



Preliminary Environmental Information Report

Volume 2

Chapter 13: Materials and Waste

13 Materials and Waste

13.1 Introduction

13.1.1.1 This chapter of our Preliminary Environmental Information Report (PEIR) considers the likely significant effects from construction and operation of the River Thames Scheme (RTS) ('the project') in relation to materials and waste. Within this chapter we have included topic specific sections on:

- Legislation, policy and guidance (noting any changes since Environmental Impact Assessment (EIA) scoping);
- Engagement with consultees, including responses to comments received on the RTS EIA Scoping Report;
- The assessment methodology for this topic (again noting any changes or updates since EIA scoping);
- Key environmental considerations and opportunities,
- Primary and tertiary mitigation;
- Our preliminary assessment of effects;
- Secondary mitigation; and
- Future work for this topic of our EIA.

13.1.1.2 For a summary of the key baseline elements associated with materials and waste see Section 5.9.

13.1.1.3 This chapter describes the proposed scope of the assessment on materials and waste. It describes the likely significant effects of the project and the measures proposed to avoid or reduce such effects.

13.1.1.4 For the purposes of waste management (for which waste management infrastructure is considered), the study area encompasses the Southeast region of England. For hazardous waste management, the study area is defined as the whole of England, due to the limited number of active sites that accept such hazardous material.

13.1.1.5 For the purposes of primary minerals and waste (the extent to which waste could be generated as a result of the project, and how it will be managed) the study area includes the full extent of the area within the project boundary for EIA PEIR.

- 13.1.1.6 This is the same definition for the study area as used for the Materials and Waste chapter of the RTS EIA Scoping Report (Environment Agency and Surrey County Council, October 2022) ('the EIA Scoping Report') in Section 13.2.3 of the Scoping Report. However, the study area will be slightly different to that presented in the EIA Scoping Report due to minor changes in the project boundary for EIA PEIR (see Chapter 2 and Figure 5.21).
- 13.1.1.7 The assessment of materials and waste effects overlaps with the following other topics and uses similar baseline information: Chapter 10: Flood Risk (for effects related to flood risk), Chapter 16: Soils and Land (for effects related to the quality of farmland in the context of Agricultural Land Classifications (ALC), soil properties, and excavation of landfill waste), Chapter 17: Traffic and Transport (for effects related to transport of waste), and Chapter 18: Water Environment (for effects related to water / cross over with Water Framework Directive regulatory mechanisms).

13.2 Legislation, Policy and Guidance

- 13.2.1.1 A summary of the key legislation, policy, and guidance relevant to materials and waste assessment is provided in Appendix M of the EIA Scoping Report. Since publication of the EIA Scoping Report in October 2022, the National Policy Statement for Water Resources Infrastructure (NPS) has been finalised and was designated in September 2023 (Defra, 2023a). No notable changes to the NPS from the draft NPS (published in 2018) have been identified as relevant to this chapter. Additionally, the Environmental Targets (Residual Waste) (England) Regulations 2023 and waste policies in the Environmental Improvement Plan were published in January 2023 but no notable content was relevant to this chapter. We will evaluate emerging minerals and waste policy during the EIA process due to Surrey County Council's ongoing preparation for their first joint Minerals and Waste Local Plan in 2023.
- 13.2.1.2 We have used IEMA guidance relevant to materials and waste to inform the assessment methodology.

13.3 Engagement

13.3.1 Responses to EIA Scoping

13.3.1.1 Table 13-1 below summarises the comments and responses received on the EIA Scoping Report following formal submission to the Planning Inspectorate (PINS) including the PINS EIA Scoping Opinion (date 15 November 2022) ('the PINS Scoping Opinion') and any key comments received from statutory consultees. Full responses to consultee comments on the EIA Scoping Report and our responses to these comments are provided in Appendix 4.1.

Table 13-1: Responses to comments received on the EIA Scoping Report

Consultee or Organisation	Summary of Comment	Project Response
PINS	<p>The Scoping Report states that there could be potential “adverse effects of waste management at established third party facilities” but seeks to scope these out on the basis that such facilities “will be operating under relevant planning and permitting authorisations.”</p> <p>The Inspectorate agrees this matter can be scoped out on the understanding that these potential effects would relate to management of the facility, i.e. noise, air quality, odour and stockpiling rather than facility capacity, which is proposed to be scoped in to the Environmental Statement (ES).</p>	<p>This comment has been noted. This matter will remain scoped out.</p>
PINS	<p>Please see box 2.1.1 of this Scoping Opinion "The Scoping Report proposes to scope out impacts from general maintenance, which are described in Scoping Report section 4.3.2 and across multiple Chapters. However, the long-term maintenance activities required to ensure that the design profile is maintained are not described and the Inspectorate considers that this could include activities such as dredging or structural work which have potential to give rise to significant pollution and hydromorphological effects. In the absence of further details regarding the extent and nature</p>	<p>Maintenance of the channel to restore the design profile has been scoped into this topic for the PEIR/ES in response to the PINS scoping opinion. An outline of the operational maintenance plan will be provided alongside the DCO application.</p>

Consultee or Organisation	Summary of Comment	Project Response
	<p>of such effects, the Inspectorate does not consider that this matter may be scoped out. The ES should explain the likely maintenance activities and provide an outline of the operational maintenance plan, demonstrating how this would mitigate any likely significant effects.</p>	
PINS	<p>The Scoping Report states that, at time of writing, the exact quantity and type of material that will be excavated during construction of the Proposed Development and from maintaining the design capacity of the flood channel during operation is unknown. It is stated that a materials management feasibility study and materials management plan (MMP) are being developed in parallel to the DCO application to provide clarity with regard to construction. The Inspectorate advises that the ES should clearly describe the predicted volume, type and end use of all excavated construction materials and sediment removal during operation, as well as the predicted cut and fill balance. Where assumptions are made, these should be explained.</p>	<p>A Materials Management Strategy (MMS) will be developed alongside the ES, which will provide information on waste volumes and uses including from maintenance sediment removal during operation. The waste assumptions are detailed in the project description Chapter of the PEIR.</p>
PINS	<p>In addition to the receptors listed, consideration should also be given to existing mineral infrastructure, Preferred Areas for mineral extraction and Areas of Search in the assessment of effects to mineral resource.</p>	<p>These have been considered as receptors within the PEIR and will be in the ES, as well as being reflected in the baseline information.</p>
LPA Project Group	<p>In respect of the assessment of effects, receptors listed at Paragraph 13.7.2.2 should, in addition to Minerals Safeguarding Areas, include existing mineral infrastructure, Preferred Areas for mineral extraction and Areas of Search as identified in the Surrey Minerals Plan Primary Aggregates Development Plan Document (DPD) and emerging planning policy. Approved restoration scheme requirements for mineral workings should also be given consideration in the context of the supply and</p>	<p>These have been considered as receptors within the PEIR and will be in the ES, as well as being reflected in the baseline information. We will evaluate emerging minerals and waste policy during the EIA process.</p>

Consultee or Organisation	Summary of Comment	Project Response
	availability of suitable restoration material. Otherwise, the operational and construction effects set out in Paragraphs 13.7.3.1 to 13.7.5.2 are agreed.	

13.3.2 Other Engagement since EIA Scoping

13.3.2.1 Section 13.2.2 of our EIA Scoping Report summarises the stakeholder engagement relevant to the Materials and Waste topic that was undertaken prior to submission of the EIA Scoping Report.

13.3.2.2 Briefings have been held with the LPA Project Group in 2023 to provide updates on our approach to materials and waste management, including a summary of our ground investigations (GI). We have also met with the Environment Agency National Infrastructure team to discuss consenting requirements in relation to materials management, waste and permitting requirements, and this will continue as the project progresses.

13.4 Methodology

13.4.1.1 This section should be read in conjunction with Chapter 4 ‘Approach to the Environmental Assessment’ which sets out relevant information on the design parameters and information that have informed the PEIR assessment, and how we have approached various aspects of the assessment including:

- The scope of the assessment;
- The methodology (including the approach to defining the baseline environment, topic study areas, and assessment methodology and criteria);
- The approach to mitigation; and
- The approach to cumulative effects.

13.4.1.2 The assessment methodology used for the materials and waste assessment in this PEIR and to be used in the (ES) is presented in Section 13.7 of the EIA Scoping Report.

- 13.4.1.3 We have based our assessment of significance of effects for the PEIR on established EIA approaches, our expert professional judgement and according to relevant guidance.
- 13.4.1.4 Our assessment for the PEIR has considered the types and quantities of solid waste that will be generated from construction of the project based on the materials management assumptions set out in Chapter 2 'Project Description' Section 2.2.6 and the likely significance of the environmental effects that could arise with the management of such waste. We have identified the different means by which waste may be managed during construction and assessed the effects of these routes for the different types of waste. We have also evaluated the use of excavated materials and waste from the construction and operation of the project. These material volumes will be refined for the ES as refined data on waste arisings to be generated by the project become available and as the design responds to statutory consultation feedback.
- 13.4.1.5 We have evaluated the mineral resources that could be affected by the project from construction and any prevention of future mineral resource extraction due to the presence of the completed project.
- 13.4.1.6 We have also identified the type of wastes likely to be generated from operation, such as waste generation from maintenance activities. Section 13.7 of the EIA Scoping Report describes in full the proposed methodology that is used for the assessment of materials and waste effects, defining categories for the sensitivity of receptors and the magnitude of effects. No changes to the methodology were required in response to the Planning Inspectorate (PINS) EIA Scoping Opinion.

13.5 Key Environmental Considerations and Opportunities

- 13.5.1.1 The key considerations with respect to materials and waste are:
- The presence and availability of primary material resources, existing mineral extraction sites and Mineral Safeguarding Areas (MSAs) are sensitive to land use changes and development which prevents future extraction.
 - The availability of key material resources within the UK.
 - The availability and capacity of landfill sites, treatment centres and restoration sites and associated management of waste and materials on site.

13.5.1.2 The key opportunities with respect to materials and waste are:

- To improve flood risk to industrial assets in the area and upstream of it, such as quarries and landfill sites.
- Excavation through landfill will contribute to reducing the volume of landfilled waste within the study area, as excavated landfill arisings will be processed and deposited for recovery via an appropriate permitting route or off-site disposal.
- The potential to recover or place excavated arisings from construction of the project through application of the waste hierarchy, and CL:AIRE Definition of Waste Code of Practice (DoWCoP).

13.6 Primary and Tertiary Mitigation

13.6.1 Primary Mitigation

13.6.1.1 The following primary mitigation is proposed in relation to Materials and Waste effects. For further detail of these measures see Chapter 2: Project Description:

- Silt monitoring and channel maintenance (excavation of materials and waste) during operation to restore the design profile, including sampling and testing of the accumulated sediment in the channel will allow classification to identify its properties as a waste and undertake subsequent treatment to minimise disposal to landfill and reduce additional demands upon existing landfill capacity.

13.6.2 Tertiary Mitigation

13.6.2.1 The following tertiary mitigation is proposed in relation to the materials and waste effects assessed within our PEIR. Many of these measures will also serve as mitigation in respect of other EIA topics such as to the water environment and human health:

- Apply standard construction practices in relation to management and protection of soils as a material resource to mitigate the effects from the deterioration of existing soil and materials on site (both geotechnically and geochemically) and preserve them for future use, for example:

- Topsoil stripping, storage, and replacement to preserve and protect the soil as a resource from deterioration during construction.
- Limiting construction traffic to delineated routes and away from riverbanks to prevent damage to soils.
- Placement of granular layers of hardcore with geotextile at construction compounds and material processing sites to minimise ground compaction.
- Soil handling measures will be undertaken to preserve soils in accordance with the following guidance documents (this is not an exhaustive list):
 - Good Practice Guide for Handling Soils in Mineral Workings (The Institute of Quarrying (IQ), 2021).
 - BS4428:1989 British Standard code of practice for general landscape operations.
 - BS3882:2007 British Standard specification for topsoil and requirements for use.
 - Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009).
 - Site Specific Soil Resource Plan.
- Develop a Materials Management Strategy. We are developing the strategy in parallel to the Development Consent Order (DCO) process and it will:
 - Detail efficient management proposals for processing and recovery of waste and placement of materials generated by the project, using specific criteria based on risk assessments to ensure geochemical and geotechnical suitability for minimal acceptable effect on environmental receptors. This reduces effects from the need to import materials from off-site, and minimises the volume of unsuitable materials requiring off-site disposal.
 - Be implemented in line with relevant permitting requirements and CL:AIRE DoWCoP.
 - Inform the further development of appropriate primary, tertiary, and secondary mitigation.
- Apply the waste hierarchy. This includes, for example minimising the generation of waste, and treatment of excavated waste to make it suitable for recovery, thereby minimising the volumes of unsuitable

waste being disposed of at landfill sites off-site and therefore reducing the additional demand upon existing landfill capacity.

- Apply standard construction practices in relation to waste and materials management. The application of these measures would minimise disposal to landfill and reduce additional demand on existing landfill capacity, and also mitigate for the deterioration of existing materials on site (both geotechnically and geochemically) and preserve them for future use. This would include mitigation measures and associated monitoring (such as for groundwater quality) in accordance with the following standard practice guidance documents and legislation (this is not an exhaustive list) to control and minimise the transfer of pollution to various receptors:
 - Technical Guidance WM3: Waste Classification - Guidance on the classification and assessment of waste (Environment Agency, 2021a).
 - Land Contamination Risk Management (LCRM).
 - Model Procedures for the Management of Contaminated Land (CLR 11).
 - Part IIA of the Environmental Protection Act 1990.
 - Water Framework Directive.
 - Groundwater Regulations 1998.
 - Water Resources Act 1991.
 - Site Waste Management Plan.
 - Environmental consents and permitting (Environmental Permitting (England and Wales) Regulations, 2016) – see below.
 - Environment Agency Landfill Gas Guidance (Environment Agency, 2004).
- Obtain and comply with environmental permits for waste in relation to potential spread of contaminants as a result of compression from project components, e.g. new landforms, as well as changes in land use of historical landfills due to the project. This would mitigate the deterioration of existing materials on site (both geotechnically and geochemically) and preserve them for future use. Any works within or affecting landfills or involving waste will be subject to the requirement of an environmental permit under the Environmental Permitting (England and Wales) Regulations 2016. For the purposes of this PEIR assessment, environmental permits for waste have been relied upon as mitigation, with the assumption that these are in place to mitigate the spread of contamination to environmental and human

receptors and will be complied with and enforced by the Environment Agency as regulator as part of the permitting process, we will be required to:

- Undertake a range of risk assessments / modelling of landfill leachate and gas migration (based on the outcomes of our current Ground Investigations and ground modelling), which will be subject to scrutiny by the Environment Agency's National Permitting Service to ensure that they are robust;
- Propose and put in place suitable measures to mitigate effects on the environment to an acceptable level, which the Environment Agency National Permitting Service will review and scrutinise in terms of their adequacy and appropriateness for mitigating the risks and effects identified. An environmental permit will only be granted if the Environment Agency National Permitting Service is satisfied that effects on human health and the environment are acceptable.
- Comply with conditions to limit effects on human health and the environment and ensure that the activities are subject to suitable controls.
- The project will have, and adhere to, a Site Waste Management Plan (SWMP). The SWMP sets out the amount and type of waste and how it could be recovered, recycled or disposed of in accordance with legislation.

13.7 Preliminary Assessment of Likely Significant Effects

13.7.1 Introduction

13.7.1.1 This PEIR adopts a precautionary approach. Assessments reported within this chapter are a preliminary assessment of potential likely significant environmental effects based on the design parameters set out in Chapter 2. This precautionary approach has been taken for the PEIR as there is some information on the project that is currently incomplete and the parameters within Chapter 2 are high level and account for a range of uses and allowance for design development within a boundary that could possibly be refined once this work has been completed. For example, some designs, construction and mitigation details (and therefore also land requirements) or baseline information is still required from further surveys, assessments and/or consultation feedback.

- 13.7.1.2 In making a determination of likely significant effects, we have considered the sensitivity of receptors (a receptor being a feature of the environment that responds to change) and the potential magnitude (i.e. size) of change caused by the RTS. The methodology for defining sensitivity and magnitude vary by topic and are defined in the topic sections of our EIA Scoping Report.
- 13.7.1.3 We are committed to including mitigation measures as necessary to address likely significant negative environmental effects as far as reasonably practicable. Both primary and tertiary mitigation are considered to form part of the RTS; those applicable to this topic are set out in Section 13.6. Several of these mitigation measures are still being developed, and therefore as a precaution, the preliminary assessment of effects for the PEIR does not assume full achievement of these in considering if a project effect is likely to be significant (Appendix 4.2 identifies the implementation status of primary and tertiary mitigation for the PEIR assessment and notably confirms that measures secured through permits are assumed to be implemented). Furthermore, the potential likely significant effects reported within this PEIR have been assessed prior to the implementation of secondary mitigation measures, those applicable to this topic are set out in Section 13.7.2. These secondary mitigation measures are the subject of further development; and given they are still being developed, are not able to be applied to develop a 'residual' effects assessment.
- 13.7.1.4 The PEIR is based on the latest design and construction parameters and baseline information. As such the findings of the preliminary environmental appraisal presented within this PEIR may be subject to change as the design progresses, as mitigation is further developed or information from further studies becomes available, such as the on-going GI and waste classification works. The final assessment of effects undertaken as part of the EIA and reported within the ES will be based on the latest information available at that time.

13.7.2 Potential Likely Significant Effects

- 13.7.2.1 Our preliminary assessment of likely significant environmental effects has identified the potential for the following likely significant effects from construction in relation to materials and waste:

- Negative permanent effect from reduced capacity and availability of permitted inert and non-hazardous landfill sites in Surrey after materials generated from construction of the RTS have been accounted for. In particular from project activities associated with material excavation (contaminated), processing / placement of non-hazardous waste and bed lowering.
- Negative temporary effect from reduced capacity and availability of treatment centres in Surrey as a result of processing site-won waste material from the RTS, in particular from material excavation (contaminated), processing / placement of hazardous waste and non-hazardous waste and bed lowering.
- Negative permanent effect from the reduced capacity and availability of permitted hazardous waste landfill sites in the South East and wider UK as a result of disposal of hazardous waste gained from project activities including material excavation (contaminated) and processing / placement of hazardous waste.
- Positive permanent effects due to excavation through landfill and associated processing and disposal reducing the volume of landfilled waste in the project boundary and releasing this land for change of use to flood channel. Suitable waste will be processed for recovery within the project boundary where appropriate.
- Permanent negative effect from loss of former Shepperton quarry, as a potential landfill site on the Spelthorne flood channel.

13.7.2.2 Our preliminary assessment of likely significant environmental effects has identified the potential for the following likely significant effects from operation in relation to materials and waste:

- Negative permanent effects from the prevention of future extraction of mineral resources from MSAs due to the existence of new flood channels, new landforms, and other permanent project components.

13.7.2.3 Further details of the potential likely significant effects from construction and operation with respect to receptors, project components and project activities, in relation to materials and waste can be found in Table 1 and 2 in Appendix 13.1.

13.7.3 Potential Likely Non-Significant Effects

13.7.3.1 Further details of the non-significant effects from construction and operation with respect to receptors, project components and project activities, in relation to materials and waste can be found in Table 3 and 4 in Appendix 13.1.

13.7.3.2 An example of a materials and waste non-significant effect includes (this is not an exhaustive list):

- A positive non-significant effect to topsoil and subsoil. The project could produce a surplus of topsoil and subsoil which can be utilised on other projects or for mineral restoration sites.

13.7.4 In-Combination Climate Impact

13.7.4.1 Consideration of 'In-Combination Climate Impact' (ICCI) has been undertaken. The preliminary environmental assessment has considered a future climate scenario and has determined that the potential likely significant environmental effects identified for this topic are unlikely to be exacerbated further by climate change. Further consideration of ICCI will be included in the ES.

13.7.5 Secondary Mitigation

13.7.5.1 No secondary mitigation has been identified for effects from construction and operation. Primary mitigation in design and tertiary mitigation in the form of standard construction practices such as the waste permitting and Materials Management Strategy have been included in the assessment. The need for any further mitigation (including any site specific control measures) will be considered further as design and assessment work continues to progress as part of the EIA, and any secondary mitigation developed will be reported in the ES.

13.8 Further Work for the EIA

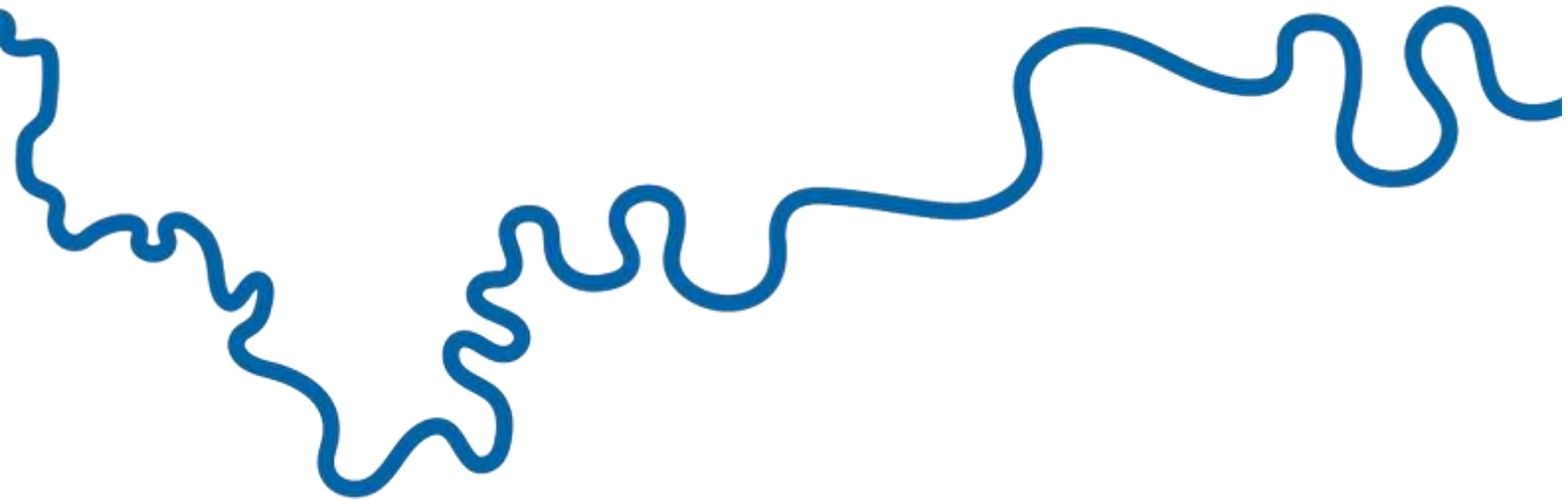
13.8.1.1 The assessment of likely significant effects in relation to materials and waste effects will be undertaken following the methodology set out in Section 13.7 of the EIA Scoping Report, having been informed by the PINS Scoping Opinion, public consultation, and other consultation

feedback on baseline, methodology, mitigation and effects scoped into the assessment.

13.8.1.2 To further the assessment presented in this PEIR, the following will be undertaken as part of the Materials and Waste assessment for the EIA and reported in the ES:

- Ground model to be updated from recent GIs providing more accurate volumes of each type of material and waste to be excavated that will inform the EIA;
- Update the baseline as set out in the EIA Scoping Report where there is more updated information available, including obtaining additional data from the ongoing GI works and review associated factual reports to establish a full baseline; and
- Develop a Materials Management Strategy for approval (and development of related Materials Management Plans and SWMPs for specific areas) and consider their effects as mitigation in the EIA.

13.8.1.3 We consider that the further development of the project design and mitigation measures which will be reflected in the ES and DCO application, will enable a reduction in the scale of identified negative likely significant effects set out in this chapter.



The River Thames Scheme represents a new landscape-based approach to creating healthier, more resilient and more sustainable communities by reducing the risk of flooding and creating high quality natural environments.