



South East Strategic Reservoir Option
Preliminary Environmental Information Report

Chapter 11 - Materials and waste

Date: October 2025

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11 Materials and waste

11.1 Introduction

- 11.1.1 This chapter of the Preliminary Environmental Information (PEI) Report provides the preliminary assessment of likely significant effects on materials and waste from the construction of the proposed **SESRO Project** (the Project, as detailed in Chapter 2: Project description).
- 11.1.2 Within this chapter, aspect-specific sections are included on:
- Legislation, policy and guidance (Section 11.2)
 - Consultation, engagement and scoping (Section 11.3)
 - Assessment methodology (Section 11.4)
 - Study area (Section 11.5)
 - Baseline conditions (Section 11.6)
 - Project parameters, assumptions and limitations (Section 11.7)
 - Embedded design mitigation and standard good practice (Section 11.8)
 - Preliminary assessment of likely significant effects (Section 11.9)
 - Next steps (Section 11.10)
- 11.1.3 This chapter considers the potential effects on identified sensitive receptors which include the availability of key construction materials, sterilisation of mineral resources, and landfill void capacity from the construction of the Project. The potential effects generated during operation have been scoped out and therefore are not assessed within this chapter.
- 11.1.4 This chapter should be read in conjunction with Chapter 2: Project description and other chapters of key relevance, namely:
- Chapter 10: Geology and soils – predictions of the levels of contamination of excavated material and geological site setting. It also supports with classification of the surplus excavated material expected to be sent for disposal as inert, non-hazardous and hazardous waste.
 - Chapter 12: Traffic and transport – assessment of trips to transport materials to site and transport waste off site when required.
 - Chapter 17: Greenhouse gases – assessment of associated carbon impacts of the use of materials and disposal of waste.
- 11.1.5 This chapter is supported by the following figure and appendix:
- Figure 11.1: Mineral resource areas
 - Appendix 11.1: Preliminary assessment of effects for Materials and waste
- 11.1.6 This PEI Report does not constitute a draft Environmental Statement (ES). Assessments reported within this PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is being developed. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and

addressed as part of the assessment during the production of the ES, as noted in Section 11.10: Next steps.

- 11.1.7 Where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed and the design and mitigation are further developed. The ES will be submitted with the Development Consent Order (DCO) application and will provide the final assessment of likely significant effects; this will be informed by the ongoing Environmental Impact Assessment (EIA) process and ongoing consultation and engagement.

11.2 Legislation, policy and guidance

- 11.2.1 Table 11.1 lists the legislation, policy and guidance relevant to materials and waste for the Project and specifies where in the PEI Report information is provided in relation to these. A full policy compliance assessment will be presented within the Planning Statement as part of the DCO application.
- 11.2.2 National Policy Statements (NPS) form the principal policy for developments progressing through the Planning Act 2008 process. The NPS for Water Resources Infrastructure (NPSWRI) is the primary NPS for the Project. In addition, the Secretary of State must also have regard to any other matters which they think are both important and relevant to the decision and this could include regional and local planning policies.
- 11.2.3 The Project is located mainly within the Vale of White Horse District, with the exception of the far eastern extent on the eastern bank of the River Thames, which falls within the South Oxfordshire District. The Project is wholly within the county of Oxfordshire. The regional and local planning policies most relevant to the assessment within this chapter are included in Table 11.1.

Table 11.1 Relevant legislation, policy and guidance for materials and waste

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Legislation		
Environmental Protection Act 1990 The aim of the Act is to provide a framework for the prevention of pollution from emissions to air, land or water. It contains the primary legislation relating to statutory nuisances, introduces the concept of integrated pollution control and places a duty of care on those involved in the management of waste. This Act outlines the basic provisions for the management of all waste, which includes details on the definition of waste, duty of care	The Project will generate waste. This will require the implementation of compliant waste management practices to remain within the legislative requirements and ensure environmental and human health protection. This includes obtaining necessary permits, complying with requirements for waste management (including disposal), and maintaining accurate records of waste management activities.	Duty of Care requirements for the Project will be included in the draft Code of Construction Practice (CoCP) (Appendix 2.1: Draft Code of Construction Practice). These requirements have been incorporated into the embedded mitigation which is outlined in Section 11.8: Embedded design mitigation and standard good practice. Measures included will ensure that waste will be managed in

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
requirements, and waste management licenses.		line with good practice and the waste hierarchy.
Directive 2008/98/EC the Waste Framework Directive (as transposed in United Kingdom (UK) law as of 2018); see The Waste and Environmental Permitting. (Legislative Functions and Amendments) (EU Exit) Regulations 2020) The Waste (England and Wales) Regulations 2011 The Regulations transpose the Revised EU Waste Framework Directive into UK law and requires the management of waste in alignment with the waste hierarchy to prevent waste going to landfill.	Waste generated by the Project will be managed according to the principles of the waste hierarchy. The waste generated by the Project will be managed responsibly throughout the Project's life cycle. This will require obtaining necessary environmental permits, implementing waste prevention measures, and ensuring proper recycling and disposal practices. Waste management contractors collecting waste for the Project will be required to provide evidence to demonstrate that waste is being disposed of in accordance with the Regulations. This evidence will be in the form of waste transfer notes and hazardous waste consignment notes, which must be kept for a minimum of two and three years, respectively.	These requirements have been incorporated into the embedded mitigation which is outlined in Section 11.8 Embedded design mitigation and standard good practice. Measures included will ensure that waste will be managed in line with good practice and the waste hierarchy.
The Controlled Waste (England and Wales) Regulations 2012 These Regulations set out what types of waste are examples of controlled waste, and classify waste as household waste, industrial waste or commercial waste.	Contractors constructing the Project will classify waste generated to determine the controls under which it will be managed.	Section 11.9 focuses on the assessment of likely significant effects on waste management resulting from the demolition, excavation and construction of the Project, including the identification and categorisation of the types of waste generated during these processes.
The Hazardous Waste (England and Wales) Regulations 2005 These Regulations apply to all wastes listed as hazardous in the European Waste Catalogue (2000/532/EC) and the CLP (Classification, Labelling and	The Project will generate hazardous waste, and will need to put in place suitable waste management practices to comply with the legislative requirements, which ensure	This requirement has been incorporated into the embedded mitigation which is outlined in Section 11.8: Embedded design mitigation and standard good practice of this Chapter. Measures included will ensure

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
Packaging) Regulation (EC 1272/2008). The Regulations set out the regime for the control and tracking of the movement of hazardous waste.	environmental and human health protection.	compliance with legislative requirements and protect environmental and human health.
Waste (Circular Economy) (Amendment) Regulations 2020 These Regulations amend legislation in the UK to fully implement the 2020 Circular Economy Package.	The Project will need to implement compliant waste management practices that are aligned with the principles of the circular economy to remain within the legislative guidance. The impact of the Project on landfill void capacity during the operation phase has been scoped out of the assessment (subject to the Applicant providing an appropriate operational waste management plan).	The circular economy principles that are being applied to the Project to maximise resource efficiency including reuse/ recovery opportunities and minimising off site disposal of waste are set out in Chapter 2: Project description and embedded mitigation in Section 11.8: Embedded design mitigation and standard good practice of this Chapter. An Operational Waste Management Plan will be submitted as part of the DCO application and will be secured by the DCO. Site Waste Management Plan (SWMP) requirements will be included in the draft CoCP (Appendix 2.1: Draft Code of Construction Practice) and a Materials Management and Handling Strategy (MMHS) will accompany the DCO application and will be secured by the DCO.
The Environmental Permitting (England and Wales) Regulations 2016 These Regulations provide a consolidated system of environmental permitting in England and Wales. They define the term 'regulated facility' and require every regulated facility to be operated under the authority of an environmental permit or relevant exemption. They also set out the procedures in relation to environmental permits; provided	Contractors working on the Project will ensure that all waste management activities covered by the regulations, are undertaken with a valid environmental permit, or suitable exemption.	Environmental permitting requirements have been incorporated into the embedded mitigation which is outlined in Section 11.8: Embedded design mitigation and standard good practice. Measures included will ensure that all regulated activities are conducted in compliance with legislative requirements. Environmental Permitting requirements for the Project will also be included in the

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
with respect to administration and enforcement related to permitting.		draft CoCP (Appendix 2.1: Draft Code of Construction Practice).
Environment Act 2021 The Act makes provisions for targets, plans and policies aimed at improving the natural environment, including waste and resource efficiency.	The Project will support the attainment of targets set by the Secretary of State, subsequent to the requirements of the Environment Act 2021.	Measures that align with Environment Act 2021 targets and policies have been incorporated into the embedded mitigation which is outlined in Section 11.8: Embedded design mitigation and standard good practice. Measures included will ensure that waste will be managed in line with good practice and the waste hierarchy.
The Environmental Targets (Residual Waste) (England) Regulations 2023 The Regulations come under the Environment Act 2021 which requires the setting of deliverable targets to help government improve the state of the environment. The Regulations set a long-term target, that by the end of 2042, the total mass of residual waste does not exceed 287 kilograms per capita per year.	The Project will ensure that waste is minimised wherever possible, through resource efficient design, prioritising on site reuse of construction materials, and effective construction management, and segregated efficiently throughout construction to support this residual waste target.	Environmental targets for residual waste during the construction of the Project will be included in the draft CoCP (Appendix 2.1: Draft Code of Construction Practice). This requirement has been incorporated into the embedded mitigation which is outlined in Section 11.8: Embedded design mitigation and standard good practice. Measures included will ensure that waste will be managed in line with good practice and the waste hierarchy.
The Control of Asbestos Regulations 2012 This legislation governs the management of asbestos in the workplace and public buildings. These regulations came into force on 6 April 2012, updating and replacing the previous 2006 law.	Clearance and demolition works of existing buildings and structures within the draft Order limits of the Project are likely to generate some asbestos containing materials such as asbestos cement board roofing sheets.	Requirements for the safe management of asbestos containing materials will be included in the draft CoCP (Appendix 2.1: Draft Code of Construction Practice).
National Policy Statement for Water Resources Infrastructure (NPSWRI)		
Paragraphs 4.10.16 and 4.10.28 Requirement to identify and assess any impacts the proposed project might have for mineral safeguarded areas (or other	A small part of the Project is located within a Mineral Strategic Resource Area comprising two Mineral	Figure 11.1: Mineral Resource Areas shows the intersection of the Project and Mineral Safeguarding Areas and

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
minerals supply aspects) with the relevant Mineral Planning Authority.	Safeguarding Areas, as defined by the Oxfordshire County Council Minerals and Waste Local Plan Policies Map South. Potential sterilisation of mineral resources by the Project has been considered in this PEI Report.	Mineral Consultation Area, which is described in Section 11.4: Assessment methodology. Potential highway works at Frilford Junction or changes in agricultural regimes for habitat creation or species relocation would not affect the Mineral Strategic Resource Areas in any impactful way or sterilise any potential mineral resource in that area (i.e. prevent or otherwise hinder the future working of mineral resources). The impact of the Project on sterilising mineral resources is described in Section 11.9: Preliminary assessment of likely significant effects.
Paragraphs 4.12.1, 4.12.2 and 4.12.5 Requirement to minimise waste, reuse materials and manage materials in line with the waste hierarchy to minimise the impact on human health and the environment.	Waste management contractors for the Project will need to implement compliant waste management practices that are aligned with the principles of the circular economy to remain within the legislative guidance	The requirement has been incorporated into the standard good practice mitigation which is outlined in Section 11.8. This sets out that reuse and waste minimisation measures have been embedded within the design. SWMP requirements are also included in the draft CoCP (Appendix 2.1: Draft Code of Construction Practice) to ensure that waste is managed in line with best practice and the waste hierarchy to minimise the impact on the environment.
Paragraphs 4.12.4, 4.12.7 and 4.12.8 Requirement to follow sustainable waste management hierarchy, ensure that duty of care obligations are met, and set out mitigations to eliminate or significantly reduce the risk of adverse impacts associated with resource and waste management.	During construction, excavated soil, subsoil, and rock should be reused wherever practicable, following the Materials Management and Handling Plan MMHP. The process should be detailed to ensure compliance with duty of care as a waste producer. Efforts should be made to	The requirement has been incorporated into the standard good practice mitigation which is outlined in Section 11.8. This sets out that reuse and waste minimisation measures have been embedded within the design. SWMP requirements are included in the draft CoCP to ensure that

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
	minimise the volume of waste produced and to reduce the amount of waste sent for disposal, unless it can be proven that disposal is the best overall environmental, social, and economic outcome for the Project's entire lifespan.	waste is managed in line with best practice and the waste hierarchy.
Paragraphs 4.12.6 Requirements to prepare a Site Waste Management Plan and Materials Management Plan (where relevant).	The Project will require an Outline SWMP and a MMHP.	The requirement has been incorporated into the standard good practice mitigation, which is outlined in Section 11.8. SWMP requirements are included in the draft CoCP to ensure that waste is managed in line with best practice and the waste hierarchy.
Other national policy		
National Planning Policy Framework (NPPF) Sets out government's planning policies for England and how these are expected to be applied. Paragraph 223 (b) 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	The Project would require aggregates including recycled or secondary aggregates, which will be considered when assessing materials availability.	Table 11.13 lists the key materials required for construction of the Project, including recycled or secondary aggregates.
NPPF - Paragraph 223 (c) Safeguard mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas. This places a requirement on the Minerals Planning Authority to identify Mineral Safeguarding Areas and Mineral Consultation Areas.	A small part of the Project is located within a Mineral Strategic Resource Area comprising two Mineral Safeguarding Areas, as defined by the Oxfordshire County Council Minerals and Waste Local Plan Policies Map South. The Minerals and Waste Planning Authority sets out the requirements for consultation and assessment	Figure 11.1: Mineral Resource Areas shows the intersection of the Project and Mineral Safeguarding Areas and Mineral Consultation Area, which is described in Section 11.4: Assessment methodology.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
	when the site is situated within a Mineral Consultation Area.	
NPPF - Paragraph 226 (f) Maintaining landbanks of at least seven years for sand and gravel and at least ten years for crushed rock.	The Project will require crushed rock (rock armour for wave protection of the inner face of the reservoir), sand and gravel as per Table 11.9 . The NPPF requires the Minerals Planning Authority to maintain landbanks for minerals. This has informed the study area and baseline.	Section 11.5 and Section 11.6 sets out the study area and baseline for materials.
National Planning Policy for Waste 2014 (NPPW) Sets out detailed national waste planning policies. Policy 8 The application should demonstrate that the likely impact of a proposed development on existing sites and areas allocated for waste management, is acceptable, does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities.	The construction of the Project will generate waste which will be managed in accordance with the waste hierarchy. Where disposal is required, it will be disposed of at existing waste management sites.	The waste hierarchy, including Designing out Waste and Circular Economy principles, is being applied to the Project to maximise resource efficiency and reduce the quantities of waste generated. The assessment methodology, proposed in Section 11.4, sets out how to assess the impact of the Project's construction on existing waste management sites in the study area described in Section 11.5.
NPPW - Policy 8 The application should demonstrate that a proposed development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities.	Operation of the Project will generate waste. The design of the Project will include for on site facilities for temporary storage of operational waste prior to removal off site to licensed waste management facilities. The impact of the Project on landfill void capacity during the operation phase has been scoped out of the assessment (subject to the Applicant providing an appropriate operational waste management plan).	An Operational Waste Management Plan will be submitted as part of the DCO application. SWMP requirements are included in the draft CoCP (Appendix 2.1: Draft Code of Construction Practice).
NPPW - Policy 8 The application should demonstrate that the handling of waste arising from the construction and operation of a	The construction of the Project will generate waste which will be managed in accordance with the waste hierarchy,	The waste hierarchy, including Designing out Waste and Circular Economy principles, is being applied to the Project

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
proposed development maximises reuse/recovery opportunities and minimises off site disposal.	prioritising minimisation and on site reuse. The Project is also identifying off site reuse opportunities for surplus excavated material. Where disposal is required, it will be disposed of at existing waste management sites. The impact of the Project on landfill void capacity during the operation phase has been scoped out of the assessment (subject to the Applicant providing an appropriate operational waste management plan).	to maximise reuse/recovery opportunities and minimise off site disposal. An Operational Waste Management Plan will be submitted as part of the DCO application. SWMP requirements are included in the draft CoCP and as set out in Section 11.8 a MMHS will accompany the DCO application.
Regional and local policy		
Oxfordshire Minerals and Waste Local Plan (2017) Part 1 – Core Strategy The Core Strategy sets out policies to guide minerals and waste development over the plan period to 2031 and contains common core policies relevant to minerals and waste. Policy M1 requires that, so far as practicable, aggregate mineral supply to meet demand in Oxfordshire should be from recycled and secondary aggregate materials in preference to primary aggregates, in order to minimise the need to work primary aggregates.	The aggregates that the Project will require will be recycled or secondary aggregates where practicable.	Table 11.9 lists the key materials required for construction of the Project, including recycled and secondary aggregates.
Oxfordshire Minerals and Waste Local Plan (2017) Part 1 – Core Strategy Policy M8 requires that developments that would prevent or otherwise hinder the possible future working of mineral resources in Mineral Safeguarding Areas will not be	A small part of the Project is located within a Mineral Strategic Resource Area comprising two Mineral Safeguarding Areas, as defined by the Oxfordshire County Council Minerals and Waste Local Plan Policies Map South. Potential sterilisation of mineral resources by the	Figure 11.1: Mineral Resource Areas shows the intersection of the Project and Mineral Safeguarding Areas and Mineral Consultation Area, which is described in Section 11.4: Assessment methodology. Potential highway works at Frilford Junction or changes in

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
permitted, unless it can be shown that: - the site has been allocated for development in an adopted local plan or neighbourhood plan, or - the need for development outweighs the economic and sustainability considerations relating to the mineral resource, or - the mineral will be extracted prior to the development taking place.	Project has been considered in this PEI Report.	agricultural regimes for habitat creation or species relocation would not affect the Mineral Safeguarding Areas in any impactful way or sterilise potential mineral resource in that area (i.e. prevent or otherwise hinder the future working of mineral resources). The impact of the Project on sterilising mineral resources is described in Section 11.9: Preliminary assessment of likely significant effects.
Oxfordshire Minerals and Waste Local Plan (2017) Part 1 – Core Strategy Policy M9 sets out that existing and permitted infrastructure that supports minerals supply in Oxfordshire is safeguarded against development that would unnecessarily prevent the operation of the infrastructure or would prejudice or jeopardise its continued use by creating incompatible land uses nearby.	A small part of the Project is located within a Mineral Strategic Resource Area comprising two Mineral Safeguarding Areas, as defined by the Oxfordshire County Council Minerals and Waste Local Plan Policies Map South. Potential sterilisation of mineral resources by the Project has been considered in this PEI Report.	Figure 11.1: Mineral Resource Areas shows the intersection of the Project and Mineral Safeguarding Areas and Mineral Consultation Area, which is described in Section 11.4: Assessment Methodology. Potential highway works at Frilford Junction or changes in agricultural regimes for habitat creation or species relocation would not affect the Mineral Safeguarding Areas in any impactful way or sterilise potential mineral resource in that area (i.e. prevent or otherwise hinder the future working of mineral resources). The impact of the Project on sterilising mineral resources is described in Section 11.9: Preliminary assessment of likely significant effects.
Oxfordshire Minerals and Waste Local Plan (2017) Part 1 – Core Strategy Policy W6 states that priority will be given to the use of inert waste that cannot be recycled as infill material to achieve the satisfactory restoration and after	The Project will generate quantities of inert waste that may be suitable for use as infill for restoration of unrestored quarries.	Opportunities for the reuse of inert waste will be explored to maximise resource efficiency and reduce the quantity of waste requiring off site landfill disposal.

Legislation, policy or guidance description	Relevance to assessment	Where in the PEI Report is information provided to address this
use of active or unrestored quarries.		
Vale of White Horse District Council Local Plan 2031 Sets out the spatial strategy and strategic policies for the district to deliver sustainable development. Core Policy 43 encourages developers to make provision for the effective use of natural resources where applicable, including: - minimising waste and making adequate provision for the recycling of waste on site - using recycled and energy efficient materials - maximising the reuse of materials.	The construction and operation of the Project will generate waste.	The waste hierarchy, including Designing out Waste and Circular Economy principles, is being applied to the Project to maximise reuse/recovery opportunities and minimise off site disposal. An Operational Waste Management Plan will be submitted as part of the DCO application. SWMP requirements will be included in the draft CoCP and a MMHSS will accompany the DCO application.
Guidance		
Institute of Environmental Management and Assessment (IEMA) guide to: Materials and waste in Environmental Impact Assessment. Provides guidance and recommendations for EIA practitioners and stakeholders concerned with the impacts and effects of materials and waste on the environment.	This guidance is considered an industry best practice approach to assess the effects and impacts of materials consumption and landfill disposal of waste on the environment across various project scales.	The assessment methodology presented in Section 11.4 is aligned with this guidance.

11.3 Consultation, engagement and scoping

- 11.3.1 Feedback from consultation and engagement is used to define the assessment approach and to ensure that appropriate baseline information is used. Feedback is also used to drive the design of the Project to avoid, prevent and reduce any likely environmental effects. In particular, feedback from key stakeholders has informed the Project's proposed mitigation measures. Specific mitigation measures relevant to the Materials and waste assessment are summarised in Section 11.8 of this chapter. Engagement is ongoing and will continue to inform the EIA and design process.

Scoping Opinion

- 11.3.2 The EIA Scoping Report (Thames Water, 2024) was issued to the Planning Inspectorate (PINS) on 28 August 2024. PINS provided its EIA Scoping Opinion (The Planning Inspectorate, 2024) on 8 October 2024, which included feedback from consultation bodies that it formally consulted.
- 11.3.3 Table 11.2 captures the key Scoping Opinion comments received from PINS and other key comments received from consultation bodies relevant to the Materials and waste assessment, along with the Applicant's response to these at this stage of the assessment. Key activities to inform the final assessment that will be undertaken between the PEI Report and ES are covered in Section 11.10: Next steps. The full consultee comments on the EIA Scoping Report and responses to these will be provided in the ES.

Table 11.2 Key Scoping feedback for materials and waste

Stakeholder	Scoping comment	Applicant response
PINS	3.10.1 The Scoping Report notes that whilst there are currently allocated mineral safeguarding sites within the development study area, these are unlikely to be worked/extracted during construction or operation and are not within designated Mineral Strategic Resources Areas and Mineral Safeguarding Areas. Additionally, there is a low probability of new mineral safeguarding sites being allocated during construction and operation. The Inspectorate is content with this approach and agrees to scope these matters out provided that the proposed reservoir does not affect any mineral safeguarding areas, regardless of whether the sites have been allocated.	Potential sterilisation of Mineral Safeguarding Areas by the Project has been considered in this PEI Report. Stakeholder engagement meeting to be arranged with existing Oxfordshire County Council and Vale of White Horse technical liaison group to discuss the proposed approach to safeguarding and managing mineral resources.
PINS	3.10.2 The Scoping Report notes that as the Proposed Development is at an early stage, the consumption of materials is yet to be quantified. However, based on IEMA guidance, professional judgement and the operational nature of the Proposed Development, it is considered unlikely that there will be significant materials consumption within the first three years of operation. The Inspectorate is content with this approach and agrees to scope this matter out subject to materials being quantified in the ES.	Material consumption of the Project in operation will be quantified and included in an operational materials and waste management plan and submitted as part of the DCO application.
PINS	3.10.3 The Scoping Report notes that as the Proposed Development is at an	An operational materials and waste management plan to be

Stakeholder	Scoping comment	Applicant response
	early stage, waste generation and waste disposal is yet to be quantified. However, based on IEMA guidance, professional judgement and the operational nature of the Proposed Development, it is considered unlikely that there will be significant operational waste generation during any one full representative year within the first three years of operation. Subject to an appropriate waste management plan being submitted and secured with the application, the Inspectorate is content to scope this matter out.	submitted as part of the DCO application and secured by the DCO.
PINS	3.10.4 The Scoping Report indicates that Figure 15.1 identifies the development study area; Mineral Strategic Resource Area; and Mineral Safeguarding Area. However, Figure 15.1, does not clearly identify/label the Mineral Strategic Resource Area and Study Area. The ES should include a figure which clearly identifies/labels the Mineral Strategic Resource Area/Study Area.	A revised mineral resource areas plan has been prepared (Figure 11.1: Mineral Resource Areas), which clearly identifies and labels the Mineral Strategic Resource Areas, Mineral Safeguarding Areas, Mineral Consultation Areas, allocated mineral sites (Oday Quarry and Sutton Wick) and mineral ownership right sites, and the Project draft Order limits.
Oxfordshire County Council	If the construction of the reservoir site sterilises minerals set out in the Mineral Safeguarding Area of the current Minerals and Waste Local Plan, the impact of that needs to be assessed, having regard to the volume of mineral lost.	Potential sterilisation of Mineral Safeguarding Areas by the Project has been considered in this PEI Report. Stakeholder engagement meeting to be arranged with the existing Oxfordshire County Council and Vale of White Horse technical liaison group to discuss the proposed approach to safeguarding and managing mineral resources.
Oxfordshire County Council	Mineral safeguarding sites should be scoped in.	Potential sterilisation of Mineral Safeguarding Areas by the Project has been considered in this PEI Report. Stakeholder engagement meeting to be arranged with the existing Oxfordshire County Council and Vale of White Horse technical liaison group to discuss the proposed approach to

Stakeholder	Scoping comment	Applicant response
		safeguarding and managing mineral resources.
Oxfordshire County Council	Thrupp Lane Radley is mentioned as an area of land subject to minerals ownership rights. Part of this site has planning permission for mineral extraction. It is subject to a Review of Mineral Permission (ROMP) and is currently not capable of being worked until new permissions are approved.	Thrupp Farm Quarry, Radley is not within the Project draft Order limits and will not be included in the PEI Report and ES.

Non-statutory public consultation

- 11.3.4 Non-statutory public consultation on the emerging proposals for the Project was undertaken with stakeholders and local communities in Summer 2024. Formal responses to this non-statutory consultation feedback have been provided within the 'Statement of Response' (Thames Water, 2025). Any feedback relevant to the Materials and waste assessment has been taken into account where appropriate.

Ongoing engagement

- 11.3.5 A stakeholder engagement meeting is to be arranged with existing Oxfordshire County Council and Vale of White Horse technical liaison group to discuss and agree proposed approach to managing mineral resources.

11.4 Assessment methodology

- 11.4.1 The project-wide approach to the assessment methodology is set out in Chapter 4: Approach to environmental assessment. This has informed the approach used in this Materials and waste assessment.
- 11.4.2 This section outlines the methodology followed to assess the likely significant effects of the Project in relation to materials and waste including:
- Effects scoped into the assessment
 - Study area
 - Criteria for determining likely significant effects
 - Assessment of cumulative effects
- 11.4.3 Any further data collection or site surveys, studies, modelling, or additional assessments that are still to be undertaken to inform the ES are set out in Section 11.10: Next steps.
- 11.4.4 The assessment methodology followed for the Materials and waste assessment is based on the IEMA guide to: Materials and Waste in Environmental Impact Assessment, 2020 (IEMA Guidance 2020). This guidance is considered an industry best practice approach, which was developed with the support of the IEMA Impact Assessment network with input from a wide range of professionals and organisations. It provides comprehensive guidance on assessing the impacts and effects of materials and waste on the environment across various project scales.

Scope of the assessment

- 11.4.5 The scope of the assessment has been informed by the EIA Scoping process, including the EIA Scoping Report (Thames Water, 2024) and Scoping Opinion (The Planning Inspectorate, 2024), combined with subsequent changes to the Project design and an enhanced understanding of the baseline environment.
- 11.4.6 Matters that have been scoped out of the Materials and waste assessment are documented in Appendix 4.1: Matters scoped out of the EIA, along with justification for the scoping approach. In summary, matters scoped out are:
- Operational effects on materials availability
 - Operational effects on landfill void capacity
- 11.4.7 Effects that are scoped in for the Materials and waste assessment relevant to the construction phase are:
- The availability of key materials required to construct the Project
 - Impact on access or sterilisation of one or more Mineral Safeguarding Area or mineral site
 - The landfill void capacity required to accommodate waste from the Project generated during construction
- 11.4.8 There are no effects that are scoped in for the Materials and waste assessment relevant to the operation phase.

Study area

- 11.4.9 This section describes how suitable study areas have been determined for materials and waste, in accordance with the IEMA Guidance 2020.
- 11.4.10 The IEMA Guidance 2020 recommends that, where materials can be sourced and waste managed locally, the study area may be commensurately small. Where material sourcing and waste management is required at a regional, national and international level, it recommends that the study area is defined accordingly.
- 11.4.11 IEMA Guidance 2020 also recommends that two study areas are proposed for materials and waste:
- The ‘development study area’, which comprises the draft Order limits, including any areas required for temporary access, site compounds, working platforms and other enabling activities where key construction materials will be consumed, mineral safeguarding areas could be sterilised and waste will be generated.
 - The ‘expansive study area’, which extends to the availability of construction materials and remaining landfill void capacity within a defined region or, as appropriate, across multiple regions or nationally, where justified.

Expansive study area - Materials

- 11.4.12 The expansive study area for materials availability was determined through a desk-based assessment, which was carried out using professional judgement and available baseline information. First, the key materials required for construction of the Project were identified. Data on the baseline availability of these key materials at a local level was then sought, see

data sources set out below. Where baseline availability data was not available, or where the quantities and types of key materials did not meet the Project requirements, the expansive study area was expanded to a regional level. Similarly, where baseline availability data was not available at a regional level, or where the quantities and types of key materials did not meet the Project requirements, the expansive study area was further expanded to a national level (Great Britain or United Kingdom, depending on data availability).

Expansive study area – Mineral resources

- 11.4.13 It is expected that the location and extent of Mineral Strategic Resource Areas and Mineral Safeguarding Areas will remain largely consistent with the current baseline conditions described below. This is because the presence of such mineral resource areas is primarily dictated by the underlying geological formations, which are fixed. Therefore, there is no expansive study area for the sterilisation of mineral resources.

Expansive study area - Waste

- 11.4.14 The expansive study area for waste has been determined for each category of waste (inert, non-hazardous and hazardous) using the latest available data published by the Environment Agency in the 2023 Waste Data Interrogator (Environment Agency, 2024b) and 2023 Hazardous Waste Interrogator (Environment Agency, 2024c) in line with the IEMA Guidance 2020. The regions that receive waste generated in Oxfordshire have been analysed, with regions accepting more than 10% of the total waste generated, being selected to form the expansive study area.

Methodology

Baseline

Data collection

- 11.4.15 Baseline data collection has been undertaken to obtain information over the study areas. This section provides the approach to collecting baseline data.
- 11.4.16 The following data sources have been accessed to inform the baseline with respect to materials and waste:
- British Geological Survey – GeoIndex (Onshore) (British Geological Survey, 2025a)
 - British Geological Survey – British Pits (database) (British Geological Survey, 2025b)
 - Department of Environment, Food and Rural Affairs – Multi Agency Government Information for the Countryside (MAGIC) map application (Defra, 2025)
 - Department of Environment, Food and Rural Affairs – UK Statistics on waste – Recovery rate from non-hazardous construction and demolition waste, England, 2010-2022 (Defra, 2024)
 - Environment Agency – Remaining Landfill Capacity 2023 – Summary Tables (Environment Agency, 2024a)
 - Environment Agency – Waste Data Interrogator 2023 (Environment Agency, 2024b)
 - Environment Agency – Remaining Landfill Capacity 2023 – Summary Tables (Environment Agency, 2024a)

- Environment Agency – Waste Data Interrogator 2023 (Environment Agency, 2024b)
- Environment Agency – Hazardous Waste Interrogator 2023 (Environment Agency, 2024c)
- Environment Agency – Waste Data Interrogator 2022 (Environment Agency, 2023a)
- Environment Agency – Hazardous Waste Interrogator 2022 (Environment Agency, 2023b)
- Environment Agency – Waste Data Interrogator 2021 (Environment Agency, 2022a)
- Environment Agency – Hazardous Waste Interrogator 2021 (Environment Agency, 2022b)
- Environment Agency – Waste Data Interrogator 2020 (Environment Agency, 2021a)
- Environment Agency – Hazardous Waste Interrogator 2020 (Environment Agency, 2021b)
- Environment Agency – Waste Data Interrogator 2019 (Environment Agency, 2020a)
- Environment Agency – Hazardous Waste Interrogator 2019 (Environment Agency, 2020b)
- Forest Research – Wood Production 1976-2023 (Forest Research, 2024)
- Ministry of Housing, Communities & Local Government – Aggregate Minerals Survey for England and Wales 2019 (MHCLG, 2019)
- Mineral Products Association – Profile of the UK Mineral Products Industry, 2023 Edition (Mineral Products Association, 2023)
- Mineral Products Association – Regional overview of construction and mineral products markets in Great Britain (Mineral Products Association, 2024)
- Oxfordshire County Council – Saved policies from the existing Minerals and Waste Local Plan (1996). (Oxfordshire County Council, 1996)
- Oxfordshire County Council – Oxfordshire Minerals and Waste Local Plan, Part 1 – Core Strategy (Oxfordshire County Council, 2017a)
- Oxfordshire County Council – Oxfordshire Minerals and Waste Local Plan Policies Map South (Oxfordshire County Council, 2017b)
- Oxfordshire County Council – Oxfordshire Local Aggregate Assessment (Calendar year 2023) (Oxfordshire County Council, 2024)
- Oxfordshire County Council – Oxfordshire Minerals and Waste Local Plan, Oxfordshire Minerals and Waste Local Development Scheme (Oxfordshire County Council, 2025)
- South East England Aggregates Working Party – Annual Report 2022 (South East England Aggregates Working Party, 2023)
- South-East England Aggregate Working Party – *Annual Report 2023* (South East England Aggregates Working Party, 2024)
- Thames Water – TMS10 Bioresources: AMP8 and Market Strategy (Thames Water, 2023)
- IBISWorld – Stone Quarrying in the UK (IBISWorld, 2024a)
- IBISWorld – Gravel, Sand & Clay Extraction in the UK (IBISWorld, 2024b)
- IBISWorld – Dam, Harbour & Other Water Project Construction in the UK (IBISWorld, 2024c)
- IBISWorld – Civil Engineering Project Construction in the UK (IBISWorld, 2024d)
- IBISWorld – Chemical & Fertiliser Mineral Mining in the UK (IBISWorld, 2024e)
- UK Steel – Key Statistics Guide 2024 (UK Steel, 2024)
- Vale of White Horse District Council – Local Plan 2031 Adopted Policies Map: Abingdon-on-Thames and Oxford Fringe Sub-Area (Vale of White Horse District Council, 2019)

- 11.4.17 In addition to these data sources, the Materials and waste assessment also draws on environmental baseline data collated for other aspects, specifically, baseline data presented in Chapter 10: Geology and soils and Chapter 12: Traffic and transport.

Site surveys

- 11.4.18 Baseline data collection for the Materials and waste assessment is desk based and in accordance with IEMA Guidance 2020. No surveys specific to the Materials and waste assessment have informed the PEI Report.

Future baseline

- 11.4.19 The assessment has considered the likely evolution of the baseline without the implementation of the Project.
- 11.4.20 The future baseline for the materials assessment includes the following:
- The demand for key construction materials is influenced by several factors, with economic activity being a major driver of material consumption. While the construction industry is expected to grow, the forecast for slower economic growth and fewer interest rate cuts compared to the Government's Autumn Budget in 2024 suggests that growth will be more gradual. These uncertainties make it impracticable to forecast the future baseline for material demand during the Project's construction phase.
- 11.4.21 The future baseline for the mineral resources assessment includes the following:
- As stated in Section 11.4.13, the location and extent of Mineral Strategic Resource Areas and Mineral Safeguarding Areas will remain largely consistent with the current baseline conditions.
- 11.4.22 The future baseline for the waste assessment includes the following:
- The use of historical trends, based on historical waste data, to forecast the landfill void capacity that is expected to be available within the defined expansive study area, in the absence of the Project, during the Project's construction phase.
- 11.4.23 Data sources listed in Paragraph 11.4.16 have been accessed to inform the future baseline with respect to materials and waste.

Criteria for the assessment of significance

- 11.4.24 The methodology for assessing effects is based on the principle that the environmental effects of the Project, in relation to a receptor, should be determined by identifying the receptor's sensitivity, assessing the magnitude of impact the Project would have on the receptor and then using professional judgement in combining these two elements to identify the significance of effect. The following sections explain the criteria that have been developed for these elements and applied within this preliminary assessment of effects.

Assessment of sensitivity

Assessment of sensitivity - Materials

- 11.4.25 For the materials assessment, the sensitive receptor is considered to be the availability (supply and stocks) of important key construction materials within the expansive study area. Table 11.3 provides detail on the criteria that have been used for establishing the sensitivity of this receptor.
- 11.4.26 It is not expected that the Project would consume significant quantities of critical raw materials, as defined by the European Commission (2025), which determines material criticality with economic importance and supply risk criteria. In 2023, an updated list of the 34 critical raw materials was published following screening of 70 candidate materials. The full list of the 34 critical raw materials is available using the European Commission document reference provided above.

Table 11.3 Criteria for establishing the sensitivity of the availability of important construction materials (adapted from the IEMA Guidance 2020)

Sensitivity of receptor	Typical descriptors
Negligible	Key materials required for the construction of the Project are forecast to be free from known issues regarding supply and stock, and/or are available comprising a very high proportion of sustainable features and benefits compared to industry standard materials*.
Low	Key materials required for the construction of the Project are forecast to be generally free from known issues regarding supply and stock, and/or are available comprising a high proportion of sustainable features and benefits compared to industry standard materials*.
Moderate	Key materials required for the construction of the Project are forecast to suffer from some potential issues regarding supply and stock, and/or are available comprising some sustainable features and benefits compared to industry-standard materials*.
High	Key materials required for the construction of the Project are forecast 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	Key materials required for the construction of the Project 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*.
<u>Notes</u> * Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated material and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts. [#] In the absence of the IEMA Guidance 2020, any critical raw materials (where the security of supply is at great risk) used in the Project would be assigned a 'high' or 'very high' sensitivity rating based on the application of professional judgement.	

Assessment of sensitivity - Mineral resources

- 11.4.27 No sensitivity criteria are provided in the IEMA Guidance 2020 for mineral resources such as Mineral Safeguarding Areas or allocated mineral sites.
- 11.4.28 A review of the Oxfordshire County Council (2017b) – Minerals and Waste Local Plan Policies Map South confirms a small intersection between the development study area and the Mineral Strategic Resource Area (Policy M3), which comprises of two Mineral Safeguarding Areas (Policy M8) including No 2. ‘East/South East of Faringdon’ (Crushed Rock)’ and No 7. ‘Corallian Ridge – Oxford to Faringdon (Soft Sand)’ respectively, compared to the EIA Scoping Report, as shown on Figure 11.1: Mineral Resource Areas.
- 11.4.29 The Materials Strategic Resource Area covers a land area of approximately 6,491 hectares and the development study area intersect with this area by approximately 103.5 hectares (or 1.6%).
- 11.4.30 The intersection is a result of allocating land for habitat creation and/or species relocation and potential highway works at Frilford Junction within the existing highway boundary. At present a small area of the Mineral Strategic Resource Area may be used for habitat mitigation, possibly species rich grassland, but is not expected to constitute a significant change in land-use from what is currently present on site. Therefore, it is not expected to result in the sterilisation of potential mineral resource in the Mineral Strategic Resource Area.
- 11.4.31 Based on the works proposed and the current use of the land in the Mineral Strategic Resource Area, road improvements within a highway boundary or changes in agricultural regimes for habitat mitigation are not expected to affect the Mineral Safeguarding Area in any impactful way or sterilise potential mineral resource in that area (i.e. prevent or otherwise hinder the future working of mineral resources). On that basis and professional judgment, the sensitivity of the intersection with the Mineral Safeguarding Areas is low.
- 11.4.32 Allocated mineral sites including Oday Quarry and land at Sutton Wick within the draft Order limits (see Figure 11.1: Mineral Resource Areas) are referred to in older planning documents. It is expected that these sites will have been worked out or restored before the construction of the Project. Therefore, there is negligible risk of adverse impact on the allocated mineral sites. Based on professional judgment, the sensitivity of the allocated mineral sites is low.

The Church Commissioners of England hold mineral ownership rights of six sites within the development study area. While these sites are recorded in the Land Registry, they do not have mineral planning status and are not located in a mineral safeguarding area. The Project intends to use any viable mineral resources from these sites where feasible, unless they are unsuitable. Based on professional judgment, the sensitivity of the mineral ownership rights sites is low.

Assessment of sensitivity - Waste

- 11.4.33 For the waste assessment, the sensitive receptor is considered to be landfill void capacity. Table 11.4 provides further detail on the criteria for establishing the sensitivity of this receptor.
- 11.4.34 Landfill is considered a sensitive receptor, as due to the ongoing disposal of waste and occupation of the available landfill void capacity, there is a continued need to expand landfill void capacity. This leads to the depletion of natural resources such as soils and

mineral resources. The loss of natural resources from the disposal of waste results in permanent adverse environmental effects and degradation of the natural environment.

- 11.4.35 In the UK, landfill sites are permitted based on the type of waste that they can accept:
- 1) Inert waste
 - 2) Non-hazardous waste
 - 3) Hazardous waste
- 11.4.36 These categories of landfill are distinct, and capacity is not interchangeable between them. The likely significant effects are therefore considered independently for each category of landfill.
- 11.4.37 Landfill sensitivity is defined by assessing how the future baseline of regional landfill void capacity is expected to change in the absence of the Project. The sensitivity of landfill void capacity is assessed by applying the following two-step process, adapted from the IEMA Guidance 2020:
- 1) Forecast the volume of waste for disposal that is expected to be generated within the defined expansive study area during the Project's construction phase, through extrapolation of trends identified from analysis of historical waste data, then
 - 2) Compare this forecast volume of waste with the remaining landfill void capacity (taking into account any consented increases in future capacity), to identify any expected losses in capacity over the Project's construction phase.
- 11.4.38 In line with the IEMA Guidance 2020, non-landfill waste management infrastructure (waste transfer, recycling, composting and recovery) located off site used to process and recover value from waste (and hence divert waste from landfill) are beneficial to reduce adverse environmental effects from landfilling waste. This infrastructure is therefore an influencing factor in reducing the magnitude of waste impacts on landfill void capacity, rather than being sensitive receptors in their own right.
- 11.4.39 Furthermore, the capacity of such non-landfill waste management infrastructure is defined by its annual throughput, and it does not comprise the depletion of a finite natural resource, as is the case for landfill void capacity. Any waste managed at these facilities does not generate a permanent residual impact on the future capacity of the facility. Impacts on waste transfer, recycling, composting and recovery infrastructure are not considered to comprise an environmental effect; these are expected to be managed by the respective waste planning authorities as part of their responsibilities under the National Planning Policy for Waste (Department for Communities and Local Government, 2014).

Table 11.4 Criteria for establishing the sensitivity of inert, non-hazardous and hazardous landfill void capacity (adapted from the IEMA Guidance 2020)

Sensitivity of receptor	Typical descriptors (inert and non-hazardous)	Typical descriptors (hazardous)
Negligible	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to remain unchanged, or is	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill void capacity is expected to remain unchanged, or is expected to

Sensitivity of receptor	Typical descriptors (inert and non-hazardous)	Typical descriptors (hazardous)
	expected to increase through a committed change in capacity.	increase through a committed change in capacity.
Low	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce minimally: by <1% as a result of wastes forecast.	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill void capacity is expected to reduce minimally: by <0.1% as a result of wastes forecast.
Moderate	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce noticeably: by 1-5% as a result of wastes forecast.	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill void capacity is expected to reduce noticeably: by 0.1-0.5% as a result of wastes forecast.
High	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce considerably: by 6-10% as a result of wastes forecast.	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill void capacity is expected to reduce considerably: by 0.5-1% as a result of wastes forecast.
Very high	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce very considerably (by >10%); end during construction; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.	Across the construction phase, the baseline/future baseline (i.e. without the Project) of regional (or where justified, national) hazardous landfill void capacity is expected to reduce very considerably (by >1%); end during construction; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet its forecast demand.

Magnitude of impact

Magnitude of impact - Materials

- 11.4.40 The approach used to assess magnitude of impact on the materials receptor considers the nature and magnitude of impact. The approach used is based on professional judgment and experience with reference to defined criteria from IEMA Guidance 2020. Table 11.5 provides further detail on the criteria for assessing the magnitude of impact.
- 11.4.41 The methodology for assessing the magnitude of impact due to consumption of material resources comprises a percentage-based approach, which is used to determine the

influence of materials consumption on baseline market capacity during construction of the Project, in combination with the potential to sterilise one or more allocated mineral sites.

- 11.4.42 The assessment has determined whether, through constructing the Project, the consumption of materials would result in the scenarios shown in Table 11.5.

Magnitude of impact - Mineral resources

- 11.4.43 The magnitude of impact on sterilising mineral resources by non-mineral development was assessed qualitatively using professional judgement. Several factors were considered such as the extent of land-take, existing land-use, the sensitivity of the receptor and current or prospective mineral extraction developments.
- 11.4.44 The assessment has determined whether the Project would substantially impact access or potentially sterilise mineral resources as shown in Table 11.5.

Table 11.5 Criteria for assessing the magnitude of impact on materials receptors (adapted from the IEMA Guidance 2020)

Magnitude of impact	Description of magnitude criteria
No change	No materials are required.
Negligible	No individual material type is equal to or greater than 1% by volume of the regional* baseline availability.
Minor	One or more material is between 1-5% by volume of the regional* baseline availability, and/or The Project has the potential to adversely and substantially [#] impact access to one or more Mineral Safeguarding Area or allocated mineral site (in their entirety), placing their future use at risk.
Moderate	One or more material is between >5-10% by volume of the regional* baseline availability, and/or One Mineral Safeguarding Area or allocated mineral site is substantially [#] sterilised by the Project rendering it inaccessible for future use.
Major	One or more material is >10% by volume of the regional* baseline availability, and/or More than one Mineral Safeguarding Area or allocated mineral site is substantially [#] sterilised by the Project rendering it inaccessible for future use.
<u>Notes</u> * or where justified, national # justified using professional judgement, based on the scale and nature of the allocated mineral site being assessed.	

Magnitude of impact - Waste

- 11.4.45 The approach used to assess magnitude of impact on waste receptors considers the nature and magnitude of impact. The approach used is based on professional judgment and experience with reference to defined criteria from guidance. Table 11.6 provides further detail on the criteria for assessing the magnitude of impact.

- 11.4.46 The magnitude of impacts from waste is assessed by comparing the projections of future baseline landfill void capacity and waste forecast data against the percentage of remaining landfill void capacity used by waste generated by the Project. The volume of forecast waste for disposal is compared to the remaining landfill void capacity (as forecast based on historical trends) to identify expected use over the construction phase of the Project.
- 11.4.47 The magnitude of impacts for inert and non-hazardous landfill is calculated using the regional forecast landfill void capacity for the appropriate defined expansive study area for that waste type, as set out in the IEMA Guidance 2020.
- 11.4.48 The magnitude of impacts for hazardous landfill is calculated using the national landfill void capacity, as per the IEMA Guidance 2020 and historical trends in hazardous waste management.

Table 11.6 Criteria for assessing the magnitude of impact on inert, non-hazardous and hazardous landfill void capacity (adapted from the IEMA Guidance 2020)

Magnitude of impact	Description of magnitude criteria (inert and non-hazardous)	Description of magnitude criteria (hazardous)
No change	Zero waste generation and disposal from the development.	Zero waste generation and disposal from the development.
Negligible	Waste generated by the development will reduce regional* landfill void capacity baseline [#] by <1%.	Waste generated by development will reduce national landfill void capacity baseline [#] by <0.1%.
Minor	Waste generated by the development will reduce regional* landfill void capacity baseline [#] by 1-5%.	Waste generated by the development will reduce national landfill void capacity baseline [#] by 0.1-0.5%.
Moderate	Waste generated by the development will reduce regional* landfill void capacity baseline [#] by >5-10%.	Waste generated by the development will reduce national landfill void capacity baseline [#] by >0.5-1%.
Major	Waste generated by the development will reduce regional* landfill void capacity baseline [#] by >10%.	Waste generated by the development will reduce national landfill void capacity baseline [#] by >1%.
Notes * or where justified, national. [#] forecast as the worst case scenario, during a defined construction phase		

Significance of effect

- 11.4.49 The significance of construction effects on materials and waste receptors is determined by combining the sensitivity of each receptor and the magnitude of impact. The resultant effects may be either adverse or neutral, depending on the nature of the change. Table 11.7 shows how the sensitivity of receptor and the magnitude of impact are combined to deduce the significance of effect. Effects that are moderate or major are deemed to be significant.

Table 11.7 Significance matrix

Receptor sensitivity	Magnitude of impact				
	No change	Negligible	Minor	Moderate	Major
Negligible	None	Neutral	Neutral	Minor	Minor
Low	None	Neutral	Minor	Minor	Moderate (significant)
Moderate	None	Minor	Minor	Moderate (significant)	Moderate (significant)
High	None	Minor	Moderate (significant)	Moderate (significant)	Major (significant)
Very High	None	Minor	Moderate (significant)	Major (significant)	Major (significant)

11.4.50 For this preliminary assessment, the assessment of effects has assumed that ‘embedded design mitigation’ and ‘standard good practice mitigation’ relevant to the Materials and waste assessment are in place (these measures are presented in Section 11.8: Embedded design mitigation and standard good practice). Nevertheless, as noted in Section 11.4 Assessment methodology, the preliminary assessment assumes that additional mitigation that may reduce any identified likely significant adverse effects is not applied, as the viability, nature, and extent of these are not confirmed at this stage in the EIA process. As a result, consideration of residual effects (those that remain after the implementation of all mitigation, including additional mitigation) has not been completed for this preliminary assessment; this will be undertaken in the ES. Additional mitigation that is being explored is presented in Section 11.10: Next steps.

Assessment of cumulative effects

- 11.4.51 There are two types of cumulative effects assessed within the PEI Report, these are inter-project cumulative effects (effects with other developments) and intra-project cumulative effects (effects within the Project). The cumulative effects assessment approach for intra-project cumulative effects is set out in Chapter 20: Cumulative effects. The outcomes of the intra-project cumulative effects assessment is summarised within Chapter 20: Cumulative effects, and within Chapter 20 signposts are provided to the location of the intra-project cumulative effects assessment (where it has been possible to provide at this stage).
- 11.4.52 For inter-project cumulative effects, given the nature of materials and waste considerations, the IEMA Guidance 2020 does not set out a prescribed approach for the assessment of cumulative effects. In contrast to most other environmental aspects, effects from the consumption of material resources and the generation and disposal of waste, such as the depletion of material resources and landfill void capacity, are largely dispersed, rather than affecting specific receptor(s) that are local to the Project.
- 11.4.53 The assessment of inter-project cumulative materials and waste effects cannot be carried out in a similar way to other environmental aspects because there is an insufficient causal

link between a committed development and its drawdown effects on materials availability and landfill void capacity at specific or shared receptors.

- 11.4.54 Furthermore, this assessment cannot be carried out in a similar way to other environmental aspects due to the comparatively large spatial scope of the expansive study area, which extends to the regional availability of construction materials in South East England, or where justified, to the national level, including the capacity of remaining landfill void capacity.
- 11.4.55 Minerals and Waste Planning Authorities have a statutory duty to plan for an appropriate amount of minerals and waste landfill void capacity to be available over a defined period, and to account for minerals and waste that are transferred across authority boundaries. It is neither necessary nor feasible for each committed development within the expansive study area to duplicate, in effect, the function of the Minerals and Waste Planning Authority by assessing the combined effects of multiple developments upon landfill void capacity as part of an EIA.
- 11.4.56 Furthermore, the methodology used to develop the estimates for future baseline material resource availability and landfill void capacity takes account of historic trends in material consumption and waste generation within the expansive study area; these trends are affected by previous development in the expansive study area. The future baseline materials resource availability and landfill void capacity projections are premised on the basis that the type and quantity of development continues in the future, similarly to that which has taken place over the period for which historical data will be analysed. Developments which are similar in scale and nature to those that have taken place over the period for which historical data will be analysed are therefore considered to already be included in the assessment within the future baseline.
- 11.4.57 Therefore, the effects assessment of the materials and waste aspects are inherently cumulative. This is because growth forecasts of material consumption and depletion of landfill void capacity are included within the future baseline for the two types of effect. In addition, targeted engagement with the Minerals and Waste Planning Authority and South East England working groups will be undertaken (for the ES) to identify other developments, which may not have been considered in material consumption and depletion of landfill void capacity growth projections. These developments will be assessed qualitatively (based on professional judgement), where practicable.

11.5 Study area

- 11.5.1 The study areas are defined according to the sensitivity of the receiving environment and the potential effects of the Project. The methodology used to define the study areas is outlined in Section 11.4: Assessment methodology above.
- 11.5.2 The study areas have changed since the EIA scoping stage as a result of changes to the design and the associated draft Order limits. See Chapter 2: Project description for details of the Project parameters and assumptions for the PEI Report.

Materials

- 11.5.3 The development study area for key construction materials comprises the draft Order limits as described in Chapter 2: Project description. This is the area within which key construction materials are consumed by the Project. Materials used in off site

manufacturing are not included in the assessment, as it is considered that the manufacturing facilities in which these materials will be consumed, will have been subject to their own environmental impact assessment process.

- 11.5.4 The expansive study area for the availability of key construction materials is regional and national (Great Britain or United Kingdom (UK), depending on baseline information availability). The assessment is conducted at both a regional and national level as construction materials could be sourced within the region or nationally depending on the construction material type and method of delivery to the Project (i.e. road and/or rail).
- 11.5.5 The expansive study areas of the key construction materials required by the Project are shown in Table 11.8.

Table 11.8 Study areas for key construction materials

Key construction materials	Expansive study area
Crushed rock (including rock armour)	National
Sand and gravel	National
Recycled/secondary aggregates	South East England
Asphalt	South East England
Concrete	National
Steel	National

Mineral resources

- 11.5.6 The development study area for mineral resources comprises the draft Order limits, as described in Chapter 2: Project description. This is the area where mineral resources could potentially be sterilised by the Project.
- 11.5.7 As stated in Section 11.4: Assessment methodology above, there is no expansive study area for the sterilisation of mineral resources.

Waste

- 11.5.8 The development study area for waste comprises the draft Order limits, as described in Chapter 2: Project description. This is the area within which waste generated by the Project is included within this assessment. Waste generated indirectly by the Project, outside of the development study area, has not been considered.
- 11.5.9 In terms of the expansive study area, the Waste Data Interrogator data shows that inert waste generated in Oxfordshire is exported throughout the South East of England for management (Environment Agency 2023a). For non-hazardous waste generated in Oxfordshire, data shows that this is predominantly managed in the South East of England and Gloucestershire sub-region of the South West of England for management (Environment Agency 2023a). There are no restrictions on the inter-regional movement of waste within the UK, and this export trend is driven through market forces such as the cost and availability of waste management infrastructure. Therefore, these regions serve as the expansive study areas with respect to inert (South East) and non-hazardous (South East and Gloucestershire) waste from the Project.

- 11.5.10 Waste Data Interrogator data in 2023 indicates that hazardous waste generated in Oxfordshire is exported throughout the South East of England, the Wiltshire and Gloucestershire sub-regions of the South West of England for management. These regions therefore serve as the expansive study areas with respect to calculating the sensitivity of the receptor, as per the IEMA Guidance 2020. However, national trends in hazardous waste management show that due to the high cost of disposal and the relatively low availability of treatment capacity, hazardous waste is typically transported greater distances for treatment and disposal. Additionally, the IEMA Guidance 2020 sets out that national landfill void capacity should be used for the calculation of the magnitude of impact, and therefore, national capacity has also been forecasted to form the baseline for hazardous waste management capacity.
- 11.5.11 The expansive study areas for inert, non-hazardous and hazardous waste landfill void capacity are as follows:
- Inert waste: South East England
 - Non-hazardous waste: South East England and Gloucestershire
 - Hazardous waste: South East England, Gloucestershire, Wiltshire and England

11.6 Baseline environment

- 11.6.1 To assess the significance of effects arising from the Project in relation to materials and waste, it is necessary to identify and understand the baseline environment within the study areas. This provides a reference state against which any potential effects on materials and waste can be assessed.
- 11.6.2 This section outlines the existing and expected future baseline conditions of materials and waste in the study areas.

Existing baseline

Materials

- 11.6.3 Publicly available data of key construction materials at a regional level and national level (Great Britain or United Kingdom) has been used to establish a quantitative baseline of consumption of key construction materials.
- 11.6.4 The availability of key construction materials, at the most recent point for which data is available, is presented in Table 11.9

Table 11.9 Baseline availability data for key construction materials consumption and sales

Key construction materials	Baseline data year	Expansive study area	Production (tonnes)	Source
Crushed rock (including rock armour)	2022	National	126,474,000	British Geological Survey, 2024
Crushed rock (including rock armour)	2023	South East England	6,700,000*	South East England Aggregates Working Party, 2024

Key construction materials	Baseline data year	Expansive study area	Production (tonnes)	Source
Rock armour	2019	England & Wales	312,000*	Ministry of Housing, Communities & Local Government, 2021
Sand and gravel – land won	2021	National	47,700,000	Mineral Products Association, 2022
Sand and gravel – land won	2022	South East England	13,661,000	British Geological Survey, 2024
Sand and gravel – marine	2021	National	14,300,000	Mineral Products Association, 2022
Sand and gravel – marine	2021-2023	South East England	6,700,000*	South East England Aggregates Working Party, 2024
Recycled/secondary aggregates	2021	National	69,600,000	Mineral Products Association, 2022
Recycled/secondary aggregates	2023	South East England	3,937,000*	South East England Aggregates Working Party, 2024
Asphalt	2021	National	28,300,000	Mineral Products Association, 2022
Asphalt	2022	South East England	1,744,000*	Mineral Products Association, 2023
Concrete (ready-mixed)	2021	National	52,700,000	Mineral Products Association, 2022
Concrete products	2021	National	24,800,000	Mineral Products Association, 2022
Steel	2023	National	5,600,000	UK Steel, 2024

* Quantity based on sales data

Mineral resources

- 11.6.5 Policy M3 of the Oxfordshire Minerals and Waste Local Plan, Part 1 – Core Strategy (Oxfordshire County Council, 2017a) outlines the general areas, referred to as strategic resource areas, where future extraction of sharp sand and gravel, soft sand and crushed rock is intended to occur.
- 11.6.6 The Mineral Strategic Resource Areas serve as the basis for identifying and evaluating potential mineral extraction for possible allocation in the Oxfordshire Minerals and Waste Local Plan. The Mineral Strategic Resource Areas include Mineral Safeguarding Areas, which are defined in the NPPF as ‘An area designated by minerals planning authorities which covers known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.’ Mineral Consultation Areas are also shown and are defined in the NPPF as ‘a geographical area based on a Mineral

Safeguarding Area, where the district or borough council should consult the Mineral Planning Authority for any proposals for non-minerals development.'

- 11.6.7 A review of the Oxfordshire County Council (2017b) – Minerals and Waste Local Plan Policies Map South shows a small intersection between the development study area and the Mineral Strategic Resource Area comprising the Mineral Safeguarding Area No 2. 'East/South East of Faringdon' (Crushed Rock)' and No 7. 'Corallian Ridge – Oxford to Faringdon (Soft Sand)', as shown on Figure 11.1: Mineral Resource Areas.
- 11.6.8 The British Geological Survey's (2025b) BritPits dataset and saved policies of the Oxfordshire County Council Minerals and Waste Local Plan (1996) identifies mineral resource areas, as shown on Figure 11.1: Mineral Resource Areas, including:
- Oday Quarry (Sutton Wick Quarry) and plant area, and associated planning permissions (MW.0010/18, MW.0103/20, MW.0104/20, MW.0038/23, MW.0080/23, MW.0170/23, MW.0098/18 and MW.0024/24)
 - Land at Sutton Wick where the principle of new sharp sand and gravel working is accepted under saved Policy SW1 of the Oxfordshire Minerals and Waste Local Plan (1996)
 - Six areas of land subject to mineral ownership rights by the Church Commissioners for England

Waste

- 11.6.9 Based on data published by the Environment Agency, 2023 landfill void capacity for the expansive study areas identified are as follows:
- Inert waste (South East England) – 19,321,061 cubic metres (m³) (approximately 28,981,592 tonnes based on a density conversion factor of 1.5 tonnes/m³ (West Midlands Regional Assembly, 2009))
 - Non-hazardous waste (South East England and Gloucestershire) – 26,923,555m³ (approximately 32,438,019 tonnes based on a density conversion factor of 0.83 tonnes/m³ (Environment Agency, 2012))
 - Hazardous waste (South East England, Gloucestershire and Wiltshire) – 571,901m³ (approximately 749,190 tonnes based on a density conversion factor of 1.31 tonnes/m³ (Scottish Environment Protection Agency, no date))
 - Hazardous waste (England) – 10,374,793m³ (approximately 13,590,979 tonnes based on a density conversion factor of 1.31 tonnes/m³ (Scottish Environment Protection Agency, no date))

Future baseline

- 11.6.10 As set out in Chapter 4: Approach to the environmental assessment, the preliminary assessment of effects considers the likely evolution of the baseline without the implementation of the Project. Where climate change may alter future materials and waste baseline conditions and therefore likely significant effects, this is discussed as part of the In-combination Climate Change Impact (ICCI) assessment which brings together all climate related impacts on aspect assessments and is presented in Appendix 18.3: In-combination Climate Change Impact Assessment.

Materials

- 11.6.11 Demand for key construction materials is closely aligned with the general health of the economy. When the economy is growing, there is typically more investment in infrastructure projects and the amount of construction taking place is increasing. However, there is no publicly available information on potential long-term changes to the national or regional demand and consumption of key construction materials identified by the time the Project would be constructed (circa 2030-2040). It is acknowledged that there are other nationally significant infrastructure projects, including other reservoir projects, currently progressing and expected to be constructed which would require similar materials.
- 11.6.12 Based on the latest Government Construction buildings materials: commentary April 2025 (Department for Business and Trade May 2025), the total construction output is projected to decline by 1.1% in 2024, then grow by 3.5% in 2025 and 4.6% in 2026. The Construction Products Association's Spring Forecast April 2025 states that the total construction output is expected to grow by 1.9% in 2025 and 3.7% in 2026 excluding the potential impacts of the recent United States of America tariff disruption on the global and UK economies.
- 11.6.13 According to the latest South East England Aggregate Working Party (SEEAWP) Annual Report 2023, land-won sand and gravel sales in the South East totalled 4.9 million tonnes (Mt), with an overall declining trend. On the other hand, marine dredged aggregate (MDA) sales averaged 6.7Mt (from 2021 to 2023), indicating a slight upward trend. However, MDA reserves are significant with 253Mt, which equates to 28 years life at a 10-year average off-take of 9Mt per annum. Crushed rock sales also show a slight upward trend with 6.7Mt in 2023. However, the South East is a net importer of crushed rock by approximately 5Mt by rail from the East Midlands and South West and by sea from Scotland. Recycled aggregates sales were approximately 3.6Mt and secondary aggregate sales 0.3Mt in 2023 with recycled aggregates on a slightly declining trend and no capacity constraints being reported. In addition, based on the number and extensive network of recycled/secondary aggregate sites in the South East, there is unlikely to be a capacity limit on growth.
- 11.6.14 Due to significant uncertainties in forecasting the future demand of key construction materials, it is impractical to make accurate predictions. Therefore, based on the above and professional judgement, the future baseline of key construction materials consumption is assumed to be the same as the current baseline, as shown in Table 11.9.
- 11.6.15 As defined in the IEMA Guidance 2020 and summarised in Paragraph 11.4.25, the sensitivity of key construction materials relates to the baseline availability and type of resources to be consumed by development. Based on the above baseline information and the sensitivity thresholds in Table 11.3, the sensitivity of the identified key construction material receptors is considered to be low for crushed rock (including rock armour), sand and gravel, recycled/secondary aggregates, asphalt, concrete and steel due to limited challenges to the availability and supply chain for these materials.

Mineral resources

- 11.6.16 As described in Section 11.4: Assessment methodology, the location and extent of Mineral Strategic Resource Areas and Mineral Safeguarding Areas will remain largely consistent with the current baseline conditions described above. This is because the presence of such

mineral resource areas is primarily dictated by the underlying geological formations, which are fixed.

- 11.6.17 Oxfordshire County Council is developing the new Minerals and Waste Local Plan to 2042, but it is considered unlikely that new mineral sites being allocated within the development study area. This assumption is based on the expectation in the Oxfordshire Minerals and Waste Local Plan, Part 1 - Core Strategy (Oxfordshire County Council, 2017a) that future mineral site allocations will be confined to Mineral Safeguarding Areas within the Mineral Strategic Resource Area, both of which only have a small intersection with the development study area.
- 11.6.18 As stated in the EIA Scoping Report, the development study area is also safeguarded in its own right for construction of a reservoir under Policies CP14 and CP14a of the Value of White Horse District Council (2019b) Local Plan 2031. It is, therefore, unlikely that the Oxfordshire County Council Minerals and Waste Planning Authority would designate any new allocated mineral sites within the development study area. Therefore, the future baseline of mineral strategic resource areas is assumed to be the same as the current baseline.

Waste

- 11.6.19 Trends in historic landfill void capacity data for the last ten years have been calculated. The trends for inert, non-hazardous and hazardous landfill void capacity have been extrapolated from the 2023 baseline period (2024-2050). Plate 11.1, Plate 11.2 and Plate 11.3 show the projected future baseline landfill void capacity throughout the assessment period for inert, non-hazardous and hazardous waste respectively. These comprise the future baseline (without the Project) assessment scenario, and have been used to establish the sensitivity for inert, non-hazardous and hazardous waste. Additionally, Plate 11.4 shows the forecast for national hazardous landfill void capacity, which is used to establish the magnitude of impact, as per the IEMA Guidance 2020 and trends in hazardous waste management in England.
- 11.6.20 All extrapolated trends forecast gradual reductions in landfill void capacities. Historical data shows a slight increase in landfill void capacity in the South East of England. However, there are substantial fluctuations in capacity year on year, and as a reasonable worst case, it has been assumed that inert waste landfill void capacity remains unchanged at the capacity available in 2023 (the last year for which data is available). The result shows that inert waste remains unchanged throughout the two regions comprising the expansive study area.

Plate 11.1 Inert landfill void capacity future baseline (Regional)

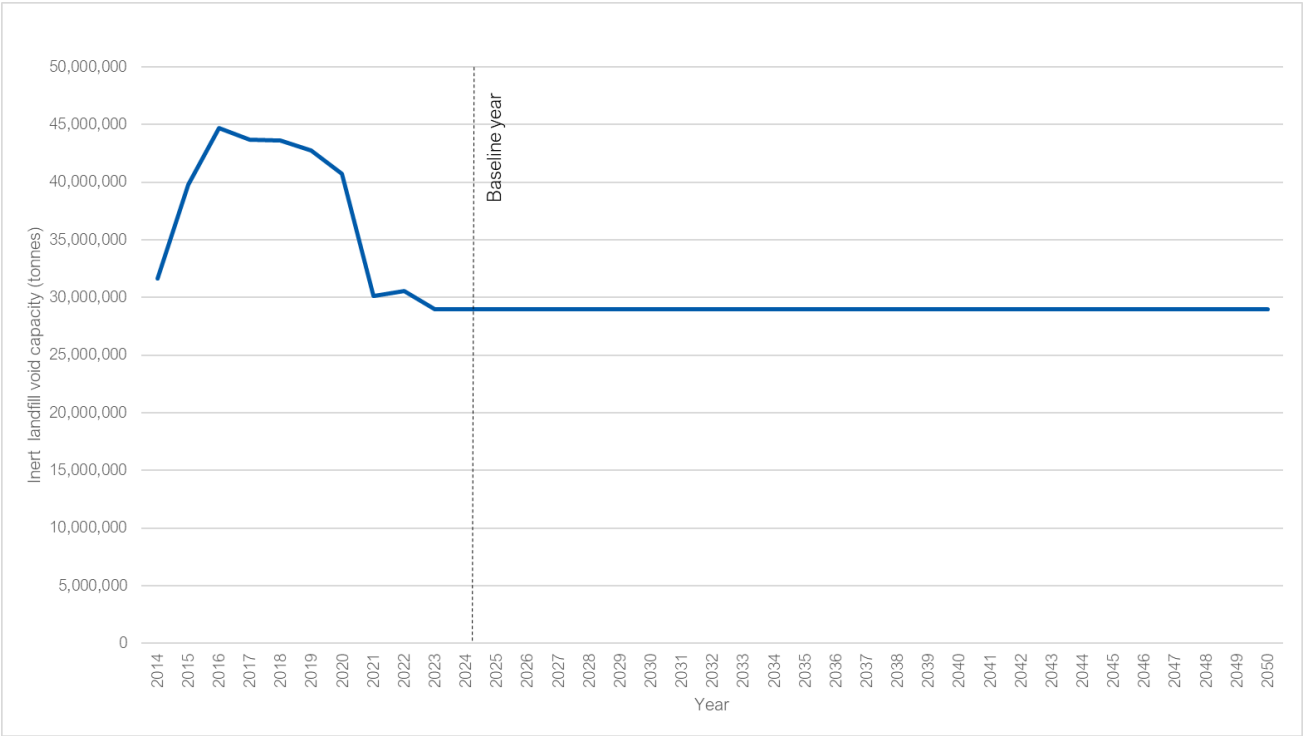


Plate 11.2 Non-hazardous landfill void capacity future baseline (Regional)

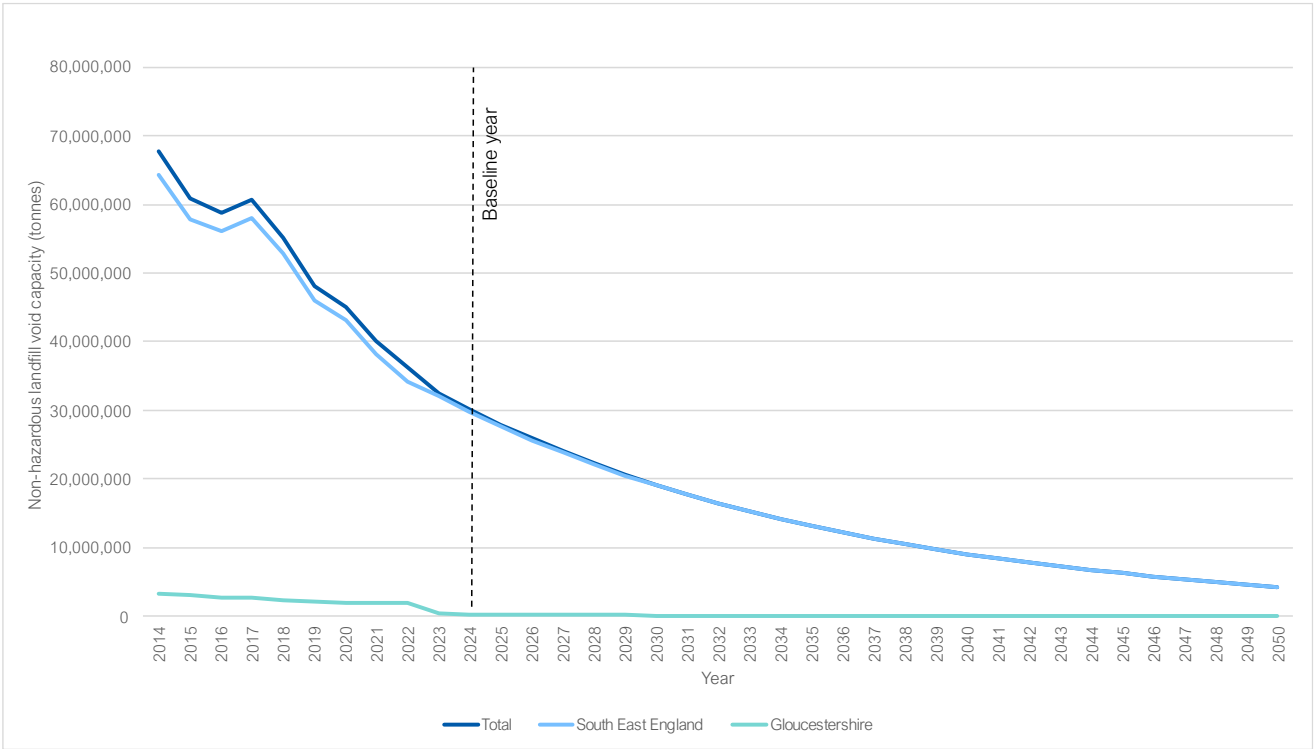


Plate 11.3 Hazardous landfill void capacity future baseline (Regional)

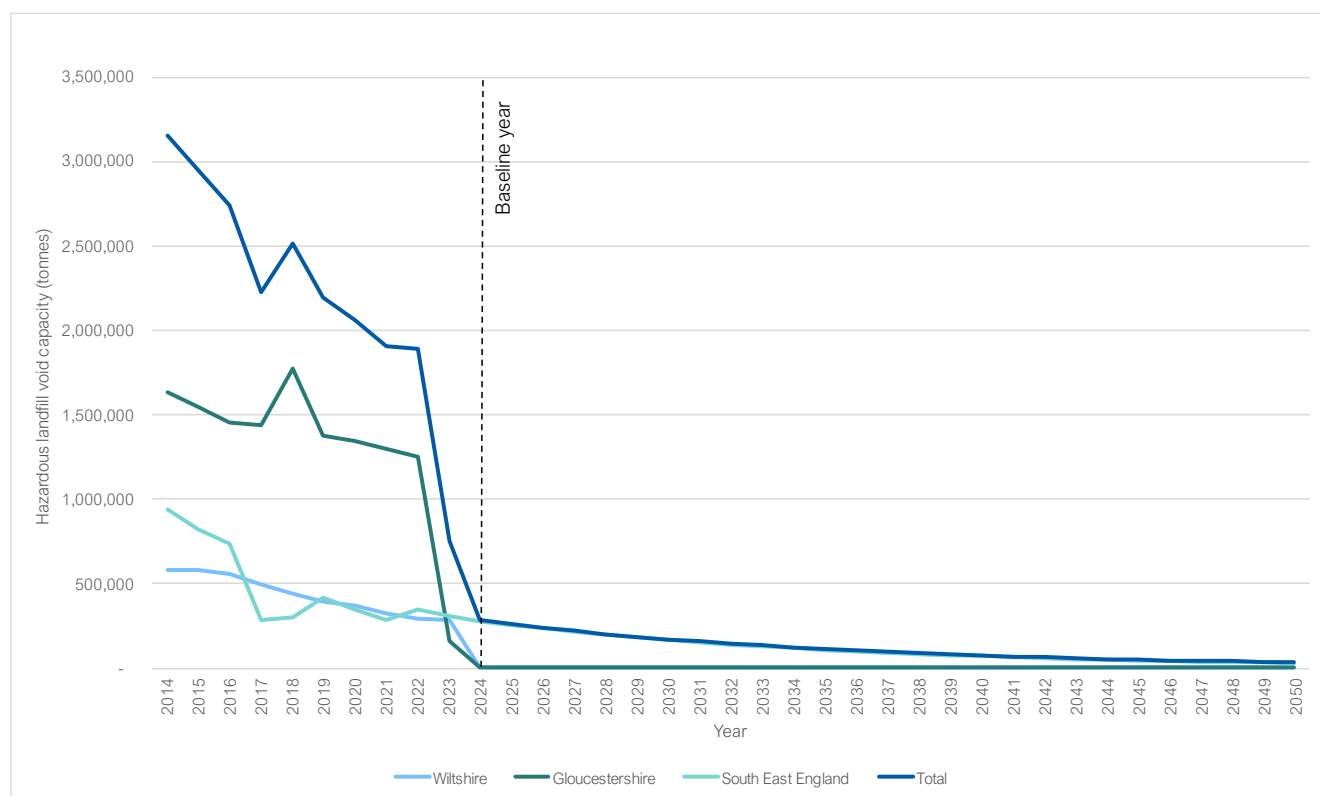
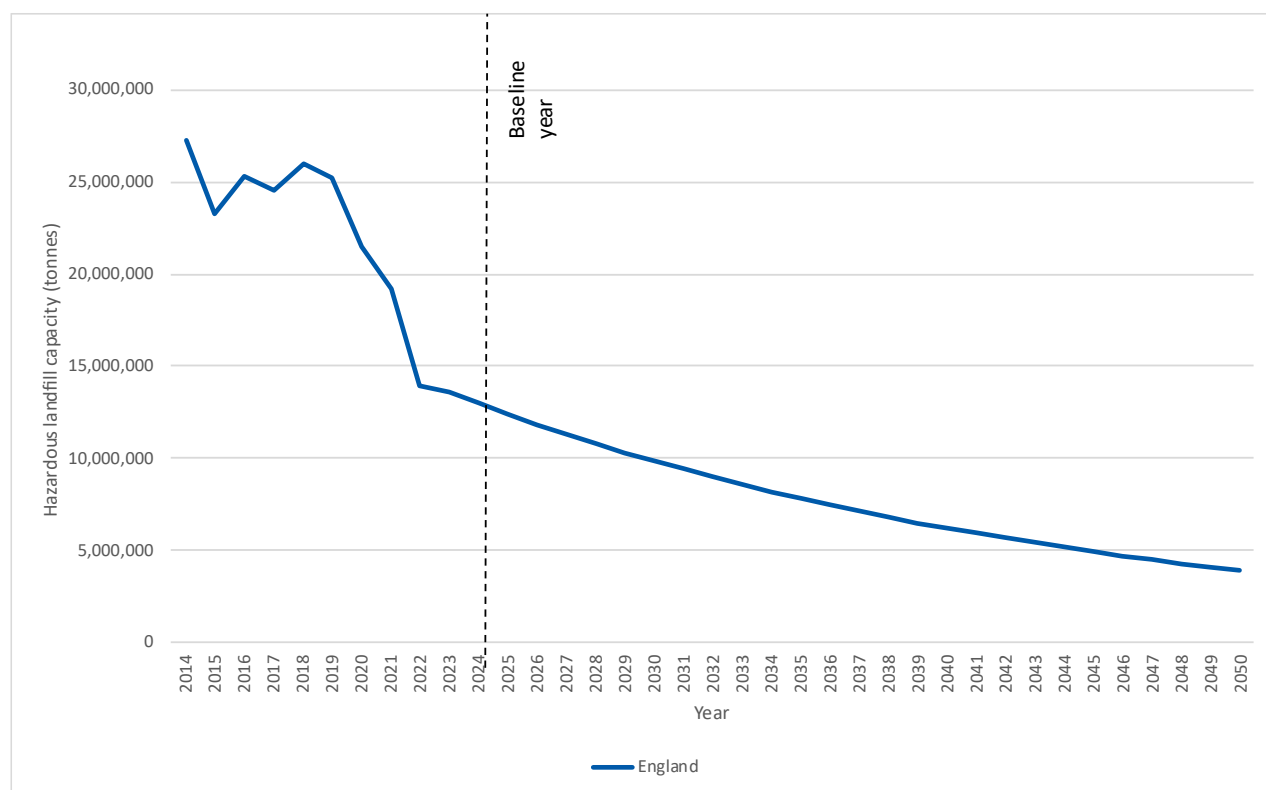


Plate 11.4 Hazardous landfill void capacity future baseline (national)



11.6.21 Whilst it is acknowledged that there is a general trend in reducing landfill void capacity nationally, waste planning authorities have a responsibility under the National Planning

Policy for Waste to make provision for sufficient waste infrastructure capacity. Trends in waste generation, the way in which waste is managed, and the timeline of landfill waste diversion policies (as set out in the Resources and waste strategy for England 2018, the Waste Management Plan for England 2021, the Environmental Improvement Plan 2023, and other relevant strategies and policies), show that there is likely to be a continued demand for landfill void capacity beyond 2050.

- 11.6.22 As defined in the IEMA Guidance 2020 and summarised in Paragraph 11.4.33, the sensitivity of landfill void capacity as a receptor is defined by the projected proportional decline in capacity within the assessment period, without the Project. It is forecast that by the end of the construction assessment period, in the absence of the Project, landfill void capacity would have declined by the following rates:
- Inert waste – 0% utilisation of 2023 landfill void capacity in the baseline region
 - Non-hazardous waste – 87% utilisation of 2023 landfill void capacity in the baseline region
 - Hazardous waste – 95% utilisation of 2023 landfill void capacity in the baseline region
- 11.6.23 Based on the above, the sensitivity of the identified receptors is considered to be:
- Inert waste landfill void capacity – negligible
 - Non-hazardous waste landfill void capacity – very high
 - Hazardous waste landfill void capacity – very high

Materials and waste receptors considered in the Preliminary Assessment

- 11.6.24 Table 11.10 shows the materials and waste receptors in the expansive and development study area that have been considered in the preliminary assessment for the PEI Report. In some cases, individual receptors have been grouped where anticipated effects and mitigation are likely to be very similar. The sensitivity of each receptor is defined in the table with commentary justifying the sensitivity category assigned. The table also identifies the effect ID(s) relevant to each receptor. The effect IDs are unique identifiers of each effect assessed (discussed further in Appendix 11.1: Preliminary assessment of effects for Materials and waste). The receptors in this aspect are not spatially mapped, as spatial representation is not applicable.

Table 11.10 Receptors assessed in the preliminary assessment

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)
Materials			
Asphalt (SE)	Low	Supply and stocks are not constrained. Sensitivity assessed in line with IEMA Guidance 2020.	MW-13
Concrete (national)	Low	Supply and stocks are not constrained. Sensitivity assessed in line with IEMA Guidance 2020.	MW-14
Crushed rock (including rock armour) (national)	Low	Supply and stocks are not constrained. Sensitivity assessed in line with IEMA Guidance 2020.	MW-8
Recycled/secondary aggregates (SE)	Low	Supply and stocks are not constrained. Sensitivity assessed in line with IEMA Guidance 2020.	MW-11
Sand and gravel (national)	Low	Supply and stocks are not constrained. Sensitivity assessed in line with IEMA Guidance 2020.	MW-6
Steel (national)	Low	Supply and stocks are not constrained. Sensitivity assessed in line with IEMA Guidance 2020.	MW-15
Mineral resources			
Mineral Safeguarding Areas, allocated mineral sites and mineral ownership rights sites	Low	There is minimal intersection with the Mineral Strategic Resource Area including the Mineral Safeguarding Areas No 2. 'East/South East of Faringdon' and No 7. 'Corallian Ridge – Oxford to Faringdon'. Therefore, sensitivity is considered to be Low. Allocated mineral sites including Oday Quarry and land at Sutton Wick are expected to either about to be worked out or restored before the start of construction of the Project. Therefore sensitivity is considered to be Low. Mineral ownership rights sites do not have mineral planning status and are not located in a Mineral Safeguarding Area. The Project intends to use any viable mineral resources from these sites where feasible. Therefore, sensitivity is considered to be Low.	MW-20

Receptor Name	Sensitivity	Sensitivity Commentary	Effect-ID(s)
Waste			
Hazardous landfill void capacity	Very High	As defined in the IEMA Guidance 2020, the sensitivity of landfill void capacity as a receptor is defined by the projected proportional decline in capacity within the assessment period, without the Project. It is forecast that by the end of the construction assessment period, in the absence of the Project, landfill capacity would have declined by the following rates: Hazardous waste - 95% utilisation of 2023 landfill capacity in the baseline region Based on the above, the sensitivity of the identified receptors is considered to be: Hazardous waste landfill void capacity - Very High.	MW-5
Inert landfill void capacity	Negligible	As defined in the IEMA Guidance 2020, the sensitivity of landfill void capacity as a receptor is defined by the projected proportional decline in capacity within the assessment period, without the Project. It is forecast that by the end of the construction assessment period, in the absence of the Project, landfill capacity would have declined by the following rates: Inert waste - 0% utilisation of 2023 landfill capacity in the baseline region Based on the above, the sensitivity of the identified receptors is considered to be: Inert waste landfill void capacity - Negligible.	MW-3
Non-hazardous landfill void capacity	Very High	As defined in the IEMA Guidance 2020, the sensitivity of landfill void capacity as a receptor is defined by the projected proportional decline in capacity within the assessment period, without the Project. It is forecast that by the end of the construction assessment period, in the absence of the Project, landfill capacity would have declined by the following rates: Non-hazardous waste - 87% utilisation of 2023 landfill capacity in the baseline region Based on the above, the sensitivity of the identified receptors is considered to be: Non-hazardous waste landfill void capacity - Very High.	MW-4

11.7 Project parameters, assumptions and limitations

- 11.7.1 Chapter 2: Project description relies on the use of relevant parameters and assumptions to allow flexibility in the final design of the Project, in accordance with the Rochdale envelope approach (Planning Inspectorate, 2018). This preliminary assessment for the Materials and waste aspect uses the parameters and assumptions outlined in Chapter 2: Project description as well as additional parameters and assumptions specific to this aspect to ensure that the reasonable worst case scenario is considered within this assessment.

Project parameters and assumptions specific to this aspect

- 11.7.2 Table 11.11 identifies the Project parameters, components and activities relevant to this assessment where assumptions specific to the preliminary Materials and waste assessment have been generated.

Table 11.11 Project parameters and assumptions forming the basis of assessment

Project parameter / component / activity	Assumption (basis of assessment)
Waste generation	Waste generation has been forecast and assessed for the following key activities: • Demolition and site clearance works • Earthworks • Infrastructure works • Building construction
Construction phase waste	Waste generated from the construction phase including demolition, site clearance, excavation, temporary works and construction of buildings are assessed as a whole.
Construction phase assessment year	Waste generated during the construction phase will be assessed against the future baseline landfill void capacity for the final year of construction to give a reasonable worst case scenario due to the forecast trend of a general decrease in landfill capacity.
Material sourcing	The source location of key construction materials is assumed to be within the region and national depending on the availability of supply.
Sustainable waste management principles	Good practice waste management principles, including the waste hierarchy and circular economy, will be undertaken during construction, enforced through the CoCP and outline Site Waste Management Plan. See Table 11.12 for embedded design mitigation and standard good practice.
Summarised Earthworks Quantities Schedule (SEQS)	Excavation quantities and quantities for potential reuse on site used for assessment are taken as worst case including borrow pit access, winning materials from site and the slope angle of the embankment.

Assessment assumptions and limitations

- 11.7.3 This section identifies the aspect-specific assumptions and limitations for the preliminary Materials and waste assessment including those related to the availability of data to inform the assessment and assumptions used in the methodology. The assessment of effects in this chapter is preliminary and will be revisited in the ES in light of data available at that time and the design taken forward for submission. Assessments reported within this PEI Report chapter are considered a reasonable 'worst case' as a precautionary approach has been taken where design, construction or baseline information is incomplete. Nevertheless, the preliminary assessment is considered sufficiently robust to enable consultees to understand the likely significant environmental effects of the Project, based on current design information and understanding of the baseline environment. Gaps in information identified within the PEI Report will be considered and addressed as part of the assessment during the production of the ES, as noted in Section 11.10: Next steps.
- 11.7.4 In addition to the assumptions and limitation stated in the EIA Scoping Report, additional assumptions and limitations have been identified due to the progression of design and availability of information to allow for the quantitative assessment to be carried out. Assumptions and limitations identified in relation to the preliminary Materials and waste assessment comprise:

Assumptions

- Preliminary waste forecasts have been undertaken based on the available design information and use of appropriate industry benchmarks. Industry benchmarks reflect standard good practice and designing out waste measures implemented on similar projects.
- Material and waste bulk densities have been applied where relevant based on professional judgment and available data.
- All waste has been grouped and assessed according to three main waste types (inert, non-hazardous and hazardous) based on the sensitive receptors identified.
- Diversion from landfill of inert waste from construction and demolition – 94% (Department of Environment, Food and Rural Affairs 2024).
- Diversion from landfill of non-hazardous waste from construction and demolition – 94% (Department of Environment, Food and Rural Affairs 2024).
- Diversion from landfill of hazardous waste from construction and demolition – 84% (Environment Agency 2020a).
- Diversion from landfill of inert waste from excavation – 39% (Environment Agency 2020a).
- Diversion from landfill of non-hazardous waste from excavation – 39% (Environment Agency 2020a).
- Proportion of hazardous waste from excavation – 2%.
- Diversion from landfill of hazardous waste from excavation – 83% (Environment Agency 2020a).
- Asbestos cement board roofing sheets will be disposed of as stable non-reactive hazardous waste in non-hazardous landfill cells.
- Key construction materials consumption split over a five-year construction period including main embankment earthworks and construction, and establishment of the groundwater drain, as a reasonable worst case scenario.

- Rock armour is a non-aggregate type of crushed rock, which is required for wave protection of the inner face of the reservoir. It has been assumed that all wave protection material will be rock armour, as a reasonable worst case scenario. Alternative construction materials to rock armour such as open stone asphalt and/or concrete slabs where these are available and not considered to be environmentally worse than rock armour for the purposes of assessment.

Limitations

- Small miscellaneous infrastructure elements including silos, yards and storage areas have been excluded from the demolition assessment.
- The quantity of green waste (organic waste that can be composted) expected to be generated from site clearance of vegetation (existing hedgerows, shrubs, trees) is not yet known. It is expected that green waste will be reused on site to support, for example, woodland creation, where possible. Surplus green waste will be recovered off site using existing organic waste treatment plants, which is the lowest cost and more sustainable treatment option, with a negligible quantity expected requiring landfill disposal.
- At this stage of design there is not enough information about the material consumption and waste generation related to new utility connections (e.g. power, water, telecoms and foul drainage) required for the Project and therefore this has been excluded from the assessment. This information will be presented in the ES, but it is not expected to comprise a significant proportion of the total material consumption and waste generation.

11.8 Embedded design mitigation and standard good practice

- 11.8.1 As described within Chapter 4: Approach to the environmental assessment, identified embedded design (primary) mitigation and standard good practice (tertiary) measures are assumed to be applied within this preliminary assessment, to reduce the potential for environmental effects.
- 11.8.2 Embedded design mitigation identified for the Project at this stage are noted in Chapter 2: Project description. These, and standard good practice measures to be applied, are described in greater detail within Appendix 2.2: Draft commitments register.
- 11.8.3 Table 11.12 lists the embedded design mitigation and standard good practice measures applicable to the preliminary Materials and waste assessment during construction, including the unique commitment IDs that relate to the Draft commitments register (where further detail on each can be referred to). The table also states the purpose of each mitigation and the applicable securing mechanisms.

Table 11.12 Construction: Relevant embedded design mitigation and standard good practice measures, their purpose and the securing mechanisms

Embedded design mitigation or standard good practice measure (unique commitment ID)	Purpose of mitigation measure	Indicative securing mechanism
Design the Project to minimise need to import material as far as practicable (ED-04)	To minimise the consumption of virgin aggregates and recycled/secondary aggregates. Reduce transport movements and associated carbon footprint.	Under the terms of the DCO
Seek to maximise reuse of excavated materials on site where practicable (ED-24)	To minimise the consumption of virgin aggregates and recycled/secondary aggregates. Reduce transport movements and associated carbon footprint.	Under the terms of the DCO
Application of circular economy principles and the waste hierarchy during design (ED-55)	To minimise the generation of surplus excavated material and use of landfill void capacity. Maximise material reuse and/or recycling to reduce the amount of construction waste requiring disposal.	Under the terms of the DCO
Manage material resources during construction in accordance with good practice (SGP-14)	To minimise the generation of surplus excavated material and use of landfill void capacity. Maximise material reuse and/or recycling to reduce the amount of construction waste requiring disposal.	Under the terms of the DCO
Manage all soil resources during construction in accordance with standard good practice (SGP-15)	To preserve soil quality and function, prevent degradation or contamination, and maximise the quantity of reused soil. This will enable the reduction in quantity of material being sent off site for disposal.	Under the terms of the DCO
Implement a Site Waste Management Plan (SPG-33)	To manage waste in line with best practice and minimise the impact on the environment.	Under the terms of the DCO

11.9 Preliminary assessment of likely significant effects

Introduction

- 11.9.1 This section summarises the findings of the preliminary assessment of effects for materials, mineral resources and waste, focusing on key effects that are initially anticipated to be 'significant', be they adverse, beneficial or neutral. The assessment of significance has been made assuming that embedded design mitigation and standard good practice mitigation measures relevant to materials and waste are applied (see Table 11.12 and Appendix 2.2: Draft commitments register for more details). The assessment assumes no additional mitigation, as specific measures are yet to be confirmed during the EIA process. As a result, consideration of residual effects (those that remain after the implementation of all mitigation, including additional mitigation) has not been completed for the PEI Report.
- 11.9.2 As noted in Paragraph 11.1.6, the Materials and waste assessment considered a reasonable 'worst case' in line with the precautionary approach that has been taken. Preliminary assessments may indicate likely significant effects; however, these may later be deemed not significant in the Environmental Statement once data gaps are resolved and design and mitigation measures are refined. The next steps for the Materials and waste assessment, including further exploration of relevant additional mitigation, are set out in Section 11.10: Next steps.
- 11.9.3 Appendix 11.1: Preliminary assessment of effects for materials and waste, sets out the preliminary assessment of effects for each receptor for the construction phase. The appendix is structured into tables distinguishing effects initially anticipated to be significant and those not likely to be significant. Each table outlines the following details for each effect:
- Receptor name, the Effect ID (a unique identifier for each effect), and sensitivity category
 - Project components and activities giving rise to the effect
 - Relevant embedded mitigation and standard good practice mitigation (with unique Commitment ID, which relates to Appendix 2.2: Draft commitments register)
 - Magnitude of impact category and narrative
 - Initial category of effect significance, including whether it is adverse, beneficial or neutral (taking account of embedded design mitigation and standard good practice mitigation)
 - Description and duration of the effect
 - Any additional mitigation and monitoring identified at this stage (with unique Additional Mitigation ID to enable cross reference to the measures noted in Section 11.10: Next steps)

Magnitude of impact - materials

- 11.9.4 This section summarises the initial magnitude of impact to materials during construction. Appendix 11.1: Preliminary assessment of effects for materials and waste, sets out in full the receptor sensitivity and magnitude of impact.
- 11.9.5 Significant quantities of key construction materials (crushed rock including rock armour, sand and gravel, recycled/secondary aggregates, asphalt, concrete and steel) are required

for the construction of the Project. The consumption of key construction materials by the Project would have an impact on the supply and stocks of these materials.

- 11.9.6 Consideration will be given to sourcing of key construction materials from local suppliers where practicable and sustainable, such as local quarries. However, some of the key construction materials are expected to be sourced from suppliers outside of the South East England area and wider UK suppliers for certain key construction materials such as rock armour.
- 11.9.7 The estimated main types and quantities of key construction materials expected to be consumed during construction of the Project compared to the future baseline consumption are provided in Table 11.13 below.

Table 11.13 Forecast key construction materials and percentage of regional or national consumption

Key construction material type	Expansive study area	Total forecast quantity (tonnes)	Annual forecast quantity (tonnes per annum)	Baseline capacity (tonnes per annum)	Magnitude of impact	Percentage of baseline (%)
Crushed rock (incl rock armour)	National	1,726,559	345,312	126,474,000	Negligible	0.27
Sand and Gravel	National	4,022,529	804,506	47,700,000	Minor	1.69
Recycled/ secondary aggregates	South East England	2,708,318	541,664	3,937,000	Major	13.76
Asphalt	South East England	177,477	35,495	1,744,000	Minor	2.04
Concrete	National	595,920	119,184	52,700,000	Negligible	0.23
Steel	National	17,333	3,467	5,600,000	Negligible	0.06

Project materials consumption compared to national consumption

- 11.9.8 The total consumption of the key construction materials (see Table 11.13) shows that at national scale only sand and gravel is slightly above 1% by weight of the baseline national consumption but less than 5% by weight respectively. However, rock armour, which is non-aggregate use class of crushed rock, is significantly above 10% by weight of the baseline national consumption of 312,000 tonnes in 2019 (see Table 11.9). Rock armour has not been assessed separately to crushed rock, because the production of rock armour is a relatively simple process, and a specific grade of crushed rock, with stocks and supply being dynamically adjusted to suit the market demand for rock armour, which can be seen from historic supply and demand aggregate minerals survey data for 2001-2019 (GOV.UK Collection - Minerals Surveys).
- 11.9.9 On the basis of the magnitude thresholds set out in the IEMA Guidance 2020, the magnitude of the impact of crushed rock (including rock armour), concrete and steel during the construction phase are Negligible, and for sand and gravel Minor.

Project materials consumption compared to regional consumption

- 11.9.10 The total consumption of recycled/secondary aggregates at a regional scale (see Table 11.13) is above 10% by weight and for asphalt less than 5% by weight of the baseline regional consumption respectively.
- 11.9.11 As noted in Paragraph 11.6.13, there are no reported capacity constraints for recycled/secondary aggregates in the South East. Given the existing number and wide distribution of recycled/secondary aggregates sites, it is unlikely that there will be a capacity limit on growth in this region.
- 11.9.12 On the basis of the magnitude thresholds set out in the IEMA Guidance 2020, the magnitude of the impact of recycled/secondary aggregates during the construction phase is Major and for asphalt Minor.

Magnitude of impact – minerals resources

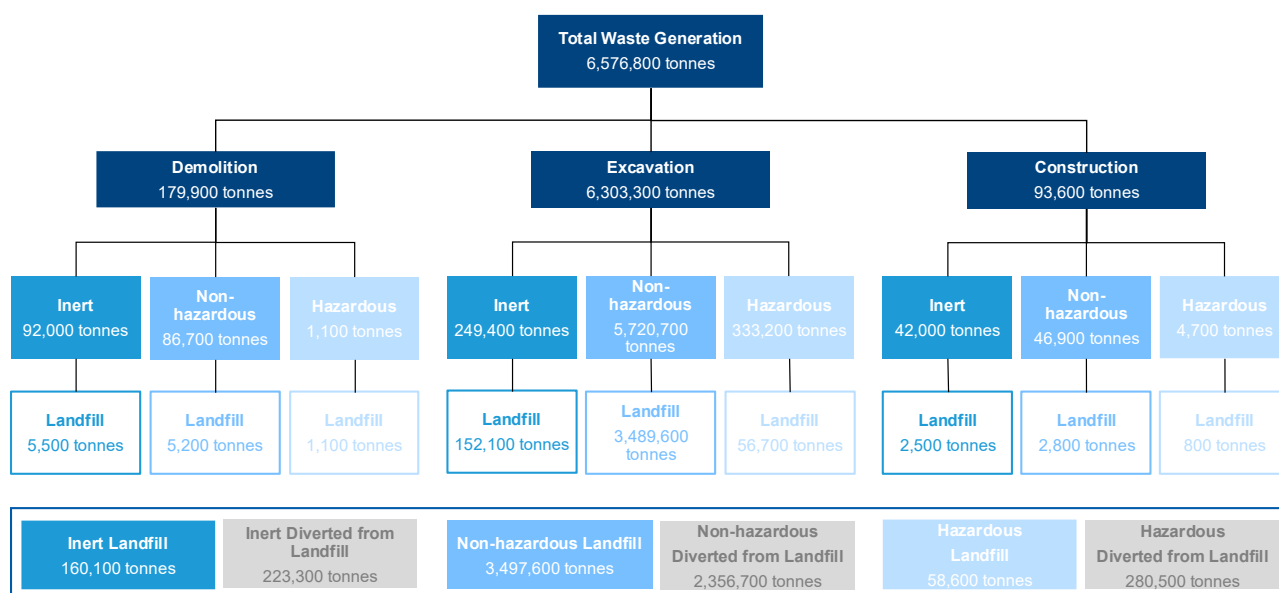
- 11.9.13 This section summarises the initial magnitude of impact of sterilising mineral resources. Appendix 11.1: Preliminary assessment of effects for materials and waste, sets out in full the receptor sensitivity and magnitude of impact.
- 11.9.14 As described in the assessment of sensitivity section for mineral resources, the intersection of the development study area and the Mineral Strategic Resource Area, Mineral Safeguarding Areas (No 2. 'East/South East of Faringdon' (Crushed Rock)' and No 7. 'Corallian Ridge – Oxford to Faringdon (Soft Sand)) and Mineral Consultation Areas is small and would not constitute a change in land use from that which is currently present on site.
- 11.9.15 Additionally, due to the works proposed and the current use of the land in the Minerals Strategic Resource Area, road improvements within a highway boundary or changes in agricultural regimes for habitat mitigation creation or species relocation are not expected to affect the Mineral Safeguarding Areas in any impactful way or sterilise potential mineral resource in that area.
- 11.9.16 Based on professional judgment and the magnitude thresholds set out in the IEMA Guidance 2020, the magnitude of impact of the potential sterilisation of the Mineral Safeguarding Areas, allocated mineral sites and mineral ownerships rights sites is Negligible.

Magnitude of impact - waste

- 11.9.17 This section summarises the initial magnitude of impact from waste during construction. Appendix 11.1: Preliminary assessment of effects for waste, sets out in full the receptor sensitivity and magnitude of impact.
- 11.9.18 For purposes of the construction phase waste assessment, it is necessary to undertake a forecast of waste generated throughout the construction phase (circa 2030 to 2040). The construction waste forecast has been broken down into the distinct construction phase works typically generating waste; these are demolition, excavation and construction. The assessment is then undertaken on the portion of the total estimated waste generation for the construction phase considered likely to require off site disposal to landfill, compared to the landfill void capacity forecast to be available in the final year of construction for each waste type (inert, non-hazardous and hazardous).

- 11.9.19 Preliminary waste forecasts have been undertaken based on the available design information and use of appropriate industry benchmarks. Plate 11.5 sets out the total preliminary estimated waste generation from the construction phase and summarises the forecast waste expected to be sent to inert, non-hazardous and hazardous landfill. The construction waste forecasts have been undertaken using industry benchmarks assuming business-as-usual approaches to waste management. The forecast considers a likely worst case and includes reasonable application of waste minimisation and landfill diversion measures as set out in the CoCP.
- 11.9.20 Using the assumptions set out in Table 11.11 and Section 11.7, the estimated breakdown of inert, non-hazardous and hazardous waste has been forecast for each construction phase. This has been combined with the current landfill diversion performance regionally or nationally to forecast the total waste expected to be sent to landfill for each landfill receptor.

Plate 11.5 Summary of construction phase waste to landfill



Demolition

- 11.9.21 Based on the design information available, a forecast has been prepared of potential quantities of waste generated during demolition required for the Project. This waste streams expected to include, for example, brick, concrete, glass, plastic, timber, steel and asbestos containing materials such as asbestos cement board roofing sheets.
- 11.9.22 The waste forecast shows approximately 179,900 tonnes of waste would be generated due to demolition activities. After application of assumptions on typical waste composition and current diversion from landfill performance, set out in Section 11.7, approximately 5,500 tonnes would require off site disposal to inert landfill, 5,200 tonnes would require off site disposal to non-hazardous landfill and 1,100 tonnes to hazardous landfill, see Plate 11.5 for more details.

Excavation

- 11.9.23 Earthworks activities associated with the Project comprise excavation of the reservoir, tunnelling, trenchless pipe boring, open cut pipe installation, structural foundations,

preparation of working platforms, and enabling works for supporting infrastructure (for example roads and utilities diversion).

- 11.9.24 Based on the earthworks design information available, it is estimated that approximately 65.8 million m³ (Mm³) of excavated material would be generated by excavation activities during construction of the Project.
- 11.9.25 Design information indicates opportunities for approximately 62.1Mm³ (94.4%) of excavated material to be reused on site; predominantly within the embankments, and also includes backfill and capping, a replacement of stripped topsoil and use in construction of roads and utilities diversion. The Project is targeting a neutral cut and fill balance to reduce the need to send surplus excavated material off site for management or disposal, see Section 11.10: Next steps for more information.
- 11.9.26 The remaining 3.7Mm³ (5.6%) of excavated material is forecast to be surplus to the needs of the Project and would require management off site. Consisting predominately of non-hazardous topsoil (approximately 3.1Mm³). After application of assumptions on typical waste composition, current diversion from landfill performance and professional judgement, set out in Section 11.7, there is estimated to be 152,100 tonnes of inert waste requiring off site disposal to landfill, approximately 3.5Mt of waste would require off site disposal to non-hazardous landfill and 56,700 tonnes to hazardous landfill, see Plate 11.5 for more details.

Construction

- 11.9.27 The waste forecast shows approximately 93,600 tonnes of waste would be generated from construction of buildings and infrastructure including materials such as concrete, masonry, bricks and tiles, bituminous mixtures, gypsum, plastic, timber and metals. After the application of assumptions on typical waste composition and current diversion from landfill performance, set out in Section 11.7, approximately 2,500 tonnes would require off site disposal to inert landfill, 2,800 tonnes would require off site disposal to non-hazardous landfill and 800 tonnes to hazardous landfill, see Plate 11.5 for more details.
- 11.9.28 A summary of expected waste generation during excavation and waste to be sent to landfill is presented in Table 11.14.

Table 11.14 Forecast excavated material quantities for the Project

Excavated material waste classification	Total quantity (m ³)	Reused on site (m ³)	Surplus excavated material	
			Diverted from landfill off site (tonnes)	Waste to landfill (tonnes)
Inert	65.8 million	62.1 million	97,300	152,100
Non-hazardous			2,231,100	3,489,600
Hazardous			276,500	56,700
Total	65.8 million	62.1 million	2,604,900	3,698,400

Summary of magnitude of impact for waste

- 11.9.29 The total quantity of inert waste forecast to require off site disposal is 160,100 tonnes, see Plate 11.5 and Table 11.14 for further details. This quantity represents approximately 4%

of the total waste generated during construction requiring off site disposal to landfill. This would comprise a 0.55% reduction in the 29Mt of inert landfill void capacity projected to be available in the South East region at the end of construction. On the basis of the magnitude thresholds set out in the IEMA Guidance 2020, the magnitude of impact from inert waste during construction is considered to be Negligible.

- 11.9.30 The total quantity of non-hazardous waste forecast to require off site disposal to landfill, is 3,497,600 tonnes, see Plate 11.5 and Table 11.14 for further details. This quantity represents approximately 94% of the total waste generated during construction requiring off site disposal to landfill. This would comprise an 81.4% reduction in the 4.3Mt of non-hazardous landfill void capacity projected to be available in the South East and Gloucestershire sub-region at the end of construction. On the basis of the magnitude thresholds set out in the IEMA Guidance 2020, the magnitude of the impact on non-hazardous landfill void capacity during the construction phase is Major.
- 11.9.31 The total quantity of hazardous waste forecast to require off site disposal to landfill, is 58,600 tonnes, see Plate 11.5 and Table 11.14 for further details. This quantity represents approximately 2% of the total waste generated during construction requiring off site disposal to landfill. This would comprise a 1.5% reduction in the 3.9Mt of hazardous landfill void capacity projected to be available in England at the end of construction. On the basis of the magnitude thresholds set out in the IEMA Guidance 2020, the magnitude of impact from hazardous waste during construction is considered to be Major.

Summary of likely significant construction effects

- 11.9.32 This section summarises the construction effects that are initially anticipated to be 'significant' through the preliminary assessment of effects for materials and waste. It pulls out the key potential causes, receptors affected, and additional mitigation that is being considered to tackle likely significant adverse effects.

Materials

- 11.9.33 Chapter 2: Project description explains the construction components and activities for the Project. Key effects on materials may result from the following during construction:
- General construction activities, preparatory and enabling works and material stockpiling associated with the construction of all project components could impact material demand and deplete natural resources.
- 11.9.34 The Project is considered likely to generate a Moderate (significant) effect on recycled/secondary aggregates consumption during construction due to the Low sensitivity of the receptor and a Major magnitude of impact.

Waste

- 11.9.35 Chapter 2: Project description explains the construction components and activities for the Project. Key effects on waste may result from the following during construction:
- General construction activities, demolition and material excavation and handling associated with the construction of all Project activities would produce waste requiring disposal to landfill that would have an adverse effect on landfill void capacity.

- 11.9.36 The Project is likely to generate a Major (significant) permanent effect on hazardous and non-hazardous waste landfill void capacity during construction.
- 11.9.37 Whilst it is forecast that construction of the Project would generate an adverse (significant) effect on non-hazardous and hazardous landfill void capacity during construction, in accordance with the criteria set out in the IEMA Guidance 2020, forecasts show that sufficient landfill void capacity is likely to remain regionally and nationally after completion of construction of the Project, such that the ability for other waste producers to manage their waste would be unaffected.
- 11.9.38 The Government and Oxfordshire County Council have set out ambitions for increasing resource efficiency, reducing pollution and waste, and transitioning to a circular economy including an overall target for soils to be managed sustainably by 2030, to eliminate avoidable waste and double resource productivity by 2050 (Defra 25 Year Environment Plan).
- 11.9.39 It is estimated (for inert, non-hazardous and hazardous waste), the effects from the Project on landfill void capacity are likely to be reduced compared to the effects reported in the PEI Report. Given the trends in national policy with respect to increasing resource efficiency and promoting better waste management, it is anticipated that waste management practices will continue to improve. It is considered likely that reliance on landfill as a means of managing waste will decline, and there are likely to be opportunities to reuse, recycle and recover a greater proportion of the waste streams likely to be generated.
- 11.9.40 The Project is committed to pioneering sustainable soil management by proactively identifying off site reuse opportunities for surplus excavated material. Through developing a framework for an off site options assessment potential receiver sites will be identified, enabling the principal contractor to implement soil reuse solutions. This approach not only aligns with the Government's vision for sustainable soil management but also aims to retain the value of soils and reducing the total quantity of waste being sent to landfill.
- 11.9.41 In addition to the above the Waste (Circular Economy) (Amendment) Regulations 2020, which transposes the Waste Framework Directive requirements, planning authorities must prepare a waste local plan which ensures sufficient waste management capacity is provided. Despite the above, the baseline of landfill void capacity used in this assessment provides a reasonable worst case position.

Summary of likely non-significant construction effects

- 11.9.42 This section summarises the justification for construction effects that are initially anticipated to be 'non-significant' through the preliminary assessment of effects for materials and waste. In particular, it pulls out the key embedded design mitigation and standard good practice mitigation that will be applied and are anticipated to reduce adverse effects to be non-significant.

Materials

- 11.9.43 With a receptor sensitivity of Low, as there are no known issues in the supply chain, and magnitudes of impact ranging from Moderate to Negligible, the Project is considered likely to have a Neutral (not significant) permanent effect for crushed rock (including rock armour) and concrete consumption during construction. Minor (not significant) permanent effects are considered likely for sand and gravel, and asphalt consumption.

Mineral resources

- 11.9.44 Chapter 2: Project description explains the construction components and activities for the Project. Key effects on mineral resources may result from the following during construction:
- During construction activities, potential highway works at Frilford Junction or changes in agricultural regimes for habitat creation or species relocation could have an adverse effect on access or substantially sterilisation of one or more Mineral Safeguarding Areas or allocated mineral sites.
- 11.9.45 The Project is considered likely to have a Neutral (not significant) permanent effect on Mineral Safeguarding Areas, allocated mineral sites and mineral ownership rights sites due to the Low sensitivity of the receptors and a Negligible magnitude of impact.

Waste

- 11.9.46 The Project is considered likely to have a Neutral (not significant) permanent effect on inert landfill void capacity during construction due to a Low sensitivity of this receptor and a Minor magnitude of impact. This is because the Project requires a small quantity of available inert landfill void capacity.

11.10 Next steps

- 11.10.1 As part of next steps, the Project is proactively developing the design, refining the construction approach and continuing to define the environmental baseline, in conjunction with ongoing consultation and engagement. These activities will inform the EIA process and provide a robust evidence base for the ES. The aim is that where initial likely significant effects are identified at this stage, these may ultimately be determined as not significant in the ES once data gaps are addressed, and the design and mitigation proposals are further developed. Effects that remain after the implementation of all mitigation are referred to as 'residual effects'. These effects are not reported in the PEI Report as additional mitigation is not assumed to be implemented at this stage of the assessment. The assessment of the significance of residual effects after all mitigation is applied is a key outcome of the EIA process and will be reported within the ES, which will be submitted with the DCO application.
- 11.10.2 The next steps anticipated to be undertaken in relation to the Materials and waste assessment prior to completion of the ES and submission of the DCO application are explained below.

Further exploration of additional mitigation

- 11.10.3 A key aspect of the next steps is to further explore additional mitigation that may reduce adverse effects that the preliminary assessment has initially identified as likely to be significant. Additional mitigation that has been identified for the Materials and waste assessment is noted against relevant likely significant effects in Appendix 11.1: Preliminary assessment of effects for Materials and waste. All additional mitigation that has been identified in relation to the Materials and waste assessment to date is listed below in Table 11.15 along with a description of what each measure entails. Each measure has a unique Additional Mitigation ID to enable cross reference between Appendix 11.1: Preliminary assessment of effects for Materials and waste and Table 11.15.

- 11.10.4 As noted previously above, the preliminary assessment presented in the PEI Report assumes that additional mitigation is not yet applied, as the precise nature and extent of any additional mitigation measures is not confirmed at this stage in the EIA process.

Table 11.15 Additional mitigation identified to date in relation to the Materials and waste assessment

Additional mitigation ID	Additional mitigation name	Description of additional mitigation measure
AM-07	Implement a sustainable materials procurement plan	A Sustainable Procurement Plan will be developed to encourage the specification, procurement and use of sustainable, responsibly sourced, locally sourced where available, non-hazardous and circular construction materials and products, where practicable.
AM-72	Establish a framework for the reuse of excavated material off site	A framework will be established for the reuse of excavated material off site. This will include a structured selection process to identify and assess potential receiver sites for surplus excavated material, ensuring a standardised, transparent, and sustainable approach that reduces environmental and community impact.

Other next steps

- 11.10.5 Other steps that are continuing or are planned to be undertaken to support the Materials and waste assessment prior to completion of the ES and submission of the DCO application are noted below with an explanation of how these will inform the EIA process:
- Continue to develop design to increase reuse of material and minimise waste generation to align with the circular economy principles including using excavated and reclaimed materials on site for embankments, landscaping, and other beneficial purposes where feasible and to apply the waste hierarchy to materials management during construction and operation.
 - Prepare an excavated material off site options assessment to identify reuse opportunities for surplus excavated material and reduce the total quantity of material being sent to landfill. This approach aims to retain the value of soil and reduce the total quantity of waste being sent to landfills.
 - Engaging with the Oxfordshire County Council and Vale of White Horse technical liaison group to discuss the approach to safeguarding and managing mineral resources. This dialogue will help identify potential technical concerns that can be addressed proactively leading to a robust EIA.
 - Determine the material consumption and waste generation related to new utility connections (e.g. power, water, telecoms and foul drainage) required for the Project. This additional information will be used to inform the quantity of surplus excavated material requiring off site reuse or disposal.
 - Requirements for the preparation of a SWMP are set out in the draft CoCP, with the outline SWMP being produced for the DCO application. This will help identify at an

early stage of the Project potential opportunities for waste prevention, reuse, recycling and recovery of construction, demolition and excavation waste.

- Identify the locations and calculate the quantity of green waste likely to result from clearing vegetation (hedgerows, shrubs, trees). This information will support the development of nature-based solutions such as using green waste for woodland creation. It will also reduce the need for off site recycling of green waste.
- Prepare the operational materials and waste management plan including a forecast of material consumption and waste quantities likely to be generated by the Project in operation. This will also include identification of waste management routes for operational waste.

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