East Midlands Gateway
Phase 2 (EMG2)

Document DCO 6.18/MCO 6.18

ENVIRONMENTAL STATEMENT

Volume 1 Main Statement

Chapter 18

Materials and Waste

July 2025

18

The East Midlands Gateway Phase 2 and Highway Order 202X and The East Midlands Gateway Rail Freight and Highway (Amendment) Order 202X

SEGRO.COM/SLPEMG2

SEGRO

Materials and Waste

18.1. Introduction

18.1.1. This ES Chapter reports the assessment of any potential significant effects of the **EMG2 Project**, as described in full in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**) on materials consumption, waste generation and disposal, during construction and operation. It describes the:

- relevant policy, legislation and guidance;
- consultation undertaken to date;
- methodology for assessment;
- potential impacts and effects of the construction phase; and
- potential impacts and effects of the operational phase.

18.1.2. In brief, the **EMG2 Project** comprises three main components as follows:

Main Component	**Details**	**Works Nos.**
DCO Application		
EMG2 Works	Logistics and advanced manufacturing development located on the EMG2 Main Site south of East Midlands Airport and the A453, and west of the M1 motorway. Together with an upgrade to the EMG1 substation and provision of a community park.	DCO Works Nos. 1 to 5 as described in the draft DCO. DCO Works Nos. 20 and 21 as described in the draft DCO.
Highway Works	Works to the highway network: the A453 EMG2 access junction works; significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements) and works to the wider highway network including active travel works.	DCO Works Nos. 6 to 19 as described in the draft DCO.
MCO Application		
EMG1 Works	Additional warehousing development on Plot 16 together with works to increase the permitted height of the cranes at the EMG1 rail-freight terminal, improvements to the public transport	MCO Works Nos. 3A, 3B, 5A, 5B, 5C, 6A and 8A in the draft MCO.

Main Component	Details	Works Nos.
	interchange, site management building and the EMG1 access works.	

18.1.3. The materials and waste assessment of the **EMG2 Project** has been undertaken in line with the legislation, policy and guidance described in Section 18.3 of this chapter. This Chapter is supported by the following documents:

- **Appendix 18A:** Technical Note Justifying the Expanded Study Area in Consultation with LCC **(Document DCO 6.18A/MCO 6.18A)**
- **Appendix 18B:** Updated Technical Note in Consultation with LCC **(Document DCO 6.18B/MCO 6.18B)**
- **Appendix 18C:** Expanded Study Area Plan **(Document DCO 6.18A/MCO 6.18A)**
- **Appendix 18D:** Site Waste and Materials Management Plan (SWMMP) **(Document DCO 6.18D/MCO 6.18D)**

18.1.4. In recognition that this chapter forms part of a single ES covering both the DCO Application and the MCO Application, it makes a clear distinction between the component parts and, consistent with the dual application approach, assesses the impacts arising from the DCO Application and MCO Application separately and then together as the **EMG2 Project** in combination. An assessment of the cumulative impacts of the **EMG2 Project** with other existing and, or approved developments, has been completed using the list of projects identified in **Appendix 21A of Chapter 21: Cumulative Impacts** (**Document DCO 6.21A/MCO6.21A**).

Definitions of Waste

18.1.5. Definitions for the categories of waste in this Chapter are presented in **Table 18.1**.

Table 18.1: Categories of waste definition

Waste Category	Definition
Inert waste	Defined as waste: • that does not undergo any significant physical, chemical or biological transformations; • that does not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter from which it comes into contact in a way likely to give rise to environmental pollution or harm to human health; and • where its total leachability and pollutant content and the ecotoxicity of its leachate are insignificant and, in particular, do not endanger

Waste Category	Definition
	the quality of any surface water or groundwater (see Directive 1999/31/EC 'The Landfill Directive').
Hazardous waste	Any waste that displays one or more of the hazardous properties listed in Annex III of the Waste Directive (2008/98/EC).
Non-hazardous waste	Waste that is neither classified as inert nor hazardous.

18.2. Scope and Methodology of the Assessment

18.2.1. The scope of this Chapter includes the assessment of the materials consumption and waste generation and disposal for the component parts of the **EMG2 Project** which are the **EMG2 Works** and the **Highways Works for the DCO Application,** and **EMG1 Works** for the MCO Application. This section is common to both applications.

Consultation

Scoping Opinion

18.2.2. An EIA Scoping Report for the **EMG2 Project** (**Document DCO 6.1C/MCO 6.1C**) was submitted to the Planning Inspectorate (PINS) in August 2024. A Scoping Opinion (**Document DCO 6.1D/MCO 6.1D**) was adopted by PINS on the 24th of September 2024. **Table 18.2** summarises the relevant comments from the Scoping Opinion with respect to Materials and Waste and provides commentary as required.

Table 18.2: Scoping Opinion Comments and Responses

Originator	Issue Raised	Response to issue raised
PINS ID 2.2.11	Stated that the Scoping Report did not consider the potential for effects on materials and natural resources that may be required for the Proposed Development, nor effects arising from the expected residues or wastes that could be generated. The Inspectorate also noted that the Main Site would include earthworks and landscape mounds that could potentially require either re-use or import of materials in their construction. The Inspectorate therefore considered that there was potential for significant materials and waste effects from the Proposed Development and that an	This ES Chapter provides an assessment of effects as requested by PINS.

Originator	Issue Raised	Response to issue raised
	assessment of this aspect should be included within the ES for all phases of the Proposed Development. As part of the assessment of effects, the ES should consider: • an approximate estimate of materials used in the construction of the Proposed Development, based on worst-case parameters; • the type, volume and sources of materials required; • the volumes and nature of wastes generated; and • the likely generation of traffic as a result of any movements of materials or waste. The approach to the assessment of these matters should be discussed and, where possible, agreed with relevant consultation bodies. Appropriate cross reference to relevant other aspect chapters should be provided in the ES, such as to traffic and transport, air quality, and noise and vibration assessments.	
PINS ID 3.0.3	The Scoping Report proposed to scope out effects on minerals identified within the Main Site on the basis that a safeguarding assessment (provided as Scoping Report Appendix 6), identified that these are low value and not viable for extraction. The Inspectorate agrees that this matter can be scoped out for the Main Site. The Inspectorate notes that the minerals assessment provided as Scoping Report Appendix 6 does not however extend to the rail freight expansion-site or highway network improvements. The ES should therefore set out the minerals status of the Proposed Development as a whole. A description and assessment of likely significant effects should be provided in the ES, where significant effects are likely to occur.	In accordance with PINS comments, the impacts associated with the extraction of raw resources from the EMG2 Works (excluding the sub-station component) and the manufacture of products has been scoped out of the assessment for this ES Chapter. **Chapter 14: Ground Conditions** contains a minerals safeguarding assessment for the remaining components of the **EMG2 Project** which confirms minerals can be fully scoped out and is agreed with LCC.

18.2.3. The impacts from the transportation of material resources and waste to and from the **EMG2 Project** are assessed in **Chapter 6**: **Traffic and Transport (Document DCO 6.6/MCO 6.6)** and **Chapter 19: Climate Change (Document DCO 6.19/MCO 6.19)** respectively.

18.2.4. This assessment also only covers solid waste; the management of liquid waste such as wastewater from dewatering operations is covered in **Chapters 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13)**. Impacts on human health and controlled waters as a result of contaminated site arisings are also assessed in **Chapters 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13), Chapter 14: Ground Conditions (Document DCO 6.14/MCO 6.14)** and **Chapter 17**: **Population and Human Health (Document DCO6.17/MCO6.17)** respectively.

18.2.5. The assessment of the construction and operational phase effects and has been prepared in accordance with the IEMA guide to 'Materials and Waste in Environmental Impact Assessment'[i], the 'CL:AIRE Definition of Waste: Development Industry Code of Practice' and the 'Design Manual for Roads and Bridges (DMRB) LA110 for Material Assets and Waste'[ii].

Council Liaison

Leicestershire County Council

18.2.6. Direct liaison has been undertaken with the relevant officers at Leicestershire County Council (LCC). A contact log with LCC is provided in **Table 18.3**.

Table 18.3: Leicestershire County Council Contact Log

Details	**BWB Response**
09/12/2024 (online meeting) BWB made LCC aware of differing scenarios that could be considered when determining the 'expansive study area.' It was explained that there is no definitive methodology for applying this, with each scenario having distinct limitations. BWB proposed an expansive study 30-mile geographical radius extending from the central study location based upon guidance from WRAP, CIRIA and DEFRA.	09/12/2024 (online meeting) LCC confirmed that the approach proposed for the assessment was acceptable in principle and requested a justification for this approach. It was also noted that this approach would introduce a transboundary element, necessitating additional consultation with neighbouring councils to ensure a comprehensive assessment.
13/03/2025 LCC provided comments to the Statutory Consultation which included commentary on the draft Waste and Materials Chapter. Their comments and BWB's responses are as follows:	
LCC did not agree a 30-mile expansive study area radius of study. 30 miles was mentioned as an example, but LCC asked that whatever radius used is supported with some form of evidence or	The 30-mile radius cited was provided following initial consultation in which LCC proposed that an isopleth (circular) radius is best

Details	BWB Response
justification. *The documents used as justification for a 30-mile radius in this paragraph are generic and provide no real evidence for selecting a 30-mile radius as the expansive study area.* *This Chapter needs to justify expansive study area radius for both materials and waste separately.* *Radius still needs to be agreed with LCC and with other neighbouring authorities (Nottinghamshire, Derbyshire, Staffordshire, Lincolnshire, Warwickshire and West Midlands Combined Authority).* *Whatever radius is agreed, it must be clear whether it is based on vehicle miles distance travelled or an isochrone.*	suited - and is not fixed. In response to comments from LCC, separate justifications for materials and waste have been identified-, and both distinguish whether the assessment is based on isochrone mapping or vehicle miles. Neighbouring authorities (Nottinghamshire, Derbyshire, Staffordshire, Lincolnshire, Warwickshire, and WMCA) have been invited to approve the materials and waste study area, based on regional logistics, facility catchments, and available data.
States that "[This section to be completed on receipt of data from and further consultation with LCC]". *It is not clear what data is expected from LCC. No request has been received.*	At the time of the statutory consultation and preparation of an earlier draft of this chapter it is noted that no formal data request had been made to LCC. However, information regarding local-level facility throughput and forecasted capacity has since been requested and received from LCC and incorporated into the Chapter.
In the 'Assessment of Operational Effects' section Table 18.1 sets out the density:volume ratio for warehouse related waste during operation. *An equivalent table should also be provided for construction and demolition related waste in the 'Assessment of Construction Effects' section.*	An equivalent table for construction and demolition-related waste (CDW) has been included in the 'Assessment of Construction Effects' section. This includes waste density and volume assumptions based on the BRE SmartWaste tool and industry benchmarks.
Sensitivity Criteria table (Table 18.6) provides criteria for just inert waste but should also provide criteria for other types of waste (e.g. commercial and industrial waste arising during the operational stage).	The table has been updated to include criteria for commercial and industrial (C&I) waste and municipal waste, in addition to inert waste, to ensure a comprehensive assessment of all relevant waste streams during the operational phase.
Prior to the publication of the draft Environmental Statement the Applicant has not sought consideration and agreement from LCC on the materials and waste Chapter. Also, it has not	A draft of this Chapter was published as part of the statutory consultation and provided to LCC for review and comments.

Details	BWB Response
identified what the data gaps are with which they would like support from LCC.	Since the statutory consultation, focused engagement with LCC to clarify outstanding data gaps and seek agreement on key methodological assumptions (including waste stream baselines, receptor sensitivities, and projected capacities) has been undertaken.
Final bullet says available capacity data for 2020 projected forward to 2023 for landfill capacity. However, 2023 data is available from the Waste Data Interrogator so there is no need to project older data.	The most current information (2023) from the Waste Data Interrogator has since been applied and the narrative has been updated accordingly.
Table 18.11 includes cut and fill volume row, but no data is provided. Without knowing the cut and fill balance, it is unknown whether there will need to be importation of engineering fill or exportation of excavation waste.	The cut and fill assessment has now been completed and the resulting volumes included in the Chapter with full details contained in **Chapter 14; Ground Conditions** and the accompanying appendices. The balance determines whether materials will be reused on site or imported/exported.
Lack of reference to National Planning Policy for Waste (NPPW). *Waste Disposal Authority Plan (2018-2030) has been superseded by the adopted Waste and Resources Strategy (2022-2050).*	The National Planning Policy for Waste (NPPW) is now referenced and aligned with the assessment framework. The current Waste and Resources Strategy (2022–2050) has been included in Table 18.12 (Relevant Policy, Legislation and Guidance) and aligned with the assessment framework.
Table 18.14 attempts to present very different data in a single table for comparison. For example, sand and gravel is presented as annual sales, but crushed rock is total permitted reserves. *It is using data from 2019 and 2020, when more recent data is available (e.g. Local Aggregate Assessments) and this should be used.* *Also, it is confusing as to whether a regional picture is being presented, or just Leicestershire.*	This table has been revised to ensure data consistency (e.g. using either annual sales or permitted reserves, not both) and to reflect the most recent Local Aggregate Assessments (2021–2023). The geographical scope is now clearly identified for each data point—either Leicestershire or regional, as appropriate.
Inconsistency in the number of incinerators within	The inconsistency in the number of incinerators has been resolved. The

Details	BWB Response
the 30-mile expansive study area (to be agreed).	data table and text have been aligned and updated with the latest available information. The number of facilities are now clearly identified within the agreed study area.
There appears to have been the conflation of non-hazardous Construction and Demolition (C&D) wastes and non-hazardous waste (which relates mostly to municipal waste). It is not appropriate to compare the recycling rates of one with the other.	The non-hazardous municipal waste and C&D waste have been separated, and recycling rate comparisons have been revised to reflect like-for-like waste types, using appropriate DEFRA data sets.
This table (Table 18.17) should list the waste facilities in the 30-mile expansive study radius, not just Leicestershire.	The table has been updated to include facilities from all relevant areas within the proposed expansive study area, not just Leicestershire. Each facility is listed with its waste type specialism and location (where this information exists).
It's not clear what waste streams are being used for the waste quantities set out in Table 18.14 (e.g. does it include non-hazardous municipal waste, C&D and Commercial & Industrial (C&I), or a selection of these streams). Also, it is not clear why 2022 data has been used, when more recent 2023 data is available.	2022 data has been used where 2023 data is unavailable. The table has been updated to clarify which waste streams are included (municipal, C&I, and C&D).
Makes reference to 76.7% of waste in Leicestershire being diverted from landfill and compares this against an England wide rate of 90%. However, the 90% seems to refer to C&D waste and 76.7% to a mix of waste streams. It makes the comparison meaningless.	The comparison with national performance is provided given the **EMG2 Project** is considered 'Nationally Significant'. The comparison has been revised to ensure consistency between waste types (e.g. comparing C&D diversion in Leicestershire with national C&D diversion rates only). Any potential mixed comparisons have been removed.
In regards to Table 18.19, only landfill capacity in Leicestershire has been considered. It is missing for other authorities within whatever expansive study area is identified and agreed.	Since publication of the draft chapter, the table has been expanded to include landfill capacity for all authorities within the defined study area. Sources have been cited from relevant regional and local waste plans.

Details	BWB Response
Table 18.21 appears to be a partial representation of recycling facilities predominantly within Leicester City rather than the County. In addition, some identified sites are irrelevant for a Rail Freight Interchange (e.g. Household Waste Recycling Sites). *Furthermore, no facilities have been considered in the expansive study area outside of Leicestershire (e.g. Derbyshire, Nottinghamshire).*	Since publication of the draft chapter, the table has been revised to exclude irrelevant facilities (e.g. HWRCs) and include appropriate commercial waste processing and recycling infrastructure across the broader study area, including Derbyshire and Nottinghamshire.
In reference to Paragraphs 18.5.20 and 18.5.22, figures provided in these paragraphs do not reflect the figures in the tables that immediately precede them.	Since publication of the draft chapter, figures in the text have been updated to align precisely with those in the tables. Any discrepancies due to rounding or outdated figures have been resolved.
In reference to Sections 18.6, 18.7 and 18.8, all include notes which say: "section to be completed".	Since publication of the draft chapter, these sections have now been completed, incorporating the outcomes of the impact assessment, mitigation strategy, and residual effects in line with the updated methodology and agreed study area.
28/03/2025 A Technical Note was issued to LCC which provided a justification for the proposed expansive 30-mile study area for the assessment.	The Technical Note is presented in **Appendix 18A**.
02/04/2025 (online meeting) BWB provided justification for the proposed expansive 30-mile study area. BWB raised the difficulty in establishing the existing and future capacity for waste facilities within the expansive study area due to EA Waste Data Interrogators not setting out this data.	LCC confirmed they were satisfied with the justification for the proposed expansive 30-mile study area with respect to waste but requested further justification for the 30 mile study area with respect to minerals. LCC confirmed they are aware of the dearth of available data on existing and future capacity. They suggested using whatever information is set out within local and county level waste plans and annual monitoring reports.
02/04/2025 (email)	03/04/2025 (email)

Details	BWB Response
The Technical Note was updated to expand on the justification for the proposed expansive 30-mile study area for the minerals assessment.	LCC confirmed that the justification provided for the minerals assessment was acceptable. The updated Technical Note is provided in **Appendix 18A**.
02/04/2025 (email) Correspondence from BWB to LCC confirming the lack of available data on existing and future waste facility capacity, and requesting any available information for relevant facilities within Leicestershire.	04/04/2025 (email) LCC confirmed they would inquire on the availability of data requested and will issue any relevant data to BWB. Additional information was subsequently provided by email on 30/04/2025.

Nottinghamshire County Council

18.2.7. A response to the request for consultation was received from Nottinghamshire County Council (NCC) and an initial, non-statutory meeting took place on June 11 2025. BWB set out the methodology for the Chapter, including the justification for choosing the study area. BWB confirmed they would issue the latest version of the Chapter for their review.

Derbyshire County Council

18.2.8. Multiple attempts to engage with Derbyshire County Council (DCC), including the use of targeted emails and voicemail messages were made. However, efforts to liaise with DCC, including with the support of LCC, to discuss the capacity of waste receptors within the revised study area were unsuccessful. To date, no response has been received.

Other Councils

18.2.9. Other local authority entities were not contacted, for the reasons outlined in Paragraph 18.2.18 of this Chapter.

Baseline Data Collection

18.2.10. The most up-to-date sources of information, available at the time of writing, have been used to collate data for material resource availability, landfill capacity and waste recovery.

18.2.11. The key sources of information used to determine the baseline resource availability, landfill capacity and waste recovery conditions are:

- Department for Business and Trade Monthly 'Bulletin of Building Materials and Components'[iii];
- Natural England Multi-Agency Geographic Information for the Countryside ('MAGIC') mapping[iv];

- Department for Environment, Food & Rural Affairs ('DEFRA') (2024) 'UK Statistics on Waste'[v];
- Environment Agency ('EA') (2023): Waste Data Interrogator[vi]; and
- EA 'Remaining Landfill Capacity, England' (2024)[vii]
- Leicestershire County Council (2023) Local Aggregate Assessment[viii]
- Leicestershire County Council (2024) Authority Monitoring Report 2022-2023[ix]
- Derbyshire County Council (2023) Local Aggregate Assessment[x]
- Nottinghamshire County Council (NCC) and Nottingham (2023) Local Aggregate Assessment[xi]
- Nottinghamshire Minerals Local Plan (2021)[xii]
- Nottinghamshire County Council and Nottingham City Council (2023): Nottinghamshire and Nottingham Waste Needs Assessment: 2022-2023 update[xiii]

18.2.12. Sources of data that are considered to be outdated and therefore unreliable for the purposes of this assessment include:

- Derbyshire County Council and Derby City Council Waste Local Plan (2005)
- Derbyshire County Council and Derby City Council Minerals Local Plan (2000)

Study Area

18.2.13. The study areas for the assessment of impacts related to materials and waste have been defined in line with the IEMA Guidance[i].

18.2.14. Two study areas are defined. Together the '**EMG2 Project** Study Area' and 'Expansive Study Area' are referred to in this chapter as 'the Study Areas':

i. **EMG2 Project** Study Area – comprises the **EMG2 Project** area (as set out within **Chapters 1** and **2** (**Documents DCO6.1/MCO6.1** and **DCO6.2/MCO6.2 respectively**) and shown on the **Location Plans** (**Documents DCO 2.1 and MCO 2.1**). It also includes any areas required for temporary access, site compounds, working platforms and other enabling activities. The development study area comprises waste generated through both construction and operation, namely, groundworks, construction materials and bi-products of operations.

ii. The Expansive Study Area – extends to the availability of construction materials, and capacity of waste management infrastructure and remaining landfill void, within a defined region. For the purposes of this assessment, the region extends to a radius of 30 miles from the centre of the **EMG2 Project**, which was agreed during consultation with LCC (**Appendix 18A**).

18.2.15. Recognising that there is no defined radius for waste-related matters in current best UK practice guidance, a 30-mile radius from the **EMG2 Project** has been proposed – a thorough justification for this is outlined in Enclosure 1 of **Appendix 18A**. This approach aligns with best practice guidance for materials management, which recommends a similar scale for assessing material sourcing and waste considerations:

- WRAP (Waste and Resources Action Programme): WRAP guidance often suggests considering local sourcing and waste management within a practical range, typically up to 30 miles, to minimise transport emissions and maximise local resource use.
- CIRIA (Construction Industry Research and Information Association): Some CIRIA guides on materials and waste management discuss sustainable procurement and logistics within similar distances to reduce environmental impact.
- BS 8903: Principles and Framework for Sustainable Procurement: While not specific to a 30-mile radius, it promotes local sourcing as a key strategy, often referencing radii that align with practical transport considerations.
- DEFRA's Waste Management Plan for England: This document supports a proximity principle for waste management, which can sometimes inform practical distances such as the 30-mile guideline.

18.2.16. Based on the 30 mile radius from the centre of the Location Plans (**Documents DCO 2.1 and MCO 2.1**), the following county councils are included within the Expansive Study Area:

- Derbyshire;
- Leicestershire;
- Lincolnshire;
- Nottinghamshire;
- Staffordshire;
- Warwickshire; and
- West Midlands Combined Authority.

18.2.17. Taking into account the location of the **EMG2 Project** in relation to both county and local authority boundaries as well as the extent of the 30-mile study area, it is proposed that only Leicestershire, Derbyshire and Nottinghamshire are included within the scope of the assessment. This refined approach reflects a more realistic understanding of how materials and waste are likely to be managed during the construction and operational phases of the **EMG2 Project**.

18.2.18. While other local authorities fall within the broader 30-mile radius, they have been excluded from the assessment for the following reasons. Firstly, based on proximity and logistical considerations, it is considered highly unlikely that construction materials will be sourced from, or that residual waste will be transported to, facilities located within these more distant areas. Secondly, no relevant waste management sites were identified within the portions of the Zone of Influence that fall within these other authorities' boundaries. As such, their inclusion would not meaningfully contribute to the assessment.

18.2.19. The scope has therefore been narrowed to focus on the authorities most likely to be affected by the **EMG2 Project**, namely Leicestershire, Derbyshire and Nottinghamshire, regardless of strict adherence to county areas. This approach ensures a proportionate and realistic assessment, recognising actual material supply and waste management patterns over arbitrary administrative boundaries.

Identifying Sensitive Receptors

18.2.20. Sensitive receptors have been identified in accordance with IEMA guidance as follows:

> *For waste, the sensitive receptor is landfill capacity. Landfill is a finite resource, and hence – through the ongoing disposal of waste – there is a continued need to expand existing and develop new facilities. This requires the depletion of natural and other resources which, in turn, adversely impacts the environment.'*
>
> *'Materials are, in their own right, sensitive receptors. Consuming materials impacts upon their immediate and (in the case of primary materials) long-term availability; this results in the depletion of natural resources and adversely impacts the environment.'*

18.2.21. Sensitive receptors have been identified via a desk study of publicly available data and the use of waste management experience and professional judgement.

Sources of Waste

18.2.22. The **EMG2 Project** would generate the following types of waste during construction which are considered in the assessment:

- excavation wastes;
- demolition wastes; and
- construction wastes.

18.2.23. Once completed and operational, the **EMG2 Project** will be used for logistics and distribution and is expected to generate such waste as cardboard, plastic wrap, pallets, and other materials used for packaging and protecting products during transit.

Assessment of Construction Effects

18.2.24. The IEMA Guidance has been used to assess the potential construction effects from the **EMG2 Project**, using the process and significance criteria it sets out. Method W1 (Void Capacity, as detailed in the IEMA Guide) has been used to best reflect the scale and nature of the **EMG2 Project**.

18.2.25. In accordance with the IEMA Guidance, the assessment is a quantitative exercise that identifies the:

- type and volume of materials to be consumed by the **EMG2 Project** during construction, including details of any recycled materials content;
- type and volume of waste to be generated by the **EMG2 Project** during construction, with details of planned recovery and/or disposal method (for example on-site reuse, off-site recycling, disposal to landfill);
- cut and fill balance, during construction; and

- details of any construction materials to be specified, where sustainability credentials (particularly those that improve resource efficiency) afford performance beyond expected industry standards.

18.2.26. **Table 18.4** sets out the average density in kilograms per litre (k/l) for the most abundant waste types during construction.

Table 18.4: Typical Estimates for the Density of Construction Waste

Waste Type	Average Density (kg/l)	Notes
Cardboard Waste	0.05–0.15	Lower density unless baled or compacted.
Plastic Waste	0.10–0.25	Very low density, particularly for loose plastics.
Wooden Pallets	0.30–0.60	Higher density, depending on size and stacking.

Assessment of Operational Effects

18.2.27. The CL:AIRE Definition of Waste is a regulatory construct to determine when an item, substance or material becomes waste that is currently defined under Section 75 of the Environmental Protection Act 1990[1].

18.2.28. The approach to assessing the effects of waste generated by the **EMG2 Project** during its operational life broadly aligns with the methodology adopted for the assessment of construction phase wastes. However, rather than the assessment solely relating to the ability of landfill infrastructure to accept any generated wastes, the assessment also considers other recovery and disposal options for the more specialist types of waste to come from the operation phase of the **EMG2 Project**. This is because unlike the construction phase, where associated waste, if not recycled, usually results in landfill, (e.g. surplus building materials) the types of waste to be generated during the operational phase such as oils, lubricants, electricals and batteries are more likely to require alternative forms of treatment at specialist facilities.

18.2.29. The operation phase assessment includes:

- expected waste (likely types and estimated quantities) to arise in a typical year of operation;
- changes to annual waste volumes from improvements or changes to operations e.g. replacement technologies, alterations in capacity of the facility etc.; and

[1] Environmental Protection Act 1990 is up to date with all changes known to be in force on or before 17 November 2024. There are changes that may be brought into force at a future date.

- changes to annual waste volumes from potential sustainability and waste reduction targets that could impact upon the composition, tonnage and management route for wastes (including internal targets or regulatory targets).

18.2.30. The operational waste arisings do not include end of life wastes such as decommissioning. The **EMG2 Project** has a long design life and potentially even longer operational life and as such it is not considered possible to reliably forecast decommissioning requirements and infrastructure far in the future.

Determining Volumes of Waste

18.2.31. Estimates of the likely waste generation from the operations buildings are based upon floor area and appropriate benchmark metrics from BS 5906:2005 Waste Management in Buildings – Code of Practice[xiv].

18.2.32. Potential wastes are quantified using metrics appropriate to the building use, with estimates generated based on the known site occupation split between Logistics and Advanced Manufacturing and allowing up to 20% ancillary 'Offices' including maintenance storage. This average takes into account the fact that most occupiers will have much lower office content but some, and in particular Maersk, as described in **Chapter 3: Project Description**, may have higher office content.

- To quantify estimated potential industrial wastes, a metric of 5 litres is applied to every square metre of floorspace across operational areas.
- To quantify estimated potential office wastes, a metric of 50 litres is applied for each employee across operational areas.

18.2.33. Typical ratios for waste in logistics buildings are as follows:

- Packaging Waste: Accounts for approximately 60–70% of total waste in non-specialist warehouses.
- General and Operational Waste: Around 20–30%.
- Hazardous and Maintenance Waste: Typically 5–10%, depending on the warehouse's specific operations.

18.2.34. To enable a calculation of weight to benchmark against the capacity of waste receptors, it is necessary to convert typical volumes (litres) to cubic metres and/or tonnes. Converting litres of waste to tonnes depends on the density of the waste material, as the relationship between volume (litres) and weight (tonnes) varies significantly based on the material's composition. Steps to converting litres to tonnes are as follows:

i. Determine the Volume in Litres: Identify the total volume of waste in litres.

ii. Identify the Waste Type: Determine the type of waste (e.g., water, oil, food, plastic).

iii. Find the Density: Use a standard density chart or data provided by the waste producer/handler. Density is typically measured in kilograms per litre (kg/l).

iv. Perform the Conversion: Multiply the volume by the density to calculate the weight in kilograms, then divide by 1,000 to convert to tonnes.

18.2.35. The general formula for conversion is:

$$\text{Weight (tonnes)} = \text{Volume (litres)} \times \text{Density (kg/l)} / 1{,}000$$

18.2.36. Factors influencing density include the composition of the waste (logistics buildings dealing with high volumes of cardboard and plastic will have lower-density waste compared to facilities handling food products or scrap metal), compaction (using balers and compactors significantly increases density and reduces storage/transportation volume) and moisture content (organic waste, such as food or cleaning residues, increases the average density due to higher water content).

18.2.37. The average density of logistics buildings waste varies depending on the type of materials being handled, operations within the warehouse, and how the waste is managed (e.g., loose or compacted). However, typical estimates[xv,xvi] for the density of mixed warehouse waste are presented in **Table 18.5**.

Table 18.5: Typical Estimates for the Density of Mixed Logistics Building Waste

Waste Type	Average Density (kg/l)	Notes
General Mixed Waste (Uncompacted)	0.5-0.3	Includes plastics, cardboard, and general refuse.
General Mixed Waste (Compacted)	0.3-05	After compaction, density increases significantly.
Cardboard Waste	0.05–0.15	Lower density unless baled or compacted.
Plastic Waste	0.10–0.25	Very low density, particularly for loose plastics.
Wooden Pallets	0.30–0.60	Higher density, depending on size and stacking.
Food Waste	0.60–0.80	Organic material with high moisture content.
Hazardous Waste	1.00–1.50	Includes batteries, WEEE, and chemical residues.

18.2.38. Given the amount and type of waste cannot be determined at this stage, the average density for General Mixed Waste is to be applied. The upper value (0.50 kg/l) will be taken as a worst case scenario.

Determining the Significance of Effect

Determining the Sensitivity of Receptors

18.2.39. The sensitivity of waste is determined by considering the baseline and forecast future baseline of regional (Expansive Study Area) landfill void capacity in the absence of the **EMG2 Project**. Landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste.

18.2.40. The sensitivity of materials relates to the regional (Expansive Study Area) availability and type of resources to be consumed by the **EMG2 Project**. The sensitivity of materials is determined by identifying where one or more of the criteria thresholds are met.

18.2.41. The criteria for assessing sensitivity of materials and waste receptors are set out in **Table 18.6**, in accordance with the criteria outlined in the IEMA Guidance (IEMA, 2020).

Table 18.6 Sensitivity Criteria

Sensitivity	Waste Criteria	Materials Criteria
Negligible	Across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity	Materials are forecast (through trend analysis and other information) 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	Across construction and/or operation phases, the baseline/future baseline 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.	Materials are forecast (through trend analysis and other information) 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	Across construction and/or operation phases, the baseline/future baseline 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.	Materials are forecast (through trend analysis and other information) 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	Across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to	Materials are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock; and/or comprise little or no sustainable features and

Sensitivity	Waste Criteria	Materials Criteria
	reduce considerably: by 6- 10% as a result of wastes forecast.	benefits compared to industry-standard materials.
Very High	Across construction and/or operation phases, the baseline/future baseline of regional (or where justified, national) inert and non-hazardous landfill void capacity is expected to reduce very considerably: by>10%; end during construction or operation; is already known to be unavailable; or would require new capacity or infrastructure to be put in place to meet forecast demand.	Materials 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.

Determining the Magnitude of Impacts

18.2.42. The magnitude of impact describes the degree of variation from the baseline conditions as a result of the **EMG2 Project**. The IEMA Guidance (IEMA, 2020) for assessing the magnitude of impact from materials comprises a percentage-based approach that determines the influence of construction materials use on the baseline national demand from the construction of the **EMG2 Project**. The criteria used to assess the magnitude of impact for materials are provided in **Table 18.7**.

Table 18.7 Materials Magnitude Criteria

Sensitivity	Materials 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 materials is between 1-5% by volume of the regional baseline availability.
Moderate	...one or more materials is between 6-10% by volume of the regional baseline availability
Major	..one or more materials is >10% by volume of the regional baseline availability.

Waste

18.2.43. IEMA stipulates that "*a single and unified method for assessing the magnitude of impact from the generation and disposal of waste is felt to be too restrictive by comparison with the number and variety of development types potentially subject to environmental assessment*". The guidance, therefore, offers two methods and describes their relative merits:

i. Method 'W1' – Void Capacity; and

ii. Method 'W2' – Landfill Diversion.

18.2.44. Methods W1 and W2 should not be combined either in part or fully, as this would cause ambiguity and a lack of clarity in reporting.

18.2.45. Using Method W1, the magnitude of impact from waste is assessed by determining the percentage of the remaining landfill void capacity that will be depleted by waste produced during the construction and/or operation phases of the development. Method W1 will therefore be applied to determine the effect of the waste likely to be recovered and diverted from landfill in accordance with annual targets (e.g. 90% recovery / diversion rate).

18.2.46. Using Method W2, developments are compared to a good practice landfill diversion rate of 90% (as achieved and exceeded by major UK developments). Method W2 will be applied where residual waste will not be diverted from landfill (e.g. 10%). The criteria used to assess the magnitude of impact for waste are provided in **Table 18.8**.

Table 18.8: Waste Magnitude Criteria

Magnitude	Method W1	Method W2
No Change	Zero waste generation and disposal from the development.	…100% landfill diversion.
Negligible	Waste generated by the development will reduce regional landfill void capacity baseline by <1%	…90-99% landfill diversion.
Low	Waste generated by the development will reduce regional landfill void capacity baseline by <1-5%	…60-89% landfill diversion..
Moderate	Waste generated by the development will reduce regional landfill void capacity baseline by <6-10%	…30-59% landfill diversion.
Major	Waste generated by the development will reduce	…<30% landfill diversion.

	regional landfill void capacity baseline by >10%	

Determining the Significance of Effect

18.2.47. The overall significance of effects from materials and waste are determined in accordance with the IEMA Guidance (Section 11), by comparing sensitivity and magnitude within the matrix provided in **Table 18.9**.

18.2.48. Effects that are classified as 'moderate' or greater are considered to be 'significant' in EIA terms.

Table 18.9: IEMA Significance Matrix

		Sensitivity of Receptor				
		Negligible	**Low**	**Medium**	**High**	**Very high**
Magnitude of Impact	**No change**	Negligible	Negligible	Negligible	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	Minor	Minor	Minor	Minor	Moderate*	Moderate*
	Moderate	Minor	Minor	Moderate*	Moderate*	Major*
	Major	Minor	Moderate*	Moderate*	Major*	Major*

* These effects are considered significant for the purposes of the EIA Regulations.

Determining the Duration of Effect

18.2.49. The duration of effect is defined in **Table 18.10**.

Table 18.10: Duration of Effect Definitions

Duration	**Definition**
Short-term	The effects would be of short duration and would not last more than 2-5 years.
Medium-Term	The effects would take 5-15 years to be mitigated.
Long-term	The effects would be reasonably mitigated over a long period of time (15 years or more).

Limitations and Assumptions

18.2.50. This section outlines the limitations, uncertainties, and assumptions made in undertaking the materials and waste assessment reported in this chapter:

- This assessment has been undertaken as a desk-based study, using the most recent publicly available information which is up to and including 2023 (unless stated otherwise).
- No quantified data was available for materials currently required for maintenance and agriculture at the current site proposed for the **EMG2 Works**.
- No information on steel production is currently available at a regional level.
- The data to be used on the **EMG2 Works** and **EMG1 Works** have been estimated using the Maximum Parameters, summarised in **Table 18.11**.
- The resources that are expected to be consumed and waste that is expected to arise during the operation phase of the **EMG2 Project** have been assessed based on the information provided and the development proposals. Accurate estimates of likely waste generation volumes during operation will, to a significant extent, be dictated by the system processes to be utilised.
- Both quarry and landfill operators can claim commercial confidentiality for their data at the time of submission; data for sites with a commercial confidentiality agreement in place are therefore unavailable for the baseline presented in this Chapter. However, this is not likely to affect this assessment as reasonable assumptions can be made based on available data.
- In line with the IEMA Guidance, a lifecycle assessment (including embodied carbon and water) of materials will not be part of this assessment process. Embodied carbon has been assessed in **Chapter 19: Climate Change (Document DCO 6.19/MCO6.19).**
- For the assessment, the landfill capacity has been based on a projection of available capacity data from the EA's most current 'Remaining Landfill Capacity, England' data[vii]. Although the bulk of the waste would be sent to landfill during the construction of the development, the construction period will span a number of years and will not fall solely in one year. However, 2027 has been deemed as an appropriate approximation of the availability of capacity as it is expected that 2027 will experience peak earthworks activity during the construction period. Operational recycling rates have been set at a minimum of 70% recovery as a worst-case scenario based on current recycling of 64.8% as per Defra's most current statistics[xxiii] and a target of 70% set for 2030 as yet in the Waste Strategy for England (2018).

Table 18.11: DCO and MCO Applications Maximum Parameters Summary

Design Component	Maximum DCO Application Parameter	Maximum MCO Application Parameter
• Employment floorspace (GIA)	• 300,000 sq.m	• 26,500

Design Component	Maximum DCO Application Parameter	Maximum MCO Application Parameter
• Internal mezzanine	• 200,000 sq.m	• 3,500
• Development zones	• 7	• 1
• External hardstanding / highways	• Approx. 76,000 sq.m	• N/A
• Earthworks cut and fill volume	• Deficit of approximately 17,000m^3, which is within the tolerance of what is considered to be a balanced cut and fill)	• Deficit of approximately 37,382m^3, although there is flexibility to reduce this deficit.
• Bus terminal and office within Zone 6 of EMG2 Main Site	• Up to 500 sq.m	• N/A
• HGV Parking and amenity building within Zone 7 of EMG2 Main Site	• Up to 500 sq.m	• N/A
• Access works (management suite extension) within EMG1 Works	• N/A	• 500 sq.m

Cumulative Effects

18.2.51. The Study Area for the consideration of cumulative effects comprises a 5km radius from the **Location Plans** (**Documents DCO 2.1** and **MCO 2.1**), which has been used for the assessment within **Chapter 21: Cumulative Impacts (Document DCO 6.21/MCO6.21).**

18.2.52. A precautionary approach has been adopted to ensure that any potentially significant effects (including cumulative effects) have been effectively identified. Information on the likely extent of impacts associated with other developments in the area has also been considered. Where sufficient information exists, all known proposed developments in the surrounding area that could potentially result in cumulative effects have been considered.

18.3. Policy, Guidance and Legislative Context

18.3.1. This section of the chapter is common to both the DCO Application and the MCO Application.

18.3.2. The policy, legislation, and guidance relevant to the assessment of materials and waste for the Proposed Development is detailed in **Table 18.12**.

Table 18.12: Relevant Policy, Legislation and Guidance

Legislation, Policy or Guidance	**Description**
Legislation	
Environment Act 1995, as amended in 2021	The Environment Act 1995 makes provision for targets, plans and policies for improving the natural environment. It sets out clear statutory targets for the protection and regeneration of the natural world in four priority areas, one of which is waste. Part 3 specifically refers to waste and resource efficiency, incorporating: producer responsibility obligations; resource efficiency; managing waste; and waste enforcement and regulation.
The Revised EU Waste Framework Directive 2008/98/EC	Provides a comprehensive foundation for the management of waste across the European Community and gives a common definition of waste. While the UK is no longer a member of the European Union, many of the concepts underpinning the Directive are relevant to the UK's domestic law. Article 3 of the Waste Framework Directive defines waste as "*any substance or object that the holder discards or intends or is required to discard*".
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020	Aims to streamline the legislative system for industrial and waste installations into a single permitting structure for those activities which have the potential to cause harm to human health or the environment.
The Waste Electrical and Electronic Equipment Regulations 2013 (as amended)	Aims to reduce the impact of electrical waste on the environment by encouraging reuse or recycling. Ensures electrical and electronic equipment is recycled in a sustainable way when it reaches end of life.

Legislation, Policy or Guidance	Description
The Controlled Waste (England and Wales) Regulations 2012 (as amended)	Classifies waste as household, industrial or commercial waste. It allows local authorities to implement charges for the collection of waste from non-domestic properties.
The Waste (England and Wales) Regulations 2011 (as amended)	Stipulates the requirement for industry and businesses to implement the waste hierarchy. The Waste (England and Wales) (Amendment) Regulations 2014 amend the 2011 Regulations to clarify that the transfer of controlled waste can be recorded on alternative documentation, such as invoices, instead of waste transfer notes.
The Clean Neighbourhoods and Environment Act 2005	Part 5, Chapter 3 of this Act specifically refers to site waste, where there may be a regulatory requirement to prepare Site Waste Management Plans and to ensure compliance with them.
The Hazardous Waste (England and Wales) Regulations 2005 (as amended)	Introduces measures to control storage, transport and disposal of hazardous waste. The Regulations provide a means to ensure that hazardous waste and any associated risks are appropriately managed.
The Waste Minimisation Act 1998	Enables local planning authorities to take the appropriate steps to reduce and minimise the generation of household, commercial or industrial waste within their area.
The Environmental Protection Act 1990	As of 2008, defines within England, Scotland and Wales the fundamental structure and authority for waste management and control of emissions into the environment. The Act outlines the requirement of the manager of a development to ensure that any excess materials or waste resulting from construction activities are recovered or disposed of without any subsequent adverse effects upon the surrounding environment.
The Control of Pollution (Amendment) Act 1989	The Control of Pollution (Amendment) Act 1989 makes it a criminal offence for a person who is not a registered carrier to transport controlled waste to or from any place in Great Britain. The Act also provides for the seizure and disposal of vehicles used for illegal waste disposal.

Legislation, Policy or Guidance	Description
Policy	
National Planning Policy for Waste (NPPW) 2014	The NPPW sets out detailed waste planning policies for local authorities to consider within their Local Plan or when assessing development. According to the NPPW, local authorities are required to: • Ensure that the planned provision of new capacity and its spatial distribution is based on robust analysis of the best available data and information; • Work jointly and collaboratively with other planning authorities to collect and share data and information on waste arisings; • Ensure that the need for waste management facilities is considered alongside other spatial planning concerns; • Identify need for waste management facilities; • Identify suitable sites and areas for new or enhanced waste management facilities in appropriate locations; and • Monitoring and report on waste arisings and the amounts of waste recycled, recovered or going for disposal.
National Policy Statement for National Networks (NPSNN)	The NPSNN sets out the UK Government's policy for the delivery of nationally significant road and rail networks and how these should be applied, with the following paragraphs of relevance to materials and waste. The NPSNN recognises the importance of protecting human health and the environment by reducing waste safely and carefully in accordance with the principles set out in the waste hierarchy, and to maximise resource use by moving towards a more circular economy as per Paragraph 5.70. Paragraph 5.71 states that: *The applicant should demonstrate that they will adhere to the waste hierarchy, preventing and reducing waste produced in the first place and maximising preparation for reuse and recycling for waste that cannot be prevented. Where possible, applicants are encouraged to use existing materials first, then low carbon*

Legislation, Policy or Guidance	Description
	materials, sustainable sources, and local suppliers. Consideration should be given to circular economy principles wherever practicable, for example by using longer lasting materials efficiently, optimising the use of secondary materials and how the development will be maintained and decommissioned. Applicants should consider and take into account emerging government policy, including Maximising Resources, Minimising Waste, constituting the new Waste Prevention Programme for England and Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction-sites, which provides practical guidance on how to improve appropriate soil reuse on construction-sites and reducing the volume that is sent to landfill.
National Planning Policy Framework (NPPF) 2024	The NPPF sets out the Government's planning policies for England and how these should be applied, with the following paragraphs relating to materials and waste. Paragraph 8 highlights that the purpose of the planning system is to contribute to the achievement of sustainable development through three overarching objectives: economic, social and environmental. The environmental objective requires the planning system to protect and enhance the natural, built and historic environment by "*using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy*". Paragraphs 222 to 225 outline the sustainable use of minerals, which are *"a finite natural resource and can only be worked where they are found*". Therefore, it is essential that sufficient supply is maintained through various planning policies, including safeguarding mineral resources by defining Mineral Safeguarding Areas and Mineral Consultation Areas. Specific guidance under this framework (Planning Practice Guidance) provides further information in support of the implementation of waste planning policy.

Legislation, Policy or Guidance	Description
Waste Management Plan for England 2021	Provides a detailed analysis of the present state of waste management at the national level and considers how the objectives of the Waste Framework Directive will be supported effectively. It outlines the waste hierarchy, which gives priority to waste prevention, followed by preparing for reuse, recycling, other types of recovery and finally disposal (e.g., landfill).
25 Year Environment Plan	The 25 Year Environment Plan sets out government actions to improve, regain and retain the natural world. The Plan sets out high level goals, which includes *"using resources from nature more sustainably and efficiently*" and "*minimising waste*".
Our Waste, Our Resources: A Strategy for England 2018	Sets out how the UK Government will preserve material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. The Strategy also outlines the Government's aims to minimise the damage caused to the natural environment by reducing and managing waste safely and carefully, and by tackling waste crime. It combines actions to take now with firm commitments for the coming years and gives a clear longer-term policy direction in line with the 25 Year Environment Plan.
Leicestershire Minerals and Waste Local Plan up to 2031	This Minerals and Waste Local Plan includes the spatial vision, spatial strategy, strategic objectives, and core policies which guides the future winning and working of minerals within Leicestershire. These also guide the waste management development within the County. Key policies are outlined below at Paragraph 18.3.2.
Resources and Waste Strategy (2022-2050) for Leicestershire	This strategy reflects current global thinking on achieving net-zero climate change targets. It describes the recycling and waste management services to be delivered in Leicestershire from 2022 up to 2050, with a vision to work towards a circular economy and contribute to achieving net-zero carbon by 2050.
UK's Resources and Waste Strategy (2022-2050)	This Strategy sets out the UK's planned transition from the linear economic model of 'take, make, use, throw', to a more circular and sustainable model of waste management. The Strategy includes the following overarching targets:

Legislation, Policy or Guidance	Description
	• zero avoidable waste by 2050; • double resource efficiency by 2050; • zero plastic waste by 2042; and • zero food waste to landfill by 2030.
Guidance	
Planning Practice Guidance (PPG) on waste[xvii], published on 15 October 2015	The PPG, which supplements the NPPF, provides specific guidance to support the implementation of waste planning policy. It focuses on promoting sustainable waste management and ensuring that waste is managed in line with the principles of the waste hierarchy. This hierarchy prioritises waste prevention, followed by reuse, recycling, recovery, and disposal as a last resort. The PPG elaborates on how planning authorities should consider waste management in decision-making, including: • Safeguarding Waste Infrastructure: Ensuring existing waste management facilities are protected from incompatible developments. • Site Allocations: Identifying appropriate sites and areas for new waste management facilities to meet the needs of the local area while minimising environmental impacts. • Plan-Making: Integrating waste management considerations into local plans to align with national strategies and local waste needs. • Climate Change and Waste: Encouraging facilities and practices that contribute to a circular economy and reduce greenhouse gas emissions. This guidance aims to ensure that waste management is integral to the planning process, promoting sustainable practices that reduce reliance on landfill and encourage resource efficiency. It serves as a key tool for local authorities and developers in implementing waste policies effectively.
The Institute of Environmental Management and	Guidance used to assess the potential impacts and effects from **EMG2 Project**, using the process and significance criteria it sets

Legislation, Policy or Guidance	Description
Assessment (IEMA) Guide to Materials and Waste in EIA	out. This guidance is referred to as 'the IEMA Guide' throughout this chapter.
Waste Duty of Care: Code of Practice (2018)	This Waste Duty of Care: Code of Practice was issued under Section 34 of the Environmental Protection Act 1990 and sets out detail on how to safely and responsibly manage wastes. The Code details the actions to be taken to prevent unauthorised treatment or disposal of waste, ensure adequate storage to prevent uncontrolled escape of waste and to properly transfer wastes to third parties.
British Standards Institution (2005) BS 5906:2005 Waste Management in Buildings – Code of Practice	The Standard details the requirements for the safe storage, collection, segregation and on-site treatment for residential and non-residential developments. The standard requires designers to ensure safe and easy access to waste facilities which adhere to the aesthetics of the site whilst avoiding social nuisance. Facilities should support the waste hierarchy and be designed in consultation with service users.

18.3.3. LCC has recently produced the Leicestershire Minerals and Waste Local Plan Up to 2031 which is referred to and used for assessing the operational cumulative effects in this chapter. Key policies applicable to this chapter include the following:

- Policy W1: Waste Management Capacity - "*The County Council will make provision for a sufficient range of waste facilities within the County of Leicestershire to manage the equivalent of the predicted arisings for the County up to and including 2031 and to meet the recycling, composting and recovery targets…*";
- Policy DM1:Sustainable Development - *"[…]Proposals should contribute to the three dimensions (economic, environmental and social) of sustainable development, as well as providing clear evidence of how a proposal would make a positive contribution to reducing its effects on climate change…"* ;Policy DM11: Cumulative Impact – "*Planning permission will be granted for minerals and waste development where it is demonstrated that cumulative impacts on the environment of an area or on the amenity of a local community, either in relation to the collective effect of different impacts of an individual proposal, or in relation to the effects of a number of developments occurring either concurrently or successively, are acceptable*."

18.4. Baseline Conditions

18.4.1. This section of the chapter is common to both the DCO Application and the MCO Application.

Materials

18.4.2. A summary of the baseline conditions for materials, site arisings and waste are presented in this section. The baseline conditions align with the Study Areas defined in paragraph 18.2.14.

18.4.3. The development study area, which relates to **EMG2 Project** as set out in **Chapter 2: Site and Surroundings (Document DCO 6.2/MCO 6.2)**, comprises a mixture of arable farmland at the **EMG2 Works** site, an area of open ground adjoining the rail freight terminal within the **EMG1 Works** (referred to as Plot 16) and **Highways Works** area. The operation and maintenance of all facilities and activities located within the development study area requires products to support arable agriculture including fertilisers, perimeter fencing as well as the intermittent use of bulk products for routine works and repairs of the existing highways and access roads where not part of the public highway (e.g. lighting, paint, concrete, masonry, aggregate and asphalt for minor re-surfacing).

18.4.4. Although at the time of writing no specific data are available on materials currently available for **Highways Works**, professional judgement and guidance, where appropriate, has been used to define current material resource requirements in the development study area (**Table 18.13**). By comparison with regional and national availability of resources, the consumption of materials for routine maintenance by comparable development study area is minimal.

Table 18.13: Material Resource Requirements

Material	Estimated Quantity	Unit
Fertiliser[2]	9.5	tonnes (per annum)
Perimeter Fencing[3]	5.1	Km (over 10 years)
Highways[4]		
Asphalt	2,564	tonnes (over 20 years)[5]

[2] Based upon total agricultural land mass estimated at 102 hectares (ha). Assumed the crops are cereals, the land is 'average' and local rainfall index is 1. The 'Nutrient Management Guide (RB209)' has been used to calculate the phosphate recommendation for wheat with an expected yield of 10 t/ha where straw is incorporated: 80 + (2 x 6.5) = 93 kg/ha.

[3] Total length of northern highways permitter (~1.2km). Fencing specification taken from BS EN 335-1:2006: typically consisting of 2 vertical posts every 2 meters (1.5 meters in height) and 3 rails. Wastage allowance considered 10%.

[4] Total highways length estimated as 2.8 km (1.3 km single-track and 1.5 km dual carriageway) with no street lighting. The materials required include asphalt, aggregate, sub-base, and concrete for kerbing (dual carriageway only). These estimates follow standard UK highway construction guidelines (e.g., Design Manual for Roads and Bridges (DMRB) and BS EN standards). Additional allowances (5–10%) for wastage and site-specific conditions are factored.

[5] Typical worst-case scenario for design lifespan as specified by the Design Manual for Roads and Bridges (DMRB).

Base Course	3,846	tonnes (over 20 years)
Sub-base	10,684	tonnes (over 20 years)
Concrete for Kerbing	540	tonnes (over 20 years)

Availability of Construction Materials

18.4.5. Given that the **EMG2 Project** is classified as Nationally Significant, the assessment of waste arisings has been undertaken with consideration of both regional and national contexts. This dual approach provides a meaningful benchmark against which the scale and potential impacts of the waste generated can be understood. By comparing projected waste quantities to both regional and national waste management capacities and data, the assessment ensures that the conclusions drawn are proportionate, robust, and aligned with the strategic importance of the **EMG2 Project**.

18.4.6. A summary of availability of the main construction materials in Leicestershire, Derbyshire, Nottinghamshire and the UK is presented in **Table 18.14** below. The overview excludes technological products but provides a context in which the assessment for material consumption during construction of the **EMG2 Project** has been undertaken. Totals are provided as either sales, stocks or production depending on the data available for each material type. The comparison of county and national totals is done on a like-for like basis (e.g. sales vs sales) where available data allows. Where data are available over years 2018 to 2024[xviiixix]; the most recent information has been presented. Data is provided by the Government's 'Building materials and components: monthly statistics' unless specified – where feasible, the most up to date data sets have been applied, though it is recognised that much data relates to 2022.

Table 18.14: Availability of Main Construction Materials in Leicestershire, Derbyshire and Nottinghamshire

Material Type	County Provision	UK Provision	Units	Regional Availability as a % of National Availability
Leicestershire				
Sand and Gravel[a]	0.26 (2022)	41.9 (2024)	Mt	0.62
Permitted Crushed Rock[a]	11.42	126.4 (2022)	Mt	9.03
Concrete Blocks[b]	No data.	6.7 (2024)	Mm^2	N/A

Material Type	County Provision	UK Provision	Units	Regional Availability as a % of National Availability
Recycled and Secondary Aggregate[c]	No data.	7[6]4 (2022)	Mt	N/A
Ready-mix Concrete[a]	No data.	12.3 (2022)	Mm^3	N/A
Steel[c]	No data.	5.6[7] (2023)	Mt	N/A
Asphalt[a]	1.2 (2019)	22 (2022)	Mt	17
Derbyshire				
Sand and Gravel[c]	0.82	41.9 (2024)	Mt	1.96
Permitted Crushed Rock[a]	14.59	126.4 (2022)	Mt	11.54
Concrete Blocks	No data	6.7 (2024)	Mm^2	N/A
Recycled and Secondary Aggregate	No data	74 (2022)	Mt	N/A
Ready-mix Concrete	No data	12.3 (2022)	Mt	N/A
Steel	No data	5.6 (2023)	Mm^3	N/A
Asphalt	No data	22 (2022)	Mt	N/A
Nottinghamshire				
Sand and Gravel	0.87	41.9 (2024)	Mt	2.08
Permitted Crushed Rock	0 (most imported from Derbyshire and Leicestershire)	126.4 (2022)	Mt	N/A
Concrete Blocks	No data	6.7 (2024)	Mm^2	N/A
Recycled and Secondary Aggregate	No data	74 (2022)	Mt	N/A
Ready-mix Concrete	No data	12.3 (2022)	Mt	N/A
Steel	No data	5.6 (2023)	Mm^3	N/A
Asphalt	No data	22 (2022)	Mt	N/A

[6] Profile of the UK Mineral Products Industry 2023 pg. 25

[7] https://commonslibrary.parliament.uk/research-briefings/cbp-7317/

Material Type	County Provision	UK Provision	Units	Regional Availability as a % of National Availability
[a] sales [b] stocks [c] production Mt million tonnes Mm^2 million square metres Mm^3 million cubic metres GB: Great Britain (England, Wales and Scotland) figures used where UK figures (including Northern Ireland) are unavailable.				

18.4.7. Further analysis of the data suggests that across the UK, the availability of construction materials typically required for development in terms of stocks, production or sales remains buoyant, although information on steel production is not currently available at a regional level. Future trends are not available for scrutiny, it is noted that there may be short term fluctuations in supply.

Waste

18.4.8. The current land uses within the **EMG2 Works** are understood to generate minimal volumes of site arisings, limited to bi-products produced from the operation of agriculture and the maintenance of highways, including packaging and green waste. Most of these arisings would be expected to be diverted from landfill as a matter of good practice to reuse, recover or recycle materials.

18.4.9. The current land use within the **Highway Works** is existing roads which are likely to produce little to no waste.

18.4.10. The land within the area of **EMG1 Works** is currently unused and is not currently producing any waste.

18.4.11. The data presented in this section confirms the availability of waste management facilities in the expansive study area; these facilities are expected to enable suitable recovery of site arisings generated by **EMG2 Works,** the **Highway Works** and the **EMG1 Works**.

General Waste Management Practices

18.4.12. Based on the Environment Agency's 2023 Waste Data Interrogator – Wastes Received[vi], Leicestershire, Derbyshire and Nottinghamshire host a variety of waste management facilities. The categorisation and number of these facilities are as listed in **Table 18.15** below

Table 18.15: Waste Management Facilities Summary within the Study Area

Facility Type	Number of Sites
Landfill	15
Incineration	9

Facility Type	Number of Sites
Transfer	133
Treatment	125
Metal Recovery	57
Processing	8
Storage	9
Total	**356**
Note: The numbers provided are based on the most recent data available as of November 2024. For the latest updates, please refer to the Environment Agency's official publications.	

Construction Waste

18.4.13. Department for Environment, Food & Rural Affairs (DEFRA) data[v], summarised in **Table 18.16**, shows that within England the recovery rate for non-hazardous construction and demolition wastes (excluding excavation wastes) has remained above 90% since 2010.

18.4.14. This data shows that the recovery rate for non-hazardous C&D waste in England was 92.6% in 2020, the highest percentage across the 11 years for which data is available. Data for the years 2021, 2022, and 2023 have not yet been published. DEFRA typically releases waste statistics with a time lag to ensure data accuracy and completeness. Therefore, the most recent figures available are up to 2020.

18.4.15. Nationally, the UK has achieved remarkable success in waste recovery, with consistent recovery rates above 90% for construction and demolition waste, including non-hazardous materials since 2011. The government's emphasis on adhering to the waste hierarchy—prioritising reduction, reuse, and recycling—has contributed to these high rates. Policies such as landfill taxes and incentives for recycling and recovery have been instrumental in driving the UK's performance.

Table 18.16: Recovery Rate for Non-hazardous C&D Wastes

Year	Generation (Mt)	Recovery (Mt)	Recovery rate (%)
2010	59.2	53.1	89.7
2011	60.2	55.2	91.8

Year	Generation (Mt)	Recovery (Mt)	Recovery rate (%)
2012	55.8	51.0	91.4
2013	57.1	52.2	91.5
2014	61.6	56.4	91.7
2015	63.8	58.4	91.5
2016	66.2	60.6	91.6
2017	68.7	63.6	92.5
2018	67.8	63.2	93.1
2019	68.2	63.7	93.3
2020	59.4	55.0	92.6

18.4.16. Based on the latest EA Wastes Received Data Interrogator for 2023, the distribution of C&D waste across various management routes within Leicestershire, Derbyshire and Nottinghamshire is detailed in **Table 18.17**.

Table 18.17: Waste Management Routes Summary for 2023

County	Waste Management Route	Inert and Non-Hazardous Waste (Tonnes)	Hazardous Waste (Tonnes)	Total Waste (Tonnes)	Percentage (%)
Leicestershire	Incineration, Recycling, Recovery or Transfer	671,929	2,809	674,783	61.8
	Landfill	416,967	0	416,967	38.2
	Total	1,088,896	2,809	1,091,750	100
Derbyshire	Incineration, Recycling, Recovery or Transfer	629,159	33,406	662,565	70.9
	Landfill	271,709	0	271,709	29.1
	Total	900,868	33,406	934,274	100
Nottinghamshire	Incineration, Recycling, Recovery or Transfer	986,209	10,833	997,042	76.9
	Landfill	298,786	0	298,786	22.1

County	Waste Management Route	Inert and Non-Hazardous Waste (Tonnes)	Hazardous Waste (Tonnes)	Total Waste (Tonnes)	Percentage (%)
	Total	1,284,995	10,833	1,295,828	100

18.4.17. This table shows that facilities in Leicestershire received a total of 1,088,896 tonnes of C&D waste, both inert / non-hazardous and hazardous, in 2023. Of this total, 416,967 tonnes (38%) was sent to landfill with the remainder sent to either metal recycling sites, transfer facilities or treatment facilities. The total of 416,967 tonnes sent to landfill is much lower than the average of 583,313 tonnes per annum inert C&D waste that was sent to landfill between 2008 and 2014[8] as stated in LCC's Waste Needs Assessment[xx]. The vast majority (98.9%) of this total of 416,967 tonnes was classified as Waste Category '17 05 04', which is non-hazardous soil and stone waste, with the remainder being stabilised non-reactive hazardous waste.

18.4.18. The 38% of waste sent to landfill in Leicestershire compares unfavourably with the 28.4% of waste sent to landfill in England. Leicestershire's higher landfill rate may be attributed to a combination of factors, including limited access to advanced recovery facilities, lower adoption of recycling initiatives, and the presence of local landfill capacity, which can sometimes discourage investment in alternative solutions. Addressing these challenges will be key to aligning the county's waste management performance with national benchmarks.

18.4.19. **Table 18.18** below sets out the operational capacity of C&D waste facilities within the expansive study area. The table shows that there is currently a total operational capacity of 1.30 Mt per annum of landfill and 2.95 Mt per annum of recycling, reuse and/or transfer respectively.

Table 18.18: Operational capacity of C&D waste facilities within the expansive study

County	Facility Type	Operational Capacity (Mt per annum)
Leicestershire	Landfill	1.00
	Recycling, Reuse or Transfer*	1.06
Derbyshire[9]	Landfill	0.14
	Recycling, Reuse or Transfer*	0.26

[8] Page 31 of the Waste Needs Assessment

[9] 'Derbyshire County Council's Waste Collection and Disposal Update' (2024) and 'Strategy for Dealing with Derbyshire's Waste' (2022).

County	Facility Type	Operational Capacity (Mt per annum)
Nottinghamshire[10]	Landfill	0.16
	Recycling, Reuse or Transfer*	1.63
Total	**Landfill**	**1.30**
	Recycling, Reuse or Transfer*	**2.95**
Notes: * There is also permission granted for two facilities which would provide 0.23 Mt of capacity per annum Note: The landfill capacity data is based on the most recent available figures and may not reflect current capacities.		

Landfill Capacity

18.4.20. LCC advises that projects intending to dispose of waste to landfill must ensure that the receiving facility has adequate capacity to accept waste throughout the development's lifecycle. This requirement supports sustainable waste management practices and minimises the risk of capacity shortfalls.

18.4.21. Furthermore, LCC has indicated that no new landfill proposals or significant expansions are currently planned or anticipated within the county's waste management strategy timeframe (20–25 years). Should any new or extended landfill proposals emerge, the council emphasises the need to align these developments with broader environmental objectives, ensuring that void-space is managed in accordance with sustainable waste management policies and local environmental strategies.

18.4.22. Based on the latest data from the Environment Agency[xxi,xxii], the landfill capacities in Leicestershire, Derbyshire and Nottinghamshire for 2022 and 2023 are provided in **Table 18.19** below. It should be noted that there are no hazardous merchant waste (which refers to any discarded materials from commercial activities that pose a risk to human health or the environment, requiring specialised handling and disposal) landfills currently operating in these counties according to EA data.

[10] Nottinghamshire County Council and Nottingham City Council (2024): Nottinghamshire and Nottingham Waste Needs Assessment: 2022-2023 update

Table 18.19: Leicestershire, Derbyshire and Nottinghamshire Landfill Capacities

County	Landfill Type	Capacity in 2022 (m^3)	Remaining Capacity in 2023 (m^3)	Change in Capacity (m^3)	Change in Capacity (%)
Leicestershire	Non Hazardous	12,670	20,220	+ 7,550	+ 59.59
	Hazardous (restricted[a])	0	0	0	0
	Inert	12,617,182	12,359,915	- 257,267	- 2.04
	Non-hazardous (including stable hazardous waste cells)	10,780468	10,603,925	- 176,543	- 1.64
Derbyshire	Non Hazardous	2,539,318	2,369,098	- 170,220	- 6.70
	Hazardous (restricted[a])	0	0	0	0
	Inert	91,826	53,253	- 38,573	- 42.01
	Non-hazardous (including stable hazardous waste cells)	4,864,104	4,129,622	- 734,482	- 15.10
Nottinghamshire	Non Hazardous	3,923,091	4,080,864	+ 157,773	+4.02
	Hazardous (restricted[a])	0	0	0	0

County	Landfill Type	Capacity in 2022 (m^3)	Remaining Capacity in 2023 (m^3)	Change in Capacity (m^3)	Change in Capacity (%)
	Inert	4,147,585	3,251,235	- 896,350	- 21.61
	Non-hazardous (including stable hazardous waste cells)	0	0	0	0
Total		**38,976,244**	**36,868,132**	**- 2,108,112**	**- 3.19%**
Note: [a] Restricted landfill sites only accept waste from restricted sources and producers, e.g. site operator/managing site.					

18.4.23. The data in this table show a general decrease in landfill capacity across most categories, with no capacity available for hazardous (restricted) waste in 2022 or 2023. The most significant reduction is in inert landfill capacity, which fell by 21.89% between 2022 and 2023. Overall, the total remaining landfill capacity across the three counties decreased by approximately 3.2% during this period, highlighting ongoing pressures on waste management infrastructure.

18.4.24. Baseline data indicates that inert, non-inert and total landfill capacity is likely to become an increasingly sensitive receptor throughout the duration of the construction phase and in operation of **EMG2 Project**.

18.4.25. As of September 2024, the remaining landfill capacity in England (excluding the County Councils listed in Paragraph 18.2.16) was considered to total 302,914,637 m^3**. Table 18.20** below provides a breakdown of capacity.

Table 18.20: England Landfill Capacity

Landfill Type	Capacity in 2023 (m^3)
Non Hazardous	141,534,918
Hazardous (merchant)	9,680,003
Hazardous (restricted)	694,790
Inert	106,584,319
Non-hazardous (including stable hazardous waste cells)	30,536,535
Total	**289,030,565**

Recycling Facilities

18.4.26. Leicestershire hosts several recycling facilities that have evolved over recent years to enhance waste management and recycling capabilities. **Table 18.21** below provides a summary of the total amount of waste received and removed at facilities within Leicestershire, Derbyshire and Nottinghamshire with the capability of recycling inert C&D waste as per data within the EA's Wastes Received Interrogator and Wastes Removed Interrogator. There is no official data on the remaining capacity of these recycling facilities; where possible Annual Waste Reports ('AWR') for each facility have been reviewed.

Table 18.21: Leicestershire, Derbyshire and Nottinghamshire C&D Recycling Facilities 2023 Data

County Council	Wastes Received in 2023 (tonnes)	Wastes Removed in 2023 (tonnes)
Leicestershire	671,929	139,293
Derbyshire	536,953	216,477
Nottinghamshire	853,458	178,431

Energy From Waste

18.4.27. According to the most current Defra statistics[v], there are 28 permitted Energy-from-Waste (EfW) facilities in England as 2022. These facilities had a total capacity of 8.97 million tonnes of capacity per year. 87% of the waste used to generate waste in EfW facilities comprises 'Other wastes' (which includes residues following physical treatment and incineration of waste, residues from industrial processes and sewage, sorting residues, health care and biological wastes). However, they can also accept household (or similar) and wood wastes to generate energy through processes like incineration. The preference for waste from **EMG2 Project** with the potential to be used at EfW facilities should be to re-use where possible, in accordance with the Waste Hierarchy.

18.4.28. As of November 2024, Leicestershire hosts one operational EfW facility: the Newhurst Energy Recovery Facility (approximately 8 miles / 13 kilometres from the **EMG2 Project**). Located near Shepshed, this facility began full operations in June 2023. It processes up to 455,000 tonnes of residual waste annually, generating approximately 42 megawatts (MW) of electricity—sufficient to power around 80,000 homes.

18.4.29. There are two other EfW facilities within the expansive study area. The first is the Biomass Power Plant in Widmerpool, Nottingham which is approximately 12.5 miles / 20 km to the east of the **EMG2 Project**. This plant recycles around 52,000 tonnes of waste wood annually, generating approximately 6.8 megawatts of electricity. The Drakelow Energy Generation Facility near Burton Upon Trent (approximately 13.6 miles / 21.9 kilometres from the **EMG2 Project**) has the capacity to process 169,000 tonnes of non-recyclable Refuse Derived Fuel (RDF) each year, generating 18MW of electricity.

Hazardous Waste

18.4.30. The management and disposal of hazardous waste is a specialist process and usually would involve some interim treatment processes prior to disposal at landfill. Based on the EA's Remaining Landfill Capacity dataset (2023), there are only seven Hazardous Restricted Landfill sites within England for which information on capacity is available, although none of these sites are within 30 miles of the **EMG2 Project**. The total capacity across all seven sites in 2023 was 694,790 m^3. The nearest site for which data is available is Grange Top Quarry Landfill in Ketton Works, Stamford which is located 35 miles to the south-east of the Site. According to the Interrogator, this site currently has no capacity to receive hazardous waste. Of the seven sites, the nearest site that have remaining capacity is located in Kingsbury Road, Sutton Coldfield located 44 km to the south-west of the **EMG2 Project**, which currently has a capacity of 195,048 m^3.

18.4.31. According to the EA's 2023 Wastes Received Interrogator, there is a total of 15 hazardous waste facilities that accept C&D waste in Leicestershire, Derbyshire and Nottinghamshire. The nearest of these sites is the Bardon Waste Transfer Station located in Coalville, which is approximately 8.7 miles / 14km from the **EMG2 Project**. Across these 15 sites, a total of 46,025 tonnes of waste was received in 2023 and a total of 24,021 tonnes was removed.

18.4.32. The calculation within **Table 18.23** shows the void capacity for Hazardous waste sites for 2020 and forecasted for 2025 both at a Regional (i.e. East Midlands) and National level. In all cases the sensitivity is very high.

Table 18.23: Hazardous Waste Landfill Site Sensitivities

Capacity in 2023 (tonnage)[11].	Regional = 2.0 Mt	Nationally = 0.83 Mt
Material received 2023 2023 sensitivity	1M tonnes 1/2.0 x 100% = 50% (Medium)	9.4M tonnes 9.4/12.5 x 100% = 75% (Low)
Projection of material received in 5 Year period (tonnage)	= 5.0 Mt = 0.1M tonnes	= 47 Mt = 5.5% (Very High)

[11] *Using WRAP Waste Density Conversion Factor*

2025 Capacity and sensitivity per annum based on 5-year projection[12] 2025 sensitivity	Insufficient capacity – very high	

18.4.33. The availability of hazardous landfill capacity—particularly at the national level—is extremely limited. Based on the volume of hazardous waste managed and disposed of annually, the remaining voidspace for this waste stream is critically low. Both regional and national sensitivities are categorised as 'Very High', indicating a significant constraint to long-term disposal options for hazardous waste without intervention or the provision of additional capacity.

Operational Waste

18.4.34. Commercial and industrial (C&I) waste is generated by business and industrial activity and will therefore occur widely within the region with a particular concentration in more urbanised areas. Certain elements of the C&I waste stream, such as mixed ordinary C&I waste, can be very similar to household waste and can often be dealt with through similar treatment and disposal processes. C&I waste can also contain hazardous substances which require management at specialist facilities.

18.4.35. Information on C&I waste generation in England is currently provided in the UK Statistics on Waste report[xxiii]. Whilst this report does not provide a regional breakdown of C&I arisings, it estimates that approximately 33.6 million tonnes of C&I waste was generated in England in 2022 with approximately 60% stemming from the commercial sector. Since 2010, the lowest amount of C&I arisings generated in England was 31.7 million tonnes in 2014, whilst the lowest amount was 37.2 million tonnes in both 2018 and 2019. C&I waste accounted for 19% of total waste generation in the UK in 2018. A large proportion of C&I waste comprises packaging, of which 64.8% was recycled in the UK in 2023, which was an increase from the 62.4% recycled in 2022.

18.4.36. C&I waste is currently collected within the expansive study area by a large number of private waste companies. There is also a considerable network of waste facilities that are used to bulk, transfer, treat and dispose of C&I waste.

18.4.37. As set out in **Table 18.23** above, EA data shows that there is a general decrease in landfill capacity across most categories within Leicestershire, Derbyshire and Nottinghamshire, with no capacity available for hazardous (restricted) waste in 2022 or 2023. There is a current capacity of 36,868,132 m^3 for all landfill types across the three counties in 2023, compared to a total of 38,976,244 m^3 in 2022.

18.4.38. Details on the capacity of various types of facilities that accept C&I waste within the wider study area are set out in **Table 18.24** below. All figures stated are in tonnes per annum (t/a). It should

[12] Assuming similar disposal patterns continue, project forward: National 5-Year Projection = 9.4 Mt/year × 5 = 47 Mt. Regional 5-Year Projection = 1.0 Mt/year × 5 = 5 Mt

be noted that data on C&I waste is generally reported on alongside household waste as the waste streams are similar.

Table 18.24: Existing C&I Waste Capacity within the Wider Study Area

County	Composting	Disposal (not landfill)	Recovery	Recycling	Reuse	Transfer	Anaerobic Digestion
Leicestershire[ix]	897	182.5	51,289	637,994	2,013	97,760	0
Derbyshire[vi] *	71,915	0	4,902	145,804	0	381,983	3,784
Nottinghamshire[xiii]	80,345	0	0	1,367,501	0	749,958	394,226
Total	**153,157**	**182.5**	**56,191**	**2,151,299**	**2,013**	**1,299,701**	**428,010**
* There is no data available on the current capacity of waste facilities within Derbyshire. Therefore, figures stated and the average of the last three years of data from the EA's Wastes Received database.							

18.4.39. Further to the data in **Table 18.24**, according to LCC's Annual Monitoring Report (2024)[ix] permission has been granted for the following which could accommodate C&I waste:

- Two recovery operations facilities with a combined capacity of 385,000 t/a; and
- Two recycling operations facilities with a combined capacity of 150,000 t/a.

18.4.40. Details of the capacity set out in relation to hazardous, recycling and EfW facilities within the 'Construction Waste' section above is also applicable to operational waste.

Future Baseline

18.4.41. In the future baseline it is considered that the current land use within the **EMG2 Project** would cease. No significant changes to the future baseline for materials and waste are anticipated in the event that the **EMG2 Project** does not proceed. Therefore this section of the report focuses on the following:

Materials

Sand and Gravel

18.4.42. Projections of future availability of materials within Leicestershire, Derbyshire and Nottinghamshire is set out within **Table 18.25** below. There is no specific future capacity information for recycled and secondary aggregates within these counties.

Table 18.25: Future Capacity of Materials within Leicestershire, Derbyshire and Nottinghamshire

County	Material	Future Capacity	Notes on Potential Additional Capacity
Leicestershire	Sand and Gravel	There is expected be an annual requirement for 1.10 Mt of sand and gravel up to 2031 but a shortfall of sand and gravel reserves of some 7.67 million tonnes is expected over the same period.[viii]	• A planning application (application ref: 2021/0683/03) for the extraction of 900,000 tonnes of sand and gravel at Husbands Bosworth Quarry was granted in January 2023. • There is an application for an extensions to Cliffe Hill Quarry (planning ref.: 2022/EIA/0100/LCC), which would release 30 Mt of reserves. • A total of 3.3Mt of sand and gravel at Lockington (planning ref.: 2019/CM/0244/LCC) which has recently been approved subject to a Section 106 agreement, as resolved in a Development Control and Regulatory Board meeting in April 2025, and 1.01Mt at One Ash Quarry (planning ref.: 2021/EIA/0158/LCC) which is currently awaiting determination. • There are a number of allocations at Cadeby Quarry and Shawell Quarry which remain without planning permission currently.[viii]
	Crushed Rock	There is more than sufficient crushed rock reserves to meet requirements over the period up to 2031, with	It is understood that the operators of Mountsorrel Quarry are likely to submit a planning application for the extension northern and south-eastern areas but this application has not been submitted at the time

County	Material	Future Capacity	Notes on Potential Additional Capacity
		a surplus of 187.46 Mt expected.[viii]	of writing. If an application is submitted and successful, it would lead to increased production of crushed rock within Leicestershire.
	Secondary and Recycled Aggregate	No data available	No information available.
Derbyshire	Sand and Gravel	It is anticipated that approximately 1 Mt of sand and gravel will be produced per year up to 2038.[x]	The Derbyshire and Derby Minerals Local Plan includes policies that support the allocation of new sites and allow for proposals outside allocated areas if necessary.
	Crushed Rock	It is anticipated that approximately 13.88 Mt of crushed rock will be produced per year up to 2038, which is deemed sufficient to last around 38 years at current average production rates.[x]	The existing permitted reserves are considered adequate to meet the forecasted demand. However, the plan allows for extensions to existing sites and the development of new sites if required to maintain supply.
	Secondary and Recycled Aggregate	It is estimated that from 2024 to 2038, Derby and Derbyshire will produce around 3 Mt of recycled aggregate	The Minerals Local Plan includes policies that support the production of recycled and secondary aggregates in appropriate locations. It also emphasizes the safeguarding of existing facilities and encourages the development of new ones to maximise the use of these materials.
Nottinghamshire	Sand and Gravel	There is an estimated sand and gravel shortfall of 11.8 Mt over the Nottinghamshire County Council (NCC) Minerals Local Plan period up to 2036.[xii]	The Minerals Local Plan identifies a need for an additional 17.8 million tonnes of sand and gravel over the plan period to 2036. This shortfall is expected to be met through allocations and proposals for new extraction sites. One such proposal is the Barton in Fabis site, which aims to extract

County	Material	Future Capacity	Notes on Potential Additional Capacity
			approximately 2.5 million tonnes of sand and gravel.
	Crushed Rock	Nether Langwith quarry has planning permission until 2035 at a planned output of 250,000 tonnes of crushed rock per annum.[xii]	Given the substantial existing reserves and low annual production, no immediate additional capacity is planned. The county relies on imports from neighbouring regions, such as Derbyshire and Leicestershire, to meet its crushed rock needs.
	Secondary and Recycled Aggregate	No data available	The Minerals Local Plan supports the use of recycled and secondary aggregates to reduce reliance on primary materials. However, specific targets or planned facilities are not detailed in the available documents.

18.4.43. The table above shows that there is likely to be a shortfall of sand and gravel production in Leicestershire and Nottinghamshire during the construction phase of the **EMG2 Project**. However, there are numerous sites which are awaiting determination on their respective planning applications in Leicestershire, as well as the recent planning permission, subject to the meeting of S106 obligations, for a total of 3.3Mt of sand and gravel at Lockington and land allocations for quarries in Nottinghamshire, which have the potential to alleviate the shortfall. It is expected that Derbyshire will produce 1 Mt of sand and gravel per annum up to 2038.

18.4.44. Both Leicestershire and Derbyshire have the resources to exceed their needs for crushed rock over the duration of the construction phase of EMG2 Project. Nottinghamshire is likely to produce less crushed rock but is still expected to produce 0.25 Mt per annum up to 2035.

18.4.45. Data on the future capacity of secondary and recycled aggregate is only available for Derbyshire, where it is expected that a total of 3 Mt of recycled aggregate will be produced up to 2038.

18.5. Potential Impacts

18.5.1. This section details the assessment of impacts and effects for the **EMG2 Project** during both the construction and operation phases having taken account of the embedded design measures. The section has been split out between the DCO Application and MCO Application.

DCO Application

Embedded Mitigation Measures

18.5.2. This section sets out the embedded design, mitigation and enhancement measures which are relevant to the materials and waste assessment for the construction phase and operation phases of the DCO Application. The design strategy which is embedded as part of the **EMG2 Project**, as set out within Design Approach Document (**Document DCO 5.3**) are considered to be embedded mitigation for the purposes of the assessment presented in this chapter. In the context of the assessment of effects, the design and layout and primary mitigation measures have been incorporated as embedded as part of DCO Application as set out in the submitted Parameters Plan (**Document DCO 2.5**).

18.5.3. Given the current topography of the **EMG2 Works**, a cut and fill strategy is required to produce suitable development plateaus.

18.5.4. An earthworks cut and fill assessment for the **EMG2 Works** has been undertaken (**Appendix 14M**) based on a comparison of existing ground levels against the proposed earthworks levels. The assessment included topsoil material. Overall, it was determined that the majority of excavated material (non-organic) will be reused on-site and that there will be an approximate deficit of 17,000m^3, which is considered to be well within the tolerance for when major earthworks can be deemed to provide a balanced cut and fill exercise. The majority of excavated material (non-organic) is expected to be reused on-site e.g., a cut and fill balance is intended. For the purpose of this assessment, only if excavated material is not required, or is unsuitable for the development or specified receiver sites, it would become waste. Therefore careful consideration that has been given to the earthworks proposals, including the positioning and heights of perimeter 'mitigation mounding' for the **EMG2 Works**.

18.5.5. All of these aspects and features have been taken into account in the design of the **EMG2 Project** and the development parameters and have therefore been assessed as part of the construction and operational stages, as detailed below.

18.5.6. The assessment of the suitability of soils excavated onsite for re-use onsite is outside the scope of this ES Chapter, the assessment of material quality is covered in **Chapter 14: Ground Conditions** (**Document DCO 6.14**) and **Chapter 15: Agriculture and Soils** (**Document DCO 6.15**). Materials extracted and processed offsite are outside the scope of this assessment.

Construction Effects

18.5.7. The likely significant effects for materials and waste associated with the construction phase are set out below.

18.5.8. The potential impacts associated with material consumption and waste generation and disposal during construction are summarised in **Table 18.26** below.

Table 18.26: Construction Material and Waste Impacts

Element	Direct Impacts	Indirect Impacts
Materials	Consumption of natural and non-renewable resources.	• release of greenhouse gas emissions (through transportation); • water consumption; • visual impacts, noise, vibration and other nuisance issues; and • human health.
Waste	Reduction in landfill capacity.	• release of greenhouse gas emissions (through transportation and management); • ecological impacts; and • visual impacts, noise vibration and other nuisance issues.

Consumption of Materials

18.5.9. Key construction materials estimated to be required are presented in **Table 18.27** below. The information provided describes the material type, estimated quantity and any available information relating to the use of the material in the construction of all of the components of the DCO Application.

Table 18.27: Construction Material Estimations for the DCO Application

Material Assets	Quantity for DCO Application (Tonnes)	Use of Material in EMG2 Works and Highways Works
Steel	19,731	Used in concrete reinforcement, sheet piling and drainage equipment.
Concrete	309,817	This includes reinforced concrete for structures, foundations, piling and pre-cast concrete for drainage.
Asphalt Concrete	183,869	Used for the construction of roads.
Stone Mastic Asphalt	16,884	Used as the surface material in the construction of roads.
Aggregates	229,428	Used as material components in concrete and asphalt concrete

Material Assets	Quantity for DCO Application (Tonnes)	Use of Material in EMG2 Works and Highways Works
Insulation	3,473	Used to insulate buildings to improve energy efficiency.
Reinforcing Bar (Rebar)	4,243	Used to reinforcement concrete.
Aluminium	373	Used for a variety of purposes, including structural components, enclosure, roof panels, shelving, and equipment for automated systems.
Glazing	216	Used to allow natural light and views while also providing a barrier against the elements.
Membranes	63	Used for protection and moisture management
Raised Access Floor	169	Used to hide and protect utilities while allowing easy access for maintenance and upgrades.
Paint	71	Used as a decorative enhancement and protective barrier.
Glass Fiber Reinforced Polymer	109	Used to reinforce concrete structures.
Plasterboarding	972	Used for lining interior walls and ceilings in buildings.
Tiles	98	Used for covering surfaces like floors and walls.
Timber	34	Used for decking and shelving.
Coatings	145	Used for protecting concrete floors.
Screed	353	Used to create a smooth, level surface for flooring.
Vinyl	6	Used for flooring and signage/labels
Cladding	3	Used for providing insulation, enhancing aesthetics, and protecting the building's structure from the elements.
Blockwork	60	Used to build internal partition walls and retaining walls.
Earthworks (imported material)	28,900*	Engineered fill material for ground raising and topsoil.

Material Assets	Quantity for DCO Application (Tonnes)	Use of Material in EMG2 Works and Highways Works
* This figure assumes a soil weight of 1.7 tonnes per cubic meter		

18.5.10. The specification of materials is anticipated to be confirmed prior to the commencement of the construction of **EMG2 Works** and **Highway Works**. Using professional judgement to apply the criteria set out in **Table 18.26** above, the sensitivity of material resources is therefore considered medium.

18.5.11. Where data are available, as reported in the Baseline (Section 18.4), the percentage of material resource consumption for **EMG2 Works** and **Highway Works** has been calculated and presented in **Table 18.28** below. This is based on current data rather than future trends.

Table 18.28: Percentage of Material Resource Consumption (DCO)

Material	Production/Sale Data for the Region* (Million Tonnes)	DCO Application Requirements (Tonnes)	Percentage of Available Resource Consumed by EMG2 Project (%)
Primary aggregate	150	56,212	0.04
Ready-mix concrete	15*	309,817	2.06
Asphalt	1.2	200,753	16.7
Steel	7.2*	19,731	0.27
*nationally where regional data unavailable.			

18.5.12. Based on the criteria set out in **Table 18.28** above using professional judgement and considering the nature and scale of **EMG2 Works** and **Highway Works**, the magnitude for material resources consumption is considered minor as one or more materials (primary aggregate and ready-mix concrete) is between 1-5% by volume of the regional baseline availability.

18.5.13. Based on the criteria set out in **Table 18.28**, the significance of effect for material resource consumption is therefore currently considered to be Minor (Not Significant) with respect to all materials with the exception of Asphalt. Whilst the impact of Asphalt is considered Major (and therefore significant) it should be noted that figures relating to asphalt availability are only available for Leicestershire, as no equivalent data has been published Nottinghamshire or Derbyshire[13]. However, given the presence of operational asphalt plants and aggregate

[13] Local Aggregates Assessments ('LAA') for each of the counties focus exclusively on primary aggregates such as sand, gravel, sandstone and limestone.

resources within both Counties, it is anticipated that sufficient supply (i.e. less than 10% of total stocks) is available locally. As such, the total impact on material availability is likely to be reduced and is considered reasonable in the context regional capacity in the study area.

Waste

Demolition Waste

18.5.14. The DCO Application **i**nvolves minimal demolition, limited to possible removal of some over head gantries as part of the **Highways Works**.

18.5.15. The volumes of non-hazardous waste from such works are considered to be relatively low in comparison to the regional capacity. It is expected that a high proportion of the material generated would be recyclable and not go to landfill. The significance of the non-Hazardous / inert waste is considered to be negligible (not significant).

Earthworks

18.5.16. It is anticipated that a balanced cut and fill exercise will be achieved.

18.5.17. Material quality would be assessed to ensure material is placed in a suitable location on-site, such as within the mitigation mounding, minimising the requirement to dispose of excavated material. With off-site disposal volumes expected to be minimal (less than 1% of the regional capacity), the magnitude of impact for earthwork material being disposed of to landfill as non-hazardous or inert waste is assessed as negligible (not significant).

18.5.18. There are no known contamination sources that would cause the ground to be impacted to levels that could classify soils as hazardous waste and therefore the magnitude of impact from hazardous waste from the earthworks is no change (not significant).

18.5.19. Further details on the ground conditions are included in **Chapter 14: Ground Conditions** (**Document DCO 6.14**). This includes an assessment of the materials suitability for reuse of soils and aggregates.

Construction Waste

18.5.20. Waste produced from the construction of buildings within **EMG2 Works** is displayed in **Table 18.29** below. This figure has been calculated using Smart Waste BRE Waste Benchmark Data[xxiv] and assumes the buildings to be constructed are industrial buildings, producing an average quantity of 12.6 tonnes of construction waste per 100 m^2. This data provides an estimate of waste produced during the construction phase only and does not include demolition, excavation, or groundworks waste.

Table 18.29: Construction Waste Summary (DCO)

Total Floorspace of New Buildings (m^2) (excluding mezzanines)	Total Building Construction Waste (tonnes)
300,000	37,800

18.5.21. On the assumption that the recycling rates would be a minimum of 90% to meet national performance, with the remaining 10% sent to landfill, the total amount of construction waste to be recycled is 42,000 tonnes with the remaining 7,800 tonnes to be sent to landfill.

18.5.22. Waste produced from the construction of roads and paved areas within **EMG2 Works** and **Highway Works** has been calculated based on an assumed average wastage rate of 3% of total material use and assuming surface and road base thickness of 0.5m. The anticipated waste volume is displayed in **Table 18.30** below.

Table 18.30: Road and Paved Areas Construction Waste (DCO)

Area of roads and hardstanding (m^2)	Volume of material (m^3)	Estimated construction waste (tonnes)
107,400 m^2	53,700 m^3	1,611 tonnes

18.5.23. Assuming a recycling rate of 90% and the remaining 10% being sent to landfill, 1,450 tonnes will be recycled and 161 tonnes is to be sent to landfill.

18.5.24. The magnitude of impact from the total quantity of construction waste (calculated using **Tables 18.29** and **18.30**) is considered to be negligible, having regard to available capacity. The impact from construction waste is therefore considered to be not significant.

18.5.25. A summary of anticipated construction impacts for both materials use and waste, and their likely effects, is presented in **Table 18.31** below.

Table 18.31: Construction Materials and Waste Impacts and Effects (DCO)

Activity	Activities with Potential impacts on material resource / waste	Sensitivity of Receptor	Description of Magnitude	Significance
Demolition	Demolition of any existing built structures.	Low	Negligible	Negligible

Activity	Activities with Potential impacts on material resource / waste	Sensitivity of Receptor	Description of Magnitude	Significance
Site preparation earthworks	Excavation and filling using site won materials, disposal of unsuitable material	Very High	Negligible	Negligible
Construction	Use of quarried aggregate for construction (Concrete, sub-base, road surfacing)	Medium	Minor	Negligible
Construction	Generation of construction waste	Low	Negligible	Negligible

Transportation of Waste

18.5.26. The movement of waste would be undertaken by road. The extent of the impacts would be proportional to the waste generated and any reduction in waste would reduce the impacts on the road network. During construction works the reuse of material on-site would reduce waste movements. The impacts on traffic (**Chapter 6: Traffic and Transportation** (**Document DCO 6.6**), noise (**Chapter 7: Noise** (**Document DCO 6.7**), air quality (**Chapter 8: Air Quality** (**Document DCO 6.8**) and climate change (**Chapter 19: Climate Change** (**Document DCO 6.19**) are assessed elsewhere in this ES. Any betterment in the reduction of waste generated would automatically reduce the transportation impact.

Operational Effects

18.5.27. The likely significant effects for materials and waste associated with the operational phase of the **EMG2 Works** and **Highway Works** are summarised in this section.

18.5.28. It is assumed that operational waste will comprise standard bi-products associated with warehouse and non-specialised industrial operations. These wastes can generally be grouped into categories based on their source and material composition. Below is an outline of standard wastes associated with warehousing operations:

- Packaging - plastics, cardboard, wood, metal strapping and synthetic polymers such as polystyrene);

- General Waste - includes non-recyclable items like food wrappers, office waste, or small quantities of miscellaneous items;
- Damaged or Unsellable Goods - products that cannot be resold or reused due to damage or expiration;
- Hazardous Waste – batteries, Electrical and Electronic Equipment (WEEE) including outdated or broken machinery, lighting fixtures, or IT equipment, cleaning products and paints, oils / lubricants and solvents used in maintenance; and
- Organic Waste – such as food waste and compostable materials such as biodegradable packaging.

Waste Generation

18.5.29. **Table 18.32** below estimates the likely C&I waste generation from the operations buildings for **EMG2 Works**. These estimates are based upon floor area and appropriate benchmark metrics as outline in Section 18.2. In accordance with relevant British Standards and industry guidance (e.g. BS 5906 and BS EN 15978), waste calculations are typically based on the gross or net internal floor area associated with primary functional spaces. Mezzanine levels are often excluded from these calculations where they are ancillary in nature, not fully enclosed, non-permanent, or do not materially affect occupancy or the intensity of use. As such, the mezzanine floor has not been included within the baseline waste estimates for this development. Should the mezzanine be brought into more intensive use or contribute to operational waste generation in future, a revised assessment can be provided.

Table 18.32: EMG2 Works Building Operation C&I Waste Generation Estimations (DCO)

Description	**Indicative Gross Internal Area (GIA) (m^2) (excluding mezzanine]**	**Weekly General Waste Arisings (Tonnes)**	**Annual General Waste Arisings (Tonnes)**	**Weekly Recycling Waste Arisings (Tonnes)***	**Annual Recycling Waste Arisings (Tonnes)**
Ancillary Offices (20%)	60,000	1,500	78,000	1,050	54,600
Warehouse / Industrial Unit (80%)	240,000	600	27,733	472.5	19,413
Total	**300,000**	**2,100**	**105,733**	**1,522.5**	**74,013**
**recovery targeted at 70%*					

Waste Disposal

18.5.30. Based upon the anticipated operational waste arisings outlined in this chapter and taking into consideration the receptors of energy from waste facilities and landfill facilities, **Table 18.33** below shows the magnitude and sensitivity that the operational wastes would have on waste infrastructure in the expanded study area.

18.5.31. As per IEMA guidance, the assessment considers the percentage depletion of remaining landfill capacity or remaining permitted capacity in other final management capacity (energy from waste facilities). The assessment includes use of landfill, and energy from waste, for general wastes simply to demonstrate the negligible impact upon either option given the small volumes of general wastes.

Table 18.33: Operational Wastes Magnitude and Sensitivity (DCO)

Operational Waste	Assumed Waste Fate	Available Capacity (%)	Sensitivity (%)	Magnitude
General waste	Energy from Waste	450,000 tonnes per annum	<15% High	Negligible
	Recycling centres	>300,000 tonnes per annum	<20% Very High	Negligible
	Combined EfW & Recycling centres	>750,000 tonnes per annum	<9% High	Negligible
	Non- hazardous landfill (90% diversion per annum)	61,799,575 tonnes*	<0.01% Negligible	Negligible
**conversion density considered 5kg/l*				

18.5.32. Based upon the magnitude of impact, and sensitivity of receptors, the operational wastes from **EMG2 Works** will result in a Negligible effect (Not Significant) upon landfill capacity and a Minor Adverse (Not Significant) effect upon recovery facilities within the expansive study area.

Materials

18.5.33. Material use is not included within the assessment of operational circumstances, as all significant material consumption is associated with the construction phase of the Proposed Development. Once operational, the scheme is not expected to involve manufacturing activities

that are material-intensive, given the focus on advanced manufacturing industry. In the event that any material-intensive manufacturing does occur, it is not anticipated that such processes would involve the use of construction materials. Therefore, materials consumption is not considered relevant to the operational phase.

MCO Application

Embedded Mitigation Measures

18.5.34. This section sets out the embedded design, mitigation and enhancement measures which are relevant to the materials and waste assessment for the construction phase and operation phases for the EMG1 Works. In the context of the assessment of effects, the design and layout and primary mitigation measures have been incorporated as embedded as part of the **EMG1 Works** as set out in the submitted **Parameters Plan (Document MCO 2.2)**.

18.5.35. Given the topography of the **EMG1 Works**, site a cut and fill strategy is required to produce a suitable development plateau.

18.5.36. An earthworks cut and fill assessment for **EMG1** Works has been undertaken (**Document MCO 6.14M**). This assessment determined that there will be an approximate deficit of 37,382m^3, which is not considered to provide a balanced cut and fill exercise. However, there is flexibility to reduce this deficit.

18.5.37. This has been taken into account in the design of **EMG1 Works** and the development parameters and have therefore been assessed as part of the construction and operational stages, as detailed below.

18.5.38. The assessment of the suitability of soils excavated onsite for re-use onsite is outside the scope of this ES Chapter, the assessment of material quality is covered in **Chapter 14: Ground Conditions (Document MCO6.14)** and **Chapter 15: Agriculture and Soils (Document MCO6.15)**. Materials extracted and processed offsite are outside the scope of this assessment.

Construction Effects

18.5.39. The likely significant effects for materials and waste associated with the construction phase are set out below.

18.5.40. The potential impacts associated with material consumption and waste generation and disposal during construction are summarised in **Table 18.34** below.

Table 18.34: Construction Material and Waste Impacts

Element	Direct Impacts	Indirect Impacts
Materials	Consumption of natural and non-renewable resources.	• release of greenhouse gas emissions (through transportation); • water consumption; • visual impacts, noise, vibration and other nuisance issues; and • human health.
Waste	Reduction in landfill capacity.	• release of greenhouse gas emissions (through transportation and management); • ecological impacts; and • visual impacts, noise vibration and other nuisance issues.

18.5.41. Key construction materials estimated to be required are presented in **Table 18.35** below. The information provided describes the material type, estimated quantity and any available information relating to the use of the material in the construction of all of the components of the MCO Application.

Table 18.35: Construction Material Estimations for the MCO Application

Material Assets	Quantity for MCO Application (Tonnes)	Use of Material in EMG2 Project
Steel	1,758	Used in concrete reinforcement, sheet piling and drainage equipment.
Concrete	25,511	This includes reinforced concrete for structures, foundations, piling and pre-cast concrete for drainage.
Asphalt Concrete	16,919	Used for the construction of roads.
Stone Mastic Asphalt	1,690	Used as the surface material in the construction of roads.
Aggregates	21,883	Used as material components in concrete and asphalt concrete

Material Assets	Quantity for MCO Application (Tonnes)	Use of Material in EMG2 Project
Insulation	312	Used to insulate buildings to improve energy efficiency.
Reinforcing Bar (Rebar)	370	Used to reinforcement concrete.
Aluminium	31	Used for a variety of purposes, including structural components, enclosure, roof panels, shelving, and equipment for automated systems.
Glazing	15	Used to allow natural light and views while also providing a barrier against the elements.
Membranes	5	Used for protection and moisture management
Raised Access Floor	14	Used to hide and protect utilities while allowing easy access for maintenance and upgrades.
Paint	6	Used as a decorative enhancement and protective barrier.
Glass Fiber Reinforced Polymer	9	Used to reinforce concrete structures.
Plasterboarding	81	Used for lining interior walls and ceilings in buildings.
Tiles	8	Used for covering surfaces like floors and walls.
Timber	3	Used for decking and shelving.
Coatings	12	Used for protecting concrete floors.
Screed	29	Used to create a smooth, level surface for flooring.
Blockwork	5	Used to build internal partition walls and retaining walls.
Earthworks (imported material)	63,549*	Engineered fill material for ground raising and topsoil.
* This figure assumes a soil weight of 1.7 tonnes per cubic meter		

18.5.42. The specification of materials is anticipated to be confirmed prior to the commencement of the construction of **EMG1 Works**. Using professional judgement to apply the criteria set out in **Table 18.8**, the sensitivity of material resources is therefore considered medium.

18.5.43. Where data is available, as reported in the Baseline (Section 18.4), the percentage of material resource consumption for **EMG1 Works** has been calculated and presented in **Table 18.36** below. This is based on current data rather than future trends.

Table 18.36: Percentage of Material Resource Consumption (MCO)

Material	Production/Sale Data for the Region* (Million Tonnes)	EMG1 Works Application Requirements (Tonnes)	Percentage of Available Resource Consumed by EMG1 Works (%)
Primary aggregate	150	21,883	0.01
Ready-mix concrete	15*	25,511	0.17
Asphalt	1.2	18,609	1.55
Steel	7.2*	1,758	0.02
* nationally where regional data unavailable.			

18.5.44. Based on the criteria set out in **Table 18.8** using professional judgement and considering the nature and scale of **EMG1 Works**, the magnitude for material resources consumption is considered negligible as one or more materials (primary aggregate and ready-mix concrete) is less than 1% by volume of the regional baseline availability.

18.5.45. Based on the criteria set out in **Table 18.28**, the significance of effect for material resource consumption is therefore currently considered to be Negligible (Not Significant).

Waste

Demolition Waste

18.5.46. There will be no demolition required for the **EMG1 Works**, therefore it will not be considered further.

Earthworks

18.5.47. It is currently anticipated that a balanced cut and fill exercise will not be achieved and that soil will need to be imported for **EMG1 Works**. However, there is flexibility in earthworks movements and the amount of imported soil may be reduced from what is currently anticipated.

18.5.48. Material quality would be assessed to ensure material is placed in a suitable location on-site, such as within the mitigation mounding, minimising the requirement to dispose of excavated material. With off-site disposal volumes expected to be minimal (less than 1% of the regional capacity), the magnitude of impact for earthwork material being disposed of to landfill as non-hazardous or inert waste is assessed as negligible (not significant).

18.5.49. There are no known contamination sources that would cause the ground to be impacted to levels that could classify soils as hazardous waste and therefore the magnitude of impact from hazardous waste from the earthworks is no change (not significant).

18.5.50. Further details on the ground conditions are included in **Chapter 14: Ground Conditions** (**Document MCO6.14**). This includes an assessment of the materials suitability for reuse of soils and aggregates.

Construction Waste

18.5.51. Waste produced from the construction of buildings within EMG2 Project is displayed in **Table 18.37** below. This figure has been calculated using Smart Waste BRE Waste Benchmark Data[xv] and assumes the buildings to be constructed are industrial buildings, producing an average quantity of 12.6 tonnes of construction waste per 100 m^2. This data provides an estimate of waste produced during the construction phase only and does not include demolition, excavation, or groundworks waste.

Table 37: Construction Waste Summary (MCO)

Total Floorspace of New Buildings (m^2) (excluding mezzanines)	**Total Building Construction Waste (tonnes)**
26,500	3,339

18.5.52. On the assumption that the recycling rates would be a minimum of 90% to meet national performance, with the remaining 10% sent to landfill, the total amount of construction waste to be recycled is 3,005 tonnes with the remaining 334 tonnes to be sent to landfill.

18.5.53. The magnitude of impact from the total quantity of construction waste is considered to be negligible, having regard to available capacity. The impact from construction waste is therefore considered to be not significant.

18.5.54. A summary of anticipated construction impacts for both materials use and waste, and their likely effects, is presented in **Table 18.38**.

Table 18.38: Construction Materials and Waste Impacts and Effects (MCO)

Activity	**Activities with Potential impacts on material resource / waste**	**Sensitivity of Receptor**	**Description of Magnitude**	**Significance**
Site preparation earthworks	Excavation and filling using site won materials, disposal of	Very High	Negligible	Negligible

Activity	Activities with Potential impacts on material resource / waste	Sensitivity of Receptor	Description of Magnitude	Significance
	unsuitable material			
Construction	Use of quarried aggregate for construction (Concrete, sub-base, road surfacing)	Medium	Negligible	Negligible
Construction	Generation of construction waste	Low	Negligible	Negligible

Transportation of Waste

The movement of waste would be undertaken by road. The extent of the impacts would be proportional to the waste generated and any reduction in waste would reduce the impacts on the road network. During construction works the reuse of material on-site would reduce waste movements. The impacts on traffic (Chapter 6: Traffic and Transportation (Document MCO 6.6)), noise (Chapter 7: Noise (Document MCO 6.7)), air quality (Chapter 8: Air Quality (Document MCO 6.8)) and climate change (Chapter 19: Climate Change (Document MCO 6.19)) are assessed elsewhere in this ES. Any betterment in the reduction of waste generated would automatically reduce the transportation impact.

Operational Effects

18.5.55. The likely significant effects for materials and waste associated with the operational phase for the **EMG1 Works** are summarised in this section.

18.5.56. It is assumed that operational waste will comprise standard bi-products associated with warehouse and non-specialised industrial operations. These wastes can generally be grouped into categories based on their source and material composition. Below is an outline of standard wastes associated with warehousing operations:

- Packaging - plastics, cardboard, wood, metal strapping and synthetic polymers such as polystyrene);
- General Waste - includes non-recyclable items like food wrappers, office waste, or small quantities of miscellaneous items;
- Damaged or Unsellable Goods - products that cannot be resold or reused due to damage or expiration;

- Hazardous Waste – batteries, Electrical and Electronic Equipment (WEEE) including outdated or broken machinery, lighting fixtures, or IT equipment, cleaning products and paints, oils / lubricants and solvents used in maintenance; and
- Organic Waste – such as food waste and compostable materials such as biodegradable packaging.

Waste Generation

18.5.57. **Table 18.39** below estimates the likely C&I waste generation from the operations buildings for **EMG1 Works**. These estimates are based upon floor area and appropriate benchmark metrics as outline in Section 18.2. In accordance with relevant British Standards and industry guidance (e.g. BS 5906 and BS EN 15978), waste calculations are typically based on the gross or net internal floor area associated with primary functional spaces. Mezzanine levels are often excluded from these calculations where they are ancillary in nature, not fully enclosed, non-permanent, or do not materially affect occupancy or the intensity of use. As such, the mezzanine floor has not been included within the baseline waste estimates for this development. Should the mezzanine be brought into more intensive use or contribute to operational waste generation in future, a revised assessment can be provided.

Table 18.39: EMG1 Works Building Operation C&I Waste Generation Estimations

Description	**Indicative Gross Internal Area (GIA) (m^2) (excluding mezzanine]**	**Weekly General Waste Arisings (Tonnes)**	**Annual General Waste Arisings (Tonnes)**	**Weekly Recycling Waste Arisings (Tonnes)***	**Annual Recycling Waste Arisings (Tonnes)**
Ancillary Offices	5,300	132.6	3,447.6	46.4	2,412.8
Warehouse / Industrial Unit	21,200	52.9	2,750.8	37.0	1,925.6
Total	**26,500**	**185.5**	**6,198.4**	**83.4**	**4,338.4**
**recovery targeted at 70%*					

Waste Disposal

18.5.58. Based upon the anticipated operational waste arisings outlined in this chapter and taking into consideration the receptors of energy from waste facilities and landfill facilities, **Table 18.40** below shows the magnitude and sensitivity that the operational wastes would have on waste infrastructure in the expanded study area.

18.5.59. As per IEMA guidance, the assessment considers the percentage depletion of remaining landfill capacity or remaining permitted capacity in other final management capacity (energy from waste facilities). The assessment includes use of landfill, and energy from waste, for general wastes simply to demonstrate the negligible impact upon either option given the small volumes of general wastes.

Table 18.40: Operational Wastes Magnitude and Sensitivity

Operational Waste	Assumed Waste Fate	Available Capacity (%)	Sensitivity (%)	Magnitude
General waste	Energy from Waste	450,000 tonnes per annum	<15% High	Negligible
	Recycling centres	>300,000 tonnes per annum	<20% Very High	Negligible
	Combined EfW & Recycling centres	>750,000 tonnes per annum	<9% High	Negligible
	Non- hazardous landfill (90% diversion per annum)	61,799,575 tonnes*	<0.01% Negligible	Negligible
**conversion density considered 5kg/l*				

18.5.60. Based upon the magnitude of impact, and sensitivity of receptors, the operational wastes from EMG1 Works will result in a Negligible effect (Not Significant) upon landfill capacity and a Minor Adverse (Not Significant) effect upon recovery facilities within the expansive study area.

Materials

18.5.61. Material use is not included within the assessment of operational circumstances, as all significant material consumption is associated construction phase of the Proposed Development. Once operational, the scheme is not expected to involve manufacturing or material-intensive activities. In the unlikely event that any manufacturing does occur, it is not anticipated that such processes would involve the use of construction materials. Therefore, materials consumption is not considered relevant to the operational phase.

18.6. Mitigation Measures

18.6.1. This section sets out the additional mitigation and enhancement measures, over and above the embedded mitigation, which are relevant to the materials and waste assessment for the construction phase and operation phases.

18.6.2. The section considers the mitigation measures proposed for the DCO Application and the MCO Application.

DCO Application

Additional Mitigation

Construction

18.6.3. Measures would be implemented to collectively mitigate the impacts identified from both the use of materials and the management of waste in relation to **EMG2 Works**. There is significant synergy between materials re-use and the avoidance of the generation of waste, and therefore there is a substantial overlap between the mitigation measures for materials and waste.

18.6.4. The importance of careful management of materials to promote re-use and waste reduction has been widely recognised by the construction industry. Both legislation and voluntary best practice mechanisms have been developed and implemented. These provide measurable and accountable processes and provide the basis for mitigating environmental effects associated with materials and waste.

18.6.5. The principal mitigation measure relating to this topic is the implementation of the Construction Environmental Management Plane (CEMP) (**Document DCO 6.3A**), which has been submitted and provided as **Appendix 3A**. Phase specific construction environmental management plan (P-CEMP) will be drafted in accordance with the principles set out in the construction environmental management plan and submitted as per draft DCO Requirement 11. The CEMP includes the following:

- Details of the approach to environmental management throughout the construction phase, with the primary aim of mitigating any adverse impacts from construction activity on the identified sensitive receptors;
- methods for the prevention and control of any potential short-term construction phase impacts (e.g., construction dust, and the risk of accidental spillages of contaminating materials) and also permanent impacts (e.g., disturbance to vegetation, archaeology and heritage);
- good materials management methods, such as location of temporary haul routes and re-use of temporary works materials from haul routes, plant and piling mats etc; and
- risk/impact-specific method statements and strategic details of how relevant environmental impacts would be addressed throughout **EMG2 Works**.

18.6.6. Although not required by the regulations, a Site Waste and Materials Management Plan (SWMMP) will be regularly updated during the lifetime of **EMG2 Works**. The SWMMP is provided as **Appendix 18D** (**Document DCO 6.18D**) and identifies:

- The types and likely quantities of construction, demolition and excavation (CD&E) wastes that may be generated as a result of the proposed development;
- relevant reuse, recycling and landfill diversion targets applicable to the proposed development; and
- a review of the waste management measures and procedures to be implemented on-site during construction in line with relevant legislation, guidance and best practice. These measures would set out how the CD&E wastes would be reduced, reused, managed and disposed of.

18.6.7. The SWMMP (**Document DCO 6.18D**) outlines the suitability of material for re-use on-site and off-site in respect to structural and contamination status.

18.6.8. Topsoil strip volumes can be minimised by measurement of organic content of soils with depth, so there is a scientific definition of the interface between topsoil and subsoil rather than a borehole log visual interpretation. This will minimise the volume stripped. Cut and fill of subsoils will then take place to form the earthworks plateaus and the required levels for formation of the infrastructure, which will be designed to balance.

18.6.9. The topsoil removed will first be used in the following hierarchy:

- Topsoil will be set aside for re-use in on-site landscaping requirements (used in permanent works)
- Topsoil will be used to create the various noise / visual bunds (used in permanent works)
- Topsoil requirements for off-site BNG areas will be taken from ground within the **Location Plan** (**Document DCO 2.1**) (used in permanent works)
- Topsoil will be placed back on plots for future development to protect the formation until they are ready to come forward (used in temporary works)
- Topsoil may be used to create surcharge loading if geotechnical conditions require ground improvement (pre-loading technique) (this will be a temporary use)
- Residual topsoil following all these demands being met will be stockpiled for storage for long term duration of the development.

18.6.10. During the extended development programme, topsoil will be advertised for sale for use in agricultural or biodiversity uses or to meet the needs of developments in the region.

18.6.11. As each plot comes forward and topsoil is released from temporary uses, the topsoil recovered can be added to storage, then sold down over a period of time until the next plot is stripped and adds new topsoil to the quantity stored.

18.6.12. Topsoil quantities can be managed through the construction phase of the whole development by additional techniques introduced into the strategy to manage volume by creating additional uses:

- Chemical treatment and / or mixing with subsoils to reduce the organic content and enable treated topsoil to be used in the general earthwork

- Overdig of non sensitive areas (balancing ponds, landscaping areas etc that are not vulnerable to settlement) to create borrow pits to swap usable subsoil material for non-treated topsoil material, again, to be used in the general earthwork

18.6.13. When the development gets to the final plots there is likely to be a small quantity of residual topsoil that needs to be disposed of quickly to facilitate plot construction. This small fraction may be destined for landfill if a suitable home cannot be found at the right time.

18.6.14. The SWMMP (**Document DCO 6.18D**) will:

- Demonstrate the quantity of material to be reused on-site;
- identify the origin of the material to be used on-site, and/or identify the receiver site for surplus material; and
- demonstrate that the material is suitable for reuse and there would be no risk to either human health or the environment by reusing the material either on-site or on the receiver site.

18.6.15. Implementation of the SWMMP (**Document DCO 6.18D**) will ensure that material reuse is maximised by minimising waste at source (reducing the requirement for new construction materials) and during construction. For example, this could include screening, crushing, and recycling of demolition materials on-site, or the use of in-situ recycling of tar bound bituminous materials. Further, the SWMMP allows for imported material to come from donor sites as waste material or material for reuse.

18.6.16. The assumption in this assessment is that all material from the cut and fill exercise to develop a development plateau would be suitable for reuse on-site. The SWMMP controls the quantity of this excavated material classified as waste and this may require the material to be managed in accordance with the Definition of Waste: Development Industry Code of Practise (CL:AIRE, 2011).

18.6.17. The reuse of site won materials would be subject to conformance with material specification and assessment criteria to ensure suitability for use. Any materials that do not initially comply to suitable for use criteria would be treated or processed until suitable for reuse.

Storage of materials and waste

18.6.18. Measures to control the management and temporary storage of materials and waste during construction are detailed within the CEMP (**Document DCO 6.3A**).

18.6.19. It is anticipated that waste would be separated at source where practical, with storage areas laid out to facilitate the segregation of waste material to encourage reuse and recycling; for example, by using colour coded skips. Signage should be used to clearly identify the material to be stored in each area and the site set up should be continuously reviewed and modified where necessary to maximise the opportunity for reuse and recycling.

18.6.20. It is expected that temporary storage areas would be provided with the capacity to store excavated material required for reuse on-site. Best practice guidance recommends that topsoil should not be stored at heights greater than 3m. The area to be used for stockpiling topsoil should be sized appropriately so that the height of the pile does not need to extend above 3m.

Operational Phase

18.6.21. The assessment has concluded that the effects of material consumption and waste generation during the operational phase are not significant. However, best practice design and operation measures to minimise impacts are considered and the occupiers will operate the **EMG2 Works** using existing on-site waste prevention, minimisation and management processes and procedures to drive good practice behaviour and contracts, to maximise action in the highest tiers of the Waste Hierarchy and adherence to the proximity principle. Circular Economy practices will be identified and considered to design out wastes, reduce wastes and to divert materials from landfill, into other productive uses.

18.6.22. Examples of mitigation measures that will be considered to reduce operational materials and operational waste may include the following:

- Operators will engage early with Contractor(s) to identify opportunities to move wastes up the hierarchy through, for example, valorising of municipal and industrial wastes into new and valuable materials using collaboration and regional synergies;
- Exploring opportunities to move the treatment of hazardous wastes up the hierarchy from landfill to recovery or recycling once compositions and tonnages are known. For example, this ES has modelled the significance of impacts of operational wastes by considering the treatment of materials within energy from waste recovery plants or landfill sites. Once the composition and tonnages are better known, the Applicant will explore opportunities to move these wastes up the hierarchy using alternative recovery, valorisation or recycling methods;
- Ensuring that consumables and other materials include a high level of recycled and secondary content where technically and economically feasible;
- Careful estimation and ordering of the operational material needed on-site at any given time to minimise the likelihood of surplus materials. This will also reduce the risk of material being stored on-site for long periods of time, with a risk of damage or decay;
- Source reusable leased plant, assets and other aspects for temporary periods which can then be returned to the supplier for reuse, rather than to procure new components which then have to be sold, recycled or disposed when no longer required;
- The Applicant will engage with suppliers to identify opportunities to procure materials and supplies that afford higher sustainability performances than typical industry standards;
- The Applicant will engage with suppliers to ensure that, where feasible, procurement agreements include takeback schemes wherein suppliers are obliged to take back any packaging as well as surplus or spent materials; and
- The Applicant will engage with local third parties, such as educational establishments, to divert suitable waste materials into use as supplies for local projects or into use within local college courses. This will move wastes up the hierarchy from recycling to reuse.

Management of hazardous waste

18.6.23. It is not expected that any significant quantity of hazardous waste would be produced during the operational phase. Although there would be oily rags and other light plant maintenance wastes that would be hazardous. Any hazardous waste produced during the operational phase would be segregated and stored securely before being disposed of by an approved and appropriately licensed hazardous waste contractor, in accordance with the Hazardous Waste Regulations (as amended 2015) and the associated Hazardous Waste Classification Guidance (2015).

MCO Application

Additional Mitigation

Construction

18.6.24. Measures would be implemented to collectively mitigate the impacts identified from both the use of materials and the management of waste in relation to **EMG1 Works**. There is significant synergy between materials re-use and the avoidance of the generation of waste, and therefore there is a substantial overlap between the mitigation measures for materials and waste.

18.6.25. The importance of careful management of materials to promote re-use and waste reduction has been widely recognised by the construction industry. Both legislation and voluntary best practice mechanisms have been developed and implemented. These provide measurable and accountable processes and provide the basis for mitigating environmental effects associated with materials and waste.

18.6.26. The principal mitigation measures relating to this topic are set out in the construction management framework plan that was approved with the EMG1 DCO.

18.6.27. The following standard measures will be set out in a CEMP for the development of Plot 16 pursuant to Requirement 11 of the EMG1 DCO to minimise the use of materials and generation of waste:

- Topsoil removal and re-use will be undertaken as set out above for the DCO Application;
- Chemical testing of soil to determine the extent that can be re-used on-site; and
- Appropriate storage of materials and waste.

Operational Phase

18.6.28. The assessment has concluded that the effects of material consumption and waste generation during the operational phase are not significant. However, best practice design and operation measures to minimise impacts are considered and the occupiers will operate the **EMG1 Works** using existing on-site waste prevention, minimisation and management processes and procedures to drive good practice behaviour and contracts, to maximise action in the highest tiers of the Waste Hierarchy and adherence to the proximity principle. Circular Economy practices will be identified and considered to design out wastes, reduce wastes and to divert materials from landfill, into other productive uses.

18.6.29. Examples of mitigation measures that will be considered to reduce operational materials and operational waste may include the following:

- Operators will engage early with Contractor(s) to identify opportunities to move wastes up the hierarchy through, for example, valorising of municipal and industrial wastes into new and valuable materials using collaboration and regional synergies;
- Exploring opportunities to move the treatment of hazardous wastes up the hierarchy from landfill to recovery or recycling once compositions and tonnages are known. For example, this ES has modelled the significance of impacts of operational wastes by considering the treatment of materials within energy from waste recovery plants or landfill sites. Once the composition and tonnages are better known, the Applicant will explore opportunities to move these wastes up the hierarchy using alternative recovery, valorisation or recycling methods;
- Ensuring that consumables and other materials include a high level of recycled and secondary content where technically and economically feasible;
- Careful estimation and ordering of the operational material needed on-site at any given time to minimise the likelihood of surplus materials. This will also reduce the risk of material being stored on-site for long periods of time, with a risk of damage or decay;
- Source reusable leased plant, assets and other aspects for temporary periods which can then be returned to the supplier for reuse, rather than to procure new components which then have to be sold, recycled or disposed when no longer required;
- The Applicant will engage with suppliers to identify opportunities to procure materials and supplies that afford higher sustainability performances than typical industry standards;
- The Applicant will engage with suppliers to ensure that, where feasible, procurement agreements include takeback schemes wherein suppliers are obliged to take back any packaging as well as surplus or spent materials; and
- The Applicant will engage with local third parties, such as educational establishments, to divert suitable waste materials into use as supplies for local projects or into use within local college courses. This will move wastes up the hierarchy from recycling to reuse.

Management of hazardous waste

18.6.30. It is not expected that any significant quantity of hazardous waste would be produced during the operational phase. Although there would be oily rags and other light plant maintenance wastes that would be hazardous. Any hazardous waste produced during the operational phase would be segregated and stored securely before being disposed of by an approved and appropriately licensed hazardous waste contractor, in accordance with the Hazardous Waste Regulations (as amended 2015) and the associated Hazardous Waste Classification Guidance (2015).

18.7. Residual Effects

DCO Application

18.7.1. Receptors which were assessed with potential to be significantly impacted during the construction phase have been reassessed with the additional mitigation measures detailed above in place. Careful management of material from the earthworks can avoid material that is not suitable to be reused on-site being sent to landfill. Material designated for an alternative use such as surplus topsoil can be sent to donor sites without classifying the material as waste. In addition, material treated or processed and then reused on-site would reduce what is required for disposal. It is reasonable to assume, that if the material unsuitable for reuse cannot be used on-site then as part of the mitigation in the SWMMP the material is more likely to be managed in a Waste Transfer Station than sent to landfill. A small proportion of any earthwork material sent to a waste transfer station would be sent to landfill reducing the impact to a **negligible** significance. This summary concludes that **EMG2 Works** and **Highways Works** would not give rise to any significant residual effects.

MCO Application

18.7.2. As the **EMG1 Works** is not expected to give rise to any significant effects prior to additional mitigation measures, the impact will be **negligible** and therefore, no significant residual effects are expected to occur.

EMG2 Project

18.7.3. With due regard to the additional mitigation measures that will be employed for both the DCO Application and MCO Application, it is anticipated that potential impacts of the combined **EMG2 Project** on both material consumption and waste generation would be **negligible** and therefore, no significant residual effects are expected to occur.

18.8. Cumulative Effects

18.8.1. There may be additional impacts on materials use and waste disposal when the **EMG2 Project** is assessed together with other schemes. The assessment of construction waste is included in the baseline assessment within this chapter with a review of capacity capturing the effects from any other scheme currently operating and feeding the landfill sites.

18.8.2. The LCC Minerals and Waste Local Plan identifies the potential increase in capacity for minerals and landfill volume. The Barwell and Earl Shilton sustainable urban extension were the exception and the plan identified a requirement for new waste sites to be incorporated into the employment land allocated within the master planning of these urban extensions.

18.8.3. Of the 12 committed developments deemed applicable to the cumulative assessment of the **EMG2 Project** (as set out in **Chapter 21: Cumulative Impacts, Document DCO 6.21/MCO 6.21)** 11 are considered to be relevant to this Chapter. The only development not deemed to be applicable is the proposed solar farm at Donington Park Service Area, Jct 23A (Application Ref. 23/01712/FULM) as solar farms require very little of the materials that will be required for the **EMG2 Project** and produce very little waste during either the construction or operational phases. The remaining developments comprise residential and employment use projects that

would broadly use similar materials in their construction and produce similar waste streams during their operation, should they receive planning permission.

18.8.4. A review of waste facilities within the 5 km radius of the **Location Plans (Documents DCO 2.1** and **MCO 2.1)** identified that there are two facilities within this zone, Lockington Quarry Landfill Site and Shardlow Quarry, which could accept waste that would be produced during both construction and operational phases of those developments. According to EA data[vii], These two facilities currently have a combined total remaining capacity of 0.12 Mt. There is also another facility approximately 1 km outside the 5km radius, Winking Hill Ash Disposal, that could accept this construction and operational phase wastes. This facility has a total remaining capacity of 0.27 Mt.

18.8.5. In conclusion, future schemes will generate construction and operational waste and feed into the local waste management facilities, diminishing the capacity available for the **EMG2 Project**. However, regional development also provides opportunities for local sources of material – both through donating surplus earthwork material and/or through extensions to quarries. Other schemes can also act as receiver sites for any surplus material that arises as a result of the **EMG2 Project**. Overall, it is expected that the cumulative effects will increase the impacts from the construction and operational waste generated by the **EMG2 Project** but as the volume of waste compared to the waste management capacity is small, the effect is assessed to be not significant.

18.9. Summary of Effects and Conclusions

DCO Application

Materials

18.9.1. It is anticipated that a large quantity of materials would be required for the construction of the **EMG2 Works** and **Highways Works** though it has been determined that there is sufficient availability within both the expansive study area and the UK.

18.9.2. The design and mitigation measures outlined would ensure the efficient use of material assets on-site, the reuse of material is made a priority and recycled or secondary material is used wherever technically appropriate and economically feasible. This would be in line to achieve the regional percentage targets specified in Leicestershire. Overall, with the use of mitigation measures in place as identified above, it is considered that the **EMG2 Works** and **Highways Works** would not give rise to any significant residual effects.

Waste

18.9.3. The **EMG2 Works** and **Highways Works** will be a generator of waste during both construction and operation. The key environmental effect resulting from the generation and management of waste is the impact on reduction or alteration in the regional capacity of waste infrastructure. The mitigation measures outlined would ensure the implementation of circular economy and the waste hierarchy principles, aimed to minimise the generation of waste in the first place.

18.9.4. A worst-case scenario is anticipated where inert waste would generate the largest quantities of waste. In a worst-case scenario, non-hazardous waste arisings are anticipated to be less than 1 percent of the regional non-hazardous landfill void capacity.

18.9.5. Potential arising of hazardous waste is not yet been quantified and worst-case scenario does not anticipate hazardous waste arisings to be greater than the 0.35 percent of the regional hazardous landfill void capacity.

18.9.6. Following the implementation of the design and mitigation measures, as outlined within the assessment, it is concluded that **EMG2 Works** and **Highways Works** would not give rise to any significant residual effects.

18.9.7. A summary of effects and mitigation is provided in **Table 18.41** below.

MCO Application

Materials

18.9.8. It is anticipated that a much smaller quantity of materials would be required for the construction of **EMG1 Works** and it has been determined that there is sufficient availability within both the expansive study area and the UK.

18.9.9. The design and mitigation measures outlined would ensure the efficient use of material assets on-site, the reuse of material is made a priority and recycled or secondary material is used wherever technically appropriate and economically feasible. This would be in line to achieve the regional percentage targets specified in Leicestershire. It is considered that **EMG1 Works** would not give rise to any significant residual effects.

Waste

18.9.10. **EMG1 Works** will be a generator of waste during both construction and operation, albeit to a much smaller extent.

18.9.11. A worst-case scenario is anticipated where inert waste would generate the largest quantities of waste from **EMG1 Works**. In a worst-case scenario, non-hazardous waste arisings are anticipated to be less than 1 percent of the regional non-hazardous landfill void capacity.

18.9.12. Potential arising of hazardous waste is not yet been quantified and worst-case scenario does not anticipate hazardous waste arisings to be greater than the 0.35 percent of the regional hazardous landfill void capacity.

18.9.13. Following the implementation of the design and mitigation measures, as outlined within the assessment, it is concluded that **EMG1 Works** would not give rise to any significant residual effects.

18.9.14. A summary of effects and mitigation is provided in **Table 18.42** below.

EMG2 Project

18.9.15. With due regard to the additional mitigation measures that will be employed for both the DCO Application and MCO Application, it is anticipated that potential impacts of the **EMG2 Project** on both material consumption and waste generation would be negligible and therefore, no significant residual effects are expected to occur.

Table 18.41: Summary of Effects and Mitigation for the DCO Application (EMG2 Works and Highway Works)

Description of the Effect	Sensitive Receptor	Significance of Effect	Design, Mitigation, Enhancement measures	Residual Effect
Construction				
Consumption of material resources	Material resource availability	Negligible Adverse (Not Significant))	Site Waste and Materials Management Plan	**Negligible Adverse** (Not Significant)
Disposal and recovery of waste	Landfill void capacity	Negligible Adverse (Not Significant)	Construction Environmental Management Plan Site Waste and Materials Management Plan Earthworks Strategy 90% Landfill Diversion Target	**Negligible Adverse** (Not Significant)
Operational Phase				
Consumption of material resources	Material resource availability	Minor Adverse (Not Significant)	Operational Environmental Management Plan	**Negligible Adverse** (Not Significant)
Disposal of waste	Landfill void capacity	Negligible Adverse (Not Significant)	Operational Environmental Management Plan	**Negligible Adverse** (Not Significant)
Recovery of waste	Energy from waste and recycling centres	Minor Adverse (Not Significant)	Operational Environmental Management Plan	**Minor Adverse** (Not Significant)

Table 18.42: Summary of Effects and Mitigation for the MCO Application (EMG1 Works)

Description of the Effect	Sensitive Receptor	Significance of Effect	Design, Mitigation, Enhancement measures	Residual Effect
Construction				
Consumption of material resources	Material resource availability	Negligible Adverse (Not Significant)	-	**Negligible Adverse** (Not Significant)
Disposal and recovery of waste	Landfill void capacity	Negligible Adverse (Not Significant)	Construction Environmental Management Plan Earthworks Strategy 90% Landfill Diversion Target	**Negligible Adverse** (Not Significant)
Operational Phase				
Consumption of material resources	Material resource availability	Minor Adverse (Not Significant)	Operational Environmental Management Plan	**Negligible Adverse** (Not Significant)
Disposal of waste	Landfill void capacity	Negligible Adverse (Not Significant)	Operational Environmental Management Plan	**Negligible Adverse** (Not Significant)
Recovery of waste	Energy from waste and recycling centres	Minor Adverse (Not Significant)	Operational Environmental Management Plan	**Minor Adverse** (Not Significant)

References

[i] IEMA (2020): IEMA guide to: Materials and Waste in Environmental Impact Assessment. Guidance for a proportionate approach. https://www.iema.net/media/0t5fwyhj/iema-materials-and-waste-in-eia-march-2020.pdf

[ii] National Highways (formerly Highways England) (2019): Design Manual for Roads and Bridges; LA 110 Material assets and waste. Revision 0. https://www.standardsforhighways.co.uk/tses/attachments/6a19a7d4-2596-490d-b17b-4c9e570339e9?inline=true

[iii] Department for Business and Trade Monthly 'Bulletin of Building Materials and Components': November 2024: https://www.gov.uk/government/collections/building-materials-and-components-monthly-statistics-2012

[iv] Natural England (2024); MAGIC Mapping: https://magic.defra.gov.uk/magicmap.aspx

[v] Department for Environment, Food & Rural Affairs ('DEFRA') (2024) UK Statistics on Waste: https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste

[vi] Environment Agency (2023): Waste Data Interrogator; https://www.data.gov.uk/dataset/59ab8448-3905-49c6-9122-ae762f96f66b/2023-waste-data-interrogator

[vii] EA 'Remaining Landfill Capacity, England' (2024): https://environment.data.gov.uk/defra/6d0cd361-d465-11e4-81cd-f0def148f590/details

[viii] Leicestershire County Council (2023) Local Aggregate Assessment

[ix] Leicestershire County Council (2024) Authority Monitoring Report 2022-2023

[x] Derbyshire County Council (2024) Local Aggregate Assessment

[xi] Nottinghamshire County Council and Nottingham (2023) Local Aggregate Assessment

[xii] Nottinghamshire County Council (2021) Minerals Local Plan

[xiii] Nottinghamshire County Council and Nottingham City Council (2023): Nottinghamshire and Nottingham Waste Needs Assessment: 2022-2023 update

[xiv] British Standards Institute (2005). 'BS 5906:2005 Waste Management in Buildings – Code of Practice'

[xv] CIRIA (Construction Industry Research and Information Association): benchmarks on waste densities for construction and commercial activities.

[xvi] European Waste Catalogue (EWC): COMMISSION DECISION of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste.

[xvii] Ministry of Housing, Communities and Local Government (October 2015): Planning practice guidance; Waste. https://www.gov.uk/guidance/waste

[xviii] Department for Business and Trade. (2023). 'Monthly Bulletin of Building Materials and Components.' Available at: https://www.data.gov.uk/dataset/75ee36ed-21f7-4d7b- 9e7c-f5bf4546145d/monthly-statistics-of-building-materials-and-components

[xix] Mineral Products Association. (2023). 'Profile of the UK Mineral Products Industry'. Available at: https://mineralproducts.org/MPA/media/root/Publications/2023/Profile_of_the_UK_Mineral_Products_Industry_2023.pdf

[xx] Leicestershire County Council (2017) Waste Needs Assessment

[xxi] Environment Agency. (2023). '2022 Remaining Landfill capacity, England

[xxii] Environment Agency. (2024). '2023 Remaining Landfill capacity, England – Version 1'. Available at: https://data.gov.uk/dataset/237825cb-dc10-4c53-8446- 1bcd35614c12/remaining-landfill-capacity

[xxiii] Department for Environment, Food and Rural Affairs. (2023). 'UK Statistics on Waste'. Available at: https://www.gov.uk/government/statistics/uk-waste-data/uk- statistics-on-waste

[xxiv] Smart Waste BRE Waste Benchmark Data (2012)