

The Lighthouse Green Fuels Order

Application Reference: EN0110025

Applicant: LGF Projects Limited

Environmental Statement Volume III Appendix 5B: Framework Site Waste Management Plan

Document Reference: 6.3.5

Revision: 00

APFP Reg. 5(2)(a) and EIA Reg. 14

Document information

Document Title	ES Appendix 5B: Framework Site Waste Management Plan
Document Ref	6.3.5
Author	Arup

Revision record

00	Purpose	DCO Application Submission
	Date	September 2026

Information classification

Information Classification	Date	Reason
Public	September 2026	Proprietary information which will have no impact on the company if disclosed publicly

Contents

Abbreviations	4
1 Introduction	5
1.1 Overview	5
2 Site Waste Management Plan	6
2.1 Overview	6
2.2 Construction, demolition and excavation waste forecast.....	6
Site clearance waste estimates	7
Earthworks.....	7
Construction waste	8
Dredging	8
Construction Demolition and Excavation (CD&E) waste diversion	8
2.3 Waste management options	9
Designing out waste	9
Site Clearance	11
Excavation	12
Construction	12
Construction Environmental Management Plan (CEMP)	12
Materials Management Plan.....	13
2.4 On-site practice	13
Overview.....	13
Hazardous waste management.....	14
Landfill	14
EPC Contractor's duties	14
Waste champions	14
Site induction and toolbox talks	14
Environmental training for key staff	15
Sub-contractors	15
Waste management facilities.....	15
Waste management Contractors.....	15
Monitoring.....	15
Review	15
Update prior to hand back	16
References	17

Tables

Table 2.1	Potential waste sources during the construction phase	6
Table 2.2	Estimated waste generated from the Site Clearance	7
Table 2.3	Earthworks estimate	8
Table 2.4	Construction waste estimates	8
Table 2.5	Estimated diversion of CD&E waste	9

Abbreviations

Abbreviation	In full
CCS	Considerate Constructors Scheme
CD&E	Construction, Demolition and Excavation
CEMP	Construction Environmental Management Plan
CL:AIRE	Contaminated Land: Applications in Real Environments
DCO	Development Consent Order
DoC	Duty of Care
EPC	Engineering, Procurement and Construction
fCEMP	Framework Construction Environmental Management Plan
fSWMP	Framework Site Waste Management Plan
MMP	Materials Management Plan
WEEE	Waste Electrical and Electronic Equipment
WRAP	Waste and Resources Action Programme

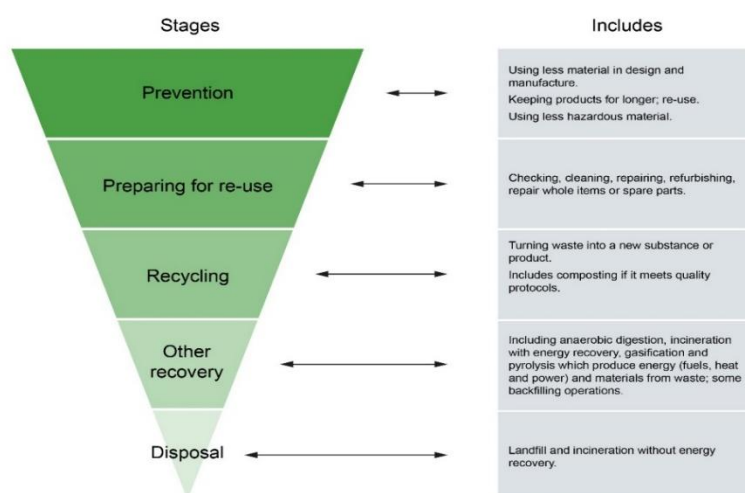
1 Introduction

1.1 Overview

1.1.1 This Framework Site Waste Management Plan (fSWMP) is an Appendix to **ES Chapter 5: Construction and Programme and Management (ES Volume I, Application Document Ref. 6.1)**. The fSWMP is a working document and will be refined as future design details enable waste streams to be quantified more accurately.

1.1.2 Where waste is generated it should be managed in accordance with the waste hierarchy as displayed in Inset 1.1. The waste hierarchy advocates, the following order of preference:

- prevention;
- preparing for re-use;
- recycling;
- other recovery; and
- disposal as a last resort.



Inset 1.1 The Waste Hierarchy

1.1.3 The fSWMP is to be submitted as part of the Development Consent Order (DCO) application for the Proposed Development to demonstrate how resources and waste have been considered during the design stage of the Proposed Development and how effective and sustainable waste management will be delivered during the construction phase of the Proposed Development. Implementation of the SWMP will ensure that significant adverse effects do not arise as a result of the construction phase.

2 Site Waste Management Plan

2.1 Overview

- 2.1.1 This fSWMP will be refined as future design details enable waste streams to be quantified more accurately. It will be used throughout the design process, to promote 'designing out waste'. It will also be used to monitor waste arisings and optimise the waste management strategy going forward.
- 2.1.2 The fSWMP will be updated by the Engineering, Procurement and Construction (EPC) Contractor(s) prior to the construction phase of the Proposed Development. The EPC Contractor(s) will review waste management options with the aim of moving waste up the waste management hierarchy as displayed in Inset 1.1 above. This will involve the use of effective waste management techniques to reduce the quantity of material sent to landfill during the construction phase of the Proposed Development. Where the generation of waste cannot be avoided this will be recovered through re-use and recycling as far as practicable.
- 2.1.3 This fSWMP identifies the key waste streams that are likely to be produced during the construction of the Proposed Development and appropriate waste management and minimisation options, with an aim to encourage resource efficiency and sustainable waste management.
- 2.1.4 This fSWMP has been developed based on the information available at the time of writing and will be updated as further data becomes available and waste streams can be quantified more accurately.

2.2 Construction, demolition and excavation waste forecast

- 2.2.1 The potential Construction, Demolition and Excavation (CD&E) waste types generated during the construction phase are summarised in Table 2.1.

Table 2.1 Potential waste sources during the construction phase

Construction phase	Potential wastes produced	Classification of waste
Construction	Construction waste	Inert; and/or, Non-hazardous; and/or, Hazardous.
	Made ground, soil and sub-soils.	Non-hazardous, and Hazardous if it contains sufficiently high concentrations of contaminants.
	Waste products arising from the presence of construction staff within the Proposed Development e.g. effluent from portable toilets, food waste and packaging, as well as waste from surplus materials and spillages.	Inert; Non-hazardous and potentially Hazardous.

Construction phase	Potential wastes produced	Classification of waste
Demolition	Materials from the removal of the existing quay, existing jetties and revetment.	Inert; Non-hazardous and potentially Hazardous.
	Asphalt and bituminous products.	Inert; Non-hazardous and potentially Hazardous.
	Dredge spoil and disposal of the arisings associated with the construction of the marine elements of the project.	Inert; Non-hazardous and potentially Hazardous.
Excavation	Made ground, concrete, soil and sub-soils.	Inert; and/or, Non-hazardous; and/or, potentially Hazardous if it contains sufficiently high levels of heavy metals.

Site clearance waste estimates

2.2.2 The Proposed Development will generate waste associated with site clearance and demolition of existing quay, jetties and revetment. The estimated waste generated from Site Clearance are displayed in Table 2.2 using data provided by the Applicant [Ref 1].

Table 2.2 Estimated waste generated from the Site Clearance

Waste stream	Waste arisings (tonnes)	Waste arisings (m ³)
Concrete	170,000	140,000
Metals	60,000	140,000
Plastic	5,000	20,000
Materials arising from the demolition of the existing jetties and removal of the revetment	20,000	15,000
Insulation (including Asbestos)	<500	<500
Hazardous Waste – Waste Electrical and Electronic Equipment (WEEE) and cables	5,000	5,000
Total	260,000	320,000

Earthworks

2.2.3 The earthworks estimates (in m³) have been provided by the Applicant and are set out in Table 2.3. These have been provided in volume (cubic metres) and have therefore been converted to mass (tonnes) using a Waste and Resources Action Programme (WRAP) conversion factor of 1.25 tonnes per cubic metre used for inert materials [Ref 1].

Table 2.3 Earthworks estimate

Earthworks activity	Volume (m ³)	Mass (tonnes)
Main Site Excavation	235,000	294,000
Total Soil Excavation	454,000	568,000
Total re-use of excavated materials onsite*	195,000	243,000
Total Backfill Materials	776,000	970,000
Levelling of site	281,000	351,000
Main site backfill material	495,000	619,000
*subject to material passing the CL:AIRE suitability for use test [Ref 4]		

Construction waste

- 2.2.4 The construction waste forecast likely to be generated by the Proposed Development has been estimated from construction materials quantities provided by the Applicant and is shown in Table 2.4. The construction waste forecast has been estimated by applying a recognised WRAP [Ref 1] wastage rate to the materials consumed by the Proposed Development.

Table 2.4 Construction waste estimates

Activity	Waste arisings (tonnes)
Steel	2,000
Concrete	43,000
Copper	<100
Instrumentation	<100
Equipment	<100
Total	45,000

Dredging

- 2.2.5 Quantities of dredged material associated with construction of the proposed new quay are estimated to be 400,000m³ to 800,000m³. Based on the site-specific survey of the proposed capital dredging area, elevated contamination was only recorded at one sampling station indicating that the majority of the dredge material is expected to be suitable for disposal at Tees Bay C or another agreed licensed marine disposal site (subject to disposal criteria being met).

Construction Demolition and Excavation (CD&E) waste diversion

- 2.2.6 The quantity of CD&E waste that will be diverted from landfill via re-use, recycling and recovery is based on an assumed landfill diversion rate of 90% (excluding unsuitable and contaminated materials from excavation) [Ref 2]. Therefore, as a realistic worst-case scenario it has been assumed that the remaining 10% of construction waste arising will be disposed of

offsite to landfill. This is a reasonable worst case, as the last published data from 2022 indicated that England was achieving a recovery rate of 94.3% for non-hazardous construction and demolition waste [Ref 2].

- 2.2.7 The estimated diversion of CD&E waste for the Proposed Development is displayed in Table 2.5.

Table 2.5 Estimated diversion of CD&E waste

Activity	Waste arisings (tonnes)	CD&E 90% recycled (tonnes)	CD&E waste disposed (tonnes)
Excavation	31,000		31,000
Site clearance	259,000	233,000	26,000
Construction	45,000	41,000	4,000
Total	335,000	274,000	61,000

2.3 Waste management options

- 2.3.1 The information below sets out the actions that will be undertaken by the EPC Contractor(s) to prevent, re-use, recycle, recover and dispose of SCD&E waste.

Designing out waste

- 2.3.2 Designers will play a key role in reducing the amount of waste generated in a construction project. By considering materials and waste in the design process there are likely to be more significant opportunities for resource efficiency. The most significant opportunities for designing out waste are in the early stages of the design process. The actions undertaken throughout the evolution of design will determine the levels of materials consumed and waste generated during the construction as well as maintenance and the end of life phase of a project.

- 2.3.3 The Proposed Development will adopt Designing out Waste principles. These include:

- design for re-use and recovery: identifying, securing, recycling, treating and using materials that already exist within the Site or can be sourced from other projects;
- design for materials optimisation: simplifying layout and form to minimise material use, using standard design parameters, balancing cut and fill, maximising the use of renewable materials and materials with recycled content;

- design for construction outside of the Site: maximising the use of prefabricated structure and components, encouraging a process of assembly rather than construction;
 - design for the future (deconstruction and flexibility): identify how materials can be designed to be more easily adapted over an asset lifetime and how de-constructability and de-mountability of elements can be maximised at end of first life; and
 - design for waste efficient procurement: identify and specify materials that can be acquired responsibly, in accordance with recognised industry standards.
- 2.3.4 More efficient use of materials would make a major contribution to reducing the environmental effects of construction including reducing demand for landfill and the depletion of finite, natural resources through:
- minimising the overall creation of waste resulting from, for example, over ordering or inefficient design;
 - reducing the quantity of material sent to landfill during the construction process through effective waste management; and
 - recycling materials already within the Site into construction.
- 2.3.5 The depletion of finite material resources will occur through extraction of primary aggregates (e.g. sands and gravels). This impact will be reduced by using more recycled materials and mainstream products with higher recycled content and supporting a circular economy.
- 2.3.6 This fSWMP will drive the implementation of good practice and sustainable procurement, for example:
- materials selected will be durable to ensure long life and reduced need for replacement;
 - materials will be appropriately handled and stored throughout their lifecycle from delivery to inclusion, to reduce the chance of breakage;
 - careful planning, logistics and management of construction materials to limit the need for excess storage; and
 - there will be designated areas for the segregated storage of materials to prevent damage.
- 2.3.7 Opportunities will be investigated to introduce standardisation across the Proposed Development to ensure waste inherent in the design is reduced.

- 2.3.8 The location of material storage areas will be determined following detailed design and detailed construction phase planning, when storage requirements are finalised.
- 2.3.9 In addition to the above measures, the Proposed Development will consider the following:
- specifying the use of materials with a high percentage of recycled content;
 - using local sources for aggregate supplies within the expansive study area whenever possible;
 - ensuring demolition, excavation, construction arisings generated are handled, stored, managed and re-used or recycled as close as possible to the point of origin; and
 - re-using packaging by returning to supplier/manufacturer or using it for other purposes (e.g., timber packaging pallets can be chipped and used for landscaping top mulch).

Site Clearance

- 2.3.10 The Proposed Development will generate waste associated with site clearance and the demolition of existing marine infrastructure.
- 2.3.11 On the Main Site, there will need to be groundworks to clear any scrub vegetation, take up the existing concrete hardstanding across the site, and cap or remove foundations and piles. Vegetation clearance may also be required within the land to the north of the Main Site which is proposed for temporary construction compounds and laydown areas (see **Figure 5.1: Access and Laydown (ES Volume II, Application Document Ref. 6.2)**).
- 2.3.12 The grass covered land in the west of the Main Site is an historic landfill formerly known as Seal Sand Waste Disposal Site which was original operated by Cleveland County Council and later Monsanto. The landfill site has no current environmental permits, and no ongoing monitoring or management. Subject to ground investigation and any necessary remedial measures, it is intended to use part of the landfill as part of the Proposed Development.
- 2.3.13 The existing jetties will require demolition and removal along with removal of the existing revetment. There will also be capital dredging of material for deepening the approach channel and berthing pocket for the quay.
- 2.3.14 Where on-site recycling of materials arising from site clearance (e.g. re-use of crushed concrete as fill) is not feasible the project team will identify opportunities for recycling these materials outside of the Site in other

suitable local projects, through a recycling contractor or in other external projects.

Excavation

- 2.3.15 Site levels and grading would be designed to be at a minimum elevation of 5.08mAOD to mitigate against flood risk (see **Flood Risk Assessment (Application Document Ref. 5.7)**). The Proposed Development would also be designed to enable flexibility in the landscaping, so that it could accommodate the changes in spoil volumes that may arise when site conditions differ from those assumed during the design.
- 2.3.16 A sustainable earthworks strategy will enable materials which will be excavated within the Site to be re-used or recycled at areas where materials are required where practicable. This will aim to minimise the amount of material that is required from sources outside of the Site, and the transportation impacts associated with removal or delivery of aggregates outside of the Site.
- 2.3.17 There are no areas determined as contaminated land under Part 2A Contaminated Land Statutory Guidance. There is potential for contamination in the ground beneath the site associated with the former chemical works and landfill site and other industrial activities in the surrounding area. Intrusive ground investigation to inform design is planned in advance of construction which will allow the presence and, if necessary, quantity of potentially contaminated material to be identified and appropriate mitigation and management measures will be specified and implemented.

Construction

- 2.3.18 The design will take into consideration the waste hierarchy to decrease the amount of waste arisings via designing out waste and maximising efficient use of materials ultimately to prevent and minimise waste sent to landfill.
- 2.3.19 Where construction waste cannot be reduced, re-used, recycled or recovered, the proximity principle will be applied to residual waste to ensure it is disposed of as close to the Site as practicable where it is generated, with the aim of treating the waste at primarily a sub-regional level and where this is not feasible at a regional level. Early contact with waste management contractors and facilities would be made to notify them of the quantities and timings of CD&E waste that would be generated to ensure they can plan and manage the waste appropriately.

Construction Environmental Management Plan (CEMP)

- 2.3.20 A **Framework CEMP (fCEMP) (ES Volume III, Application Document Ref. 6.3)** has been prepared which will capture information on the

management of key material assets and waste issues including recycling and hazardous waste as well as providing links to the SWMP.

Materials Management Plan

- 2.3.21 An MMP will be prepared post DCO consent following the protocols within the Contaminated Land: Applications in Real Environments (CL:AIRE) 2011 Definition of Waste [Ref 4].

2.4 On-site practice

Overview

- 2.4.1 The EPC Contractor(s) will introduce the use of good on-site practice to ensure waste is managed effectively. While reduction of waste will remain the highest priority, waste produced will be segregated. This will allow materials to be re-used / recycled and ultimately reduce the amount of waste that has to be finally disposed of to landfill.
- 2.4.2 The EPC Contractor(s) will establish a waste storage and recycling area for the safe storage and processing of recovered materials to ensure that opportunities for re-use, recycling and recovery are maximised. Where no other waste management option is found to be feasible, wastes will be sent to an appropriately permitted landfill site in accordance with UK legislation.
- 2.4.3 While waste minimisation should remain the highest priority, where feasible waste produced will be segregated for recycling. This will allow materials to be recycled and ultimately reduce the amount of waste that has to be finally disposed of at landfill. The EPC Contractor(s) will establish waste storage and recycling areas for the safe storage and processing of separated waste streams to ensure that opportunities for re-use are maximised.
- 2.4.4 The Proposed Development will implement good industry practice for the segregation of waste, and will consider adopting the Considerate Constructors Scheme (CCS) colour coding system on waste skips. The colour coding scheme is a simple system which colour labels waste skips indicating the types of waste that can be placed in them. Where no other waste management option is found to be feasible, wastes will be sent to an appropriately permitted waste management facility for management in accordance with UK legislation.
- 2.4.5 Waste storage areas will include impermeable surfaces with appropriate drainage as well as hazardous waste storage areas to minimise cross contamination of other waste streams and surrounding ground. The EPC Contractor(s) will identify the appropriate drainage which would include temporary interceptors or bunded areas. The separate storage area for

hazardous waste will include labelled bins for aerosols, oil, oily rags and Waste Electrical and Electronic Equipment (WEEE).

Hazardous waste management

- 2.4.6 Hazardous waste will be correctly labelled, will not be mixed with non-hazardous waste, securely contained and disposed of by a registered waste carrier for hazardous waste. The Duty of Care (DoC) applies to hazardous wastes.
- 2.4.7 Asbestos is classified as a hazardous waste in England. Any asbestos waste is subject to The Control of Asbestos Regulations 2012 [Ref 3]. Waste must be packed in UN-approved packaging with a Control of Dangerous Goods (CDG) hazard label and asbestos code information visible. It should be double-wrapped and be labelled asbestos waste. Standard practice is to use a red inner bag with asbestos warnings, and a clear outer bag with the CDG label, if required.
- 2.4.8 The chosen EPC Contractor(s) will retain all consignment notes in accordance with waste collection and transfer by an approved supplier before they are sent for appropriate and permitted treatment/recovery/disposal.

Landfill

- 2.4.9 Where no other waste management option is found to be feasible, wastes will be sent to an appropriately permitted landfill site. It is anticipated there will be sufficient capacity in local landfill sites, including for hazardous waste, if required.
- 2.4.10 There is adequate estimated non-hazardous and inert landfill capacity for the north-east to dispose of waste from the Site. In addition, there is adequate estimated hazardous landfill capacity in England to dispose of such waste from the Site, if required.

EPC Contractor's duties

Waste champions

- 2.4.11 The EPC Contractor(s) will nominate a designated Waste Champion at all stages of the development including design. The Waste Champion will have sufficient authority and clear responsibilities for reporting to management and communicating with site staff on waste management issues.

Site induction and toolbox talks

- 2.4.12 The EPC Contractor(s) will provide general information on waste and specific information relating to the SWMP in site inductions and toolbox talks. This training will include information on the materials segregation strategy and recovery targets in place at the site.

- 2.4.13 Any changes to the SWMP will be communicated at toolbox talks.

Environmental training for key staff

- 2.4.14 The EPC Contractor(s) will implement a programme of environmental training for key staff at the site. This will enable them to train operatives through toolbox talks and gather feedback from site personnel.

Sub-contractors

- 2.4.15 The EPC Contractor(s) will establish agreements with sub-contractors for the training of staff and control and management of waste.

Waste management facilities

- 2.4.16 The EPC Contractor(s) will identify waste management facilities for the management of all waste streams arising from the site whilst achieving compliance with all relevant legislation. The waste management facilities will be as close to the site as possible, in line with the proximity principle for waste treatment and disposal. The proximity principle is the requirement to treat and/or dispose of wastes in reasonable proximity to their point of generation.

Waste management Contractors

- 2.4.17 The EPC Contractor(s) will engage with waste management sub-contractors early in the design process to identify opportunities for recycling materials generated by the Proposed Development. The EPC Contractor(s) will verify the waste management contractor through the Defra website. The EPC Contractor(s) will keep a record of relevant documentation provided by the waste management contractors such as waste transfer notes.

Monitoring

- 2.4.18 Monitoring and measurement of waste will be undertaken on a regular basis by the EPC Contractor(s), with regular interpretations to identify trends and rectify wasteful practices. The results of monitoring will be included in regular site meetings.

Review

- 2.4.19 As often as necessary to ensure that the plan accurately reflects the progress of the project, the EPC Contractor(s) will:
- review the plan;
 - record the types and quantities of waste produced;
 - record the types and quantities of waste that have been:
 - re-used (and whether this was on or off site);
 - recycled (and whether this was on or off site);

- sent for another form of recovery (and whether this was on or off site);
 - sent to landfill; or otherwise disposed of; and
 - update the SWMP to reflect the progress of the Proposed Development.
- 2.4.20 Good industry practice would be to update the SWMP monthly, but less frequent updates may be appropriate during some phases of work.

Update prior to hand back

- 2.4.21 Within three months of the work being completed the EPC Contractor(s) will add to the plan:
- confirmation that the SWMP has been monitored on a regular basis to ensure that work is progressing according to the plan and that the plan was updated;
 - a comparison of the estimated quantities of each waste type against the actual quantities of each waste type;
 - an explanation of any deviation from the SWMP; and
 - an estimate of the cost savings that have been achieved by completing and implementing the SWMP.

References

- Ref 1 Waste and Resources Action Programme (WRAP) (2008) Net Waste Tool Guide to Reference Data, Version 1.0
- Ref 2 Department for Environment, Food and Rural Affairs (2025) UK Statistics on Waste. Available online: <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste> [Accessed March 2026].
- Ref 3 UK Government (2012) The Control of Asbestos Regulations 2012. Available online: <https://www.legislation.gov.uk/uksi/2012/632/contents> Accessed July 2026 [Accessed March 2026].
- Ref 4 Contaminated Land: Applications in Real Environments (CL:AIRE) 2011 Definition of Waste