Preliminary Environmental Information Report Volume 2

Appendix 14.1 Material Assets and Waste Forecast Calculations

LLK1-ARU-REP-ENV-000014_AP14.1

Version 0.0

January 2026

Contents

1 Introduction 1
1.2 Material 1
1.3 Waste 7

Table 1.1: Key characteristics of the proposed Underground HVAC Cables for the Southern Route option and Northern Route option 2
Table 1.2: Material assets required for construction of the proposed Underground HVAC Cables. 2
Table 1.3: Material assets required for construction of the proposed Underground HVDC Cables 4
Table 1.4: Construction key material assets consumption for the proposed Underground HVDC Cables and HVAC Northern Route option 4
Table 1.5: Construction key material assets consumption for the proposed Underground HVDC Cables and HVAC Southern Route option 5
Table 1.6: Material assets required for construction of the proposed Landfall. 5
Table 1.7: Type of material and potential sources. 6

Inset 1.1: Regional non-hazardous landfill capacity future baseline. 8
Inset 1.2: Regional inert landfill capacity future baseline. 8
Inset 1.3: Regional hazardous landfill capacity future baseline. 9
Inset 1.4: National hazardous landfill capacity future baseline. 9
Inset 1.5: Waste Hierarchy. 10

1 Introduction

1.1.1 This appendix provides the available information to date regarding the key materials required for the Propose Onshore Scheme. Where possible a comparison has been made between the consumption of material required for the different scenarios and the worst case identified. The scenarios and options presented are in **Chapter 2 Description of the Proposed Scheme**.

1.2 Material

Materials for construction

1.2.1 Information regarding the materials required for construction is limited at this stage of the Proposed Onshore Scheme design. The following section details the information available for the Preliminary Environmental Information Report (PEIR).

Material asset requirements

Kiln Lane Substation

1.2.2 At the time of writing there is no available data for the material quantities required for the construction of Kiln Lane Substation. Therefore, an assessment of effects is not possible at this stage.

1.2.3 An indicative Bill of Quantities is expected to be reported in the Environmental Statement (ES). Further assessment will be completed based on the available information provided at ES.

Proposed Underground High Voltage Alternating Current (HVAC) Cable Corridor

1.2.4 Two route options for the proposed Underground HVAC Cable Corridor have been considered as described in **Chapter 5 EIA Approach and Methodology**. In the HVAC Cable Northern Route Option, only infrastructure for the Proposed Onshore Scheme has been assessed. For the HVAC Cable Southern Route Option, the HVAC Cable Route Proposed Onshore Scheme Infrastructure and ducting for Sea Link Scenario has been assessed as the worst case.

1.2.5 The Southern Route option is approximately 2.1km in length and will be shared with Sea Link. The Northern Route option is approximately 2km in length and will be occupied by the Proposed Onshore Scheme only.

1.2.6 The key characteristics of the proposed Underground HVAC Cables for the Southern Route option and Northern Route option are presented in **Table 1.1,** further information is provided in **Chapter 2 Description of the Proposed Scheme.**

1.2.7 Both route options lie within areas of the Minerals Consultation Area (MCA), see **Figure 14.2 Mineral designations.**

1.2.8 The types of key materials for the proposed Underground HVAC Cables for the Southern Route option and Northern Route option are presented in **Table 1.2.**

Table 1.1: Key characteristics of the proposed Underground HVAC Cables for the Southern Route option and Northern Route option

Details of proposed working area	Northern Route option (m)	Southern Route option
Construction working width	63m typically	94m typically
Trench width/ depth	Up to 2.45m x1.5m	Up to 2.45m x1.5m
No of trenches	2	5

Table 1.2: Material assets required for construction of the proposed Underground HVAC Cables.

<table>
<tr><th colspan="2" rowspan="2">Details of material assets required for the proposed HVDC</th><th>Northern Route option</th><th>Southern Route option</th></tr>
<tr><th colspan="2">Quantities of material assets required</th></tr>
<tr><td colspan="2">Fencing</td><td>123m</td><td>123m</td></tr>
<tr><td rowspan="2">Aggregates</td><td>Type 1</td><td>157 tons</td><td>157 tons</td></tr>
<tr><td>6f3</td><td>1,007 tons</td><td>4,484 tons</td></tr>
<tr><td colspan="2">Cement bound sand (Sand 10: Cement 1)</td><td>2,200 tons</td><td>4,400 tons</td></tr>
<tr><td colspan="2">Fibre Duct</td><td>6,600m</td><td>13,200m</td></tr>
<tr><td colspan="2">Duct (trench)</td><td>6,600m</td><td>13,200m</td></tr>
<tr><td colspan="2">Duct (HDD)</td><td>-</td><td>-</td></tr>
<tr><td colspan="2">Tile/Tape</td><td>-</td><td>-</td></tr>
<tr><td colspan="2">Cable AIL (drums) (800m/drum)</td><td>17Nr</td><td>18Nr</td></tr>
<tr><td rowspan="2">Drainage Gravel</td><td>Field</td><td>1,198 tons</td><td>1,198 tons</td></tr>
<tr><td>Restorative</td><td>444 tons</td><td>997 tons</td></tr>
<tr><td colspan="2">Kerbs</td><td>98Nr</td><td>98Nr</td></tr>
<tr><td colspan="2">Geo-text</td><td>7,176m</td><td>7,176m</td></tr>
<tr><td colspan="2">Hot Rolled Asphalt (HRA)</td><td>2,600 tons</td><td>2,600 tons</td></tr>
</table>

Proposed Converter Station

1.2.9 The proposed Converter Station would comprise approximately 11 main buildings. The current design indicates the buildings will have similar characteristics in envelop and structural design, primarily comprising a primary steel frame either using trusses or portal frames (the structural systems will be hidden by the building cladding). It is assumed that long spans will be required to provide column free internal spaces for high voltage equipment. It is expected that the wall cladding will span vertically between horizontal cladding rails, but horizontal spanning cladding is likely to also be acceptable. Roof sheeting is likely to be supported on purlins spanning between the structural bays. Openings in the walls and roofs will be framed out using secondary steelwork.

1.2.10 **Chapter 2 Description of the Proposed Scheme** provides details on the delivery of the access road/the Fromus Bridge at the proposed Converter Station Site. The worst-case structure would have a 6m clearance requiring a 62m length approach ramp.

1.2.11 At the time of writing there is no available data for the material quantities required for the construction of the proposed Converter Station and the Fromus Bridge. Therefore, an assessment of effects is not possible at this stage.

1.2.12 An indicative Bill of Quantities is expected to be reported in the ES.

Proposed Underground High Voltage Direct Current (HVDC) Cable Corridor

1.2.13 The proposed Underground HVDC Cable Corridor comprises a combination of open trench cutting and Horizontal Directional Drilling (HDD) trenchless crossings, as detailed in **Chapter 2 Description of the Proposed Scheme.**

1.2.14 The proposed HVDC Cable Corridor has two route options: a Western Route option or an Eastern Route option as detailed in **Chapter 2 Description of the Proposed Scheme.** For the assessment, available data on the proposed construction materials required for the Western Route has been used. Based on the length of the Western Route and Eastern Route, required quantities of materials would be similar. Therefore, the Eastern Route is unlikely to generate significant effects.

1.2.15 The proposed Underground HVDC Cables would be laid in sections up to 1.5km in length. These would be connected at joint bays with no above ground structures. The exact number of these joint bays will be confirmed as the design develops.

1.2.16 The proposed working width is up to 46m (typical). The trench would be 2.45m wide and 1.5m deep. The anticipated dimensions of the joint bays are 20m long x 4m wide and 1.5m deep with 1.2m of cover.

1.2.17 The proposed Underground HVDC Cable Corridor is located partially within the MCA, see **Figure 14.2 Mineral designations**.

1.2.18 The materials required for the construction of the proposed Underground HVDC Cables are presented in **Table 1.3**.

Table 1.3: Material assets required for construction of the proposed Underground HVDC Cables

Details of material assets required for the proposed Underground HVDC Cables		Quantities of material assets required
Fencing		43,756m
Aggregates	Type 1	1,624 tons
	6f3	109,099 tons
Cement bound sand (Sand 10: Cement 1)		10,775 tons
Fibre Duct		15,306m
Duct		45,918m
Duct (HDD)		16,674m
Tile/Tape		45,918Nr
Cable AIL (drums) (800m/drum)		72Nr
Drainage Gravel	Field	9,879 tons
	Restorative	3,086m
Kerbs		944Nr
Geo-text		23,088m
Hot Rolled Asphalt (HRA)		1,417 tons

Table 1.4: Construction key material assets consumption for the proposed Underground HVDC Cables and HVAC Northern Route option

Material Asset	Production/ Sales Data for the Region/ UK	Proposed Scheme Requirements	Percentage of available resource consumed by the Proposed Onshore Scheme (%)
Primary aggregates	Sand and Gravel and Crushed Rock: 125,479Mt	1,781 tons For CBS: 11,795	0.011%
Cement bound sand (Sand: Cement 10:1) (CBS)	Cement: 7,689,000 tonnes*	Cement only: 1,180 tonnes	0.015%
Asphalt	2,750,000 tonnes	4,017 tonnes	0.14%
*Nationally where regional data is unavailable			

Table 1.5: Construction key material assets consumption for the proposed Underground HVDC Cables and HVAC Southern Route option

Material Asset	Production/ Sales Data for the Region/ UK	Proposed Scheme Requirements	Percentage of available resource consumed by the Proposed Onshore Scheme (%)
Primary aggregates	Sand and Gravel and Crushed Rock: 125,479Mt	1,781 tons For CBS: 13,795	0.012%
Cement bound sand (Sand: Cement 10:1) (CBS)	Cement: 7,689,000 tonnes*	Cement only: 1,380 tonnes	0.018%
Asphalt	2,750,000 tonnes	4,017 tonnes	0.14%
*Nationally where regional data is unavailable			

Landfall Site

1.2.19 The cables are protected within ducts which link the transition joint bay (TJB) to the location offshore where the proposed Offshore HVDC Cables are installed on the seabed. There is no above ground infrastructure required at the proposed Landfall. Further details are provided in **Chapter 2 Description of the Proposed Scheme**.

1.2.20 The materials required for the construction phase proposed for the proposed Landfall are presented in **Table 1.6.** The proposed construction materials available do not include key materials and are free from known issues regarding stock and supply. Therefore, the materials presented in **Table 1.6** have not been included in the assessment. A further assessment will be completed based on available information provided at ES.

Table 1.6: Material assets required for construction of the proposed Landfall.

Details of material assets required for the proposed Landfall	Quantities of material assets required
Aggregates 6f3	4,752 tons
Duct (HDD)	3,702m
Geo-text	1,650m

Potential sources of materials

1.2.21 The potential sources of key materials for the Proposed Onshore Scheme are also presented in **Table 1.7**. The sources have been based on resource availability and proximity to the Proposed Onshore Scheme, as provided in the design data.

1.2.22 Aggregates and concrete will be sourced from Breedon Flixton Quarry and Concrete Plant located approximately 19km from the Proposed Onshore Scheme.

Table 1.7: Type of material and potential sources.

Material		Source 1	Source 2	Source 3
Fencing		Heras Doncaster: Apex Building, 1 Water Vole Way, DN4 5JP, Doncaster		
Drainage Gravel (restorative)		Breedon Flixton Quarry & Concrete Plant - Aggregates Park Rd, Bungay NR35 1NN	Breedon Wangford Quarry - Aggregates Hill Rd, Wangford, Suffolk NR34 8AR	Aggmax Transport Ltd Lawn Farm Quarry, Wetherden, Stowmarket IP14 3JU
Aggregates	Type 1			
	6f3			
Concrete		Breedon Flixton Quarry & Concrete Plant - Aggregates Park Rd, Bungay NR35 1NN Proposed Scheme Concrete Plant at proposed Converter Station is a potential		
Hot Rolled Asphalt		Tarmac Trowse Asphalt Plant Bracondale Old Station Yard, Trowse Newton, Norwich NR1 2EG		
Kerbs		Longwater (South East) Ltd Oaks Drive Newmarket Suffolk, CB8 7SX		
Geo-text		Terram North Yorkshire HG5 0FF		
Fibre Duct (Trench)		Emetelle UK Derby		

Material	Source 1	Source 2	Source 3
Duct (trench)			
Tile/Tape			
Duct (HDD)	Emtelle Scandinavia Vardevej 140 7280 Sønder Felding, Denmark		
Transformer	Port of Lowestoft		
Cable AIL (drums) (800m/drum)			
Site Accommodation	TBC in the subsequent ES		

Materials containing recycled content

1.2.23 Breedon Quarry provides recycled and secondary aggregates for the production of the following:

a. asphalt;
b. concrete;
c. building products; and
d. other aggregate applications.

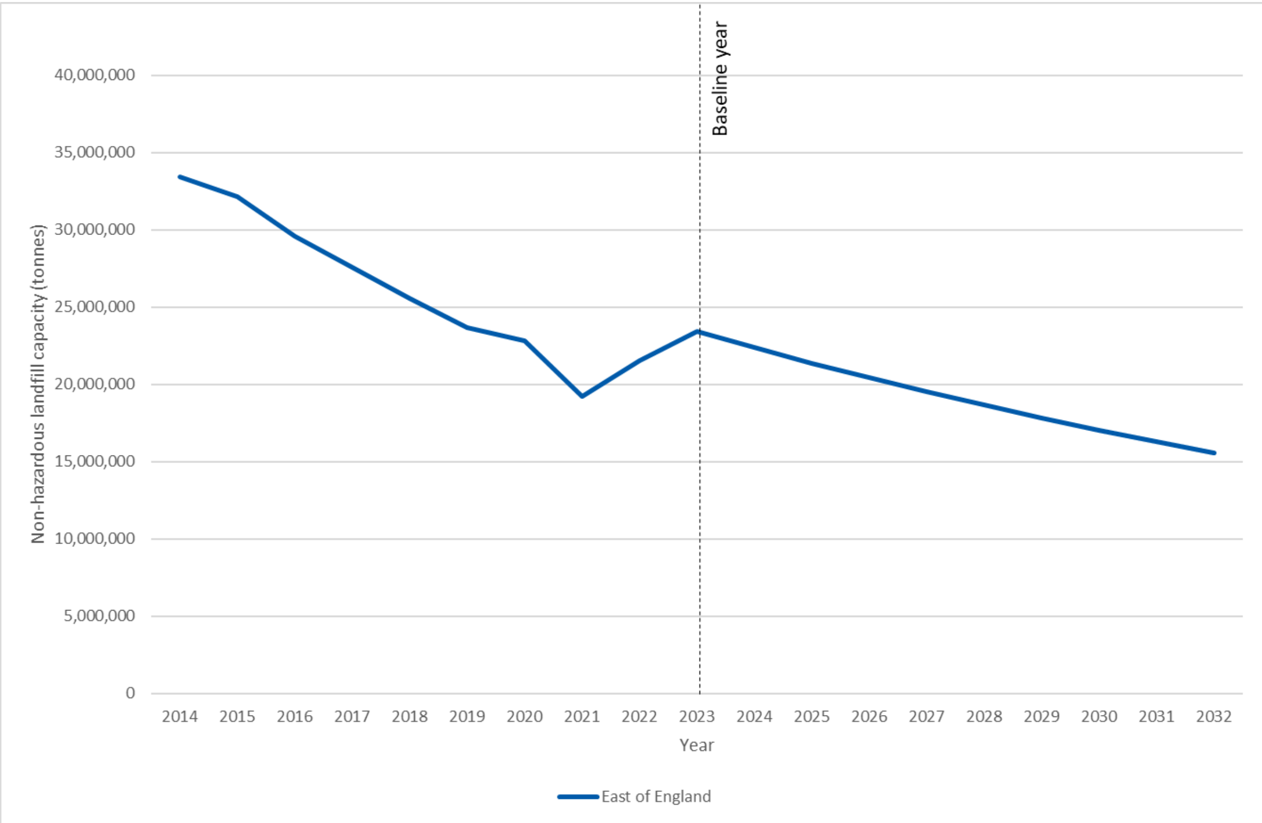
1.2.24 The Proposed Onshore Scheme would use Type 1 (Primary), class 6f3 material and drainage gravel (Secondary) aggregates. The use of recycled and secondary aggregates will reduce the need for extraction of virgin material.

1.3 Waste

Landfill capacity future baseline

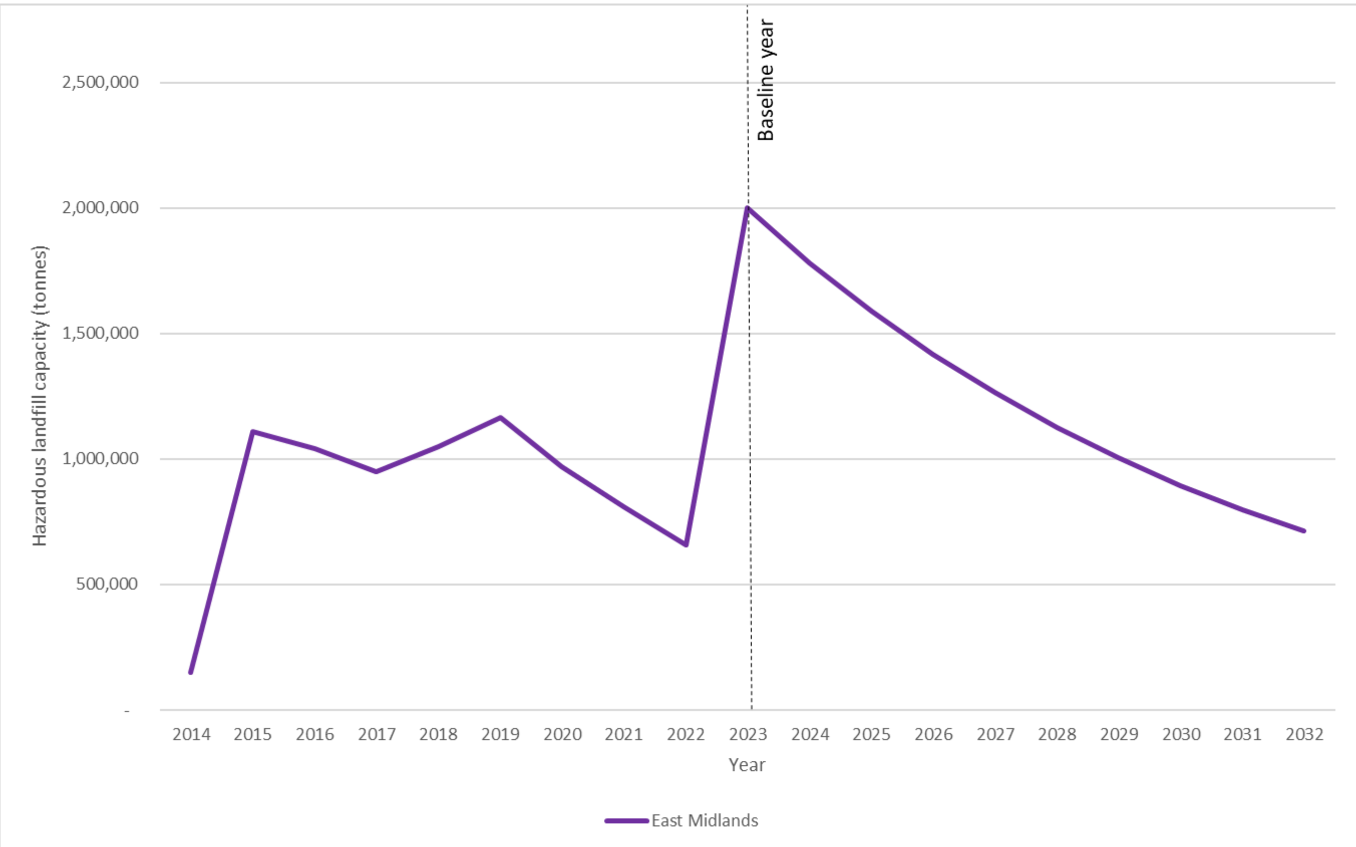
1.3.1 Trends in historic landfill capacity data for the last ten years have been used to calculate the infill rates for the future. The trend for inert, non-hazardous and hazardous landfill has been extrapolated from 2023 for the baseline period (2023-2032). **Inset 1.1**, **Inset 1.2** and **Inset 1.3** show the projected future baseline landfill capacity throughout the assessment period for inert, non-hazardous and hazardous waste respectively. These comprise the future baseline (without the Proposed Onshore Scheme) assessment scenario and have been used to establish the sensitivity for inert, non-hazardous and hazardous waste. Additionally, **Inset 1.4** shows the forecast for national hazardous landfill capacity, which is used to establish the magnitude of impact, as per IEMA Guidance and trends in hazardous waste management in England.

Inset 1.1: Regional non-hazardous landfill capacity future baseline.

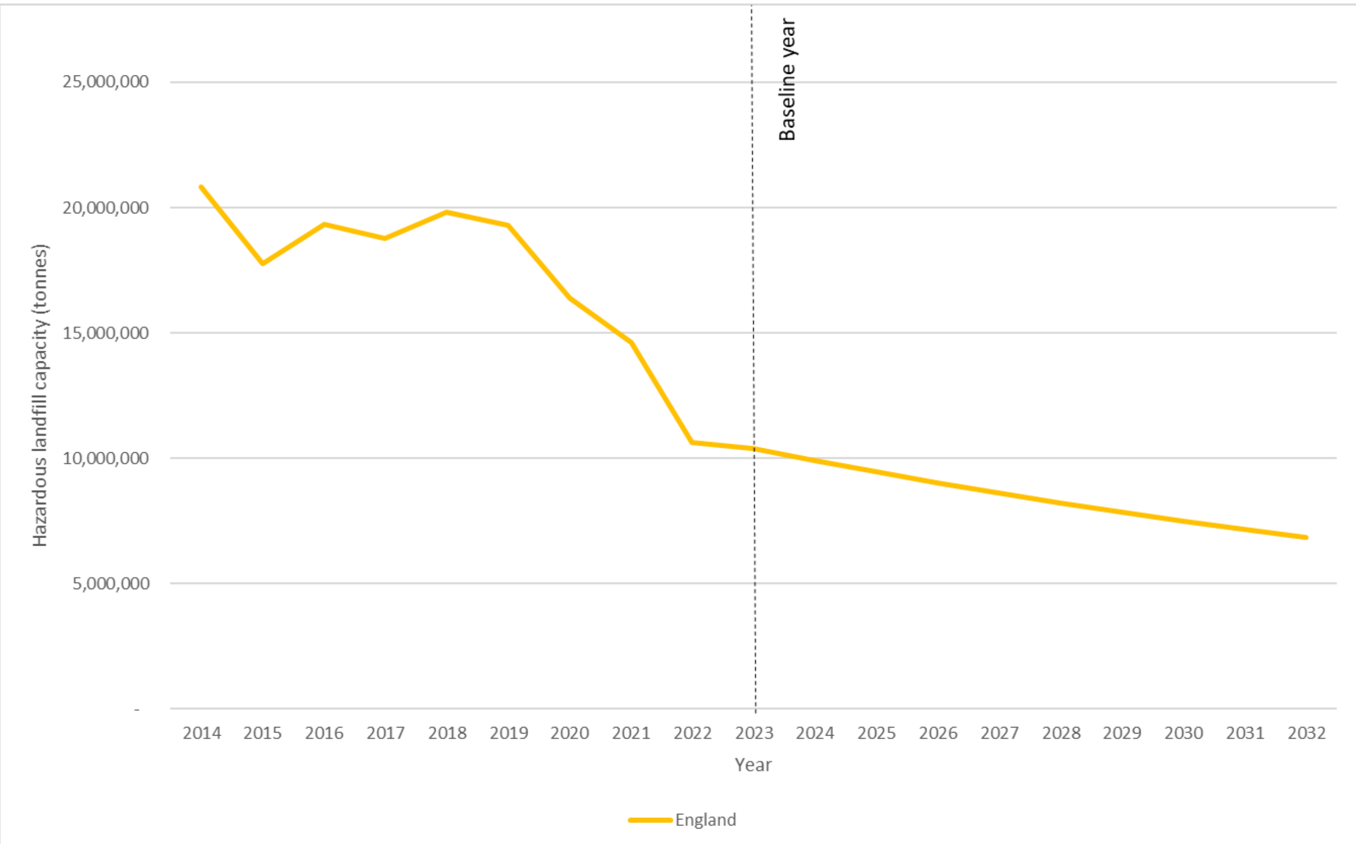


Inset 1.2: Regional inert landfill capacity future baseline.

Inset 1.3: Regional hazardous landfill capacity future baseline.



Inset 1.4: National hazardous landfill capacity future baseline.

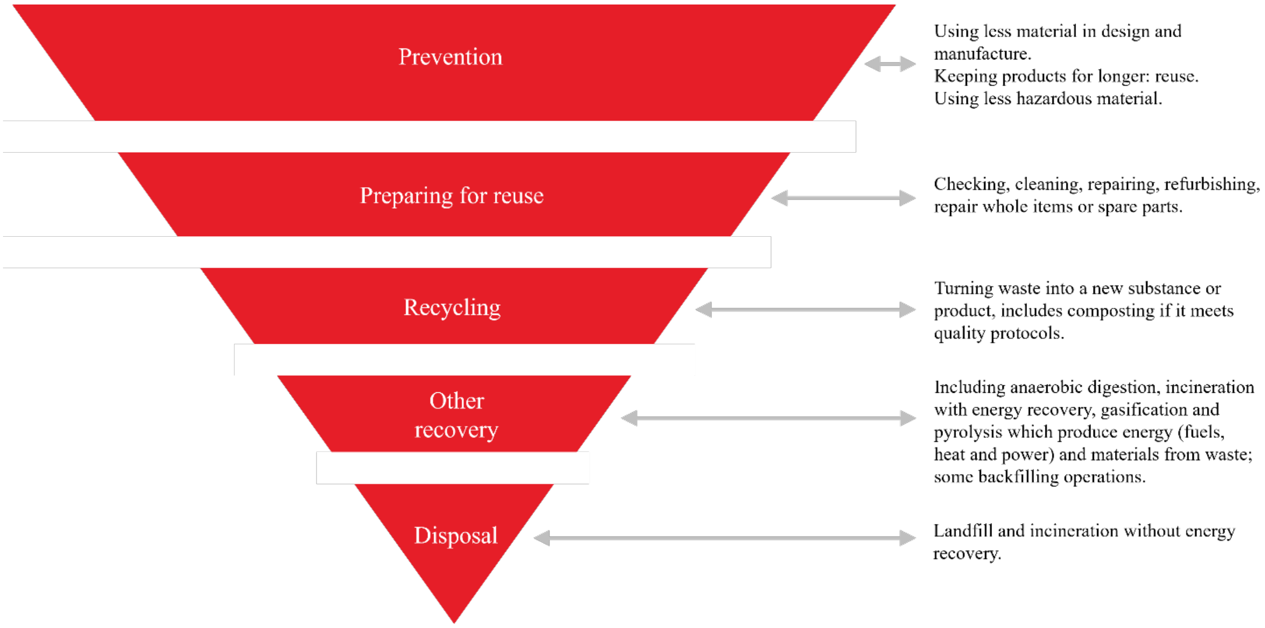


Waste Hierarchy

1.3.2 Mitigation measures to reduce the impacts of material assets and waste impacts from the project will follow the principles of sustainable resource and waste management in accordance with the waste hierarchy.

1.3.3 The project design will take into consideration the upper tiers of the waste hierarchy with a view to minimising the overall volume of waste arisings via designing out waste and maximising efficient use of materials, ultimately to prevent and minimise waste sent to landfill.

Inset 1.5: Waste Hierarchy.



National Grid LionLink Limited

Company number 14722364

1-3 Strand

London

WG2N-5EH

United Kingdom

nationalgrid.com/lionlink