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London Luton Airport Expansion

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Volume 5 Environmental Statement and Related Documents
5.04 Non-technical Summary

Application Document Ref: TR020001/APP/5.04

APFP Regulation: 5(2)(a)

The Planning Act 2008

**The Infrastructure Planning (Applications: Prescribed Forms and Procedure)
Regulations 2009**

**London Luton Airport Expansion Development Consent
Order 202x**

5.04 ENVIRONMENTAL STATEMENT NON-TECHNICAL SUMMARY

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Contents

	Page
1 INTRODUCTION	1
1.1 Purpose of this document	1
1.2 Overview of the Proposed Development	2
1.3 What is an EIA and an ES?	3
2 SITE AND SURROUNDINGS	4
2.1 Overview	4
2.2 Main Application Site	4
2.3 Off-site Car Parks	6
2.4 Off-site Highways Interventions	6
2.5 Off-site Planting	6
3 ALTERNATIVES AND DESIGN EVOLUTION	8
4 THE PROPOSED DEVELOPMENT	10
4.1 Description of development	10
4.2 Assessment phasing for the Proposed Development	12
4.3 Construction	12
5 APPROACH TO THE ASSESSMENT	14
6 AGRICULTURAL LAND QUALITY AND FARM HOLDINGS	17
6.1 Context	17
6.2 Mitigation measures	17
6.3 Likely significant effects	18
7 AIR QUALITY	19
7.1 Context	19
7.2 Mitigation measures	19
7.3 Likely significant effects	20
8 BIODIVERSITY	22
8.1 Context	22
8.2 Mitigation measures	22
8.3 Likely significant effects	24
9 CLIMATE CHANGE RESILIENCE	26
9.1 Context	26
9.2 Mitigation measures	26
9.3 Likely significant effects	27

10	CULTURAL HERITAGE	29
10.1	Context	29
10.2	Mitigation measures	29
10.3	Likely significant effects	30
11	ECONOMICS AND EMPLOYMENT	31
11.1	Context	31
11.2	Mitigation measures	31
11.3	Likely significant effects	32
12	GREENHOUSE GASES	35
12.1	Context	35
12.2	Mitigation measures	35
12.3	Likely significant effects	36
13	HEALTH AND COMMUNITY	38
13.1	Context	38
13.2	Mitigation measures	38
13.3	Likely significant effects	40
14	LANDSCAPE AND VISUAL	42
14.1	Context	42
14.2	Mitigation measures	42
14.3	Likely significant effects	43
15	MAJOR ACCIDENTS AND DISASTERS	46
15.1	Context	46
15.2	Mitigation measures	46
15.3	Likely significant effects	48
16	NOISE AND VIBRATION	49
16.1	Context	49
16.2	Mitigation measures	50
16.3	Significant adverse effects on health and quality of life and likely significant effects	52
17	SOILS AND GEOLOGY	58
17.1	Context	58
17.2	Mitigation measures	58
17.3	Likely significant effects	61
18	TRAFFIC AND TRANSPORT	62
18.1	Context	62
18.2	Mitigation measures	62
18.3	Likely significant effects	63

19	WASTE AND RESOURCES	65
19.1	Context	65
19.2	Mitigation measures	65
19.3	Likely significant effects	66
20	WATER RESOURCES	68
20.1	Context	68
20.2	Mitigation measures	69
20.3	Likely significant effects	70
21	IN-COMBINATION AND CUMULATIVE EFFECTS	71
21.1	In-combination Effects	71
21.2	Cumulative Effects Assessment	71
	Glossary and Abbreviations	73
	REFERENCES	74

Tables

Table 4.1: Proposed Development assessment phases

Table 11.1: With Development minus Without Development: Gross and Net GDP and Employment Growth (Direct, Indirect and Induced)

Insets

Inset 2.1: Development Areas

Inset 4.1: Proposed Development layout at 32 mppa

Inset 14.1 Example verified view of the Proposed Development from Wigmore Valley Park

Inset 16.1: Daytime (left) and night-time (right) noise assessment.

1 INTRODUCTION

1.1 Purpose of this document

- 1.1.1 This document is the Non-Technical Summary (NTS) of the Environmental Statement (ES) submitted as part of the application for development consent for the proposed expansion of London Luton Airport ('the airport'), hereafter referred to as the 'Proposed Development'.
- 1.1.2 The ES and associated documentation are presented in Volume 5 of the application for development consent. The ES is comprised of many documents and figures referenced in four parts:
- a. Assessment of Effects **[TR020001/APP/5.01]**. These documents contain introductory and explanatory information and the assessment of likely significant environmental effects;
 - b. Technical Appendices **[TR020001/APP/5.02]**. The technical appendices include any relevant technical information and further detail in support of each chapter, numbered sequentially corresponding to the relevant chapter;
 - c. Figures **[TR020001/APP/5.03]**. These are supporting drawings referred to in the ES; and
 - d. Non-Technical Summary (NTS) (this document) **[TR020001/APP/5.04]**. A summary of the findings of the ES using non-technical language.
- 1.1.3 The following environmental documents also form part of the application for development consent, but are referred to using different numbering in response to planning and legal requirements:
- a. Scoping Report and Scoping Opinion **[TR020001/APP/5.05]** **Appendices 1.1 and 1.2, and 1.3** of the ES respectively;
 - b. Statement of Statutory Nuisances **[TR020001/APP/5.06]**;
 - c. Flood Risk Assessment **[TR020001/APP/5.07]** **Appendix 20.1** of the ES;
 - d. Habitats Regulation Screening Assessment **[TR020001/APP/5.08]** **Appendix 8.3** of the ES;
 - e. A Mitigation Route Map **[TR020001/APP/5.09]** has also been submitted as part of the application for development consent, which summarises the mitigation measures proposed and considered in the ES. That document signposts how each measure considered is secured to ensure its delivery; and
 - f. Strategic Landscape Masterplan **[TR020001/APP/5.10]**.
- 1.1.4 The purpose of this NTS is to provide a summary of the ES in non-technical language, to report the conclusions of the Environmental Impact Assessment (EIA), which has been undertaken for the Proposed Development. The ES has been prepared so that the Planning Inspectorate, on behalf of the Secretary of State, can develop an informed view of the likely environmental effects associated with the Proposed Development.

- 1.1.5 This NTS provides:
- a. a description of the site and surroundings (**Section 2**);
 - b. a description of how the proposals have been developed (**Section 3**);
 - c. a description of the Proposed Development (**Section 4**);
 - d. a summary of the EIA methodology (**Section 5**); and
 - e. a summary of EIA findings, including the likely environmental effects of the Proposed Development and measures proposed to avoid, reduce and manage these effects (**Sections 6 to 21**).

- 1.1.6 Each of the sections of this NTS corresponds to a chapter included within the Assessment of Effects [TR020001/APP/5.01], so that the reader can easily refer to relevant chapters of the Assessment of Effects for further detail, where required.

1.2 Overview of the Proposed Development

- 1.2.1 London Luton Airport has the potential to become the airport of choice for north of London and for England's Economic Heartland (stretching from Swindon to Cambridgeshire and from Northamptonshire to Hertfordshire), and consequently bring greater benefits to the local, regional and national economy. To do this, the airport needs to be able to expand its infrastructure to take greater advantage of the available capacity offered by its existing single runway.
- 1.2.2 Luton Rising (a trading name of London Luton Airport Limited) (also referred to as the 'Applicant') owns the airport and has submitted an application for development consent for works that would allow the airport to increase the capacity, from the currently permitted 18 mppa, up to 32 mppa. The Proposed Development comprises works to the existing passenger terminal (Terminal 1), provision of a new terminal building and boarding piers (Terminal 2) and associated earthworks, airside and landside facilities, enhancements to the existing surface access network, extension of the Luton Direct Air-Rail Transit (Luton DART), a new cable-hauled fast passenger transit connecting Luton Airport Parkway station to the airport (the announcement of an official opening date will be made in 2023), and ecological and landscaping improvements. Further infrastructure enhancements and initiatives to support the target of achieving zero emission ground operations by 2040¹, with interventions to support carbon neutrality being delivered sooner including facilities for greater public transport usage, improved thermal efficiency, electric vehicle charging, on-site energy generation and storage, new aircraft fuel pipeline connection and storage facilities and sustainable surface and foul water management installations.
- 1.2.3 London Luton Airport Operations Limited (LLAOL) (the current airport operator) also has a planning application under consideration by the Secretary of State to increase the capacity of the airport from 18 mppa to 19 mppa. If granted, this

¹ This is a Government target, for which the precise definition will be subject to further consultation following the Jet Zero Strategy (Ref. 8), and which will require further mitigations beyond those secured under the Development Consent Order.

would have the effect of lifting the baseline capacity assumed in this assessment from 18 to 19 mppa.

- 1.2.4 A project of this nature and scale is classified as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. Therefore, the application for development consent has been submitted to the Planning Inspectorate for examination, on behalf of the Secretary of State, and is subject to approval by the Secretary of State.
- 1.2.5 Further details of the Proposed Development can be found in **Section 4** of this NTS.
- 1.2.6 For the purposes of assessment, the Proposed Development has been programmed to deliver infrastructure capacity to meet a predicted passenger demand referred to as the Core Planning Case. There are certain known scenarios or risks that may occur that could influence the conclusions of the assessment (including the current operator's 19 mppa planning application); therefore, sensitivity tests have been undertaken and reported in the ES to understand how the effects may change if these risks are realised. Further information on this approach to assessment is provided in **Section 5** of this NTS.

1.3 What is an EIA and an ES?

- 1.3.1 An EIA is a systematic process that examines the likely environmental effects resulting from the future construction and operation and maintenance of a development. In particular, the objective of the EIA is to identify any likely significant effects which may arise from a development and to identify measures to prevent, reduce or offset any adverse effects and to enhance any beneficial effects.
- 1.3.2 The EIA for the Proposed Development is undertaken pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (The IP EIA Regulations). The findings of an EIA are presented in an ES which can then be used to inform decision makers and the public about the possible environmental implications of a development and help the decision maker (in the case of an application for development consent, the Secretary of State) to determine the application.
- 1.3.3 The ES is submitted as part of the application for development consent detailing the final findings of the EIA. Whilst the primary focus of this document is on significant environmental effects, the assessment reviews a wider range of impacts and potential effects which are also described within the individual technical assessments.

2 SITE AND SURROUNDINGS

2.1 Overview

2.1.1 The land on which the Proposed Development will be constructed is referred to as the Application Site. For the purposes of the ES, the Application Site has been further split into four distinct geographical components:

- a. the Main Application Site;
- b. Off-site Car Parks;
- c. Off-site Highways Interventions;
- d. Off-site Planting.

2.1.2 The Main Application Site, Off-site Car Parks, Off-site Highways Interventions boundaries and locations for Off-site Planting are shown in **Inset 2.1**.

2.1.3 Further details on the existing site and surroundings can be found within **Chapter 2** of the ES [TR020001/APP/5.01].

2.2 Main Application Site

2.2.1 The Main Application Site is located approximately 45 kilometres (km) north west of London, to the east of Luton town centre and encompasses approximately 428 hectares (ha). The Main Application Site includes the existing airport, the existing business park to the north and north west of the airport, Wigmore Valley Park and arable land to the east.

2.2.2 The Main Application Site boundary extends across Luton Borough Council and North Hertfordshire District Council administrative boundaries, with a small section within the Central Bedfordshire Council administrative boundary at the south west corner, as can be seen in **Inset 2.1**.

2.2.3 Immediately to the south of the existing airport is Central Bedfordshire. The administrative boundaries between Luton Borough Council and North Hertfordshire and Central Bedfordshire also mark the boundary of the Green Belt.

2.2.4 The existing airport is located on a raised platform at the north-eastern end of the Chiltern Hills. The existing airport infrastructure consists of a single runway with associated taxiways, stands and aprons. It has a single commercial passenger terminal, with supporting hangars, maintenance facilities, and airport related offices. The airport and its associated business park also accommodate a range of aircraft and airport production and maintenance businesses. There are also a number of car parks for short-, mid- and long-term stay.

2.2.5 In 2019, the last 'normal' operating year before the pandemic, the airport operated flights to approximately 90 destinations, with most passengers flying on commercial, scheduled and charter services. In 2019, there were around 141,500 aircraft movements (approximately 460 in a typical busy day), of which around 113,100 were by commercial passenger or cargo operations. The majority of flights were to international destinations, while around 8% were

domestic flights. Scheduled service operators include easyJet, Ryanair and Wizz Air. Business and private operators are serviced by facilities operated by Harrods and Signature Flight Support.

- 2.2.6 Local buses connect the existing airport with Luton town centre. Conventional bus and coach services also operate, connecting the airport with local towns and cities. A shuttle bus operates currently between the Luton Airport Parkway railway station and the existing passenger terminal. Luton Airport Parkway is serviced by both the East Midlands service as well as the extensive Thameslink service, connecting Luton Airport Parkway with London and other major towns and cities. Luton Airport Parkway railway station will be directly connected to the airport via the Luton DART system which is currently under construction. An announcement of the opening date is expected in early 2023, with an opening date also expected in the same year.
- 2.2.7 Wigmore Valley Park, located to the east of the existing airport, provides an area of public open space and recreational facilities. It comprises an area of former landfill which was operational between 1937 and 1978. The park is also designated as an Area of Local Landscape Value, an Asset of Community Value and parts of the park are designated as a County Wildlife Site (CWS).
- 2.2.8 The east of the Main Application Site largely comprises arable fields with hedgerow boundaries and scattered trees. Archaeological records suggest historical human activity in this area with a possible Roman building in the field to the east of Wigmore Valley Park.
- 2.2.9 The Main Application Site is bordered by Darley Road to the north and intersected by Winch Hill Lane, a rural road running through the area of Winch Hill in the east of the Main Application Site. There is a network of Public Rights of Way in this area including the Chiltern Way which follows approximately the alignment of Darley Road. There is a ridge with a band of woodland running approximately north-west to south-east through this area, and Winch Hill Wood, a block of ancient woodland, in the south east.
- 2.2.10 There is one occupied residential property, Winch Hill House, within the Main Application Site boundary. Although no works are proposed to that structure or area of hardstanding, the proposed pipeline would impact the woods on the property. Winch Hill Cottages, isolated barns, and some properties at Wandon End are immediately adjacent to, but outside of the Main Application Site boundary.
- 2.2.11 Land outside the Main Application Site boundary to the north and west is predominantly residential and mixed industrial, and rural with arable fields to the east and south. The River Lea flows to the south in a valley directly to the west of the existing airport. There are also a number of assets of heritage value in the surrounding area, including Someries Castle, a scheduled monument, approximately 250m south of the Main Application Site, and Luton Hoo Grade II* Listed Registered Park and Garden, approximately 300m south west at its closest point to the airport.

2.3 Off-site Car Parks

- 2.3.1 The two locations for the proposed Off-site Car Parks (for staff only), as shown on **Inset 2.1** are to the south west of the airport, adjacent to either side of the Midland Mainline railway and the Luton DART. Only car parks proposed by and directly owned and controlled by the airport are considered as these Off-site Car Parks. Any other third party car parks are not part of the Proposed Development.
- 2.3.2 The larger of the two sites is located to the north of the Midland Mainline railway and is currently a trailer park for Heavy Good Vehicles (HGVs). The smaller site, which is located to the south of the Midland Mainline, is a disused area of hardstanding which was previously used as a car park. The sites are located in a commercial area dominated by existing transport infrastructure; bordered by Parkway Road and the A1081 to the south, New Airport Way and the A1081 to the east, Kimpton Road and industrial units to the north. The Midland Mainline railway and the Luton DART pass between the two sites.
- 2.3.3 These sites are partially located within the airport's Public Safety Zone, an area at the end of runways within which development is restricted in order to control the number of people on the ground at risk of death or injury in the event of an aircraft accident on take-off or landing. Development of long stay and employee car parking in this zone is permitted.

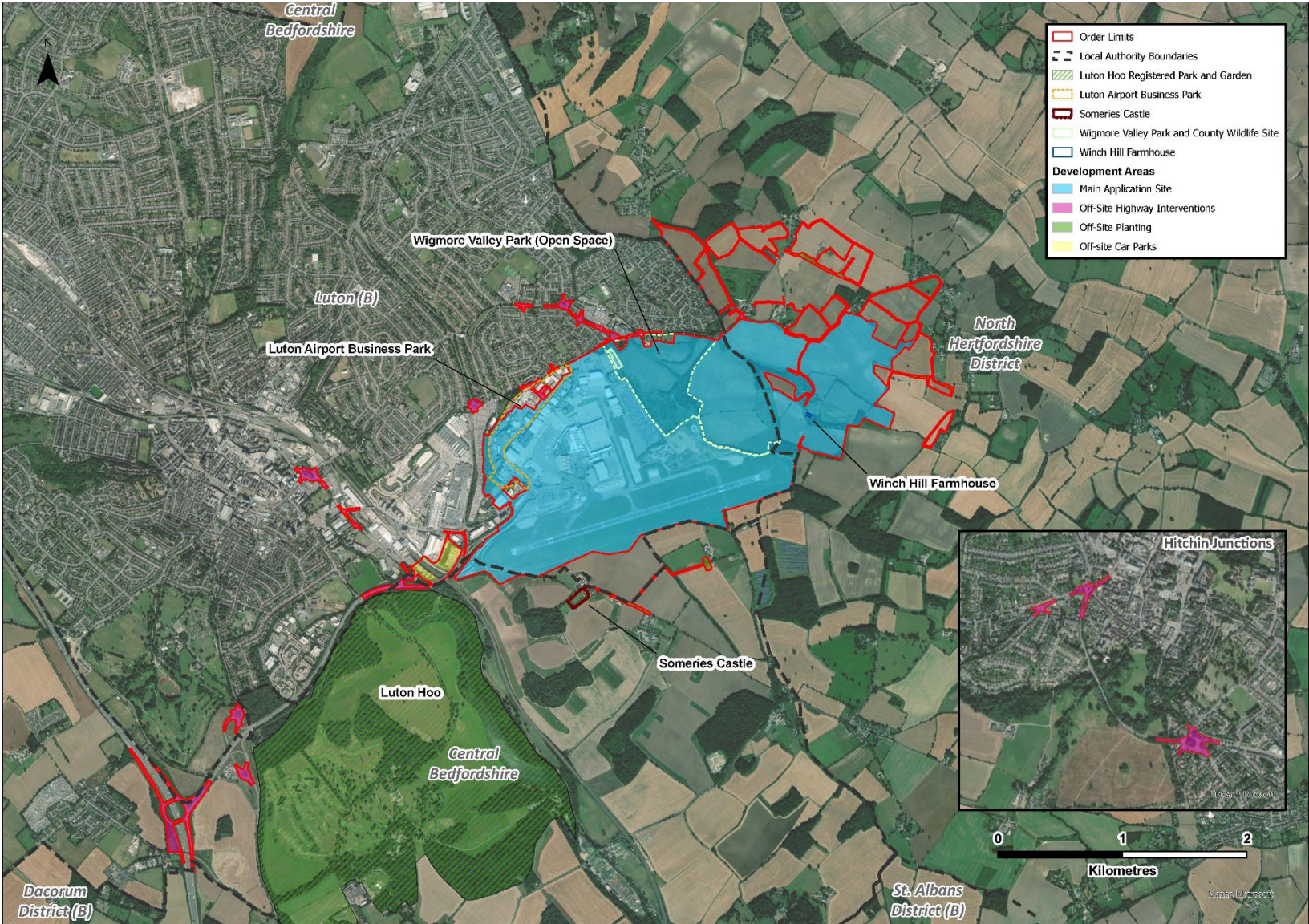
2.4 Off-site Highways Interventions

- 2.4.1 The Proposed Development would include several sites where highway improvements would be required to facilitate an increase in traffic flows forecast to occur with the increased airport capacity, including Junction 10 of the M1. The locations of the Off-site Highways Interventions are shown on **Inset 2.1**.
- 2.4.2 The proposed improvements to existing highway infrastructure are located in urban areas, and each location has been subject to previous development and disturbance. The proposed works would be small scale junction and road works, and would be restricted to existing highway boundaries as far as possible. No existing buildings are expected to be directly impacted as result of the proposed Off-site Highway Interventions.

2.5 Off-site Planting

- 2.5.1 As part of the Proposed Development, areas of off-site planting are proposed. These comprise improvements to existing agricultural field boundaries to the north, east and south of the Main Application Site. The location of the Off-site Planting is shown on **Inset 2.1**.

Inset 2.1: Development Areas



3 ALTERNATIVES AND DESIGN EVOLUTION

- 3.1.1 In December 2017, the Applicant publicly launched its '*Vision for Sustainable Growth 2020-2050*' for the airport (Ref. 1). Since then, the design for the Proposed Development has been developed through an iterative process, referred to as 'sifts', to identify a preferred option. The identification and appraisal of alternative options has been a key part of the EIA process to ensure that environmental considerations are built into the project design at the earliest possible stage.
- 3.1.2 Several options for the Proposed Development, including a preferred option, were presented at the non-statutory consultation held in summer 2018. Subsequently, feedback from the non-statutory consultation was analysed to inform further design development. Revised and refined proposals were presented at the 2019 Statutory Consultation, which ran from 16 October to 16 December 2019, and at the 2022 Statutory Consultation, which ran from 8 February to 4 April 2022. The outcome of both Statutory Consultations, including how feedback received has been taken into account, is summarised within the **Consultation Report** submitted as part of the application for development consent [TR020001/APP/6.01] and [TR020001/APP/6/02].
- 3.1.3 A number of changes have been made to the Proposed Development in response to feedback received, and as a result of a review of the project proposals.
- 3.1.4 The changes made following feedback from the 2019 statutory consultation and as a result of a review prior to the 2022 Statutory Consultation (as reported in the 2022 PEIR) included (but were not limited to):
- a. inclusion of a new Airport Access Road² (AAR) and improvements to the Airport Way/Percival Way junction as part of the application for development consent, which changed the Order Limits³ for the application;
 - b. a range of sustainability design measures, including additional solar energy production and water efficiency measures;
 - c. improvements to the replacement open space for Wigmore Valley Park to protect more valued existing habitat and landscape features, provide improved enclosure and screening to development at the airport, improve connectivity to the existing parkland areas to be retained, and to reposition it nearer to the community it serves;
 - d. reducing the size of the platform needed to bring the expanded airport level with the runway, meaning a reduction in earthworks (engineering works involving moving and excavating earth);

² Airport Access Road (AAR), formerly known as Century Park Access Road (CPAR). Refer to **Chapter 2** Site and Surroundings and **Chapter 4** The Proposed Development of the ES [TR020001/APP/5.01] for more information.

³ If the application for development consent is successful, the document that grants the powers for the Proposed Development to proceed would be a Development Consent Order. Therefore, the extent of the site, and the boundary within which the Proposed Development would be built is known as the 'Order Limits'.

- e. reconfiguring taxiways, reducing aircraft parking stands, and re-positioning the engine run-up bay with noise barriers;
- f. reducing the footprint of the proposed car parking; and
- g. a new approach to managing the potential effects of future expansion, called Green Controlled Growth – details about this can be found in the **Green Controlled Growth Explanatory Note and Green Controlled Growth Framework** documents [TR020001/APP/7.07] and [TR020001/APP/7.08].

3.1.5 As a result of the feedback from the 2022 Statutory Consultation and further design development, a number of additional changes were made to the Proposed Development. These include, but are not limited to the below:

- a. Minor changes to the Terminal 1 building, including the removal of a bussing lounge, extension of a departure lounge and baggage hall, addition of a south pier and canopy. These changes were made following feedback from the current airport operator.
- b. Addition of a 33kV substation in a proposed car park north of the AAR, and subsequent changes to car park layouts. This substation was added to accommodate increased electricity demand due to the transition to electric vehicles and decarbonising the airport.
- c. Construction of a surface movement radar tower earlier in the programme following feedback from National Air Traffic Services (NATS), and the changes to Terminal 1 which would impede Air Traffic Control sight lines.
- d. Updates to the drainage statement in response to comments received from the Environment Agency (refer to **Appendix 20.4** of the ES [TR020001/APP/5.02] for further information).

3.1.6 Further information on the alternative options considered and design evolution can be found within **Chapter 3** Alternatives and design evolution of this ES [TR020001/APP/5.01].

4 THE PROPOSED DEVELOPMENT

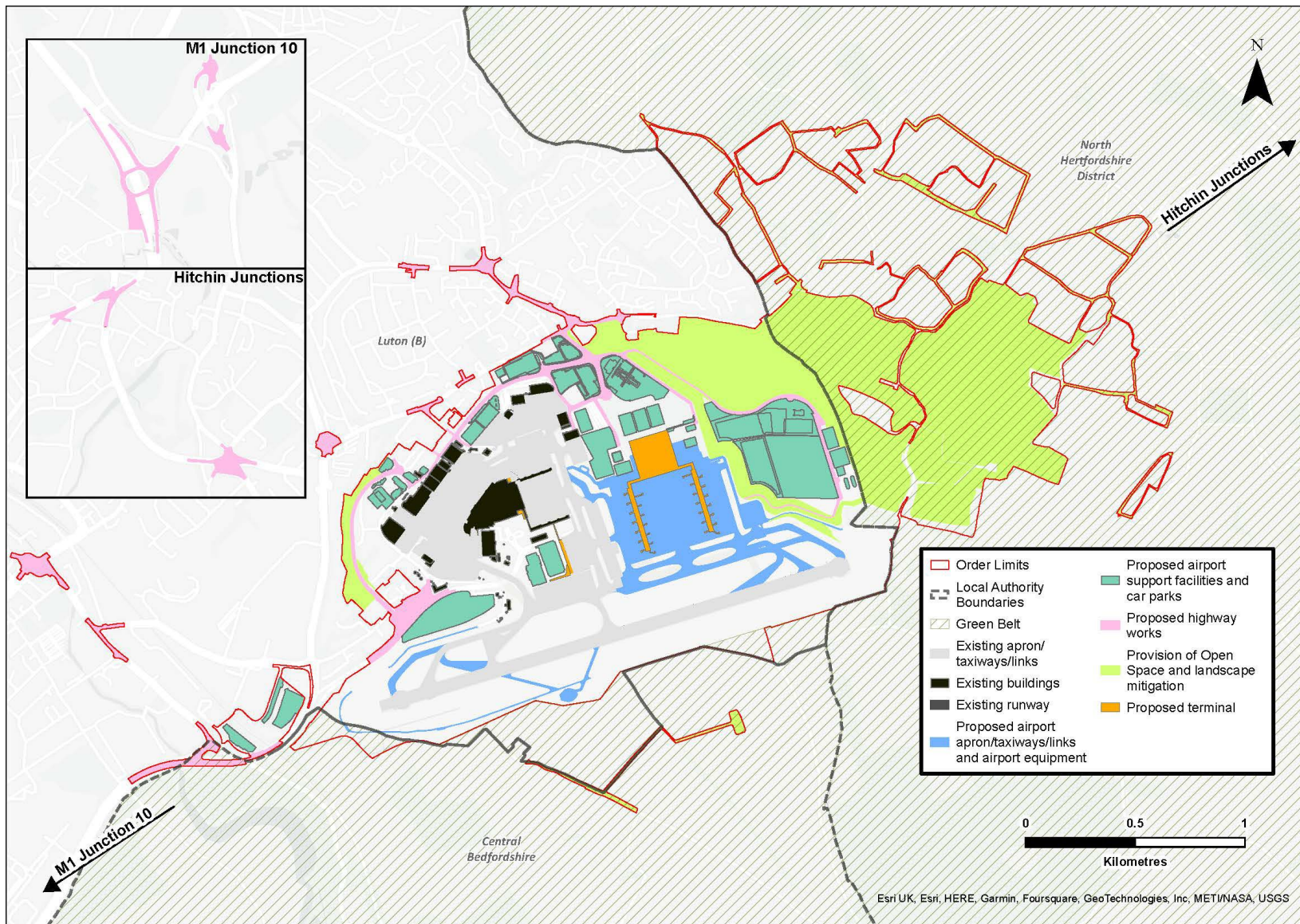
4.1 Description of development

4.1.1 The main elements of the Proposed Development comprise the following:

- a. extension and remodelling of the existing passenger terminal (Terminal 1) to increase the capacity;
- b. new passenger terminal building and boarding piers (Terminal 2);
- c. earthworks to create an extension to the current airfield platform; the vast majority of material for these earthworks would be generated on site;
- d. airside facilities including new taxiways and aprons, together with relocated engine run-up bay and fire training facility;
- e. landside facilities, including buildings which support the operational, energy and servicing needs of the airport;
- f. enhancement of the existing surface access network, including a new dual carriageway road accessed via a new junction on the existing New Airport Way (A1081) to the new passenger terminal along with the provision of forecourt and car parking facilities;
- g. extension of the Luton Direct Air-Rail Transit (Luton DART) with a station serving the new passenger terminal;
- h. landscape and ecological improvements, including the replacement of existing open space; and
- i. further infrastructure enhancements and initiatives to support the target of zero emission ground operations by 2040¹, with interventions to support carbon neutrality being delivered sooner including facilities for greater public transport usage, improved thermal efficiency, electric vehicle charging, on-site energy generation and storage, new aircraft fuel pipeline connection and storage facilities and sustainable surface and foul water management installations.

4.1.2 The Proposed Development will increase the current passenger capacity of the airport to 32 mppa. **Inset 4.1** shows the indicative layout of the Proposed Development at 32 mppa.

Inset 4.1: Proposed Development layout at 32 mppa



4.2 Assessment phasing for the Proposed Development

- 4.2.1 It is recognised that delivery of the Proposed Development will take several years, during which time the airport will remain operational. Additional capacity to respond to the forecast growth in demand would be delivered incrementally.
- 4.2.2 For the purposes of the EIA, three assessment phases are considered, so that environmental effects can be better understood over the long timeframe that the Proposed Development would be implemented. **Table 4.1** summarises the construction period to build the infrastructure capacity, and the date by which passenger throughput is expected to be reached, for each assessment phase.

Table 4.1: Proposed Development assessment phases

Assessment Phase	Passenger capacity	Construction start year	Construction completion year	Year predicted passenger capacity reached
Assessment Phase 1	21.5 mppa	2025	2027	2027
Assessment Phase 2a	27 mppa	2033	2036	2039
Assessment Phase 2b	32 mppa	2037	2041	2043

4.3 Construction

4.3.1 Construction activities to deliver the Proposed Development will comprise:

- a. enabling works, including site clearance and demolition of existing structures, where required;
- b. construction of new apron and aircraft stands;
- c. Terminal 1 enhancement works;
- d. earthworks to establish an extended platform and remediation of the affected landfill area;
- e. Terminal 2 construction, including extension of the Luton DART;
- f. construction of landside and airside infrastructure and buildings;
- g. provision of car parking, off-site highways improvements and utilities works; and
- h. provision of replacement open space and landscaping in each assessment phase.

4.3.2 A Code of Construction Practice (CoCP) has been prepared which sets out measures that would be implemented by the appointed contractor(s) to minimise the effects of these works where reasonably practicable. This is provided as **Appendix 4.2** of the ES [TR020001/APP/5.02]. In summary, the CoCP sets out the following requirements:

- a. environmental management principles: an overview of the environmental management systems (EMS) to be implemented during construction;
- b. management approach: the mechanisms by which broader environmental commitments and detailed requirements in local community areas are secured;
- c. community relations and stakeholder engagement: an overview of engagement with the local community, including the mechanisms for communications, enquiries and complaints;
- d. general requirements, including hours of work, good housekeeping, security; and
- e. requirements by environmental topic: an outline of the measures that would be employed to minimise effects from construction activities, as far as reasonably practicable including:
 - i. accident and incident prevention and control;
 - ii. agricultural land quality;
 - iii. air quality;
 - iv. biodiversity;
 - v. climate change and greenhouse gases;
 - vi. cultural heritage;
 - vii. health and community;
 - viii. landscape and visual;
 - ix. noise and vibration;
 - x. soils and geology;
 - xi. traffic and transport;
 - xii. waste and resources; and
 - xiii. water environment.

4.3.3 Further information on the design and construction of the Proposed Development is provided within **Chapter 4** of the ES [TR020001/APP/5.01].

5 APPROACH TO THE ASSESSMENT

- 5.1.1 The EIA of the Proposed Development, as presented in the ES, has been undertaken in accordance with the IP EIA Regulations, the Planning Act 2008 and relevant guidance.
- 5.1.2 The scope and methodology of the EIA has been consulted on with the Planning Inspectorate and relevant stakeholders through a process called EIA Scoping. This includes identifying the potential environmental aspects that may be significantly impacted by the Proposed Development and setting out the methodology for the assessment of likely significant effects.
- 5.1.3 A request for an EIA Scoping Opinion, setting out the proposed scope and methodology of the EIA, was submitted to the Planning Inspectorate on 1 April 2019. In response, a Scoping Opinion was issued by the Planning Inspectorate on 9 May 2019 and is available as **Appendix 1.3** of this ES **[TR020001/APP/5.05]**. As a result, the following technical assessments have been scoped into the EIA:
- a. Agricultural Land Quality and Farm Holdings (refer to **Chapter 6** of the ES **[TR020001/APP/5.01]**);
 - b. Air Quality (refer to **Chapter 7** of the ES **[TR020001/APP/5.01]**);
 - c. Biodiversity (refer to **Chapter 8** of the ES **[TR020001/APP/5.01]**);
 - d. Climate Change Resilience (refer to **Chapter 9** of the ES **[TR020001/APP/5.01]**);
 - e. Cultural Heritage (refer to **Chapter 10** of the ES **[TR020001/APP/5.01]**);
 - f. Economics and Employment (refer to **Chapter 11** of the ES **[TR020001/APP/5.01]**);
 - g. Greenhouse Gases (refer to **Chapter 12** of the ES **[TR020001/APP/5.01]**);
 - h. Health and Community (refer to **Chapter 13** of the ES **[TR020001/APP/5.01]**);
 - i. Landscape and Visual (refer to **Chapter 14** of the ES **[TR020001/APP/5.01]**);
 - j. Major Accidents and Disasters (refer to **Chapter 15** of the ES **[TR020001/APP/5.01]**);
 - k. Noise and Vibration (refer to **Chapter 16** of the ES **[TR020001/APP/5.01]**);
 - l. Soils and Geology (refer to **Chapter 17** of the ES **[TR020001/APP/5.01]**);
 - m. Traffic and Transport (refer to **Chapter 18** of the ES **[TR020001/APP/5.01]**);
 - n. Waste and Resources (refer to **Chapter 19** of the ES **[TR020001/APP/5.01]**);

- o. Water Resources and Flood Risk (refer to **Chapter 20** of the ES [TR020001/APP/5.01]); and
- p. In-combination and Cumulative Effects (refer to **Chapter 21** of the ES [TR020001/APP/5.01]).

- 5.1.4 As part of the EIA, the environmental effects of the Proposed Development under each of the above topics have been assessed both during the construction and subsequent operation of the Proposed Development. To retain flexibility in the final design, maximum parameters for the height and extent of proposed new structures have been defined and used in this assessment to ensure a reasonable worst case has been assessed.
- 5.1.5 The assessment employs predictions in aircraft and passenger numbers, traffic modelling and construction data, generated for a feasible programme of works to deliver infrastructure capacity to meet a reasonable forecast passenger demand. The assumptions and data used in, and derived from, this scenario is referred to as the Core Planning Case on which the assessment is based. In developing this information, a conservative approach has been taken to allow a reasonable worst case to be considered in this assessment, therefore providing confidence that the exact delivery of the Proposed Development in the future can take place within the envelope of environmental effects reported in the ES.
- 5.1.6 The EIA assesses environmental effects on resources (such as archaeology) and receptors (such as people). The effects are described in terms of changes to the existing situation (known as the baseline). The significance of environmental effects is then assessed, typically by judging the value and susceptibility of a resource or receptor to change and the predicted magnitude of change resulting from the Proposed Development.
- 5.1.7 The EIA also identifies measures to avoid or reduce significant adverse effects. These are known as mitigation measures. Throughout the EIA process, mitigation has been identified to avoid, reduce, and offset significant adverse effects, where practicable. Finally, the EIA provides a conclusion on the significance of the environmental effects, assuming that the proposed mitigation is implemented.
- 5.1.8 The subsequent sections of this NTS present the outcomes of the EIA by describing the proposed mitigation measures and the conclusions on likely significant effects, following the implementation of these measures.
- 5.1.9 There are certain known scenarios or risks that may occur that could influence the conclusions of the assessment; therefore, tests have been undertaken and reported in the ES to understand how the effects may change if these risks are realised. These are called 'sensitivity tests', the results of which are presented in each topic assessment. The sensitivity tests considered include:
- a. **19 mppa application** - the current airport operator (LLAOL) has a planning application under consideration by the Secretary of State to increase the capacity of the airport from 18 mppa to 19 mppa. If granted, this would have the effect of lifting the baseline capacity assumed in this assessment from 18 to 19 mppa.

- b. **Faster growth** - passenger demand rises quicker than forecast in the Core Planning Case and higher passenger throughput occurs earlier than predicted.
- c. **Slower growth** - a lower rate of forecast passenger demand is realised, and a given passenger throughput is achieved later than forecast in the Core Planning Case.
- d. **Next generation aircraft** - an alternative long term fleet mix has been prepared which takes into account the next generation of aircraft (rather than existing new generation, such as the Max and Neo), which would have better environmental performance, for example, electric and/or hydrogen fuelled aircraft.
- e. **J10 without National Highways Smart Motorway upgrade (hard shoulder running scheme)** - the Core Planning Case assumes the M1 south of Junction 10 would be upgraded to Smart Motorway, or other method, to provide all lane running and address current and predicted congestion on this stretch of the M1. This sensitivity test assumes that all lane running is not delivered and the M1 continues to operate as is.
- f. **Changes to airspace** - the EIA is based on current flight paths as airspace change is being developed across the south east, not part of the Proposed Development, and will be subject to other planning, assessment and approval processes. This sensitivity test considers one option put forward by LLAOL that provides the biggest change to the existing flight paths through provision of respite departure routes, primarily to demonstrate that the noise envelope would not act as a constraint on potential airspace change in the future.

5.1.10 **Chapter 5** of the ES [TR020001/APP/5.01] provides further information on the environmental assessment methodology.

6 AGRICULTURAL LAND QUALITY AND FARM HOLDINGS

6.1 Context

- 6.1.1 **Chapter 6** of the ES [TR020001/APP/5.01] presents the assessment of effects on agricultural land quality and farm holdings. The Order Limits include approximately 120ha of agricultural land (approximately 28% of the area within the Main Application Site) and approximately 0.6ha of agricultural land to the west of Junction 10 of the M1 highway intervention that would be affected by the Proposed Development, some of which is no longer being farmed. The land within the Main Application Site is classified as a mixture of Subgrade 3a or Subgrade 3b in line with the Agricultural Land Classification criteria (Ref. 2). Subgrade 3a land forms part of the Best and Most Versatile agricultural land, as defined under the National Planning Policy Framework (Ref. 3). The land associated with the highway intervention is classified as Subgrade 3a.
- 6.1.2 Most of the agricultural land within the Main Application Site, which is owned by the Applicant, was formerly used for intensive arable production. All agricultural land within the Main Application Site is under direct control of the Applicant and any remaining tenancy agreement will end prior to being required for the Proposed Development.
- 6.1.3 Available soil resource at the Main Application Site is characterised by four main soil types: agricultural soil, agricultural soil (calcareous)⁴, parkland soil and woodland soil. Soilscape mapping (Ref. 4) records the soil associated with Junction 10 of the M1 as being slightly acid loamy and clayey soil with impeded drainage, similar to the Main Application Site.

6.2 Mitigation measures

- 6.2.1 The agricultural land would be managed under a new agricultural tenancy which would retain some areas in agricultural use during assessment Phase 1. All land would be taken out of arable production in assessment Phase 2a to provide new areas of habitat creation. However, the neutral grassland provided as biodiversity mitigation is potentially reversible, i.e. the grassland could be returned to its former agricultural use by future generations, if required.
- 6.2.2 During construction, the quality and quantity of soil disturbed by the Proposed Development would be maintained by implementing appropriate techniques for stripping, storing and re-use. This approach would be adopted by construction contractors as described in the Outline Soil Management Plan, included as **Appendix 6.6** of the ES [TR020001/APP/5.02].
- 6.2.3 All significant effects on agricultural land quality and farm holdings occur exclusively during construction, hence no mitigation during operation is required.

⁴ A calcareous soil is soil that is rich in calcium carbonate. Calcareous soils can be nutrient deficient for many plants.

6.3 Likely significant effects

Construction

- 6.3.1 During construction, the Proposed Development would result in the permanent change from agricultural to non-agricultural use of approximately 25.1ha of best and most versatile agricultural land in Subgrade 3a. This is considered a significant adverse effect on agricultural land resource. No likely significant effects were identified for agricultural land in Subgrade 3b.
- 6.3.2 The tenancy of the farming business that currently farms some of the agricultural land within the Main Application Site is due to expire before the start of construction works. Agricultural land that will be retained in use during construction will be managed under a new agricultural tenancy. Whilst new planting is proposed on field boundaries, with residual rights to retain and maintain the planted vegetation, this would not have any significant adverse effects on the neighbouring farm holdings. Therefore, no significant effects on agricultural businesses have been identified.
- 6.3.3 The Proposed Development would retain on site and re-use within the landscape approximately 44,750m³ of topsoil and 71,750m³ of subsoil. This soil resource would be managed in line with the Outline Soil Management Plan. Approximately 146,500m³ of topsoil and 119,200m³ of subsoil would be surplus to future requirements and not retained for landscape purposes. The loss of this soil resource during construction has been identified as a significant effect.

Operation

- 6.3.4 No likely significant effects on agricultural land quality, farm holdings and soil resources during the operational life of the Proposed Development have been identified.

7 AIR QUALITY

7.1 Context

- 7.1.1 **Chapter 7** of the ES [TR020001/APP/5.01] provides the assessment of the effects of the Proposed Development on air quality. An air quality monitoring programme was implemented throughout the EIA process (reported to 2021 in the ES, the latest full year of data), measuring a range of potential pollutants wider than that monitored by any other major airport in the UK. Monitoring has been undertaken at the airport and at nearby residential areas, to supplement monitoring carried out by the airport operator (LLAOL), Luton Borough Council, Central Bedfordshire Council, North Hertfordshire District Council and St Albans City and District Council.
- 7.1.2 Production of nitrogen oxides (NO₂ and NO_x) by road traffic is a major source of pollution and has led to Air Quality Management Areas being declared in Luton, Hitchin (North Hertfordshire), Dunstable (Central Bedfordshire), and St Albans. However, monitoring has demonstrated that the concentration of nitrogen oxides at the closest residential areas to the airport and also at homes beneath flightpaths, are below the air quality standards set out in legislation. Concentrations monitored at some of the roads around the airport, in the car parks and on the apron are higher, however these are at locations away from residential properties.
- 7.1.3 In the future, additional electric road vehicles and newer generation aircraft, which are more efficient, are expected to enter the fleet. Therefore, emissions from these sources are expected to reduce in the future. In line with industry guidance, this reduction in emissions has been accounted for within each assessment phase. However, background concentrations from emissions of other non-airport related sources are only predicted up to 2030 and, therefore, the assessments for Phase 2a and Phase 2b are conservative with respect to total pollutant concentrations. Aircraft fleet have not included next generation aircraft (expected zero emissions aircraft, beyond the newer generation aircraft assessed), however, this has been considered in a qualitative sensitivity test as described in **Paragraph 5.1.9**.

7.2 Mitigation measures

- 7.2.1 A range of measures to minimise emissions to air are proposed or embedded within the design of the Proposed Development, where appropriate. These include (but are not limited to):

Construction

- a. a construction Air Quality Management Plan, Construction Traffic Management Plan and Construction Workers Travel Plan will be developed and implemented by the lead contractor, in line with the requirements of the CoCP (refer to **Appendix 4.2** of the ES [TR020001/APP/5.02]);
- b. phased working would reduce the magnitude and extent of air quality impacts in comparison to undertaking all works at the same time; and

- c. odorous material will be covered over regularly if works are on-going to avoid release of unpleasant odours.

Operation

- a. use of the new AAR to provide routes for road traffic away from sensitive receptors;
- b. a direct underground connection to an existing fuel pipeline is proposed which would reduce the number of HGVs (also known as lorries or trucks) delivering aviation fuel to the airport, and the related emissions from those extra HGVs; and
- c. an Outline Operational Air Quality Plan setting out measures to minimise emissions during operation has been prepared and is included in **Appendix 7.5** of the ES [TR020001/APP/5.02]. These measures include but are not limited to:
 - i. providing fixed electrical ground power at the new stands and non-diesel ground power units at existing stands so aircraft can minimise the use of their auxiliary engines when on the ground;
 - ii. encouraging the take up of sustainable aviation fuels;
 - iii. working with the NATS and airlines to reduce hold times in the air and on the ground;
 - iv. updating the fleet of ground support equipment that operates on the airport aprons to a low or zero-emission fleet, such as a fleet of electric powered vehicles by 2035;
 - v. making it easier for passengers and airport employees to travel by public transport to and from the airport, with the aim for no more than 55% of passengers to travel to the airport by using non-sustainable modes of transport by 2039;
 - vi. encouraging the use of low and zero-emission vehicles by providing charging points for electric vehicles to keep pace with the increasing demand by employees and the electric vehicle charging preferences of car driving visitors, taxi companies, and public service vehicles; and
 - vii. reducing reliance on fixed combustion plant and providing zero emissions plant, where permissible.

7.3 Likely significant effects

Construction dust

- 7.3.1 During construction, the assessment considered dust from construction and demolition works. The assessment of dust emissions was used to specify appropriate mitigation for inclusion in the CoCP in **Appendix 4.2** of the ES [TR020001/APP/5.02]. With these measures in place, no likely significant effects were identified.

Modelling of pollutant concentrations

- 7.3.2 The air quality assessment modelled increased emissions from staff and passenger journeys on the local road network; construction traffic; increased emissions from aircraft engines and increased exhaust emission from vehicles operating at the airport, as well as generators and boilers; and other airport activities, such as fire training and engine testing. The assessment modelled changes to air quality in each assessment phase with and without the Proposed Development. The maximum modelled change to pollutant concentrations was an increase of $3.4\mu\text{g}/\text{m}^3$ in NO_2 concentration values at one receptor location in assessment Phase 2b. All predicted concentrations remained below the air quality objectives set out in legislation. No likely significant effects on existing air quality were therefore identified at human receptors. Effects on ecological receptors (such as existing habitats) are reported within **Section 8** of this NTS.

Odour assessment

- 7.3.3 An odour assessment was undertaken to consider the risk of odour from aircraft emissions and works at the historic landfill. With good practice measures set out within the CoCP in **Appendix 4.2** of the ES [TR020001/APP/5.02] and the Outline Operational Air Quality Plan in **Appendix 7.5** of the ES [TR020001/APP/5.02], no likely significant effects were identified.

8 BIODIVERSITY

8.1 Context

8.1.1 **Chapter 8** of the ES [TR020001/APP/5.01] sets out the assessment of the effects of the Proposed Development on biodiversity.

8.1.2 In addition to previously developed land, the Main Application Site comprises predominantly of arable land (some of which has since been sown with a grass seed mix and managed), with hedgerows, trees and shrub-lined margins. Occasional woodland blocks, copses, tree belts, areas of scrub, rough grassland, ruderal vegetation, conservation headlands and game cover adjacent to field edges. Off-site Highway Interventions are largely restricted to within existing highway boundaries. Off-site Car Parks comprise access roads, temporary buildings, areas of ephemeral/short perennial vegetation, grassland margins and areas of landscaping comprising scrub and trees.

8.1.3 The Main Application Site includes three sites locally designated for nature conservation: the Wigmore Park County Wildlife Site, Winch Hill Wood County Wildlife Site and Local Wildlife Site, and Dairyborn Scarp District Wildlife Site. Winch Hill wood is also designated as ancient woodland. The proposed Off-Site Car Parks also partly impact Luton Parkway Verges District Wildlife Site (around 120m south west of the Main Application Site).

8.1.4 Ecological surveys and desk based studies undertaken to date have demonstrated that the Main Application Site and the surrounding area is used by a number of protected or notable species, including badgers, bats, brown hares, hedgehogs, slow worms, common toads, common frogs, smooth newts, Roman snails, other invertebrates and a range of birds including barn owl and red kite.

8.1.5 Field surveys have identified populations of orchids at the Wigmore Park County Wildlife Site and other notable plants within the Main Application Site. Botanical surveys have confirmed the presence of wildlife habitats including ancient woodland, broadleaved semi-natural woodland, ancient and veteran trees, species-rich hedgerows, semi-improved neutral grassland and calcareous grassland. Various non-native invasive species have also been identified across the application site, including Japanese knotweed, Japanese rose, and cotoneaster species.

8.2 Mitigation measures

8.2.1 A range of measures to reduce effects on biodiversity are proposed as part of the Proposed Development. These include but are not limited to:

Construction

- a. best practice construction environmental management measures to minimise disturbance to habitats and species during construction, and control of invasive species, as described in the CoCP (**Appendix 4.2**, of the ES [TR020001/APP/5.02]);

- b. detailed mitigation strategies (provided as **Appendices 8.6 to 8.10** of the ES [TR020001/APP/5.02] have been developed that outline species specific mitigation measures. Where badger setts or bat roosts would be lost or disturbed by the Proposed Development, a licence from Natural England would be sought, which may require the provision of artificial bat roosts;
- c. where possible, the Proposed Development has been designed to avoid or reduce adverse effects on valued ecological features and deliver benefits for biodiversity in accordance with policy and best practice. Overall, the Proposed Development will deliver a minimum of 10% biodiversity net gain through the extensive landscaping and habitat creation proposals incorporated within the Proposed Development and the management of retained and proposed habitat areas;
- d. the landscape design includes large areas of habitat creation on and off site to partially mitigate the loss of habitats from construction and contribute to the Proposed Development achieving a net gain in biodiversity. Much of the habitat creation will be within the large provision of open space that would be designed to mitigate for the loss of Wigmore Valley Park and Wigmore Park County Wildlife Site and its habitats;
- e. additional areas of embedded habitat creation include areas of habitat with the Terminal Approach⁵, within and around Dairyborn Scarp District Wildlife Site (DWS). This will replace habitats lost with scrub, neutral meadow grassland, and exposed chalk on lower lying shallow slopes, along with management of existing woodland;
- f. existing vegetation, including woodland and hedgerow belts on the boundaries of the Main Application Site, will be retained wherever possible and a 15m buffer zone maintained around areas of ancient woodland and veteran trees to avoid damage to roots;
- g. orchids would be moved from the Wigmore Park County Wildlife Site to new sites within the large area of replacement open space and habitat creation area and protected from recreational pressure;
- h. new habitat features would be provided in the form of deadwood in open areas for insects, and artificial bat roosting and bird nesting boxes on buildings and retained trees;
- i. habitat creation measures for barn owl and red kite will be provided at a safe distance from the airport, to avoid increasing the risk of bird strike. Such measures would include the creation of grassland, hedgerows and woodland. Opportunities would also be sought to provide barn owl nesting boxes within the wider landscape at a safe distance from the Proposed Development, and to provide alternative barn owl nesting opportunities to those lost to construction; and
- j. in addition to the mitigation measures detailed above, enhancement measures will be provided, such as enhancement and restoration of

⁵ Terminal Approach is defined as Work No. 5a and includes habitat along the roads providing access to Terminal 2, as described in **Chapter 4** of the ES [TR020001/APP/5.01].

species-poor/defunct hedgerows to improve connectivity with the wider landscape.

Operation

- a. an Outline Landscape and Biodiversity Management Plan (see **Appendix 8.2** of the ES [TR020001/APP/5.02]) has been developed to set out requirements for establishing, managing and monitoring areas of habitat created for 50 years;
- b. whilst the provision of open space will be open to the public, other areas of habitat provision will not be. In addition the provision of open space is designed with footpaths to direct the public away from habitats in the rest of the area;
- c. any remaining areas of Luton Parkway Verges District Wildlife Site that fall within the Applicant's ownership will be subject to management measures to promote the habitats for which the site is designated;
- d. the Proposed Development would use directional lighting to avoid light spill onto retained and adjacent habitats to minimise disturbance of nocturnal species, such as bats and badgers; and
- e. opportunities will be sought to implement sensitive management of retained veteran trees within the wider landscape, which may include measures such as thinning of young trees around veteran trees to reduce stresses upon the tree. Opportunities will also be explored to undertake 'veteranisation' of mature trees within the Applicant's ownership.

8.3 Likely significant effects

Construction

- 8.3.1 The Proposed Development would result in direct physical effects on biodiversity due to construction on currently undeveloped land and indirect effects due to disturbance during construction. For instance, the construction of the Proposed Development would result in the direct loss of 15.2ha, which is almost 100% of Wigmore Park County Wildlife Site, and in the loss of approximately 1.3ha (20%) of the Dairyborn Scarp District Wildlife Site and 0.21ha (37%) of Luton Parkway Verges District Wildlife Site. Winch Hill Wood County Wildlife Site, Local Wildlife Site and ancient woodland would be retained and managed to improve its condition, with the exception of minor tree removal on the perimeter of the site for arboriculture reasons only. These sites would also be subject to indirect effects as a result of construction disturbance.
- 8.3.2 With substantial habitat replacement provided by the Proposed Development, resulting in over 10% biodiversity net gain, and mitigation in place, as described above, these effects are not likely to be significant and the effect reduces to negligible in some cases after habitats provided have matured.
- 8.3.3 Furthermore, the provision of habitats as part of the landscaping proposals during construction is considered to provide long-term minor beneficial effects (not significant) in some cases due to the net increase of habitats.

Operation

- 8.3.4 Disturbance from the operation of the Proposed Development may displace protected species from using habitats adjacent to the airport. In addition, effects may occur due to changes to the quantity and direction of surface water runoff. However, with mitigation in place, as described above, these effects are not likely to be significant.
- 8.3.5 The air quality assessment of ecological sites found temporary minor adverse (not significant) effects on some sites, including Winch Hill Wood CWS, where they lie within 2km of the Main Application Site and/or within 200m of the roads which experience certain changes in traffic due to the Proposed Development, as a result of nitrogen deposition and the resulting effect on species richness. Management of Winch Hill Wood CWS/ancient woodland and Dairyborn Scarp DWS for 50 years, as set out within the Outline Landscape and Biodiversity Management Plan (**Appendix 8.2** of the ES [TR020001/APP/5.02]), aims to improve their condition in the long term.

9 CLIMATE CHANGE RESILIENCE

9.1 Context

9.1.1 **Chapter 9** of the ES [TR020001/APP/5.01] presents the climate change resilience and in-combination climate change impacts assessments. These consider the resilience of the Proposed Development to climate change and whether the effects of the Proposed Development on receptors in the surrounding environment would be different when considering the impacts of climate change.

9.1.2 The UK climate projections (Ref. 5) outline that with climate change the UK will experience the following changes:

- a. the annual number of heatwaves is expected to increase;
- b. the annual number of frost days is expected to decrease;
- c. the number of dry spells (defined as ten or more consecutive days without precipitation) is expected to increase; and
- d. the number of days with heavy rain (precipitation higher than 25mm/day) is expected to increase.

9.2 Mitigation measures

9.2.1 A range of measures are proposed in response to the predicted effects of climate change. These include, but are not limited to the following:

Construction

- a. the CoCP (**Appendix 4.2** of the ES [TR020001/APP/5.02]) requires the lead contractor to monitor and plan for severe weather events, including relevant associated health and safety plans, and to register on the Environment Agency's flood warning service in areas of flood risk;
- b. the lead contractors' EMS will consider all measures deemed necessary and appropriate to manage the impact of severe weather events and would, as a minimum, cover training of personnel and prevention and monitoring arrangements; and
- c. as far as reasonably practicable, contractors will also be required to use construction materials with superior properties that offer increased tolerance to fluctuating temperatures, heavy precipitation and other impacts due to extreme weather events such as increased and more severe storm events.

Operation

9.2.2 With regards to climate change resilience, assets will either be designed for the climatic conditions projected or the end of their design life, using appropriate design guidance where available or adaptive capacity will be built into the designs. For example:

- a. the drainage design for the Proposed Development will accommodate an increase in surface water flows during storms and as a result of climate change;
- b. measures to reduce water demand are built into the Proposed Development, for example rainwater harvesting from the roofs will allow greywater storage and re-use where practicable and appropriate;
- c. Landscape planting will take into consideration climate change in the selection of appropriate woodland tree and shrub species planting and habitat creation, e.g. drought tolerant species and provide adequate monitoring post-planting, as described in the Outline Landscape and Biodiversity Management Plan (**Appendix 8.2** of the ES [TR020001/APP/5.02]);
- d. adequate heating, ventilation and air conditioning (HVAC) systems will be provided to mitigate any impacts on thermal comfort of staff and passengers in airport buildings; and
- e. assets will be maintained regularly to detect deterioration and damage caused by extreme weather events such as storms through maintenance and monitoring.

9.2.3 In addition, mitigation described for other topic assessments also accounts for the effects of climate change, specifically mitigation set out for air quality (**Section 7.2**), biodiversity (**Section 8.2**), health and community (**Section 13.2**), landscape and visual effects (**Section 14.2**), soils and geology (**Section 17.2**), and water resources (**Section 20.2**).

9.3 Likely significant effects

Construction

9.3.1 The assessment has considered how hazards related to climate change, such as extreme weather events, could impact construction. The assessment identified no likely significant effects with the proposed mitigation measures in place.

9.3.2 In addition, the assessment considered whether with climate change, construction effects identified by other topic assessments could become worse. When the proposed measures are put in place to mitigate for the projected changes in climate, no likely significant in-combination climate change effects were identified.

Operation

9.3.3 The assessment has considered how climate change hazards, such as extreme weather events, increased temperature variability, precipitation and drought, could impact the design and operation of the Proposed Development. The assessment concluded that with the proposed mitigation in place, no significant effects are likely.

9.3.4 The assessment also considered whether with climate change, operational effects identified by other topic assessments could become worse. With

appropriate mitigation in place, as described above, no likely significant in-combination climate change effects were identified.

10 CULTURAL HERITAGE

10.1 Context

10.1.1 **Chapter 10** of the ES [TR020001/APP/5.01] presents an assessment of the effects of the Proposed Development on cultural heritage.

10.1.2 Luton and the surrounding area show evidence of human occupation since the Palaeolithic era, concentrating in river valleys, upland areas and around water bodies. The area remained largely in agricultural use until the 20th century, preserving archaeological remains, including Iron Age and Romano-British settlements. The airport was established in the 1930s and, over the course of its development, several assets of heritage value have been retained, including some related to the airport itself, such as a World War II pillbox and the London Luton Airport Fire Station.

10.1.3 There are a variety of designated and non-designated heritage assets that have been considered in the assessment, including two scheduled monuments (Someries Castle and Six Hills Roman barrows); four registered parks and gardens (including Luton Hoo); six conservation areas; 113 listed buildings; buried archaeological remains and historic landscape features.

10.1.4 Archaeological evaluation works carried out for the Proposed Development have characterised the nature of buried archaeological remains within the Main Application Site, which includes the site of an Iron Age and Roman settlement, and informed the scope of further evaluation and mitigation that is required to mitigate impacts arising from the Proposed Development.

10.2 Mitigation measures

10.2.1 The Proposed Development has evolved to take into consideration the heritage assets within the Order Limits and to minimise any impacts on the historic environment. The Proposed Development design will enhance the historic landscape by including provision for the planting of hedgerows and hedgerow trees that are in keeping with the historic landscape character of the area. In addition, effects on the identified Iron Age and Roman settlement within the Main Application Site have been avoided through changes to the extent of earthworks required for the Proposed Development and the preservation in situ of archaeological remains in an area designated for meadow grassland and scrub.

10.2.2 Additional evaluation and mitigation measures are set out in the Cultural Heritage Management Plan presented in **Appendix 10.6** of the ES [TR020001/APP/5.02]. The evaluation and mitigation measures comprise:

- a. additional trial trench evaluation;
- b. detailed archaeological excavation;
- c. preservation of archaeological remains during construction and operation;

- d. targeted archaeological monitoring during construction and operation;
and
- e. protocols to be adopted for dealing with unexpected archaeological discoveries.

10.3 Likely significant effects

Construction

- 10.3.1 During construction, the Proposed Development could result in direct physical impacts on heritage and archaeological assets, due to ground disturbance and excavation works. A significant adverse effect due to physical impacts on cropmarks which may relate to late prehistoric or Roman activity has been identified. Direct impacts on the buried archaeological resource would be addressed by a programme of archaeological mitigation as set out in the Cultural Heritage Management Plan (**Appendix 10.6** of the ES **[TR020001/APP/5.02]**).
- 10.3.2 The construction of the Proposed Development was assessed to have a likely significant effect on the setting of Wandon End House and Wandon End Farmhouse Grade II listed buildings due to changes within their setting. Mitigation is not proposed due to the temporary nature of these effects.

Operation

- 10.3.3 During operation, effects due to changes in the setting arising from the presence of the Proposed Development and an increase in noise were identified.
- 10.3.4 It is anticipated that the setting of the Luton Hoo Grade II* Registered Park and Garden and associated assets would experience a significant adverse effect due to increased aviation noise levels from the Proposed Development which would detract further from the park's rural character and the appreciation of its designed views. Mitigation has not been proposed as there is no feasible or acceptable response to mitigate effects arising from increased noise levels within the environment of a designed park.

11 ECONOMICS AND EMPLOYMENT

11.1 Context

11.1.1 **Chapter 11** of the ES [TR020001/APP/5.01] presents the assessment of effects associated with economics and employment. The airport's total economic footprint in the UK in 2019 was estimated to be around 28,400 jobs and £1.8 billion in Gross Domestic Product (GDP). This included direct, as well as indirect and induced employment and economic activity associated with the supply chain and employee expenditure.

11.1.2 It is estimated that in 2019 the airport supported 10,900 direct jobs; these included jobs supported by airlines, head office functions of aviation-related companies, airport operations, airline support services, shops, hotels and restaurants. The majority of employees lived in Bedfordshire, where the airport is located, particularly in Luton.

11.2 Mitigation measures

11.2.1 A range of measures relating to economics and employment are proposed to enhance the benefits of the Proposed Development. These include:

Construction

- a. the CoCP in **Appendix 4.2** of the ES [TR020001/APP/5.02] seeks to minimise disruption to ongoing airport operations and therefore minimise effects on airport or other employment;
- b. the design of the Proposed Development has been configured to minimise disruption to existing local businesses;
- c. the design for the Proposed Development has sought to minimise adverse effects on the Green Horizons Park development (formerly New Century Park) (application reference 17/02300/EIA LBC) which included employment creation estimated at 3,200 jobs;
- d. an **Employment and Training Strategy (ETS)** has been prepared in liaison with key stakeholders and submitted as part of the application for development consent [TR020001/APP/7.05]. The **ETS** proposes actions and initiatives with a vision to create quality careers and make the airport an inclusive and aspirational place to work. The ETS specifically focuses on maximising employment opportunities at the local level (Luton) and in the Three Counties of Hertfordshire, Bedfordshire and Buckinghamshire, the principal area of airport employee residence, in particular. These proposals include establishing a Luton Employment and Skills Programme at the airport in line with the initiatives set out within the ETS. The Programme will involve engagement with local government partners, education institutions and training providers, promote employment and training opportunities across the airport with local employment support and training institutions, encouraging hiring of apprentices and trainees through procurement and working together with airport employers and enhancing outreach with local community groups and schools;

- e. work will be undertaken with existing education bodies and employers in advance of construction to determine future skills requirements and gaps; and
- f. as part of their selection criteria, contractors' ability to deliver social value will be considered (i.e. whether the contracts could deliver wider social, economic and environmental benefits).

Operation

- 11.2.2 For operation a similar approach to construction will be undertaken with the **ETS [TR020001/APP/7.05]** proposing actions and initiatives wherever relevant. A number of existing operators have bespoke training programmes – such as easyJet Academy.
- 11.2.3 It is anticipated that a Workplace Charter for employers will be developed to work towards a set of agreed objectives that would include a focus on local employment and training initiatives.
- 11.2.4 By developing local training and skills and focusing on target groups such as those out of work, the **ETS [TR020001/APP/7.05]** will also act as a mitigation to the effects on housing need. It will increase the ability of existing economically active and inactive populations in Luton and the Three Counties to engage with airport-related construction and operational employment thus reducing, particularly in relation to operation, the increase in housing need or in commuting that may result.

11.3 Likely significant effects

Construction

- 11.3.1 The construction of the Proposed Development would generate new jobs from direct employment at the construction site, and also in industries supporting the construction works, such as those supplying construction materials and services. It is estimated that over the construction period a total equivalent of 628 Full Time Equivalent (FTE) jobs would be directly created. In addition, approximately 3,140 FTE jobs would be created as a result of additional demand for goods and services through the construction industry supply chain, and through expenditure in the local economy by construction workers. This is equivalent to an additional £341 million in Gross Value Added (GVA) generated across the construction period. While the construction of the Proposed Development is estimated to displace circa 350 workers from existing businesses, overall it is estimated to bring significant economic benefits to Luton and the surrounding three counties of Bedfordshire, Buckinghamshire and Hertfordshire. There will also be no significant effects on the local housing market during construction due to additional demand for housing from new workers.

Operation

- 11.3.2 During operation, the Proposed Development would generate direct employment through creation of jobs to support airport operations, airlines and

other companies serving the airport, indirect employment in supply chains of the firms which support the operation of the airport and induced impacts in the form of employment and income created by the spending of the operational incomes earned.

- 11.3.3 The economic impacts of the Proposed Development have accounted for displacement, referring to the potential for other airports to accommodate demand and generate employment within the study area. It is assumed that at the local authority level, 95% of impacts are net additional in Luton but as the geographic scale of impact widens, the proportion of net additional impacts assumed decreases. At the national scale, only 5% of impacts are assumed to be net additional.
- 11.3.4 When comparing the employment growth and GDP by 2043 with existing employment and GDP in 2019 and adjusting for the direct, indirect and induced impacts identified above for displacement, the total number of net new jobs would be approximately 5,795 in Luton and an additional £553m in GDP, 6,450 new jobs in the Three Counties with an additional £572m in GDP, and a total net of 750 new jobs across the UK equating to an additional £63m in GDP.
- 11.3.5 This would provide a significant beneficial effect to the UK economy. **Table 11.1** presents a breakdown summary of the net GDP and employment growth estimated as a result of the Proposed Development.

Table 11.1: With Development minus Without Development: Gross and Net GDP and Employment Growth (Direct, Indirect and Induced)

Year	Area	With Development – Without Development Gross		Displacement Adjustment Factor	With Development – Without Development Net	
		Jobs	GDP		Jobs	GDP
2027	Luton	1,200	£87m	95%	1,140	£83m
	Three Counties	1,700	£114m	75%	1,280	£86m
	UK	2,900	£190m	5%	150	£10m
2039	Luton	3,800	£308m	95%	3,610	£293m
	Three Counties	5,200	£409m	75%	3,900	£307m
	UK	9,100	£684m	5%	460	£34m
2043	Luton	6,130	£582m	95%	5,795	£553m
	Three Counties	8,590	£762m	75%	6,450	£572m
	UK	15,000	£1.3bn	5%	750	£63m

Note: Rows may not sum due to rounding.

- 11.3.6 The airport also supports economic activity by providing connectivity to the passengers that use it. For passengers travelling on business, the connectivity

offered by the airport means that they are able to interact more effectively with global markets. The growth of the airport and the connectivity it offers would also enable more visitors to come to the UK. These visitors would support GDP and employment via an expenditure injection into the economy. The expansion of the airport also has the potential to generate additional tax revenue for Government through the Air Passenger Duty paid by passengers. These impacts would result in further significant beneficial effects to the UK economy. There will also be no significant effects on the local housing market during operation due to additional demand for housing from new workers.

12 GREENHOUSE GASES

12.1 Context

12.1.1 **Chapter 12** of the ES [TR020001/APP/5.01] presents the assessment of greenhouse gas (GHG) emissions from the Proposed Development. In June 2019, the UK Government set a legally binding target of net zero carbon emissions by 2050 (Ref. 6). The Transport Decarbonisation Plan (Ref. 7), published in July 2021, sets out the Government's commitments and actions to further decarbonise the full transport system in the UK before 2050.

12.1.2 The Jet Zero Strategy (Ref. 8) was published in July 2022 and sets out the Government's position on how the aviation sector can decarbonise in line with national targets. The strategy provides a number of policy measures to mitigate the emissions from aviation; these have been accounted for in the GHG assessment.

12.1.3 In addition to the assessment of GHG emissions, the ES also identifies the impact of the Proposed Development on the UK meeting its five-yearly carbon reduction targets. The sixth carbon budget (Ref. 9), passed into law in June 2021 for years 2033-2037, was the first to align with the net zero target and for the first time incorporated the UK's share of international aviation and shipping emissions.

12.1.4 Consideration is also given to the Airports National Policy Statement (ANPS). While the ANPS does not have a direct bearing on the Proposed Development the method for calculating GHG emissions presented in the ANPS has been followed and the significance test in paragraph in 5.82 is applied. This states that:

“Any increase in carbon emissions alone is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the project is so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets, including carbon budgets.”

12.2 Mitigation measures

12.2.1 A range of measures to reduce GHG emissions from the Proposed Development are proposed and have been accounted for in the assessment. These include (but are not limited to):

Construction

- a. as set out in the CoCP (**Appendix 4.2** of the ES [TR020001/APP/5.02]) the lead contractor will develop and implement a Carbon Efficiency Plan to manage carbon emissions from construction activities and promote good practice;
- b. mitigation measures will consider both, the embodied and operational carbon associated with construction works, and include the below:
- c. specification of materials with lower embodied GHG emissions within lead contractor' contracts;

- d. commitments to recycle/reuse demolition waste;
- e. commitments to reduce water use and disposal;
- f. use of renewable/zero or low carbon fuels for construction; vehicles, plant and machinery where reasonably practicable; and
- g. targets would be set to reduce waste generation and water use during construction.

Operation

12.2.2 The Outline Greenhouse Gas Action Plan (refer to **Appendix 12.1** of the ES [TR020001/APP/5.02]) sets out measures to reduce GHG emissions from the operation of the Proposed Development, such as:

- a. options for low carbon renewable energy generation;
- b. options to encourage the future uptake of low and zero carbon fuels for both vehicles using the airport and aircraft in co-operation with the airport operator, e.g. inclusion of electric vehicle charging points in car parks, and inclusion of infrastructure for sustainable aviation fuels, where feasible;
- c. measures incorporated into the design to utilise efficient building design, reduce energy usage and waste generation during operation.
- d. no natural gas to be supplied as part of the Proposed Development, and its use phased out of existing airport operations;
- e. a landscaping strategy for the operation of the Proposed Development to offset any loss of vegetation and deliver new habitats would be implemented (refer to **Appendix 8.2** of this ES [TR020001/APP/5.02]); and
- f. mitigation proposed to reduce emissions to air and the number of car journeys outlined in **Sections 7.2** and **18.2** of this NTS will also reduce GHG emissions.

12.3 Likely significant effects

Construction

12.3.1 Construction GHG emissions calculated for the Proposed Development were based on data for estimated energy use, types and quantities of construction materials, waste generated during construction, and land use change leading to a loss of carbon stock. The assessment estimated that a total of 1,082,369 tonnes of carbon dioxide equivalent (tCO₂e) would be emitted during the construction of the Proposed Development. 50% of these emissions are associated with usage of equipment and vehicles during construction. Other major sources of GHG emissions are land use change and embodied carbon in construction materials, which account for 23% and 20% of total GHG emissions during construction respectively.

Operation

- 12.3.2 Operational GHG emissions assessment considered emissions over the life cycle of the Proposed Development from key activities identified, including aviation, airport operations and surface access of passengers, staff and freight. The assessment of GHG emissions considered the impact of existing policy measures including:
- a. market based mechanisms such as the UK Emissions Trading Scheme (UK ETS) and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA);
 - b. the uptake of Sustainable Aviation Fuels;
 - c. projected improvements in the efficiency of aircraft and airspace management and the rollout of zero emission aircraft (electric and hydrogen);
 - d. the ongoing decarbonisation of the UK electricity grid; and
 - e. the ongoing decarbonisation of surface transport.
- 12.3.3 At maximum capacity in 2043, the Proposed Development was estimated to generate annual emissions of 983,869 tCO₂e from its operation, with the majority of these being associated with aircraft movements. This is an additional carbon impact of 462,128 tCO₂e compared to the airport's capacity being capped at 18 mppa (there is a separate application to increase capacity to 19 mppa, but the Future Baseline for the GHG assessment assumes that capacity remains capped at 18 mppa).
- 12.3.4 A quantitative assessment of the Proposed Development's GHG impact relative to comparable trajectories to net zero showed that aviation emissions were consistent with the Jet Zero High Ambition scenario, and emissions from airport operations, surface access and construction were consistent with the UK's overall trajectory to net zero as represented by the UK's national carbon budgets.
- 12.3.5 The assessment concluded that the overall impact of the Proposed Development was Minor Adverse and Not Significant, and that the Proposed Development would not materially affect the UK's ability to meet its carbon reduction targets, including carbon budgets.
- 12.3.6 This overall assessment of significance was based on the relatively minor contribution of the Proposed Development's GHG emissions to relevant trajectories to net zero, and the fact that all aspects of the Proposed Development will be consistent and compliant with existing policy and best practice.

13 HEALTH AND COMMUNITY

13.1 Context

- 13.1.1 **Chapter 13** of the ES [TR020001/APP/5.01] presents the assessment of likely significant effects of the Proposed Development on population health and community.
- 13.1.2 The health and community assessment identifies effects on the health of the population and on the lives of people within the local community, arising from direct and indirect impacts on community resources and the environmental, social and economic impacts of the Proposed Development. It brings together the assessment of effects on people living close to, or affected by, the Proposed Development in a single chapter.
- 13.1.3 The health assessment considers likely effects arising from impacts on environmental, social, or economic factors that influence health and wellbeing ('health determinants'), including: access to open space, recreation, and physical activity; access to services; employment and income; housing; air quality, neighbourhood quality; aircraft noise; perception and uncertainty; and social capital⁶.
- 13.1.4 The community assessment considers likely effects on community resources, and the resultant effects on the people ('receptors') using those resources, including: residential properties, schools, community facilities, open spaces and Public Rights of Way, and leisure and recreation facilities.

13.2 Mitigation measures

- 13.2.1 A range of mitigation measures to reduce the effects on health and community from the Proposed Development would be implemented, as set out below:

Construction

- 13.2.2 As part of the landscape proposals for the Proposed Development, an area of Wigmore Valley Park would be lost and replacement open space of a greater area will be provided to the east of the existing park. The replacement open space would be delivered in assessment Phase 1, prior to any direct impacts on the existing park. The replacement open space would retain the existing main entrance to Wigmore Valley Park, adjoining Wigmore Hall and Wigmore Pavilion, and would incorporate several of the enhanced facilities proposed in this area still being delivered as part of Green Horizons Park planning consent (i.e. the improved skate park and play facilities and the refurbished Wigmore Pavilion). Overall, the loss of part of the existing park will be fully mitigated by:
- the enhancement of existing facilities, such as the upgrading of existing footpaths and new signage;
 - the provision of a larger area of publicly accessible open space; and

⁶ Social capital is defined as the networks of relationships among people who live and work in a particular society, enabling that society to function effectively.

- c. the continuation of accessibility to the park through the existing main entrance and within the replacement open space, through the resurfacing and in some instances upgrading of existing Public Rights of Way and through the creation of new surfaced paths.

13.2.3 Further mitigation proposed for the construction of the Proposed Development is set out below:

- a. the lead contractor will prepare a construction-specific community engagement plan for the construction of the Proposed Development as set out within the CoCP (**Appendix 4.2** of the ES **[TR020001/APP/5.02]**);
- b. measures to minimise dust emissions (e.g. phased working), noise emissions (e.g. limiting the time equipment is used) and visual impacts (e.g. well designed and maintained temporary hoarding and fencing) and light impacts (e.g. confinement of task lighting and orientation of site floodlights away from dwellings) to both local businesses and residents will be implemented as detailed in the CoCP (**Appendix 4.2** of the ES **[TR020001/APP/5.02]**);
- c. an **ETS [TR020001/APP/7.05]** has been developed for construction to maximise employment opportunities and upskilling for hard-to-reach groups, the employed, young people and those in the local and wider study area;
- d. the Outline Construction Traffic Management Plan and Outline Construction Workers Travel Plan, **Appendix 18.3** and **18.4** of the ES **[TR020001/APP/5.02]** respectively, to minimise the impact of transport on the local roads and the environment will be implemented.

13.2.4 The Applicant will continue to engage with the owners and operators of a number of facilities, including Prospect House Day Nursery to identify reasonably practicable measures to help mitigate the likely effects on these facilities. A potential alternative property for the nursery has been identified and the Applicant has committed to ensure that alternative facilities are provided, and agreements are in place, with adequate prior notice, to accommodate these services prior to the existing building being required for the Proposed Development. This commitment will be secured via a section 106 agreement⁷.

Operation

13.2.5 Mitigation proposed for air quality (see **Section 7.2**), economics and employment (**Section 11.2**), landscape and visual effects (**Section 14.2**), noise and vibration (**Section 16.2**) and traffic and transport (**Section 18.2**) would also apply to reducing adverse effects on health and community, as well as the Light Obtrusion Assessment (refer to **Appendix 5.2** of the ES **[TR020001/APP/5.02]**) and the **Framework Travel Plan [TR020001/APP/7.13]**.

⁷ A Section 106 Agreement is a legal agreement between a planning authority and a developer, or undertakings offered unilaterally by a developer, that ensure that certain extra works related to a development are undertaken.

- 13.2.6 The **ETS [TR020001/APP/7.05]** will also cover operation to maximise employment opportunities and upskilling for hard-to-reach groups, the employed, young people and those in the local and wider study area.

13.3 Likely significant effects

Planning, construction and operation – Health Assessment

- 13.3.1 Effects on mental wellbeing resulting from negative perceptions and uncertainty in relation to all assessment phases of the proposed development would be managed and reduced, as much as possible, through ongoing community engagement such as the Community Engagement Plan to be prepared as part of the CoCP (**Appendix 4.2** of the ES **[TR020001/APP/5.02]**), however, it is likely that significant adverse effects on mental wellbeing would remain.

Construction effects – Health Assessment

- 13.3.2 During construction, the local community would experience a significant beneficial effect as a result of construction employment opportunities for local people.
- 13.3.3 Prior to mitigation, likely significant effects on mental health and wellbeing have been identified due to the loss of the Prospect House Day Nursery. However, with a commitment, secured via a Section 106 agreement, to provide a replacement facility for Prospect House Nursery, of a comparable size, quality, and accessibility, to meet future capacity requirements, effects on the users of the nursery would be minor adverse, and not significant.

Construction effects – Community Assessment

- 13.3.4 Similarly, the community assessment recognises that with a commitment in place to provide a replacement facility for Prospect House Day Nursery of a comparable size, quality, and accessibility, to meet future capacity requirements, effects on the users of the nursery would be minor adverse, and not significant.

Operational effects – Health Assessment

- 13.3.5 During operation, prior to mitigation, likely significant adverse effects on health and wellbeing have been identified due to an increase in air noise. However, the provision of additional compensatory mitigation measures in the form of noise insulation to qualifying properties, where accepted, could help reduce the significant adverse health effect inside properties and would result in the adverse health outcomes reducing to minor adverse, resulting in an effect that would be not significant.
- 13.3.6 Significant beneficial effects on health and wellbeing would occur from the increase in operational employment opportunities for local people.

Operational effects – Community Assessment

- 13.3.7 The assessment has explored whether there are any in-combination effects during operation, however as no community resources experience two or more

residual significant effects, there are no significant effects on community resources during operation.

14 LANDSCAPE AND VISUAL

14.1 Context

14.1.1 **Chapter 14** of the ES [TR020001/APP/5.01] presents the landscape and visual assessment, considering likely effects of the Proposed Development on the elements that make up the landscape, the specific aesthetic or perceptual qualities of the landscape, character of the landscape and changes in views or visual amenity.

14.1.2 The airport is located to the south east of Luton on an elevated plateau. The surrounding landscape is recognised for its local landscape value, has an extensive network of Public Rights of Way and has several features valued for their amenity, heritage or ecological value. The Chilterns Area of Outstanding Natural Beauty (AONB) is located approximately 3km north and 5km west of the airport. The existing airport is a prominent feature in views from much of the surrounding area and is also visible from long distance views from the Chilterns AONB. Further context of the existing airport in views from the surrounding area can be gained from panoramic photographs included in **Appendix 14.6** of the ES [TR020001/APP/5.02]. These have been taken from representative viewpoints in the surrounding area, agreed with the landscape officers of the local authorities.

14.2 Mitigation measures

14.2.1 A range of measures relating to the management of landscape and visual effects are proposed as part of the Proposed Development. These include (but are not limited to):

Construction

- a. good practice measures to protect the landscape and visual amenity as set out and explained in the CoCP (refer to **Appendix 4.2** of the ES [TR020001/APP/5.02]);
- b. works to trees to be carried out in accordance with the Arboricultural Impact Assessment contained in **Appendix 14.3** of the ES [TR020001/APP/5.02];
- c. the functionality of the Public Rights of Way network would be protected throughout construction, to enable users to continue to exercise their rights whilst also protecting them from construction traffic; and
- d. an area at least as large as may be affected by the proposed works would be made available for use by the public ahead of any site clearance activities that would impact existing public open space and construction operations.

Operation

- a. the design of the Proposed Development has evolved to avoid impacting on ancient woodland at Winch Hill Wood, to retain mature woodland/hedgerow vegetation and coniferous plantation woodland

- along the ridgeline of Winch Hill, to retain an area of mature woodland to the north of Dairyborn Escarpment, and to retain (in part) hedgerow vegetation on the retained northern part of Wigmore Valley Park;
- b. the design of the Proposed Development has evolved to avoid excavation on the ridgeline of Winch Hill or in land occupied by a potential Roman building, located within the field immediately to the south east of Wigmore Valley Park;
 - c. the replacement open space is an integral part of the Proposed Development, which has been designed to avoid, minimise, replicate and/or replace landscape and visual effects by restoring boundary treatments, providing new screening planting and creating areas of meadow and mown grassland;
 - d. hedgerow and tree planting is proposed to restore historic field boundaries and provide visual screening;
 - e. an earth bund would be formed on the south west boundary of the retained part of Wigmore Valley Park using fill material considered unsuitable for constructing the airfield platform;
 - f. extensive planting of new trees, shrubs and seeding of meadow grassland are proposed to mitigate for the loss of existing vegetation and to provide new habitats and green corridors for wildlife;
 - g. the visual impact of new buildings and, where feasible, airfield equipment would be reduced through muted surface finishes;
 - h. an Outline Landscape and Biodiversity Management Plan has been prepared (refer to **Appendix 8.2** of the ES [TR020001/APP/5.02]) that sets out measures for the management of existing and proposed vegetation; and
 - i. improvements to Public Rights of Way within the surrounding landscape are proposed, including upgrades of sections and improved signage.

14.3 Likely significant effects

Construction and Operation Effects - Landscape

- 14.3.1 The Proposed Development would impact on the existing landscape character during both construction and operation.
- 14.3.2 The removal of elements of the existing landscape and proposed alterations to landform are likely to result in significant adverse effects on several landscape receptors during construction, impacting elements that make up the existing landscape and defined character areas. It is assessed that there would be a residual significant adverse effect on the landform east of the airport, on the townscape of Hitchin (largely due to the potential to impact on trees as a result of highway interventions) and on several landscape character areas (Luton Borough Landscape Character Area 13 – Wigmore Rural and Hertfordshire Landscape Character Area 200 – Peters Green Plateau). The increase in aircraft movements is also assessed to result in a significant adverse effect on

the aesthetic and perceptual characteristics of the landscape within the Chilterns AONB.

- 14.3.3 However, the mitigation measures to be delivered by the Proposed Development would result in a significant beneficial effect on the network of Public Rights of Way east of Luton.

Construction and Operational Effects – Visual Amenity

- 14.3.4 The Proposed Development would impact on people's visual amenity during both construction and operation.
- 14.3.5 **Inset 14.1** includes an example photomontage of the Proposed Development from Wigmore Valley Park. Further photomontages of the Proposed Development from representative viewpoints in the surrounding area are provided in **Appendix 14.7** of the ES [TR020001/APP/5.02].
- 14.3.6 The assessment concludes that the Proposed Development would result in people experiencing a significant adverse effect to their visual amenity during construction when visiting Wigmore Valley Park, Wigmore Hall, Raynham Way Recreation Ground and Community Centre, the car park east of Vauxhall Way, the area of greenspace next to Polzeath Close, South Wigmore, Darleyhall, Breachwood Green, The Heath and Lye Hill, Tea Green, using the Chiltern Way Cycle Route, the Lea Valley Cycle Route near Park Street, and when moving along Darley Road, Eaton Green Road, Winch Hill Road, Kimpton Road and Airport Way, New Airport Way, Half Moon Lane and several nearby Public Rights of Way, including to the east of the airport, to the west of Junction 10 of the M1 and users of the Chiltern Way long distance footpath.
- 14.3.7 The assessment concludes that people would continue to experience significant adverse effects at the year of maximum passenger capacity in 2043, when using Wigmore Valley Park, Wigmore Hall, Raynham Way Recreation Ground and Community Centre, the car park east of Vauxhall Way, Breachwood Green, The Heath and Lye Hill, Darleyhall, the Chiltern Way Cycle Route, the Lea Valley Cycle Route near Park Street, and when moving along Darley Road and several nearby Public Rights of Way, including to the east of the airport and users of the Chiltern Way long distance footpath.
- 14.3.8 Once the landscape mitigation delivered as part of the Proposed Development has matured, the effects experienced by the users of Wigmore Hall Conference Centre, the car park east of Vauxhall Way and users of Public Rights of Way to the south east of Wigmore Valley Park and to the east of the airport would be reduced to not significant. All other significant adverse effects on visual amenity would remain.

Inset 14.1 Example verified view of the Proposed Development from Wigmore Valley Park

Representative Viewpoint 13 : Wigmore Valley Park

Accurate Visual Representation based on winter viewpoint photography.
Refer to Appendix 14.6 of this ES [TR020001/APP/5.02] for corresponding viewpoint information.



Existing View



Block Form of Max. Parameters (Viewing Distance 300mm)

15 MAJOR ACCIDENTS AND DISASTERS

15.1 Context

15.1.1 **Chapter 15** of the ES [TR020001/APP/5.01] presents the assessment of Major Accidents and Disasters (MA&D), which considers the vulnerability of the Proposed Development to MA&D hazards and assesses the potential for the Proposed Development to cause significant environmental effects as a result of a major accident.

15.1.2 For example, natural hazards relevant to the Proposed Development include meteorological hazards (such as extreme weather events), geological hazards (e.g. ground collapse) and space weather (e.g. solar flares).

15.1.3 Relevant existing major accident hazard sources include but are not limited to: aircraft accidents, accidents associated with cargo handling and transportation centres, fuel storage facilities, former landfill, potential for unexploded ordnance within the Main Application Site, and the existing fuel pipeline which crosses the eastern boundary of the Main Application Site.

15.2 Mitigation measures

15.2.1 Measures to mitigate MA&D risks to and from the Proposed Development include but are not limited to:

Construction

- a. a detailed construction phasing plan is to be developed by the lead contractor which would consider the interaction of the works with airport operations and existing safety, environmental, emergency systems (refer to **Appendix 4.2** CoCP of the ES [TR020001/APP/5.02]);
- b. the lead contractor would be required to set up and implement accredited safety and EMS, including safe systems of work. These would identify all relevant legislation that must be complied with. Regular audits would be undertaken to monitor compliance against these management systems (refer to **Appendix 4.2** CoCP of the ES [TR020001/APP/5.02]); and
- c. the CoCP sets out requirements to minimise the risk of environmental pollution, including requirements for emergency preparedness and pollution incident response.

Operation

- a. the drainage strategy of the Proposed Development has been developed to accommodate 1 in 100 year rainfall events, including an allowance of 40% for increase in rainfall with climate change and incorporates pollution prevention measures (see **Section 20.2** and **Appendix 20.4** Drainage Design Statement of the ES [TR020001/APP/5.02]);
- b. slopes within the earthworks design have been specified at a gradient which would mitigate the risk of slope failure that could result in a landslide;

- c. to mitigate the risks associated with construction over the historic landfill site, piled foundations and ground gas protection would be embedded into the design of new structures (see **Section 17.2**);
- d. the highway design of the Proposed Development has been developed to the standards set within the Design Manual for Roads and Bridges (Ref. 10). Road Safety Audits would be carried out to inform further design development;
- e. the layout of the Proposed Development has been developed in consultation with the airport's fire safety and emergency resilience officers. A fire hydrant system will be provided during assessment Phase 2a to connect to all new aircraft stands, and the existing number of emergency water tanks around the runway will be retained. A three minute response time across the airport for the onsite rescue and firefighting service has been maintained by the Proposed Development's design;
- f. the design of the proposed fuel storage facility would incorporate measures to mitigate the risk of fire and explosion;
- g. the Proposed Development includes a direct connection between the fuel storage facility and the existing fuel pipeline to the east of the Main Application Site. This will provide the opportunity for fuel to be delivered to site via pipeline, reducing the need for fuel to be transported to the airport via road, and therefore, removing hazardous loads from the public road network;
- h. uninterruptible power sources have been incorporated within the design, which would provide emergency power for critical infrastructure, if mains power fails;
- i. the design of the Proposed Development has been developed not to attract birds in order to minimise the risk of bird strike;
- j. the Proposed Development will provide facilities for the on-site police service and rendezvous points for emergency services. An isolation bay has been incorporated within the airfield design, where aircraft can be directed, if required, in case of a threat or for disease control;
- k. the design of extended Luton DART includes emergency means of egress from trains and station platforms;
- l. the Proposed Development has been designed in compliance with relevant health and safety legislation, standards and guidance, including with regards to fire safety. In line with legal requirements, a fire risk assessment will be undertaken, and a fire plan and evacuation strategy will be implemented on site;
- m. the Proposed Development would operate under the Civil Aviation Authority Aerodrome Certificate and in compliance with UK aviation law and relevant guidance;
- n. the on-site rescue and firefighting service would remain the first-responders for any incident within the airport boundary and the on-site Luton Airport Policing Unit would continue to police the airport;

- o. the proposed fuel farm would be operated under a Control of Major Accidents Hazards and Hazardous Substances Consent in compliance with relevant legislative requirements; and
- p. the Public Safety Zone, where planning restrictions apply, would be maintained to minimise the number of people and properties at risk in case of an accident occurring during aircraft landing or take-off.

15.3 Likely significant effects

Construction

- 15.3.1 The assessment identified 30 potential MA&D hazards relevant to the Proposed Development during construction such as extreme weather events, fire, explosion and major leaks and spillages. The potential for construction activities to disturb the normal operation of the existing airport was considered.
- 15.3.2 Mitigation outlined above is considered to mitigate all MA&D risks to be as low as reasonably practicable. Therefore, the residual risks of MA&D are not likely to be significant.

Operation

- 15.3.3 The assessment identified 31 hazards during operation, such as extreme weather events, fire, explosion, major leaks and spillages and aircraft accidents. During operation, the Proposed Development would introduce additional aircraft movements, and therefore, the potential for an increased risk of aircraft accidents was considered.
- 15.3.4 Mitigation outlined above is considered to mitigate all MA&D risks to be as low as reasonably practicable. Therefore, the residual risks of MA&D are not likely to be significant.

16 NOISE AND VIBRATION

16.1 Context

- 16.1.1 **Chapter 16** Noise and vibration of the ES [TR020001/APP/5.01] presents the assessment of the effects of the Proposed Development due to changes in noise and vibration. Noise associated with the airport is primarily caused by departing and arriving aircraft (referred to as air noise). Assessments of noise and vibration have also been undertaken for construction works and other sources of noise from the operation of the Proposed Development, for example aircraft on the ground as they taxi around the airport and test their engines for safety reasons (together referred to as ground noise), road traffic, the extension of the Luton DART serving the airport and fixed plant (e.g. air handling equipment at the new terminal).
- 16.1.2 Due to the large study area for the assessment, it is necessary to define the assessment baseline using noise modelling. This is standard practice. Extensive measurements have been collected from the airport's noise monitoring terminals to allow the predictions from the aircraft baseline noise model to be compared to real measured data, and then adjustments made to the model to replicate measured data as accurately as possible. To provide baseline information for the construction noise assessment and to provide context to the wider assessment, ambient sound surveys were also undertaken at locations surrounding the Proposed Development from 2018 to 2021. This allowed the identification of the nature and character of noise currently experienced by receptors, such as residential properties.
- 16.1.3 The assessment identifies the likely reasonable worst-case noise and vibration effects during both construction and operation for each assessment phase. The modelling of air noise, with and without the Proposed Development, accounts for an expected reduction in noise levels over time, as airlines upgrade their fleet with new-generation aircraft (e.g. the Airbus Neos and Boeing 737 MAX), which are quieter and more efficient.
- 16.1.4 "New-generation" aircraft are those that currently exist at the airport in relatively small but increasing numbers. The transition of these aircraft into the fleet can be predicted with a reasonable degree of accuracy and are forecast to form the vast majority of the fleet by 2039. The transition of these aircraft into the fleet are therefore taken into account in the assessment. The "next-generation" of aircraft are those that will utilise future technologies (which includes sustainable aviation fuel, hydrogen and electric) that are currently in development. These aircraft are expected to start to become available in the mid-2030s (and the subsequent generation expected after that in the 2050s) and their noise performance is unknown as they are not currently in service. Therefore, the noise assessment assumes these aircraft will perform no better than the "new-generation" aircraft that they replace on a reasonable worst-case basis. However, there are mechanisms in the Noise Envelope (see **Section 16.2**) for noise limits to be reduced (i.e. made stricter) to account for any noise improvement from next generation aircraft once their performance is known, ensuring noise improvement from this future technology is shared with communities around the airport.

16.1.5 The UK is also undergoing a redesign of airspace, which is being undertaken concurrently with, but separate to, the Proposed Development. This is subject to separate development control overseen by the Civil Aviation Authority that includes the assessment of noise and public consultation. This is expected, for example, to allow aircraft from the airport to climb more quickly due to the lifting of constraints imposed on aircraft from neighbouring airports, and therefore could reduce air noise experienced by the wider surrounding area. Details on how airspace may change at the airport in the future are not yet available so any noise benefits that may occur as a result of airspace changes have not been accounted for within the modelling for this ES, though a sensitivity test has been undertaken to demonstrate how future airspace changes are expected to be delivered within the Proposed Development's noise limits (known as the Noise Envelope, defined and secured as part of the **Green Controlled Growth Framework [TR020001/APP/7.08]**, see **Green Controlled Growth Explanatory Note [TR020001/APP/7.07]**).

16.2 Mitigation measures

Overview

- 16.2.1 There are a range of measures already in place that address the noise impact of the airport, which are summarised in the airport's 2019-2023 Noise Action Plan (NAP, Ref 11). These measures include operational procedures and operational limits to minimise noise from the airport and a noise insulation scheme for houses significantly affected by noise from the airport.
- 16.2.2 To mitigate the effects of the Proposed Development, a range of additional measures are proposed as described in the following sub-sections. In line with aviation policy (Ref. 12), the Noise Policy Statement for England (NPSE, Ref. 13), Planning Practice Guidance Noise (PPGN, Ref. 14) and Government's policy on sustainable development⁸, the Proposed Development includes noise mitigation measures to:
- a. limit and, where possible, reduce the number of people significantly affected by adverse impacts from aircraft noise;
 - b. prevent unacceptable adverse effects on health and quality of life from noise;
 - c. avoid significant adverse effects on health and quality of life from noise;
 - d. mitigate and minimise adverse effects on health and quality of life from noise;
 - e. where possible contribute to improvements of health and quality of life from noise; and
 - f. share the benefits of future technological improvements between the airport and its local communities to achieve a balance between growth and noise reduction.

⁸ Please refer to the **Sustainability Statement [TR020001/APP/7.06]**

- 16.2.3 The noise mitigation embedded into the Proposed Development collectively meets the second and third aims of Government noise policy to mitigate and minimise adverse effects on health and quality of life from noise and where possible contribute to improvements in health and quality of life from noise, and contributes to meeting the first aim, all within the context of Government policy on sustainable development.
- 16.2.4 The compensatory mitigation measures (noise insulation) have been developed so that in combination with the embedded noise management measures, together they meet the first aim of Government noise policy to avoid significant adverse effects on health and quality of life from noise. This is achieved through the noise insulation scheme which provides a full package of noise insulation where air noise exposure from the Proposed Development exceeds the relevant significant noise thresholds.

Construction

- 16.2.5 The CoCP (**Appendix 4.2** of the ES [TR020001/APP/5.02] sets out measures to minimise noise and vibration from construction activities, including the requirement for contractors to use quieter machinery and equipment and construction methods which are not inherently noisy. The measures include, but are not limited to, the following:
- a. best practicable means⁹ measures to minimise noise and vibration (e.g. control of working hours, selection of quiet construction methods and plant and provision of screening);
 - b. noise and vibration monitoring;
 - c. seeking prior consent for the above from the local authority before noisy works are commenced;
 - d. details of works notifications to nearby houses; and
 - e. details of a complaints procedure.

Operation

Air noise

- 16.2.6 A 'Noise Envelope' would be adopted through Green Controlled Growth, which is a framework of legally binding and enforceable limits and controls to manage air noise and other environmental topics. Noise contour area limits would be set along with thresholds, at which action should be taken to ensure limits are not exceeded. In addition, the existing restrictions on the airport of 9,650 aircraft movements during the night quota period (from 23:30 and 06:00) are proposed to be maintained to limit night-time aircraft noise levels. The Noise Envelope would give certainty to local communities about the amount of noise which can be expected in the future and to give the airport operator and airlines certainty on how they can use the airport.

⁹ 'Best Practicable Means' (BPM), as defined by as defined in Section 72 of the Control of Pollution Act, are means employed to minimise noise, taking into account things such as local conditions, technology, cost and safety.

- 16.2.7 In essence, the Noise Envelope defines the noise outcomes to be achieved, or bettered, rather than the specific mitigation steps employed to achieve the outcomes. Given that the airport expansion is planned over an extended period of time, this approach provides appropriate flexibility for the airport operator to identify and implement the optimum mitigation and draw on future technology improvement whilst also providing certainty of the outcomes that would result, even in the reasonable worst-case scenario. The Noise Envelope would also contain a mechanism for the limits to be reduced in future years to ensure that the noise benefits of next-generation aircraft technology are shared between the airport and surrounding communities. For further information on the Noise Envelope, please refer to the **Green Controlled Growth Explanatory Note [TR020001/APP/7.07]**.
- 16.2.8 All houses identified as experiencing a likely significant noise effect due to the Proposed Development and which meet the qualifying criteria would be eligible for noise insulation, such as double or secondary glazing, acoustic thermal insulation in lofts and installation of suitable ventilation systems. An existing noise insulation scheme is already offered by the airport operator, however as part of the Proposed Development, the existing noise insulation scheme would be updated and will represent a substantial improvement in terms of the extent of the scheme and the number of properties that are eligible. For more information on the noise insulation schemes, please refer to the **Draft Compensation Policies, Measures and Community First [TR020001/APP/7.10]**.

Ground noise

- 16.2.9 The Proposed Development has been designed to reduce aircraft ground noise by providing additional taxiways and improving the use of airfield layout to reduce aircraft taxi time and queueing. An engine run-up bay for engine testing has been located within a specially designed facility with noise screening and noise barriers have been provided to reduce the impact of aircraft ground noise.

Surface access noise

- 16.2.10 The Proposed Development is committed to improving accessibility to the airport, particularly by public transport which will reduce the impacts from road traffic noise. In addition, the AAR would be constructed using a surfacing material designed to reduce noise.

16.3 Significant adverse effects on health and quality of life and likely significant effects

Overview

- 16.3.1 For the assessment of noise and vibration effects, the concepts of Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL), as defined in the Noise Policy Statement for England, are used.
- a. LOAEL is defined as ‘the level above which adverse effects on health and quality of life can be detected’.

- b. SOAEL is defined as ‘the level above which significant adverse effects on health and quality of life occur’.

- 16.3.2 Noise and vibration effects are identified as a result of the magnitude of change and the resulting exposure, with reference to the LOAEL and SOAEL thresholds.
- 16.3.3 Significant adverse effects on health and quality of life in noise policy terms are determined by noise or vibration exposure above the SOAEL.
- 16.3.4 Likely significant effects in EIA terms are determined by noise change when comparing a situation with the Proposed Development and without the Proposed Development in a given assessment year.
- 16.3.5 The following years have been modelled to inform the noise and vibration assessment:
- a. 2019, representing the actual noise baseline¹⁰ that occurred pre-pandemic;
 - b. 2027 representing when Terminal 1 passenger throughput reaches 21.5 mppa (assessment Phase 1);
 - c. 2039 representing when Terminal 2 is open and total passenger throughput reaches 27 mppa (assessment Phase 2a); and
 - d. 2043 representing when Terminal 2 is completed and the airport is at full capacity of 32 mppa (assessment Phase 2b).
- 16.3.6 For each of the assessment years the following scenarios are modelled:
- a. without the Proposed Development coming forward (i.e. with the airport operating at the current consented capacity of 18 mppa and within the currently consented long term noise limits but accounting for a reduction in air noise resulting from the ongoing upgrade of aircraft fleet); and
 - b. with the increased air and road traffic as a result of the Proposed Development.

Construction

- 16.3.7 Predictions for construction works and construction traffic movements indicate that significant adverse effects from noise and vibration are unlikely.

Operation

Air noise

- 16.3.8 The predicted air noise in assessment Phases 1, 2a and 2b shows that overall, even with the Proposed Development, there will be a reduction in the number of people who would experience adverse effects on health and quality of life

¹⁰ Whilst it is considered appropriate to model the noise impact that occurred in 2019 using actual aircraft movement data to represent the ‘current baseline’, in response to 2022 Statutory Consultation feedback a sensitivity test has been undertaken using a ‘2019 Consented’ baseline, modelled using a theoretical 2019 fleet that would have been compliant with the current consented short-term noise limit. Results of the sensitivity test are presented in **Section 16.9 of Chapter 16** of this ES [TR020001/APP/5.01].

compared to the 2019 'current' baseline. By assessment Phase 2b 1,150 fewer people will be exposed to noise levels above the SOAEL during the daytime and 1,700 fewer people will be exposed to noise levels above the SOAEL during the night-time compared to the 2019 baseline. The reduction in the SOAEL noise contours in assessment Phase 2b compared to the 2019 baseline is shown in **Inset 16.1**.

- 16.3.9 This reduction in noise exposure over time is due to quieter and more efficient aircraft that will be phased into the fleet, with the noise limits in the Noise Envelope in place to make sure this noise reduction is delivered.
- 16.3.10 Although there will be a reduction in the total population exposed to significant adverse effects on health and quality of life as described above, there will be community areas close to the airport that are significantly affected now and will continue to experience these effects with the Proposed Development in future years. These significant effects would be avoided through the provision of a full package of noise insulation.
- 16.3.11 Whilst there will be noise reductions over time from the 2019 current baseline to future assessment years with the Proposed Development, there will be increases in noise in a given year when comparing the situation with and without the Proposed Development. This is because the ongoing transition to quieter new-generation aircraft will happen with or without the Proposed Development. It is this change which is used to identify likely significant effects in EIA terms.
- 16.3.12 If the assessment Phase 1 noise contours with the Proposed Development are compared with the assessment Phase 1 noise contours without the Proposed Development coming forward, the difference in noise would be between 0 and 2 dB higher with the Proposed Development. Most of this change will be experienced by the population at lower noise exposure levels between the LOAEL and SOAEL, and the magnitude of change would not lead to adverse likely significant effects.
- 16.3.13 In assessment Phase 1, where likely significant adverse effects due to noise change above SOAEL are predicted to occur as early as 2027, the full roll out of noise insulation may not have been completed before the relevant noise change occurs. However, it is important to note that these communities are already exposed to noise levels above the SOAEL in the 2019 Actuals baseline, and will experience a lower noise exposure in 2027, even with the Proposed Development in place. These effects are therefore not significant effects on health and quality of life as a result of the Proposed Development but are adverse likely significant effects in EIA terms when considering the change from the Do-Minimum (without the Proposed Development) to the Do-Something (with the Proposed Development) scenario in 2027. Whilst the noise insulation scheme will be rolled out as quickly as is reasonably practicable, it may not be possible to offer and install noise insulation (where the offer is accepted) to all impacted communities before the relevant noise change occurs, due to the capacity of the market to meet immediate demand. In such cases there may be temporary adverse likely significant effects in assessment Phase 1 for 3,800

people until such time as noise insulation can be provided and the adverse likely significant effects avoided.

- 16.3.14 If the assessment Phase 2a noise contours with the Proposed Development are compared with the assessment Phase 2a noise contours without the Proposed Development coming forward, the difference in noise would be between 1 and 2 dB higher with the Proposed Development. Most of this change will be experienced by the population at lower noise exposure levels between the LOAEL and SOAEL, and the magnitude of change would not lead to adverse likely significant effects. The extensive noise insulation scheme that forms part of the application for development consent would avoid the adverse likely significant effects that would otherwise occur in assessment Phase 2a for 200 people during the day and 2,600 people during the night. By assessment Phase 2a, noise insulation will have been rolled out to all the communities that would otherwise experience adverse likely significant effects.
- 16.3.15 If the assessment Phase 2b noise contours with the Proposed Development are compared with the assessment Phase 2b noise contours without the Proposed Development coming forward, the difference in noise would be between 1 and 3 dB higher with the Proposed Development. Most of this change will be experienced by the population at lower noise exposure levels between the LOAEL and SOAEL, and the magnitude of change would not lead to adverse likely significant effects. The extensive noise insulation scheme that forms part of the application for development consent would avoid the adverse likely significant effects that would otherwise occur in assessment Phase 2b for 500 people during the day and 3,250 people during the night. By assessment Phase 2b, noise insulation will have been rolled out to all the communities that would otherwise experience adverse likely significant effects.
- 16.3.16 The assessment is based on the Core Planning Case of expected growth in air traffic; however, sensitivity testing has been undertaken using slower and faster growth cases, which consider throughput being achieved earlier or later than the Core Planning Case to account for any uncertainties in forecasting. Other sensitivity tests have been undertaken to see whether assumptions such as the noise reduction of next-generation aircraft technology, the effect of flight paths changing (through the separate airspace change process) and the use of a compliant 2019 baseline, would make a difference to the identification of likely significant effects. The results of these sensitivity tests are reported in **Section 16.9 of Chapter 16 Noise and Vibration** of this ES [TR020001/APP/5.01].
- 16.3.17 No adverse likely significant effects are predicted for noise sensitive non-residential receptors in any assessment phase.

Ground noise

- 16.3.18 With respect to aircraft ground noise, households adjacent to the airport are expected to experience changes in noise levels across the assessment phases (increases of up to 3dB and decreases of up to 2dB). However, the vast majority of these noise changes will be experienced by the population at lower noise exposure levels between the LOAEL and SOAEL, and the magnitude of change would not lead to adverse likely significant effects.

- 16.3.19 A small number of households (six in assessment Phase 1, reducing to four in assessment Phase 2a and 2b) close to the airport will experience adverse likely significant effects due to noise change above SOAEL that will be avoided by the provision of noise insulation due to air noise exposure.
- 16.3.20 No adverse likely significant effects are predicted for noise sensitive non-residential receptors in any assessment phase.

Surface access noise

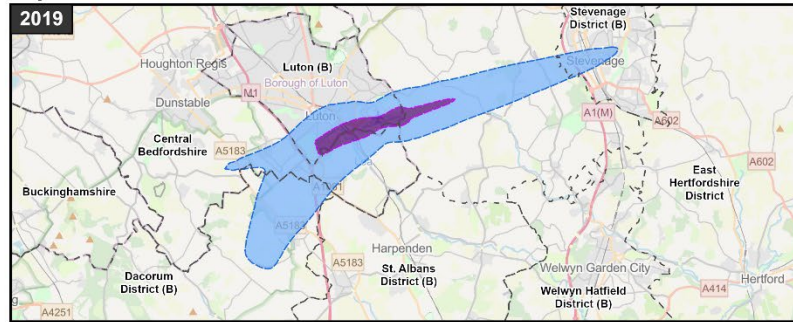
- 16.3.21 Minor increases in road traffic are expected on most major routes but typically not to the extent that they would result in significant adverse effects in terms of road traffic noise exposure. However, for some houses along Crawley Green Road, minor increases in road traffic noise in assessment Phase 2a and Phase 2b could lead to indirect adverse likely significant effects because of the existing high road traffic noise levels in the area (above the SOAEL). As these effects are far into the future and depend on forecast traffic data, the effects will be reassessed using more up to date traffic data nearer the time, and noise insulation will be provided to avoid the significant effects should the reassessment confirm that they are likely to occur.
- 16.3.22 Potential indirect adverse likely significant effects in assessment Phase 2b are also predicted for some residents in Tea Green as a result of increased traffic on Stony Lane, although absolute road traffic noise levels are not expected to be high (i.e. they remain below the SOAEL).
- 16.3.23 There are also some localised beneficial effects on road traffic noise associated with the Proposed Development. For example, once the airport access road is open, road traffic, and therefore road traffic noise, on Eaton Green Road is expected to reduce. However these beneficial effects are not likely to be significant.
- 16.3.24 No adverse likely significant effects are predicted for noise sensitive non-residential receptors in any assessment phase.

Other noise and vibration sources

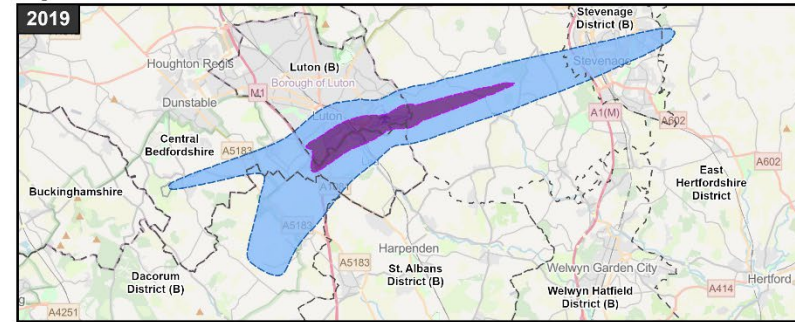
- 16.3.25 Other noise and vibration sources include vibration from aircraft on the ground and noise and vibration from the extension of the Luton DART. These potential sources of noise and vibration are over 400m from the nearest houses and noise sensitive buildings so no likely significant effects have been identified. Likely significant effects from fixed plant (such as substations, fuel storage facilities and other building services) will be avoided through a requirement to design these to meet a specified process to control noise and avoid significant effects at the nearest houses and sensitive receptors.

Inset 16.1: Daytime (left) and night-time (right) noise assessment.

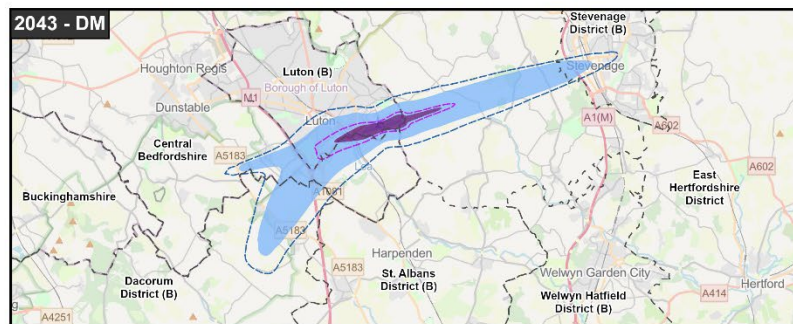
Daytime Noise Levels Assessment



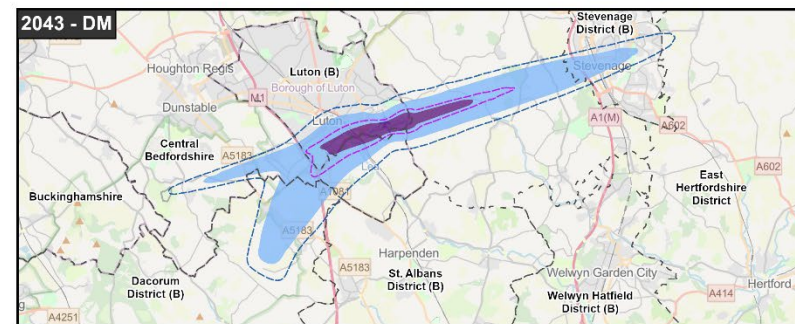
Night-time Noise Levels Assessment



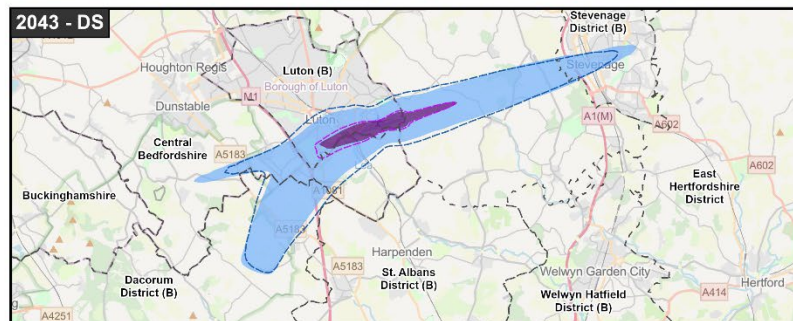
2043 - DM



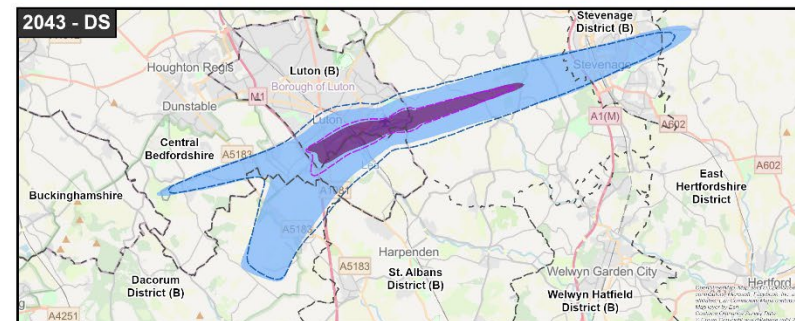
2043 - DM



2043 - DS



2043 - DS



KEY

- Local Authority Boundaries
- Daytime: LOAEL : 51dB LAeq,16h
- Night-time: 45dB (LOAEL)
- SOAEL : 63dB LAeq,16h
- 55dB (SOAEL)
- 2019 Actuals: LOAEL
- 2019 Actuals: SOAEL

DM stands for 'Do-Minimum' and represents the scenario of air noise without the proposed development coming forward.
 DS stands for 'Do-Something' and represents the scenario of air noise with the proposed development in place.
 Areas shown in blue indicate the Lowest Observed Adverse Effect Level (LOAEL).
 Areas shown in purple indicate the Significant Observed Adverse Effect Level (SOAEL).
 All Noise Levels are presented in Decibels (dB)

17 SOILS AND GEOLOGY

17.1 Context

- 17.1.1 **Chapter 17** of this ES [TR020001/APP/5.01] presents the assessment of effects on land quality with respect to soils and geology.
- 17.1.2 The geology of the Main Application Site comprises Made Ground, Dry Valley, Head Deposits and Clay with Flint overlying Chalk bedrock. The Wigmore Valley Park area and parts of the existing airport of the Main Application Site also comprise the former Eaton Green landfill. The former landfill was operated by Luton Borough Council between 1937 and 1978, although other records show it was still in use in the 1990s.
- 17.1.3 An extensive ground investigation (GI) has been completed to characterise the material within the former landfill and understand the risk from contamination. Findings indicate the former landfill contains a variety of contaminants, including heavy metals, chlorinated solvents and inorganic compounds, and presents a source of landfill gases. In its current state, the contamination levels do not pose a high risk of harm to human health or pollution of the water environment.
- 17.1.4 On the basis of a desktop review of historical mapping, previous site reports, relevant geological maps, regulatory body records, ground investigation data and site walkovers, other potential contaminative sources have also been identified within the Main Application Site and the surrounding area. Beside the former landfill, these include: car parking areas, a former scrap yard, airport activities such as the fire station training area, motor works and other industrial uses and areas of likely Made Ground.
- 17.1.5 These potential sources are associated with contaminants such as hydrocarbons, heavy metals, asbestos containing materials and ground gases. The airport also had a significant role in World War II and is therefore associated with the risk of unexploded ordnance (UXO). These areas are considered to present a lower risk of contamination comparable to the former landfill.
- 17.1.6 No potential contaminative sources were identified on the agricultural land to the east of the airport; therefore no significant effects are likely.

17.2 Mitigation measures

Construction

- 17.2.1 Construction of the Proposed Development would disturb the landfill and therefore, a range of measures to minimise risks associated with land contamination and ground gases are proposed. Whilst these measures would be implemented during construction, they would also minimise risks during operation. The proposed measures include:
- a. measures proposed to be implemented by the lead contractor to manage risks associated with contamination and potential UXO are set out within the CoCP (**Appendix 4.2** of the ES)

[TR020001/APP/5.02]. These include good construction site practices, site briefings, watching brief for contamination, procedures for dealing with unexpected contamination, controls for odour, noise, dust and compliance with legislation. A watching brief may be required in areas where natural chalk is to be excavated to identify and record any geological features of interest exposed;

- b. an Outline Remediation Strategy (ORS) has been prepared (refer to **Appendix 17.5** of the ES **[TR020001/APP/5.02]**), setting out details of how remediation would be undertaken and the remediation objectives to be achieved;
- c. the lead contractor will prepare the following documentation, prior to start of enabling works on the landfill:
 - i. a detailed Remediation Strategy, substantially in accordance with the Outline Remediation Strategy;
 - ii. a Framework Materials Management Plan (FMMP) to describe how materials (made ground, natural soils) will be handled and reused on site, during construction works. The framework is to be applied to all excavated materials reuse and management (including storage);
 - iii. individual Material Management Plans (MMP) for all assessment phases and work packages, with reference to the FMMP, this would be agreed with the Environment Agency and signed off by a Qualified Person (QP); and
- d. prior to the start of the enabling works, the lead contractor would apply to the Environment Agency for an environmental permit to reuse material from the former landfill, see CoCP **Appendix 4.2** and ORS **Appendix 17.5** of the ES **[TR020001/APP/5.02]**. This would be submitted with any required documentation, such as a detailed hydrogeological risk assessment. The timeframe for obtaining the environmental permit is approximately two to three years which includes 12 months of groundwater monitoring.

17.2.2 Additional GI would be undertaken on the other lower risk areas of the Main Application Site where potential contamination sources have been identified, such as the Off-site Car Parks, the airport and AAR prior to construction of the Proposed Development. This forms part of the embedded mitigation for these areas. The information obtained from the GI would be used to verify mitigation requirements and design measures for land contamination.

17.2.3 Additional measures proposed to protect and retain the existing soil resource and minimise waste and material use are summarised within **Sections 6.2 (Chapter 6 Agricultural Land Quality and Farm Holdings of the ES [TR020001/APP/5.01])** and **19.2 (Chapter 19 Waste and Resources of the ES [TR020001/APP/5.01])** of this NTS respectively. The risks to groundwater arising from the potential creation of pathways into the underlying chalk during piling are assessed in **Chapter 20 Water Resources and Flood Risk of the ES [TR020001/APP/5.01]**.

Construction and operation

17.2.4 A number of measures have been embedded within the design to minimise risks associated with ground contamination, ground gas and settlement during construction on the former landfill which will minimise risks during operation. For example:

- a. the location, orientation and depth of excavation into the landfill for the development platforms¹¹ has been designed to reduce the amount of landfill material that will require excavation;
- b. an engineered cover system is proposed across the area of the former landfill to prevent people coming into contact with contamination, and include protection of drainage and other services;
- c. diversion/treatment of existing services in the landfill to prevent potential pathways for landfill gas to migrate off-site;
- d. all buildings present within the area of the former landfill, external areas and Luton DART would have ground gas management measures, to prevent migration of gases into structures/services;
- e. a perimeter ground gas control system would be installed to prevent off-site migration of ground gases to adjacent land uses prior to earthworks and be maintained into the operational phase;
- f. a leachate control system, including leachate sumps to be installed;
- g. gas monitoring would be continued post-construction to monitor the efficacy of the control measures and to confirm no risk to off-site receptors;
- h. the geotechnical design will take into account issues associated with building on the former landfill, including ground stability, settlement and integrity, to ensure they do not impact the Proposed Development. Measures being considered to address these issues include use of: settlement and slope stability analysis, ground improvement techniques, surcharging, dynamic compaction and flexible pavement;
- i. service connections would be modified to accommodate the likelihood of future settlement of the landfill and reduce the risk of damage to services;
- j. continuous monitoring of the landfill with regard to settlement would be undertaken, with requirement for maintenance measures; and
- k. mitigation and monitoring measures would be employed during piling works through the landfill in accordance with the findings of the Foundation Works Risk Assessment, **Appendix 17.6** of the ES **[TR020001/APP/5.02]** and detailed hydrogeological risk assessment.

¹¹ Areas where earthworks have been completed to create suitable ground conditions on which to construct the Proposed Development.

17.3 Likely significant effects

Construction

- 17.3.1 The assessment of risks to human health from existing ground contamination sources has been completed. During construction, with mitigation in place as described above, these risks are not likely to be significant. Furthermore, the Proposed Development would provide a beneficial effect overall to adjacent site users and properties by removing some contaminated soils and replacing these with treated materials which do not present a risk to human health, or the environment, placement of an engineered cover system and installing gas control measures.

Operation

- 17.3.2 The assessment of risks to human health during the operation of the Proposed Development has been undertaken, considering the risk of contact with contaminated materials and the migration of ground gas into buildings. With mitigation embedded within the design, as described above, the potential risks can be managed effectively, and no significant effects are likely.

18 TRAFFIC AND TRANSPORT

18.1 Context

- 18.1.1 **Chapter 18** of the ES [TR020001/APP/5.01] presents the assessment of environmental effects from traffic and transport. Vehicular access to airport and its car parks is currently along Airport Way and along Percival Way/President Way. Luton Airport Parkway station is located close to the airport and provides a rail connection with London and the East Midlands. There are also several Public Rights of Way located within the Main Application Site.
- 18.1.2 Separately to the Proposed Development, a package of highway improvement schemes has been identified in the East Luton Study (on behalf of Luton Borough Council) (Ref. 15) to address traffic pressures arising from planned growth in housing and employment identified in the Luton Local Plan (Ref. 16) and growth in the neighbouring districts. As agreed with Luton Borough Council, these schemes have been assumed to be completed by 2027 in the ES. Furthermore, in discussion with National Highways, it is expected that improvements to M1 capacity between Junctions 9 and 10 would be made by 2043 (e.g. in the form of a hard shoulder running) to address capacity issues arising from planned growth.
- 18.1.3 The airport Public Transport Hub, located adjacent to the existing terminal, caters for a wide variety of services to support airport operations with 18 bus/coach stands allocated to specific services. Local buses operated by Arriva and Centrebus connect the existing airport with Luton town centre, Stevenage and Dunstable. Conventional coach services are also operated by National Express, Stagecoach and Greenline Coaches, connecting the airport with London and other London airports, Milton Keynes, Oxford, Birmingham, Manchester and other cities and towns across the UK.
- 18.1.4 Unlike other London airports, the airport is not served directly by a rail line. The nearest station is Luton Airport Parkway railway station from which a shuttle bus to the airport is currently operated. The rail service at Luton Airport Parkway station has improved recently with the introduction of the East Midlands Rail Connect service, in addition to the Thameslink services. This service runs between Corby and St Pancras International stations with a 30 minute frequency and is operated by electric multiple unit trains. The date of opening of the Luton DART, a new cable-hauled fast passenger transit connecting Luton Airport Parkway and Terminal 1, will be announced in early 2023.

18.2 Mitigation measures

- 18.2.1 A range of mitigation measures relating to traffic and transport are proposed. These include:

Construction

- a. an Outline Construction Traffic Management Plan (CTMP) has been prepared (refer to **Appendix 18.3** of the ES [TR020001/APP/5.02]) which sets out measures that would be undertaken by the lead contractor

to minimise the impact of construction traffic on the highway network;
and

- b. an Outline Construction Workers Travel Plan (refer to **Appendix 18.4** of the ES [TR020001/APP/5.02]) has been prepared, which sets out measures to encourage responsible transport choices by construction workers.

Operation

- a. a **Framework Travel Plan [TR020001/APP/7.13]** has been produced, which sets out targets for travel by non-car modes and describes the measures to achieve set targets;
- b. a bus/coach strategy will be developed, as identified in the **Surface Access Strategy [TR020001/APP/7.12]** and discussed with bus and coach operators, aimed at increasing the frequency of service, introducing new routes, integrated ticketing, ticket purchasing facilities and better vehicles;
- c. the Luton DART will be extended to serve the new terminal; and
- d. various highway intervention works are included in the Proposed Development to reduce the adverse impact of the additional traffic on local road users.

18.3 Likely significant effects

Construction

- 18.3.1 During construction, the assessment considered the potential impacts on road users, as a result of any additional traffic generated by the construction works. Over the construction period, the level of construction traffic would vary considerably. An estimated 231 vehicles are predicted to visit the Main Application Site on a daily basis during the busiest quarter of the construction period (in Quarter 2, 2036). An estimated 66% of this traffic would be HGVs. It is proposed in the Outline CTMP that construction traffic would mostly be routed to the Main Application Site via President Way, AAR (once constructed), the A1081 and M1. With mitigation in place, as set out in the Outline CTMP, the effects of construction traffic on these routes are not likely to be significant.

Operation

- 18.3.2 During operation, the assessment considered the potential impacts of the forecast operational traffic flows. Modelling of future traffic flows demonstrated that even without the Proposed Development, traffic within the surrounding area is forecast to increase in the future, which could lead to greater congestion, causing delays and a reduction in average journey speeds.
- 18.3.3 During operation, the majority of additional traffic is forecast to be focused on the A1081 between the airport and M1 Junction 10, and then on the M1 itself to the north and south of Luton. In addition to this, there are forecast to be changes to traffic on local routes to the north, south and east of the airport with the Proposed Development in operation. Only between 5% and 6% of air

passengers either arrive at or leave the airport in the morning (08:00 to 09:00) and evening (17:00 to 18:00) peak hours due to the airport's flight schedule. Hence, the majority of the traffic associated with the operation of the airport does not coincide with peak traffic during the day. With mitigation in place, the changes in traffic flows were not determined likely to result in significant effects.

- 18.3.4 A significant beneficial effect on the users of the junction of Eaton Green Road/Frank Lester Way was also identified due to a reduced risk of road traffic collisions and improved road safety.

19 WASTE AND RESOURCES

19.1 Context

19.1.1 **Chapter 19** of the ES [TR020001/APP/5.01] presents the assessment of potential effects on waste infrastructure (specifically landfill capacity) and the national demand for resources.

19.1.2 In 2019, the airport generated a total of 2,471 tonnes of non-hazardous operational Commercial and Industrial (C&I) waste and 21 tonnes of hazardous waste. 60% of airport operational non-hazardous waste was sent to recycling facilities, with the remaining 40% sent to an energy recovery facility. No non-hazardous C&I waste was sent directly to landfill.

19.2 Mitigation measures

19.2.1 A range of proposed measures intended to minimise waste and resource use are embedded as part of the Proposed Development. These include:

Construction

- a. the Outline Site Waste Management Plan (OSWMP) (**Appendix 19.1** of the ES [TR020001/APP/5.02]) sets out good practice measures for minimising waste during construction, using materials with recycled content and adopting sustainable procurement practices;
- b. construction waste would be managed in line with a Site Waste Management Plan (an OSWMP has been included within **Appendix 19.1** of the ES [TR020001/APP/5.02]). Reuse of non-landfill material (i.e. soils and demolition waste) would be managed in line with a Framework Materials Management Plan and Individual Material Management Plans, prepared by the lead contractor; and
- c. a number of measures to minimise waste by design have been identified and designers, and the lead contractor would be required to continue to identify opportunities to design out waste. For example, demolition waste would be reused on-site, where possible, cut and fill balance would be optimised to minimise the amount of excavated material imported or exported. Landfill material would undergo treatment with hazardous material removed and other material reengineered to allow it to be reused elsewhere within the Proposed Development.
- d. setting of recycled content targets - achieve a minimum of 25% recycled or secondary content in key construction materials (e.g. concrete and steel).
- e. setting of waste recovery targets as per the ANPS – achieve at least 90% (by weight) material recovery of non-hazardous construction and demolition waste (uncontaminated excavated soil and stones (European Waste Catalogue/List of Wastes code 17 05 04) are specifically excluded from this target). Recovery is deemed to include reuse, recycling and recovery (e.g. energy recovery) and achieve at least 50% preparation for reuse, reuse and recycling of municipal waste (waste materials such as

at least paper, metal, as far as these waste streams are similar to waste from households).

Operation

- a. for operation, the design of the Proposed Development would provide adequate internal and external waste storage to allow waste segregation to facilitate recycling.
- b. setting of waste recovery targets as per the ANPS - achieve at least 50% preparation for reuse, reuse and recycling of municipal waste (waste materials such as paper, metal, plastic and glass as far as these waste streams are similar to waste from households), as described in the Outline Operational Waste Management Plan provided as **Appendix 19.2** of the ES [TR020001/APP/5.02].

19.3 Likely significant effects

Construction

- 19.3.1 The assessment estimated the amount of waste likely to be produced and resource use required during the construction of the Proposed Development.
- 19.3.2 The current maximum estimated construction waste quantities by assessment Phase arising from the Proposed Development is in assessment Phase 2a (254,670m³ of inert waste (2.4% of landfill void capacity), 49,936m³ of non-hazardous waste (0.5% of landfill void capacity), and 2,400m³ of hazardous waste 0.27% of landfill void capacity). For inert and non-hazardous wastes the quantity of waste is either less than 1% or 1-5% of the landfill void capacity. For hazardous waste the quantity of waste is 0.1-0.5% of landfill void capacity.
- 19.3.3 Given the landfill capacity in the study area, national hazardous waste landfill void capacity and likely recovery rates (at least 70% for inert and non-hazardous waste and 50% for hazardous waste), no likely significant effects were identified.
- 19.3.4 The quantity of materials required for the construction of the Proposed Development represent either less than 1% of the overall national and regional demand for construction materials or 1-5% of the overall national and national demand for construction materials. When considered over the construction programme, no likely significant effects were identified.

Operation

- 19.3.5 The assessment concluded that during operation non-hazardous waste generation is predicted to increase to 4,393 tonnes by 2043 (which is 20,919m³) due to the increase in passenger numbers through the airport, but the current rate of waste diverted from landfill (100%) is expected to be maintained. As such, the operation of the Proposed Development is not likely to have a significant effect on the existing waste management infrastructure, specifically landfill capacity.

19.3.6 Quantities and types of material resources required for the operation of the Proposed Development are currently unknown, however within the context of national demand, these are not likely to be significant.

20 WATER RESOURCES

20.1 Context

- 20.1.1 **Chapter 20** of the ES [TR020001/APP/5.01] presents the assessment of the effects of the Proposed Development on surface water and groundwater resources and the existing drainage network.
- 20.1.2 The Main Application Site spans two river valleys: the River Lea, which is located approximately 450m to the south west, and the River Mimram, approximately 3.5km to the east. The Proposed Development is also located within an area at low risk of flooding from rivers (within Environment Agency's Flood Zone 1¹²). However, the Environment Agency long-term flood risk map shows a number of areas at risk of surface water flooding across the Main Application Site, likely to be associated with the impermeable surfaces of existing structures and hardstanding.
- 20.1.3 The Main Application Site is underlain by Chalk bedrock, which provides a high level of groundwater storage, and is therefore, classified as a Principal Aquifer¹³. The majority of the Main Application Site is also within the total catchment area of a groundwater Source Protection Zone¹⁴. The site is part of Affinity Water's supply area and is considered as an area under 'Serious' Water Stress. Groundwater quality in the vicinity of Luton (both the town and airport) has been known to be poor due to pollution related to the surrounding area's industrial heritage.
- 20.1.4 The airport currently manages surface water via a combination of discharges to public sewers and by soaking into the ground. The surface water generated on the Main Application Site is currently captured by a pipe network managed by LLAOL, the airport operator. This directs the first pulse of a rainfall event (assumed to contain the majority of any polluting matter) to the public combined sewerage system and onto East Hyde Treatment Works, operated and maintained by Thames Water. As flows increase the water is then directed towards one of the existing soakaways located on the Main Application Site or the public surface water drainage network operated and maintained by Thames Water, which discharges into the River Lea.
- 20.1.5 Foul water is currently discharged to the public foul water network owned and operated by Thames Water. This is collected via the airport's own private foul water pipe network operated by Veolia Water. The public water supply assets are owned and operated by Affinity Water.

¹² Flood Zone 1 is defined by the Environment Agency as land having a less than 1 in 1,000 annual probability of river or sea flooding.

¹³ A Principal Aquifer comprises layers of rock that have high intergranular and/or fracture permeability and can provide a high level of water storage. It may support water supply and/or river base flow on a strategic scale.

¹⁴ Environment Agency have defined Source Protection Zones for groundwater sources such as wells, boreholes and springs used for public drinking water supply. These zones show an area at risk of contamination from any activities that might cause pollution in the area.

20.1.6 Surface water and foul water from the Proposed Development will be discharged to two new soakaways.

20.2 Mitigation measures

20.2.1 A range of mitigation measures are proposed to avoid and reduce the effects of the Proposed Development on water resources. Measures summarised in **Section 17.2** of this NTS also mitigate the risk of contamination of water resources. Further mitigation includes:

Construction

- a. the CoCP (**Appendix 4.2** of the ES [TR020001/APP/5.02]) sets out proposed measures to be implemented by the lead contractor to protect surface water and groundwater resources. These include undertaking monitoring of groundwater and leachate from the former landfill, preparing a Construction Surface Water Management Strategy, implementing good practice measures to minimise the risk of pollution, and preparing a pollution incident plan.

Operation

- a. the drainage strategy (described in **Appendix 20.4** of the ES [TR020001/APP/5.02]) for the Main Application Site has been designed to accommodate an increase in surface water flows during heavy rainfall events, including an allowance for increase in rainfall with climate change;
- b. the drainage strategy (**Appendix 20.4** of the ES [TR020001/APP/5.02]) incorporates measures to prevent the pollution of water resources. Runoff from the Main Application Site would pass through hydrocarbon separators, located within the system at locations where there is a risk of hydrocarbons being present (airport aprons, taxi ways, runways and car parks). Permeable paving is being proposed for areas of car parking and bunding is proposed for the new fuel storage area. Real-time monitoring of contaminant concentrations is proposed with shut off valves to divert runoff to a storage tank, if trigger levels are exceeded, and from there into a treatment facility;
- c. a new Water Treatment Plant is proposed to treat sewage, from the new terminal and other facilities in the Proposed Development, including aircraft, and contaminated surface water runoff from the aprons, runways and taxiways. Sewage would be collected from within the Main Application Site via a new dedicated foul drainage system and combined with surface water runoff prior to treatment. Clean and treated effluent would be discharged into the ground under an Environmental Permit regulated by the Environment Agency;
- d. the new fire training ground would be served by an isolated drainage system, with contaminated runoff tankered off-site;
- e. measures to minimise water consumption and maximise water reuse as outlined in the Water Cycle Strategy (**Appendix 20.5** of the ES

[TR020001/APP/5.02]), such as rainwater harvesting are to be implemented to prevent a net increase in water supply requirements; and

- f. the works at each Off-site Highway Interventions will be designed in line with accepted highway design standards to ensure no unacceptable increase in flood risk or potentially significant effect on local water quality occurs.

20.3 Likely significant effects

Construction

- 20.3.1 The assessment of potential effects on the identified surface water and groundwater resources and the existing drainage network during construction has been undertaken. With appropriate mitigation in place, as described above, no likely significant adverse effects have been identified. The excavation, processing and treatment of the former landfill material prior to reuse would remove potential sources of contaminants and is expected to result in a minor beneficial effect, as it improves the overall environmental conditions at the Main Application Site.

Operation

- 20.3.2 The assessment of potential effects on water resources during operation has been undertaken. With measures embedded within the design to prevent discharge of polluted water to the environment and prevent an increase in water supply requirements, as described above, no likely significant adverse effects were identified. The installation of a capping layer over the former landfill will minimise surface water infiltration into the underlying waste and prevent the generation of landfill leachate. This, together with the live monitoring and treatment of the surface water runoff, would result in a minor beneficial effect by reducing the risk of existing contamination polluting groundwater and local receptors which are groundwater fed. Overall the effect of the Proposed Development on the underlying aquifer is considered minor adverse (in this case meaning no deterioration of the aquifer), which is not significant. This is a precautionary assessment balancing the beneficial effect of removing potentially polluting matter contained within the existing landfill and the effect of infiltrating treated effluent into the aquifer.

21 IN-COMBINATION AND CUMULATIVE EFFECTS

21.1 In-combination Effects

- 21.1.1 An in-combination effect can occur when a single receptor or resource is impacted by a number of environmental impacts (for example, a residential property is affected by both noise and air quality impacts). **Chapter 21** of the ES [TR020001/APP/5.01] presents the in-combination effects assessment.
- 21.1.2 During construction, the measures included within the CoCP (refer to **Appendix 4.2** of the ES [TR020001/APP/5.02]) would be sufficient to ensure that the majority of the overall in-combination effects would not increase the degree of effects beyond those determined by individual topics. Furthermore, most in-combination effects identified would be minor, temporary and localised in nature. However, moderate/major adverse, significant traffic noise effects are expected to be experienced in Tea Green, concurrently with minor adverse, not significant visual amenity effects. These have the potential to lead to a medium magnitude of change and therefore a moderate adverse, significant in-combination effect. Tea Green has been identified as part of the **Transport Assessment** [TR020001/APP/7.02] and where necessary, opportunities for parking controls, traffic management and calming measures investigated and funded.
- 21.1.3 During operation, in-combination effects are not expected to result in any greater effects than those identified within the individual technical assessments.
- 21.1.4 As such, no significant in-combination effects have been identified during construction or operation of the Proposed Development.

21.2 Cumulative Effects Assessment

- 21.2.1 Cumulative effects occur when the effects of the Proposed Development combine with those from other reasonably foreseeable projects, plans or programmes yet to be built. **Chapter 21** of the ES [TR020001/APP/5.01] presents the cumulative effects assessment.
- 21.2.2 A four stage approach for undertaking a cumulative effects assessment has been adopted for the Proposed Development in accordance with the Planning Inspectorate's Advice Note 17 (Ref. 17):
- a. Stage 1: Establish the project's zone of influence and identify a long list of 'other development';
 - b. Stage 2: Identify a shortlist of 'other development' for cumulative effects assessment;
 - c. Stage 3: Information gathering; and
 - d. Stage 4: Assessment.
- 21.2.3 **Appendix 21.2** of the ES [TR020001/APP/5.02] provides the short-list of other developments considered in the cumulative effects assessment. No additional significant effects further to those associated with the Proposed Development were identified.

GLOSSARY AND ABBREVIATIONS

Term	Definition
AONB	Area of Outstanding Natural Beauty
CoCP	Code of Construction Practice
C&I	Commercial and Industrial waste
dB	Decibel
FTE	Full Time Equivalent
GHG	Greenhouse Gases
EIA	Environmental Impact Assessment
ES	Environmental Statement
ETS	Employment and Training Strategy
GDP	Gross Domestic Product
GVA	Gross Value Added
ha	hectare
LLAOL	London Luton Airport Operations Limited (the airport operator)
LOAEL	Lowest Observed Adverse Effect Level
Luton DART	Luton Direct Air-Rail Transit
MA&D	Major Accidents and Disasters
mppa	Million passengers per annum
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary (this report)
SOAEL	Significant Observed Adverse Effect Level
SoS	Secretary of State
UXO	Unexploded Ordnance

REFERENCES

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- Ref 3. MHLG (2021) National Planning Policy Framework.
- Ref 4 Cranfield Soil and Agricultural Institute: Soilscape, online resource
[Redacted] [Accessed 23 February 2023].
- Ref 5. Met Office (2021) UK Climate Projections User Interface
- Ref 6. HM Government (2019) Climate Change Act 2008 (2050 Target Amendment)
- Ref 7. Department for Transport (2021) Transport Decarbonisation Plan, Decarbonising Transport: a better, greener Britain
- Ref 8. Department for Transport (2022) Jet Zero Strategy
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- Ref 10. National Highways, Transport Scotland, Welsh Government and the Department for Infrastructure (2022) The Design Manual for Roads and Bridges.
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- Ref 14. Department for Communities and Local Government (2019), Planning Practice Guidance: Noise.
- Ref 15. Arup; (2018); East Luton Study Report
- Ref 16. LBC (2017) Luton Local Plan 2011-2031.
- Ref 17. Planning Inspectorate (August 2019) Advice note seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects. Version 2.