or contextual data are not available, professional judgement will be used to determine importance. A justification of all determinations of importance are provided in **Table 11.7**.

Table 11.7 Importance of the Proposed Development for Ecological features

Geographic context of importance	Description
International or European	European sites including Special Protection Areas (SPAs), Special Areas of Conservations (SAC)s, candidate SACs and Sites of Community Importance (SCI). Potential SPAs (pSPA), and Ramsar sites (designated under international convention). Areas of habitat or populations of species which meet the published selection criteria based on discussions with Natural England and field data collected to inform the EcIA for designation as a European site, but which are not themselves currently designated at this level.
National	A nationally designated site including SSSIs and National Nature Reserves (NNRs). Areas (and the populations of species which inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs but which are not themselves designated. Section 41 habitats and species, species included within the International Union for Conservation of Nature (IUCN) Red list, and legally protected species that are not addressed directly in Part 2 of the "Guidelines for Selection of Biological SSSIs" but can be determined to be of national importance using the principles described in Part 1 of the guidance. Areas of Ancient Woodland such as woodland listed within the Ancient Woodland Inventory and ancient and veteran trees.
Regional	Regularly occurring Section 41 habitats or populations of Section 41 species, Red listed and legally protected species may be of regional importance in the context of published information on population size and distribution.
County (Greater London**)**	Local Nature Reserves (LNRs) and Non-Statutory Designated sites including: SINCs of County Importance. Areas which based on field data collected to inform the EcIA meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant Local Biodiversity Action Plans) but which are not themselves designated.
Local	Section 41 habitats and species, Red listed and legally protected species that based on their extent, population size, quality etc are determined to be at a lesser level of importance than the geographic contexts above. Common and widespread semi-natural habitats occurring within the Study Area in proportions greater than may be expected in the local context. Common and widespread native species occurring within the Study Area in numbers greater than may be expected in the local context.

Geographic context of importance	Description
Negligible	Common and widespread semi-natural habitats and species that do not occur in levels elevated above those of the surrounding area. Areas of heavily modified or managed land uses (e.g. hard standing used for car parking, as roads etc.)

11.4.4 Where protected species are present and there is the potential for impacts on them , those species will be considered as 'important' features. With the exception of such species receiving specific legal protection, or those subject to legal control (such as invasive species), all ecological features determined to be important at negligible level will be scoped out of the assessment. This approach is consistent with that described in CIEEM (2019).

11.4.5 All legally protected species and ecological features that are of sufficient importance will then be taken through to the next stage of the scoping assessment.

Potentially significant effects

11.4.6 The potentially significant biodiversity effects that will be taken forward for assessment in the Environmental Statement are summarised in **Table 11.8**.

Table 11.8 Potentially significant biodiversity effects

Activity	Effect	Receptor
Construction Effects anticipated within Core Biodiversity Study Area		
Permanent or temporary land take / changes to habitats	Reduction in the availability of foraging and commuting habitat and resting or breeding sites. Killing or injury of fauna through the removal of occupied resting or breeding sites. Loss of ecological connectivity through severance of habitats resulting in fragmentation.	Reptiles (grass snake) Birds Bats Otter
Changes in noise, light, vibration, and movement levels due to construction activities	Disturbance and displacement of species susceptible to noise/visual disturbance resulting in a reduction of energy intake and/or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.	Reptiles (grass snake) Birds Bats Otter
Dust emissions from construction activities	Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.	Reptiles (grass snake) Birds Bats

Activity	Effect	Receptor
		Otter
Operational Effects anticipated within Extended Biodiversity Study Area		
Changes in airspace operations	Changes in the atmospheric concentration and deposition of nitrogen. Potential for cumulative effects from other nearby developments.	South West London Waterbodies SPA and Ramsar Wraysbury Reservoir SSSI* Staines Moor SSSI* Windsor Forest and Great Park SAC Wimbledon Common SAC Richmond Park SAC Burnham Beeches SAC Thursley, Ash, Pirbright, and Chobham SAC
Changes in airspace operations	Disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual birds.	South West London Waterbodies SPA and Ramsar Wraysbury Reservoir SSSI* Staines Moor SSSI*

11.4.7 **Table 11.9** summarises receptor and/or specific effects which have been scoped out based at this stage and will not be further considered as part of the Environmental Statement.

Table 11.9 Biodiversity effects scoped out of assessment

Receptor	Effects scoped out	Justification for Scoping out
European Statutory Designated Sites	All Construction Effects	All identified sites are >1.7 km from proposed enabling works with no pathway for effects to occur. SSSI Impact Risk Zones (IRZs) for the South West London Waterbodies SPA do overlap the areas required for construction, however the nature and scale of construction is such that no effects would occur.
National Statutory Designated Sites	All Construction Effects	All identified sites are >1.7 km from proposed enabling works with no pathway for effects to occur. SSSI Impact Risk Zones (IRZs) for the Wraysbury Reservoir and Staines Moor SSSI do overlap the areas required for construction, however the nature and scale of construction is such that no effects would occur.
Non-Statutory Designated Sites	All Construction and Operational Effects	The Lower Colne SMI is located upstream of the Proposed Development and therefore not anticipated to be impacted in the unlikely event of a pollution incident. Industry standard embedded measures relating to potential construction effects (pollution or dust deposition) would be employed ensuring no effects would occur. Operational Effects would not result in any observable change compared to the existing baseline.
Habitats (including on airfield, off airfield and Habitats of Principal Importance) **Notable Plant Species**	All Construction and Operational Effects	No HPIs have been identified within the Proposed Development Area. Small areas of habitat loss may be required on the airfield however they are considered to be of low ecological value and common habitats which are widespread in the wider area. These areas are shown in **Figure 11.1**. In addition, measures to mitigate the loss of habitats (such as BNG) will be considered as part of the Environmental Statement. Industry standard embedded measures relating to potential construction effects (pollution or dust deposition) would be employed ensuring no indirect effects of habitat degradation would occur.

Receptor	Effects scoped out	Justification for Scoping out
		Given the nature of the habitats present it is considered highly unlikely that any notable plant species would occur.
Invertebrates	All Construction and Operational Effects	The Proposed Development would not result in significant habitat loss with only small areas of common/widespread habitat to be impacted. Therefore, the associated effect on invertebrates is considered unlikely to be observable against the current baseline or have an impact on any notable invertebrate species.
Amphibians (including GCN) and reptiles (excluding grass snake)	All Construction and Operational Effects	The Proposed Development is unlikely to support populations of amphibians or reptiles (excluding grass snake). Observed populations of species such as GCN and slow worm in the wider area are isolated from the Proposed Development by roads and other major developments and are >500m away. Therefore, this is no predicted pathway for effects to occur.
Breeding birds and bats	Operational Effects	Effects on habitats which support breeding birds and bats would be limited to those associated with construction. During operation, the Proposed Development will result in a redistribution of noise from ground operations and changes in aircraft arrivals or departures (noting that the number of aircraft movements will not change). There will be no change in aircraft operations or aircraft noise during westerly operations. There will be no change in the number of aircraft movements or passengers, and no change to landside road traffic or any sources of noise other than aircraft. Operational Effects would therefore not result in any observable change compared to the existing baseline with birds and bats already existing in a highly disturbed environment close to both runways and surrounding the airport.

Receptor	Effects scoped out	Justification for Scoping out
Water vole, badger and brown hare	All Construction and Operational Effects	The Proposed Development is unlikely to support populations of these species. Extensive surveys during the Heathrow Expansion project found no evidence of water vole. Badger is present in the wider area but are isolated from the Proposed Development by roads and other major developments. No recent records of Brown Hare were identified as part of the desk study.
Invasive Species	All Construction and Operational Effects	No evidence of invasive non-native species were identified during surveys.

11.5 Assessment methodology

11.5.1 The proposed generic project-wide approach to the assessment methodology is set out in **Section 4: The Environment Impact Assessment Process**, and specifically in S**ection 4.3**. However, whilst this has informed the approach that is set out in this Biodiversity Scoping section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the Biodiversity assessment in the Environmental Statement, which will follow standard industry guidance provided by CIEEM (2019).

11.5.2 The assessment will be based upon not only the results of the desk study and field surveys, but also relevant published information (for example on the status, distribution, sensitivity to environmental changes and ecology of the features scoped into the assessment, where this information is available), and professional knowledge of ecological processes and functions.

11.5.3 For each scoped-in ecological feature effects will be assessed against the predicted baseline conditions for that feature during construction and operation. the future baseline is unlikely to be markedly different from the current baseline, as land use/management around the airport is anticipated to remain largely unchanged. Areas within and adjacent to the airport itself are subject to long term management to reduce the risk of wildlife hazards (in particular bird strikes)[224]. This includes adoption of a long grass policy and active management of river corridors using netting. Whilst some species are subject to population contractions or expansion, prediction of population decreases or increases specific to the areas immediately surrounding the Proposed Development cannot be made. Therefore, it is reasonable to use the existing baseline as the basis of assessment. Throughout the assessment process, the initial results of the assessment regarding potentially significant effects will be used to inform whether additional baseline data collection is required, together with the identification of environmental measures that should be embedded into the development proposals to avoid or reduce negative effects or to deliver enhancements.

11.5.4 Where part of a designated site is located within the ecological ZoI relating to a particular biophysical change as a result of the Proposed Development, an assessment will be made of the effects on the designated site as a whole. A similar approach will be taken for areas of notable habitat.

11.5.5 For species that occur within the ZoI, the assessment will consider the total area that is used by the affected individuals or the local population of the species (such as for foraging or as breeding territories).

Significance evaluation methodology

11.5.6 CIEEM (2019) defines a significant effect as one "*that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*".

11.5.7 When considering potentially significant effects on ecological features, whether these be negative or positive, the following characteristics of environmental change are taken into account:

- Extent – the spatial or geographical area over which the environmental change may occur;
- Magnitude – the size, amount, intensity or volume of the environmental change;
- Duration – the length of time over which the environmental change may occur;
- Frequency – the number of times the environmental change may occur;
- Timing – the periods of the day/year etc. during which an environmental change may occur; and
- Reversibility – whether the environmental change can be reversed through restoration actions.

Magnitude of change

11.5.8 Although the characteristics described in **Paragraph 11.5.7** are all important in assessing effects by using information about the way in which habitats and species are likely to be affected, a scale for the magnitude of the environmental change, as a result of the Proposed Development, is described in **Table 11.10** to provide an understanding of the relative change from the baseline position, be that negative or positive changes.

Table 11.10 Guidelines for the Assessment of the scale of magnitude

Scale of change	Criteria and resultant effect
High	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the receptor in the context of the Proposed Development.
Medium	The change permanently (or over the long term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this receptor in the context of the project.
Low	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the receptor in terms of its importance.
Very Low	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-term or long-term change to conservation status of habitats/species receptors or the integrity of designated sites.
Negligible	A change, the level of which is so low, that it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a project and result in a neutral position.

Determining significance – negative and positive effects

11.5.9 Adverse effects are assessed as being significant if the favourable conservation status of an ecological feature would be lost as a result of the Proposed Development. Positive effects are assessed as those where a resulting change from baseline improves the quality of the environment (such as increases species diversity, increases the extent of a particular habitat etc., or halts or slows down an existing decline). For a positive effect to be considered significant, the conservation status would need to positively increase in line with a magnitude of change of "high" as described in **Table 11.10**.

11.5.10 Conservation status is defined as follows (as per CIEEM 2019):

- *"For habitats, conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and typical species within a given geographical area*
- *For species, conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area*".

11.5.11 The decision as to whether the conservation status (or level of importance) of an ecological feature would be affected will be made using professional judgement, drawing upon the information produced through the desk study, field survey and assessment of how each feature is likely to be affected by the Proposed Development.

11.5.12 A similar procedure is used where designated sites may be affected by the Proposed Development, except that the focus is on the effects on the integrity of each site; defined as:

> "*The coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*".

11.5.13 The assessment of effects on integrity draws upon the assessment of effects on the conservation status of the features for which the site has been designated.

Approach to mitigation and compensation

11.5.14 The mitigation hierarchy will be applied to biodiversity (CIEEM, 2019) to ensure designs first seek to avoid significant harm, to mitigate where it is unavoidable, and, as a last resort, to compensate for residual effects that remain after avoidance and mitigation measures are implemented. The avoidance of significant harm will be considered through the design process and potential mitigation measures associated with conservation of notable and legally protected flora and fauna will also be actively considered.

11.5.15 In addition, the development will look to identify potential ecological enhancements that would be proportionate to the Proposed Development and which would deliver ecological benefits commensurate to the Proposed Development. Such enhancements would be proposed following consultation with relevant stakeholders to ensure that any measures proposed were compatible with ongoing management of the Survey Area as an active airport.

Biodiversity Net Gain

11.5.16 Biodiversity Net Gain will be considered as part of the Proposed Development as it will ensure enhancement is to be provided that will seek to deliver a net gain in biodiversity above the current baseline.

11.5.17 Requirements for enhancements or provision of compensatory habitat will be determined following the confirmation of Proposed Development design and through further discussions with key stakeholders so that all proposals align with local initiatives where reasonably practicable, appropriate, and relevant. This will include reference to local

plans such as the London Plan (2021) and the supporting document *Urban Greening for Biodiversity Net Gain: A Design Guide* (London Wildlife Trust 2021)[225]. This guidance does not specify a quantified BNG requirement, such as the minimum recommended 10% net gain values described as part of the Environment Act 2021, however reference to local, regional and national requirements will inform the extent and nature of any mitigation for impacts on habitats.

[225] London Wildlife Trust (2021). *Urban Greening for Biodiversity Net Gain: A Design Guide - https://www.london.gov.uk/sites/default/files/urban_greening_and_bng_design_guide_march_2021.pdf*

12. Environmental aspects to be scoped out

12.1 Introduction

12.1.1 A number of aspects have been scoped out of further consideration and assessment within the Environmental Statement. These aspects include:

- Land quality (see **Section 12.2**);
- Major accidents and disasters (see **Section 12.3**);
- Traffic and transport (see **Section 12.4**);
- Waste (see **Section 12.5**);
- Vortex damage (see **Section 12.6**);
- Greenhouse gas and climate change (see **Section 12.7**); and
- Hydrology and hydrogeology (see **Section 12.8**).

12.2 Land quality

Introduction

12.2.1 Given the nature of the Proposed Development, intrusive groundworks are anticipated to be limited to shallow excavation across the area of the proposed taxiway. Excavation for the taxiway pavements is anticipated to be less than <1m across the majority of the Proposed Development Site with deeper excavation in isolated areas to accommodate underground services (<2.0m).

12.2.2 The works will be undertaken on brownfield, previously developed land. As a result, the principal ground conditions risks can be grouped into two categories: risks to construction workers and risks from land contamination.

Risk to Construction Workers

12.2.3 Construction work must comply with the law and construction workers will therefore be subject to The Construction Design and Management (CDM) Regulations 2015[226] and safe working practices as part of normal construction health and safety management under the Health and Safety at Work Act (1974)[227] and regulations made under the Act. These legal obligations include the requirement for risk assessments and method statements for all construction related activities and the use of appropriate working methods, training, and Personal Protective Equipment (PPE).

[226] UK Government (2015). The Construction (Design and Management) Regulations 2015 (online) Available at: The Construction (Design and Management) Regulations 2015 (legislation.gov.uk) (Accessed January 2023).
[227] UK Government (1974). Health and Safety at Work Act 1974 (online) Available at: Health and Safety at Work etc. Act 1974 (legislation.gov.uk) (Accessed January 2023).

12.2.4 In addition to these legal obligations, good and standard construction practices, which would be undertaken to meet existing legislative requirements under CDM and the Health and Safety at Work Act, would reduce ground conditions effects. These good and standard practices include measures to prevent pollution incidents that could result in harm to construction workers, development of spill response procedures and storage of fuels for construction in suitable locations and in suitably bunded tanks.

Risk from Land Contamination

12.2.5 The Environment Agency's *Land Contamination Risk Management* (LCRM)[228] provides the technical framework for applying a risk management process when dealing with land affected by contamination.

12.2.6 LCRM comprises an iterative risk-based approach starting with a Phase 1 Desk Study and followed by a Phase 2 Ground Investigation (including quantitative risk assessment) where considered necessary, to assess the risks to the environment and users of the land posed by contamination that may be present.

12.2.7 A review of land contamination data covering the areas included within the Proposed Development has been undertaken as part of this Scoping Report and included review of the following sources of information:

- British Geological Society (BGS) Onshore GeoIndex[229];
- Department for Environment, Food and Rural Affairs (Defra) MAGIC map viewer;
- Old Maps Online historical map viewer[230];
- Environment Agency landfill data[231];
- Google Earth contemporary and historical aerial imagery[232]; and
- Historic England aerial imagery[233].

12.2.8 Based on the review of the above land contamination data sources, no significant land contamination risk is anticipated to be present in the proposed development footprint. It is noted that the proposed development is expected to have limited potential to introduce new contaminant pathways to human health or controlled water receptors during the construction or operational phase of works (it is assumed that construction and maintenance workers will utilise appropriate personal protective equipment (PPE) and health and safety best practice as required).

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[228] Environment Agency, (2020). Land contamination risk management (LCRM). (online) Available at: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm (Accessed January 2023).
[229] https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ [Accessed January 2023]
[230] https://www.oldmapsonline.org/en/Hillingdon [Accessed January 2023]
[231] https://www.gov.uk/guidance/how-to-access-waste-management-data-for-england#find-the-data-on-datagov [Accessed January 2023]
[232] Google Earth Pro [Accessed January 2023]
[233] https://historicengland.org.uk/images-books/archive/collections/aerial-photos/ [Accessed January 2023]

Land quality summary

12.2.9 Taking into account the need for compliance with legal requirements (CDM, the Health and Safety at Work Act and the Waste Regulations), the commitment to implementation of good and standard construction practices, and the commitment to development of an unexpected contamination protocol, it is predicted that there will be no significant adverse ground conditions effects as a result of the Proposed Development.

12.2.10 It is therefore considered that the ground conditions aspect should be **scoped out of the EIA** and potentially contaminated material (if any) managed via the implementation of an unexpected contamination protocol secured through an appropriately worded planning condition.

12.3 Major accidents and disasters

Introduction

12.3.1 The EIA Regulations require that the likely significant effects assessed as part of the EIA include 'the expected significant effects arising from the vulnerability of the Proposed Development to major accidents or disasters that are relevant to that development.'

12.3.2 In line with established EIA good practice and guidance for Major Accidents and Disasters (MA&D)[234], a few principles guide the assessment of MA&D:

- In order to be considered 'relevant' to the development, a major accident or disaster has to either: affect the development as a receptor (External MA&D) or the development has to increase the risk of an MA&D (by introducing new sources or increasing the likelihood that an event occurs).
- The assessment should consider the changes to the risk of major accidents and/or disasters brought about by the development.[235]
- The assessment should consider that compliance with Industry Good Practice will be applied where this is secured by legislative and regulatory requirements. In line with the NPPF[236], in which Paragraph 188 states:

'The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively.'

12.3.3 A major accident has been defined for the purposes of this report as an occurrence resulting from an uncontrolled event caused by a man-made activity or asset leading to serious damage on receptors. The term 'disaster' is used to describe a natural

[234] Major Accidents and Disasters in EIA: A Primer. (2020). [online] Available at: https://www.iema.net/document-download/48915 [Accessed 1 Feb. 2023].
[235] European Commission (2017). Environmental Impact Assessment of Projects Guidance on Scoping. European Commission.
[236] Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. [online] GOV.UK. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf [Accessed 2 Feb. 2023].

occurrence leading to serious damage on receptors. In both cases, the effects could be either immediate or delayed.

12.3.4 Serious damage to human receptors is considered to have the same meaning as Major Accident as defined in Paragraph 2. (b) of Schedule 5 of the Control of Major Accident Hazard Regulations 2015[237]. Serious damage to non-human receptors is considered to have the same meaning as Major Accident to the Environment (MATTE) in the Chemical and Downstream Oil Industries Forum (CDOIF) guidance[238] endorsed by the UK Regulators for risk assessment of major accidents affecting the environment.

12.3.5 The HSE describe the risk of suffering harm as 'an inescapable aspect of living'[239]. All elements of daily life engender some form of risk, and developments are no different. In line with the HSE Reducing Risks, Protecting People (R2P2) guidance[240], for the purpose of this report, the follow terms are defined:

- **Hazard** – the potential for harm arising from an intrinsic property of an activity, object, or scenario.
- **Likelihood** – the chance that a hazard occurs leading to harm.
- **Risk** – a combination of the hazard and likelihood leading to a specific outcome.

12.3.5 As the purpose of the EIA and planning processes are to demonstrate that the Proposed Development is 'an appropriate use of land'[241], the assessment of potential MA&Ds is aligned to the benchmark levels of risk tolerability as used by the HSE and other UK regulators for Major Accident regulatory regimes.

12.3.6 In the context of the assessment of MA&Ds, a potential major accident or disaster would be considered to be a 'significant effect' if it is judged that the majority of people would find the likelihood of it being realised as intolerable.

12.3.7 A review of potential major MA&D has been undertaken using the guide words in the IEMA guidance and the National Risk Register[242] supplemented by expert judgement to identify the potential MA&Ds and assess the reasonable worst-case hazards.

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[237] The Control of Major Accident Hazards Regulations 2015.[online] Available at: https://www.legislation.gov.uk/uksi/2015/483/made/data.pdf [Accessed 1 Feb. 2023].
[238] Chemical and Downstream Oil Industries Forum (CDOIF) (2016). Guideline -Environmental Risk Tolerability for COMAH Establishments. [online] Available at: https://www.sepa.org.uk/media/219154/cdoif_guideline__environmental_risk_assessment_v2.pdf [Accessed 1 Feb. 2023].
[239] HSE (2001). Reducing Risks, Protecting People: HSE's decision-making process (R2P2). [online] Available at: https://www.hse.gov.uk/managing/theory/r2p2.pdf [Accessed 1 Feb. 2023].
[240] HSE (2001). Reducing Risks, Protecting People: HSE's decision-making process (R2P2). [online] Available at: https://www.hse.gov.uk/managing/theory/r2p2.pdf [Accessed 1 Feb. 2023].
[241] Ministry of Housing, Communities & Local Government (2021). National Planning Policy Framework. [online] GOV.UK. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf [Accessed 2 Feb. 2023].
[242] Cabinet Office (2020). National Risk Register. [online] GOV.UK. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952959/6.6920_CO_CCS_s_National_Risk_Register_2020_11-1-21-FINAL.pdf [Accessed 2 Feb. 2023].

Baseline

12.3.8 The Airport is a major international airport with permission to operate up to 480,000 ATMs per year via two operational runways and four passenger terminals. The Airport is operated by the Applicant and has well established processes for managing all forms of risk at the Airport and this includes risks arising from new developments.

12.3.9 The Applicant operates an Occupational Health and Safety Management System (OHSMS) and the OHSMS covers all of the Applicant's operations, other than control of aviation. It is the primary vehicle through which the Applicant implements the legal requirements relating to safety extending from the Health and Safety at Work etc. Act 1974 and the Management of Health and Safety at Work Regulation 1999.

12.3.10 Additionally, a separate aerodrome manual and aerodrome Safety Management System (SMS) is maintained for the control of aerodrome activities. The SMS is aligned to the requirements of the European Aviation Safety Agency (EASA) and the International Civil Aviation Organization (ICAO). These requirements cover infrastructure, processes, procedures, and people. The Airport is licensed and regulated by the CAA to ensure that all relevant standards are met.

12.3.11 As a major transport hub, Heathrow is already a potential target for malicious actions, the Applicant maintains a robust regime of security measures in conjunction with partner agencies including the British Transport Police (BTP), Metropolitan Police, Border Force, and security services.

Potential Major Accidents and Disasters

12.3.12 A review of potential MA&D has been undertaken using the guide words in the IEMA guidance and the National Risk Register[243] supplemented by expert judgement to identify the potential MA&D and assess the reasonable worst-case hazards.

12.3.13 These have been considered in **Table 122.1**, with a justification provided as to whether the potential effects arising from MA&Ds are scoped in or out of the EIA.

[243] Cabinet Office (2020). National Risk Register. [online] GOV.UK. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/952959/6.6920_CO_CCS_s_National_Risk_Register_2020_11-1-21-FINAL.pdf [Accessed 2 Feb. 2023].

Table 122.1 Potential Major Accidents and Disasters in relation to the Proposed Development

Activity	Summary of Effects	Scoping Justification
Accidents during construction activities	There are construction works required as part of the development including the use of excavations, temporary structures, working at height and plant vehicles which pose a risk of harm to the construction workforce. Construction Industry Good Practice will ensure that all unauthorised personnel are excluded from areas where construction works are taking place to protect them from hazards. The CDM Regulations 2015 ensure that all risk from construction activities is identified and assessed at the design stage and designed out where possible. Where it cannot be designed out, this must be reduced to As Low As Reasonable Practicable (ALARP). CDM also specifies clear responsibilities to the Principal Contractor, Principal Designer and Client, as all parties have an important role in managing construction works safely.	**Scoped out**. It is proposed to scope out on the basis of the existing control processes used to manage construction risk.
Construction activities leading to an aviation accident	Construction works on an airfield present an additional risk by creating a hazard to aircraft, either during taxiing due to excavations or the generation of Foreign Object Debris (FOD) on the airfield. As a major international airport, Heathrow usually has multiple projects underway to improve or maintain some aspect of the Airport or airfield infrastructure. Past major projects have included the construction of Terminals 2 and 5, which were undertaken without closing the airfield. Other projects happen every year including airfield maintenance and repair. Any required closures, detours or modifications to the airfield will be notified to relevant organisations and personnel through Aeronautical Information Publications (AIPs) and Notices to Airmen (NOTAM) by NATS. The Applicant has existing processes and procedures to manage the risk of FOD and works within the airfield through the aerodrome manual and SMS. These existing measures include the prevention, detection, and removal of FOD from the airfield.	**Scoped out** It is proposed to scope out the risk of construction activities causing an aviation accident on the basis that it will be managed by existing procedures required by EASA rules regulated by the CAA.

Activity	Summary of Effects	Scoping Justification
Operational aviation accident	Accidents in commercial aviation are extremely rare but can have extremely severe consequences. The CAA has certified that Heathrow is authorised to operate a licensed aerodrome with two declared runways in line with EASA and CAA requirements. The certificate currently states that Heathrow is suitable for the largest categories of aircraft currently designated by ICAO and has the highest level of provision for Rescue and Fire Fighting Services. Heathrow can operate up to 480,000 ATMs per year. These existing operations are controlled by the Aerodrome Manual and supporting documents which comprise the Aerodrome SMS including safety standards and operational safety instructions. These processes ensure that all operations are conducted safely. Any infrastructure changes will be notified to relevant organisations and personnel through Aeronautical Information Publications and Notices to Airmen (NOTAM) by NATS. The aerodrome chart will be updated to identify available taxiways and stands. There will be no physical changes required to the operational airspace to facilitate easterly departures, as the flight paths already exist within the current airspace design. The planned redistribution of flights will need an airspace change consent to be assessed by the CAA through the CAP1616[244] process with supporting environmental assessments. The proposed airspace change (and any alternatives considered) will be assessed for their safety in line with CAP760[245]. The CAA will then provide ongoing oversight as the regulator of civil aviation to ensure that all aspects of airfield operations meet the EASA/CAA requirements. On the basis, that all aviation operations will be operated in line with CAA Aerodrome certificate and the Heathrow Aerodrome Manual and Aerodrome SMS, it is not considered that the Proposed Development presents any significant increase in the risk of an operational aviation accident.	**Scoped out** It is proposed to scope out the risk of an operational aviation accident based on the aerodrome licensing regime enforced by the CAA and no increase in the number of flights.

[244] CAA (2021). Airspace Change Guidance on the regulatory process for changing the notified airspace design and planned and permanent redistribution of air traffic, and on providing airspace information. [online] Available at: https://publicapps.caa.co.uk/docs/33/CAA_Airspace%20Change%20Doc_Mar2021.pdf [Accessed 2 Feb. 2023].
[245] CAA Safety Regulation Group (2010). CAP 760 Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases. [online] Available at: https://publicapps.caa.co.uk/docs/33/CAP760.pdf [Accessed 2 Feb. 2023].

Activity	Summary of Effects	Scoping Justification
External Major Accidents	There are two Control of Major Accident Hazards (COMAH) facilities which form part of the wider Heathrow Airport facilities operated by the Heathrow Hydrant Operating Company (HHOpCo) for the purposes of refuelling aircraft at the Airport. One is located at the south of the Airport adjacent to the cargo facilities, and the other located between T5C and T3. The areas where the works will take place will be located outside of the Consultation Distance of these sites. Both of these sites will be regulated by the HSE and Environment Agency under the COMAH Regulations to ensure that the risk of major accidents is reduced to ALARP. There are no Major Accident Hazard Pipelines (MAHP), licensed Nuclear Sites or explosives sites which could have a credible impact on the Proposed Development.	**Scoped Out** It is proposed to scope out External Major Accidents due to the distance between potential sources and the Proposed Development.
Natural Disasters	The Proposed Development will not materially alter the risk of a natural disaster affecting human receptors at Heathrow. The only additional receptor will be a small construction workforce during the construction phase of the Proposed Development, and this workforce will be less exposed to harm and under greater control than other receptors such as passengers. The assessment of flood risk will be subject to a separate assessment.	**Scoped Out** The Proposed Development does not increase the likelihood of a malicious threat and nor does it significantly increase the population at risk from a natural disaster, therefore it is proposed to scope them out from the EIA.
Malicious threats	The Proposed Development will not materially alter the risk of a malicious threat targeted against Heathrow. Security related risks are robustly managed for the current operations and these processes and systems will be extended to the Proposed Development in the design phase (i.e. the design will provide robust security features) and during the construction and operational phases. While the majority of the works are within secured restricted areas, if any additional features are deemed to be necessary these will be included. The design of any necessary security features will have due consideration of the advice and guidance produced by the Department for Transport (DfT) or the Centre for the Protection of National Infrastructure (CPNI).	**Scoped Out** The Proposed Development does not increase the likelihood of a malicious threat and nor does it increase the population at risk of a malicious act. It is therefore proposed to scope out malicious threats.

Major accidents and disasters summary

12.3.14 The potential for effects arising from MA&Ds have been reviewed and it is proposed to scope out all from detailed assessment.

12.3.15 The Proposed Development is anticipated to present a generally low risk of leading to a major accident and does not introduce any significant new sources or types of major accidents. The Applicant has well developed procedures for managing risk associated with construction works and minor airfield changes.

12.3.16 It is, therefore, considered that the MA&D aspect should be **scoped out of the EIA** as the Proposed Development does not introduce any new receptors which will be significantly exposed to the risk of MA&Ds. Furthermore, the construction workforce will be adequately briefed on all relevant risks prior to the start of operation.

12.4 Traffic and transport

Introduction

12.4.1 The Airport is broadly bounded to the north by the A4, to the west by the A3044, to the east by the A30 and smaller connecting roads. Approximately 600m from the western perimeter of Heathrow lies the M25, with a direct link to Terminal 5 (T5) and the perimeter road from Junction 14a. The M4 provides an additional direct link to the Airport's central terminal area and the perimeter road from Junction 4 via a 'spur'. Owing to the nature of the Airports operations as well as the large number of residential communities surrounding it, there can be considerable traffic generated in the roads surrounding the Airport.

12.4.2 The approach to completing the scoping assessment of the traffic and transport broadly follows the 1993 Institute of Environmental Assessment (IEA) publication 'Guidelines for Environmental Assessment of Road Traffic' which identifies a number of environmental effects that should be considered whenever a new development is likely to give rise to changes in traffic flows. The receptors identified are:

- Potential effects on local roads and the users of those roads; and
- Potential effects on land uses and environmental resources fronting those roads, including the relevant occupiers and users.

12.4.3 The following rules, taken from the guidelines, have been used broadly in making this scoping assessment:

- **Rule 1** - For detailed assessment include highway links where traffic flows will increase by more than 30% (or the number of HGV's will increase by more than 30%); and
- **Rule 2** - For the detailed assessment include any other specifically 'sensitive' areas where traffic flows have increased by 10% or more.

Summary of potential effects not requiring further consideration

12.4.4 Consideration of each of the following potential effects has led to the conclusion that they are not likely to be significant and hence do not require further assessment:

Increased traffic (including HGVs) during construction on the local road network resulting in such things as driver delay, an increase in accidents, and effects on severance, pedestrian delay, and pedestrian amenity.

12.4.5 Daily HGV movements related to the construction phase would be very limited, construction is for a short period on an existing busy road, and materials will be sourced locally where possible. Other traffic will mainly be associated with the small numbers of construction workers (between 20 and 25) driving to the Proposed Development area. It is therefore not anticipated that the increase in traffic flows will exceed 10% and thus effects on traffic and transport at the construction stage are **scoped out** of the detailed assessment.

Increased traffic (including HGVs) following the implementation of the Proposed Development on the local road network resulting in such things as driver delay, an increase in accidents, and effects on severance, pedestrian delay, and pedestrian amenity.

12.4.6 There will be no change to traffic numbers resulting from the implementation of the Proposed Development. For these reasons, there is no requirement for detailed Traffic and Transport assessment related to the Proposed Development.

Traffic and Transport Summary

12.4.7 It is, therefore, considered that the Traffic and Transport aspect should be **scoped out of the EIA** as the Proposed Development is not considered likely to result in significant effects.

12.4.8 Air quality and Noise effects resulting from development related traffic are considered in **Section 5** and **Section 6** respectively within this report.

12.5 Waste management

Introduction

12.5.1 The Proposed Development largely comprise shallow excavation, removal of topsoil and engineering of groundworks to form Runway Access Taxiways, connecter taxiways and, if required, an acoustic barrier. The proposals do not include the construction of buildings, increase in total number of Air Transport Movements (ATMs), or include the management of waste generated from aircraft. The proposed construction period would be short term and over a period of approximately 18 -24 months. The generation of and disposal of waste is considered, where relevant, within the assessment (or scoping) of other aspects such as traffic and transport.

12.5.2 The waste hierarchy (as set out in the National Planning Policy for Waste 2014) will be applied and adhered to throughout the construction period. This would ensure that construction waste is minimised and subsequently recycled and re-used on site, where

possible. In the first instance, material that is suitable for re-use on site will be used to facilitate groundworks such as fill and reprofiling. Before any material is disposed to a registered landfill, it would be considered for recycling and recovery to a local waste management facility. As such, the amount of waste generated from the proposed operations, which is considered as construction, demolition, and excavation waste (CD&E) is unlikely to be significant and unlikely to have a significant effect on local waste management capacity. Additionally, the proposed activities can be adequately managed through the supporting Construction and Environmental Management Plan. Therefore, waste can be **scoped out of the EIA**.

12.5.3 The construction of the taxiways will require the removal of the top metre of the soil profile. The Contractor will carry out testing from stockpiles during construction. The testing will determine whether excavated soils would be suitable for re-use elsewhere across the Airport. Materials that are not recyclable will be disposed at licensed landfill facilities. Additionally, excavated materials that cannot be reused as backfill throughout the construction period will be classified as waste and would be disposed of off-site to a suitably licensed landfill facility.

12.5.4 Therefore, the Waste Management associated with the Proposed Development will comply with Waste Management Regulations 1994 and Duty of Care Regulations 1991, and the strategy for dealing with waste will be finalised in consultation with the Environment Agency.

Waste Summary

12.5.5 Due to the nature and scale of the proposed development, the proposals are not likely to generate a significant amount of waste during the construction and operational phase. Any waste that is generated would be re-used on site if not elsewhere suitable within the grounds of the Airport. It is therefore anticipated only a small volume of waste (if any) would be transported off site to local waste management facilities or final disposal. As such it is considered that waste should be **scoped out of the EIA**.

12.6 Vortex damage

12.6.1 A vortex is a circulating current of air generated by planes. It can sometimes strike and damage the roofs of houses located under a flight path. Pitched roofs with loose-laid tiles are prone to vortex damage. Heathrow has a vortex protection scheme to protect and repair homes around the airport. If a home has been damaged by a vortex strike, Heathrow will repair it.

12.6.2 The incidence of additional vortex strikes due to the Proposed Development is unlikely to be significant and as such it is considered that the topic should be **scoped out of the EIA**.

12.7 Greenhouse gas and climate change

Introduction

12.7.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The number of aircraft movements will be unchanged by the Proposed Development albeit the quantity of emissions during operation may change slightly due to changes in the way aircraft operate. This section sets out the baseline and a summary of the penitential effects not requiring further consideration (i.e. scoped out).

Current baseline

12.7.2 The 2022 Carbon footprint for Heathrow details the baseline GHG emissions. The Carbon footprint is shown in **Table 122.2**. Scope 3 emissions from aircraft in the Landing and Take-Off (LTO) cycle are of particular relevance. In 2022 these emissions were 985,506 tonnes CO_2e. The third carbon budget (which set a restriction on the total amount of greenhouse gases the UK can emit over the 5-year period from 2018 to 2022) of 2,544 MtCO2e and the CCC's recommended carbon budget sector allocations can be considered as the current national baseline for the GHG emissions assessment.

Table 122.2 Heathrow Carbon Footprint 2022[59]

Objective	Emission source		Greenhouse gas emissions			
	GHGP (Greenhouse Gas Protocol)	ACA (Airport Carbon Accreditation)	2019*	2020	2021	2022
Net zero on the ground	**SCOPE 1** (tonnes CO_2e)		**26,998**	**23,209**	**29,091**	**29,806**
	Company facilities	Fuel consumption utilities - Market based	21,942	18,903	23,525	21,867
		- Location based[6]	(24,335) [134,288.9 MWh]	(18,903) [162,578 MWh]	(23,525) [125,326 MWh]	(21,867) [268,499 MWh]
	Company vehicles	Operational vehicles and equipment	1,668 [6,732 MWh]	1,121 [4,597 MWh]	1,023 [5,324 MWh]	790.9 [4,867 MWh]
	Company facilities	LPG for fire training	35 [4.9 MWh]	- [0 MWh]	- [0 MWh]	- [0 MWh]
	Company facilities	Refrigerants	2,871	2,777	2,968	6,671
	Company facilities	De-icer (airfield)	482	407	1,575	477
	SCOPE 2 (tonnes CO_2e)		**0**	**0**	**0**	**0**
	Purchased electricity, steam, heating and cooling for own use	Grid electricity consumption - Market-based	-	-	-	-
		- Location based[6]	(71,163) [283,229 MWh]	(52,392) [224,722 MWh]	(49,066) [231,082 MWh]	(52,717) [272,610 MWh]
	SCOPE 1 and 2 carbon intensity (kg CO_2e/passenger)		**0.33**	**1.05**	**1.50**	**0.48**
	SCOPE 3 (tonnes CO_2e)		**20,782,751**	**8,845,890**	**8,125,487**	**14,734,239**
	Downstream transportation and distribution	Passenger surface access	632,348	195,040	130,699	361,856
	Employee commuting	Colleague surface access	115,531	66,428	78,537	89,034
	Business travel	Business travel	1,070	245	28	420
	Waste generated in operations	Waste	563	1,407	176	385
	Purchased goods and services	Water	2,068	980	434	482
	Use of sold products	De-icer (aircraft)	4,584	1,517	3,267	3,473
	Upstream transportation and distribution	Operational vehicles and equipment	33,015	18,075	12,204	15,768
		Construction vehicle fuels	-	771	1,299	1,886
	Downstream leased asset/use of sold products	Third party grid electricity consumption - Market based	146	125	69	-
		- Location based[6]	(43,706)	(28,790)	(23,785)	(24,956)
		Fuel consumption utilities	272	266	173	
Net zero in the air	Use of sold products	Aircraft in the LTO cycle	1,250,648	511,056	505,552	985,506
		Cruise emissions from all departure flights	18,742,505	8,049,981	7,393,049	13,276,039
Scope 3 carbon intensity (kg CO_2e/passenger)			**256.89**	**400.27**	**418.84**	**239.19**
Scope 1, 2 and 3 (excl. aircraft emissions) carbon intensity (kg CO_2e/passenger)			**10.09**	**13.94**	**13.19**	**8.16**
	TOTAL (tonnes CO_2e)		20,809,603	8,868,974	8,154,578	14,764,810

Emission source (tonnes CO2e)	2019	2020	2021	2022
Scope 3 well-to-tank ('WTT') and transmission and distribution ('T&D')	4,362,098	1,864,309	1,717,522	3,103,182
Total including WTT and T&D	25,171,847	10,733,407	9,872,100	17,867,227

Future baseline

12.7.3 The UK Government has set a net zero target which requires the UK to reduce GHG emissions by 100% below 1990 levels by 2050. Policy has been implemented at a national scale in order to achieve targets for decarbonisation. The future baseline considers relevant policy and a number of the UK carbon budgets (including sectoral allocations) against which emissions associated with the Proposed Development can be contextualised. These are the fourth carbon budget (2023 to 2027) of 1,950MtCO_2e, the fifth carbon budget (2028 to 2032) of 1,725MtCO_2e and the sixth carbon budget (2033 to 2037) of 965MtCO_2e.

Summary of potential effects not requiring further consideration

Greenhouse Gas

12.7.1 The Proposed Development will lead to a change in the pattern of aircraft movements on the ground and in the air, during easterly operations only. The number of aircraft movements will be unchanged by the Proposed Development albeit the quantity of emissions during operation may change slightly due to changes in the way aircraft

operate. Sources other than aircraft, including landside road vehicles, airside vehicles and ground support equipment, and stationary combustion plant, will be unchanged. There will be greenhouse gas emissions arising as a result of the construction process and embodied carbon will occur within the materials used.

12.7.2 A Whole Life Cycle Carbon Assessment will be submitted as part of the Planning Application. This would be undertaken in accordance with IEMA principles. The assessment will set out the measures taken to reduce the carbon footprint during construction and operation. A Climate Change Resilience (CCR) assessment of the Proposed Development will be included within the Whole Life Cycle Carbon Assessment.

12.7.3 Therefore, for the reasons set out above, the changes in the levels of greenhouse gases and associated effects on climate change as a result of the Proposed Development will be very small (either in the context of climate as a global receptor or in the context of the Government's carbon budget). These changes are therefore considered to be not significant and as such it is proposed that this aspect is **scoped out of the EIA**. This section of the Scoping Report provides the information that informs the justification for this approach.

12.7.4 Any policy issues relating to greenhouse gas and climate change will be addressed in the Planning Statement.

Climate Change Resilience (CCR)

12.7.5 Heathrow Airport's Climate Change Adaptation Report[246] (CCAR), details the current and future physical climate risks at the airport and refers specifically to the increased risk to the integrity and performance of airfield structures such as runway and apron tarmac. It also outlines future actions to address these risks.

12.7.6 Given the scope of the proposed works, an understanding of the existing baseline and existing efforts to ensure climate change resilience (as set out in the CCAR) and the requirement for proportionate EIA, it is considered that CCR can be **scoped out** of detailed consideration in the EIA.

12.7.7 As such, the vulnerability of assets and receptors to climate change will not have a dedicated section in the Environmental Statement. Relevant environmental topics (for example **Section 11: Biodiversity** and **Section 12: Hydrology and hydrogeology**) will consider the impacts of climate change within their assessments and include appropriate mitigation measures where relevant. The measures to ensure climate change resilience of the Proposed Development will also be reported in relevant documents such as the Flood Risk Assessment and Outline Drainage Strategy and/or other design detail supplied with the planning application.

[246] Heathrow Airport Limited (2022), Climate Change Adaptation Report – Third Road Progress Report [online]. Available at: https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/heathrow-2-0-sustainability/futher-reading/Heathrow%20Airport%20CCAR%202021%20FINAL.pdf

12.7.8 In addition, CCR will be considered throughout design and input will be provided in the Outline Code of Construction Practice (CoCP) to ensure appropriate mitigation during construction.

12.7.9 This approach is considered appropriate for the consideration of vulnerability to climate change, which is primarily a design consideration rather than an assessment of project effects on the environment.

12.8 Hydrology and Hydrogeology

Introduction

12.8.1 The Proposed Development will lead to a change to the impermeable and permeable surfaces on site, in order to facilitate aircraft movements on the ground through the provision of new airfield infrastructure.

12.8.2 In considering whether there are likely to be significant environmental effects related to hydrology and hydrogeology that require detailed assessment, consideration has been paid to the fact that there will be a Flood Risk Assessment (and incorporated Drainage Strategy) provided as part of the planning application. As a result, and following a review of the relevant policy and legislative context and the baseline conditions within the Site and surrounding area, it has been determined that no significant effects are likely, and that the need for detailed assessment with regard Hydrology and Hydrogeology can be scoped out from detailed assessment.

12.8.3 This section sets out the reasons for reaching that conclusion and also provides details on the work that will be undertaken to inform the Flood Risk Assessment itself.

Baseline conditions

Data gathering methodology

12.8.4 The baseline conditions of the Proposed Development Site have been established by consulting the following sources of information:

- Ordnance Survey (OS) maps and British Geological Survey[247] maps.
- A review of the EA's Flood Map for Planning, Surface Water Flood Risk Mapping, and Reservoir Flood Risk Mapping[248].
- A review of the BGS Aquifer Designations, EA Groundwater Vulnerability Mapping, and the EA Source Protection Zone Mapping[249].
- Review of existing drainage record plans within the Airport boundary and Thames Water asset plans.

[247] BGS mapping sheet 269 'Windsor' (1:50,000 scale) dated 1999, available at: https://webapps.bgs.ac.uk/data/maps/maps.cfc?method=viewRecord&mapId=9981
[248] Environment Agency Flood Map for Planning available at www.flood-map-for-planning.service.gov.uk
[249] Defra, (n.d.)., 'MagicMap Application' [online]. Available at: https://magic.defra.gov.uk/magicmap.aspx (Accessed 3 July 2023)

- A review of the West London Level 1 SFRA[250].
- Topographic levels taken from LiDAR data (an aerial flown survey of the ground).

Current baseline

12.8.5 This Section sets out the baseline conditions relating to Flood Risk and Drainage, and how they relate to the Proposed Development Site (as shown in **Figure 2.1**).

Topography

12.8.6 The topography of the Airport and surrounding area is relatively flat, ranging from around 19m above Ordnance Datum (AOD) to the west, to 26m AOD in the east.

Flood Risk

12.8.7 According to the EA's Flood Map for Planning, the majority of the Proposed Development Site is shown to be within Flood Zone 1 indicating a low probability of flooding from fluvial and tidal sources.

12.8.8 There are two longitudinal areas in the west of the Airport which are shown to be within Flood Zone 2 indicating a medium probability of flooding from fluvial or tidal sources. However, these are shown to be historic flooding locations rather than modelled outlines. Furthermore, the longitudinal nature of the extents indicates that this flooding was likely associated with a historic channel and implies that flows may have been contained within the channel. In the current situation there are no open watercourses flowing through the Airport and these areas of Flood Zone 2 are therefore not considered to be accurate. The far eastern boundary of the Airport is located in Flood Zone 2, however it is understood that no development or alterations are proposed in this area.

12.8.9 The EA Flood Risk from Surface Water mapping (**Figure 12.1**) indicates that the majority of the Proposed Development Site is at a very low risk of flooding from pluvial sources. There are however localised areas within the Airport which are shown to be at low, medium, and high risk. These areas are likely due to localised topography alongside taxiways and buildings within the Airport boundary and do not appear to form flow routes originating from offsite areas.

12.8.10 The EA Flood Risk from Reservoirs mapping indicates that the majority of the Proposed Development Site does not fall within the extents of flooding. There are areas in the far west and east of the Airport which are shown to be within the maximum extent of flooding from reservoirs. However, it is worth noting that reservoirs are maintained to a very high standard and are inspected regularly. The chance of a reservoir failure is therefore considered to be extremely unlikely.

12.8.11 According to the British Geological Survey (BGS) online geology mapping, the Proposed Development Site is underlain by bedrock geology of London Clay (consisting of clay, silt and sand) and superficial deposits of Taplow Gravel Member (consisting of sand and

[250] West London Alliance, (2019)., 'West London SFRA' [online]. Available at: https://westlondonsfra.london/ (Accessed July 2023)

gravel). The London Clay is expected to act as an impermeable barrier to groundwater rising to the surface.

12.8.12 Mapping from the SFRA indicates that the Proposed Development Site lies within an area with greater than 75% susceptibility to groundwater flooding. This is anticipated to be due to the permeable superficial deposits of sand and gravel.

Hydrogeology

12.8.13 The EA aquifer designation mapping indicates the following:

- The bedrock geology of London Clay as unproductive; and
- The superficial geology of Taplow Gravel Member as a principal aquifer, meaning that the layer has high permeability and water storage capacity.

12.8.14 The EA Groundwater Vulnerability Mapping shows that the majority of the Proposed Development Site has medium to low vulnerability for pollution. The Proposed Development Site is not located within any EA Source Protection Zones.

Existing Drainage Infrastructure

12.8.15 Surface water runoff from hardstanding areas around the Airport is currently positively drained, with appropriate treatment provided prior to discharge. Given the size of the Airport this is currently split into three separate catchments referred to as the eastern, western, and southern catchments.

Future baseline

12.8.16 It is considered that there would be very minimal changes to the Proposed Development Site in the future baseline scenario. The main implications would be as a result of climate change impacts on surface water flood extents as well as a natural increase in the greenfield runoff rate for surface water runoff.

Summary of potential effects not requiring further consideration

Potential receptors

12.8.17 Following baseline review, the following receptors have been identified:

- Users of both the construction site (such as construction workers) and of the completed development in relation to flood risk from all sources.
- Offsite areas in relation to flood risk from all sources.
- Existing receiving waterbodies (such as groundwater, watercourses or surface water sewers) with respect to surface water discharge rates, volume, and quality of runoff.

Potentially significant effects

12.8.18 No potentially significant effects have been identified and therefore the entire aspect is **scoped out of the EIA**. However, an FRA will be undertaken and submitted with the DCO application. A summary of why these elements have been scoped out is included below.

12.8.19 The effects scoped out from further assessment in the Environmental Statement are:

- Effects on flood risk (onsite and offsite): The Proposed Development would not result in an increase in flood risk either onsite or offsite. Minor alterations to surfacing are proposed, however existing ground levels would generally be retained as existing. Whilst some amendments are proposed to the existing permeable and impermeable areas of the Site, the quantum of impermeable surfacing would be offset within each respective drainage catchment. As a result, there would be no increase in impermeable surfaces within any respective catchment, and therefore no increase in runoff from the Site There would be no potential to alter existing flood risk at the Site or elsewhere. As a result, it is proposed to scope out potential effects on flood risk from further consideration in the EIA.
- Effects of changes in water quality of surface water runoff: Whilst some amendments are proposed to the existing permeable and impermeable areas of the Site, the quantum of impermeable surface would be offset within each respective drainage catchment. Each area of the Site receives appropriate treatment prior to discharge, and therefore there would be no impact on water quality as a result of the Proposed Development. As a result, it is proposed to scope out potential effects on water quality from further consideration in the EIA.
- Effects on groundwater: The Proposed Development does not include significant excavations or structures that could give rise to a potential significant effect on groundwater flows beneath the Proposed Development Site. Excavation is limited to the proposed taxiway pavements, and is generally anticipated to be less than 1m, with deeper excavation in isolated areas to accommodate underground services (less than 2.0m), as stated in **Section 12.2**. The vulnerability of the Proposed Development Site to groundwater flooding would not alter as part of the Proposed Development. As a result, it is proposed to scope out potential effects on groundwater from further consideration in the EIA.
- Effects on Thames Water sewer network and local wastewater treatment with respect to foul capacity: The Proposed Development would not result in any increases in foul discharge. During construction it is anticipated that existing welfare facilities would be utilised. As a result, it is proposed scope out potential effects on foul sewerage capacity from further consideration in the EIA.
- Effects on Thames Water network with regards to potable water: The Proposed Development would not result in any increases in potable water demand. During construction, there will likely be some minor increase in demand however this would be on a temporary basis and is considered unlikely to have an effect on the existing infrastructure. As a result, it is proposed to scope out potential effects on potable water capacity from further consideration in the EIA.

Flood Risk Assessment - methodology

12.8.20 As part of the planning application, an NPPF compliant FRA incorporating a Drainage Strategy will be prepared, which would take the above baseline conditions into account, as well as any consultation responses received.

12.8.21 With regards to the management of surface water runoff, the effects of runoff from new hardstanding areas would be offset by removing existing hardstanding from the same drainage catchment, meaning that no attenuation would be required / provided. This approach would result in no negative effects with regards to the volume and rate of runoff when compared to the existing scenario. However, a drainage network to convey runoff along with pollution control methods would be provided to ensure that there is no negative effect on water quality.

12.8.22 The principles and requirements of the assessment would be discussed with the design team and will influence the design development to ensure that flood risk and drainage aspects are inherently incorporated within the masterplan. The scope of the FRA would include the following:

- Consideration of the potential effects of all sources of flooding to the Proposed Development Site and identification of any necessary measures required to manage these;
- Residual risks after implementation of any necessary mitigation measures, allowing for the future effects of climate change;
- Qualitative consideration of any effects on the flow of groundwater beneath the Proposed Development Site; and
- Quantified confirmation of the existing and proposed permeable and impermeable areas within each respective drainage catchment, showing that the impermeable area does not increase, and highlighting any alterations to the drainage regime.

13. Summary of scope

13.1 Introduction

13.1.1 **Table 13.1** summarises the technical aspects to be scoped in and scoped out from further detailed assessment as part of the EIA.

Table 13.1 Summary of Scope

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Section 5: Air quality	
Air quality as a result of changes to aircraft ground movements: Concentrations of NO_2, PM_{10} and $PM_{2.5}$	Emissions of dust and exhaust gases - the Proposed Development does not include for the provision of extensive ground-based engineering works. The Proposed Development is principally an operational change with limited physical development works, as described in the preceding sections, and on this basis it is not considered that construction related air quality effects would be significant and are therefore scoped out. With regards to dust, construction activity is expected to be at least 350m from the nearest sensitive receptor. Under GLA guidance[251], impacts above this distance can be screened out from detailed assessment. In terms of exhaust emissions from off-site construction traffic during construction, any additional vehicle movements on the local road network are expected to be a very small percentage of total movements. Any increase in exhaust emissions from on-site plant and machinery would be very small and insignificant above the baseline, and the distance between on-site emission sources and receptors is also sufficient for effects to be not significant.
Air quality as a result of changes to aircraft air movements: Nitrogen and acid deposition rates.	Odour from aircraft is mainly associated with low-thrust activities, which are focused on the central apron areas of the airfield and are therefore largely unaffected by the Proposed Development. The impacts of the Proposed Development on odour have therefore been scoped out.
Section 6: Noise and vibration	

[251] GLA (2014) 'The Control Of Dust And Emissions During Construction And Demolition: Supplementary Planning Guidance'. Available at: https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Dust%20and%20Emissions%20SPG%208%20July%202014_0.pdf?token=zV3ZKTpP (Accessed: 3 July 2023)

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Health and quality of life effects from construction noise - The Proposed Development will require engineering works to facilitate the airfield operations required to implement full easterly alternation operations. During engineering works, construction noise will be generated from the plant and construction equipment operating on airfield. However, construction may also occur landside depending on the need and location of any noise barriers. Construction noise has the potential to effect people, both on an individual basis and on a community basis, including any shared community open areas. Effects may also occur at community facilities such as schools, hospitals, and places of worship collectively described as 'non- residential receptors.	Hearing loss - The evidence for environmental noise effects from sources such as aircraft suggests that there would be no effect of environmental noise exposure on hearing loss. Hearing loss is associated with long-term exposure to very high noise levels, such as occupational and industrial noise exposures higher than LA 75-85dB or through exposure to an intense impulse sound, such as gunfire.
Health and Quality of Life Effects arising from a redistribution of Aircraft Noise - Change in operational noise has the potential to effect people, both on an individual basis and on a community basis, including any shared community open areas. The following health outcomes and effects will be assessed in line with Government policy metrics: • Annoyance. • Acute Myocardial Infarction. • Sleep Disturbance. • Hypertension – (stroke/dementia).	Health and Quality of Life Effects from Surface Access - As outlined above, the Proposed Development will not give rise to changes in landside vehicle access and movement (such as road and rail). Effects from landside road and rail sources are therefore scoped out.
	Health and Quality of Life Effects from Construction Traffic - The Proposed Development does not require any extended periods of ground-based engineering works which have the potential to generate discernible volumes of construction traffic. As such, off-site construction traffic during construction of the Proposed Development along with any additional vehicle movements on the local road network are expected to be a very small percentage of total movements. Noise effects from construction traffic have therefore been scoped out.
	Direct and Indirect Effects on Quiet Areas -There are unlikely to be any formally designated Quiet Areas within the study area. This will be confirmed within the Environmental Statement
Section 7: People and communities	
The types of activities that may be subject to likely significant effects are grouped into seven:	The Effects on Economy and Employment (inc. GVA effects[252]) are scoped out based on simple comparison of supply chain requirements with the size of nearby London markets. Furthermore, the

[252] Gross Value Added (GVA) is an indicator of economic performance.

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
• Community activities with regular temporal patterns; • Community events, scheduled and ad-hoc; • Working in the local area; • Outdoor use of amenity, recreational and cultural facilities; • Economic activities and employment; • Activities affecting health or health conditions; and • Passenger use of airport terminals. The following broad categories of effects with socio-economic outcomes on resident populations are scoped in, noting that some effects may fall in more than one category: • Effects related to noise, vibration and air quality. • Effects arising during working, such as where ambient noise levels affect safety. • Effects related to use of amenity, recreational and cultural facilities. • Effects dependent on patterns of community behaviour (including religious calendars; school timetables, entertainment and sports schedules) and community events (including religious festivals, sports days and street parties) • Effects related to traffic and use of transport (including peak/school times and at certain locations) • Effects on vulnerable health groups, based on general health and prevalence of particular conditions. Health effects are considered in more detail in **Section 9**. In addition, change in effects over time, such as related to an aging demography, will be considered as well as specific effects on passengers and effects which may arise outside the 20 * 40 nm rectangle, such as use of longer supply chains for construction materials or on the home communities of visitors to the area.	main intention of the Proposed Development is to redistribute noise.

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Effects on community facilities such as schools, health, social, and retail centres, are not considered separately but as locations where effects on people may be more concentrated. Effects arising from the following groups of activities are scoped in (see **Table 7.3** Likely significant effects – People and communities) **Community events** Patterns of air noise and other operational effects which coincide with planned or seasonal schedules of events. Schedules for cultural, religious, sporting, and entertainment events will be confirmed with local councils. **Community activities with regular temporal patterns** Patterns of air noise and other operational effects may coincide with temporal patterns of behaviour for people in communities. Regular activities fall under similar headings to those used for community events (cultural, religious, sporting, and entertainment). Schedules relevant to the community may include: markets; religious calendars; food preparation; sports practices; ecological/astronomical calendars; nature-watching; travel/commuting patterns. **Working Locally** Patterns of air noise and other operational effects may affect capability in performing some types of work or tasks. While workers are visitors and would be covered anyway, there may be particular types of work where noise may have specific effects such as safety when working in the construction sector. **Outdoor recreation** Patterns of air noise and other operational effects may coincide with periods and locations of community activity such sports or recreational events (park sports festivals, sports fields, playgrounds). **Health conditions** Patterns of air noise and other operational effects may increase the prevalence of certain health conditions and the possible effects are addressed in **Section 9**.	
Section 8: Health	

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Physical activity Operation of the Proposed Development may affect incentives to take physical activity (both positively and negatively). **Housing** Operation of the Proposed Development may affect investment needs (e.g. in soundproofing). **Relocation** Operation of the Proposed Development may affect incentives for relocation. **Open space, leisure and play** Operation of the Proposed Development may affect the quality of the outdoor environment (both positively and negatively). **Community identity, culture, resilience and influence** Operation of the Proposed Development may affect environmental characteristics influencing community identity and health resilience (both positively and negatively). **Social participation, interaction and support** Operation of the Proposed Development may affect regular and ad-hoc community events (both positively and negatively). **Education and training** Operation of the Proposed Development may affect educational attainment and child development (both positively and negatively). **Air quality** Operation and construction effects in Longford (see Air Quality chapter). **Noise and vibration** Operation and construction effects directly and indirectly through influence on wider determinants of health. **Health and social care services** Spatial distribution of heath needs affected by new pattern of noise and air quality.	**Risk taking behaviour** Negligible effect of Proposed Development **Diet and nutrition** Negligible effect of Proposed Development **Transport modes, access and connections** Negligible effect of Proposed Development. **Community safety** Negligible effect of Proposed Development. **Employment and income** Negligible effect of Proposed Development (See Section 8). **Climate change mitigation and adaptation** Negligible effect of Proposed Development. **Water quality or availability** The Proposed Development is not expected to affect the water regime. **Land quality** The Proposed Development will result in effects which are above the surface and do not affect land quality. **Radiation** Negligible effect of Proposed Development. **Built environment** Negligible effect of Proposed Development.

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Wider societal infrastructure and resources Operation of the Proposed Development may affect incentives for investment.	
Section 9: Historic environment	
Disturbance of archaeological remains from the construction of Runway Access Taxiways	Disturbance of archaeological remains at Longford during potential breaking out of hard standing: The area of the noise barrier, should such be required, near Longford was evaluated before the construction of the existing car park and further archaeological work was not carried out as a result of the demonstrably low potential. Any archaeological remains that might have been present would have been substantially disturbed by construction of the car park and it is not considered that any archaeological remains are present in this area. The potential breaking out of hard standing prevent a net increase in the proportion of paved areas would be in an area where potential survival of archaeological remains is very limited as a result of the previous disturbance and compaction caused by the construction of this hard standing. Intrusive works would also be limited to the removal of existing hard standing and make up and it is not considered that any coherent archaeological remains would be affected.
Potential effects on the character of the conservation area and the setting of heritage assets from the construction of the noise barrier.	Change to setting of heritage assets: Change to setting, including visibility of operations and construction noise, arising from construction of Runway Access Taxiways and potential breaking out of hard standing would be experienced in the context of the operational Airport and no negative effect would arise. Westerly operations from Heathrow will not be changed as a result of the proposed operational change, which applies only to easterly operations. Consequently, no assessment will be undertaken of westerly operations. Designated heritage assets which do not meet the tests set out in ANM to determine their sensitivity to changed aviation noise will not be assessed for change to setting arising from aviation noise.
Change to setting of heritage assets arising from increased or decreased aviation noise from easterly alternation operation.	

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	Designated heritage assets where the threshold of a predicted change in aviation noise of +/- 3dbLAEQT from baseline with a minimum predicted aviation noise level of 54dB LAEQT (as set in ANM) is not exceeded will not be assessed for change to setting arising from aviation noise.
Section 10: Landscape and visual impact assessment	
The following receptors will be included in the assessment: • Residential receptors in Longford; • Recreational users of the Colne Valley Way and other Public Rights of Way (PRoWs); • Recreational users of Harmondsworth Moor and Colne Valley Regional Park; and • Road users of Bath Road.	Due to the developed urban character of the landscape within the Study Area, there are no landscape character receptors deemed sensitive to the Proposed Development. Landscape character receptors are therefore scoped out of the assessment.
	The potential acoustic barrier south of Longford would be likely to be experienced from visual receptors to the north and west of Heathrow, as well as travelers on the Personal Rapid Transport System and those within the Terminal 5 Business Car Park. The latter two receptors are likely to view the barrier as fitting in the context of the existing landscape and therefore effects on these receptors have been scoped out of this assessment. Likewise, road users on the M25 and M4 are likely to attribute the Proposed Development as characteristic of the surroundings. Due to the intervening built-form and vegetation, the residential receptors in Harmondsworth (including the Conservation Area) and Sipson have been scoped out.
	A review of planning applications within the 2km Study Area did not identify any features which are likely to significantly alter the baseline landscape character or visual context. It is not anticipated that the proposed acoustic barrier will result in any significant cumulative effects due to intervening land cover, and as such, this is scoped out of the assessment.
Section 11: Biodiversity	

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Permanent or temporary land take / changes to habitats • Reduction in the availability of foraging and commuting habitat and resting or breeding sites. • Killing or injury of fauna through the removal of occupied resting or breeding sites. • Loss of ecological connectivity through severance of habitats resulting in fragmentation.	European Statutory Designated Sites - All Construction Effects All identified sites are >1.7 km from proposed enabling works with no pathway for effects to occur. SSSI Impact Risk Zones (IRZs) for the South West London Waterbodies SPA do overlap the areas required for construction, however the nature and scale of construction is such that no effects would occur.
Changes in noise, light, vibration, and movement levels due to construction activities - Disturbance and displacement of species susceptible to noise/visual disturbance resulting in a reduction of energy intake and/or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.	National Statutory Designated Sites - All Construction Effects
Dust emissions from construction activities - Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.	Non-Statutory Designated Sites - All Construction and Operational Effects
Changes in airspace operations - Increases in the atmospheric concentration and deposition of nitrogen. Potential for cumulative effects from other nearby developments.	Habitats (including on airfield, off airfield and Habitats of Principal Importance) Notable Plant Species All Construction and Operational Effects
Changes in airspace operations - Disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual birds.	Invertebrates - All Construction and Operational Effects
	Amphibians (including GCN) and reptiles (excluding grass snake) - All Construction and Operational Effects
	Breeding birds and bats - Operational Effects
	Water vole, badger and brown hare - All Construction and Operational Effects
	Invasive Species - All Construction and Operational Effects
Environmental aspects to be scoped out	
Section 12.2: Land quality	

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	Based on the review of the above land contamination data sources, no significant land contamination risk is anticipated to be present in the proposed development footprint. It is noted that the proposed development is expected to have limited potential to introduce new contaminant pathways to human health or controlled water receptors during the construction or operational phase of works (it is assumed that construction and maintenance workers will utilise appropriate personal protective equipment (PPE) and health and safety best practice as required)
Section 12.3: Major accidents and disasters	
	Accidents during construction activities - proposed to scope out on the basis of the existing control processes used to manage construction risk.
	Construction activities leading to an aviation accident - It is proposed to scope out the risk of construction activities causing an aviation accident on the basis that it will be managed by existing procedures required by EASA rules regulated by the CAA.
	Operational aviation accident - It is proposed to scope out the risk of an operational aviation accident based on the aerodrome licensing regime enforced by the CAA and no increase in the number of flights.
	External Major Accidents - It is proposed to scope out External Major Accidents due to the distance between potential sources and the Proposed Development.
	Natural Disasters - The Proposed Development does not increase the likelihood of a malicious threat and nor does it significantly increase the population at risk from a natural disaster, therefore it is proposed to scope them out from the EIA.
	Malicious threats - The Proposed Development does not increase the likelihood of a malicious threat and nor does it increase the population at risk of a malicious act. It is therefore proposed to scope out malicious threats.
Section 12.4 Traffic and transport	

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	The Proposed Development does not satisfy either of the following rules for detailed assessment from the 1993 Institute for Environmental Assessment 'Guidelines for Environmental Assessment of Road Traffic': • Rule 1 - For detailed assessment include highway links where traffic flows will increase by more than 30% (or the number of HGV's will increase by more than 30%); and • Rule 2 - For the detailed assessment include any other specifically 'sensitive' areas where traffic flows have increased by 10% or more.
	Daily HGV movements related to the construction phase would be very limited, construction is for a short period on an existing busy road, and materials will be sourced locally where possible. Other traffic will mainly be associated with the small numbers of construction workers (between 20 and 25) driving to the Proposed Development area. It is therefore not anticipated that the increase in traffic flows will exceed 10% and thus effects on traffic and transport at the construction stage are scoped out of the detailed assessment.
	The Proposed Development will not lead to an increase in annual ATMs, therefore it is not expected that any change to traffic numbers resulting will occur during the operation phase.
Section 12.5: Waste	
	The waste hierarchy (as set out in the National Planning Policy for Waste 2014) will be applied and adhered to throughout the construction period. This would ensure that construction waste is minimised and subsequently recycled and re-used on site, where possible. In the first instance, material that is suitable for re-use on site will be used to facilitate groundworks such as fill and reprofiling. Before any material is disposed to a registered landfill, it would be considered for recycling and recovery to a local waste management facility. As such, the amount of waste generated from the proposed operations, which is considered as construction, demolition, and excavation waste (CD&E) is unlikely to be significant and unlikely to have a significant effect

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	on local waste management capacity. Additionally, the proposed activities can be adequately managed through the supporting Construction and Environmental Management Plan.
Section 12.6: Vortex strikes	
	Heathrow has a vortex protection scheme to protect and repair homes around the airport. If a home has been damaged by a vortex strike, Heathrow will repair it. The incidence of additional vortex strikes due to the Proposed Development is unlikely to be significant and as such it is considered that the topic should be scoped out of the EIA.
Section 12.7: Greenhouse Gas and Climate change	
	In accordance with IEMA guidance for GHG assessments, activities that do not significantly change the result of the assessment can be excluded where expected emissions are less than 1% of total emissions. As emissions from the pre-construction stage are expected to minimal and as they will be largely associated with the supply chain (and therefore considered in the carbon footprint of supplier companies), it is considered that GHG emissions related to the pre-construction stage are not likely to be significant and have been scoped out of the assessment.
	Transport of construction materials resources and equipment from point of purchase to the works site. Commuting of workforce during construction.
	The carbon emitted directly from the fabric of products and materials once they have been installed as part of infrastructure and it is in normal use. It is not anticipated that any of the materials used in the construction of the Proposed Development will be capable of absorbing carbon dioxide from the atmosphere.
	Emissions associated with construction and installation processes (including fuel and electricity consumption) of the temporary works, ground works, landscaping and permanent works. Emissions associated with site water demand.

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	Waste management activities (transport, processing, final disposal) associated with waste arising from the Proposed Development.
	The works activities and new materials for the maintenance, repair, replacement and refurbishment of the infrastructure during the use stage / operation of infrastructure. Given the nature of the Proposed Development, it is not anticipated that the additional maintenance requirements will make a material difference to emissions as they will just form a small part of existing maintenance operations.
	Emissions resulting from the energy used (for example for the operation of heating systems and other building-related installed services) by the Proposed Development to enable it to deliver its service during operation. This stage has been scoped out as the Proposed Development will not use energy in the operation of heating systems and other building-related installed services in the operation phase.
	The activities associated with utilisation of the Proposed Development during the use stage. This is defined by the principle of control and influence whereby the GHG emissions arise from an activity that the user has control over. It should be noted that the total number of ATMs will remain the same, but differences may arise due to how the aircraft move around the airfield, and potentially in relation to the aircraft routes used (however, these are not likely to be significant).
	Other process GHG emissions arising from the Proposed Development to enable it to operate and deliver its service including management of operational waste. No other operational processes of the Proposed Development have been identified.
	The on-site activities of deconstructing, dismantling and demolishing the infrastructure. All GHG emissions due to transport to disposal and / or until the end-of-waste state of waste materials arising. Activities associated with treatment and processing

Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	for recovery, reuse and recycling of waste materials arising from infrastructure. GHG emissions resulting from final disposal of demolition materials. In accordance with the proposed generic project-wide approach to the assessment set out in **Section 4**, and specifically in **Section 4.3**, GHG emissions associated with decommissioning have been scoped out.
	Avoided carbon emissions associated with the Proposed Development including potential for re-use, recovery and recycling of materials and / or energy and associated GHG emissions beyond the system boundary. No Benefits and loads beyond the infrastructure lifecycle have been identified.
Section 12:8 Hydrology & Hydrogeology	
	Effects on groundwater: The Proposed Development does not include excavations or structures that could give rise to a potential significant effect on groundwater flows beneath the Airport as intrusive groundworks are anticipated to be approximately 1.5m to 2m deep. The vulnerability of the Airport to groundwater flooding would not alter as part of the Proposed Development. As a result, it is proposed to scope out potential effects on groundwater from further consideration in the EIA.
	Effects on Thames Water sewer network and local wastewater treatment with respect to foul capacity: The Proposed Development would not result in any increases in foul discharge. During construction it is anticipated that existing welfare facilities would be utilised. As a result, it is proposed scope out potential effects on foul sewerage capacity from further consideration in the EIA.
	Effects on Thames Water network with regards to potable water: The Proposed Development would not result in any increases in potable water demand. During construction, there will likely be some minor increase in demand however this would be on a temporary basis and is considered unlikely to have an effect on the existing infrastructure. As a result, it is proposed to scope out potential effects on potable water capacity from further consideration in the EIA.

APPENDIX 1.5 SCOPING REPORT FIGURES