Airspace Change Masterplan

CAP 2526 Strategic Environmental Assessment Scoping Report

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Waterman Infrastructure & Environment Limited
Pickfords Wharf, Clink Street, London, SE1 9DG
www.watermangroup.com

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Issue	Date	Prepared by	Checked by	Approved by
First	October 2022	Helen Mentink & Toby Gibbs Logika Consultants Limited James Malone Consultant Waterman Infrastructure & Environment Ltd	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd
Second	November 2022	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd James Malone Consultant Waterman Infrastructure & Environment Ltd Stephanie Jones Graduate Consultant Waterman Infrastructure & Environment Ltd	Helen Mentink & Toby Gibbs Logika Consultants Limited Lara Knapman Technical Director Waterman Infrastructure & Environment Ltd	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd
Third	December 2022	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd James Malone Consultant Waterman Infrastructure & Environment Ltd	Helen Mentink & Toby Gibbs Logika Consultants Limited Lara Knapman Technical Director Waterman Infrastructure & Environment Ltd	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd
Final	February 2023	Toby Gibbs Logika Consultants Limited Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd James Malone Consultant Waterman Infrastructure & Environment Ltd	Lara Knapman Technical Director Waterman Infrastructure & Environment Ltd	Ros Boalch Associate Director Waterman Infrastructure & Environment Ltd 

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1. Introduction

1.1. The Civil Aviation Authority (CAA) has appointed Waterman Infrastructure & Environment Ltd (Waterman), to prepare this Strategic Environmental Assessment (SEA) Scoping Report for the Airspace Change Masterplan (the 'Masterplan') for the United Kingdom (UK). Waterman prepared this SEA Scoping Report together with their sub consultant, Logika Consultants Limited (Logika).

1.2. This SEA Scoping Report sets the context and objectives for the SEA including the baseline and has been prepared in the context of the Environmental Assessment of Plans and Programmes Regulations 2004 (the 'SEA Regulations')[1]. This SEA Scoping Report sets out the rationale for the preparation of the SEA Environmental Report.

1.3. Information supporting this SEA Scoping Report, including **Figure 1** are set out within **Appendix A**, **Appendix C** and **Appendix D**.

1.4. Details of the Waterman consultant team; and those of Logika who together prepared this SEA Scoping Report are presented within **Appendix B**.

Background to the Modernisation of UK Airspace and the Airspace Change Masterplan

1.5. UK airspace is an invisible but vital piece of our national infrastructure. The basic design has remained the same for decades, despite technological advances and an increase in demand from airspace users. Modernisation is long overdue and is critical to ensure that UK airspace is fit for purpose in the future. The Department for Transport and CAA are working together to deliver it through an Airspace Modernisation Strategy (AMS)[2].

1.6. Airspace modernisation will be achieved, in part, through of a series of individual airspace change proposals initiated by airports (for routes close to airports) and the en-route air traffic control provider NATS (for upper airspace routes connecting airports). The airspace changes proposed by these 'sponsors' are being coordinated by the ACOG, which was set up to prepare an airspace change masterplan. The masterplan is a single coordinated implementation plan for airspace changes in the UK up to 2040 to upgrade the UK's airspace and deliver the objectives of airspace modernisation at a system level. The masterplan must be consistent with the delivery of airspace modernisation as described in the AMS.

1.7. The Masterplan, through the individual constituent airspace change proposals, may alter where aircraft fly. This could have consequential environmental impacts, including noise levels on the ground, greenhouse-gas emissions and local air quality.

1.8. The Masterplan will:

- Identify where and when airspace change proposals need to be developed in coordination to support delivery of the objectives of the CAA's AMS;
- Describe how individual airspace change proposals relate to each other (i.e. interdependencies[3]) and where there are potential conflicts in their proposed designs;
- Explain how trade-off[4] decisions to resolve those conflicts[5] have been made;
- Set out the proposed timelines for implementation of the individual airspace changes;

[1] SI 2004 No. 1633, The Environmental Assessment of Plans and Programmes Regulations 2004 (as amended).
[2] The first version of the AMS was published in December 2018, superseding the UK's Future Airspace Strategy published in June 2011. A refreshed version of the AMS was published in January 2023 (CAP 1711 and CAP 1711a).
[3] An interdependency can be described as two or more airspace change proposals that are linked together in some way. For example, there is a potential conflict in their design options or there is a potential cumulative impact on stakeholders on the ground.
[4] A trade-off is the choice or decision to resolve a conflict and could be between two or more sponsors of separate airspace changes, or between two or more objectives (such as achieving noise reduction and achieving fuel efficiency).
[5] A conflict can be described as two or more airspace change proposals that cannot both proceed in their proposed form.

- Demonstrate the anticipated cumulative impact of the airspace change proposals.

1.9. The CAA has published further detail about what the Masterplan must contain within CAP 2156a[6].

Masterplan Iterations

1.10. The Masterplan is being produced by ACOG in iterations. More detail is added with each iteration as the individual airspace change proposals are themselves developed. The CAA and Department for Transport check that each submission of the masterplan covers the right material. The CAA then decides whether to accept it into the AMS.

1.11. Iteration 1 was assessed but did not need to be accepted because it was only a high-level plan. Iteration 2 of the masterplan was accepted in January 2022. ACOG is currently working on Iteration 3. The final iteration of the masterplan for each 'cluster' or deployment, Iteration 4, will act as a framework for the constituent airspace change proposals. Further explanation of deployment and clusters are presented later within this Section.

1.12. Appendix B of Iteration 2.2 of the Masterplan sets out a record of stakeholder feedback and how, if relevant, this feedback will influence Iterations of the Masterplan going forward. Those points that are relevant to the SEA are related to environmental impacts and policy. **Appendix C** summarises the stakeholder feedback and responses in Appendix B of Iteration 2.2 of the Masterplan; and adds some further commentary in respect of the SEA process.

1.13. Through the SEA process, there will be consideration of this stakeholder feedback so that it informs the review and assessment of Iteration 3 of the Masterplan and subsequent Iterations where relevant.

Iteration 3

1.14. Iteration 3 will describe the proposed airspace structure and route network envisaged by the airspace change proposals when viewed as a collective, but without the detailed designs of all the routes. It will explain the specific airspace design trade-offs between interdependent airspace change proposals in greater detail than Iteration 2, with more information about the cumulative impacts of different design choices and the methods used to calculate them.

1.15. ACOG will create Iteration 3 by working with the sponsors of the constituent airspace change proposals to incorporate the outputs that are available from the 'options appraisals' that form part of the CAP 1616 airspace change process. The options appraisal is used by the airspace change sponsor to determine, in a transparent way, which option(s) to take forward to the public consultation on their airspace design.

1.16. For each interdependency, ACOG will coordinate input from the sponsors concerned as to what types of solutions could potentially be deployed in the masterplan to resolve any conflicts between their collective airspace change proposals for them to work as a system. Iteration 3 will describe the intended approach to coordinating the CAP 1616 consultations within the relevant cluster or deployment. It will include the high-level consultation plans of constituent airspace change proposals and ensure stakeholders understand how they will be able to respond.

1.17. As part of Iteration 3, ACOG is developing a 'cumulative assessment framework' tool to guide sponsors in assessing the cumulative impacts (positive or negative) of different options in interdependent airspace change proposals, and thus inform the decision to choose their preferred design option(s).

Iteration 4

1.18. Iteration 4 will describe the final proposed trade-offs between interdependent airspace change proposals, taking account of the outputs of the sponsors' coordinated consultations. It will provide a description of the proposed airspace structure and route network when viewed as a collective, but without the detailed designs of all the routes.

[6] CAA (2022). CAP 2156a Airspace change masterplan – CAA acceptance criteria. (2nd Edition, December 2022).

Consistency of Airspace Change Proposals with the Masterplan

1.19. The Masterplan is a UK strategic plan made up of individual airspace change proposals, and it is those individual proposals that determine the detailed airspace design (such as actual flightpaths). The masterplan coordinates, but does not determine, those designs. This is because any airspace change proposal must follow the CAA's 'CAP 1616' airspace change process. This process ensures that when the CAA decides whether or not to approve a proposal to change the airspace design, it does so in an impartial and evidence-based way that takes proper account of the needs and interests of all affected stakeholders, including appropriate consultation. The airspace change proposals making up the masterplan and the CAA's decisions on them must of course remain consistent with the Masterplan.

Taking SEA and HRA into Account in the Masterplan

1.20. For Iteration 3 and Iteration 4, ACOG will show how the SEA and HRA have been taken into account in developing the Masterplan.

Clustering Approach

1.21. The CAA has accepted that ACOG can organise the airports involved in the masterplan into four geographical 'clusters', as shown in **Figure 1** of **Appendix A**. Airspace change proposals in one cluster can thus progress at their own speed without delaying those in other parts of the UK. Each cluster also has at least one NATS airspace change proposal to connect the airports to the network. ACOG refers to these clusters as:

- West terminal airspace
- Scottish TMA
- Manchester TMA
- London TMA

(TMA Means Terminal Control Area)

1.22. For the Scottish TMA, ACOG expects to submit Iteration 3 to the CAA for assessment in summer 2023. Submissions of Iteration 3 for other clusters will follow. The London TMA is expected to be implemented in phases, which are referred to as 'deployments'. Northern Ireland is not currently in scope of the Masterplan.

ACOG Public Engagement Exercise

1.23. In preparation for submitting Iteration 3, ACOG will run a public engagement exercise. This will include providing information about the content of Iteration 3, giving stakeholders the opportunity to input on key aspects, including a series of regional engagements as the proposals in each cluster progress.

1.24. Later on in the process, each sponsor will also run a consultation about the specific airspace design of its airspace change proposal, coordinated within each cluster as needed. For the Scottish TMA, those consultations would probably be in the first half of 2024.

Plan Alternatives

1.25. At this stage in the development of the Masterplan, the various options are not yet defined. Many different options will be considered for each of the ACPs separately (at Stage 3A of the CAP 1616 process) and for various reasons (such as safety, cost, environmental impact), some will be discounted and others taken forward.

1.26. The preferred options for each of the ACPs will be decided at Step 3B of CAP 1616, and reported on in Iteration 3 of the Masterplan (these are considered to be alternative options of the 'Assessment Case', considered at TMA level, within each SEA report for Iteration 3).

1.27. These options will be finalised at Step 4B of CAP 1616, and reported on in Iteration 4 of the Masterplan following TMA-level conflict resolution and necessary trade-offs (as guided by the Masterplan).

1.28. Any alternative options considered by ACOG for addressing possible conflicts arising between the preferred options of an ACP within a TMA will also be documented in Iteration 4 and the associated draft SEA Environmental Report (i.e. they are also to be treated as alternative options of the Assessment Case).

1.29. At the level of the Masterplan as a whole, a 'do nothing', or better referred to as the Future Baseline alternative will also be considered by the SEA. In this instance, it is assumed that no Masterplan or ACPs would be implemented. The Future Baseline would be assessed in the same way against the SEA objectives as the Assessment Case, enabling comparison between the two.

Growth

1.30. The AMS seeks to facilitate growing demand from airspace users in a sustainable way by optimising air routes and air traffic management practices resulting in reduced track miles and stacking, more efficient climbs and descents, increased flight efficiency and improved environmental performance. The Masterplan is a macro-level, co-ordinated implementation plan for airspace changes, forming one of the ways the AMS will be delivered. Through the Masterplan, ACP sponsors will identify interdependencies and resolve potential conflicts through trade-off decisions.

1.31. The Masterplan will not directly facilitate, or grant consent for, additional growth in air traffic movements (ATMs) over and above that which has already been consented. Any additional growth in ATMs at UK airports will be subject to separate consenting decisions - such as development consent for new ground-based infrastructure or the approval of ACPs through the CAP 1616 process. The Masterplan will address the management and re-distribution of air traffic movements within the UK's airspace based on the degree to which an airport already has approval for, and is practically capable of achieving, planned growth.

1.32. As a consequence, the forecast growth in aviation which is already authorised forms part of the baseline against which the environmental impacts of the Masterplan will be assessed. The SEA of the Masterplan will be undertaken on that basis.

2. Strategic Environmental Assessment

2.1. European Union (EU) Directive 2001/42/EC[7] (the 'SEA Directive') requires EU Member States to ensure that certain plans and programmes are subject to a requirement for Strategic Environmental Assessment ('SEA'). In the UK, the SEA Directive was transposed into national legislation via the Environmental Assessment of Plans and Programmes Regulations 2004 (updated in 2020)[8].

2.2. The term SEA is used to describe the application of environmental assessment to plans and programmes in accordance with the SEA Regulations. The requirement for SEA is separate from and in addition to the need for environmental assessment of individual projects.

Screening - The need for SEA of the Masterplan

2.3. The SEA Regulations require that the 'responsible authority' shall carry out, or secure the carrying out of, an environmental assessment of a plan or programme where either regulation 5(2) or regulation 5(3) applies:

- Reg 5(2): the plan or programme is prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use, and sets the framework for future development consent of projects listed in Annex I or II of the "Environmental Impact Assessment (EIA) Directive"; or
- Reg 5(3): the plan or programme, in view of the likely effect on sites, has been determined to require an assessment pursuant to Article 6 or 7 of the Habitats Directive (92/43/EEC)[9].

2.4. The CAA is the 'responsible authority' for the preparation of the Masterplan, which is a plan for the purposes of the SEA Regulations and the SEA Directive. Regulation 5(2) of the SEA Regulations does not apply to the Masterplan because it will not provide a framework for future development consents, being only concerned with the use of airspace. However, it has been determined that the Masterplan is likely to have significant effects on the national sites network of Special Areas of Conservation (SAC) and Special Protection Areas (SPA), and therefore an Appropriate Assessment[10] is required. As a result, regulation 5(3) of the SEA Regulations applies, and so SEA is required during the preparation of the Masterplan and prior to its adoption. Regulation 12(1) of the SEA Regulations requires that an environmental report must be prepared as part of this process.

SEA Approach

2.5. SEA is an iterative process of gathering data and evidence, assessment of environmental effects, developing mitigation measures and making recommendations to refine plans or programmes in view of the predicted environmental effects. This information is presented in an SEA Environmental Report, which, published alongside the draft plan, is then subject to consultation with the statutory consultation bodies and the public. The production of the Environmental Report and the statutory consultation which takes place upon it, make up the assessment phase of the SEA process. The SEA outputs can inform the responsible authority's decision on the content of the plan.

2.6. The legal duty is to carry out SEA (i.e. production of the Environmental Report and consultation upon it) during the preparation of the Masterplan prior to acceptance into the AMS. The complete version of the Masterplan including final ACPs for all the TMAs will not be published until the final version of Iteration 4. However, best practice is to commence environmental assessment work and engagement at an early stage, so that the full range of options are considered, and consultees are given an effective opportunity to influence the content of the Masterplan before its 'acceptance' into the AMS.

[7] Council Regulation (EC) 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA).
[8] HMSO (2004). SI 2004 No. 1633 Environmental Protection: The Environmental Assessment of Plans and Programmes Regulations 2004
[9] Council Regulation (EC) 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
[10] Note that a Habitats Regulations Assessment (HRA) Screening Report, in accordance with the Habitats Directive, is being prepared concurrently, though separately, to this SEA Scoping Report.

2.7. Masterplan Iterations 1 and 2, which have already been published, were not subject to SEA, because they are high-level documents which do not contain any policies or proposals capable of undergoing SEA.

2.8. Iteration 3 is anticipated to contain policies and proposals which will make it possible to undertake SEA. Assessment will begin at an early stage and will be on-going throughout the development of Iteration 3 of the Masterplan with a draft Environmental Report documenting the results of the assessment (there will therefore be an Environmental Report associated with each version of Iteration 3 in respect of each geographical cluster).

2.9. When a draft Environmental Report has been prepared, it will be published together with Iteration 3 of the Masterplan in respect of the geographical cluster it relates to. Consultation will then take place with the statutory consultation bodies and the wider public on the content of the Environmental Report.

2.10. If Iteration 4 of the Masterplan contains substantial modifications compared with Iteration 3 in respect of that geographical cluster, and as a result there are likely to be changes to the assessment and in particular the significant environmental effects that were previously reported, a further draft Environmental Report will be prepared, and further consultation may need to be carried out.

2.11. Each Environmental Report will then be finalised and taken into account when deciding whether to accept Iteration 4 of the Masterplan in respect of that geographical cluster into the AMS. The final Environmental Reports will be published with Iteration 4 of the Masterplan to which they relate, once that version has been accepted.

Purpose of this Report (SEA Scoping)

2.12. Having previously determined that SEA of the Masterplan is required, the next step is to establish the required scope of the environmental assessment. In general terms, the scope of the environmental report is identified in regulations 12(2), 12(3) and Schedule 2 of the SEA Regulations. The proposals for this are set out in this scoping report which also, as a matter of standard practice, defines the methodology for the assessment of the Masterplan.

2.13. Regulation 12(5) of the SEA Regulations requires that:

(5) When deciding on the scope and level of detail of the information that must be included in the report, the responsible authority shall consult the consultation bodies.

2.14. The consultation bodies are identified in regulation 4. In addition, as a matter of good practice, and the Practical Guide to SEA and the Planning Guidance on SEA[11], consultation on this Scoping Report will be carried out with other interested parties and members of the public. More information on scope, methodology and consultation is provided later in this document. consultation on this Scoping Report will be carried out with other interested parties and members of the public. More information on scope, methodology and consultation is provided later in this document.

2.15. The purpose of this SEA Scoping Report is to set out the proposed scope and methodology of the detailed environmental assessments that will be documented within the subsequent SEA Environmental Report. Furthermore, this SEA Scoping Report also sets out which environmental effects are considered to be not significant and are therefore scoped out from detailed environmental assessment.

2.16. This SEA Scoping Report includes the following information:

- An outline description of the Masterplan and possible alternative delivery approaches that are being considered (**Chapter 1**);
- Details of national legislation and policy that are relevant to the Masterplan as a whole, and to each of the environmental factors scoped into the SEA (**Chapter 3**);

[11] Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

- The national environmental baseline, including its current state and the likely evolution thereof without implementation of the Masterplan, including geographical Zones of Influence (ZoI) associated with potential effects on different environmental factors scoped into the SEA (**Chapter 4**);
- The scope of the SEA, along with the predicted high level potential impacts of the Masterplan, enabling relevant environmental factors to be 'scoped in' and justification provided for those that are proposed to be 'scoped out' (**Chapter 5**);
- Detail on the methodology (including regional baseline data collection and review) that will be used to assess the impacts of the Masterplan at Iteration 3 (**Chapter 6**); and
- The next steps in the process (**Chapter 7**).

2.17. In order to meet the requirements of Schedule 2 of the SEA Regulations, certain environmental factors need to be considered as may be reasonably required. **Table 1** notes under which sub-headings in the **Chapter 3 National Legislation and Policy Baseline** and **Chapter 3 National Environmental Baseline** of this SEA Scoping Report these factors are covered.

Table 1: Coverage of Environmental Factors

SEA Regulations (Schedule 2): Environmental Factor	SEA Scoping Report National Environmental Baseline (Chapter 3): Aspect Heading Under Which Factor is Covered
Biodiversity	Biodiversity
Population	Population and Health
Human Health	Local Air Quality Noise* Population and Health
Fauna	Biodiversity
Flora	Biodiversity
Soil**	n/a
Water**	n/a
Air	Local Air Quality
Climatic Factors	Carbon and Climate Change
Material Assets**	n/a
Landscape	Landscape and Visual
Cultural Heritage including Architecture and Archaeological Heritage	Cultural Heritage

* Noise is not listed as an environmental factor in the SEA Regulations, however it has been included as an environmental aspect in this Scoping Report as it is deemed to be an aspect that needs consideration given the nature of the proposals and their *potential* to affect human health.
** As is explained within **Chapter 5: Scope of the SEA** these topics have been scoped out, and as such further information in respect of national legislation, policy or baseline are not set out within this SEA Scoping Report.

2.18. It should be noted that **Chapter 3: National Legislation and Policy Baseline** and **Chapter 4: National Environmental Baseline** of this SEA Scoping Report do not set out detailed analysis of relevant legislation, policy or baseline, as this is specific to each TMA. This analysis will instead be presented within the draft SEA Environmental Report relevant to that TMA. The rationale for deferring this analysis is to realise efficiencies, for instance baselines and policies could change between now and preparation of Iteration 3 of the Masterplan and so analysis would need to be repeated. Additionally, it is an opportunity for consultees to identify which regional plans and programmes (and baseline data sets) they consider applicable and thereby engage with the preparation of the Masterplan. This SEA Scoping Report therefore focuses on defining ZoI and identifying the potential for likely significant effects.

2.19. Consultation, through provision of this SEA Scoping Report, will be undertaken with the statutory Consultation Bodies to seek to gain agreement on the specific scope and method for the detailed assessment which will be undertaken on Iteration 3 Masterplan and reported in the associated SEA Environmental Reports. The Consultation Bodies relevant to the Masterplan are listed below:

- Natural England;
- Environment Agency;
- Historic England;
- the Scottish Ministers;
- NatureScot;
- Scottish Environmental Protection Agency;
- the Welsh Ministers; and
- Natural Resources Wales.

2.20. Though not a legal requirement, this Scoping Report will also be made publicly available via the CAA's website, so that other affected or interested parties in each of the TMA clusters may also comment on the proposed approach for this SEA.

2.21. Although the Masterplan is national in its focus and applicable to the UK as a whole, on account of their geographical spread of the four TMA clusters, Northern Ireland is excluded from the scope of this report. However, should in the future a Northern Irish ACP be included this would be considered at that time and SEA work undertaken as is appropriate.

3. National Legislation and Policy Baseline

3.1 This Chapter sets out details of other plans, programmes and environmental protection objectives relevant to the plan area (in this case, the UK as a whole, excluding Northern Ireland) and subject matter (aviation).

Policy Relevant to the Masterplan

3.2 **Table 2** sets out relevant aspects and objectives of policies related to aviation and the Masterplan.

Table 2: National Policy Relevant to Aviation and the Masterplan

Policy Document	Summary
General Aviation Strategy[12]	The strategy sets out a vision for General Aviation to be a *"…a flourishing, wealth generating and job producing sector of the economy."* The strategy sets out economically derived aims to achieve this vision such as deregulation of some components of General Aviation, stimulating employment and supporting infrastructure.
Aviation Policy Framework, 2013[13]	This is a high level strategy to support the growth and benefits of aviation, manage aviation's environmental impact and other aviation objectives such as airspace.
Jet Zero Strategy: Delivering Net Zero Aviation 2050[14]	A strategy to achieve 'net zero' aviation emissions by 2050, with a target for domestic aviation to reach this by 2040. The strategy considers system efficiencies, sustainable aviation fuels, and zero emission aircraft technologies to achieve this target.
Net Zero Strategy: Build Back Greener[15]	A strategy to achieve 'net zero' global emissions of greenhouse gases by 2050.
Decarbonising Transport, A Better, Greener Britain[16]	Several commitments are set out to consult on targets for net zero aviation emissions, decarbonising emissions from airport operations, supporting development of new technologies, infrastructure and sustainable aviation fuels, development of emissions trading. A specific commitment is made to UK airspace modernisation "…*to deliver quicker, quieter, and cleaner journeys, alongside annual carbon savings of up to 0.6 million tonnes of CO_2 equivalent ($MtCO_2e$) (based on 2019 figures)*".
Flightpath to the Future, 2022[17]	Identifies that post Covid 19 pandemic the role airports have to boosting our global connectivity and sets a strategic framework of four key themes underpinned by a ten point plan. Relevant to the Masterplan and the environment include embracing innovation, the achievement of Jet Zero and the reduction of localised impacts of aviation from noise and air pollution.

[12] Department for Transport (2015). General Aviation Strategy.
[13] Department for Transport (2013). Aviation Policy Framework.
[14] Department for Transport (2022). Jet Zero Strategy: Delivering net zero aviation by 2050.
[15] Department for Business, Energy & Industrial Strategy (2021). Net Zero Strategy: Build Back Greener.
[16] Department for Transport (2021). Decarbonising Transport, A Better, Greener Britain.
[17] Department for Transport (2022). Flightpath to the Future.

3.3 Further to UK Government legislation and policy discussed in **Chapter 3**, the Department for Transport and the CAA have provided additional guidance on the aviation sector, most notably through CAP 1616 and the Air Navigation Guidance (2017)[18], among others. CAP 1616 in particular, provides guidance on the accounting for ZoIs for various environmental factors which are likely to arise from airspace change and have, in part, informed this Report.

Policy Relevant to the Environmental Aspects

3.4 As recommended within the SEA Practical Guide, for each environmental aspect scoped into the SEA, national level (UK and devolved administrations) legislation and policy that the Masterplan would need to comply with is considered. Legislation is considered within the following sections where applicable. Relevant policy is summarised along with detail of the environmental protection objectives of each where applicable.

Local Air Quality

3.5 The primary framework for air quality considerations in respect of aviation are the various legislative instruments which set out the Government's obligations to meet mandatory EU air quality targets set under EU Directive 2008/50/EC[19] and national air quality objectives through the Air Quality Standards Regulations[20]; Part IV of the Environment Act[21] and the Air Quality Strategy[22].

3.6 The Air Quality Strategy published by the Department for Environment, Food, and Rural Affairs (Defra) and Devolved Administrations, provides the policy framework for air quality management and assessment in the UK. It provides air quality standards and objectives for key air pollutants, as shown in **Table 3**, which are designed to protect human health and the environment. It also sets out how the different sectors: industry, transport and local government, can contribute to achieving the air quality objectives. Local authorities are seen to play a particularly important role. **Table 3** is broken down by relevant by country within the UK.

3.7 The 25 Year Environment Plan[23] and the Environmental Improvement Plan 2023[24] sets out the Government's approach to deliver cleaner air and includes commitments to cleaner transport.

[18] Department for Transport (2017). Air Navigation Guidance: 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 management.
[19] Council Regulation (EC) 2008/50/EC of 21 May 2008 on ambient air quality and cleaner air for Europe.
[20] HMSO (2010). SI 2010 No. 1001 Environmental Protection: Air Quality Standards Regulations 2010.
[21] HMSO (1995). Environment Act, 1995 (as amended).
[22] Department for Environment, Food and Rural Affairs (2007). The Air Quality Strategy for England, Scotland, Wales, and Northern Ireland.
[23] HM Government (2018). A Green Future: Our 25 Year Plan to Improve the Environment.
[24] HM Government (2023). Environmental Improvement Plan 2023. First revision of the 25 Year Environment Plan.

Table 3: Summary of UK Air Quality Strategy Objectives Relevant to the Aviation Sector

Pollutant	Objective		Date the Objective is to be met by (and be maintained thereafter)
	Concentration	Measured As	
Particulate Matter (PM10)	50 µg/m^3 (in the UK)	24 hour mean, not to be exceeded more than 35 times per year in the UK (not to be exceeded more than 7 times per year in Scotland)	31st December 2004
	40 µg/m^3 (in the UK)	Annual mean	31st December 2010
	18 µg/m^3 (in Scotland)	Annual mean	31st December 2010
Particulate Matter (PM2.5)	Target reduction of 15% in concentrations in urban background locations	Annual mean	Between 2010 and 2020
	20 µg/m^3 (in the UK excluding Scotland)	Annual mean	1st January 2020
	10 µg/m^3 (in Scotland)	Annual mean	31st December 2020
Nitrogen Dioxide (NO_2)	200 µg/m^3 (in the UK)	Annual mean, not to be exceeded more than 18 times a year	31st December 2005
	40 µg/m^3 (in the UK)	Annual mean	31st December 2005
Ozone	100 µg/m^3 (in the UK)	8 hour mean, not to be exceeded more than 10 times a year	31st December 2005
Sulphur Dioxide	266 µg/m^3 (in the UK)	15 minute mean not to be exceeded more than 35 times a year	No date
	350 µg/m^3 (in the UK)	1 hour mean not to be exceeded more than 24 times a year	1st January 2005
	125 µg/m^3 (in the UK)	24 hour mean not to be exceeded more than 3 times a year	1st January 2005
Benzene	16.25 µg/m^3 (in the UK)	Running annual mean	31st December 2003
	5 µg/m^3 (in England and Wales)	Annual average	31st December 2003
	3.25 µg/m^3 (Scotland)	Running annual mean	31st December 2003
Carbon Monoxide (CO)	10 mg/m^3 (in the UK)	Maximum daily running 8 hour Mean (in Scotland as running 8 hour mean)	31st December 2003

3.8 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[25]. The second set of targets relate to reducing overall population exposure to $PM_{2.5}$. By the end 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.

3.9 Defra will assess compliance with the population exposure targets by averaging concentrations measured at its own background monitoring stations. This will not consider small changes over time to precisely where people are exposed (such as would relate to exposure introduced by a new development). 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, the actions required of local authorities, which will be clarified within a future Air Quality Strategy, relate to controlling emissions and not to directly assessing $PM_{2.5}$ concentrations against the targets.

3.10 The Air Quality Strategy describes the Local Air Quality Management (LAQM) regime that has been established, whereby every authority has to carry out regular reviews and assessments of air quality in its area to identify whether the objectives have been, or will be, achieved at relevant locations, by the applicable date. If this is not the case, the authority must declare an Air Quality Management Area (AQMA) and prepare an action plan which identifies appropriate measures that will be introduced in pursuit of the objectives.

3.11 To improve air quality, some local authorities are introducing clean air zones where drivers have to pay a charge to drive in the clean air zone if their vehicle exceeds specified emission standards. The Government has also announced the phase-out date for the sale of new petrol and diesel cars and vans will be 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 2035. If these ambitions are realised then road traffic-related NOx emissions can be expected to reduce significantly over the coming decades.

3.12 Further to the concentrations outlined in **Table 3**, the Environment Act 2021[26] establishes a legally binding duty on government to bring forward at least two new air quality targets in secondary legislation by 31 October 2022[27] (which is not yet released at the time of preparing this SEA Scoping Report). This duty sits within the environmental targets framework outlined in the Environment Act (Part 1).

3.13 The proposed air quality targets are:

- Annual Mean Concentration Target ('concentration target') - a maximum concentration of 10 µg/m3 to be met across England by 2040.
- Population Exposure Reduction Target ('exposure target') - a 35% reduction in population exposure by 2040 (compared to a base year of 2018).

3.14 Aside from strategies to reduce emissions from road traffic and industrial sources, there are also supporting strategies that are expected to contribute to an improvement of aircraft emissions, including though the development of new technologies and sustainable aviation fuels as set out in Jet Zero.

Biodiversity

3.15 There are numerous pieces of legislation and policy in respect of biodiversity. A receptor led approach has been used to summarise those in **Table 4** of particular relevance to the SEA Scoping Report. As is noted later within this SEA Scoping Report, given the strategic nature of the assessment, only ecological features of national or international status will be considered further.

[25] 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.
[26] UK Public General Acts (2021). Environment Act 2021.
[27] Department for Environment, Food and Rural Affairs (2021). Air Quality Targets in the Environment Act 2021.

Table 4: National Legislation Relevant to Biodiversity

Ecological Feature	Description	Legal Status
European sites	Special Areas of Conservation (SAC) and Special Protection Areas (SPA); with Ramsar sites, potential SACs, proposed SPAs and proposed Ramsar sites included as a matter of Government policy.	SACs and SPAs are designated and protected areas. Designation of these areas can be applied to terrestrial land and within 12 nautical miles (Territorial Seas) of the shore under the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales, as well as the Conservation (Natural Habitats) Regulations 1994 (as amended) in Scotland. Designation and protection of SPAs and SACs outside of Territorial Seas in the UK are covered under The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended).
National sites	Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNRs)	SSSIs are cited and protected through the Wildlife & Countryside Act 1981 (as amended) in England, Wales and Scotland, as well as further protection granted via the Nature Conservation (Scotland) Act 2004. NNRs are cited and protected through the National Parks Act Scotland (2000) in Scotland, and Access to the Countryside Act 1949 (as amended) in England, Scotland and Wales.
Irreplaceable habitats	Ancient woodland Ancient and veteran trees Blanket bog Limestone pavement Sand dunes Salt marsh Lowland fen	Irreplaceable habitats are recognised in policy terms only across Scotland, England and Wales, providing protection through the decision-making processes of public bodies. Many of these are also described as Habitats of Principal Importance (see below)
Habitats of Principal Importance	A large range of habitat types in England, Wales and Scotland	Habitats of Principal Importance in England and Wales are identified through and protected under the biodiversity duties of the Natural Environment and Rural Communities Act 2006 (as amended) and the Nature Conservation (Scotland) Act 2004 in Scotland. The protection is provided through consideration within the decision-making processes of public bodies.
Species of Principal Importance	A large range of species types in England, Wales and Scotland	Species of Principal Importance in England and Wales are identified through and protected under the biodiversity duties of the Natural Environment and Rural Communities Act 2006 (as amended) and the Nature Conservation (Scotland) Act 2004 in Scotland. The protection is provided through consideration within the decision-making processes of public bodies.
European Protected Species (EPS)	A range of species (including flora and fauna)	EPS are identified through and protected by the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales the Conservation (Natural Habitats) Regulations 1994 (as amended) in Scotland. In UK waters more than 12nm from the shore The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) apply.

Ecological Feature	Description	Legal Status
Other legally protected species	A range of species (including flora and fauna)	EPS and other legally protected species receive protection under a range of domestic legislation including the Wildlife & Countryside Act 1981 (as amended), The Nature Conservation (Scotland) Act 2004 and the Protection of Badgers Act 1992.

3.16 **Table 5** sets out the relevant policy in relation to biodiversity.

Table 5: National Policy Relevant to Biodiversity

Policy Document	Summary
25 Year Environment Plan	This 25 Year Environment Plan sets out government action to help the natural world regain and retain good health. It aims to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach to agriculture, forestry, land use and fishing that puts the environment first. With regards to protecting biodiversity, with the understanding that improvements in the areas outlined will all have an impact on biodiversity, explicit discussion on the protection of species consists of: • Restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term; • Creating or restoring 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits; • Taking action to recover threatened, iconic or economically important species of animals, plants and fungi, and where possible to prevent human induced extinction or loss of known threatened species in England and the Overseas Territories; • Increasing woodland in England in line with our aspiration of 12% cover by 2060: this would involve planting 180,000 hectares by end of 2042; • Managing and reducing the impact of existing plant and animal diseases; lowering the risk of new ones and tackling invasive non-native species; • Reaching the detailed goals to be set out in the Tree Health Resilience Plan of 2018; • Ensuring strong biosecurity protection at our borders, drawing on the opportunities leaving the EU provides; and • Working with industry to reduce the impact of endemic disease.
Environmental Improvement Plan 2023	The Environment Act 2021 required that the 25 Year Environment Plan was reviewed by the end of January 2023. The Environmental Improvement Plan 2023 (EIP 23) discharges this review requirement. The EIP 23 mainly covers policy specific to England only. Commitments within the plan include: • Create and restore at least 500,000 hectares of new wildlife habitats. This will comprise 70 new wildlife projects including 25 new or expanded NNR and 19 further Nature Recovery Projects. • A Species Survival Fund to protect rare species. • Schemes incentivising 65 to 80% of landowners and farmers to adopt nature friendly farming practices on at least 10 to 15% of their land by 2030. They will also be supported to create or restore 30,000 miles of hedgerows a year by 2037 and 45,000 miles of hedgerows a year by 2050.

Policy Document	Summary
Improvement Programme for England's Natura 2000 sites (IPENS)[28]	The IPENS defines the strategic approach to managing England's Natura 2000 sites, enabling Natural England, the Environment Agency, and other key partners to plan the management of Natura 2000 sites and the areas surrounding them. These managing consultees dictated areas for improvement in order to safeguard Natura 2000 sites, SPAs, SACs and provided land use changes in order to meet these aims.
United Kingdom UK Post-2010 Biodiversity Framework[29] (formerly carried out under the UK Biodiversity Action Plan (UK BAP))	The purpose of the Framework, formerly carried out under the UK BAP, was to set a broad enabling structure for action across the UK between now and 2020, in order to: • Set out a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute; • Identify priority work at a UK level which will be needed to help deliver the Aichi Targets and the EU Biodiversity Strategy; • Facilitate the aggregation and collation of information on activity and outcomes across all countries of the UK, where the four countries agree this will bring benefits compared to individual country work; and • Streamline governance arrangements for UK-scale activity.
Biodiversity 2020: A strategy for England's wildlife and ecosystem services[30]	The purpose of this Policy is to identify the risks to biodiversity, establish targets for halting biodiversity loss and demonstrate high level outcomes to meet this target. Key sectors were identified for reducing environmental pressures on biodiversity, these include; Agriculture, Forestry, Planning and Development, Water Management, Marine Management, and Fisheries. Part 2 of COP 15 is scheduled for December 2022, with a key aim to agree key priorities for the post-2020 framework set against current Goals and Targets underpinned by scientific evidence.

Carbon and Climate Change

3.17 The Stern Review: The economics of climate change (2006), commissioned by the UK Government, stated that climate change was the widest-ranging market failure ever seen and highlighted the relationship between climate change and the global economy, suggesting that 5% of global Gross Domestic Product could be lost forever if no action was taken[31]. The Stern Review found that the severity of these negative effects could be mitigated by early and strong action on climate change through mitigating Greenhouse Gas (GHG) emissions, and investments in resilience, among others. Following the Stern Review, the UK enshrined in law the Climate Change Act (2008) (as amended), which sets a target for the year 2050 for the reduction of targeted greenhouse gas emissions to net zero for Scotland, England and Wales[32,33,34].

3.18 The UK later became a signatory to the Paris Agreement in 2015, which sets a legally binding agreement on reducing GHGs emissions by 68% from 1990 levels by 2030[35]. This target, and the UK's continued dedication to reducing climate change, is substantiated by the policies set out in **Table 6** with high level commentary in respect of the Masterplan.

[28] Natural England, Environment Agency (2012). Improvement programme for England's Natura 2000 sites (IPENS).
[29] Joint Nature Conservation Committee, DEFRA (2018). UK Post-2010 Biodiversity Framework: Revised Implementation Plan (2018–2020).
[30] DEFRA (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services.
[31] Stern, N. (2006). Stern Review: The economics of climate change.
[32] UK Public General Acts (2008). Climate Change Act 2008 (as amended).
[33] Acts of the Scottish Parliament (2019). Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.
[34] Wales Statutory Instruments (2021). The Climate Change (Interim Emissions Targets) (Wales) (Amendment) Regulations 202.
[35] United Nations (2015). COP 21: The Paris Agreement.

Table 6: National Policy Relevant to Carbon and Climate Change

Policy Document	Summary
Aviation Policy Framework, 2013	A high-level strategy to support the growth and benefits of aviation, manage aviation's environmental impact and other aviation objectives such as airspace by establishing a baseline for climate change for development options to be compared against.
UK Climate Change Risk Assessment, 2017[36]	This report outlines the UK and Devolved Governments' views on the key climate change risks and opportunities that the UK faces. The assessment report notes that inter-related risks likely to result from climate change for the UK are; flooding and coastal change, the impact of high temperatures on health and wellbeing, risks to natural capital, risks of future water shortages, impacts on the global food system, and risks arising from new and emerging pests and diseases. The risks resulting from sustained climate change form the basis for the UK Government's policy making on the reduction of climate change.
Jet Zero Strategy: Delivering Net Zero Aviation 2050, 2022	A strategy to achieve 'net zero' aviation emissions by 2050, with an emerging target for domestic aviation to reach this by 2040. The strategy considers system efficiencies, sustainable aviation fuels, and zero emission aircraft technologies to achieve this target. The Department for Transport's Jet Zero Strategy directly relates to England, with implications on the rest of the UK, and will use strategies to support the devolved governments in delivering net zero aviation.
Net Zero Strategy: Build Back Greener, 2022	A strategy to achieve 'net zero' national emissions of greenhouse gases by 2050. This is consistent with the Jet Zero Strategy. This policy relates to England, Wales and Scotland.
Decarbonising Transport, A Better, Greener Britain, 2021	Several commitments are set out to consult on targets for net zero aviation emissions, decarbonising emissions from airport operations, supporting development of new technologies, infrastructure and sustainable aviation fuels, development of emissions trading. A specific commitment is made to UK airspace modernisation "…*to deliver quicker, quieter, and cleaner journeys, alongside annual carbon savings of up to 0.6 $MtCO_2e$ (based on 2019 figures)*". This policy relates to England, Wales and Scotland.

Cultural Heritage

3.19 With respect to the SEA Regulations, cultural heritage assets include certain landscapes and encompasses cultural architectural and archaeological heritage, including Listed Buildings, Scheduled Monuments, and Archaeologically Important Areas. The nature of the Masterplan – dealing with changes in the use of airspace – means that heritage assets are unlikely to be directly affected. Therefore the focus of the SEA will be on the legislative and policy regime in so far as it relates to the setting of heritage assets.

3.20 Present protections for cultural heritage assets in the UK varies depending on the type of asset, for example:

- Listed buildings and Conservation Areas – are protected under the Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended)[37] and Planning (Listed Buildings and Conservation Areas) (Scotland) 1997 (as amended)[38];
- Scheduled Monuments – were initially scheduled under the Ancient Monuments Protection Act

[36] Department for Environment, Food and Rural Affairs (2022). UK Climate Change Risk Assessment, 2022.
[37] Planning (Listed Buildings and Conservation Areas) Act 1990.
[38] Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.

1882[39] and now the Ancient Monuments and Archaeological Areas Act 1979[40], with further protections afforded under The Countryside and Rights of Way Act 2000 (as amended)[41] and The Ancient Monuments (Class Consents) (Scotland) Order 1996; and

- World Heritage Sites - the UK is a signatory to the UNESCO Convention Concerning the Protection of the World Cultural and National Heritage 1972[42], which has led to the development of the World Heritage List.

Landscape and Visual Impact

3.21 Policies relevant to landscape and visual impact issues in the context of the Masterplan are presented in **Table 7**. On account of the definition of cultural heritage, there are some overlaps such as the consideration of National Parks (UK), National Scenic Areas (Scotland)[43,44] and Areas of Outstanding Natural Beauty (AONB) (England and Wales) Which are statutorily designated (established through the National Parks and Access to the Countryside Act[45], Countryside and Rights of Way Act, 2000 and National Parks (Scotland) Act 2000[46]) on the national scale in respect of their landscape value.

Table 7: National Policy Relevant to Landscape and Visual

Policy Document	Summary
English national parks and the broads: UK government vision and circular, 2010[47]	The UK Government requires the CAA to support policies that preserve tranquillity as long as this does not negatively impact upon already congested areas. The CAA should consider assets such as National Parks and AONBs when determining changes to airspace and they should consult the Authorities on any proposed changes to air space use over a park.
Countryside and Rights of Way Act, 2000	Part IV of the Act highlights how AONBs should be managed and conserved. It places a duty on 'relevant authorities' when exercising or performing any functions in relation to land in an AONB, to have regard to the purpose of conserving and enhancing the natural beauty of the AONB.
European Landscape Convention: guidelines for managing landscapes[48]	The European Landscape Convention (ELC) promotes the protection management and planning of European landscapes. This involves the European Council and non-member European states. The ELC requires "landscape to be integrated into regional and town planning policies and in cultural, environmental, agricultural, social and economic policies, as well as any other policies with possible direct or indirect impacts on landscape".

Noise

3.22 For the purposes of this SEA Scoping Report, 'noise' is defined as per the Environmental Noise Directive (2002/49/EC) as "…unwanted or harmful outdoor sound created by human activities." This definition excludes noise caused by the exposed person themselves, noise from domestic activities, and noise created by neighbours as well as noise at workplaces which are covered by alternative legislation and not relevant to the Masterplan.

[39] Ancient Monuments Protection Act 1882.
[40] Ancient Monuments and Archaeological Areas Act 1979.
[41] HMSO (2000). Countryside and Rights of Way Act 2000.
[42] UNESCO (1975). The Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO World Heritage Convention)
[43] Nature Scot (2010). the Town and Country Planning (National Scenic Areas) (Scotland) Designation Directions 2010
[44] Scottish Parliament (2006). Planning etc. (Scotland) Act 2006
[45] National Parks and Access to the Countryside Act 1949
[46] Scottish Parliament (2000). National Parks (Scotland) Act 2000
[47] Department for Environment, Food and Rural Affairs (2010). English national parks and the broads: UK government vision and circular, 2010.
[48] Natural England (2009). European Landscape Convention - guidelines for managing landscapes.

3.23 The Environmental Noise Directive[49] was ratified under The Environmental Noise (England) Regulations, 2006[50]; The Environmental Noise (Scotland) Regulations 2006[51]; and The Environmental Noise (Wales) Regulations 2006[52]. Since the UK left the European Union changes have been made to the aforementioned legislation with regard to the aviation as the UK will no longer be required to submit noise maps to the European Commission. These changes are amended by The Aviation Noise (Amendment) (EU Exit) Regulations, 2019[53].

3.24 In support and integration of this legislation in planning, the UK Government have released several policies and methods for implementation, requirements and statutory timelines for delivery.

3.25 **Table 8** sets out the national policy relevant to noise and the Masterplan.

Table 8: National Policy Relevant to Noise

Policy Document	Summary
Flightpath to the Future, 2022	As the aviation industry recovers from the impacts of Covid-19 and air travel volumes increase, the strategic framework set out in the 'Flightpath to the Future' states the UK Government intends to introduce a clearer noise policy framework alongside measures to incentivise best operational practice to reduce noise and measures to improve airport noise insulation schemes. The UK Government has committed to reduce the impacts of localised noise (and air quality emissions) due to the aviation industry and will work with the CAA to produce legislation that will support this such as the AMS to achieve *"…quicker, quieter, and cleaner flights."* In addition to this, the UK government have committed to further measures to support the growth of the aviation industry including: • Working the aerospace sector and support the Future Flight Challenge Fund to deliver innovative solutions such as new technologies; • Review of noise policy, including the application to new types of aircraft; • Supporting the CAA's AMS; and • Setting a clear direction to achieving Jet Zero through Jet Zero Strategy which recognises that the emerging new generation of aircraft engines also has co-benefits in reduced noise.
Jet Zero strategy: delivering net zero aviation by 2050, 2022	The Jet Zero strategy whilst focussing on emissions it recognises that the emerging new generation of aircraft engines also has co-benefits in reduced noise. Targets for reductions in perceived noise per aircraft are 65% by 2050 from 2000.
Aviation 2050: The Future of UK Aviation (Consultation), 2018[54]	Aviation 2050 sets out a policy framework and measures to reduce the effects of aviation on the environment including in respect of noise which can have a detrimental effect on health and quality of life of those affected. However, in setting these policies the UK Government recognises that the growth of the aviation is greatly beneficial to the growth of the

[49] Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise
[50] HMSO (2006). Environmental Noise (England) Regulations, 2006.
[51] HMSO (2006). Environmental Noise (Scotland) Regulations 2006
[52] HMSO (2006). Environmental Noise (Wales) Regulations 2006
[53] HMSO (2019). Draft SI 2019 XXX Exiting the EU – Civil Aviation - The Aviation Noise (Amendment) (EU Exit) Regulations 2019.
[54] HM Government (2018). Aviation 2050: The Future of UK Aviation (A Consultation).

Policy Document	Summary
	economy, but these benefits should not greatly impact upon the environment. This strategy addresses the above and is in some way in response to the uncertainty with regard to how existing policy (to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise) should be interpreted, measured and enforced. The Strategy sets out that the Government intends to put in place a stronger and clearer framework in order to ensure the sector is sufficiently incentivised to reduce noise, or to put mitigation measures in place where reductions are not possible. New measures are proposed including: • *"Setting a new objective to limit, and where possible, reduce total adverse effects on health and quality of life from aviation noise";* • *"Developing a new national indicator to track the long term performance of the sector in reducing noise";* • *"Routinely setting noise caps as part of planning approvals (for increases in passengers or flights)"; and* • *"Requiring all major airports to set out a plan which commits to future noise reduction, and to review this periodically".* Aviation 2050 also sets out that the Government proposes noise insulation measures including: • "*To extend the noise insulation policy threshold beyond the current 63dB Laeq,16h contour to 60 dB Laeq,16h";* • *"To require all airports to review the effectiveness of existing schemes. This should include how effective the insulation is and whether other factors (such as ventilation) need to be considered, and also whether levels of contributions are affecting take-up";* • *"The Government… to issue new guidance to airports on best practice for noise insulation schemes, to improve consistency";* • *"For airspace changes which lead to significantly increased overflight, to set a new minimum threshold of an increase of 3dB Laeq, which leaves a household in the 54 dB Laeq,16h contour or above as a new eligibility criterion for assistance with noise insulation"*
Air Navigation Guidance, 2017	Published by the Department for Transport (DfT), the Air Navigation Guidance provides 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 management. This guidance is typically treated as policy within the industry. The guidance states the CAA should, where practicable, consider the desirability of minimising noise impacts for noise sensitive buildings of which the CAA is aware, such as hospitals, schools and places of religious worship. This should occur when a change to airspace is proposed under the CAA's Airspace Change Process. When assessing airspace changes, the Government expects the CAA to interpret this objective to mean that the total adverse effects on people as a result of aviation noise should be limited and, where possible, reduced, rather than the absolute number of people in any particular noise contour. Adverse effects are considered to be those related to health and quality of life. There is no one threshold at which all individuals are considered to be significantly adversely affected by noise. It is possible to set a Lowest Observed Adverse Effect Level (LOAEL) that is regarded as the point at

Policy Document	Summary
	which adverse effects begin to be seen on a community basis. As noise exposure increases above this level, so will the likelihood of experiencing an adverse effect. In line with this increase in risk, the proportion of the population likely to be significantly affected can be expected to grow as the noise level increases over the LOAEL. For the purposes of assessing and comparing the noise impacts of airspace changes, the government has set a LOAEL of 51dB Laeq16hr for daytime noise and 45dB Laeq8hr for night time noise and the CAA should ensure that these metrics are considered. To minimise population exposure, operational noise limiting metrics for aircraft on humans are recommended for aircraft exceeding 65 dB and 70 dBs (referred to as N65 and N70 respectively which correspond to the number of aircraft movements above 60 dB or 70dB over an average summer day) during the daytime, whereas night-time noise levels should be limited when exceeding 60 dB (N60, number of aircraft movements above 60 dB over an average summer night). When a change to airspace is proposed, the DfT WebTAG is recommended for providing an evidence risk-based assessment of noise implication. It also allows a comparison of impacts from different airspace change options so as to assess the relative benefits of options being considered. A WebTAG assessment of airspace change would identify areas which would be affected by changes in ambient noise levels, which could have monetary implications on those exposed. The monetary implications would be assigned for each dB of change, following health implications as per World Health Organisation guidance[55,56]. The guidance acknowledges that it is not always be possible to avoid overflying National Parks or AONB, and there are no legislative requirements to do so as this would be impractical. The guidance reiterates the Government's policy continues to focus on limiting and, where possible, reducing the number of people adversely affected by aircraft noise and the associated impacts on health and quality of life. As such, a key principle of airspace design is the avoidance of flying over more densely populated areas below 7,000 feet. However, the guidance acknowledges *"…when airspace changes are being considered, it is important that local circumstances, including community views on specific areas that should be avoided, are taken into account where possible."*
Aviation Policy Framework, 2013	As set out in the Aviation Policy Framework, the Government recognises that noise is a key concern for residents near airports and want to ensure there is a balance between the negative impacts of noise (such as health impacts) and positive impacts of noise (such as positive economic contributions). The government expects the aviation industry to continue to mitigate and reduce the noise impacts from flights. This can be done by modernising aircraft to operate more quietly and managing how aircraft are flown and the routes they follow to limit noise impacts. The Government recommends that when flying within the vicinity of an airport, aircraft fly along routes that avoid densely populated areas as far as possible. It is expected that airport operators to offer households exposed to levels of noise of 69 db LAeq,16h or more, assistance with the costs of moving.

[55] Department for Transport (2017). Guide to WebTAG Noise Appraisal for non-experts.
[56] WHO (2011). Methodological guidance on estimating the burden of disease from environmental noise

Policy Document	Summary
	The government also expects airport operators to offer acoustic insulation to noise-sensitive buildings, such as schools and hospitals, exposed to levels of noise of 63 db LAeq,16h or more. The Government has highlighted within this framework they are committed to working with and following the policies created by the International Civil Aviation Organization (ICAO). The main policy adopted by the ICAO is the Balanced Approach to Aircraft Noise Management[57]. The aim of the policy is to *"…address noise problems on an individual airport basis and to identify the noise-related measures that achieve maximum environmental benefit most cost-effectively using objective and measurable criteria."* This is the approach that can be used to manage noise. The Aviation Noise (Amendment) (EU Exit) Regulations 2019 sets out methods of assessment with regards to implementing the ICAO balanced approach.
Noise Policy Statement for England, 2010[58]	The Noise Policy Statement for England (NPSE) states the following aims: *"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:* • *avoid significant adverse impacts on health and quality of life;* • *mitigate and minimise adverse impacts on health and quality of life; and* • *where possible, contribute to the improvement of health and quality of life."* The second aim of the NPSE states "Mitigate and minimise adverse impacts on health and quality of life from environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development." As such, any impacts from noise sources should be managed so that if it exceeds the Lowest Observed Adverse Effect Level (LOAEL), it should be managed to below a Significant Observed Adverse Effect Level (SOAEL), reducing the impacts of noise exposure on the health of the population and their quality of life.
Scottish Environmental Noise Policy	There is no singular noise national policy document prepared for Scotland, and environmental noise policy is set out in regional action plans and the Transportation Noise Action Plan[59]. The Transportation Noise Action Plan sets out guidance to identify noise management areas and quiet areas, as well as suggested solutions for noise management (albeit focused mainly on road noise).
Wales Noise and Soundscape Action Plan 2018 -2023 (2018)[60]	This action plan highlights how the Welsh Government aims to prevent and reduce the detrimental effects of environmental noise pollution and is based upon The Environmental Noise (Wales) Regulations 2006. The action plan notes there are no airports busy enough in Wales that require noise mapping or action planning under the Environmental Noise Regulations.

[57] ICAO (2010). ICAO 9829 Guidance on the Balanced Approach to Aircraft Noise Management, 2nd Edition, (Oct 2010).
[58] DEFRA (2010). Noise Policy Statement for England, 2010.
[59] The Scottish Government (2014) Transportation Noise Action Plan, Prepared by the Transportation Noise Working Group. Available at: Transportation Noise Action Plan (www.gov.scot)
[60] Welsh Government (2018). Nosie and Soundscape Action Plan.

Policy Document	Summary
Planning Guidance (Wales), Technical Advice Note (Wales), Noise, 1997	This guidance sets out how the planning system can be used to minimise the adverse impact of noise. The guidance is also under consultation for revision[61] as set out in the Revised planning guidance in relation to air quality, noise and soundscape.

Population and Health

3.26 Population and Health is a broad environmental aspect where impacts to health could be the result of a combination of other environmental aspects. Legislation and policy in respect of air quality and noise impacts on health are set out in the proceeding sections as relevant. **Table 9** sets out further applicable national level policy or approach.

Table 9: National Policy Relevant to Population and Health

Policy Document	Summary
Public Health Scotland (PHS) Priorities (2022)[62] in partnership with the Scottish Government and Convention of Scottish Local Authorities[63]	Public Health Scotland (PHS) identify the importance of living in a vibrant, healthy and safe place and community as a priority, acknowledging the important role place has in health and wellbeing and in reducing health inequalities. Priority areas for improvement include: • A Scotland where we live in vibrant, healthy and safe places and communities; • A Scotland where we have good mental health; • A Scotland where we have a sustainable, inclusive economy with equality of outcomes for all; and • A Scotland where we eat well, have a healthy weight and are physically active. These outcomes are supported by the Local Outcome Improvement Plans generated by Local Authorities as per the Community Empowerment Act.
Public Health Wales (PHW) Long Term Strategy 2018-30 (2018)[64]	Public Health Wales (PHW) have generated long-term goals for the protection of public well-being. These priorities include: • recognise the importance of addressing the wider determinants of health for improving population health and reducing health inequalities; • build a resilient and healthy society, working closely with our partners and the public with a particular focus on mental well-being; • act on the evidence on the negative impacts of climate change on health such as poor air quality; and • provide more advice, support and intelligence to our stakeholders of what works to improve health, healthcare and well-being. PHW discusses the impacts resulting from the effects of environmental problems, such as air pollution and climate change, must be addressed in order to assist PHW in meeting their priority areas.
PHW Our Strategic Plan 2022 – 2025 (2019)[65]	PHW have identified a number of key areas to be addressed within the Strategic Plan for 2022/23the strategy includes statements on Taking action to mitigate climate change to protect health and promote equity. Other environmental factors identified impacting population health were water quality, extreme weather events, which should influence and shape sustainable planning and transport policy and practice. PHW also supports the Welsh Government's plans for the implementation of Wales Clean Air Plan and develop a new Clean Air Act for Wales.

[61] Welsh Government (2022). Technical Advice Note 11: Air Quality, Noise and Soundscape and Supporting Document 1: Soundscape Design.
[62] Public Health Scotland (2022). Scotland's Public Health Priorities.
[63] Scottish Government (2019). Scotland's public health priorities.
[64] Public Health Wales (2018). Long Term Strategy.
[65] Public Health Wales (2022). Our Strategic Plan 2022 – 2025.

Policy Document	Summary
Public Health England (PHE) Strategy 2020 to 2025 (2019) [66]	PHE have identified a number of key areas to be addressed within the PHE Strategy 2020 – 2025 through areas where they can make the most impact. The criteria for this included: • PHE see major implications for the public's health; • There is substantial scope to improve outcomes and reduce inequalities; • PHE is well-placed to make a significant contribution; and • PHE can generate a good return on investment. Some of the direct paths to improving population health is the improvements in air quality, improving mental health, and healthier diets / healthier weight, among others.
Spatial Planning for Health An evidence resource for planning and designing healthier places, 2017[67]	The aim of the project was to develop a series of practical diagrams that illustrate the linkages, and strength of evidence, between spatial planning and health based on the findings from an umbrella literature review of the impacts of the built environment on health. It is also noted within the policy that "*there is a very significant and strong body of evidence linking contact and exposure to the natural environment with improved health and wellbeing. For the purpose of this review, the natural and sustainable environment is comprised of neighbourhood ecosystems and the resulting co-benefits between the environment and health. Protecting the natural environment is essential to sustaining human civilization*." This suggests that improvements of and increased access to natural environments will improve population health[68]. Reductions in human exposure to poor air quality (as per UK and WHO standards), prolonged exposure to excessive noise levels (threshold levels noted earlier in this report) can lead to fewer health complications in the population. These complications involve type II diabetes, neonatal complications, cancer, worsened respiratory health, anxiety, and hearing issues, among others. Improvements in the natural environment and reduction in environmental hazards would assist the UK Governments and health services in meeting this planned health targets.
Healthy Lives, Healthy People: our strategy for public health in England, 2010[69]	Sets out the Government's long-term vision for the future of public health in England. It aims to create a 'wellness' service (Public Health England) and to strengthen both national and local leadership. It adopts a life course framework for tackling the social determinants and aims to support healthy communities. The quality of the environment around human populations also affects community. Notable affecting factors on population health in the report were pollution (air quality and noise), the availability of green and open spaces, transport, housing, access to good-quality food and social isolation. Climate change represents a challenge in terms of long-term health services planning and emergency preparedness.

[66] Public Health England (2019). PHE Strategy 2020-25.
[67] Public Health England (2017). Spatial planning for health: an evidence resource for planning and designing healthier places.
[68] Kabisch, N., Qureshi, S., & Haase, D. (2015). Human–environment interactions in urban green spaces—A systematic review of contemporary issues and prospects for future research. Environmental Impact assessment review, 50, 25-34.
[69] Department of Health and Social Care (2010). Healthy Lives, Healthy People: our strategy for public health in England.

4. National Environmental Baseline

4.1 Schedule 2 of the SEA Regulations specifies that the SEA Environmental Report must contain the following information in respect of baseline conditions:

"2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.

3. The environmental characteristics of areas likely to be significantly affected.

4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or the Habitats Directive."

4.2 For each of the environmental aspects listed in **Table 2**, this Chapter describes the nature, value and vulnerability of the aspects potentially affected by the proposed Masterplan during its lifespan. A summary of the current state of the environment in respect of each of the environmental aspects is therefore provided below, along with likely future environmental conditions without the Masterplan. As noted previously this is presented in the national context with regional environmental baseline to be set out in detail within the SEA Environmental Report.

4.3 As set out earlier in this report, the purpose of the Masterplan is focussed on airspace change and specifically its modernisation. The area potentially affected by the Masterplan therefore relates to aircraft and associated outcomes (e.g. from overflying) within the vicinity of the specified airports. For each environmental aspect, a Zone of Influence (ZoI) has been identified and, except where wider contextual information is useful, baseline data to be gathered at regional / TMA level will relate to that ZoI. In general, each ZoI relates to the possible impacts of overflying, as ground operations or land-based development are outside of the scope of the Masterplan.

4.4 Given the nature of the changes proposed by the Masterplan, the ZoI could comprise an area on the ground overflown by. This 'on the ground' vertical ZoI is determined in terms of altitude from where an aircraft departs an airport or arrives at an airport. For each environmental aspect, an altitude has been identified, either through scientific literature and guidance or through industry standard best practice or professional judgement, where impacts from aircraft overflying an area on the ground have the potential to be realised, up to a maximum of 7,000ft. To determine the 'on the ground' linear ZoI, the aviation analysis undertaken for the biodiversity ZoI has been used as a representative guide.

4.5 This is that the departure and arrival altitude bands for each airport covered by the Masterplan have been provided by ACOG on behalf of the CAA. All 3,000ft contours (measured from the appropriate end of runway with a common ascent or descent gradient) for all airports are less than 18km (typically ranging between 14 and 17km). Therefore, 18km for 3000ft has been used as an appropriately precautionary distance that can be applied across all airports within the Masterplan for biodiversity. Therefore, assuming a linear relationship, 6km equates to 1000ft, 12km to 2000ft, 18km to 3,000ft and 24km to 4,000ft.

4.6 It is highly unlikely that ground borne effects, i.e. effects to receptors that occur on or near the ground, will occur when overflown at heights in excess of 7,000 feet. In fact, as is shown in the noise section in **Chapter 4** noise based health effects are unlikely to occur above 4,000 feet. Other effects, such as to receptors designated because of their tranquil status, and which are again driven by changes in the noise environment, could occur at altitudes that are higher than the 4,000 feet threshold set for noise, but it is considered, not above 7,000 feet.

4.7 Should any changes to airspace design above 7,000ft occur these will be driven by making airspace more efficient (albeit operating safely will be the first priority) in terms of routes flown etc. Reducing noise is not a priority at this altitude because the sound levels experienced on the ground are already low (and certainly below LOAEL). Therefore, the assumption has been made that there is no need to consider the carbon implications of changes in airspace above 7,000ft because the priority will be to make the airspace more efficient i.e. make routes flown more direct, reduce stacking etc. and hence, this is likely to result in carbon savings. For this reason, changes at 7,000feet and above are considered no further. This approach for carbon aligns anyway, with the wider approach taken to carbon as set out in the report i.e. that such changes in fuel burn are scoped out.

4.8 On the basis that no 'on the ground' infrastructure is necessary to implement the Masterplan, no planning permission is to be sought. As such, reference to many of the national legislation and policies related to development as defined by these Town and County Planning Acts[70,71,72] is not strictly necessary. However, legislation and policy (such as the National Planning Policy Framework[73]) is set out below for some of the environmental aspects as it offers useful context in relation to land uses such as protected sites.

Local Air Quality

Zone of Influence

4.9 Studies have shown that airport-related emissions of oxides of nitrogen (NOx) contribute to ground-level concentrations of nitrogen dioxide (NO_2)[74] in the vicinity of airports. The contribution of airports to local air quality reduces rapidly beyond the immediate area around the runway; the main contribution to local air quality is from aircraft during take-off and while taxiing on the ground.

4.10 Other pollutants from aviation include particulate matter (PM), volatile organic compounds (VOCs), sulphur dioxide (SO_2), carbon monoxide (CO) and unburnt hydrocarbons (HC). Secondary particulate matter is also formed from chemical reactions of the gases ammonia (NH_3), SO_2 and NOx released into the atmosphere. Secondary particulate matter is also formed from organic compounds by reactions that occur in the atmosphere. These organic compounds are released when fuel is burned or when fuel or solvents evaporate

4.11 There is also emerging evidence that emissions from aircraft jet engines can be an important source of ultrafine particles.

4.12 NOx is used as a proxy for these other pollutants in the SEA. On this basis, at this SEA Scoping stage, the ZoI has been set for air traffic emissions with the focus on NOx emissions only and on the basis that ground level concentrations of NO_2 are dominated by NOx emissions from aircraft below 1,000ft (above airfield level) as set out within CAP 1616. Since safety requirements prevent changes to the location of aircraft below 500ft (above airfield level), it is only the altitude between 500 and 1,000ft which is considered in scope for effects on local air quality. This equates to a distance of approximately 6km from an airport.

Current Baseline Conditions

4.13 As noted earlier the primary focus of air quality policy in the UK is directed at road traffic emissions and industrial processes, this is due to the relative contribution of these sources to national emissions.

[70] HMSO (1990). Town and County Planning Act, 1990 (as amended).
[71] Scottish Parliament (2019). Planning (Scotland) Act 2019
[72] UK Public General Acts (1997). Town and Country Planning (Scotland) Act 1997
[73] Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework.
[74] Nitrogen dioxide (NO_2) forms when nitrogen oxide (NO) and other nitrogen oxides (NOx) react with other chemicals in the air to form NO2. It is NO_2 that is associated with human health impacts.

4.14 Road transport in the UK accounted for 34% of all NOx, 13% of all PM2.5 and 11% of all PM10 emissions in 2019[75]. Of the 717 AQMAs in the UK declared for each air pollutant (not the total number of AQMAs)[76], over 95% are declared as emissions from road traffic are a considerable contributor to exceedances of the objectives.

4.15 There are no AQMAs declared on the sole basis of emissions from airport activities and no AQMAs declared owing to the contribution of aircraft-related emissions to air quality in the vicinity of UK airports. Rather than the aircraft landing and taking off, it is the road traffic associated with airport activity that has the greatest potential to affect the achievement of the air quality objectives. Aircraft taxiing and other ground activities can affect local air quality, as demonstrated through London City Airport's Air Quality Management Strategy report[77]. This is also demonstrated by analysis of 2015 data from the Pollution Climate Mapping model on roads affected by Heathrow emissions and the National Policy Statement for Airports[78] on local air quality "At Heathrow Airport in 2015, aircraft movements were modelled to have contributed 17% on average to local NOx concentrations at nearby roadside locations."

4.16 Furthermore, London City Airport (LCY) released an updated Environmental Statement 2015 with regards to the City Airport's Development Programme[79], which noted that at one of the air quality monitoring locations, aviation activity contributed up to 15% of nitrogen oxides concentrations. Other locations noted lower contribution. 19.2% of the LCY's contributions to NOx emissions between 2017 and 2019, were the result of take-off activity.

Likely Future Trends in the Absence of the Masterplan

4.17 There are numerous initiatives being undertaken in the UK to reduce atmospheric emissions and improve air quality. This is exemplified by the Centre for Ecology & Hydrology[80] review of air pollutant concentrations between 1970 and 2010, finding that concentrations of PM2.5, NOx, SO2, and non-methane VOCs have decreased by between 58% and 93% over the 40-year period.

4.18 Publication of "Improving air quality in cities" by the Defra[81] states that between 2005 and 2013, emissions of nitrogen oxides (NOx) have fallen by 38% and particulate matter (PM) has reduced by more than 16% nationally. Further to this, the Clean Air Strategy notes that emissions of NOx fell by 27% between 2010 and 2016[82] and are also at their lowest level since records began.

4.19 These improvements are set to continue with improvements in vehicle efficiency, transition to carbon neutral and positive energy sources, and introduction of novel technology, among others, contributing to fewer sources of and a general reduction in, the aforementioned air pollutants. Furthermore, with increasing fuel and aircraft efficiencies, there will also be a commensurate decrease in emissions per passenger.

4.20 The aviation industry and the Government have made a joint £3.9 billion commitment between 2013 and 2026 to the development of new aircraft technology with the Aerospace Technology Institute[83] and have announced that the Renewable Transport Fuel Obligation to include incentives to use biofuels in aviation will be extended[84].

[75] Department for Transport (2021). Transport and environment statistics: Autumn 2021.
[76] DEFRA. UK AIR: Air Information Resource. Summary of AQMA data. [Access December 2022] Available at: https://uk-air.defra.gov.uk/aqma/summary
[77] London City Airport (2020). Air Quality and Carbon Management 2020-2023.
[78] Department for Transport (2018). Airports National Policy Statement.
[79] London City Airport (2020). City Airport Development Programme (CADP1): Condition 58: Air Quality Management Strategy
[80] Significant UK air quality improvements over past 40 years cut death rates | UK Centre for Ecology & Hydrology (ceh.ac.uk)
[81] Department for Environment, Food & Rural Affairs and E. Truss, MP (2015). Improving air quality in cities.
[82] Department for Environment, Food & Rural Affairs, Ministry of Housing, Communities & Local Government, Department for Transport, Department of Health and Social Care, HM Treasury, and Department for Business, Energy & Industrial Strategy (2019). Clean Air Strategy.
[83] Department for Transport (2019). Renewable fuel statistics.
[84] DBEIS (2018). Clean Growth Strategy - GOV.UK (www.gov.uk)

4.21 Within the Jet Zero Consultation, the UK Government has committed to set a Sustainable Aviation Fuel (SAF) mandate by 2025 which would require 10% of the fuel-mix of the aviation sector be SAF[85]. SAF is principally aimed at reducing greenhouse gases, but does potentially have some secondary air quality benefits, for example zero sulphur content.

4.22 Finally, other areas of investment from public and private sectors are in electric and hybrid aircraft. These aircraft types are currently being developed, envisaged to provide short haul flights and to contribute to the UK's aim to cut emissions through its Clean Growth Strategy[86] through divesting consumer's options for short-haul flights which provide lower to no emission flights, reducing impacts on local air pollution.

4.23 To conclude, in the absence of the Masterplan it is anticipated that per passenger emissions from the aviation sector will reduce in time through the implementation of electric short-haul aircraft, improvements in fuel and aircraft efficiencies as well as the mandate by 2025 requiring the implementation of 10% SAF into aircraft fuel mix. However, there is also potential for overall emissions to increase as the aviation sector grows regardless of technological improvements over time that work in the opposite direction to reduce impacts.

Biodiversity

Zone of Influence

4.24 As set out within the HRA Screening Report the ZoI for biodiversity in respect of European Sites was derived from peer-reviewed scientific literature and systematically collected and verified data (e.g. bird strike reporting records to the CAA).

4.25 As set out in the HRA Screening Report, scientific literature identifies that at 3,000ft aircraft reach an altitude where beyond which there will be no effect of any type to ecological receptors. As such, and consistent with the HRA Screening Report, the largest ZoI identified is 18km measured as a linear distance on the ground from the airport boundary.

Current Baseline

4.26 The UK Biodiversity Action Plan (UKBAP) was initially published 1994 by the UK Government as part of the UK's response to the Convention on Biological Diversity, signed in 1992 in Rio. The UK BAP coalesced the various existing instruments and programmes for nature conservation throughout the UK, setting specific biodiversity targets and plans for the recovery of species and habitats to drive conservation.

4.27 The major aim of the UK BAP was to reverse ecosystem degradation by addressing the key drivers and valuing ecosystem services, by way of maintaining, creating and restoring functional combinations of habitats. Healthy habitats in mosaics or catchment units will deliver both ecosystem services such as soil protection, flood attenuation and carbon sequestration, and also homes for priority species. Restoration of ecosystem services also contributes to the reversal of habitat fragmentation, and reduces the vulnerability of isolated habitats and species populations to catastrophic events such as fire or disease.

4.28 The Habitats and Species Review, following from the UK BAP, led to an increase in the number of priority species (from less than 600 to 1,150) and habitats (from 49 to 65) considered within the UK BAP. The UK Post-2010 Biodiversity Framework has now succeeded the UK BAP, with the purpose for establishing a broad enabling structure for action across the UK between 2010 and 2020[87], in order to:

- Set out a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute.

[85] Jet Zero consultation: summary of responses and government response (publishing.service.gov.uk)
[86] DBEIS (2018). Lift off for electric planes - new funding for green revolution in UK civil aerospace
[87] JNCC (2018). UK Post-2010 Biodiversity Framework: Revised Implementation Plan (2018–2020) JNCC and Defra on behalf of 4CBG (June 2018).

- Identify priority work at a UK level which will be needed to help deliver the Aichi Targets and the EU Biodiversity Strategy.
- Facilitate the aggregation and collation of information on activity and outcomes across all countries of the UK, where the four countries agree this will bring benefits compared to individual country work.
- Streamline governance arrangements for UK-scale activity.

4.29 The targets identified in the UK Biodiversity Framework are delivered across the UK through Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (England), Section 7 of the Environment Act (Wales), Section 2(4) of the Nature Conservation (Scotland) Act 2004.

4.30 At present, protections for non-designated sites have been granted, including over 380 NNR. Across the UK, there are over 12,000 SSSIs, approximately 290 SPAs, more than 650 SACs, and more than 150 Ramsar sites designated across the UK[88,89,90,91].

4.31 However, a release from the National Biodiversity Network on the State of Nature (2019), found that the abundance and distribution of the UK's species has, on average, declined since 1970 and many metrics suggest this decline has continued in the decade prior to 2019. An average of 13% decrease in species abundance and an average 41% decrease in general abundance of flora and fauna across the UK were reported from the State of Nature report, a continued decline since 1970[92]. The report closed with a statement that the UK would not meet its commitments to the Convention on Biological Diversity (CBD).

4.32 Further details in relation to aviation and biodiversity baselines are set out within the HRA Screening Report.

Likely Future Trends in the Absence of the Masterplan

4.33 From the aforementioned report published by the National Biodiversity Network on the State of Nature (2019), the abundance and distribution of the UK's species has, on average, declined, which includes since the establishment of the UK BAP until 2019. A 5% decline in average species' distribution, 15% of species are 'threatened' and that, by 2020, most of the CBD's targets won't be met.

4.34 From this trend, it can be surmised biodiversity in the UK will likely continue to decline unless significant action is taken. Some of the actions which can be undertaken is in the connection of habitats to provide wildlife corridors and reducing fragmentation, designation of more internationally and nationally important sites as well as increasing protection granted to these sites for the safeguarding of nature.

4.35 Despite commitments made in 2010, biodiversity has further declined over the past decade, with none of the 20 Aichi targets set in 2010 being fully achieved. In December 2022, COP 15 will determine the post-2020 framework, with the overarching aim to halt the loss of biodiversity by 2030 and achieve nature recovery and restoration by 2050.

Carbon and Climate Change

Zone of Influence

4.36 Due to the dynamic nature of the atmosphere, climate change and the contribution of Greenhouse Gases (GHG) are of global concern and not spatially dependent. It is not appropriate to set an equivalent ZoI corresponding to an altitude where sensitive receptors may be affected on the ground, as for the purposes of the SEA, the global climate has been identified as the 'sensitive receptor.'

[88] Sites of Special Scientific Interest Units (England) | Sites of Special Scientific Interest Units (England) | Natural England Open Data Geoportal (arcgis.com)
[89] Natural Resources Wales / Types of protected areas of land and sea
[90] Sites of Special Scientific Interest (SSSIs) | NatureScot
[91] SSSI Definition and Value to Conservation - Woodland Trust
[92] National Biodiversity Network (2019). State of Nature 2019 - National Biodiversity Network (nbn.org.uk).

Current Baseline Conditions

4.37 According to the Intergovernmental Panel on Climate Change (IPCC) Working Group III, within the Fifth Assessment Report (AR5), the most notable GHGs are CO_2, N_2O and methane (CH4) by virtue of the volumes emitted per year[93]. The aforementioned GHGs are also the most notable emissions resulting from the aviation sector. All individual GHGs have a potential for warming the atmosphere, however they differ in their contribution and in the volume they are emitted.

4.38 To compare the potential effect GHGs can have on the climate, CO_2 equivalent (CO_2e) is used as a measure of how much a gas contributes to global warming and is used as a standard for comparison for other GHGs.

4.39 The IPCC, in 2014, attributed the effects of modern climate change to CO_2e[94], stating that anthropogenic CO_2e is the likely cause. More recently, the IPCC released their Sixth Assessment Report, stating that the current planetary warming is 1.1°C, with a high level of confidence that this is due to anthropogenic CO_2e emissions, with risks from 1.5°C and over, posing risks to nearly all aspects of human life. These risks include higher global temperatures, rapid sea level rise, loss of biodiversity, more extreme weather events, and food security[95], among others.

4.40 In 2021, total UK territorial greenhouse gas emissions were 424.5 million tonnes carbon dioxide equivalent ($MtCO_2e$), 4.7% higher than 2020, yet 5.2% lower than 2019, reflecting the impacts of the COVID-19 restrictions on emissions[96].

4.41 As set out by the DfT, of the UK's total CO_2e in 2020, transport accounted for 24% of all emissions. Although a plateau was reached in emissions between 2000 and 2010, on average emissions have been declining since 1990[97]. In 2019, the aviation sector (domestic and international) accounted for approximately 38.1 $MtCO_2e$, approximately 23%[98], of the total emissions resulting from the transport sector.

4.42 The 2008 Climate Change Act established a legally binding climate change target - to reduce the UK's greenhouse gas emissions by at least 80% (from the 1990 baseline) by 2050. The 2008 Climate Change Act (as amended) was updated in 2019 by the UK Government to legally require the UK reach net zero CO_2e by 2050, establishing several milestones in the form of carbon budgets. The following are the total 5-year emission budgets[99]:

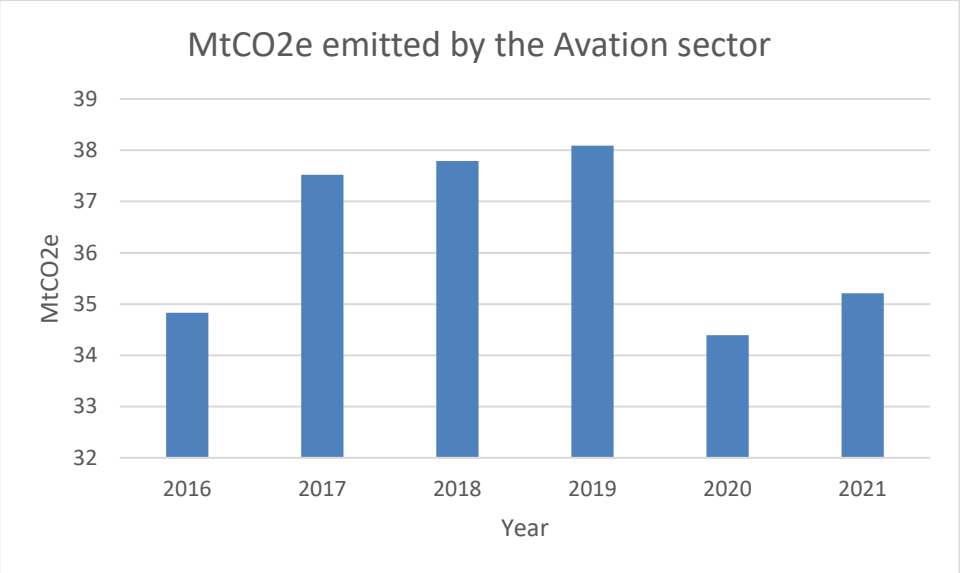
- 3,018 million tonnes of carbon dioxide equivalent ($MtCO_2e$) over the first carbon budget period (2008 to 2012);
- 2,782 $MtCO_2e$ over the second carbon budget period (2013 to 2017);
- 2,544 $MtCO_2e$ over the third carbon budget period (2018 to 2022);
- 1,950 $MtCO_2e$ over the fourth carbon budget period (2023 to 2027);
- 1,725 $MtCO_2e$ over the fifth carbon budget period (2028 to 2032); and
- 965 $MtCO_2e$ over the sixth carbon budget period (2033 to 2037)100.

[93] IPCC, Working Group III (2014). The Fifth Assessment Report (AR5).
[94] IPCC (2014). Climate Change 2014: Synthesis Report.
[95] Department for Environment, Food and Rural Affairs (2022). UK Climate Change Risk Assessment.
[96] DBEIS (2021). Provisional UK greenhouse gas emissions national statistics 2021, Provisional UK greenhouse gas emissions national statistics 2021 - GOV.UK (www.gov.uk).
[97] Department for Transport (2021). Official Statistics: Transport and environment statistics: Autumn 2021.
[98] Department for Transport (2021). Official Statistics: Transport and environment statistics: Autumn 2021.
[99] The first five carbon budgets excluded the international aviation and shipping sectors from their carbon budget, accounting for all other major industries.
[100] The sixth carbon budget accounts for the international aviation and international shipping sectors within its carbon budget, legally requiring the aviation sector to also reduce its CO_2e emissions in line with the UK.

4.43 Where the first to fifth carbon budgets include emissions from domestic aviation only, the sixth carbon budget accounts for emissions from both domestic and international aviation. This has accelerated action on UK strategies for decarbonising air transport, and the UK Government has introduced the Jet Zero Strategy to set out the plan for decarbonising the UK's domestic and international aviation by 2050. The Jet Zero Strategy: Delivering Net Zero Aviation 2050 sets out sectoral carbon targets for the aviation sector within the UK, including both domestic and international flights, with the aim to become carbon neutral by 2050, allowing for carbon offsetting where some emissions cannot be completely prevented. To meet this aim, interim targets were set 2030, 2040 and 2050, with remaining emissions in 2050 to be offset. Due to the impact COVID 19 has had on the movement of people and as a result, the aviation sector, use of the 2019 recorded emissions of 38.1 $MtCO_2e$[101] is proposed as the present baseline while the aviation sector is transitioning to the 2030 target of 35.4 $MtCO_2e$14. At 38.2 $MtCO_2e$ aviation contributes approximately 8.9% of the UK's territorial greenhouse gas emissions (424.5 $MtCO_2e$) as the current baseline.

4.44 Emissions from the aviation sector, since 2020, have been supressed by the COVID-19 pandemic, which when coupled with the introduction of methods and incentives by the UK Government to reduce CO_2e emission, indicates that 2019 would be the aviation sector's peak emission year. This is supported by the forecast decarbonisation trajectory presented in the UK's Jet Zero Strategy, which shows 2019 as the peak year for UK aviation emissions. dataset records and CO_2e data from Jet Zero Strategy (demonstrated by **Graph 1**), show the aviation sector's 2019 emissions at 38.1 $MtCO_2e$. Historic data, since 2016 until 2021, demonstrates that the aviation sector emissions were rising until 2019, growing between 2017 to 2018 and 2018 to 2019 by approximately 0.7% each year, when it peaked, and subsequently declined (albeit this is likely due to COVID 19 suppressing passenger numbers). Data for 2022 suggests that emissions have risen from their 2021 lows but are still below that of the 2019 peak[102].

Graph 1: $MtCO_2e$ emitted by the Aviation sector from 2016 to 2021. Data taken from the Jet Zero Strategy Dataset.



[101] Department for Transport (2020). Jet Zero strategy: delivering net zero aviation by 2050 – Jet Zero Strategy Dataset.
[102] Department for Transport (2020). Jet Zero strategy: delivering net zero aviation by 2050 – Jet Zero Strategy Dataset

Likely Future Trends in the Absence of the Masterplan

4.45 The IPCC has modelled various scenarios of climate change, incorporating tipping points, which are categorised by global mean temperature change – 1.5°C, 2°C, 2.2°C and 4°C[103]. The major topic of COP26 in Glasgow was the commitment by various nations in order to "keep 1.5 alive," the aim to prevent the worst of climate change by reducing the maximum global mean temperature change to 1.5°C[104]. With present proposals and Nationally Determined Contributions by the various governments for the Paris Agreement, models on peak maximum global mean temperature change are between 2.1-2.9°C if no further action to decarbonise are taken[105].

4.46 As discussed previously, the DfT and CAA, through the Jet Zero Strategy: Delivering Net Zero Aviation 205014, have established interim targets for the aviation sector carbon emissions volumes until 2050. These targets are suggested to be used as the milestones for the future trends, and are:

- 35.4 $MtCO_2e$ by 2030;
- 28.4 $MtCO_2e$ by 2040; and
- 19.3 $MtCO_2e$ by 2050.

4.47 In the absence of the Masterplan, methods for the aviation sector's decarbonisation as set out in Jet Zero include:

- Implementation of zero-emissions short haul aviation technologies (such as electric and / or green hydrogen utilizing aircraft);
- Use of SAFs in the fuel mix (including biofuels, waste to jet and power to liquid fuels) which reduce the emissions of the aircraft;
- Technological improvements to aircraft resulting in lower fuel consumption;
- Improved aircraft ground management, and improvements in airspace use;
- Implementation UK Emission Trading Scheme in the aviation sector (emissions trading); and
- Offsetting of excess CO_2e emissions in line with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) initiative[106].

4.48 The Masterplan, as a requirement for ACPs to be implemented, is necessary to contribute to these aviation targets. As such trends in the absence of the Masterplan would be less defined without the Masterplan's contribution to the aviation sector in achieving net zero.

Cultural Heritage

Zone of Influence

4.49 The designations considered in respect of cultural heritage and within the scope of the ZoI are UNESCO World Heritage Sites (WHS), Scheduled Monuments, and Registered Battlefields). Listed buildings, Conservation Areas and Parks and Gardens of Historic Interest are of primarily of local interest and are therefore excluded from explicit consideration in the SEA, given its strategic and national focus. Archaeologically Important Areas and their resources are below ground and therefore also excluded from the SEA as their setting is unlikely to be affected by the Masterplan.

[103] IPCC (2013). Climate Change 2013: The Physical Science Basis: Long-term Climate Change: Projections, Commitments and Irreversibility.
[104] Conference of the Parties (2021). COP26 keeps 1.5c alive and finalises Paris Agreement. Retrieved from: COP26 keeps 1.5C alive and finalises Paris Agreement - UN Climate Change Conference (COP26) at the SEC – Glasgow 2021 (ukcop26.org)
[105] United Nations Framework Convention (NDC) on Climate Change International treaty (2022). 2022 NDC Synthesis Report.
[106] Environment Agency (2021). CORSIA: how to comply.

4.50 The ZoI in respect of cultural heritage refers to the visual intrusion of aircraft affecting the setting of the cultural heritage assets. In terms of setting, this is defined as the surroundings in which a heritage asset is experienced. As with landscape and visual, and impacts to tranquillity, much of the setting of cultural heritage will be affected by the noise environment and it is proposed for the ZoI to reflect that of noise, i.e. 24km.

Current Baseline Conditions

4.51 Within the UK, there are a number of cultural heritage sites present. **Table 10** denotes the number of each key feature present in Scotland, England and Wales.

Table 10: Cultural Heritage Sites in the UK

Country	Approximate Number of Cultural Heritage Sites		
	UNESCO World Heritage Sites[107]	Scheduled Monuments[108, 109, 110, 111]	Registered Battlefields[112, 113, 114]
England	20	20,000	47
Scotland	6	8,212	69
Wales	4	4,000	700
Total	**30**	**32,212**	**816**

4.52 Aviation and the assessment of setting may be considered in terms of any observable impacts to the significance of a designated asset as a result of noise/visual intrusion. For instance, in part the rationale for the protection of an area/site as a site of cultural heritage can be its quality and impact on society. This quality is typically due to its tranquillity, where the area/site is isolated from disturbance or has been maintained extensively over its history. Therefore, the continued protection of the tranquillity of such areas/sites from noise and overflying, with reference to the Masterplan, is necessary to prevent the undermining of their intrinsic character of the area[115].

Likely Future Trends in the Absence of the Masterplan

4.53 It is intended for more sites to become protected and recognised for their cultural importance and heritage. There are currently two "tentative" UNESCO World Heritage Sites based in Scotland (Mousa, Old Scatness and Jarlshof: The Zenith of Iron Age Shetland and Flow Country)[116]. Tentative World Heritage Sites are an "inventory of properties which a state party considers to be cultural and/or natural heritage of outstanding universal value, and therefore suitable for inscription on the World Heritage List."

4.54 The potential changes to policy and legislation regarding cultural heritage are unknown at this stage as to take a view what likely future trends may be.

[107] UK World Heritage Sites | World Heritage UK Available at: Welcome to World Heritage UK | World Heritage UK
[108] The List Search Results for scheduled monument | Historic England Available at: Search the List: Map Search | Historic England
[109] Lle - Scheduled Monuments (gov.wales) Available at: Lle - Scheduled Monuments (gov.wales)
[110] Scheduled Monuments in Scotland Available at: Scheduled Monuments | Historic Environment Scotland | History
[111] Department for Culture Media and Sport (2010). Scheduled Monuments.
[112] Historic battlefields in Wales | Cadw (gov.wales). Available at: Historic battlefields in Wales | Cadw (gov.wales)
[113] Search Available at: Scheduled Monuments | Historic Environment Scotland | History
[114] The List Search Results for battlefields | Historic England Available at: Search the List: Map Search | Historic England
[115] Gov.UK (2019). Noise Guidance - GOV.UK (www.gov.uk). Available at: Noise - GOV.UK (www.gov.uk)
[116] UK World Heritage Sites | World Heritage UK Available at: Welcome to World Heritage UK | World Heritage UK

Landscape and Visual

Zone of Influence

4.55 This ZoI refers to the visual intrusion of aircraft within the landscape, including protected / designated areas such as National Parks and Areas of Outstanding Natural Beauty (AONBs) and the influence of noise from overflying of aircraft in respect of tranquillity. Tranquillity is defined as a state of calm, which therefore could be experienced in settings comprising of natural features and / or historic character such as AONBs and National Parks.

4.56 As tranquillity is largely affected by the perception of aircraft noise it is proposed for the ZoI for landscape and visual to reflect the Department for Transport's altitude-based priorities which direct airspace change sponsors to avoid the overflying of such locations below 7,000ft, i.e. 24km. As such this forms the ZoI to be considered in the assessment.

Current Baseline Conditions

4.57 According to the National Association for AONBs there are 46 AONBs in the UK (2022) which account for approximately 23,301 sq.km of land in the UK[117]. The equivalent to an AONB in Scotland is a National Scenic Area (NSA) based on Scottish Planning Policy (SPP)[118]. There are currently 15 National Parks in the UK – 10 in England which cover 10% of the land area, three in Wales (covering 20% of the land area) and two in Scotland (7.3%).

4.58 Within the UK, there are currently seven International Dark Sky Parks (IDSP) within the UK. An IDSP is characterised by its exceptional or distinguished quality of starry nights and a nocturnal environment that is specifically protected for its scientific, natural, educational, cultural heritage, and/or public enjoyment[119].

4.59 Natural England has prepared National Character Area profiles across England. Each NCA represents an area of distinct and recognisable character at the national scale. Their boundaries follow natural lines in the landscape, not county or district boundaries. Landscape Character Area profiles have also been created for Wales with Habitat types created for Scotland.

Likely Future Trends in the Absence of the Masterplan

4.60 The UK Government announced in September 2022 they are committed to designating and protecting 4,000 sq. km of new land in England by 2030 as part of their 30 by 30 campaign[120]. Furthermore, National Parks England aims to restore / improve at least 92,500 ha (925 sq. km) of national park land within the next 10 years as part of their Delivery Plan for National Parks that was first introduced in 2019[121].

4.61 It is not clear where future IDSPs will be located within the UK. However, the designation of dark sky parks has increased significantly, and the UK has the largest concentration of Dark Sky Areas in the world.

[117] About Areas of Outstanding Natural Beauty (AONB's) (landscapesforlife.org.uk)
[118] Scottish Government. Scottish Planning Policy. [Accessed December 2022]. Available at: Scottish Planning Policy (SPP) - Scottish planning policy - gov.scot (www.gov.scot)
[119] International Dark-Sky Association. International Dark Sky Parks. [Accessed November 2022] Available at: International Dark Sky Parks - International Dark-Sky Association.
[120] UK Government (2020). Press Release - PM commits to protect 30% of UK land in boost for biodiversity [Accessed December 2020] Available at: PM commits to protect 30% of UK land in boost for biodiversity - GOV.UK (www.gov.uk)
[121] Delivery-Plan-for-Wildlife-in-National-Parks-FINAL.pdf (nationalparksengland.org.uk)

Noise

Zone of Influence

4.62 CAP 1616 Airspace Change guidance indicates that when assessing the adverse effects of noise from the aviation industry, the ZoI should be set to an area that encompasses aircraft noise exposure levels at or above the daytime and/or night-time Lowest Observed Adverse Effect Level (LOAEL) (51 dB LAeq, 16hr and 45 dB LAeq,8hr respectively). The area of the LOAEL is dependent upon the number and type of aircraft operating at each airport, their routes and their mode of operation. Therefore, as a general rule, the Department of Transport advises that "Below 4,000 feet, there is a strong likelihood that aircraft could create levels of noise exposure above the LOAELs...". Given the geographical spread of the Masterplan it is not possible to set the ZoI as the LOAEL as this will be airport dependent. However, taking the advice from Department of Transport, it is possible to adopt a threshold of 4,000ft or below equating to a ZOI of 15km. Baseline environmental noise levels vary across the UK with the primary sources being road, rail and aviation which are associated with the movement of goods and people to or from areas of consumerism or demand. As such, the populations in these nodes of transport are typically more exposed to prolonged high noise levels. Less populated areas and/or protected areas such as National Parks or AONB, experience lower noise levels typically due to there being less demand for servicing these areas or statutory protections which act as a barrier to traversing these areas. This is exemplified through the UK's transposed END legislation citing large urban areas, major airports, major railways and major roads being classified as agglomerations for noise mapping and management[122,123].

4.63 A number of different metrics are sought by policy within the UK, however the general trend reported is a reduction in noise exposure.

4.64 CAP 1731 sets out that generally, over the last 30 years there has been a significant reduction in noise exposure around UK airports, but notes that after the recession of 2009, which was followed by sustained growth, noise exposure has grown over the past five years at several airports. Despite aircraft overall being quieter, the number of journeys being taken to and from UK airports has increased, increasing the frequency and area of exposure to higher noise contours[124].

4.65 CAP 1731 acknowledges that with growth in aviation traffic, and airport capacity such as the third runway expansion at Heathrow noise exposure has the potential to increase[125]. CAP 1731 presents historic noise metrics (2006 and 2016) and forecasts for 8 airports within the UK. This can be used as a representation of the current UK baselines and for the future baseline.

4.66 As set out in CAP 1731 comparison was made between 2006 and 2016 noise data to look at trends. The CAA refer to aircraft movements above 60dB, 65dB and 70dB as N60, N65 and N70 respectively. The comparison produced a variety of results including the following:

- The noise contour area and exposed population for both an average summers day and a 24-hour period have reduced at the majority of noise contour levels over the decade assessed. However, for noise contours and the exposed population for an average summers nigh and an average night have increased.
- The number of highly annoyed people (as defined by CAP 1731) during the daytime has decreased in line with the decrease in the noise contour areas over a 24-hour period.
- The number of people suffering from sleep disturbance (as defined by CAP 1731) has decreased in lower noise bands but has increased in higher noise bands.

4.67 The reasons for the reduction in noise exposure are a result of noise management policy and guidance as well as an improvement in aircraft technology. For instance, older aircraft typically emit more noise than more modern aircraft.

[122] Department for Environment, Food and Rural Affairs (2019). Strategic noise mapping Explaining which noise sources were included in 2017 noise maps.
[123] Department for Environment, Food and Rural Affairs (2014). Noise action plans: large urban areas, roads and railways (2014).
[124] CAA (2019). CAP 1731: Aviation Strategy – Noise Forecast and Analyses.
[125] CAA (2018) CAP 1731: Aviation Strategy: Noise Forecast and Analyses.

Likely Future Trends in the Absence of the Masterplan

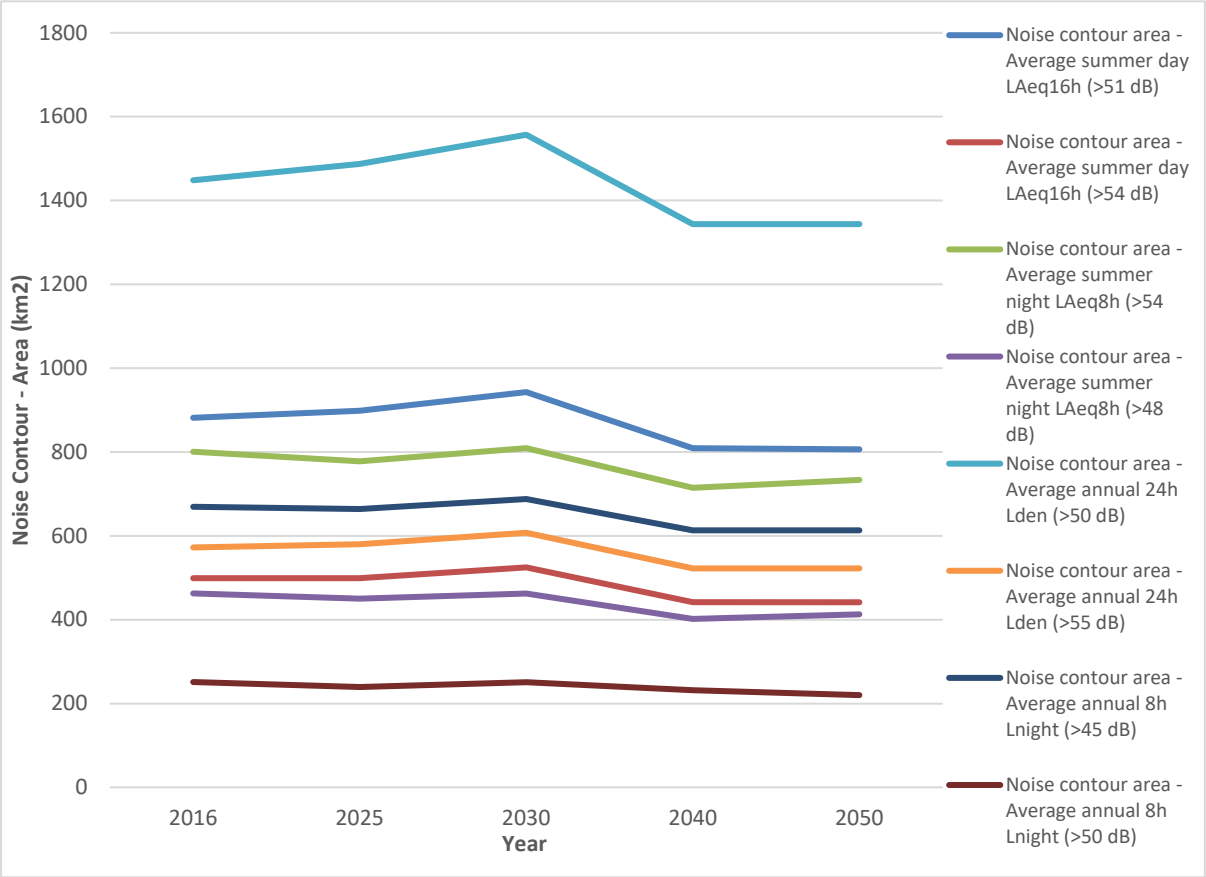
4.68 The noise around an airport varies over time, primarily depending on aviation growth rates, and the introduction of quieter aircraft, and as noted previously over the last 30 years there has been a significant reduction in noise exposure around virtually all UK airports.

4.69 As set out in CAP 1731 the CAA have modelled scenarios for future emissions of noise from aircraft, the modelling and considers a high and central scenario which reflect changes in the implementation of aircraft noise technologies. The forecasts include for planning aviation expansion, such as the third runway at Heathrow. Forecasts have been identified for the years 2025, 2030, 2040 and 2050, compared to a 2016 baseline, and classified within the periods and noise metrics: average summer Day, Summer Night, Annual 24h (Day) and Annual 8h (night) for various dB thresholds (>45, >48, >50, >51, >54, >55). With these metrics, scenarios for projected demand for air travel coupled with operating costs and emission trading schemes were modelled. Two scenarios were assessed, “High-”, and “Central-” demand, whereby high demand equates to a higher passenger demand from all world regions, lower operating costs and a global emissions trading scheme. The central demand scenario is assumed to be a comparatively lower passenger demand from all world regions, comparatively higher operating costs and a global emissions trading scheme. The results of the noise emission models were first presented in CAP 1731, with **Table 11**, **Table 12**, **Graph 2** and **Graph 3** demonstrating these results, i.e. the area in km2 of the sample area, subject to that noise level. It should be noted that these estimates were made pre-pandemic and as such several of the assumptions made in these forecasts may longer hold true. Nevertheless, the provide an indicator for how aircraft noise exposure may change in the future at UK level.

Table 11: Forecast analysis - summary of noise contour area (including LHR NWR), Scenario: High. Taken from Table 6.2 (a) of CAP 1731

		Scenario: High - area (km^2 results)					
Metric	**Level**	**2016**	**2025**	**2030**	**2040**	**2050**	**% Change 2016-2050**
Average summer day LAeq16h	>51	881.3	898.7	942.9	809.4	806.3	-8.5%
Average summer day LAeq16h	>54	498.9	498.9	524.7	441.6	441.5	-10.2%
Average summer night LAeq8h	>45	800.9	777.4	809.2	714.6	733.7	-8.4%
Average summer night LAeq8h	>48	462.6	450.3	462.4	401.8	412.4	-10.8%
Average annual 24h Lden	>50	1,448.1	1,487.3	1,556.8	1,343.6	1,343.6	-7.2%
Average annual 24h Lden	>55	572.2	579.9	607.3	522.3	522.3	-8.7%
Average annual 8h Lnight	>45	669.2	664.3	687.8	613.1	613.1	-8.4%
Average annual 8h Lnight	>50	251.2	239.2	251.0	231.5	220.0	-12.4%

Graph 2: Forecast analysis - summary of noise contour area (including LHR NWR), Scenario: High.

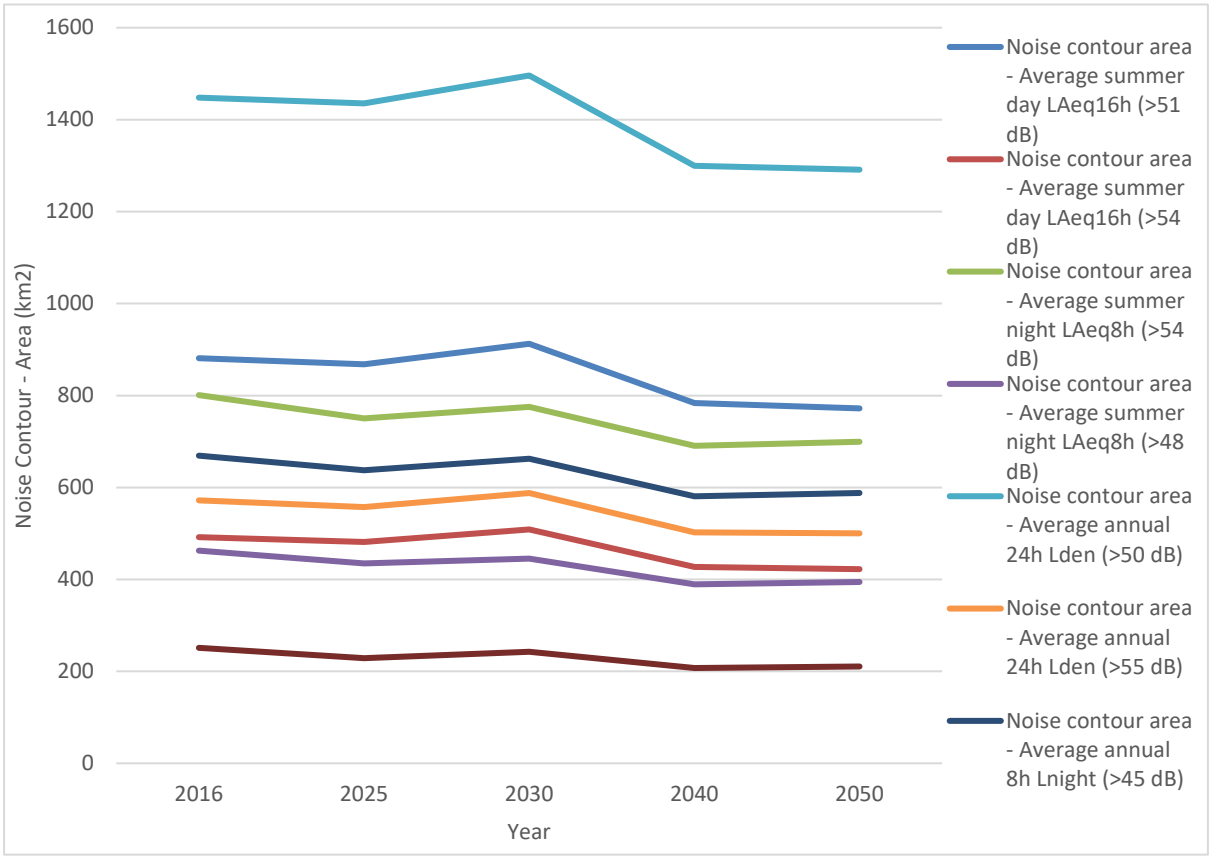


Taken from Table 6.2 (a) of CAP 1731

Table 12: Forecast analysis - summary of noise contour areas (including LHR NWR), Scenario: Central. Taken from Table 6.3 (a) of CAP 1731

Scenario: Central area (km² results)							
Metric	**Level**	**2016**	**2025**	**2030**	**2040**	**2050**	**% Change 2016-2050**
Average summer day LAeq16h	>51	881.3	867.9	912.5	783.9	772.0	-12.4%
Average summer day LAeq16h	>54	491.6	481.2	508.7	427.4	422.3	-14.1%
Average summer night LAeq8h	>45	800.9	750.0	775.4	690.6	699.5	-12.7%
Average summer night LAeq8h	>48	462.6	434.7	445.5	389.3	394.6	-10.8%
Average annual 24h Lden	>50	1,448.1	1,435.3	1,496.1	1,299.6	1,291.2	-10.8%
Average annual 24h Lden	>55	572.2	557.6	587.9	502.3	500.2	-12.6%
Average annual 8h Lnight	>45	669.2	637.1	662.6	580.8	587.8	-12.2%
Average annual 8h Lnight	>50	251.2	228.4	242.5	207.3	210.7	-16.1%

Graph 3: Forecast analysis - summary of noise contour areas (including LHR NWR), Scenario: Central. Taken from Table 6.3 (a) of CAP 1731



4.70 As previously mentioned, **Table 11**, **Table 12**, **Graph 2** and **Graph 3** demonstrate the future trends in the evolution of noise emissions from aircraft, taken from CAP 1731. The data from CAP 1731 demonstrates that the noise contours, the area of effect, which is exposed to a specific dB threshold, increases from the 2016 recorded year until 2030. This suggests that a wider area will be impacted by noise emissions resulting from aircraft in light of increased demand for flights, resulting in additional flights being provided. From 2030 to 2050, there is a decline in the predicted area of each noise contour, suggesting that there is a decrease in the noise emissions from aircraft between these time periods – the CAA describes this to be due to emerging innovations in aircraft technology which will decrease the noise emitted from aircraft. It should be noted that, although both scenarios demonstrate an average sustained decline in noise emissions between 2016 to 2050, the greatest average declines are experienced under central scenario, at approximately 12.2% decrease in noise contour area.

Population and Health

Zone of Influence

4.71 It is likely the impacts associated with the Masterplan upon the population and their health will be heavily influenced by other contributing factors such as air pollution and noise exposure. As a result, at this Scoping stage the ZoI has been set for air traffic, with impacts related to potential noise, visual and air quality impacts from overflying; and will extend to a distance of 24km (where aircraft can be expected to be operating below 4,000ft) as a proxy for the LOAEL as set for the noise ZOI).

Current Baseline Conditions

4.72 Across the UK, the population is continuing to move from rural to urban environments, compounded by population growth in urban areas being greater than that in rural environments. Other concerns include increasing public health burden of obesity and physical inactivity[126,127,128,129,130]. Urbanisation can support the emergence of obesogenic environments, promoting more sedentary, inactive lifestyles and leading to an increase in obesity, a reduction in physical activity and increased health issues.

4.73 Further pressures on population and health are the increased proportion of those living in urban environments which poses further barriers to opportunities for engaging with the natural environment, which can in itself be detrimental to physical and mental health. Urban environments can also affect physical health, psychological wellbeing and mental health for instance, through worse local air and noise quality.

4.74 A report published by the World Health Organisation (WHO) in March 2011 identified environmental noise as the second largest environmental health risk in Western Europe, after air quality having a significant and disruptive impact on the population's quality of life.

4.75 In 2016, data produced in line with the END 2002/49/EC and reported by the European Environment Agency (EEA)[131] demonstrated that approximately 16% of the UK population were exposed to aircraft noise exposure levels above 55dB L_{den}.

4.76 Between 2015 and 2019, across health indices (Healthy Lives, Healthy People and Healthy Places), the health in England has broadly remained stable. This is due to a slight improvement to Healthy Lives whereas there were slight decreases in levels of Healthy People and Healthy Places[132]. Trends in Scotland for general physical health have improved from 2012 to 2021 (excluding the COVID-19 pandemic)[133] whereas health in Wales has generally improved, demonstrated by data collected between 2008 and 2015[134].

Likely Future Trends in the Absence of the Masterplan

4.77 The devolved governments of the UK have enacted various policies and passed various legislation to incentivise people to a more active, health-centred lifestyles while requiring city planning prioritise active travel and public transport in designs rather than relying on people to utilise private motor vehicles. These changes are identified for the UK to transition to more compact urban living, as well as for reducing air and noise pollution. However, health impacts on the local population could continue to increase.

[126] Government Office for Science (2007). Tackling Obesities: Future Choices – Modelling Future Trends in Obesity & Their Impact on Health.
[127] National Health Service (2019). Health Survey for England 2019.
[128] Scottish Government (2018). Obesity indicators 2018.
[129] Public Health Wales (ND). Overweight and Obesity.
[130] British Obesity & Metabolic Surgery Society (2019). Obesity Services in Northern Ireland: Implementing the Clinical Resource Efficiency Support Team (CREST) recommendations.
[131] Reported data on noise exposure covered by Directive 2002/49/EC — European Environment Agency (europa.eu).
[132] Office for National Statistics (2022). Health in England: 2015 to 2019.
[133] Scottish Government (2021). Scottish Health Survey-Scotland level data: a data cube slice.
[134] Welsh Government (2016). Welsh Health Survey 2015: Initial headline results.

5. Scope of the SEA

Setting the Scope

5.1 The Masterplan and ACPs relate to changes to terminal airspace with no on the ground infrastructure or changes to existing infrastructure proposed.

5.2 Due to the strategic focus of SEA, the nature of the assessment is broad and overarching. As the ACP sponsors develop their final options, as set out in CAP 1616, project level environmental assessments will be prepared with detailed analysis of the likely significant environmental impacts and associated mitigation set out.

High Level Potential Impacts

5.3 Using both the evidence base for current and likely future environmental conditions without the Masterplan, and the description of the emerging Masterplan, possible significant adverse or beneficial impacts of the Masterplan on each of the environmental aspects have been identified and are shown in **Table 13**.

5.4 **Table 14** sets out those adverse or beneficial impacts that are not considered to be significant.

Table 13: Possible Significant Environmental Impacts and Effects of the Masterplan

Environmental Aspect	Possible Impacts and Effects of the Masterplan
Local Air Quality	Changes to fuel consumption altering the quantum and type of local air quality emissions and atmospheric concentration of pollutants resulting in direct impacts to human health. These impacts could be adverse or beneficial.
Biodiversity	Increases in the atmospheric concentration and deposition of nitrogen and particulate matter resulting in direct impacts to flora and fauna and changes to habitat composition including reduction in floristic diversity; resulting in degradation of designated habitats and species. Aircraft collision with wildlife (birds and bats) resulting in death or injury to individual animals reducing the fitness of the local population. The presence of aircraft and aircraft noise resulting in the disturbance of fauna, leading to a reduction in the fitness of individuals and local populations.
Carbon and Climate Change	Changes to fuel consumption leading to increases or decreases in GHG emissions, and corresponding increases or decreases in the contribution to climate change. Potential to contribute to emissions reductions from aviation as targeted by the Government's Jet Zero strategy. Should any changes to airspace design above 7,000 feet occur these will be driven by making airspace more efficient (albeit operating safely will be the first priority) in terms of routes flown, such as making routes flown more direct or to reduce stacking. Therefore, the assumption has been made that there is no need to consider the carbon implications of changes in airspace above 7,000ft because the priority will be to make the airspace more efficient and hence, this is likely to result in carbon savings. On this basis, it is assumed that decreases in GHG would arise, and so carbon and climate changes above 7,000ft is scoped out.
Cultural Heritage	Increased or reduced disturbance (noise / visual intrusion), change to tranquillity due to new or additional overflying or changes to the timing and frequency of flights, affecting the setting of cultural heritage assets (indirect effects).
Geology, Soils and Land Use	N/A
Landscape and Visual	Increased or reduced disturbance (noise / visual intrusion), change to tranquillity, due to new or additional overflying or changes to the timing and

Environmental Aspect	Possible Impacts and Effects of the Masterplan
	frequency of flights, affecting the setting of landscape and visual receptors (indirect effects).
Material Assets	N/A
Water and Hydrology	N/A
Noise	Increases and decreases in noise levels due to new or additional overflying or changes to the timing and frequency of flights resulting in direct impacts to human health. As noted in respect of carbon and climate change should any changes to airspace design above 7,000 feet occur these will be driven by making airspace more efficient. Reducing noise is not a priority at this altitude because the sound levels experienced on the ground are already low (and certainly below LOAEL).
Population and Health	The combination or (or cumulative) effects in respect of noise, air quality and opportunities to access a tranquil to a single type of sensitive receptor (i.e. the general population) resulting in improved or worse health implications.

Table 14: Possible Insignificant Environmental Impacts and Effects of the Masterplan

Environmental Aspect	Possible Impacts and Effects of the Masterplan
Geology, Soils and Land Use	There are no physical changes to on the ground infrastructure that will occur as a result of the Masterplan that could have a direct or indirect impact to geology or soils. Therefore, there is no immediate pathway for the Masterplan to affect geology or soil or land use receptors which are not considered by other environmental aspects. In respect of land uses, it is expected that effects would be picked up by other environmental aspects such as noise and visual effects from overflying. On this basis it is considered that separate consideration of land use is not scoped into the SEA.
Material Assets	Material assets are considered to be any grey infrastructure essential for the functioning of society, such as: water supply, wastewater treatment, waste management, energy generation and distribution, telecommunications, and transportation As there are no physical changes to on the ground infrastructure by the Masterplan that could have a direct or indirect impact to material assets.
Water and Hydrology	For the SEA, water and hydrology are considered to be main rivers, waterways including canals, ground water, and marine and coastal water. Water related infrastructure including groundwater abstraction, flood defences and drainage capacity are considered to be material assets and dealt with separately. It is not anticipated that at any geographical scale that significant degradation of water quality would result due to the emergency deposition of jettisoned fuel. Emergency fuel dumping is a rare occurrence, with the majority of commercial aircraft being unable to jettison fuel. Furthermore, above 5,000ft any released fuel would be expected to completely vaporise before reaching the ground. As there are no physical changes to on the ground infrastructure proposed no direct or indirect impact to water and hydrology are anticipated.

Environmental Aspects Scoped In/Out

5.5 The scoping process has revealed that the Masterplan has the potential for significant adverse impacts on several aspects of the environment as set out within **Table 13**. This is due to GHG, atmospheric pollutant and noise emissions and the physical presence of aircraft overflying. Where specific environmental effects are considered to be unlikely, they should be scoped out from further assessment to ensure that the SEA Environmental Reports deal only with potentially significant environmental effects.

5.6 Based on the details set out in **Table 14**, the following environmental aspects are therefore proposed to be scoped out, as receptors here relate to physical terrestrial and aquatic environments, unlikely to be affected by changes in airspace:

- Geology, soils and land use;
- Material assets; and
- Water and hydrology.

5.7 The following environmental aspects will be carried forward to Stage B of the SEA process:

- Air quality;
- Carbon and climate change;
- Biodiversity;
- Cultural heritage;
- Landscape and visual;
- Noise; and
- Population and health.

6. SEA Methodology

Approach to the SEA

6.1 The proposed approach for the SEA of the Masterplan follows that set out in the Practical Guide to SEA and the Planning Guidance on SEA. It involves the development of an assessment framework comprising a series of SEA objectives, assessment criteria and indicators. This framework is developed from an understanding of environmental problems and opportunities identified through a review of existing baseline information and a review of other plans, programmes and environmental protection objectives relevant to the plan area (in this case the UK as a whole) and subject matter (aviation).

6.2 This chapter identifies the proposed methodology for undertaking the assessment of each of the anticipated alternative delivery options for the Masterplan. This includes the future baseline and assessment case (i.e. what is being assessed); the SEA objectives, indicators and targets (the assessment framework); environmental aspect-specific methodology where deemed appropriate; and the significance criteria used.

Future Baseline and Assessment Case

6.3 The impacts of the Masterplan must be described relative to an identified baseline scenario, which describes how matters would develop in the absence of the Masterplan. It is therefore necessary to define – as far as is possible at this early stage – both the Future Baseline and the Assessment Case within this SEA Scoping Report, so that consultees understand what it is that the environmental assessments of the Masterplan will cover.

6.4 The Future Baseline is equivalent to the 'do nothing' scenario (i.e. without implementation of the Masterplan and the ACPs) but covering the same timeframe as the Masterplan (i.e. up to 2040). This assumes that individual airports will operate in line with existing legislation and policy in relation to safety and environmental restrictions as well as technological innovations that reduce carbon, air quality and noise emissions over time.

6.5 **Chapter 4** sets out the trends and likely future baseline position for each of the environmental aspects scoped into (and out of) the SEA, in the absence of the Masterplan, but on the assumption that legislative obligations are implemented and adhered to. The Future Baseline also assumes that the airports will seek to grow within their existing consents. Note that the likely future baseline position for each of the environmental aspects scoped into the SEA will be updated to include regional level data (i.e. relevant to the STMA, MTMA, LTMA and WTMA) at the point that the draft Environmental Reports are prepared.

6.6 As set out, the Future Baseline is expected to comprise a situation where neither the Masterplan nor the ACPs which are currently included within the scope of the Masterplan are realised. With respect to other ACPs for example for another sponsor outside of the Masterplan process, whilst these could be brought forward outside of the Masterplan, it is likely that there would be significant interdependencies with one or more of the ACPs included in the Masterplan, and therefore either the sponsor may request, or the CAA may require participation in the Masterplan programme. As such, they do not form part of the Future Baseline.

6.7 The Assessment Case represents what the SEA will actually be assessing, i.e. what changes there will be from the future baseline purely as a result of the implementation of the Masterplan. As stated earlier in this report, this relates to changes to the UK's national airspace system, i.e. changes to airspace structure and the route network with respect to the constituent ACPs.

6.8 Although Iteration 2 of the Masterplan has been published, as noted previously it does not set out the options being considered by the ACPs; this is because at the time of publication the options were not sufficiently developed for inclusion in Iteration 2. Iteration 3 will set out the options being considered by the ACPs following their options appraisals as part of the CAP 1616 airspace change process.

6.9 It is at Iteration 3 of the Masterplan onwards where potential conflicts and trade-offs between the preferred options for each of the ACPs within each TMA will be addressed. For each interdependency, ACOG will coordinate input from the sponsors concerned as to what types of solutions could potentially be deployed in the Masterplan to resolve any conflicts between their collective ACPs for them to work as a system.

6.10 It should be noted that the national focus and strategic nature of the Masterplan mean that individual airspace changes proposed by a sponsor will not be reported (this will happen at the level of ACPs). As such, location-specific impacts on individual receptors cannot be identified. As with many national or regional level plans, the effects predicted by the end of the SEA process will necessarily remain at a strategic level. Nevertheless, the assessment case is expected to constitute a high level description of the ACP options proposed, post-trade-off. These could comprise a combination of changes such as the direction / trajectory of flights, altitude, frequency and timing of arrivals and departures.

Consideration of Alternatives

6.11 Consideration of reasonable alternatives is a key feature of the SEA process as defined by the SEA Regulations. In practical terms, it refers to possible alternative mechanisms for delivering the objectives of the Masterplan (including the different options being considered by the ACPs), and the assessment of the impacts of each of these options against the SEA objectives.

6.12 Consideration of alternatives will be undertaken by means of a three step process:

1. Alternatives identification and development;
2. Alternatives assessment and comparison; and
3. Alternatives selection and documentation.

6.13 Alternative options for delivering airspace change are currently being developed by the ACP sponsors (Stage 3A of CAP 1616), and will be reported in Iteration 3 of the Masterplan. Iteration 4 will describe the final proposed trade-offs between interdependent ACPs, taking account of the outputs of the ACP sponsor's coordinated consultations on their individual designs. It will provide a description of the proposed airspace structure and route network when viewed as a collective, but without the detailed designs of all the routes.

6.14 The SEA will focus only on the reasonable alternatives that emerge during the drafting of the Masterplan, to be documented in the Environmental Report in a strategic and overarching manner and will explain why other alternatives are not considered to be 'reasonable' and will not, therefore, be subjected to assessment and consultation. The alternatives covered by the SEA will therefore include only the preferred options set out. In addition, any alternative options considered by ACOG for addressing possible conflicts arising between ACP preferred options within a TMA will also be addressed through the SEA.

6.15 Using the assessment framework set out below, the SEA will assess which of the reasonable alternatives, or combination of alternative options, performs the best environmentally. Through assessing the environmental performance of alternatives as they emerge, it will be possible to influence the overall sustainability of the evolving Masterplan, as well as the selection of the final options for each TMA. This process will be documented in the SEA Environmental Report.

Assessment Criteria and Methodology

6.16 As stated in the SEA Directive Guidance:

SEA objectives can be derived from environmental objectives which are established in law, policy, or other plans or programmes, or from a review of baseline information and environmental problems. They can be used or adapted for SEAs of related plans and programmes, whereas each individual plan or programme has its own specific objectives.

6.17 The guidance further states:

"Objectives can be expressed in the form of targets, the achievement of which is measurable using indicators."

6.18 The SEA objectives, targets and indicators for assessment of the Masterplan have been developed for each scoped-in environmental aspect using the SEA baseline presented in **Chapter 5**. These are set out in **Table 15.**

Table 15: SEA Objectives, Targets and Indicators

Environmental Aspect	Objectives	Targets	Indicators
Local Air Quality	Compliance with air quality legislation, whilst seeking opportunities to reduce emissions on account of their adverse impacts to human health	Compliance with air quality legislation and where applicable in line with human health policy.	Compliance with air quality legislation and where applicable health impact policy indicators.
Biodiversity	Preserve, protect, maintain terrestrial, aquatic and soil biodiversity of internationally, nationally and regionally statutorily and non-statutorily designated sites and protected species.	No significant effect on the conservation status of the qualifying habitat types and species of the designated sites, and compliance with conservation objectives.	Maintained (or improved) conservation status of the qualifying habitats and species.
Carbon and Climate Change	Minimise GHG emissions and contribution to climate change by delivering efficient airspace design.	Contribute to meeting Jet Zero targets.	Change in GHG emissions from flights.
Cultural Heritage	Minimise disturbance to nationally and regionally designated cultural heritage assets.	No significant adverse effect on nationally and regionally designated cultural heritage assets, including their setting and tranquillity.	Maintained integrity and setting of the nationally and regionally designated cultural heritage assets.
Landscape and Visual	Minimise disturbance to the special qualities of protected landscapes, the landscape character, views and tranquillity at the national and regional level.	No significant adverse effect on protected landscapes, or on landscape character, views and tranquillity at the national and regional level.	Maintained integrity and tranquillity of protected landscapes, the landscape character and views at the national and regional level.
Noise	Minimise the number of people exposed to levels greater than the LOAEL set by noise policy such as the Air Navigation Guidance, 2017 or the Public Health Outcomes Framework.	Compliance with legislation and policy.	Increases above defined LOAEL and numbers of people exposed to above LOAEL.
Population and Health	Contribution of a sustainable aviation sector and improvements to human health through reduction in amenity disturbance, decreases in atmospheric and noise pollution.	Compliance with legislation and where applicable in line with human health policy.	Compliance with legislation and where applicable in line with human health policy indicators.

6.19 The approach adopted for assessment of the Masterplan therefore involves defining categories of typical airspace changes that individual ACPs may make (for example changing the trajectory, altitude or timing of flights) and categories of receptors that could be impacted by such airspace changes (for example Air Quality Management Areas, or Scheduled Monuments). Given the baseline status (and likely trends) of such receptors at national and regional (cluster) level, expert judgement will then be used to determine and describe the likely impact of each category of activity on each category of receptor. Of course, the impact descriptions will need to be broad, as defining precisely the nature of an impact would require detailed spatial information and detailed information about an activity; the type of impact descriptions that will be produced will be sufficient to inform the plan and will provide a valuable resource to support ACP applications in the future. Using the indicators outlined in **Table 15**, the overall impact of the Masterplan on the objectives of each environmental aspect will then be determined.

6.20 A summary of the methodology for assessing the likely impact of the Masterplan on each of the environmental aspects/SEA objectives is given in **Table 16**.

Table 16: Methodology For Assessing Impacts of the Masterplan on Categories of Receptors

Environmental Aspect	Categories of Sensitive Receptors	Assessment Methodology
Air Quality	AQMAs	Review the likelihood of air quality legislation and objectives being complied with and where applicable health impact policy indicators.
Biodiversity	SACs SPAs Ramsar sites SSSIs NNRs Potential SACs, SPAs and Ramsar Sites Local ecological receptors	Review the likelihood of significant effects on the designated features of nature conservation sites, their conservation status and their overall integrity, in line with the HRA Appropriate Assessment, as well as on broader ecological receptors.
Carbon and Climate Change	CO_2 equivalent levels	Review the likelihood of the UK meeting GHG emissions reduction targets for aviation (Jet Zero).
Cultural Heritage	UNESCO World Heritage Sites Scheduled Monuments Registered Battlefields Local cultural heritage assets	Review the likelihood of significant effects on the integrity, setting and tranquillity of cultural heritage assets.
Landscape and Visual	National Parks AONBs	Review the likelihood of significant effects on the setting, views and tranquillity of designated landscapes.
Noise	Areas exposed to LOAEL	Review likelihood of NPSE guidelines on noise being complied with and implications for LOAEL.

Environmental Aspect	Categories of Sensitive Receptors	Assessment Methodology
Population and Health	Populations within the ZoI	Review likelihood of air quality legislation and NPSE guidelines being complied with. Review the likelihood of significant effects on the setting and tranquillity of cultural heritage assets, designated landscapes and views.

6.21 The assessment results will be presented in a matrix format using the colour coding shown in **Table 17** to identify significance, along with an accompanying narrative description of the assessment findings. This narrative will include the cumulative impact of the system as a whole, as it may be that certain types of environmental receptors are impacted by multiple elements of airspace change by a single sponsor, or by multiple ACPs, and thus the overall impact of the Masterplan on a particular environmental aspect may be significant, even if the impact of individual component options are not.

Table 17: Key to Likely Significant Effects

Key to Likely Significant Effects	
Potential for significant positive effects	++
Potential for minor positive effects	+
Negligible or no effect	0
Potential for both positive and negative effects	+/-
Potential for minor negative effects	-
Potential for significant negative effects	- -

6.22 Should any significant negative effects be predicted through the assessment, a suite of mitigation and other environmental measures that should be considered by proponents of ACPs to reduce the effects of their airspace design proposals will be proposed.

6.23 Given that airspace modernisation provides the potential for significant environmental improvement, enhancement measures may also be suggested to encourage more positive effects through the Masterplan, or recommendations made for enhancement measures that may be developed in more detail at the stage of ACP applications.

7. Next Steps

7.1 The key stages of the SEA process, as set out in the Practical Guide to SEA, are the following:

- Stage A: Setting the context and objectives, establishing the baseline and deciding on scope;
- Stage B: Developing and refining strategic alternatives and assessing their effects;
- Stage C: Preparing the Environmental Report for Iteration 3 of the Masterplan in respect of that geographical cluster (and Iteration 4 if there are substantial modifications compared to Iteration 3 of the Masterplan in respect of that geographical cluster);
- Stage D: Consulting on the draft Environmental Report when this is published alongside Iteration 3 of the Masterplan in respect of that geographical cluster (and Iteration 4 if there are substantial modifications compared to Iteration 3 of the Masterplan in respect of that geographical cluster); and
- Stage E: Monitoring the significant effects of implementing the Masterplan on the environment.

7.2 This SEA Scoping Report (representing Stage A of the process) will be forwarded to each statutory Consultation Body, thereby providing the information they require regarding which environmental factors are considered likely to be impacted by the proposed Masterplan, and how any significant effects will be identified. We also invite comments on the overall approach to this assessment, in particular our definition of the future baseline, assessment case and alternatives, our proposed ZoIs for each environmental aspect, and the collection and use of available regional data for the draft Environmental Report. Though not a legal requirement, this Scoping Report will also be made publicly available via the CAA's website, so that other affected or interested parties in each of the TMA regions may also comment on the proposed approach for this SEA. Where a Consultation Body, other organisation or member of the public decides to respond, they should do so within 6 weeks of receipt of the request/publication of this Scoping Report.

7.3 Following consultation on the SEA Scoping Report, Stages B and C will be undertaken, culminating in production of a separate draft Environmental Report for Iteration 3 of the Masterplan in respect of each geographical cluster, which will set out the likely environmental effects of implementing the Masterplan for each TMA nationally), as per the requirements of the SEA Regulations. This will include:

- A detailed description of the Masterplan, including its relationship with other plans, programmes and environmental protection objectives;
- A description of how the assessment has been undertaken, including any difficulties encountered, and how the scoping consultation responses have been accounted for;
- A summary of relevant aspects of the current state of the environment including characteristics, problems and evolution (noting that this will include new regional baseline information relevant to the TMA being considered). **Appendix D** sets out the type and examples of regional baseline data to be collected and reported upon in the draft Environmental Reports;
- An assessment of likely significant effects of the Masterplan and its realistic alternative delivery options on each of the scoped in environmental factors, along with an outline of the reasons for selecting the chosen alternative;
- Suggested measures to prevent, reduce, offset and monitor any significant adverse effects on the environment; and
- A non-technical summary of the information provided.

7.4 Stage D involves consultation on the Draft Environmental Report, when published alongside Iteration 3 of the Masterplan with the Consultation Bodies and with the public. Submissions made during the public consultation (including those from the Consultation Bodies) will be reviewed and

addressed as appropriate in the Final Environmental Report, to be published alongside the revised, adopted Masterplan.

7.5 Finally, following the acceptance of the Masterplan into the AMS, an SEA Statement will be produced provide information on the decision, specifically:

- How environmental considerations have been integrated into the Masterplan;
- How the Environmental Report, submissions and observations made to CAA by the Consultation Bodies and the public have been taken into account during the preparation of the Masterplan;
- The reasons for choosing the Masterplan in the light of the other reasonable alternatives dealt with; and
- The measures decided upon to monitor the significant environmental effects of implementation of the Masterplan.

7.6 The actual monitoring of significant environmental effects will take place over the lifetime of the Masterplan, and is beyond the scope of this SEA.

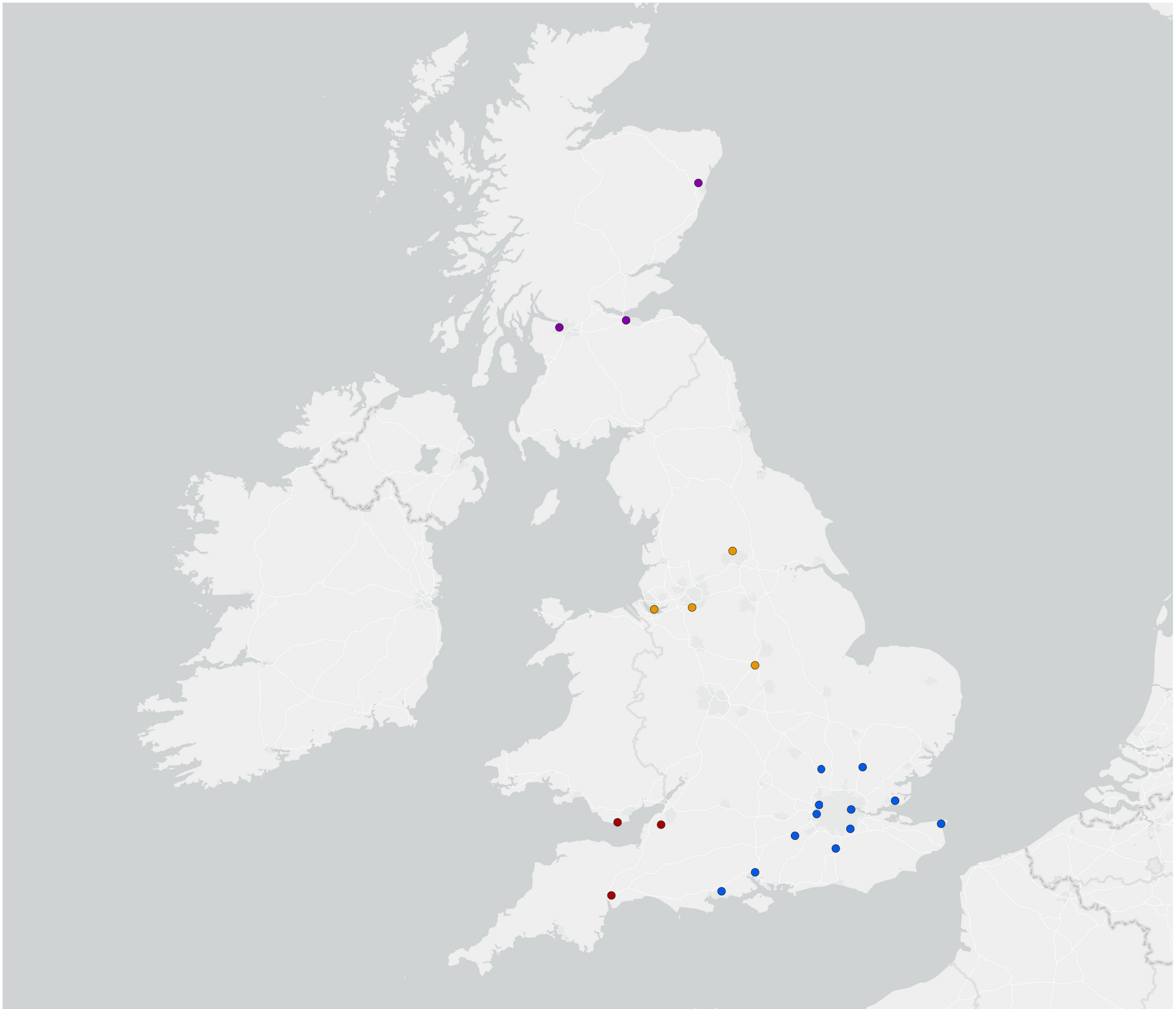
Summary of Consultation Commentary Sought

7.7 As indicated above consultation commentary is sought from the prescribed Consultation Bodies and others. In particular commentary is sought on the following:

- Those environmental aspects scoped out and in of the SEA and the objectives, targets and indicators;
- How any significant effects will be identified;
- The definition of the future baseline, assessment case and alternatives:
- The proposed ZoIs for each environmental aspect; and
- The type and use of available regional data for each TMA.

APPENDICES

A. Figures



London TMA

- Biggin Hill Airport
- Bournemouth Airport
- Farnborough Airport
- London City Airport
- London Gatwick Airport
- London Heathrow Airport
- London Luton Airport
- London Southend Airport
- London Stansted Airport
- Manston Airport
- RAF Northolt
- Southampton Airport

West Terminal Area

- Bristol International Airport
- Cardiff Airport
- Exeter Airport

Manchester TMA

- East Midlands Airport
- Leeds Bradford International Airport
- Liverpool John Lennon Airport
- Manchester Airport

Scottish TMA

- Aberdeen International Airport
- Edinburgh Airport
- Glasgow Airport

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Project Details	WIE19330-101: Airspace Change Masterplan
Figure Title	Figure 1: Terminal Control Areas
Figure Ref	WIE19330-102_GIS_SEA_1A
Date	February 2023
File Location	\\H-bm\wiel\Projects\WIE19330 CAA ACM SEA and HRA\102 SEA Scoping\9_GIS\WIE19330-102_GIS_EIA\

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B. Consultant Team

Appendix B: Consultant Team

Name and Job Title	Organisation	Qualifications	Relevant Experience
Dr Helen Mentink Associate Director – Natural Capital	Logika Consultants Ltd	BSc Economics MSc Environmental Assessment and Management PhD Environmental Economics	Helen is an associate director, leading Logika's Strategic Environmental Assessment (SEA) and natural capital workstreams. She has more than 14 years' experience in environmental consultancy, largely focused on improving the environmental sustainability of local, regional, and national government policy in the UK and Ireland, relating to the development, transport, aviation, energy, forestry, international co-operation, employment, finance and landscape sectors. As well as delivering over 25 SEAs in this time, Helen has also contributed to numerous HRA and EIA projects, relating to a range of developments including transport, infrastructure and energy. Since completion of her PhD in 2019, Helen now specialises in natural capital and biodiversity net gain assessments, green infrastructure design, and development of blended finance ecosystem services markets.
Toby Gibbs Managing Director	Logika Consultants Ltd	BSc Countryside Management MCIEEM CEnv	Toby is a board director for the Logika Group (of which, Logika Consultants Ltd is a part of) and has more than 24 years environmental experience. He is a specialist in the environmental impacts of aviation activities having worked on many aviation projects, and with experience in the UK, Europe, Africa and the Middle East. Project highlights include being engaged to provide environmental support to the development of Heathrow Airport's expansion proposals including contributing significantly to the evidence provided to the Airports Commission and leading the team engaged to produce the EIA to support the consenting application for a third runway. He was also the Project Director for the EIA associated with the ending of the Cranford Agreement at the Airport and provided written evidence to the Public Inquiry and the Director responsible for the EIA that formed part of the consenting application for reopening Manston Airport in Kent. Outside of the UK he performed the role of Environmental Director for the expansion works at Jomo Kenyatta International Airport in Kenya and completed a special advisory role for the New Lisbon Airport EIA. He also provided expert advice to countries in Eastern Europe and West Asia as they sought to bring in environmental legislation to regulate the impacts of aviation activities.
Lara Knapman Technical Director	Waterman IE	BSc	Lara is a Registered EIA Practitioner with over 15 years of environmental consultancy professional

Name and Job Title	Organisation	Qualifications	Relevant Experience
		MAppSci (Env Mgmt) BSc Cenv MCIWEM C.WEM Registered EIA Practitioner	experience. Lara is skilled at coordinating environmental inputs throughout project lifecycles, from strategic options appraisal (including SEA) through to option development, refinement, construction and operation, including discharging Planning Conditions and establishing and auditing Construction Environmental Management Plans. Lara has proven experience in the project management of large and complex projects and is practiced at working within multidisciplinary teams to develop workable, but sustainable solutions. Lara has contributed to the Strategic Environmental Assessment major UK plans, including Severn Tidal Power.
Ros Boalch Associate Director	Waterman IE	BSc (Hons) MA Licentiate Member Royal Town Planning Association Associate Member of the Institute of Environmental Management and Assessment (AIEMA)	With 15 years of environmental consultancy experience in the UK and internationally, Ros provides advice to developers, engineers, masterplanners, lawyers and architects on all aspects of environmental design and assessment strategy. Ros has experience and familiarity with Strategic Environmental Assessment and Sustainability Appraisals in the UK and overseas. Ros is organised, efficient and effective. She has a strong sense of accountability and responsibility to meet deadlines with excellent communication, presentation and reporting skills. Ros is a member of the IEMA Impact Assessment Steering Committee.
James Malone Consultant	Waterman IE	BSc (Hons) Environmental Science MSc Environmental Economics and Environmental Management	James is an Environmental Impact Assessment (EIA) consultant, part of the EIA team for Waterman IE, working in London. He has 3 years' experience in environmental and project management, across the international submarine telecoms and environmental consultancy industries as well as working in the rail and civil construction industry for 5 years. Experience has included authoring environmental statement chapters, acquisition of environmental permits, preparation of standalone environmental assessments, and drafting of environmental conservation plans, among others.
Stephanie Jones Graduate Consultant	Waterman IE	BSc Geography	Graduate EIA consultant with 1 year of experience assisting with the co-ordination of Environmental Impacts Assessments and preparing Environmental Statements for a range of projects for a variety of clients in both the public and private sector. Awaiting MSc certification in Environmental Consultancy.

C. Summary of Queries Raised and the Responses Included within Iteration 2.2 of the Masterplan and Associated SEA Commentary

Summary of Queries Raised and the Responses Included within Iteration 2.2 of the Masterplan and Associated SEA Commentary

Summary of Query Raised as set out in Iteration 2.2	Summary of Response as set out in Iteration 2.2	Relevant Commentary in respect of the SEA
How will the noise impacts of airspace change be dealt with?	The response draws attention to the Air Navigational Guidance 2017 and how the Masterplan and the constituent ACPs must demonstrate that the Government's environmental objectives as specified in that guidance are achieved.	At a strategic level, noise impacts of the Masterplan will be assessed through the SEA.
Will the release of controlled airspace lead to an increase in operations elsewhere and could this have a negative noise impact on communities who may be hoping for a reduction?	The response indicates this has been passed on to the CAA's airspace classification and airspace regulation team.	At a strategic level, noise impacts of the Masterplan will be assessed through the SEA.
What is being done around night flights?	The response acknowledges this is a policy issue, but that some ACPs may develop deployment at night through the ACP process where it would be considered.	If an overarching night time flight policy was set out in later Iterations of the Masterplan this would be assessed by the SEA.
What consideration is being given to residents around airports that will be impacted by the changes, particularly heath impacts?	The response identifies that the CAP 1616 process for the constituent ACPs will cover this. The response also states that cumulative impacts will be considered and calculated through the Masterplan preparation process. The SEA at a strategic level will also assess the impact of the Masterplan upon health.	At a strategic level, health impacts of the Masterplan will be assessed through the SEA.
How will environment and capacity be balanced?	The response refers to Section 3.4 of Iteration 2.2 which discusses trade-off decisions. This section explains how trade-offs will be identified by ACP sponsors and in collaboration with ACOG when assessing the combined and net impacts of interdependent options. Iteration 3 will set out where trade-off decisions have been made between ACP sponsors during the development of their proposals to ensure transparency in the process.	As is set out later within this SEA Scoping Report, the SEA will assess options being considered by the Masterplan which will reflect the constituent ACP trade-offs.

Summary of Query Raised as set out in Iteration 2.2	Summary of Response as set out in Iteration 2.2	Relevant Commentary in respect of the SEA
Would it make sense to define the Programme from a top down (State led) approach rather than a bottom up (commercial led) approach?	The response sets out a number of reasons why this approach would be challenging and not feasible and would require an overhaul to the current policies and process that underpin airspace change. Consideration of this approach will be made by the SEA in defining the assessment approach and further details are set out later within this SEA Scoping Report.	The SEA will assess those elements of the Masterplan that are applicable to the SEA, typically overarching policies.
Can ACOG set out gaps in policy?	The response notes that where there is evidence of a policy gap it will be passed to the DfT and will also be considered for inclusion within the Masterplan.	If an overarching policy was set out in later Iterations of the Masterplan this would be assessed by the SEA.
Are there time lags between airspace modernisation and policy, and can ACOG push the CAA to put policies in place?	The response notes that the suite of airspace design criteria is evolving to allow for technological advances, and that further guidance can be given.	If an overarching policy was set out in later Iterations of the Masterplan this would be assessed by the SEA.

Other feedback, which is not directly relevant to the SEA, was in relation to impacts to other airspace users; further engagement opportunities; the relationship with the AMS and CAP 1616; and the programming of ACPs and the Masterplan.

D. Examples of Regional Data to be Collected and Reported Upon in the draft Environmental Report

Environmental Aspect	Terminal Manoeuvring Area (TMA)	Constituent Airport	Policy	Categories of Sensitive Receptors	Baseline Information Approach
Cultural Heritage	Manchester TMA comprising Manchester, Leeds, East Midlands and Liverpool ACPs	Liverpool John Lennon Airport	Local Authority and County Council (if applicable) Plans and Policies relevant to cultural heritage and aviation, falling within the 24km Zone of Influence (ZoI) of each of the constituent ACPs. For Liverpool John Lennon Airport this could comprise Liverpool City Council; Wirral Metropolitan Borough Council; Warrington Borough Council; St Helens Council; Cheshire West and Chester Council; Cheshire East; and Wigan Council.	• UNESCO World Heritage Sites • Scheduled Monuments • Registered Battlefields • Local cultural heritage assets	Baseline data is not to be spatially analysed using GIS or similar, for instance the specific scheduled monuments within the ZoI will not be individually identified, however the total number of scheduled monuments within the ZoI will be considered and reported on, and where appropriate any general patterns, such as clusters or commonalities in their setting or character reported and identified. For categories of sensitive receptors that are less numerous, it may be appropriate to identify these individually. For example, there is only one Registered Battlefield within the 24km ZoI for Liverpool John Lennon Airport: Registered Battlefield - Battle of Winwick (also known as Battle of Red Bank) 1648, located approximately 19km to the north east. A consolidated map of the categories of sensitive receptors will not be prepared.
Air Quality	London TMA comprising Gatwick, RAF Northolt, Heathrow, Luton, Stansted, Manston, London City, Farnborough, Southampton, Biggin Hill and Southend ACPs.	Heathrow Airport	Local Authority and County Council (if applicable) Plans and Policies relevant to air quality and aviation, falling within the 6km Zone of Influence (ZoI) of each of the constituent ACPs. For Heathrow this could comprise: Slough Borough Council; London Borough of Hounslow; London Borough of Richmond Upon Thames; London Borough of Ealing; London Borough of Hillingdon; Surrey County Council; and Royal Borough of Windsor and Maidenhead.	• Air Quality Management Areas (AQMA)	The AQMAs within the ZoI would be identified and details reported upon, including Annual Status Reports and Air Quality Action Plans. A consolidated map of the categories of sensitive receptors will not be prepared, this includes mapping of exposure of the general population.

Our vision

"Engineering a better environment for people and the planet"

Our mission

"To solve complex problems for the benefit of clients, communities and the climate"

Our values

People orientated

Individually and collectively, people are our business.
We strive to create environments for everyone to flourish and thrive.

Flexible

Pragmatic by nature and dedicated to getting the job done to the highest possible standard.

Professional

Operating at pace with integrity to deliver technical and robust solutions.

Environmentally aware

We understand our responsibility to the environment, it shapes our decision making and informs our practice.

Innovative

Our forensic questioning provides the ability to deliver appropriate innovations at every stage on every project.

Relationship focused

We value individuality and the benefits of working collaboratively to achieve positive outcomes for all.