

Statutory Consultation 2022

Preliminary Environmental Information Report

Volume 2: Main Report

Chapter 19: Waste and Resources

Contents

	Page
19 Waste and resources	1
19.1 Introduction	1
19.2 Legislation, policy and guidance	2
19.3 Scope of the assessment	15
19.4 Stakeholder engagement and consultation	23
19.5 Methodology	25
19.6 Assumptions and limitations	32
19.7 Baseline conditions	33
19.8 Embedded and good practice mitigation measures	45
19.9 Preliminary assessment	49
19.10 Additional mitigation	71
19.11 Residual effects	71
19.12 In-combination climate change effects (ICCI)	71
19.13 Monitoring	71
19.14 Preliminary assessment summary	71
19.15 Completing the assessment	76
Competent Experts	77
Glossary and Abbreviations	78
References	79

Tables

Table 19.1: Waste and resources legislation
Table 19.2: Waste and resources policy
Table 19.4: How relevant waste and resources requirements of ANPS are addressed in the PEIR
Table 19.5: Waste and resources guidance
Table 19.6: Waste and resources Scoping Opinion comments
Table 19.7: Study Areas
Table 19.8: Stakeholder engagement relating to waste and resources
Table 19.9: Resource receptor sensitivity
Table 19.10: Inert and non-hazardous landfill void capacity sensitivity
Table 19.11: Hazardous landfill void capacity sensitivity
Table 19.12: Resources - magnitude of impacts
Table 19.13: Inert and non-hazardous waste - magnitude of impact
Table 19.14: Hazardous waste – magnitude of impact

Table 19.15: Effect thresholds

Table 19.16: Significance of effect

Table 19.17: Operational non-hazardous waste 2019

Table 19.18: Operational waste as reported in the Luton Airport Sustainability Report (Ref. 19.30)

Table 19.19: Operational hazardous waste 2019

Table 19.20: Estimated waste arisings over the BBC, LBC and CBC plan period as outlined in the BBC, LBC and CBC Minerals and Waste Local Plan (Ref. 19.15).

Table 19.21: Estimated waste arisings over the Buckinghamshire plan period as outlined in the Buckinghamshire Minerals and Waste Local Plan (Ref. 19.)

Table 19.22: Estimated waste arisings over the plan Hertfordshire plan period as outlined in the Waste Core Strategy and Development Management Policies Development Plan Document (Ref. 19.16)

Table 19.23: Estimated waste arisings for the non-hazardous Study Area

Table 19.24: Landfill capacity in Bedfordshire, Buckinghamshire and Hertfordshire for 2020 (Ref. 19.23) * stable non-reactive hazardous waste (SNRHW)

Table 19.25: Landfill inputs in Bedfordshire, Buckinghamshire and Hertfordshire for 2020 (Ref. 19.23) * stable non-reactive hazardous waste (SNRHW)

Table 19.26: Summary of waste infrastructure inputs in the non-hazardous waste Study Area (sites accepting hazardous waste and landfills included for completeness)

Table 19.27: National consumption and demand for key construction materials

Table 19.28: Construction material sales by region for the regions surrounding the Proposed Development, 2019

Table 19.29: National and regional guidelines for aggregates provision

Table 19.30: Potential recycled content

Table 19.31: Types of resources that would be used and wastes that may be generated during construction and operation.

Table 19.32: Estimated main types and quantities of materials resources, wastage and potential recycled content – assessment phase 1

Table 19.33: Estimated main types and quantities of materials resources, wastage and potential recycled content – assessment phase 2a

Table 19.34: Estimated main types and quantities of materials resources, wastage and potential recycled content – assessment phase 2b

Table 19.35: Estimated construction material and percentage of national annual consumption by assessment phase

Table 19.36: Estimated construction material and percentage of national annual consumption, assessment Phase 2b by year

Table 19.37: Estimated construction material for maintenance (2026-2041) and percentage of national annual consumption

Table 19.38: Construction waste – wastage from construction materials

Table 19.39: Average waste arisings benchmarks

Table 19.40: Construction waste – building construction

Table 19.41: Building demolition waste benchmarks

Table 19.42: Site clearance and demolition waste estimate

Table 19.43: Vegetation clearance waste arisings

Table 19.44: Material to be excavated from the landfill and taken offsite

Table 19.45: Construction, demolition and excavation waste summary

Table 19.46: Estimated construction waste compared against landfill void capacity

Table 19.47: Estimated operational waste

Table 19.48: Qualitative sensitivity analysis

Table 19.49: Waste and resources preliminary assessment summary

Insets

Inset 19.1: Landfill void capacity trends 2004 to 2019

19 WASTE AND RESOURCES

19.1 Introduction

- 19.1.1 This chapter presents the preliminary assessment of likely significant effects of the Proposed Development on waste and resources.
- 19.1.2 Waste and resources comprise:
- a. The generation and management of waste.
 - b. The consumption of materials and products (from primary, recycled or secondary, and renewable sources).
- 19.1.3 Resources are defined as:
- a. Construction materials and products; and
 - b. Assets associated with the management of waste or production of materials such as landfill capacity, safeguarded waste sites and mineral safeguard sites.
- 19.1.4 Waste is defined as per the European Waste Framework Directive (EWFD) as *“any substance or object which the holder discards or intends or is required to discard”*.
- 19.1.5 Matters scoped in and out of this preliminary assessment on waste and resources and where waste and resources are covered by other chapters are listed in **Section 19.3**.
- 19.1.6 The remainder of this chapter consists of:
- a. **Section 19.2** Legislation, policy and guidance relevant to the scope and methodology of the waste and resources preliminary assessment;
 - b. **Section 19.3** Scope of the assessment;
 - c. **Section 19.4** Stakeholder engagement undertaken to inform the preliminary assessment;
 - d. **Section 19.5** Methodology applied to the preliminary assessment;
 - e. **Section 19.6** Assumptions and limitations at this stage of work;
 - f. **Section 19.7** Baseline conditions;
 - g. **Section 19.8** Embedded and good practice mitigation;
 - h. **Section 19.9** Preliminary assessment;
 - i. **Section 19.10** Additional mitigation;
 - j. **Section 19.11** Residual effects;
 - k. **Section 19.12** In-combination climate change;
 - l. **Section 19.13** Monitoring;
 - m. **Section 19.14** Assessment summary; and
 - n. **Section 19.15** Completing the assessment - remaining work to complete the EIA for the Environmental Statement.

19.2 Legislation, policy and guidance

- 19.2.1 This section identifies the key legislation, policy and guidance relevant to the scope and methodology for the waste and resources assessment which may influence the type of mitigation measures that could be incorporated into the Proposed Development during construction or operation.
- 19.2.2 **Table 19.1** to **Table 19.4** provide a description of the relevant legislation, policy and guidance, and where each of these have been addressed in this PEIR.

Legislation

Table 19.1: Waste and resources legislation

Legislation	How and where addressed in PEIR
<p>Waste Framework Directive (2008/98/EC) (Ref. 19.1)</p> <p>Establishes the wider regulatory context for waste management across Europe. In addition to defining waste, it also introduces the concept of the waste hierarchy and establishes landfill diversion targets for member states. The requirements of the Waste Framework Directive are transposed into applicable national law through the Waste (England and Wales) Regulations 2011 (Ref. 19.2) as amended and other national waste legislation and policies including but not limited to:</p> <p>The Environmental Permitting (England and Wales) Regulations 2016 (Ref. 19.3); Environmental Protection Act 1990 (as amended) (Ref. 19.4); and, Hazardous Waste (England and Wales) Regulations 2005 (as amended) (Ref. 19.5).</p>	<p>The assessment of waste and resources has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous construction and demolition waste. Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to the Proposed Development. Paragraph 19.8.5 outlines the targets that will be applied to the Proposed Development.</p>
<p>Waste (England and Wales) Regulations 2011 (as amended) (Ref. 19.2)</p> <p>Environmental Protection Act 1990 (as amended) (Ref. 19.4)</p> <p>Transpose the requirements of the Waste Framework Directive in England and Wales and require the Secretary of State to establish waste prevention programmes and waste management plans that apply the waste hierarchy (as defined in the</p>	<p>The assessment of waste and resources has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous construction and demolition waste. Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to the Proposed Development. Paragraph 19.8.5 outline the construction targets that will be applied to the Proposed Development. Paragraph 19.8.14 outlines the construction targets</p>

Legislation	How and where addressed in PEIR
<p>Waste Framework Directive). The waste hierarchy prioritises waste prevention, followed by preparing for reuse, recycling, recovery and finally disposal to the management of waste. The Regulations require businesses to apply the waste hierarchy when managing waste, and also require that measures are taken to ensure that, by the year 2020, at least 70% by weight of non-hazardous construction and demolition waste is subjected to material recovery.</p> <p>The duty of care for waste management is set out under section 34 of the Environmental Protection Act 1990 and the Waste (England and Wales) Regulations 2011 (as amended). It requires anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that the waste is managed properly.</p>	<p>that will be applied to the Proposed Development. The target for construction goes beyond legislative requirements: 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).</p> <p>Details of the duty of care for waste management requirements for the contractor are set out in the Draft Outline Site Waste Management Plan (Draft OSWMP) in Appendix 19.1 in Volume 3 of this PEIR.</p>
<p>The Environmental Permitting (England and Wales) Regulations 2016 (Ref. 19.3)</p> <p>The Regulations require sites where waste is processed, treated or disposed of to hold a valid Environmental Permit issued by the Environment Agency (EA). The Regulations also include a schedule of activities that are exempt from the requirements of permitting. However, to comply with the Regulations, an exempt activity must generally be registered with the EA before commencing.</p>	<p>Details of the permits and exempts requirements for the contractor are set out in the Draft OSWMP in Appendix 19.1 in Volume 3 of this PEIR (high level requirements), Remediation Strategy (Appendix 17.5 in Volume 3 of this PEIR) (details of the remediation of the historic landfill) and Chapter 17 Soils and Geology in Volume 2 of this PEIR.</p>
<p>Hazardous Waste (England and Wales) Regulations 2005 (as amended) (Ref. 19.5Error! Bookmark not defined.)</p> <p>These Regulations set out the regime for the control and tracking of the movement of hazardous waste for the purpose of transposing the requirements of the Hazardous Waste Directive (Directive 91/689/EC) (Ref. 19.6).</p>	<p>Details of the hazardous waste management requirements for the contractor are set out in the Draft OSWMP (Appendix 19.1 in Volume 3 of this PEIR).</p>

Legislation	How and where addressed in PEIR
<p>Environment Act 2021 (Ref. 19.7)</p> <p>The Act makes provision about targets, plans and policies for improving the natural environment; for statements and reports about environmental protection; for the Office for Environmental Protection; about waste and resource efficiency; about air quality; for the recall of products that fail to meet environmental standards; about water; about nature and biodiversity; for conservation covenants; about the regulation of chemicals; and for connected purposes. Act will deliver:</p> <ol style="list-style-type: none"> a. Extend producer responsibility to make producers pay for 100% of cost of disposal of products, starting with plastic packaging; b. A deposit Return Scheme for single use drinks containers; c. Charges for single use plastics; d. Greater consistency in recycling collections in England; e. Electronic waste tracking to monitor waste movements and tackle fly-tipping; f. Tackle waste crime; g. Power to introduce new resource efficiency information (labelling on the recyclability and durability of products); h. Regulate shipment of hazardous waste; and i. Ban or restrict export of waste to non-OECD countries. 	<p>For the purposes of this assessment municipal waste is considered to include Commercial and Industrial (C&I) and institutional waste from the activities associated with the operation of an airport (e.g. retail, aircraft and terminal cleansing etc.). Sufficient provision for waste management and the integration of waste management facilities is considered in paragraph 19.8.4.</p> <p>Primary mitigation measures include activities that would be undertaken during the design stage to minimise waste thus reducing the need for waste management and landfill disposal. These include design of adequate provision for internal and external waste storage to allow waste segregation during operation and setting of waste recycling targets (paragraph 19.8.14). Key sections, which could be relevant to the Proposed Development in the Environment Act 2021 have been taken into account.</p>

Policy

Table 19.2: Waste and resources policy

Policy	How and where addressed in PEIR
<p>National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) (Ref. 19.8)</p> <p>The NPPF does not contain specific waste policies as these are detailed within the revised Waste Management Plan for England (2021) and the National Planning</p>	<p>The approach to minimising waste for the Proposed Development is outlined in paragraphs 19.8.2-19.8.8.</p> <p>The recycled content target set for the construction of the Proposed Development takes into account of the contribution that substitute or secondary and recycled</p>

Policy	How and where addressed in PEIR
<p>Policy for Waste, however the following overarching policies are relevant to waste and resources:</p> <ul style="list-style-type: none"> a. The environmental objective set out at paragraph 8 of the NPPF is <i>“to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”</i> b. The environmental objective set out in paragraph 210 of the NPPF is to <i>“so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source minerals supplies indigenously.”</i> 	<p>materials. This is outlined in paragraph 19.8.5 (achieve a minimum of 25% recycled or secondary content in key construction materials (e.g. concrete and steel).</p>
<p>National Policy Statement for National Networks – December 2014 (NPSNN) (Ref. 19.9)</p> <p>The NPSNN sets out the need for, and Government’s policies to deliver, development of nationally significant infrastructure projects on the national road and rail networks in England. It provides planning guidance for promoters of nationally significant infrastructure projects (NSIP) on the road and rail networks. The provisions of the NPSNN relevant to environmental assessment broadly mirror those as outlined in the ANPS.</p>	<p>There are no elements of the Proposed Development that would be classified as a NSIP on the national road or rail network. However, the NPSNN remains a relevant consideration as works are proposed on the SRN at Junction 10 as part of the Proposed Development. As provisions relevant to environmental assessment broadly mirror those as outlined in the ANPS they have been appropriately considered in this preliminary assessment. Further consideration of the proposals against relevant NPSNN policies will take place following this consultation and in preparation of the DCO application.</p>
<p>The national Planning Policy Guidance (PPG) for Minerals (Ref. 19.10) and Waste (Ref. 19.11) were published to provide more in-depth guidance to the NPPF. The PPG aims to make planning guidance more accessible and ensures that the guidance is kept up to date.</p>	<p>The guidance provides further information in support of the implementation of waste planning policy and on the planning for mineral extraction in plan making and the application process. This information has been taken into consideration when reviewing local policy but is not directly used in the assessment.</p>

Policy	How and where addressed in PEIR
<p>Emerging Aviation Strategy (Department for Transport, 2018) (Ref. 19.12)</p> <p>The emerging Aviation Strategy (Aviation 2050, The Future of UK Aviation, A Consultation) was published for consultation in December 2018. Paragraphs 3.73 - 3.76 are concerned with “reducing waste” as part of the operation of the airport. The paragraphs include examples of good practice such as the incorporation of disposal points for liquids at security for passengers and biomass treatment plants to treat waste from aircraft.</p>	<p>These examples of good practice are listed and considered in paragraph 19.8.15.</p>
<p>National Planning Policy for Waste (Ministry of Housing, Communities and Local Government, 2014) (Ref. 19.13)</p> <p>The National Planning Policy for Waste sets out detailed waste planning policies to be applied in conjunction with the NPPF. It states: <i>“when determining planning applications for non-waste development, local planning authorities should, to the extent appropriate to their responsibilities, ensure that:</i></p> <ul style="list-style-type: none"> • <i>The likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;</i> • <i>New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development, and;</i> • <i>The handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities, and minimises off-site disposal”.</i> 	<p>The likely impact of proposed, non-waste related development on existing waste management facilities is considered in paragraph 19.3.10. The Proposed Development study boundary includes a safeguarded waste site (the LBC Household Waste and Recycling Centre also known as the Tidy Tip as outlined in the Bedford Borough, CBC and LBC’s Minerals and Waste Local Plan: Strategic Sites and Policies adopted January 2014). However, it is anticipated that the Proposed Development will not conflict with or prejudice the site’s waste management use, therefore this aspect is scoped out of the assessment.</p> <p>Sufficient provision for waste management and the integration of waste management facilities is consider in paragraph 19.8.4. Primary mitigation measures include activities that would be undertaken during the design stage to minimise waste thus reducing the need for waste management and landfill disposal. These include design of adequate provision for internal and external waste storage to allow waste segregation during operation and setting of waste recycling targets as per the ANPS.</p> <p>Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to Proposed Development. Paragraph 19.8.5 outlines</p>

Policy	How and where addressed in PEIR
<p>Waste Management Plan for England (Defra, 2013) (Ref. 19.14)</p> <p>Provides an overview of waste management in England and reiterates the requirement for all waste producers and waste management providers to implement the waste hierarchy. It also highlights the need for waste to be managed using the proximity principle and confirms England’s commitment to recovering at least 70% by weight of non-hazardous construction and demolition waste by 2020 (excluding soils and stones). Recovery is assumed in the context of this policy to include reuse, recycling and incineration with energy recovery.</p>	<p>the targets that will be applied to the Proposed Development.</p> <p>Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to Proposed Development. Paragraph 19.8.14 outlines the construction targets that will be applied to the Proposed Development. The target set out for construction exceeds the minimum target set in Government policy: 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).</p>
<p>A Green Future: Our 25 Year Plan to Improve the Environment (Defra, 2018) (Ref. 19.15)</p> <p>Plan to Improve the Environment’ published in 2018, “sets out goals for improving the environment within a generation and leaving it in a better state than we found it”. It details how the government will work with communities and businesses to do this. The following policies are relevant:</p> <ol style="list-style-type: none"> a. Make sure that resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing and recycling. b. Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2042. c. Reducing food supply chain emissions and waste. d. Reducing litter and littering. e. Improving management of residual waste. 	<p>Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to the Proposed Development.</p>

Policy	How and where addressed in PEIR
<p>Resources and Waste Strategy for England (Defra, 2018) (Ref. 19.16)</p> <p>The strategy published in 2018 will help the government to meet the commitments outlined in the 25 Year Plan and <i>“sets out how we will preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. At the same time we will minimise the damage caused to our natural environment by reducing and managing waste safely and carefully, and by tackling waste crime.”</i> The strategy combines actions to be taken now and commitments for the coming years. Key targets and milestones and targets, which could be relevant to the Proposed Development, include:</p> <ul style="list-style-type: none"> a. Roll out of a deposit return scheme (subject to consultation) – 2023; b. Legislation for mandatory separate food waste collections (subject to consultation) – 2023; c. 75% recycling rate for packaging (subject to consultation) – 2023; d. 65% recycling rate for municipal solid waste – 2035; and e. Municipal waste to landfill 10% or less – 2035. 	<p>For the purposes of this assessment municipal waste is considered to include Commercial and Industrial (C&I) and institutional waste from the activities associated with the operation of an airport (e.g. retail, aircraft and terminal cleansing etc.). Sufficient provision for waste management and the integration of waste management facilities is consider in paragraph 19.8.4.</p> <p>Primary mitigation measures include activities that would be undertaken during the design stage to minimise waste thus reducing the need for waste management and landfill disposal. These include design of adequate provision for internal and external waste storage to allow waste segregation during operation and setting of waste recycling targets (paragraph 19.8.14). Key targets and milestones and targets, which could be relevant to the Proposed Development in the Resources and Waste Strategy for England have been taken into account.</p>
<p>Luton Local Plan 2011-2031(Ref. 19.17)</p> <p>The Luton Local Plan 2011-2031 Policy LLP37 encourages <i>“an overall reduction in the amount of waste generated, treated and disposed of to reduce the need for land for waste management. Proposals that are likely to generate significant volumes of waste through development or operational phases will be required to include a waste audit as part of the application”</i>.</p>	<p>The requirements of the waste audit are not outlined in the Local Plan. An audit of the design has been undertaken to estimate resources required and waste to be generated from construction, the estimates are summarised in Table 19.44. An audit of operational waste data from the existing airport has been undertaken. This data has been used to extrapolated future waste generation (Paragraph 19.9.29).</p>
<p>Central Bedfordshire (CBC) Local Plan 2015-2035, July 2021(Ref. 19.18)</p>	<p>Sufficient provision for waste management and the integration of waste management facilities is consider in paragraph 19.8.4.</p>

Policy	How and where addressed in PEIR
<p>This CBC Local Plan adopted in July 2021 replaces the North Core Strategy and Development Management Policies Document (2009) and the majority of the remaining policies within the South Bedfordshire Local Plan (2004), the Mid Bedfordshire Local Plan (2005) and the remaining saved policies of the Bedfordshire and Luton Minerals and Waste Local Plan (2005) so far as they affect Central Bedfordshire. Those residual site allocations in the north Site Allocations Document (2011) that are not already built out will remain in addition to the Minerals and Waste Local Plan – Strategic Sites and Policies (2014) which will sit alongside this Local Plan forming the Development Plan for Central Bedfordshire. Section 17.1.8 refers to sustainable design: <i>“All new developments should optimise the potential for sustainable design...The sorting and segregating of waste materials by occupiers is essential to the success of recycling and reuse schemes, and new developments should provide adequate and convenient storage space for the appropriate in-house storage of recyclables.”</i></p>	<p>Primary mitigation measures include activities that would be undertaken during the design stage to minimise waste thus reducing the need for waste management and landfill disposal. These include design of adequate provision for internal and external waste storage to allow waste segregation during operation and setting of waste recycling targets as per the ANPS.</p>
<p>Bedford Borough Council (BBC), CBC and LBC’s Minerals and Waste Local Plan: Strategic Sites and Policies adopted January 2014 (Ref. 19.19)</p> <p>The Bedford Borough, CBC and LBC’s Minerals and Waste Local Plan: Strategic Sites and Policies adopted January 2014 sets out the strategic locations for mineral extraction and for waste management development in the Plan area together with strategic policies which will guide the ongoing supply of minerals and development of waste management facilities.</p> <p>Policy number <i>“M4. Protection of Mineral Resources / Mineral Consultation Areas. In the Mineral Consultation Areas, the MPA will make every effort to safeguard mineral</i></p>	<p>Impacts on allocated/safeguarded mineral sites are outlined in paragraph 19.3.10. The Proposed Development boundary does not include, and is not in the proximity of, any allocated mineral sites and hence this aspect is scoped out of the assessment.</p> <p>Sufficient provision for waste management and the integration of waste management facilities is consider in paragraph 19.8.4. Primary mitigation measures include activities that would be undertaken during the design stage to minimise waste thus reducing the need for waste management and landfill disposal. These include design of adequate provision for internal and external waste storage to allow waste segregation during operation and setting of waste recycling targets as per the ANPS.</p>

Policy	How and where addressed in PEIR
<p><i>resources which are, or may come to be, of economic importance, from unnecessary sterilisation by other types of development which would be a serious hindrance to their extraction. Where development is likely to result in the sterilisation of such resources, the MPA will encourage the prior extraction of the minerals where appropriate.” Addressed in paragraph 19.3.10.</i></p> <p>Waste Strategic Policy (WSP) 5 outlines that “<i>all new developments should include sufficient and appropriate waste storage and recovery facilities in their design and layout</i>”. Addressed in Section 45.</p> <p>Policy number “<i>W5 Management of Waste at source: Waste Audits</i>” and policy number “<i>W6 Management of Waste at source: Provision of facilities with new development</i>” are saved waste polices from the Bedfordshire and Luton Minerals and Waste Local Plan (2005) Addressed in Section 45.</p> <p>Policy number “<i>W22 Safeguarding existing sites. Existing and proposed sites for waste management will be protected as far as practicable from development that may conflict with or prejudice their waste management use.</i>” Addressed in Paragraph 19.3.10.</p>	<p>An audit of the design has been undertaken to estimate resources required and waste to be generated from construction, the estimates are summarised in Table 19.44.</p> <p>An audit of operational waste data from the existing airport has been undertaken. This data has been used to extrapolated future waste generation (Paragraph 19.9.29).</p> <p>The likely impact of proposed, non-waste related development on existing waste management facilities is considered in paragraph 19.3.10. The Proposed Development study boundary includes a safeguarded waste site (the LBC Household Waste and Recycling Centre also known as the Tidy Tip as outlined in the Bedford Borough, CBC and LBC’s Minerals and Waste Local Plan: Strategic Sites and Policies adopted January 2014). However, it is anticipated that the Proposed Development will not conflict with or prejudice the site’s waste management use, therefore this aspect is scoped out of the assessment.</p>
<p>Hertfordshire County Council (HCC) Waste Development Framework Waste Core Strategy and Development Management Policies Development Plan Document 2011-2026 (Ref. 19.20)</p> <p>The Hertfordshire Waste Development Framework Waste Core Strategy and Development Management Policies Development Plan Document 2011-2026 sets out HCC’s policies for waste management. Policy 2 outlines how the authority will work with business and residents to reduce waste in line with the Waste Framework Directive (Waste FD). Policy 12 sets out requirements for</p>	<p>The assessment of waste and resources has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous construction and demolition waste. Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to Proposed Development. Paragraph 19.8.5 outlines the targets that will be applied to the Proposed Development.</p>

Policy	How and where addressed in PEIR
<p>sustainable construction and demolition practices, which include increased recycling and reductions in the use of primary materials.</p>	
<p>North Hertfordshire District Council (NHDC) Proposed Submission Draft Local Plan for 2011-2031, October 2016 (Ref. 19.21).</p> <p>NHDC’s Proposed Submission Local Plan 2011-2031, submitted to Government on 9 June 2017 includes policies on sustainable design. Policy D1 Sustainable Design states that <i>“planning permission will be granted where development proposals... take all reasonable opportunities, consistent with the nature and scale of the scheme, to, iii. reduce energy consumption and waste...”</i>. It encourages the efficient use of local or sustainably sourced new materials together with the reuse and recycling of materials to reduce the waste created in developments.</p>	<p>The assessment of waste and resources has taken account of the waste hierarchy in the management of waste, and of the targets for recovery of non-hazardous construction and demolition waste.</p> <p>Paragraphs 19.8.2-19.8.5 in Section 19.8 outline how the waste hierarchy has been and will be applied to Proposed Development. Paragraph 19.8.5 outlines the targets that will be applied to the Proposed Development.</p>

- 19.2.3 The Airports National Policy Statement (Ref. 19.22) (ANPS) does not have effect in relation to an application for development consent for an airport development not comprised of an application relating to the Heathrow Northwest Runway. Nevertheless, as set out within paragraph 1.41 of the ANPS, the Secretary of State considers that the contents of the ANPS will be both important and relevant considerations in the determination of such an application, particularly where it relates to London or the south east of England.
- 19.2.4 Accordingly, whilst the ANPS does not have effect in relation to the Proposed Development, it will be an important and relevant consideration in the determination of Luton Rising’s application for development consent. A summary of the relevant provisions for the waste and resources assessment and how these have been addressed in this PEIR is provided in **Table 19.3**.

Table 19.3: How relevant waste and resources requirements of ANPS are addressed in the PEIR

ANPS Section	How and where addressed in PEIR
<p>Paragraph 5.137 states that the targets for preparation for re-use and recycling of municipal waste (50%), and for construction and demolition waste (70%) set out by the Waste Framework Directive should be considered ‘minimum</p>	<p>Mitigation including the setting of targets in line with the APNS is outlined in Paragraphs 19.8.5 and 19.8.14 noting the target set out in the Waste Framework Directive and Waste (England and Wales) Regulations 2011 (as amended) (Ref.</p>

ANPS Section	How and where addressed in PEIR
<p>acceptable practice' for the construction and operation of any new airport infrastructure. Exceeding these targets if possible, by aiming for exemplar performance in resource efficiency and waste management is recommended, to align with the principles of the EU Action Plan for the Circular Economy.</p>	<p>19.2) also includes recovery. Paragraph 19.8.14 outlines the construction targets that will be applied to the Proposed Development. The target set out for construction exceeds the minimum target set in Government policy: 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).</p>
<p>Paragraph 5.141 sets out the approach to the management of waste. The applicant should set out the arrangements that are proposed for managing any waste produced in the application for development consent. The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental, social and economic outcome when considered over the whole lifetime of the project.</p>	<p>The assessment outlined in Section 19.9 presents arrangements that are proposed for managing waste produced including information on the proposed waste recovery and disposal system for all waste generated by the Proposed Development.</p>
<p>Paragraph 5.143 is concerned with mitigation measures. The applicant should set out a comprehensive suite of mitigations to eliminate or significantly reduce the risk of adverse impacts associated with resource and waste management.</p>	<p>Embedded and good practice mitigation measures are described in Section 19.8. Mitigation measures for environmental impacts associated with the management of waste on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of waste are outlined in other relevant chapters:</p> <ul style="list-style-type: none"> a. Air quality (odour and dust from construction including landfill excavations and waste processing, Chapter 7 Air Quality); b. Traffic and transportation (removal of waste by road is included in the assessment of the construction phase, Chapter 18 Traffic and Transportation);

ANPS Section	How and where addressed in PEIR
	<ul style="list-style-type: none"> c. Greenhouse gases (embedded carbon emissions in materials, transport of construction materials and transportation and disposal of waste, on site construction activity, operation of the airport, buildings, assets and vehicles including waste treatment, Chapter 12 Greenhouse Gases); d. Noise and vibration (noise and vibration from earthworks and construction of the airport infrastructure including landfill excavations and waste processing, changes in on-site ground noise associated with the operational project, and changes in road traffic noise, including from the new road infrastructure, Chapter 16 Noise and Vibration); and e. Soils and geology (contamination issues, Chapter 17 Soils and Geology); and, Water resources (construction and operational impacts e.g. potential impacts on groundwater, Chapter 20 Water Resources and Flood Risk).

Guidance

Table 19.4: Waste and resources guidance

Guidance	How and where addressed in PEIR
<p>Institute of Environmental Management and Assessment (IEMA) guide to: Materials and Waste in Environment Assessment, Guidance for a Proportionate Approach (referred from herein as the IEMA Guidance (Ref. 19.23).</p> <p>The document offers guidance and recommendations for EIA practitioners and stakeholders concerned with the impacts and effects of materials and waste on the environment. The guidance provides considerations for screening, scoping, consultation, assessment, and subsequent reporting and monitoring.</p>	<p>The assessment has been completed in accordance with the IEMA guidance (relevant to a number of sections of this chapter including: Section 19.3 and Section 19.5).</p>
<p>The Definition of Waste: Development Industry Code of Practice, Contaminated</p>	<p>The reuse of non-landfill excavated material i.e. soils and demolition waste</p>

Guidance	How and where addressed in PEIR
<p>Land: Applications in Real Environments (CL:AIRE) (DoW CoP) (Ref. 19.24).</p> <p>The DoW CoP provides a process which enables the reuse of excavated materials on-site or their movement between sites. Use of the DoW CoP supports the sustainable and cost-effective development of land. It can provide an alternative to Environmental Permits or Waste Exemptions.</p>	<p>would be covered by a CL:AIRE DoW CoP Materials Management Plan (MMP). Details of the requirements for the contractor are set out in the Draft CoCP (Appendix 4.2 in Volume 3 of this PEIR).</p>
<p>Waste and Resources Action Programme (WRAP) Designing Out Waste: A Design Team Guide for Civil Engineering (Ref. 19.25) and Designing Out Waste: A Design Team Guide for Buildings (Ref. 19.26).</p> <p>The guides outline the case for taking action to design out waste, provides a detailed explanation of the key principles that designers can use during the design process and how these principles can be applied to civil engineering and building projects to maximise opportunities to reduce construction waste and use materials more efficiently. It gives examples of technical solutions and how, in practice, designers have helped achieve significant waste reductions.</p>	<p>A designing out waste workshop in accordance with the guide has been undertaken alongside discussions with the Proposed Development design team throughout the design process. This is outlined in paragraph 19.8.7.</p>

19.3 Scope of the assessment

19.3.1 This section describes the scope of the Waste and Resources assessment, including how the assessment has responded to the Scoping Opinion. The temporal and spatial scope, the relevant receptors, and matters scoped in and out are identified. A description of engagement undertaken with relevant technical stakeholders to develop and agree this scope is provided in **Section 19.4**.

Scoping Opinion

- 19.3.2 The EIA Scoping Report set out the proposed scope and assessment methodologies to be employed in the EIA and is provided in **Appendix 1.1 and 1.2** in Volume 3 to this PEIR.
- 19.3.3 In response to that Scoping Report, a Scoping Opinion was received from the Planning Inspectorate on 9 May 2019 and is provided in **Appendix 1.3** in Volume 3 of this PEIR.
- 19.3.4 **Table 19.5** describes the main matters highlighted by the Planning Inspectorate in the Scoping Opinion and how these have been addressed in this PEIR. Final responses to all comments received during Scoping will be provided in an appropriate format in the ES.

Table 19.5: Waste and resources Scoping Opinion comments

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
2.2.12	Table 13.6 of the Scoping Report outlines the material resources required for, and the waste to be generated by, the Proposed Development but does not provide any indication of likely quantities. This should be clearly set out in the ES. The nature and volume of materials should also be included in the description of the Proposed Development, including justification of any key assumptions made. It is also noted that the Scoping Report refers to five sites for the disposal of spoil; however, Figure 2.3 only shows four. This should be clarified in the ES and clearly shown on accompanying figures.	Estimated quantities of construction materials required for construction are summarised in Table 19.31-Table 19.33 . All figures have been updated as appropriate for the PEIR.
3.2.10	The EIA Regulations require an estimate, by type and quantity, of expected residues and emissions. Specific reference should be made to water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste	Estimated quantities of waste to be generated during construction and operation are presented in this PEIR and summarised in Table 19.44 and Table 19.46 .

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	<p>produced during the construction and operation phases, where relevant. This information should be provided in a clear and consistent fashion and may be integrated into the relevant aspect assessments.</p>	
<p>3.2.12</p>	<p>The Inspectorate notes that a draft CoCP is to be submitted as part of the DCO application, which will include draft plans such as the following: Construction Environmental Management Plan; Site Waste Management Plan; Construction Traffic Management Plan; Materials Management Plan; Soils Management Plan (SMP); Construction Noise Management Plan; Air Quality Management Plan; and Surface Water Management Plan. Where the ES relies upon mitigation measures which would be secured through management plans, it should be demonstrated (with clear cross referencing) where each measure is set out in the management plan. Paragraph 17.8.2 of the Scoping Report also states the intention to submit a Landscape and Biodiversity Management Plan. The Applicant should provide draft copies of these documents appended to the ES and/or demonstrate how they will be secured.</p>	<p>This PEIR references the relevant sections of the Draft CoCP (Appendix 4.2 in Volume 3 of this PEIR), those referring to the Site Waste Management Plan (SWMP) and Materials Management Plan (MMP). The SWMP and MMP is a contractor requirement as outlined in the Draft CoCP. A Draft OSWMP is appended to the PEIR (Appendix 19.1 in Volume 3 of this PEIR).</p>
<p>4.8.1</p>	<p>Waste arising from extraction, processing and manufacture of construction components and products - The Inspectorate agrees that this matter can be scoped out of the assessment. This is on the basis that such matters cannot be accurately predicted and assessed in the ES as they relate to procurement decisions that cannot be assured; however, the Inspectorate anticipates that the Applicant would implement sustainable procurement practices in the selection of sustainable sources.</p>	<p>Whilst these matters are scoped out, embedded and good practice mitigation measures including waste minimisation and sustainable procurement practices are described in Section 19.8. Paragraphs 19.8.6 - 19.8.7 outline the targets that may be applied to the Proposed Development including (developing and implementing a sustainable procurement strategy throughout the supply chain).</p>

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
4.8.2	<p>Environmental impacts associated with the management of waste on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of waste - It is not apparent from the Scoping Report that these matters will be assessed in other aspect chapters. The Inspectorate accepts that these matters can be scoped out of the waste chapter of the ES on the basis that the assessment of likely significant effects associated with the management of waste will be assessed in other relevant aspect chapters. Clear cross-referencing between these relevant matters must be included in the ES to ensure a robust assessment has been undertaken.</p>	<p>The preliminary assessment of likely significant effects associated with the management of waste on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of waste is assessed in other relevant PEIR aspect chapters:</p> <ul style="list-style-type: none"> a. Air quality (odour and dust from construction including landfill excavations and waste processing, Chapter 7 Air Quality); b. Traffic and transportation (removal of waste by road is included in the assessment of the construction phase, Chapter 18 Traffic and Transportation; c. Greenhouse gases (embedded carbon emissions in materials, transport of construction materials and transportation and disposal of waste, on site construction activity, operation of the airport, buildings, assets and vehicles including waste treatment, Chapter 12 Greenhouse Gases; d. Noise and vibration (noise and vibration from earthworks and construction of the airport infrastructure including landfill excavations and waste processing, changes in on-site ground noise associated with the operational project, and changes in road traffic noise, including from the new road infrastructure, Chapter 16 Noise and Vibration; e. Soils and geology (contamination issues, Chapter 17 Soils and Geology; and

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
		f. Water resources (construction and operational impacts e.g. potential impacts on groundwater, Chapter 20 Water Resources and Flood Risk.
4.8.3	The Inspectorate notes that the overall Study Area for the Proposed Development has not yet been determined and it is the Applicant's intention to agree this with applicable consultation bodies. The Study Area should be clearly defined and justified in the ES with reference to the Zone of Influence (ZOI) for the Proposed Development.	The Study Areas are defined in Table 19.6 and Figure 19.1 and Figure 19.2 in Volume 4 of this PEIR and agreed with applicable consultation bodies (LBC, CBC and HCC). The ZOI for waste and resources is the same as the non-hazardous waste Study Area (Bedfordshire, Buckinghamshire and Hertfordshire). More detail is provided in PEIR Chapter 21 In-combination and Cumulative Effects.
4.8.4	The Scoping Report states that the Study Area for the construction of the Proposed Development is the 'footprint of the Proposed Development, including temporary land requirements during construction'. The ES should clearly define this Study Area, accompanied by clear and appropriately labelled/referenced figure(s).	The Study Areas are defined in Table 19.6 and Figure 19.1 and Figure 19.2 in Volume 4 of this PEIR and have been agreed with applicable consultation bodies (LBC, CBC and HCC).
4.8.5	The Applicant should seek to agree the baseline data to be used for landfill capacity with the relevant consultation bodies and ensure the use of the most up-to-date capacity data for the regions/ Counties assessed, taking account of any likely closures/ capacity changes at the start of construction as future baseline.	Consultation with relevant consultation bodies (LBC, CBC and HCC) is described in Section 19.4 . Baseline data is presented in Section 19.7 . When new baseline data is available, this has been discussed and agreed with the LBC, CBC and HCC).
4.8.6	The Scoping Report provides a brief statement with respect to the amount of airport operational waste diverted from landfill in 2017, as stated to have been provided by LLAOL at footnote 282. The ES should expand on this statement and provide evidence to support statements made in respect	Operational waste data for 2019 is presented in Table 19.16 and Table 19.18 and has been provided by the airport operator in the form of an annual waste report with associated recycling rates.

Scoping Opinion ID	Scoping Opinion comment	How is this addressed
	to the baseline data used in the assessment.	
4.8.7	The Scoping Report states that due to an absence of a specific methodology/guidance for assessing effects on waste and resources, it intends to use professional judgement, national and local policy, and recognised best practice. The ES should clearly explain the methodology applied to the assessment; where professional judgement has been applied this should be clearly stated.	The methodology applied is outlined in Section 19.5 . The methodology is in accordance with the IEMA Guidance, which was published in 2020, i.e. post receipt of the Scoping Opinion. This methodology has been agreed with CBC, LBC and HCC. Where professional judgement has been applied this is clearly stated in brackets in the text.
4.8.8	Table 13.6 makes no specific reference to the existing landfill site within the Proposed Development and the likely type of waste arising the remediation of this area would generate. An assessment of the waste generated from this remediation should be included in the ES. Appropriate cross-references should be included between this aspect chapter and other relevant aspects, such as (but not limited to) Traffic and Transport, Soils and Geology, and Air Quality. The Applicant should seek to agree the proposed remediation strategy with relevant consultation bodies, including waste authorities and the EA, and ensure that consideration is given to the waste arisings being moved up the waste hierarchy.	The preliminary assessment of likely significant effects associated with the management of waste on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of waste is assessed in other relevant PEIR aspect chapters and cross referenced as appropriate. The likely types of waste arisings from the remediation of the existing landfill site are discussed in paragraphs 19.9.22-19.9.23 and outlined in Table 19.43 . The proposed remediation strategy and details of consultation with the EA is outlined in the Chapter 17 Soils and Geology . Embedded and good practice mitigation measures including waste arisings being moved up the waste hierarchy are outlined in Section 19.8 .
4.8.9	It is not clear from this aspect chapter what future baseline will be considered for this assessment, particularly for operational effects. The ES should make clear the baseline scenarios applied to the assessment.	A future baseline for landfill capacity has been estimated in discussion with stakeholders (LBC, CBC and HCC) and using the Microsoft Excel Forecast function and is presented in paragraphs 19.7.23-19.7.28 .

Spatial scope

Study Area

19.3.5 Study areas have been established in accordance with the IEMA guidance. Five Study Areas cover both construction and operation and waste and resources as presented in **Table 19.6**. Receptors within this Study Area are described in the Baseline section of this chapter.

Table 19.6: Study Areas

Study areas	Spatial scope	Assessment section	Figure reference	Receptor
Proposed Development Study Area	Proposed Development boundary which includes the Main Application Site, Offsite Car Parks and Off-site Highways Interventions. Includes temporary land requirements during construction: this includes temporary offices, compounds and storage areas.	Construction waste generation	Figure 2.1 Proposed Development Boundary (in Volume 4 of this PEIR)	Not applicable
		Operational waste generation		Not applicable
		Use of material resources		Not applicable
Expansive Study Area	<ul style="list-style-type: none"> a. Bedfordshire (including LBC and CBC) b. Buckinghamshire c. Hertfordshire As defined in the EA's Waste Management Information 2019. This represents the most likely area in which non-hazardous waste would be managed. Due to the lack of non-hazardous waste landfill capacity in the Greater London area, it is anticipated that waste from the Proposed	Non-hazardous construction and operational waste management.	Figure 19.1 Non-hazardous waste expansive Study Area (in Volume 4 of this PEIR)	Capacity of waste management infrastructure and remaining landfill void.

Study areas	Spatial scope	Assessment section	Figure reference	Receptor
	Development is unlikely to be managed within this area.			
Expansive Study Area	a. South East region b. East of England region c. East Midlands region As defined in the EA's Waste Management Information 2019 This represents the most likely area in which hazardous waste would be managed.	Hazardous construction and operation waste management.	Figure 19.2 Hazardous waste expansive Study Area (Volume 4)	Capacity of waste management infrastructure and remaining landfill void.
Expansive Study Area – construction materials	National (UK or GB dependent on baseline information availability)	Availability of key construction materials (aggregates, asphalt, concrete and steel).	Figure is not included since the Study Area is the whole of the UK	National demand for key construction materials.

Zone of influence

19.3.6 The ZOI for the cumulative assessment for waste and resources comprises the counties of Bedfordshire (including LBC and CBC), Buckinghamshire and Hertfordshire. This ZOI is the same as the non-hazardous waste expansive Study Area outlined in **Figure 19.1** in Volume 4 of this PEIR and **Table 19.6**. The full cumulative effects assessment is provided in **Chapter 21** In-Combination and Cumulative Effects.

Temporal Scope

19.3.7 The Proposed Development will be delivered over two key delivery phases (Phase 1 and Phase 2 (assessed in two parts 2a and 2b), within which construction and operation may take place simultaneously. Assessment years for each phase are described in **Chapter 5** Approach to the Assessment.

19.3.8 The waste and resources assessment considers the effects for the two delivery phases in three assessment phases (Phase 1, Phase 2a, Phase 2b) side by side for each aspect of the assessment e.g. operational waste.

Matters scoped in

19.3.9 The matters that are scoped in are:

- a. Waste generation during construction and operation.
- b. Resource use during construction (key construction materials only including concrete, steel, asphalt and aggregates).
- c. Resource use during operation, (key bulk materials only for airfield maintenance).

Matters scoped out

19.3.10 The matters that scoped out are:

- a. Waste arising from extraction, processing and manufacture of construction components and products.
- b. Impacts on allocated/safeguarded mineral sites. The Proposed Development boundary does not include, and is not in the proximity of, any allocated mineral sites and hence this aspect is scoped out of the assessment.
- c. Impacts on allocated/safeguarded waste sites in the Proposed Development boundary. The development study boundary includes a safeguarded waste site (the LBC Household Waste and Recycling Centre also known as the Tidy Tip as outlined in the Bedford Borough, CBC and LBC's Minerals and Waste Local Plan: Strategic Sites and Policies adopted January 2014). However, it is anticipated that the Proposed Development will not conflict with or prejudice the site's waste management use, therefore this aspect is scoped out of the assessment.

Matters considered in other topic chapters

19.3.11 The matters considered in other topic chapter include:

- a. Impacts on mineral safeguarding areas. These mineral extraction impacts are assessed in the **Chapter 17** Soils and Geology.
- b. Impacts associated with resources such as water and energy, these are included in the **Chapter 12** Greenhouse Gases.
- c. Environmental impacts associated with the management of waste and resources are considered in other chapters:
 - i. Air quality (odour and dust from construction including landfill excavations and waste processing, **Chapter 7** Air Quality);
 - ii. Traffic and transportation (removal of waste by road is included in the assessment of the construction phase, **Chapter 18** Traffic and Transportation);
 - iii. Greenhouse gases (embedded carbon emissions in materials, transport of construction materials and transportation and disposal of waste, on site construction activity, operation of the airport, buildings, assets and vehicles including waste treatment, **Chapter 12** Greenhouse Gases);
 - iv. Noise and vibration (noise and vibration from earthworks and construction of the airport infrastructure including landfill excavations and waste processing, changes in on-site ground noise associated with the operational project, and changes in road traffic noise, including from the new road infrastructure, **Chapter 16** Noise and Vibration);

- v. Geology and soils (contamination issues, **Chapter 17** Geology and Soils); and,
- vi. Water resources (construction and operational impacts e.g. potential impacts on groundwater, **Chapter 20** Water Resources and Flood Risk)

19.4 Stakeholder engagement and consultation

- 19.4.1 Engagement in relation to waste and resources has been undertaken with a number of prescribed and non-prescribed stakeholders.
- 19.4.2 For waste and resources, working group was formed comprising representatives from:
- a. Luton Borough Council (LBC);
 - b. Central Bedfordshire Council (CBC);
 - c. Hertfordshire County Council (HCC); and,
 - d. Environment Agency (EA) (new member since July 2021).
- 19.4.3 The group have met since January 2019 and will continue to meet on an ad-hoc basis when new and updated information is available to discuss.
- 19.4.4 The **2019 Statutory Consultation Feedback Report** contains a full account of the previous statutory consultation process and issues raised in feedback. Matters raised regarding the scope, method, mitigation or compensation being considered as part of the waste and resources assessment were then subject to further discussions directly with stakeholders during working group meetings. The main matters/themes raised during consultation considered relevant to the Waste and Resources assessment were:
- a. Current baseline;
 - b. Future baseline;
 - c. Assessment methodology;
 - d. Non-landfill waste infrastructure are not considered sensitive receptors;
 - e. Identification of receiving waste management facilities; and,
 - f. Cumulative assessment.
- 19.4.5 **Table 19.7** provides a summary of engagement with relevant stakeholders, undertaken to inform the EIA to date, and this PEIR including the date and time of meetings and a summary of discussions to resolve matters listed in **paragraph 19.4.4**.

Table 19.7: Stakeholder engagement relating to waste and resources

Meeting name and date	Attendees (organisation)	Summary of discussion
Pre statutory consultation		
Initial consultation, 18 January 2019	LBC, CBC and HCC	Introduction to Proposed Development and waste assessment, to gain feedback on the emerging scope and methodology, to gain insight into issues and opportunities for

Meeting name and date	Attendees (organisation)	Summary of discussion
		waste and establish an ongoing dialogue and support engagement during the consultation process.
Future baseline data consultation, 31 May 2019	CBC (incorporating input from LBC) and HCC	Discussion of future baseline data and assessment findings to date following receipt of EIA scoping opinion.
Post statutory consultation 2019		
Waste and Resources stakeholder update, 23 October 2020	LBC, CBC and HCC	The purpose of the meeting was to introduce new working group members (AECOM and HCC representatives), provide information on scheme changes and discuss the issues raised during previous meetings, at Scoping and during Statutory Consultation.
Waste Resources stakeholder update to discuss future baseline, 7 December 2020	LBC, CBC and HCC	LBC, CBC and HCC comments on baseline data, e.g. EA, and local aggregate assessment and local plans taken in account. Approach for forecasting future landfill void capacity, discussed and agreed.
Waste and Resources stakeholder update, 27 July 2021	LBC, CBC and HCC	The purpose of the meeting was to provide information on scheme changes and discuss appropriate timings for future meetings. Change in assessment methodology to IEMA guidance agreed by attendees at the meeting and via email.

19.4.6 Stakeholder engagement will continue as the before the submission of the DCO application as the Proposed Development progresses and will include further meetings with LBC, CBC, HCC and EA to discuss the results presented in the PEIR and next steps for the ES.

19.5 Methodology

Overview

- 19.5.1 This section outlines the methodology employed for assessing the likely significant effects on waste management and resource use from the construction and operation of the Proposed Development.

The methodology proposed in the Scoping Report and presented in the 2019 PEIR was a bespoke methodology developed in the absence of any sector-specific guidance. In March 2020 IEMA published the IEMA Guide to Materials and Waste in Environmental Impact, Guidance for a Proportionate Approach (Ref. 19.18). The assessment methodology is now aligned to this new guidance. This is a departure from the 2019 Scoping Opinion which has been agreed with LBC, CBC and HCC.

Sensitive receptors

- 19.5.2 The sensitive receptors for this assessment are:
- a. Landfill void capacity in the expansive Study Areas (non-hazardous and hazardous landfill void capacity) – as defined in the IEMA guidance (page 16) *“landfill is a finite resource, and hence – through the ongoing disposal of waste – there is a continued need to expand existing and develop new facilities, This requires the depletion of natural and other resources which, in turn, adversely impacts the environment.”*
 - b. Resources, national consumption of key construction materials – as outlined in the IEMA Guidance (page 16) *“materials are, in their own right, sensitive receptors. Consuming materials impacts upon their immediate and (in the case of primary material) long-term availability; this results in the depletion of natural resources and adversely impacts the environment.”*
- 19.5.3 The IEMA guidance (page 14) *“does not consider waste processing and recovery facilities as sensitive receptors, rather: they are part of a system that has the potential to reduce the magnitude of adverse impacts associated with waste generation and disposal. Waste processing and recovery facilities are, hence, different to landfills, in that the latter are finite resources.”*
- 19.5.4 The four Waste Planning Authorities (WPAs) and Mineral Planning Authorities (MPAs), BBC, LBC, CBC and HCC have considered provision of minerals, waste recovery and landfill capacity in their respective areas. This consideration is outlined in the documents listed in **Table 19.3**.

Baseline methodology

- 19.5.5 The baseline has been developed in accordance with the IEMA guidance and consists of:
- a. National consumption for the key construction materials.
 - b. Landfill void capacity in the expansive Study Areas (non-hazardous, inert and hazardous waste).
 - c. Historical and future trends in landfill void capacity.

- 19.5.6 A quantitative baseline for the assessment of Construction, Demolition and Excavation (CD&E) and operational waste generated during the construction and operation of the Proposed Development has been established using the most recently available published data from the EA, BBC, CBC and LBC's and other industry reports.
- 19.5.7 Operational waste data for 2019 (hazardous and non-hazardous) has been provided by the current airport operator. This baseline will be updated where updated and improved data is available for the ES.
- 19.5.8 Where required, future landfill void capacity and waste production data has been forecast in accordance with the IEMA guidance using statistical trend analysis. The Microsoft Excel 'Forecast' function has been used on historical landfill void capacity data from the EA 2019 Waste Summary Tables for England (Ref. 19.27). The function predicts future values by using linear regression.
- 19.5.9 The approach to defining future baseline is described in **Section 5.4 of Chapter 5 Approach to the Assessment**. The future baseline considered for waste and resources is described **Section 19.7** of this Chapter.

Assessment methodology

- 19.5.10 The assessment focuses on the effects of the Proposed Development upon the availability of resources, specifically key construction materials during the construction and operational phases, and landfill void capacity during the construction and operational phases. It is not possible to allocate a sensitivity of other bulk materials used in operation due to the limited publicly available information on the UK demand for such materials. The sensitivity and magnitude of impacts on construction materials and landfill void capacity have been assessed through the following:

Resources

- a. Establishing the baseline for national consumption of key construction materials by weight.
- b. Establishing the baseline local material capacity (where possible via desk based research e.g. local aggregate assessments).
- c. Assessing the sensitivity of materials as related to the availability and types of resources to be consumed by the Proposed Development.
- d. Establishing the quantities of key construction materials required for the construction of the development.
- e. Establishing the quantities of key construction materials required for operation of the development.
- f. Comparing the total quantities of key construction materials with the most recent national demand (percentage approach).

Waste

- a. Establishing the baseline landfill void capacity in the expansive Study Areas.
- b. Assessing the sensitivity of landfill void capacity.

- c. Establishing a future baseline for landfill void capacity in the expansive Study Areas.
- d. Establishing the quantities of CD&E waste to be generated during the construction of the development.
- e. Forecasting the quantities of operational waste to be generated.
- f. Comparing the total waste arising from the construction and operation of the Proposed Development against the landfill void capacity (quantitative percentage approach).
- g. Establishing a baseline waste infrastructure capacity (inferred from inputs).
- h. Comparing the total waste arising from the construction and operation of the Proposed Development against waste infrastructure inputs in the absence of capacity data (qualitative approach).

Sensitivity

19.5.11 The sensitivity of resources relates to the availability and type of resources to be consumed by the Proposed Development. The IEMA guidance (page 30) criteria described within **Table 19.8** have been used to determine the sensitivity of materials.

Table 19.8: Resource receptor sensitivity

Effects	Criteria for materials receptor sensitivity
Negligible	<p>On balance, the key materials required for the construction and operation of the Proposed Development are forecast (through trend analysis and other information) to be free from known issues regarding supply and stock.</p> <p>And/or</p> <p>are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials*</p>
Low	<p>On balance, the key materials required for the construction and operation of the Proposed Development are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock.</p> <p>And/or</p> <p>are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials.</p>
Medium	<p>On balance, the key materials required for the construction and operation of the Proposed Development are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock.</p> <p>And/or</p>

	are available comprising some sustainable features and benefits compared to industry-standard materials.
High	On balance, the key materials required for the construction and operation of the Proposed Development are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock. And/or comprise little or no sustainable features and benefits compared to industry-standard materials.
Very High	On balance, the key materials required for the construction and operation of the Proposed Development are known to be insufficient in terms of production, supply and/or stock. And/or comprise no sustainable features and benefits compared to industry-standard materials.
* Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts.	

19.5.12 The sensitivity of waste relates to availability of landfill void capacity in the absence of the Proposed Development. Landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste. The sensitivity of landfill void capacity is assessed using a two-step process, which is completed in the absence of the Proposed Development:

- a. The volume of waste for disposal that is expected to be generated within the expansive Study Areas has been collated from Local Plans and forecasted over the construction period of the Proposed Development, and then,
- b. The volume of forecasted waste for disposal within the expansive Study Areas is compared to the remaining landfill void capacity to identify expected losses over the construction period.

19.5.13 The IEMA guidance (page 32) criteria described within **Table 19.9** and **Table 19.10** have been used to determine the sensitivity of landfill void capacity.

Table 19.9: Inert and non-hazardous landfill void capacity sensitivity

Effects	Criteria for inert and non-hazardous landfill void capacity sensitivity
Negligible	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is: <ul style="list-style-type: none"> a. expected to remain unchanged, or is expected to increase through a committed change in capacity.

Effects	Criteria for inert and non-hazardous landfill void capacity sensitivity
Low	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected reduce minimally by <1% as a result of wastes forecast.
Medium	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected reduce noticeably by 1-5% as a result of wastes forecast.
High	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected to reduce considerably: by 6-10% as a result of wastes forecast.
Very High	Across construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) inert and non-hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected to reduce very considerably (by >10%); b. end during construction or operation; c. is already known to be unavailable; or, d. would require new capacity or infrastructure to be put in place to meet forecast demand.

Table 19.10: Hazardous landfill void capacity sensitivity

Effects	Criteria for Hazardous landfill void capacity sensitivity
Negligible	Across the construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected to remain unchanged, or is expected to increase through a committed change in capacity.
Low	Across the construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected to reduce minimally: by <0.1% as a result of wastes forecast.
Medium	Across the construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected to reduce noticeably: by 0.1-0.5% as a result of wastes forecast.
High	Across the construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) hazardous landfill void capacity is: <ol style="list-style-type: none"> a. expected to reduce considerably: by 0.5-1% as a result of wastes forecast.

Effects	Criteria for Hazardous landfill void capacity sensitivity
Very High	<p>Across the construction and/or operation phases, the baseline/future baseline (i.e. without development) of regional (or where justified, national) hazardous landfill void capacity is:</p> <ul style="list-style-type: none"> a. expected to reduce very considerably (by >1%); b. end during construction or operation; c. is already known to be unavailable; or, d. would require new capacity or infrastructure to be put in place to meet forecast demand.

Magnitude

- 19.5.14 The magnitude of impact describes the degree of variation from the baseline conditions as result of the Proposed Development. For the construction phase, the magnitude of impact is considered at the end of each construction assessment phase (Phase 1, 2a and 2b)
- 19.5.15 For the operational phase, the magnitude of impact is assessed at the end of assessment Phase 2b for the year 2043.
- 19.5.16 The methodology for assessing the magnitude of impact from resources comprises a percentage-based approach that determines the influence of construction materials use on the baseline national demand from the construction of the Proposed Development. The IEMA guidance (page 33-35) criteria used to assess the magnitude of impact for resources and waste are provided within **Table 19.11**, **Table 19.12** and **Table 19.13**.

Table 19.11: Resources - magnitude of impacts

	Criteria for resources magnitude of impacts
No change	The assessment is made by determining whether, through a development, the consumption of no materials is required.
Negligible	The assessment is made by determining whether, through a development, the consumption of no individual material type is equal to or greater than 1% by volume of the national* baseline availability.
Minor	The assessment is made by determining whether, through a development, the consumption of one or more materials is between 1-5% by volume of the national* baseline availability.
Moderate	The assessment is made by determining whether, through a development, the consumption of one or more materials is between 6-10% by volume of the national* baseline availability.
Major	The assessment is made by determining whether, through a development, the consumption of one or more materials is >10% by volume of the national* baseline Availability.
*a national baseline is used in the absence of regional construction material consumption data.	

- 19.5.17 The methodology for assessing the magnitude of impact for waste comprises a percentage-based approach that determines the influence of waste generation from the construction and operation of the Proposed Development on the baseline landfill void capacity. The criteria used to assess the magnitude of

impact for resources and waste are provided within **Table 19.12** and **Table 19.13**.

Table 19.12: Inert and non-hazardous waste - magnitude of impact

	Criteria for inert and non- hazardous waste magnitude of impacts
No change	Zero waste generation and disposal from the development.
Negligible	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by <1%
Minor	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by 1-5%
Moderate	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by 6-10%.
Major	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by >10%
* Bedfordshire, Hertfordshire and Buckinghamshire # forecast as the worst-case scenario, during a defined construction and/or operational phase.	

Table 19.13: Hazardous waste – magnitude of impact

	Criteria for hazardous waste magnitude of impacts
No change	Zero waste generation and disposal from the development.
Negligible	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by <0.1%
Minor	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by <0.1-0.5%
Moderate	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by <0.5-1%
Major	Waste generated by the development will reduce expansive Study Area* landfill void capacity baseline# by >1%
* South East, East of England and East Midlands regions # forecast as the worst-case scenario, during a defined construction and/or operational phase.	

Significance

- 19.5.18 **Table 19.14** describes the IEMA guidance (page 39) effect thresholds used in determining the significance of potential effects and **Table 19.15** shows the IEMA guidance (page 40) significance of the effects.
- 19.5.19 Where two effect thresholds are provided professional judgement will be used to select the appropriate effect threshold.

Table 19.14: Effect thresholds

		Magnitude of impact				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity (or value) of receptor	Very High	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Table 19.15: Significance of effect

Effect	Resources	Waste
Neutral	Not significant	Not significant
Slight		
Moderate	Significant	Significant
Large		
Very large		

19.6 Assumptions and limitations

- 19.6.1 This section provides a description of the assumptions and limitations to the waste and resources assessment.
- 19.6.2 This assessment is based on the current Proposed Development design and as such detailed information relating to the exact sources and types of construction materials is not yet available. The sources of construction materials would be decided post consent by the construction contractor. A high-level assessment of estimated key construction materials against national availability is provided.
- 19.6.3 Information on the current permitted local and regional landfill capacity is provided. There is no publicly available information on any potential changes to this permitted capacity by the time of construction of the Proposed Development or operation during this period or beyond. However, a future baseline for landfill capacity has been developed in discussion with stakeholders (LBC, CBC and HCC) and using the Microsoft Excel 'Forecast' function. 2019 EA data is used within the current assessment, the baseline data will be updated as appropriate in the ES.

Reasonable Worst Case

- 19.6.4 **Chapter 5** Approach to the Assessment describes the general approach adopted to ensure that a reasonable worst case is assumed in this assessment including the use of parameters, accounting for uncertainty, and incorporating flexibility in design and demand forecasts.

- 19.6.5 Further relevant assumptions on worst case specific to this assessment include:
- a. All waste generated by the construction and operation of the Proposed Development is sent for landfill disposal, although in practice a large proportion of waste is recycled or otherwise recovered. In the first instance the quantitative assessment is completed on this basis that all waste is sent to landfill. If significant effects are predicted then the assessment is repeated using a realistic waste recovery rate i.e. that a proportion of the waste will be recovered (reused, recycled or sent for energy recovery).

19.7 Baseline conditions

- 19.7.1 This section provides a description of the existing conditions in the development and expansive Study Areas.

Existing conditions

Resources

- 19.7.2 Assessing resources use during operation of the airport is not possible since:
- a. The exact types and quantity of resource use associated with the operation of the existing airport is currently unknown since the airport uses a wide variety of resources, in some cases hundreds of different products.
 - b. Data on resource usage is not readily available from the airport operator.
 - c. There is no publicly available information on the national availability of such resources so it is not possible to set a national baseline or apply a value or sensitivity to that availability.
- 19.7.3 Resources are used on a day to day basis and periodically for maintenance activities e.g. airfield maintenance. Resource use from these maintenance activities during operation is expected to be generally the same in type to that generated by the existing airport; resources would be managed using the established procedures and facilities e.g. storage areas, that are used across the airport. Larger maintenance projects e.g. resurfacing of the airfield are likely to be covered by a project specific Site Waste Management Plan. Some data on resources required to maintain the airfield between 2026-2050 have been provided by the design team and are outlined in **paragraph 19.9.11**.
- 19.7.4 Therefore, for the reasons listed above, resource use during the operational phase (excluding airfield maintenance) of the Proposed Development is not outlined in detail in the assessment.

Operational waste

- 19.7.5 In 2019 the airport generated a total of 2,471 tonnes of non-hazardous operational C&I waste. 60% of airport operational waste was sent to recycling facilities, with the remaining 40% sent to an energy recovery facility (Ref. 19.28) (**Table 19.16**). No non-hazardous C&I waste was consigned directly to landfill. This represents 0.48% of Central Bedfordshire's 2013/2014 total C&I waste arisings (shown in **Table 19.19**).

Table 19.16: Operational non-hazardous waste 2019

Waste type	Quantity (tonnes)	Waste management route
General waste	995	Recovery
Mixed recycling	795	Recycling
Food waste	273	Recycling
Cardboard	235	Recycling
Glass waste	140	Recycling
Wood	11.9	Recycling
Cooking oil	7.4	Recycling
Metal	6.2	Recycling
Confidential waste	4.9	Recycling
Tyres	3.0	Recycling
Alkali batteries	0.01	Recycling
Li-ion batteries	0.002	Recycling
Total waste	2,471	
Total sent for recycling	1,476	
Total sent for energy recovery	995	
% sent for recycling	60	
% sent for energy recovery	40	

19.7.6 In 2019, the total non-hazardous waste generated was approximately 0.137 kg/pax (passenger) based on 18 mppa.

19.7.7 The Luton Airport 2019 Sustainability Report (Ref. 19.29) outlines the quantities of waste and recycling rates for 2017-2019 (**Table 19.17**). The total includes both non-hazardous and hazardous waste.

Table 19.17: Operational waste as reported in the Luton Airport Sustainability Report (Ref. 19.29)

Year	Recycled waste (tonnes)	Non-recycled waste (tonnes)	Total waste (tonnes)	Recycling rate (%)
2017	1,459	868	2,327	63
2018	1,430	809	2,239	64
2019	1,493	999	2,492	60

19.7.8 In 2019 approximately 21 tonnes of hazardous operational waste was generated as outlined in **Table 19.18**.

Table 19.18: Operational hazardous waste 2019

Waste type	Quantity (tonnes)	Waste management route
Waste Oil	7.3	Recycling

Waste type	Quantity (tonnes)	Waste management route
Waste Electrical and Electronic Equipment (WEEE)	4.4	Recycling
Absorbents and Oil	3.9	Incineration
Aerosol Cans	3.0	Recycling
Fridges	0.6	Recycling
Lead-acid Batteries	0.6	Recycling
Empty paint tins	0.6	Incineration
Oil Filters	0.5	Recycling
Control of Substances Hazardous to Health (COSHH) (Disposal (D15))	0.1	Incineration
COSHH (Recovery (R13))	0.1	Recovery
Paint / Thinners	0.1	Recycling
Parts Cleaner	0.1	Recycling
Ni-Cd Batteries	0.04	Recycling
Total hazardous waste	21.3	

Waste generation and management in the expansive Study Areas

Waste generation

19.7.9 Non-hazardous CD&E and C&I waste arisings in expansive Study Area of Bedfordshire, Buckinghamshire and Hertfordshire are presented in **Table 19.19**, **Table 19.20**, **Table 19.21** and **Table 19.22**.

Table 19.19: Estimated waste arisings over the BBC, LBC and CBC plan period as outlined in the BBC, LBC and CBC Minerals and Waste Local Plan (Ref. 19.19).

Year	Estimated waste arisings (million tonnes)				
	C&DE	C&I	Municipal	London	Total
2013/2014	1.140	0.510	0.306	0.165	2.212
2028/2029	1.323	0.544	0.371	0.031	2.269

19.7.10 BBC, LBC and CBC acknowledge that (page 23, paragraph 5.9) “the volumes of arisings of hazardous wastes in the Plan area are low, and no facilities for their management exist within the Plan area. It is anticipated that the transfer of these wastes to nationally significant disposal facilities outside of the Plan area, will continue.”

Table 19.20: Estimated waste arisings over the Buckinghamshire plan period as outlined in the Buckinghamshire Minerals and Waste Local Plan (Ref. 19.30)

Year	Buckinghamshire waste arisings (million tonnes)				
	CD&E	C&I	Hazardous	Municipal	Total
2016	1.132	0.554	0.013	0.266	1.965
2021	1.132	0.582	0.014	0.279	2.008
2026	1.132	0.612	0.015	0.292	2.051
2031	1.132	0.643	0.016	0.306	2.097
2036	1.132	0.676	0.016	0.319	2.144

Table 19.21: Estimated waste arisings over the plan Hertfordshire plan period as outlined in the Waste Core Strategy and Development Management Policies Development Plan Document (Ref. 19.20)

Year	Hertfordshire waste arisings (million tonnes)			
	CD&E	C&I	Municipal	Total
2016	No estimate provided	0.564	1.059	No total provided
2021		0.556	1.066	
2026		0.546	1.062	

Table 19.22: Estimated waste arisings for the non-hazardous Study Area

Year	Estimated waste arisings (million tonnes)		
	Bedfordshire (BBC, LBC and CBC) total	Buckinghamshire total	Hertfordshire C&I and Municipal only, no C&D estimate is provided, no total is provided
2013/2014	2.122		
2016		1.965	1.623
2021		2.008	1.066
2026		2.051	2.164
2028/2029	2.269		
2031		2.097	
2036		2.144	

Landfill inputs and capacity

- 19.7.11 **Table 19.23** and **Table 19.24** present EA figures for landfill inputs (waste received at the landfill) and remaining void capacity for the non-hazardous waste expansive Study Area (Bedfordshire, Buckinghamshire and Hertfordshire) and the hazardous waste Study Area (South East, East of England regions and East Midlands) for 2020.
- 19.7.12 Merchant landfills are operated for commercial purposes accepting waste from construction projects and operating businesses. Merchant landfills are therefore

considered to form the baseline. In contrast, restricted landfills are sites that deal with their own produced waste (i.e. not operating for commercial purposes) and therefore additional capacity is excluded from the baseline.

Table 19.23: Landfill capacity in Bedfordshire, Buckinghamshire and Hertfordshire for 2020 (Ref. 19.27) * stable non-reactive hazardous waste (SNRHW)

Landfill Type	Sub-Region			
	Bedfordshire	Buckinghamshire	Hertfordshire	Total
	Void capacity ('000s m ³)			
Non-hazardous with SNRHW cell*	-	17,084	-	17,084
Non-hazardous	-	9,162	64	9,226
Total non-hazardous	-	26,246	64	26,310
Inert	683	1,592	9,109	11,384

Table 19.24: Landfill inputs in Bedfordshire, Buckinghamshire and Hertfordshire for 2020 (Ref. 19.27) * stable non-reactive hazardous waste (SNRHW)

Landfill Type	Sub-Region			
	Bedfordshire	Buckinghamshire	Hertfordshire	Total
	Inputs ('000s tonnes)			
Non-hazardous with SNRHW cell*	-	1,416	-	1,416
Non-hazardous	825	863	561	2,249
Total non-hazardous	825	2,279	561	3,665
Inert	619	688	946	2,253

- 19.7.13 Buckinghamshire Minerals and Waste Local Plan (MWLP) estimates indicate that there will be sufficient landfill capacity noting this is based on indicative capacity requirements over the plan period (up to 2036) identified in the MWLP and does not include new capacity required as a result of nationally significant infrastructure projects.
- 19.7.14 BBC, LBC and CBC Minerals and Waste Plan notes that as of 2014 there was no landfill capacity for non-hazardous wastes within BBC, LBC and CBC. Within BBC, LBC and CBC, the scope for landfilling wastes is very limited, due to its geology and the poor availability of suitable mineral working voids.

Other waste management facilities

19.7.15 The capacity of waste infrastructure (aside from landfill) is not publicly available; however, capacity can be inferred from annual waste inputs. Data is collated for the Study Area from the EA's Waste Data Interrogator 2020 (Ref. 19.31) and presented in **Table 19.25**. Inputs are not totalled since the double counting of waste in the Waste Data Interrogator cannot be discounted.

Table 19.25: Summary of waste infrastructure inputs in the non-hazardous waste Study Area (sites accepting hazardous waste and landfills included for completeness)

Facility type	Bedfordshire	Buckinghamshire	Hertfordshire
Anaerobic Digestion	32,349	31,377	114,521
Animal By-Products Incinerator	22,775		
Biological Treatment	97,107	232,487	193,740
Biomass	27,010		
CA Site	33,198	73,506	107,667
Car Breaker	228	144,102	6,658
Chemical Treatment	5,542	6,828	1,595,048
Clinical Waste Transfer			169,327
Co-Incinerator (Haz)			38,874
Composting	59,007	7,435	112,103
Deposit of waste to land (recovery)	4,032	117,335	81,368
Haz Waste Transfer	16,256		64,378
Haz Waste Transfer / Treatment		52,584	173,935
Inert LF	619,430	688,273	945,566
Inert Waste Transfer			19,803
Inert Waste Transfer / Treatment	15,934	29,419	80,766
Material Recycling Facility	122,592	34,244	116,704
Metal Recycling	119,602	17,238	100,261
Mobile Plant - Landspreading	1,874		
Mobile Plant - Treatment		24,388	14,340
Mobile Plant - Unknown		82,663	
Municipal Waste Incinerator		420,451	
Non Haz (SNRHW) LF		1,416,877	
Non Haz Waste Transfer / Treatment	30,425	162,259	82,957
Non Hazardous LF	824,895	862,901	561,126
Non-Haz Waste Transfer	217,477	381,745	296,013
Physical Treatment	65,932	184,092	183,860
Recovery of Waste			224,064

Facility type	Bedfordshire	Buckinghamshire	Hertfordshire
Vehicle depollution facility	1,761	974	852
WEEE treatment facility	938		288

Resources

National, regional consumption of construction resources

- 19.7.16 United Kingdom and Great Britain data has been used to establish a quantitative national baseline of the consumption for resources (key constructional materials). **Table 19.26** summarises national consumption in 2018 for aggregates, asphalt, concrete and steel (the most recent years for which data is available), which are the key construction materials expected to be used during the construction of the Proposed Development. Regional data is presented in
- 19.7.17 **Table 19.27** to provide regional context, however this data is not used within the assessment. Construction material sales by region are provided for the regions surrounding the Proposed Development. It is assumed that the majority of key construction materials would be sourced locally, taking into account the proximity principle and value for money.

Table 19.26: National consumption and demand for key construction materials

Material	National consumption (million tonnes, year)	Baseline data year	Data description
Steel	17	2018	UK total consumption (Ref. 19.32)
<i>Aggregates of which:</i>	251	2018	Minerals and mineral products sales in Great Britain (Ref. 19.33)
Crushed rock	117.3		
Sand and gravel - land won	48.9		
Sand and gravel - marine	13.7		
Recycled and secondary	71		
Asphalt	25.4		
<i>Concrete of which:</i>	86.2		
Ready-Mixed Concrete	54.2		
Concrete products	32		

Table 19.27: Construction material sales by region for the regions surrounding the Proposed Development, 2019

Construction material	South East sales	London sales	East of England sales	East Midlands sales
Crushed rock (million tonnes)	None	None	None	26.5
Sand and gravel (million tonnes)	16.1	None	13.7	6.1
Ready-mixed concrete (million m ³)	2.4	3.1	1.5	1.4
Asphalt (million tonnes)	1.9	2.7	2.5	2.8

Targets for recycled content

19.7.18 A target is set in the Luton Rising Sustainability Strategy for recycled content:

- a. *“Achieve a minimum of 25% recycled or secondary content in key construction materials (e.g. concrete and steel).”*

19.7.19 Baseline targets for alternative aggregates (comprising both secondary aggregates, which are by-products from industrial and mining operations, and recycled aggregates, which are produced from construction waste also known as recycled content) can be derived from the data set out in the National and Regional Guidelines for Aggregates Provision in England 2005 to 2020 (Ref. 19.34). The regions surrounding the Proposed Development are summarised in **Table 19.28** below. The total aggregate provision is the sum of all aggregates, the recycled content is a proportion of the total provision that is recycled and secondary material. This table provides an indication of aggregate availability since MPAs consider these guidelines at a local level.

Table 19.28: National and regional guidelines for aggregates provision

Region	Guidelines for land-won production		Assumptions			Total aggregate provision (million tonnes)	Alternative materials (recycled content) target derived from the guidelines
	Land-won sand and gravel	Land-won crushed rock	Marine sand and gravel	Alternative materials (secondary and recycled aggregates)	Net imports to England		
South East	195	25	121	130	31	502	26%
London	18	0	71	95	12	197	48%

Region	Guidelines for land-won production		Assumptions			Total aggregate provision (million tonnes)	Alternative materials (recycled content) target derived from the guidelines
East of England	236	8	14	117	7	382	31%
East Midlands	174	500	0	110	0	784	14%
England	1028	1492	259	993	136	3,908	25%

Future baseline

19.7.20 In the absence of the Proposed Development, there is likely to be a change to the future baseline conditions as a result of other factors and developments in proximity to the airport. These are the conditions that will prevail 'Without the Scheme' in place. The 'Without the Scheme' scenario is used, where appropriate, as a comparator for the assessed case, to show the effect of the Proposed Development against an appropriate reference point. The approach to defining future baseline and the developments identified for consideration are described in **Section 5.4** of **Chapter 5** Approach to the Assessment of this PEIR.

Future consumption baseline for resources

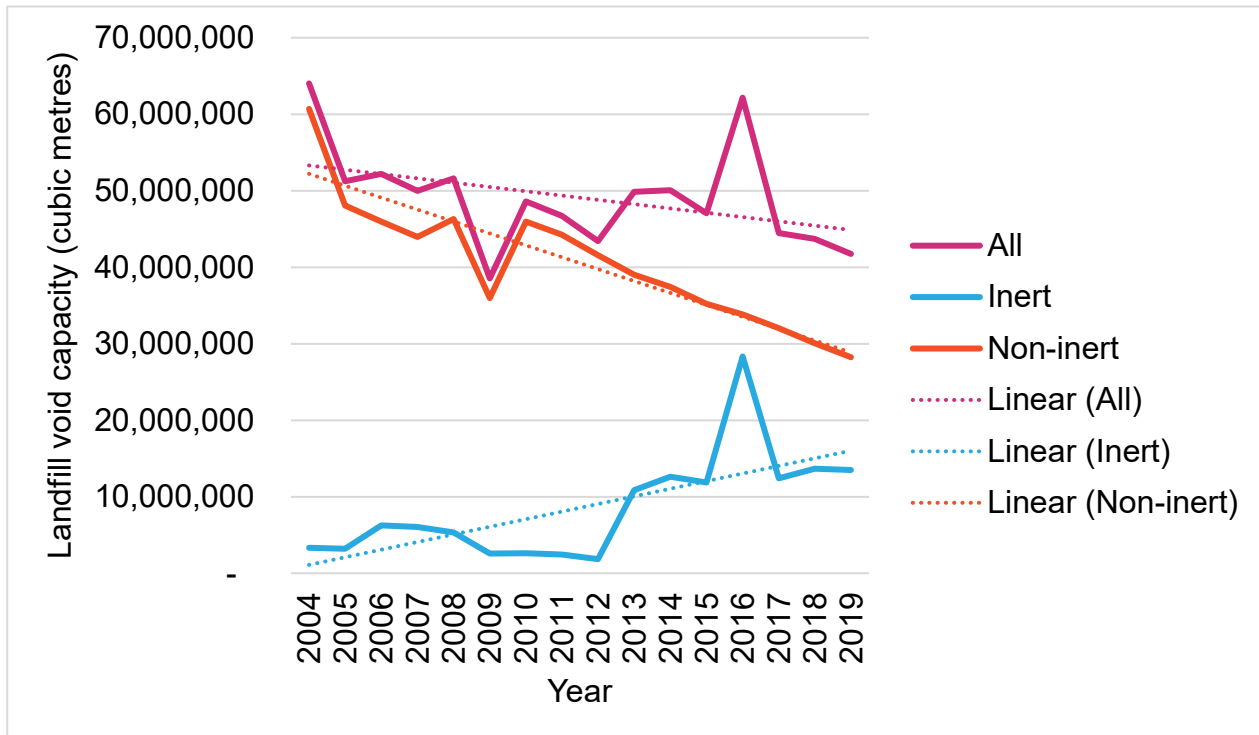
- 19.7.21 Information on national consumption of resource (key construction materials is provided in **Table 19.27**). There is no publicly available information on any potential long-term changes to this national demand by the time of construction of the Proposed Development or operation, so it is not possible to set a future baseline for resources. Therefore, future consumption is assumed to same as the current baseline as outlined in **Table 19.27**.
- 19.7.22 Construction material demand such as ready mixed concrete is closely aligned to both the quantity of construction taking place and the general economy therefore it is deemed inappropriate to forecast future demand as the demand is unlikely to be linear. The assessment considers the influence of material consumption during construction and operation on the current baseline.

Future landfill void capacity

- 19.7.23 Information on the currently permitted landfill void capacity is provided in **Table 19.24**. There is no publicly available information on any potential changes to this permitted capacity by the time of construction of the Proposed Development or operation. A future baseline for landfill capacity has been developed in discussion with stakeholders (LBC, CBC and HCC) and using the Microsoft Excel 'Forecast' function.
- 19.7.24 The EA published landfill capacity trends for 1998/99 to 2019 in October 2020. 2004 to 2019 data has been plotted as shown in **Inset 19.1**. The data

represents the non-hazardous waste expansive Study Area of Buckinghamshire, Bedfordshire and Hertfordshire. The non-inert category includes non-hazardous landfill sites, non-hazardous landfill sites with a SNHRW cell, merchant hazardous landfill sites. The restricted user category has been excluded as it is assumed that this capacity would not be available to the project.

Inset 19.1: Landfill void capacity trends 2004 to 2019



19.7.25 Between 2004 and 2012 inert landfill void capacity dropped from 3.3 million m³ metres to 1.8 million m³, in 2013 the landfill void capacity increased to 10.8 million m³ and increased steadily to 13.7 million m³ in 2018. In 2019 there was a slight reduction in landfill void capacity down to 13.5 million m³. The 2016 landfill void capacity increase to 28.3 million m³ is deemed to be an outlier. Due to the cyclic nature of inert landfill void capacity it is not realistic to use the Microsoft Excel 'Forecast' function as the forecast results in a large increase in landfill void capacity up to 2043 as the trend since 2013 has been a general increase in capacity. It is considered unrealistic to assume that inert landfill capacity would continue to increase (based on since 2013), but equally unrealistic to assume that it would be allowed to decline to zero. Because there is no realistic basis for forecasting the future baseline, a future inert landfill void capacity of 10.8 million m³ (based on 2013 capacity when capacity started to increase) will be used in the assessment.

19.7.26 Between 2004 and 2019 non-inert (which includes hazardous merchant) landfill void capacity dropped from 60.7 million m³ to 28.2 million m³. In 2010 the landfill void capacity increased to by 28%. Since 2010 non-inert landfill void capacity has reduced by between 4% and 6% each year. Using the current rate of decline of void capacity and forecasting 20 years into the future would lead to the inevitable conclusion that there would be no void space remaining by 2043. However, this is not a credible scenario: if there is still a need for landfill, then the waste planning authority will need to consent new void capacity to replace

that which has been used up. The apparent absence of landfill capacity in 20 years' time is merely a reflection of the fact that landfill operators and planning authorities do not typically develop or permit capacity to cover such a long period of time. In order to allow for consistency in assessing impacts occurring in the different assessment phases, it is therefore assumed for assessment purposes and based on professional judgement that the future baseline landfill void capacity reduces from the capacity forecast for 2027 (15.8 million m³) to a nominal 10 million m³ in 2039, and is maintained at this level to 2043. This approach has been discussed and agreed with LBC, CBC and HCC.

- 19.7.27 Hazardous landfill void capacity data is available for 2013-2019. Only merchant landfills have been considered to be available to the Proposed Development. In 2013 hazardous landfill void capacity was approximately 0.7 million m³, this reduced to 0.5 million m³ in 2014. Additional capacity was provided in 2015 for 1.7 million m³. For the following two years the capacity reduced and in 2018 and 2019 the capacity increased.
- 19.7.28 Due the cyclic nature of hazardous waste landfill void capacity it is not realistic to use the Microsoft Excel 'Forecast' function as the forecast results in a large increase in landfill void capacity up to 2043 as the trend for the last two years has been an increase in capacity. Therefore the 2019 hazardous waste landfill capacity of 1.3 million m³ is used in the assessment.

Receptor sensitivity

Material receptor sensitivity

- 19.7.29 Material receptor sensitivity is determined as low. On balance, the key materials required for the construction and operation of the Proposed Development are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock. Key materials required for the construction and operation are likely to be available comprising a high proportion of sustainable features and benefits (e.g. recycled content).
- 19.7.30 Potential recycled content for the main construction materials are outlined in **Table 19.29**. These "good practice" rates are derived from WRAP's Designing Out Waste Tool for Civil Engineering (Ref. 19.25).

Table 19.29: Potential recycled content

Material type	Potential recycled content (% by weight)
Concrete	16
Asphalt	25
Aggregates	50
Steel reinforcement	100
Structural steel	60

Waste receptor sensitivity

- 19.7.31 Taking into account the future landfill void capacity set out in **paragraphs 19.7.23-19.7.28**, across construction and operation the baseline/future baseline (without the Proposed Development) of non-hazardous landfill void capacity in the expansive Study Area is expected to:

- a. Reduce very considerably (by >10%), between 2004 and 2019 non-inert (which includes hazardous merchant) landfill void capacity dropped from 60.7 million m³ to 28.2 million m³, a >10% reduction;
- b. End during construction and operation;
- c. Is already known to be unavailable; or,
- d. Would require new capacity or infrastructure to be put in place to meet forecast demand.

19.7.32 Taking into account the future landfill void capacity set out in **paragraphs 19.7.23-19.7.28**, across construction and operation the baseline/future baseline (without the Proposed Development) of hazardous landfill void capacity in the expansive Study Area is expected to:

- a. Reduce very considerably (by >1%), in the past there has been >1% reduction in landfill capacity;
- b. End during construction and operation;
- c. Is already known to be unavailable; or,
- d. Would require new capacity or infrastructure to be put in place to meet forecast demand.

19.7.33 Since in all cases there is predicted to be a very considerable reduction in void capacity between the current and future baseline, the receptor sensitivity is determined to be very high.

19.8 Embedded and good practice mitigation measures

19.8.1 This section describes the embedded and good practice mitigation for waste and resources that has been incorporated into the Proposed Development design or assumed to be in place before undertaking the assessment. A definition of these classifications of mitigation and how they are considered in the EIA is provided in **Chapter 5** Approach to the Assessment of this PEIR.

Embedded

Design

19.8.2 The Proposed Development has been designed, as far as possible, to avoid effects related to waste and resources through option identification, appraisal, selection and refinement.

19.8.3 The design of the Proposed Development and the planned approach to its construction have been developed with an overarching principle of achieving efficiencies in waste and resources where possible, for example by designing-out waste generation where possible and diverting waste from landfill through on-site and offsite recycling and recovery.

19.8.4 Mitigation measures have been integrated (embedded) into the design for the purpose of minimising effects related to waste and resources. These general measures comprise the following, which focus on designing out waste and implementing the waste hierarchy:

- a. Designing the development in a manner that facilitates the reuse of acceptable material arisings, for example those associated with earthworks cuttings and other excavations.
- b. The inclusion of land within the development for the temporary on-site storage of soils, excavated materials and other materials.
- c. The appropriate sizing of construction compounds to enable the segregation and storage of waste, and to facilitate offsite recovery.
- d. The retention of existing infrastructure within the development design where feasible, to minimise the need for the demolition of components and infrastructure and the associated generation of waste material.
- e. Design of adequate provision for internal and external waste storage to allow waste segregation during operation.

Construction

19.8.5 Mitigation measures have been integrated (embedded) into the Proposed Development for the purpose of minimising effects related to waste and resources. These general measures comprise the following, which focus on implementing the waste hierarchy through the reuse and recycling of site-won materials on-site where possible to minimise the need to import construction materials to site, and to reduce the quantity of waste to be exported offsite:

- a. Achieving an earthworks balance (cut and fill material) within the design of the Scheme, where possible, to minimise the need to import and export material.

- b. The reuse of excavated materials and the recycling of demolition and construction materials within the development, where practicable.
- c. Importing alternative (recycled and secondary) aggregate and other materials during construction, where practicable.
- d. Produce a MMP (a requirement set out in the **Draft CoCP** included at **Appendix 4.2** in Volume 3 of this PEIR).
- e. Produce a SWMP (a requirement set out in the **Draft CoCP** included at **Appendix 4.2** in Volume 3 of this PEIR) based on the **Draft OSWMP** (included in **Appendix 19.1** in Volume 3 of this PEIR).
- f. Setting of recycled content targets. The following target is set in the **Draft CoCP (Appendix 4.2** in Volume 3 of this PEIR) and **Draft OSWMP (Appendix 19.1** in Volume 3 of this PEIR) and will be secured in the DCO application:
 - i. Achieve a minimum of 25% recycled or secondary content in key construction materials (e.g. concrete and steel).
- g. Setting of waste recovery targets as per the ANPS. The following targets are set in the **Draft CoCP (Appendix 4.2** in Volume 3 of this PEIR) and **Draft OSWMP (Appendix 19.1** in Volume 3 of this PEIR) and will be secured in the DCO application:
 - i. 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).

Operational

- 19.8.6 There is no specific embedded mitigation for operation apart from those considered in the design.

Good Practice

Design

- 19.8.7 A designing out waste workshop was completed on 4th June 2019 and opportunities have been discussed with the design team throughout the design process. The following WRAP designing out waste principles have been explored:
- a. Design for reuse and recovery;
 - b. Design for offsite construction;
 - c. Design for material optimisation;
 - d. Design for waste efficient procurement; and,
 - e. Design for deconstruction and flexibility.
- 19.8.8 Proposed Development design team representatives have to date identified a number of designing out waste opportunities, which have been prioritised, investigated and implemented where appropriate. The designing out waste

opportunities to be investigated further during subsequent design stages and construction are summarised as follows:

- a. Recycling of demolition waste onsite;
- b. Recycling and use on site of existing landfill material;
- c. Balancing the cut (excavation) and fill (material placement) (earthworks excluding landfill material);
- d. Clearing vegetation in winter;
- e. Using materials with recycled content;
- f. Offsite manufacture of design elements;
- g. Working platform (temporary geotechnical structure, consisting of compacted granular fill, installed to allow construction plant and vehicles to travel and/or operate on site) incorporated into final structure; and
- h. Setting waste targets in line with the ANPS.

Construction

- 19.8.9 Good practice mitigation, in the form of specific guidance on managing waste in accordance with the relevant regulations are outlined in the **Draft CoCP (Appendix 4.2** in Volume 3 of this PEIR) and **Draft OSWMP (Appendix 19.1** in Volume 3 of this PEIR).
- 19.8.10 Implementation and development of the contractor's SWMP based on the Draft OSWMP (**Appendix 19.1** in Volume 3 of this PEIR) will be a requirement on the contractor to be secured in the DCO application.
- 19.8.11 With the availability of further ground investigation data during the design phase and post consent, further opportunities to reuse materials beneficially both within the Proposed Development and on other nearby projects will be explored. This would typically involve the use of the CL:AIRE DoW CoP (Ref. 19.24) to reclassify waste as a resource and move material between construction sites using a defined process and methodology. Reuse of non-landfill material on-site i.e. soils and demolition waste would be covered by a MMP. The implementation and development of the MMP is a requirement set out in the **Draft CoCP (Appendix 4.2** in Volume 3 of this PEIR).
- 19.8.12 The **Draft CoCP (Appendix 4.2** in Volume 3 of this PEIR) and **Draft OSWMP (Appendix 19.1** in Volume 3 of this PEIR) also require contractors to adopt good practice in sustainable procurement and construction waste management which will reduce the quantity of waste generated and increase the use of materials with recycled content. The following approaches will be implemented, in order to minimise the quantities of waste requiring disposal and increase the use of materials with recycled content:
- a. Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme wherever feasible.
 - b. Implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste wherever feasible.
 - c. Attention to material quantity requirements to avoid over-ordering and generation of waste materials.

- d. Reuse of materials onsite wherever feasible.
- e. Recycling of waste onsite wherever feasible, e.g. recycling of demolition material.
- f. Segregation of waste at source.
- g. Reuse and recycling of materials off-site where reuse on-site is not feasible (e.g. through use of off-site waste management infrastructure and resale for direct reuse or reprocessing).
- h. Setting construction and demolition waste recovery targets.
- i. Establishment of a project specific recycled content target e.g. for aggregates.
- j. Contractual requirements for contractors to procure and use recycled and more sustainable materials.
- k. Contractor to prepare a sustainable procurement strategy to include waste and resources aims and objectives.

19.8.13 More information is set out in the Luton Rising Sustainability Strategy and this has been considered during the design and provides context to Luton Rising's strategy in relation to construction waste and resources.

Operation

19.8.14 Information is set out in the Luton Rising Sustainability Strategy and this has been considered during the design and provides context to Luton Rising's strategy in relation to waste and resources.

19.8.15 The emerging Aviation Strategy Aviation 2050. The Future of UK Aviation, A Consultation) (Ref. 19.35) provides a number of good practice examples for reducing waste in airports:

- a. Water foundations enabling customers to refill their own water containers;
- b. Liquid disposal point located before security search areas, encouraging passengers to dispose of liquids and take their empty bottles through security and re-fill at airside water refill stations;
- c. Removing single use plastic;
- d. Substituting disposable items with those made from recycled plastic, biodegradable or compostable options;
- e. Coffee cup recycling;
- f. More environmentally friendly liquid and gel bags used at security screening; and,
- g. Working with customers, employees, supplier to raise awareness of the issues of single use plastics.

19.9 Preliminary assessment

19.9.1 This section presents the results of the preliminary assessment of likely significant effects with the embedded and good practice mitigation measures, described in the previous section, in place.

19.9.2 A summary of the assessment of effects is provided in **Section 19.14**. Significant effects are discussed in further detail in this section.

Construction effects

19.9.3 The potential impacts of the Proposed Development with regards to waste and resources include:

- a. Temporary reduction in resources required for construction available in the relevant markets (key construction materials e.g. concrete, asphalt, steel, aggregates);
- b. Effects that on-site generated materials e.g. soils, waste arisings have on the existing and future landfill void capacity, during construction; and
- c. Effects that on-site generated waste arisings have on the existing and future landfill void capacity during operation.

19.9.4 **Table 19.30** summarises the types of resources that would be used and wastes that may be generated during construction and operation.

Table 19.30: Types of resources that would be used and wastes that may be generated during construction and operation.

Project Activity	Material resources required for the project	Waste arisings from the project
Site remediation / preparation/ earthworks	<ul style="list-style-type: none"> a. Fill material for construction purposes. b. Primary and secondary/recycled aggregates for ground stabilisation. c. Stripped topsoil and subsoil. 	<ul style="list-style-type: none"> a. Surplus excavated materials (earthworks) – inert. b. Surplus excavated material (former landfill) – Non-hazardous and hazardous. c. Stripped topsoil and subsoil - non-hazardous. d. Contaminated soils - hazardous. e. Site clearance, green waste arisings – non-hazardous.
Demolition	<ul style="list-style-type: none"> a. Materials are not required for demolition works. 	<ul style="list-style-type: none"> a. Waste arisings from the demolition of any existing buildings, car parks or structures – non-hazardous.

<p>Site construction</p>	<p>Construction materials including:</p> <ul style="list-style-type: none"> a. Concrete; b. Asphalt and bituminous material; c. Bricks; d. Plasterboard; e. Cement bound granular material; f. Plastics; g. Tiles and ceramics; h. Floor coverings; i. Well graded granular material; j. Precast concrete kerb; k. Timber; l. Plywood; m. Cementitious grout; n. Reinforcing steel; o. Reinforcing fabric; p. Geotextile; q. Geo-composite drainage system; r. Pipe bedding aggregate. 	<ul style="list-style-type: none"> b. Packaging from materials delivered to site – non-hazardous. c. Excess and broken/damaged construction materials – non-hazardous. d. Waste oils from construction vehicles – hazardous. e. Construction worker wastes (excluding sewage) – non-hazardous.
<p>Operation</p>	<ul style="list-style-type: none"> a. Resources required during operation and routine maintenance of the airport. 	<ul style="list-style-type: none"> a. Waste arisings during operation and routine maintenance of the airport – hazardous and non-hazardous.

Resources

Construction effects

19.9.5 **Table 19.31, Table 19.32 and Table 19.35** outline the estimated main types and quantities of materials resources to be used during the construction of the Proposed Development, wastage and potential recycled content by assessment phase.

Table 19.31: Estimated main types and quantities of materials resources, wastage and potential recycled content – assessment phase 1

Material Category	Material density	Quantity to be used in construction		Wastage rate	Wastage		Potential recycled content (% by weight)	Potential recycled content (tonnes)
	(tonnes/m ³)	m ³	tonnes	%	m ³	tonnes		
Concrete	2.4	46,067	110,560	5	2,303	5,528	16	17,690
Asphalt	2.4	57,505	138,013	2.5	1,438	3,450	25	34,503
Steel - Structural	7.85	-	-	0	-	-	60	-
Steel - Rebar	7.85	-	-	2	-	-	100	-
Aggregate	1.9	33,708	64,046	5	1,685	3,202	50	32,023
Earthworks material (granular) - imported	1.9	72,000	136,800	5	3,600	6,840	50	68,400
							Total recycled content all materials (tonnes)	152,616
Total		209,280	449,419				%	34

Table 19.32: Estimated main types and quantities of materials resources, wastage and potential recycled content – assessment phase 2a

Material Category	Material density	Quantity to be used in construction		Wastage rate	Wastage		Potential recycled content (% by weight)	Potential recycled content (tonnes)
	(tonnes/m ³)	m ³	tonnes	%	m ³	tonnes		
Concrete	2.4	393,509	944,421	5	19,675	47,221	16	151,107
Asphalt	2.4	104,866	251,678	2.5	2,622	6,292	25	62,919
Steel - Structural	7.85	1,139	8,941	0	-	-	60	5,365
Steel - Rebar	7.85	789	6,197	2	16	124	100	6,197
Aggregate	1.9	461,384	876,629	5	23,069	43,831	50	438,315
Earthworks material - imported	1.9	72,000	136,800	5	3,600	6,840	50	68,400
Total		1,033,687	2,224,666				Total recycled content all materials (tonnes)	732,303
							%	33

Table 19.33: Estimated main types and quantities of materials resources, wastage and potential recycled content – assessment phase 2b

Material Category	Material density	Quantity to be used in construction		Wastage rate	Wastage		Potential recycled content (% by weight)	Potential recycled content (tonnes)
	(tonnes/m ³)	m ³	tonnes	%	m ³	tonnes		
Concrete	2.4	85,882	206,117	5	4,294	10,306	16	32,979
Asphalt	2.4	63,126	151,503	2.5	1,578	3,788	25	37,876
Steel - Structural	7.85	584	4,585	0	46	-	60	2,751
Steel - Rebar	7.85	296	2,324	2	6	46	100	2,324
Aggregate	1.9	137,087	260,466	5	6,854	13,023	50	130,233
Earthworks material - imported	1.9	179,000	340,100	5	8,950	17,005	50	170,050
Total		465,975	965,094				Total recycled content all materials (tonnes)	376,212
							%	39

19.9.6 The estimated key construction material quantities for each assessment phase have been compared against the national annual consumption baseline in **Table 19.34**.

Table 19.34: Estimated construction material and percentage of national annual consumption by assessment phase

Material type	National annual consumption (million tonnes)	Phase 1 (tonnes)	%	Phase 2a (tonnes)	%	Phase 2b (tonnes)	%
Concrete	86.2	110,560	0.13	944,421	1.10	206,117	0.24
Asphalt	25.4	138,013	0.54	251,678	0.99	151,503	0.60
Steel (structural and rebar)	17	-	0.00	15,138	0.09	6,909	0.04
Aggregate and earthworks material (imported material only)	251	200,846	0.08	1,013,429	0.40	600,566	0.24

19.9.7 For construction assessment phase 1, and 2b no individual construction material type is equal to or greater than 1% by weight of the national baseline consumption.

19.9.8 For construction assessment phase 2b concrete is equal to or greater than 1% (1.1%) of the national baseline, asphalt is just below 1% (0.99%). This is deemed to be a conservative assessment since total construction material use will not be within a single year. For example, the construction phases cover multiple years, therefore spreading out the impact on national consumption further. Phase 2a will be constructed over four years. Concrete use over this period is outlined in **Table 19.35**.

Table 19.35: Estimated construction material and percentage of national annual consumption, assessment Phase 2b by year

Material type	National annual consumption (million tonnes)	2033 (tonnes)	%	2034 (tonnes)	%	2035 (tonnes)	%	2036 (tonnes)	%
Concrete	86.2	193,606	0.22	236,763	0.27	287,656	0.33	226,396	0.26

19.9.9 For each year within assessment Phase 2b no individual construction material type is equal to or greater than 1% by weight of the national baseline consumption.

19.9.10 Therefore, the magnitude of impact is Negligible. Receptor sensitivity is Low, the overall effect is Neutral/Slight and significant effects are not anticipated.

Operational effects

19.9.11 Information on the quantities and types of the resources required for operation of the airport are currently limited to airfield maintenance (quantities required between 2029 and 2041, the assessment period) at this time (**Table 19.36**). The material estimates take into account minor overlays and repairs and major maintenance. No individual construction material type required for maintenance of the airfield is equal to or greater than 1% by volume of the national baseline consumption. Therefore, the magnitude of impact is Negligible. Receptor sensitivity is Low, the overall effect is Neutral/Slight and significant effects are not anticipated.

Table 19.36: Estimated construction material for maintenance (2026-2041) and percentage of national annual consumption

	National annual consumption (million tonnes)	Maintenance (quantities required between 2026-2041) (tonnes)	%
Concrete	86.2	3,763	0.004
Asphalt	25.4	103,360	0.407
Steel (structural and rebar)	17	Not required for maintenance	
Aggregate and earthworks material (imported material only)	251		

Waste

Construction effects – construction waste

19.9.12 Construction waste has been estimated in two ways, firstly for infrastructure components such as roads, taxiways, hard standing and roads (by volume of material) as summarised in **Table 19.37**, and secondly for buildings as summarised in **Table 19.39**.

Table 19.37: Construction waste – wastage from construction materials

	Phase 1		Phase 2a		Phase 2b	
	m ³	tonnes	m ³	tonnes	m ³	tonnes
Concrete	2,303	5,528	19,675	47,221	4,294	10,306
Asphalt	1,438	3,450	2,622	6,292	1,578	3,788

	Phase 1		Phase 2a		Phase 2b	
Steel - Structural	-	-	-	-	46	-
Steel - Rebar	-	-	16	124	6	46
Aggregate	1,685	3,202	23,069	43,831	6,854	13,023
Earthworks material - imported	3,600	6,840	3,600	6,840	8,950	17,005
Total	9,026	19,021	48,982	104,308	21,728	44,168

19.9.13 Building construction waste is estimated using a BRE Smartwaste benchmarks (Ref. 19.36) (average waste arising in m³ per 100 m²) and the Gross External Area (GEA) of each building in m². Where GEA is not available sub-zone area (site area) is used as worst case. The benchmarks used are presented in **Table 19.38** and the construction waste estimate for buildings is presented in **Table 19.39**.

Table 19.38: Average waste arisings benchmarks

Project Type	Average waste arising m ³ /100 m ²
Residential	18.1
Public Buildings	20.9
Leisure	14.4
Industrial Buildings	13.0
Healthcare	19.1
Education	20.7
Commercial Other	17.4
Commercial Offices	19.8
Commercial Retail	20.9

Table 19.39: Construction waste – building construction

	Phase 1		Phase 2a		Phase 2b	
	m ³	tonnes	m ³	tonnes	m ³	tonnes
Total building construction waste	1,699	544	20,569	6,582	13,569	4,342

19.9.14 The precise composition and volume of this waste is dependent on several factors and will be further informed at detailed design and by the appointed Principal Contractor, based on their experience of similar developments.

Construction effects – demolition waste

19.9.15 Demolition waste consists of waste from the clearance of carparks, earth bunds, airside roads and buildings. The Bristol Britannia Fuselage is not included. Corrugated bonded cement sheeting and asbestos products have been noted in one building listed for demolition.

- 19.9.16 Demolition waste from buildings has been estimated based on building volume in m³ (width, depth and height) and the demolition waste benchmarks outlined in **Table 19.40**. The benchmarks are those that were used in the WRAP's Demolition Quantities Estimator which sat within the Net Waste Tool (Ref. 19.37). The Net Waste Tool is no longer available online.

Table 19.40: Building demolition waste benchmarks

Building type	Demolition waste arisings (tonne per m³)
Masonry	0.543
Steel frame	0.47
Timber	0.386

- 19.9.17 Waste in tonnes was converted to m³ using the WRAP Waste Volume to Mass Conversion Factors (Ref. 19.38). The demolition waste estimate is presented in **Table 19.41**. Asphalt, concrete, aggregate and brick from site clearance are all inert. 75% of the building demolition waste are considered inert wastes. Steel is categorised as non-hazardous waste as the composition of demolition waste is currently unknown. Some hazardous waste will be generated during demolition but is not possible to quantify at this time.

Table 19.41: Site clearance and demolition waste estimate

	Waste type	Phase 1		Phase 2a		Phase 2b	
		m ³	tonnes	m ³	tonnes	m ³	tonnes
Site clearance waste							
Asphalt	Inert	31,019	74,446	48,502	116,405	52,633	126,318
Concrete and asphalt mix	Inert	2,264	5,434	16,434	39,442	5,948	14,275
Aggregate (granular type)	Inert	19,928	37,863				
Steel	Non-hazardous			1,556	654		
Brick	Inert			208	137		
Building demolition waste	75% inert, 25% non-hazardous	4,054	1,297	92,491	29,597	196,345	62,830
Total		57,265	119,040	159,191	186,234	254,926	203,424
Total inert		56,252	118,716	134,513	178,182	205,839	187,716
Total non-hazardous		1,014	324	24,679	8,053	49,086	15,708

Construction effects – vegetation clearance

- 19.9.18 The quantity of waste estimated to arise from vegetation clearance (**Table 19.42**) is based on the number of hectares expected to be cleared, the vegetation type (heavily wooded, medium wood or open field) and a benchmark for m³ and tonnes of waste per hectare. The benchmarks are:
- a. Heavily wooded - 429 m³ per ha, 300 tonnes per ha;
 - b. Medium wooded – 250 m³ per ha, 175 tonnes per ha; and,
 - c. Open field – 9 m³ per ha, 6 tonnes per ha.

Table 19.42: Vegetation clearance waste arisings

Vegetation Type	m ³ of waste per ha	tonnes of waste per ha	Phase 1		Phase 2a		Phase 2b	
			ha	Waste m ³ tonnes	ha	Waste m ³ tonnes	ha	Waste m ³ tonnes
Heavily wooded	429	300	1.6	703 492	5.4	2,298 1,607	1.2	509 356
Medium wooded	250	175	0	- -	0	- -	0	- -
Open field	9	6	37.8	340 227	129	1,161 774	27.2	245 163
Total waste				1,043 718		3,459 2,381		754 520

- 19.9.19 During vegetation clearance (excluding invasive species) it is estimated that 5,256 m³ (3,619 tonnes) of material will be generated, it is anticipated that all of this waste will be recycled on or off site with a 100% recovery rate and therefore would not impact landfill void capacity.
- 19.9.20 Japanese Knotweed (non-native invasive species) has been identified in areas within the boundary of the Proposed Development as outlined in **Chapter 8 Biodiversity** in Volume 2 of this PEIR. Where possible works in these areas will be avoided. Any material generated will be managed in accordance with EA guidance: Stop invasive non-native plants from spreading (Ref. 19.39), Prevent Japanese knotweed from spreading (Ref. 19.40) and Treatment and disposal of invasive non-native plants: RPS 178 (Ref. 19.41). Options for management include but are not limited to treatment or burial onsite, therefore it is anticipated that this material will be managed onsite and would not impact landfill void capacity.

Construction effects – excavated material

- 19.9.21 Overall, in all three assessment phases it is estimated that 3,330,000 m³ of non-hazardous material (excluding the material excavated during the landfill works) will be excavated, and it is anticipated that all of this material will be reused on site and incorporated into the landform, thus achieving a cut and fill balance. Therefore, it is anticipated that this material will be managed onsite and would not impact landfill void capacity.
- 19.9.22 Overall, in all three assessment phases it is estimated that 350,000 m³ of material will be excavated during the landfill works, of this 313,000 m³ will be reused or recycled on site and incorporated into the landform. Therefore, it is anticipated that the majority of this material will be managed onsite and would not impact landfill void capacity.
- 19.9.23 **Table 19.26** presents the quantities of waste to be taken offsite for recycling or recovery. The majority of waste will be diverted from landfill with the remaining hazardous waste to be sent to hazardous waste landfill or for incineration. For the purpose of this assessment the waste management route assessed is landfill as a worst case scenario. Because the assessment of impact is based on the effects on landfill void capacity, only that waste which would potentially be sent to hazardous waste landfill is assessed.

Table 19.43: Material to be excavated from the landfill and taken offsite

	Waste management route	Phase 1 (m³)	Phase 2a (m³)	Phase 2b (m³)
Total excavated material to be taken offsite		3,000	32,000	2,000
Total hazardous waste		1,500	16,000	1,000
Hazardous - asbestos (25% of hazardous waste)	Non-hazardous landfill (SNRHW cell)	375	4,000	250

	Waste management route	Phase 1 (m³)	Phase 2a (m³)	Phase 2b (m³)
Hazardous - soil (60% of hazardous waste)	Soil treatment	900	9600	600
Hazardous - other (15% of hazardous waste)	Hazardous waste landfill or incineration	225	2400	150
Non-hazardous		1,500	16,000	1,000

Construction effects – summary

- 19.9.24 All estimated waste from construction is summarised in **Table 19.44**. Vegetation clearance is not summarised here as it assumed that waste would not impact on landfill void capacity (100% recovery rate). The total estimated construction waste is compared against the landfill void capacity in **Table 19.45**.

Table 19.44: Construction, demolition and excavation waste summary

Construction, demolition and excavation waste	Waste type	Phase 1		Phase 2a		Phase 2b	
		m ³	tonnes	m ³	tonnes	m ³	tonnes
Construction waste – material wastage	Inert	9,026	19,021	48,966	104,184	21,677	44,122
Construction waste – material wastage	Non-hazardous	-	-	16	124	52	46
Construction waste – buildings	Inert	849	272	10,284	3,291	6,784	2,171
Construction waste – buildings	Non-hazardous	849	272	10,284	3,291	6,784	2,171
Demolition waste	Inert	56,252	118,716	134,513	178,182	205,839	187,716
Demolition waste	Non-hazardous	1,014	324	24,679	8,053	49,086	15,708
Excavated waste (historic landfill excavation only)	Non-hazardous	1,500	Excavated materials quantified in m ³ only	16,000		1,000	
Hazardous waste (destined for landfill only)	Hazardous	225		2,400		150	
Total inert		66,128	138,008	193,763	285,657	234,300	234,009
Total non - hazardous		3,363	596	50,979	11,468	56,922	17,925
Total hazardous		225		2,400		150	

Table 19.45: Estimated construction waste compared against landfill void capacity

	Capacity (million m³) 2027	Phase 1 (m³)	%	Capacity (million tonnes m³) 2039	Phase 2a (m³)	%	Capacity (million m³) 2043	Phase 2b (m³)	%
Inert construction waste	10.8	66,128	0.6	10.8	193,763	1.8	10.8	234,300	2.2
Non-hazardous construction waste (noting the capacity is categorised as non-inert which includes hazardous waste capacity)	15.8	3,363	0.02	10	50,979	0.5	10	56,922	0.6
Hazardous construction waste	1.3	225	0.02	1.3	2,400	0.18	1.3	150	0.01

- 19.9.25 For inert waste, in a worst-case scenario where all waste goes to landfill, the effects in each assessment phase will be:
- Phase 1, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by <1% (0.6). Therefore, the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
 - Phase 2a, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by 1-5% (1.8%). Therefore, the magnitude of impact is Minor. Receptor sensitivity is very high, the overall effect is Moderate/Large, which is significant. When a non-hazardous construction waste recovery rate of 70% is applied waste generated would reduce the landfill void capacity by 0.5%. Therefore, the magnitude of impact is reduced to Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
 - Phase 2b, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by <1% (2.2%). Therefore, the magnitude of impact is Minor. Receptor sensitivity is very high, the overall effect is Moderate/Large, which is significant. When a non-hazardous construction waste recovery rate of 70% is applied waste generated would reduce the landfill void capacity by 0.7%. Therefore, the magnitude of impact is reduced to Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
- 19.9.26 For non-hazardous waste, in a worst-case scenario where all waste goes to landfill, the effects in each assessment phase will be:
- Phase 1, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by <1% (0.02%). Therefore, the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
 - Phase 2a, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by <1% (0.5). Therefore, the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
 - Phase 2b, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by <1% (0.18) Therefore the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
- 19.9.27 For hazardous waste in a worst-case scenario where all waste goes to landfill, the effects in each assessment phase will be:
- Phase 1, waste generated by the development will reduce landfill void capacity in the hazardous waste expansive Study Area by <0.1% (0.02%). Therefore, the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.
 - Phase 2a, waste generated by the development will reduce landfill void capacity in the hazardous waste expansive Study Area by 0.1-0.5%

(0.18%). Therefore, the magnitude of impact is Minor. Receptor sensitivity is very high, the overall effect is Moderate/Large, which is significant. When hazardous waste recovery rate of 50% is applied waste generated would reduce the landfill void capacity by 0.09%. Therefore, the magnitude of impact is reduced to Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant. The IEMA guidance suggests that the hazardous waste Study Area is the whole of England, however a conservative approach that the Study Area is smaller (three surrounding regions) is taken account in this assessment.

- c. Phase 2b, waste generated by the development will reduce landfill void capacity in the hazardous waste expansive Study Area by <0.1% (0.01%). Therefore, the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is Slight and not significant.

Operational effects

- 19.9.28 As identified in the current airport operational 2019 baseline, all non-hazardous operational waste is sent for recycling or energy recovery with no non-hazardous operational waste consigned directly to landfill. It is assumed that the current landfill diversion rate (100%) will be maintained. Non-hazardous operational waste is expected to increase in proportion to passenger numbers. In 2019 the airport generated a total of 2,471 tonnes of non-hazardous operational waste.
- 19.9.29 It is estimated that non-hazardous operational waste will increase to 4,731 tonnes by the year 2043 (**Table 19.46**) waste quantity and type is proportional to passenger number, assuming the terminal capacities are achieved, and they are achieved at the start of each year).

Table 19.46: Estimated operational waste

Year predicted passenger capacity reached	Total capacity (mppa)	Estimated non-hazardous operational waste (tonnes)	Estimated hazardous operational waste (tonnes)	Non-hazardous operational waste kg/pax	Estimated non-hazardous operational waste (m ³)	Landfill void capacity (million m ³)	% landfill void capacity
2019 (baseline year)	18 (Ref. 19.42) (actual)	2,471 (actual)	21 (actual)	0.137			n/a
2027 (Phase 1)	21.5	2,951	25	0.137	14,055	15.8	0.1
2039 (Phase 2a)	27	3,707	32	0.137	17,650	10	0.2
2043 (Phase 2b)	32	4,393	37	0.137	20,919	10	0.2
Tonnes converted to m3 using WRAP Waste Volume to Mass Conversion Factors (mixed municipal waste 0.21 tonnes/m3)							

- 19.9.30 Given the current 100% landfill diversion rate for non-hazardous operational waste, it is considered that operation of the Proposed Development will result in no impact on landfill void capacity. However, a worst case scenario where all non-hazardous waste is sent to landfill is used in the assessment. In a worst case scenario where all non-hazardous waste is sent to landfill this would be 0.2% of the baseline non-hazardous waste landfill void capacity of 10 million m³. Therefore, waste generated by the development will reduce landfill void capacity in the non-hazardous waste expansive Study Area by <1%. The magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is **Slight** and **not significant**.
- 19.9.31 Hazardous operational waste is expected to increase in proportion to passenger numbers. In 2019 the airport generated a total of approximately 21 tonnes of hazardous operational waste. It is estimated that hazardous operational waste will increase to 37 tonnes by the year 2043 (assuming the terminal capacities are achieved, and they are achieved at the start of each year).
- 19.9.32 Based on the estimated future hazardous waste arisings at the airport (37 tonnes, 178 m³) and potential for recycling and recovery of some of these waste types e.g. aerosols and batteries it is considered waste generated by the development will reduce landfill void capacity in the hazardous waste expansive Study Area by <0.1%. In a worst case scenario where all hazardous waste is sent to landfill this would be 0.014% of the baseline hazardous waste landfill void capacity of 1.3 million m³. Therefore, the magnitude of impact is Negligible. Receptor sensitivity is very high, the overall effect is **Slight** and **not significant**.
- ### Sensitivity Analysis
- 19.9.33 There are certain known scenarios or risks that may occur that could influence the conclusions of the core assessment. These scenarios and the general approach to considering them in this assessment are described in **Section 5.4** of **Chapter 5** Approach to the Assessment.
- 19.9.34 **Table 19.47** provides a qualitative assessment of any likely changes to the conclusions of the assessment reported in this chapter, in the event that that scenario or risk is realised.

Table 19.47: Qualitative sensitivity analysis

Sensitivity scenario	Potential impact and change	Likely effect
1. 19 mppa Application	No change, baseline capacity of 18 mppa is not used in the assessment. Operational waste	No change.
2. Faster growth	Future operational waste is based on passenger numbers, higher passenger throughput occurring earlier would bring forward the point at which the maximum operational waste is generated. Operational waste generated is compared against	No change or decrease slightly but remain slight and not significant .

Sensitivity scenario	Potential impact and change	Likely effect
	landfill void capacity in the assessment, which is assumed to decrease up to 2039 before remaining at the same level up to 2043. If the point of maximum waste generation is brought forward then the operation waste generated would be compared against a greater than or equal landfill void capacity. This would result in an equal or decreased impact on landfill void capacity.	
3. Slower growth	Future operational waste is based on passenger numbers, higher passenger throughput occurring later would push back the point at which the maximum operational waste is generated. Operational waste generated is compared against landfill void capacity in the assessment, which is assumed to decrease up to 2039 before remaining at the same level up to 2043. If the point of maximum waste generation is pushed back then the operation waste generated would be compared against an equal landfill void capacity assuming landfill void capacity continuing to remain at the same level beyond 2043. This would result in an equal impact on landfill void capacity. The overall effect would remain slight and not significant .	No change or decrease slightly but remain slight and not significant .

19.10 Additional mitigation

19.10.1 No additional mitigation has been proposed with respect to construction or operational effects.

19.11 Residual effects

19.11.1 As no additional mitigation has been proposed with respect to construction or operational effects since no significant impacts are reported, the effects would be as reported in **Section 19.9**.

19.12 In-combination climate change effects (ICCI)

19.12.1 The waste and resources assessment receptors are waste management infrastructure (specifically landfill capacity) and national material resources demand. It is considered that impacts arising from an increase in demand and climate change on the operation of waste management infrastructure and manufacturing of material resources have been taken into account as part of the planning and permitting process for such facilities. Therefore, the ICCI are not considered further.

19.13 Monitoring

19.13.1 As no waste and resources significant effects have been identified, no monitoring of significant effects is proposed.

19.13.2 The **Draft OSWMP (Appendix 19.1** in Volume 3 of this PEIR) sets out monitoring to be undertaken during the construction stage to ensure that the mitigation measures embedded in the design and those considered essential to mitigate the effects of construction activities are appropriately implemented.

19.14 Preliminary assessment summary

19.14.1 **Table 19.48** provides a summary of the identified impacts, mitigation and likely effects of the Proposed Development on waste and resources.

Table 19.48: Waste and resources preliminary assessment summary

Impact	Embedded/good practice mitigation	Magnitude	Receptor sensitivity	Description of effect and significance	Additional mitigation	Residual effect
Construction - resources						
Phase 1	As described in 19.8.	Negligible	Low	Decrease in the availability of construction material resources Slight, significant	None required	None
Phase 2a		Negligible	Low	Decrease in the availability of construction material resources Slight, significant	None required	None
Phase 2b		Negligible	Low	Decrease in the availability of construction material resources Slight, significant	None required	None
Construction – non-hazardous waste						
Phase 1	As described in 19.8.	Negligible	Very high	Decrease in non-hazardous and inert landfill void capacity Slight, significant	None required	None

Impact	Embedded/good practice mitigation	Magnitude	Receptor sensitivity	Description of effect and significance	Additional mitigation	Residual effect
Phase 2a		Negligible	Very high	Decrease in non-hazardous and inert landfill void capacity Slight, significant	None required	None
Phase 2b		Negligible	Very high	Decrease in non-hazardous and inert landfill void capacity Slight, significant	None required	None
Construction – hazardous waste						
Phase 1	As described in 19.8.	Negligible	Very high	Decrease in hazardous landfill void capacity Slight, significant	None required	None
Phase 2a		Negligible	Very high	Decrease in hazardous landfill void capacity Slight, significant	None required	None
Phase 2b		Negligible	Very high	Decrease in hazardous landfill void capacity Slight, significant	None required	None
Operation - resources						

Impact	Embedded/good practice mitigation	Magnitude	Receptor sensitivity	Description of effect and significance	Additional mitigation	Residual effect
Phase 1	As described in 19.8.	Negligible	Low	Decrease in the availability of operational material resources Slight, significant	None required	None
Phase 2a		Negligible	Low	Decrease in the availability of operational material resources Slight, significant	None required	None
Phase 2b		Negligible	Low	Decrease in the availability of operational material resources Slight, significant	None required	None
Operation – non-hazardous waste						
Phase 1	As described in 19.8.	Negligible	Very high	Decrease in non-hazardous and inert landfill void capacity Slight, significant	None required	None
Phase 2a		Negligible	Very high	Decrease in non-hazardous and inert landfill void capacity	None required	None

Impact	Embedded/good practice mitigation	Magnitude	Receptor sensitivity	Description of effect and significance	Additional mitigation	Residual effect
				Slight, significant		
Phase 2b		Negligible	Very high	Decrease in non-hazardous and inert landfill void capacity Slight, significant	None required	None
Operation – hazardous waste						
Phase 1	As described in 19.8.	Negligible	Very high	Decrease in hazardous landfill void capacity Slight, significant	None required	None
Phase 2a		Negligible	Very high	Decrease in hazardous landfill void capacity Slight, significant	None required	None
Phase 2b		Negligible	Very high	Decrease in hazardous landfill void capacity Slight, significant	None required	None

19.15 Completing the assessment

19.15.1 The following activities will be undertaken to complete the assessment, the results of which will be presented in the ES:

- a. The baseline will be updated with the most up to date published data e.g. EA data.
- b. The baseline operational waste will be updated where updated and improved data is available.
- c. The construction material and waste estimates will be updated where updated and improved data is available.

COMPETENT EXPERTS

Topic	Role	Company	Qualifications/competencies/experience of author
Waste and resources	Author	AECOM	BSc Environmental Science MSc Environmental Management 14 years experience Chartered Member of the Chartered Institution of Wastes Management (MCIWM) Chartered Resource and Waste Manager (CRWM) Chartered Environmentalist (CEnv) Individual Member International Solid Waste Association (ISWA) and International Waste Manager
Waste and resources	Sub-author	AECOM	BSc Geography <1 years experience
Waste and resources	Technical Reviewer	AECOM	BSc Chemistry Chartered Chemist (CChem) 25+ years experience

GLOSSARY AND ABBREVIATIONS

Term	Definition
ANPS	Airports National Policy Statement
C&D	Construction and Demolition
C&I	Commercial and Industrial
CBC	Central Bedfordshire Council
CD&E	Construction, Demolition and Excavation
DCO	Development Consent Order
DoW CoP	Definition of Waste Code of Practice
CoCP	Code of Construction Practice
EA	Environment Agency
EC	European Commission
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
GEA	Gross External Area
HCC	Hertfordshire County Council
IEMA	Institute of Environmental Management and Assessment
LBC	Luton Borough Council
LLAOL	London Luton Airport Operations Limited
LLP	Luton Local Plan
MMP	Materials Management Plan
MPA	Mineral Planning Authority
MWLP	Minerals and Waste Local Plan
NHDC	North Hertfordshire District Council
NPPF	National Planning Policy Framework
OSWMP	Outline Site Waste Management Plan
PEIR	Preliminary Environmental Impact Report
PPG	Planning Policy Guidance
SWMP	Site Waste Management Plan
TBC	To be confirmed
Waste FD	Waste Framework Directive
WEEE	Waste Electrical and Electronic Equipment
WPA	Waste Planning Authority
WRAP	Waste and Resources Action Programme
WSP	Waste Strategy Policy
ZOI	Zone of Influence

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