

Proposed Solar PV Development

Preliminary Environmental Information Report

Appendix 2.3 Assessment of Likely Waste Arisings

Byers Gill Solar

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1. Introduction

- 1.1.1. This document provides an assessment of likely waste arisings from the construction, operation and decommissioning stages of Byers Gill Solar (the Proposed Development). An assessment of likely waste arisings was requested by the Planning Inspectorate (PINS) via the Scoping Opinion response:

“... the ES should still contain a description of the potential waste streams from all phases of the Proposed Development, including estimated volumes and an assessment of the likely significant effects. In addition, the ES should describe any measures implemented to minimise waste and state whether the waste hierarchy will be utilised.”

- 1.1.2. This document fulfils the request by PINS and provides a description of likely waste arisings along with an indicative assessment of significance in relation to landfill capacity.

1.2. The Proposed Development

- 1.2.1. The Proposed Development consists of a solar farm capable of generating over 50 Megawatts (MW) Alternating Current (AC) of electricity with co-located Battery Energy Storage Systems (BESS), located between Darlington and Stockton-on-Tees in north-east England. The Site Area is approximately 563ha and comprises six solar photovoltaic (PV) panel areas (Panel Areas A-F). The solar PV panels would be mounted on a metal frame in groups. The solar PV panels will either be fixed in position or will track the sun throughout the day; this aspect of the Proposed Development remains under consideration by the Applicant and may be confirmed prior to submission of a DCO application. An on-site substation would be located within Panel Area C.
- 1.2.2. The Proposed Development includes up to 21km of 33kilovolt (kV) underground cabling between the Panel Areas and the on-site substation, as well as approximately 10km of 132kV underground cable to connect the Proposed Development to the grid connection at the existing Norton substation (located to the north-west of Stockton-on-Tees). The preferred route for all underground cabling is to be confirmed ahead of the DCO application submission, with both on-road and off-road options under consideration at this stage. A range of supporting infrastructure is required for the Proposed Development, comprising BESS; transformers and inverters for managing the electricity produced; storage containers to hold this equipment; and security measures such as fencing, CCTV and lighting. The Proposed Development includes environmental mitigation and enhancement measures to avoid or reduce adverse impacts on the surrounding environment and nearby communities.
- 1.2.3. The majority of the Proposed Development is located within the administrative boundary of Darlington Borough Council, with a section of the cable route situated within the administrative boundary of Stockton-on-Tees Council. A very small section of the Site Area is within the administrative boundary of Durham County Council.

1.3. Construction activities

- 1.3.1. The construction of the Proposed Development is proposed to be over a period of approximately 12 months. Subject to the grant of a DCO, construction would commence following the discharge of DCO Requirements.
- 1.3.2. One construction compound will be located within each Panel Area. The construction compounds will contain construction worker welfare facilities, a site office, limited parking, wheel wash area, plant and machinery storage, Heavy Goods Vehicle (HGV) / delivery turning area and waste storage areas.
- 1.3.3. Relevant construction activities will include the following:
- Preparatory works: including ground clearance, construction of access tracks, erection of fencing;
 - Construction works: installation of solar PV modules, BESS, inverters, transformers, switchgear, onsite substation, cables; and
 - Site reinstatement and habitat creation.
- 1.3.4. Full details of the Proposed Development and construction activities is provided in Chapter 2 The Proposed Development of the PEIR.

1.4. Operational activities

- 1.4.1. The design life of the Proposed Development is expected to be at least 40 years.
- 1.4.2. During the operational phase of the Proposed Development, on-site activities would be limited and restricted to maintenance activities, replacement of any components that fail, monitoring activities and vegetation management. The Panel Areas would be surrounded by a 2m to 3m high security fence and would be monitored with pole-mounted CCTV cameras situated at key locations along the perimeter security fencing.

1.5. Decommissioning activities

- 1.5.1. Following operation, the Proposed Development would require decommissioning. The process of decommissioning would involve the removal of all solar infrastructure, including the solar PV modules, cabling and on-site supporting equipment. Waste materials are to be recycled or disposed of in accordance with good practice and processes at that time. Any requests or decisions to leave certain infrastructure, for example access tracks, would be discussed and agreed with landowners as part of the decommissioning process.
- 1.5.2. The Site Area would be returned to its original use as far as possible and practical with areas of established mitigation left in situ where possible and in agreement with the landowner.

1.5.3. Decommissioning is expected to take between of 6 to 12 months and could be undertaken in phases.

1.6. Legislative and policy framework

1.6.1. The relevant legislation, planning policy and guidelines which underpin the assessment methodology and inform the scope of the assessment are outlined in this section.

Legislation

1.6.2. The legislation of relevance includes:

- Directive 2008/98/EC the Waste Framework Directive (as transposed into UK law as of 2018; see The Waste and Environmental Permitting etc. (Legislative Functions and Amendments etc.) (EU Exit) Regulations 2020;
- The Waste (England and Wales) Regulations 2011;
- The Controlled Waste (England and Wales) Regulations 2012;
- The Hazardous Waste (England and Wales) Regulations 2005;
- Waste (Circular Economy) Regulations 2020;
- The Environmental Permitting (England and Wales) Regulations 2016;
- The Landfill Directive (1999/31/EC);
- The Landfill (England and Wales) Regulations 2002;
- Environment Act 1995;
- Environment Act 2021;
- Waste Minimisation Act 1998;
- Waste and Emissions Trading Act 2003;
- Clean Neighbourhoods and Environment Act 2005; and
- The Waste Electrical and Electronic Equipment Regulations 2013.

Policy

1.6.3. The following national and local policies of relevance have been considered:

National

1.6.4. The national policies of relevance include:

- Overarching National Policy Statement (NPS) for Energy (EN-1): Section 5.14 (Waste Management) [1] and latest draft NPS EN-1 Section 5.15 Resource and Waste Management [2];
- NPS for Renewable Energy Infrastructure (EN 3), (2011) [3]. The current NPS does not include specific reference to solar technologies however, the latest Draft NPS includes a

section on solar photovoltaic generation [4];

- National Planning Policy Framework (NPPF) (England) 2021 [5];
- Waste Management Plan for England 2021 [6];
- Our waste, our resources: A strategy for England 2018 [7];
- National Planning Policy for Waste 2014 [8];
- National Planning Policy for Hazardous Waste 2013 [9]; and
- Waste Planning Practice Guidance 2015 [10].

Local

1.6.5. The Proposed Development lies within the administrative boundaries of Darlington Borough Council, Stockton-on-Tees Borough Council and Durham County Council. Planning policy of relevance to the assessment which would be considered includes:

- Tees Valley Joint Minerals and Waste Development Plan Documents [11], including the Waste Background Paper 2020 [12] and Tees Valley Joint Waste Management Strategy 2020 to 2035 [13] ; and
- Durham County Council Minerals and Waste Policies and Allocation [14].

Guidance

1.6.6. The following guidance informs the assessment: IEMA Guide to Materials and Waste in Environmental Impact Assessment 2020 (the 'IEMA Guidance') [15].

1.7. Assessment Methodology

1.7.1. This assessment is for waste arisings only, following confirmation from the PINS Scoping Opinion that an assessment of materials is not required.

1.7.2. The assessment of the effects of the Proposed Development on waste generation has been undertaken in line with the IEMA Guidance [15].

1.7.3. In terms of waste, the assessment considers the potential effects of the Proposed Development on landfill capacity during construction, due to the generation and disposal of waste.

1.7.4. The following information has been considered (where available) during the assessment:

- the type and estimated volume of materials that will be recovered from off-site sources;
- the type and estimated volume of excavation waste to be generated during construction; and
- the type and volume of waste to be discarded to landfill.

- 1.7.5. For waste, the sensitive receptor is considered to be landfill capacity. Due to the ongoing disposal of waste, there is a continued need to develop further capacity in the UK, which results in permanent adverse environmental effects.
- 1.7.6. Landfill sensitivity is defined by assessing how the future baseline of regional landfill void capacity is expected to change without any additional waste from the Proposed Development. Table 1-1 sets out the thresholds for assessing sensitivity in inert, non-hazardous and hazardous landfill.

Table 1-1 Sensitivity thresholds for inert, non hazardous and hazardous landfill

Waste Types	Negligible	Low	Medium	High	Very High
Inert and non hazardous	Remain unchanged or is expected to increase through a committed change in capacity.	Reduce minimally: by <1% as a result of wastes forecast.	Reduce noticeably: by 1-5% as a result of wastes forecast	Reduce considerably: by 6-10% as a result of wastes forecast.	Reduce very considerably (by >10%); reach capacity 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.
Hazardous	Remain unchanged or is expected to increase through a committed change in capacity.	Reduce minimally: by <0.1% as a result of wastes forecast.	Reduce noticeably: by 0.1-0.5% as a result of wastes forecast.	Reduce considerably: by 0.5-1% as a result of wastes forecast.	Reduce very considerably (by >1%); reach capacity 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.

1.7.7. Using baseline and waste forecast data, the potential magnitude of impact from waste is assessed by determining the percentage of the remaining landfill void capacity that will be depleted by waste produced by the Proposed Development, see Table 1-2.

Table 1-2 Magnitude of impacts threshold (adapted from IEMA Guidance)

Waste Types	No change	Negligible	Minor	Moderate	Major
Inert and non hazardous	Zero waste generation and disposal from the development	Waste generated by the development will reduce regional landfill void capacity baseline by <1%	Waste generated by the development will reduce regional landfill void capacity baseline by 1-5%	Waste generated by the development will reduce regional landfill void capacity baseline by 6-10%	Waste generated by the development will reduce regional landfill void capacity baseline by >10%
Hazardous	Zero waste generation and disposal from the development	Waste generated by the development will reduce national landfill void capacity baseline by <0.1%	Waste generated by the development will reduce national landfill void capacity baseline by 0.1-0.5%	Waste generated by the development will reduce national landfill void capacity baseline by 0.5-1%	Waste generated by the development will reduce national landfill void capacity baseline by >1%

1.7.8. The significance of the effect is identified through comparison of the sensitivity of the landfill resource in the study area (see Section 1.9) and the magnitude of the estimated waste arisings. Effects of moderate, large or very large significance, are considered to be significant in EIA terms. Effects of slight to moderate are considered based on professional judgement (see Table 1-3).

Table 1-3 Significance of effect matrix

Sensitivity of resource/receptor	Magnitude of impact					
	No change	Negligible	Minor	Moderate	Major	
Very High	Neutral	Slight	Moderate or large	Large or very large	Very large	
High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large	
Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large	
Low	Neutral	Neutral or slight	Neutral or slight	Sight	Slight or moderate	
Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight	

1.8. Scoping Opinion

Scoping

1.8.1. An EIA Scoping Report was submitted to PINS on 27 October 2023, with an EIA Scoping Opinion received on 6 December 2022. Table 1-4 includes a summary of how this chapter of the PEIR has responded to each scoping opinion comment.

Table 1-4 Response to the Scoping Opinion

Reference	Stakeholder	Comment	Response
3.7.24	<ul style="list-style-type: none"> ▪ PINS 	<ul style="list-style-type: none"> ▪ The Inspectorate agrees that a standalone chapter on waste is not required within the ES. However, the ES should still contain a description of the potential waste streams from all phases of the Proposed Development, including estimated volumes and an assessment of the likely significant effects. In addition, the ES should describe any measures implemented to minimise waste and state whether the waste hierarchy will be utilised. ▪ The CEMP, DEMP and Site Waste Management Plan (SWMP) should include as much detail as possible on on-site waste management, recycling opportunities, and off-site disposal. If off-site disposal is required, an assessment of likely significant effects including intracumulative effects should be included within the ES 	<ul style="list-style-type: none"> ▪ This document fulfils the request for an assessment of likely waste arisings. ▪ The Outline Environmental Management Plan (EMP), Framework Decommissioning EMP (DEMP) and Outline Site Waste Management Plan (SWMP) will provide details around waste management, recycling opportunities, and off-site disposal, and will be submitted with the DCO Application. ▪ Minimal off-site disposal is likely to be needed from the Proposed Development, therefore an assessment of likely significant effects including intra-project or inter-project cumulative effects is not considered to be required.

1.9. Study Area

1.9.1. The study area has been defined in line with the IEMA Guidance [15] as follows:

- primary study area is based on the Site Area; constituting the area within which waste would be generated; and
- second study area (referred to as the 'expansive study area' under the IEMA Guidance) covers an area sufficient to identify suitable waste infrastructure that could accept arisings of waste generated by the Proposed Development is hazardous, non-hazardous and inert waste management – North East England.

1.9.2. The following sources of baseline data have been used:

- landfill capacity in North East England (non-hazardous, inert and hazardous landfill void capacity); and
- allocated/safeguarded waste sites in the vicinity of the Proposed Development,

1.10. Baseline Conditions

1.10.1. The baseline conditions for the Proposed Development at the time of the PEIR are presented below.

Waste

1.10.2. The waste generation of the current Site Area is associated with agricultural practices. During construction, agricultural uses will cease within the Site Area. Subject to further investigations and discussions, agricultural uses may resume within the panel areas once construction is complete, other than in the areas proposed for the on-site substation, operational access tracks and other infrastructure such as BESS, inverters, switchgear and spare containers.

1.10.3. There are no records of historical waste sites on-site or within 250m of the Site Area. There is one record of an active landfill located approximately 103m north-west of the western area (429262 E, 522104 N), and has been described to have a capacity of >25,000 tonne of inert waste. For further details, see the Phase 1 Geoenvironmental and Geotechnical Desk Study (Appendix 2.1 of the PEIR).

Waste Management

1.10.4. Waste generated during the construction and operation of the Proposed Development is expected to be managed within North East England.

1.10.5. The baseline relating to the waste management and disposal infrastructure is illustrated by the current waste generation within the secondary study area and by the available capacity of landfills within the study area, suitable for the expected waste generation. The Environment Agency's Waste Interrogator [16] and Remaining Landfill Capacity

Report [17] provides baseline information regarding waste management data, including quantities and types of waste that operators of regulated waste management facilities deal with, and landfill capacity. The most recent available year for baseline data in the area is 2021, and is therefore used as the baseline year.

1.10.6. Landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste. The sensitivity of waste relates to availability of regional (and where appropriate, national) landfill void capacity in the absence of the development.

Landfill capacity

1.10.7. The Environment Agency Waste Interrogator [16] for 2021 states 2,971,000 tonnes of waste was sent to landfill in North East England (226,000 tonnes of hazardous waste, 1,276,000 tonnes of non-hazardous waste and 1,415,000 tonnes of inert waste.)

1.10.8. Data produced by the Environment Agency [17] as shown in Table 1-5 states that the remaining landfill capacity at end for 2021 for North East England was:

- Hazardous waste – 4,486,359 tonnes;
- Non-hazardous waste – 8,028,356 tonnes; and
- Inert waste – 12,255,260 tonnes.

Table 1-5 Remaining landfill capacity in North East England as at end of 2021 [17]

Planning Sub Region	Local Authority	Site Type	Facility Name	Remaining Capacity end 2021 (tonnes)
Tees Valley Unitary Authorities	Stockton on Tees	L01 - Hazardous Merchant Landfill	Port Clarence landfill Site (Haz)	2,477,350
	Redcar and Cleveland		ICI No 3 Teesport	2,009,009
Northumberland	Wansbeck	L02 - Non Hazardous Landfill	Ellington Road Landfill Site	442,073
Tees Valley Unitary Authorities Durham	Hartlepool	With SNRHW cell	Seaton Meadows	480,733
	Sedgefield		Aycliffe Quarry Landfill	340,000
Tees Valley Unitary Authorities	Stockton on Tees	L04 - Non Hazardous	Port Clarence Non-Hazardous Landfill Site	2,136,798
			Coatham Stob Quarry (Area 6)	139,695
			Cowpen Bewley Landfill Site	1,581,387
Northumberland	Redcar and Cleveland		ICI No 2 Teesport	906,204
	Wansbeck		Alcan Ash Lagoons 1-4	493,000
Tyne & Wear	Sunderland		Springwell Quarry	5,379

Planning Sub Region	Local Authority	Site Type	Facility Name	Remaining Capacity end 2021 (tonnes)
Durham	Durham City		Joint Stocks Landfill Phase 2	1,503,088
Tyne & Wear	South Tyneside	L05: Inert Landfill	Marsden Quarry Landfill Site	989,193
	Sunderland		Field House Quarry	303,342
Durham	County Durham (UA)		Bishop Middleham Quarry 2	6,579,308
			Crime Rigg Quarry Landfill	2,310,162
			Old Quarrington Quarry Landfill	1,998,096
Northumberland	Northumberland (UA)		Hollings Hill Quarry Landfill	43,124
			Merryshields Quarry	32,036
Total				24,769,975

N.B. Landfill density calculations:

Hazardous waste density of 1 t/m³ and inert waste density of 1.5 t/m³ [18]

Non-hazardous waste density of 0.85 t/m [19]

Landfill capacity future baseline

- 1.10.9. The current waste policy is driving a reduction in the waste being disposed of in landfill and therefore a reduction in the landfill capacity required, however the Tees Valley Joint Councils and Durham County Council have a responsibility under the National Planning Policy for Waste, to make provision for sufficient waste infrastructure capacity. To assess the potential impact of waste generated by the Proposed Development in relation to the landfill capacity expected to be available in future years, forecasts have been made of the likely available landfill capacity.
- 1.10.10. Landfill capacity data from the Environment Agency for the last 17 years was analysed and trends calculated. The trend for non-hazardous and hazardous landfill was extrapolated for the baseline period, over 42 years (12 months each for construction and decommissioning and 40 years for operational). The calculated trend shows a steady decrease in hazardous and non-hazardous landfill capacity in the future. Conversely, all available data shows that inert landfill capacity in the study area is slightly increasing.
- 1.10.11. As defined in the IEMA Guidance, the sensitivity of landfill capacity as a receptor is defined by the projected proportional decline in capacity within the assessment period, without the Proposed Development. Due to the expected design life of 40 years, it is not possible to accurately assess the future baseline due to potential unknowns in future capacity such as new creation of landfills, technology improvements and changes

in policy. Current national policy is the driver for landfill capacity, which shows a trend towards increasing recycling targets and material recovery. The Waste Management Plan for England 2021 [6] states a target of 70% non-hazardous construction and demolition waste is to be subjected to material recovery. Therefore, this assessment has assumed a worst-case scenario that landfill capacity for hazardous, non-hazardous and inert waste will decline by at least 50% in 42 years.

- 1.10.12. Consequently, it is forecast that after 42 years, landfill capacity would have changed by the following:
- Inert waste – 2,243,180 tonnes (50% decrease from 2021 baseline landfill capacity);
 - Non-hazardous waste – 4,014,178 tonnes (50% decrease from 2021 baseline landfill capacity); and
 - Hazardous waste – 6,127,630 tonnes (50% decrease from 2021 baseline landfill capacity).
- 1.10.13. Based on the above, the sensitivity of the identified receptors as defined in the IEMA Guidance is considered to be Very High.

Safeguarded waste sites

- 1.10.14. There are no allocated/safeguarded waste sites within the Site Area. The assessment of safeguarded waste sites is therefore not taken any further.

1.11. Potential effects

Expected waste types

Construction

- 1.11.1. The Site Area is arable land, therefore no demolition waste will be produced as part of the Proposed Development. It is also anticipated that minimal site preparation and excavation waste would be generated given the baseline. The underground cabling runs through both agricultural land and roads, which are likely to generate minimal arisings from activities, and would be reused onsite as cable route cover.
- 1.11.2. All the electrical infrastructure such as solar PV modules, inverters, transformers, batteries and other supporting infrastructure will be manufactured offsite and delivered to the Site Area ready for installation. Therefore, construction and assembly waste is expected to be minimal, including packaging wastes (wood and plastics), fencing (metal and wood), WEEE wastes and concrete.
- 1.11.3. No demolition is considered to be required within the Site Area.

Operation

- 1.11.4. Waste generation during the operational phase will include maintenance and

replacement of proposed infrastructure including the solar PV modules, inverters, BESS and transformers. No replacement of cabling is anticipated during the proposed design life of the Proposed Development.

Decommissioning

- 1.11.5. The decommissioning of the Proposed Development would involve the removal of all solar infrastructure, including the solar PV modules, inverters, transformers, BESS and switchgear, and reinstatement of the Site Area to its original use as far as possible and practicable.

Anticipated disposal / recycling

- 1.11.6. Solar PV modules are made of a frame (typically aluminium), glass, crystalline silicon solar cells and copper wiring, of which between 90 - 99% can be recycled [20] [21].
- 1.11.7. In the UK, solar PV modules are subject to the WEEE Regulations 2013, as amended by the Waste (Miscellaneous Amendments) (EU Exit) (No. 2) Regulations 2019. The WEEE Regulations mandate that manufacturers must take back decommissioned solar PV modules for recycling. The aim is to ensure that the solar PV modules are disposed of responsibly and as much of the materials as possible are recycled. The Applicant will ensure that suppliers of solar PV modules for the Proposed Development are registered with a producer compliance scheme that has an industry managed take-back and recycling scheme.
- 1.11.8. Possibilities to re-use or recycle materials will be explored before resorting to landfill options in line with the Tees Valley Joint Waste Management Strategy 2020 to 2035 which seeks to improve reuse and recycling rates, in alignment with the Waste Management Plan for England 2021 [13] [6]. There is a new industry emerging for recycling solar PV modules. This would be explored, in addition to any resale of any operational panels.

Estimated likely waste arisings

- 1.11.9. The estimated main types of waste, their likely source and management from the construction, operation and decommissioning of the Proposed Development is detailed in Table 1-6 below.

Table 1-6 Likely waste streams from the Proposed Development

Waste Streams	Waste stream activity			European Waste Code	Waste type (Hazardous / Non-hazardous / inert waste)	Waste Management	
	Construction	Operation	Decommissioning				
Soils and stones	✓		✓	Site clearance and any excavations	17 09 04	Inert / Non-hazardous	Re-used onsite for cable cover.
Vegetation	✓		✓	Site clearance activities	20 02 01	Non-hazardous	Shredded and spread across the Site Area.
Wood	✓		✓	Installation and removal of fencing and packaging	17 02 01	Non-hazardous	<ul style="list-style-type: none"> ▪ Separated and either recycled or recovered for energy. ▪ Any ash produced from energy recovery will be sent to landfill.
Mixed metals	✓	✓	✓	<ul style="list-style-type: none"> ▪ Installation and removal of fencing and packaging. ▪ Installation and removal of solar PV modules, cabling, inverters, transformers, BESS and switchgear. ▪ Maintenance and replacement of solar PV modules, inverters, transformers, BESS and switchgear. 	17 04 01	Non-hazardous	Recycled with some disposal.
Plastic (packaging)	✓	✓		Packaging	17 02 03	Non-hazardous	<ul style="list-style-type: none"> ▪ Recycled or recovered for energy. ▪ Any ash produced from energy recovery will be sent to landfill.
Plastic (solar PV modules)		✓	✓	Replacement and removal of solar PV modules.	17 02 03	Non-hazardous	Recycled with some disposal.
Glass		✓	✓	Replacement and removal of solar PV modules.	17 02 02	Non-hazardous	Recycled with some disposal.

Waste Streams	Waste stream activity			European Waste Code	Waste type (Hazardous / Non-hazardous / inert waste)	Waste Management
	Construction	Operation	Decommissioning			
WEEE	✓	✓	✓	20 01 36	Non-hazardous	Recycled with some disposal.
Concrete	✓		✓	17 01 01	Non-hazardous	Recycled for aggregate.

- 1.11.10. Therefore, following on from the conclusions of Table 1-6 the following waste streams (all non-hazardous) that will need to be disposed of to landfill include the following:
- minimal wood ash from energy recovery;
 - minimal mixed metals;
 - minimal plastic ash from energy recovery;
 - minimal disposal of glass from solar PV modules; and
 - minimal disposal of WEEE waste.

1.12. Mitigation and Management

- 1.12.1. The Outline EMP, Framework DEMP and Outline SWMP which will be submitted for the DCO application will provide details around waste management, recycling opportunities, and off-site disposal.
- 1.12.2. The SWMP would be produced during the design phase and managed by the contractor during the construction phase to direct an effective circular economy approach to the management of resources and waste materials. This would drive the waste management activities up the Waste Hierarchy, to ensure that as much material as possible is reused and/or recycled to reduce the amount of construction waste requiring disposal. The Outline SWMP will be finalised with specific measures to be implemented prior to the start of construction, in accordance with the DCO Requirement.
- 1.12.3. In order to control the waste generated on-site during site preparation and construction, the contractor will separate the main waste streams on-site, prior to transport to an approved, licensed third party waste facility for recycling or disposal.
- 1.12.4. All waste to be removed from the Site Area will be undertaken by fully licensed waste carriers and taken to licensed waste facilities.
- 1.12.5. The handling of waste material should be in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice [22]. Where practicable, the following approaches would be implemented to minimise the quantities of waste requiring disposal:
- Agreements with material suppliers to reduce the amount of packaging through a take-back scheme;
 - Implementation of just-in-time material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste;
 - Attention to material quantity requirements to avoid over-ordering and generation of waste materials due to surplus;
 - During site clearance and construction re-use of materials wherever feasible e.g. re-use of excavated soil for earthwork embankments and landscaping;

- The materials would be sorted or processed and where necessary, treated. Where materials excavated on-site are initially unable to meet the re-use criteria, they would either be treated to make them suitable for use or, as a last resort, disposed off-site as waste;
- Segregation of waste at source where practical;
- Re-use of materials within construction for example. Re-use of pavement planning in subbase in footpaths; and
- Re-use and recycling off-site where re-use on-site is not practical.

1.13. Assessment of likely waste arisings

- 1.13.1. The likely waste generated from the construction, operation and decommissioning of the Proposed Development is an estimation only at this stage of the design. However, the IEMA significance criteria has been used to assess the quantities of waste that would need to be disposed of to landfill to give rise to a significant effect. This considers the sensitivity of each landfill type based on the predicted future baseline capacities.
- 1.13.2. A comparison of the significant quantities for each landfill type has then been considered against each of the predicted waste arisings, the expected waste management of each of these and therefore the likely scale of residual waste that would be landfilled. This has been used to provide a qualitative assessment of the likely significance on any potential impacts, as shown in Table 1-7.

Table 1-7 Waste generation required for the Proposed Development to introduce a significant impact on landfill capacity in the North East England

Waste type	Likely waste stream from the Proposed Development	Current Landfill Capacity (2021)			Future Baseline Capacity (50% decrease from 2021 baseline landfill capacity)		
		North East England landfill capacity (tonnes)	Significance criteria from IEMA Guidance to introduce a significant effect	Waste generation required to introduce a significant environmental effect (tonnes)	North East England landfill capacity (tonnes)	Significance criteria from IEMA Guidance to introduce a significant effect	Waste generation required to introduce a significant environmental effect (tonnes)
Hazardous	None	4,486,359	<0.5-1% (national)	22,432	2,243,180	<0.5-1% (national)	11,216
Non-hazardous	Wood, mixed metals, plastic, glass and WEEE waste	8,028,356	6-10% (regional)	481,701	4,014,178	6-10% (regional)	240,851
Inert	None	12,255,260	6-10% (regional)	735,316	6,127,630	6-10% (regional)	367,658
	TOTAL	24,769,975		1,288,055	12,384,987		619,724

- 1.13.3. As presented in Table 1-6, no inert or hazardous waste is predicted to be produced from the Proposed Development, and therefore no impacts to landfill are expected from these waste streams.
- 1.13.4. Using professional judgment, based on the nature and scale of the construction, operation and decommissioning works, it is considered that the Proposed Development would use less than 0.5% of the non-hazardous landfill capacity for North East England. The probability that the quantities of waste arisings would exceed the values identified in Table 1-7 is considered to be negligible.
- 1.13.5. In the unlikely event that more waste arisings are produced than estimated in Table 1-7, the SWMP and CEMP will be produced during the construction stage, with the DEMP produced prior to start of decommissioning, and implemented by the contractor. This will drive the waste management activities up the Waste Hierarchy, to ensure that as much material is reused and/or recycled as possible to reduce the amount of construction, operational and decommissioning waste requiring disposal.
- 1.13.6. Therefore, the magnitude of the impact resulting from the waste arisings for the construction, operation and decommissioning for the Proposed Development is considered to be negligible. On this basis, it is considered that the potential for significant environmental effects during construction, operation and decommissioning of the Proposed Development is considered to be negligible.
- 1.13.7. It is considered that there is adequate disposal capacity in North East England. Therefore, the assessment of effects on waste arisings is slight and not significant.

1.14. Summary

- 1.14.1. This report has provided a description of the potential waste streams from all phases of the Proposed Development, including an assessment of the quantity of waste that would need to be produced to generate a significant effect. It is not considered that the Proposed Development would generate enough waste to introduce a significant impact on landfill capacity.
- 1.14.2. In addition, the SWMP, CEMP and DEMP will include appropriate measures to minimise waste during the construction of the Proposed Development. In addition, although minimal off-site disposal is likely to be required, it is not considered that an assessment of intra- or inter-project effects is required.

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