South Industrial Zone

Environmental Statement
July 2020

Volume 2

Chapter J - Waste and Materials Management

Contents

J1.0 Introduction

J1.1 This Chapter of the Environmental Statement ('ES') has been prepared by Atkins on behalf of the applicant, South Tees Development Corporation ('STDC').

J1.2 The generation of waste and consumption of materials, in one form or another, is an inevitable consequence of all forms of development and the sustainable management of waste is an important issue. This section assesses the effects of waste and materials generated by the proposed development on waste and materials management.

J1.3 The baseline is established before the likely environmental effects are identified, both during construction and operational phases of the proposed development. Mitigation measures to reduce any negative environmental effects are identified as appropriate, before the residual environmental effects are assessed.

J1.4 This chapter is supported by the following appendix:

i Appendix J1: Summary of Consultation

About the Author

J1.5 Atkins demonstrates competence in environmental impact assessment through registration to the EIA Quality Mark with the Institute of Environmental Management and Assessment.

J1.6 The Author of this document is a Senior Waste Management Consultant with over 7 years of experience in environmental consulting/ environmental impact assessment/ waste management. She is a Chartered Environmentalist and Chartered Scientist with the Chartered Institution of Water and Environmental Management.

J1.7 Additionally, our Lead EIA coordinators are experienced EIA practitioners with depth of experience in EIA and hold Chartership status such as Chartered Environmentalist, Chartered Waste Manager and/or Chartered Scientist. The Chartered status of our staff characterises them as knowledgeable, experienced, competent and committed environmental professionals.

J2.0 Policy Context

J2.1 The following section provides a list of key waste legislation and policies which are relevant to both the construction and operational phases of the proposed development. This is not exhaustive but includes those which are the most pertinent to the proposed development.

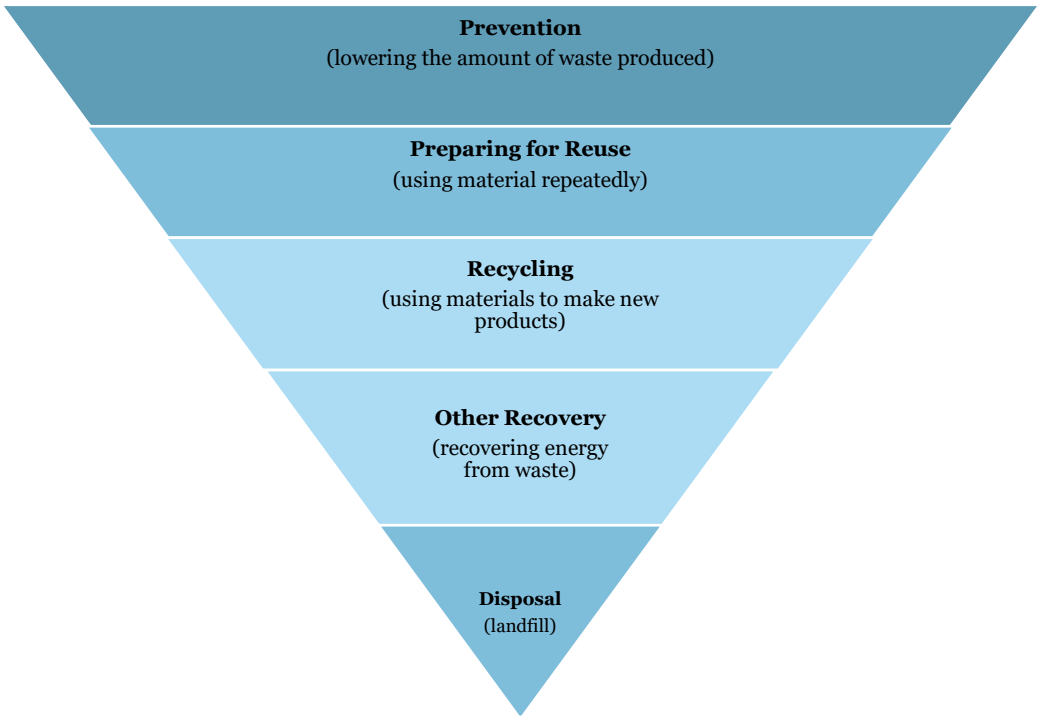
Statutory Legislation

EU Waste Framework Directive (revised) (2008/98/EC)

J2.2 The Waste Framework Directive ('WFD') sets out an overarching legislative framework for the collection, transport, recovery, and disposal of waste. One of its key targets is that by 2020, the re-use, recycling and other material recovery (including backfilling operations by waste), of non-hazardous construction and demolition waste (defined in category 17) but excluding naturally occurring material should be, as a minimum, 70% by weight of that generated. Specifically, category 17 is most relevant for the Building Research Establishment (BRE) and should be considered as a minimum requirement for waste management contractors working on the scheme to achieve.

J2.3 Article 4 of the EU Waste Framework Directive (2008/98/EC) states that waste should be managed in accordance with the five-step waste hierarchy shown in Figure J2.1, and that member states should apply this in priority order.

Figure J2.1 - The Waste Hierarchy



EU Landfill Directive (1993/31/EC)

J2.4 The EU Landfill Directive (1993/31/EC) as amended by EU Directive (2003/33/EC) altered the disposal mechanisms in landfills and introduced tighter monitoring and engineering standards.

The Directive set targets to reduce the amount of Biodegradable Municipal Waste (BMW) sent to landfill for disposal to 35% by 2020, against a 1995 baseline.

Environmental Protection Act 1990 (c. 43)

J2.5 The Environmental Protection Act 1990 (c. 43) as amended in 1996 and 1999 implements integrated pollution control for the disposal of waste to air, land and water, including solid waste disposal. The generation of waste from the development shall be managed in accordance with all applicable legislation and policy and in accordance with good practice.

Environmental Protection (Duty of Care) Regulations 1991

J2.6 This Act defines the fundamental structure and authority for waste management and control of emissions into the environment, within England and Wales and Scotland. This includes regulations surrounding the controlled disposal of waste on land, either household, industrial or commercial in origin. It introduced the concept of the Duty of Care for all wastes, with controls on the transportation, treatment, carrying and keeping of waste.

The Waste (England & Wales) Regulations 2011

J2.7 This amended several previous pieces of legislation including; Hazardous Waste (England and Wales) Regulation 2005, Environmental Permitting (England and Wales) Regulations 2010, Public General Acts and secondary legislation. Part of the stipulated duties included within the 2011 regulations is the obligation for establishments to adhere to the waste hierarchy. This new addition was intended to incorporate greater aspects of the circular economy.

The Environmental Permitting (England and Wales) Regulations 2016

J2.8 The Environmental Permitting Regulations 2016 (SI 2016/1154) replace the 2010 Regulations (SI 2010/675) (as amended in 2011 (SI 2011/2043), 2012 (SI 2012/630) and 2014 (SI 2014/255)). The Regulations put in place requirements to ensure that sites that produce certain materials and undertake certain activities (such as the storage, use or treatment of waste) have a permit or exemption from the regulator (i.e. the Environment Agency). Permit or exemption details of all sites that manage waste from the Scheme will be checked to ensure waste is being managed legally.

Hazardous Waste (England & Wales) Regulations 2016

J2.9 These control the movement and subsequent management of hazardous waste. This includes the restrictions placed on the co-mingling of hazardous waste types and mixing hazardous with non-hazardous waste. Since the 2016 amendment, organisations that produce or store 500kg or more hazardous waste per year are no longer required to register premises with the Environment Agency (EA), however it is still mandatory to complete a consignment note which ensures the hazardous waste information is recorded within the EA register.

Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 (SI 2013/3113)

J2.10 The Regulations revoke the previous WEEE Regulations (2006 (SI 2006/3289), 2007 (SI 2007/3454), 2009 (SI 2009/2957) and 2010 (SI 2010/1155)) and have a key objective to reduce the amount of WEEE that goes to landfill. This is to be achieved by making producers responsible for the collection, treatment and recovery of WEEE, including the associated costs.

The CLP (Classification, Labelling and Packaging) Regulation (EC 1272/2008)

J2.11 The CLP Regulation (within the UK and EU) was introduced in a staggered manner between 1999 and 2015. It should be noted that within the UK and EU, the CLP Regulation, has replaced the Dangerous Substances Directive (67/548/EEC) and the Dangerous Preparations Directive (1999/45/EC). To summarise, the Regulation provides guidance on the application of the CLP criteria for hazards (physical, health and environmental). With specific reference to the Scheme, the Regulation should be used to support the classification of both waste and materials. All waste should be classified by a six-digit code, which must be recorded on all waste transfer notes and hazardous waste consignment notes for the movement of waste from the CD&E and operational phases of the project.

The Control of Asbestos Regulations 2012 (SI 2012/632)

J2.12 The Regulations require notification to the appropriate authority of all notifiable asbestos works (as specified in the Regulations), the medical surveillance (from April 2015) and health records for employers dealing with asbestos, the provision of the correct equipment and training for working with asbestos; and the documentation of the method, storage and disposal of asbestos waste. Any waste containing asbestos (e.g. insulation or lagging) must be stored and disposed of, in suitable packaging to prevent fibre release, in line with the Regulations. All asbestos must be removed by a licensed contractor who has undergone the appropriate training for the removal of asbestos and must wear the appropriate PPE. Written records must be kept of the workers and the likely level of exposure. The asbestos must only be disposed of at an appropriately permitted disposal site.

Environmental Damage (Prevention and Remediation) Regulations 2009 (SI 2009/153)

J2.13 The Regulations, as amended in 2010 (SI 2010/587), introduce obligations to ensure the polluter pays for any environmental damage caused. The Regulations are applicable to all economic activities and therefore cover businesses. The Regulations require caution to be taken when managing sites in order to prevent damage to water, land and biodiversity. Such damage could be caused by poor waste management practices and as such the generation of waste from the project must be managed in accordance with all applicable legislation and policies and in accordance with good practice.

National Policy & Guidance

National Planning Policy Framework (NPPF)

J2.14 The National Planning Policy Framework ('NPPF') was first published in March 2012, and later revised in 2018 and again in February 2019. The NPPF states that part of the environmental objective for achieving sustainable development is:

"to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

J2.15 In Chapter 17, Facilitating the sustainable use of minerals, the NPPF states that planning policies should:

"so far as practicable, take account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source minerals supplies indigenously" (paragraph 204 b)

J2.16 It should be noted that national planning policy for waste is not covered within the NPPF and as such it makes no specific references to waste policies, and instead suggests that it should be read in conjunction with the most up to date national waste policies. Paragraph J2.20summarises the UK Resources & Waste Strategy 2018, which is considered most relevant to this project.

National Planning Policy for Waste 2014

J2.17 The National Planning Policy for Waste is the formal replacement for Planning Policy Statement 10 (PPS10). It follows the principles set out in PPS10, which states that waste should be managed in line with the principles of the waste hierarchy (see Figure J2-1). It is important to ensure that, where possible, waste production is minimised to reduce environmental impacts and to ensure an assessment is made of the local waste infrastructure type and capacities, to include, but not be limited to, an assessment of the local policies.

Waste Planning Practice Guidance 2015

J2.18 The national Planning Practice Guidance provides supplementary guidance to the National Planning Policy for Waste 2014. The guidance requires that impacts introduced by a proposed development on the existing waste management facilities are acceptable and do not prejudice the implementation of the waste hierarchy.

England Resources & Waste Strategy 2018

J2.19 The strategy policy paper 'Our waste, our resources: a strategy for England' published in December 2018 in line with Defra's 25 Year Plan, the UK Resources & Waste Strategy 2018 sets out the actions to be taken in order to achieve the following key targets:

i 50% recycling rate for household waste by 2020;

ii 75% recycling rate for packaging waste by 2030;

iii 65% recycling rate for Municipal Solid Waste ('MSW') by 2035; and

iv Municipal waste to landfill <10% by 2035.

Local Policy & Guidance

Redcar & Cleveland Local Plan 2018

J2.20 The Redcar & Cleveland Local Plan sets out the vision and overall development strategy for the Council's area and how it will be achieved for the period until 2032. The Local Plan provides the policy framework to meet the targets and ambitions set by wider national guidance and regional planning commitments. Policy regarding waste and minerals is set out in the Tees Valley Joint Minerals and Waste Development Plan Documents ('DPD') (2011).

The Tees Valley Joint Waste Management Strategy 2020-2035

J2.21 The strategy has been produced by the five local council that comprise the Tees Valley: Darlington, Hartlepool, Middlesborough, Redcar and Cleveland, and Stockton-on-Tees. The strategy sets out the joint approach to sustainable management of local authority collected waste within the Tees Valley and prioritises actions for the next fifteen years; it excludes construction and demolition waste. The strategy states that the region has in place a 60% recycling target for

municipal solid waste and commercial and industrial wastes by 2030. This target will be used to inform this assessment.

Tees Valley Joint Minerals and Waste Development Plan Documents 2011

J2.22 The Minerals and Waste Core Strategy DPD contains the long-term spatial vision and strategic policies for minerals and waste developments. The Minerals and Waste Policies and Sites DPD identifies specific sites for minerals and waste development and provides policies which will be used to assess minerals and waste planning applications.

J2.23 Key policies outlined in the Joint Minerals and Waste DPDs that are fundamental to future waste and materials management include:

Policy MWC 1 (Minerals Strategy)

J2.24 The sustainable use of mineral resources in the Tees Valley will be delivered through:

a Where appropriate, identifying sources of alternatives to primary mineral resources including secondary and recycled minerals, and encouraging the development of facilities to process alternative materials either at the point of production or other suitable locations;

b Ensuring new-build developments, in particular those in regeneration and growth point areas, contribute to the efficient use of resources, to increase the proportion of construction and demolition waste recycled per year for use as an alternative mineral from 38% in 2005 to at least 80% from 2016 onwards;

c The efficient use of permitted reserves of primary minerals to help meet the identified need, whilst continuing to drive minerals supply up the mineral's hierarchy;

d Identifying those wharves which can be used for the landing of marine-dredged sand and gravels and safeguarding associated land for the development, extension and continuation of this activity;

e Safeguarding the necessary infrastructure to enable the sustainable transport of minerals, in particular the use of the existing rail and port facilities in the Tees Valley; and

f Identifying minerals resources underling the Tees Valley and protecting them from unnecessary sterilisation by built development.

J2.25 The target of 80% of construction and demolition waste to be used as an alternative mineral for construction will be used as a best practice measure for materials use within this assessment.

Policy MWC 4 (Safeguarding of Minerals Resources from Sterilisation)

J2.26 Within the minerals safeguarding areas, non-minerals development will only be permitted in the following circumstances:

a the development would not sterilise or prejudice the future extraction of the mineral resource because there is evidence that the resource occurs at depth and can be extracted in an alternative way or there is evidence that the resource has been sufficiently depleted by previous extraction; or

b the mineral will be extracted prior to development and this will not significantly adversely affect the timing and viability of the non-mineral's development; or

c the need for the non-mineral development can be demonstrated to outweigh the need for the mineral resource.

Policy MWC 6 (Waste Strategy)

J2.27 The sustainable management of waste arisings in the Tees Valley should:

a Make provision for sufficient annual waste management capacity

b promote facilities and development that drives waste management up the waste hierarchy

c allow for the distribution of waste management sites across the Tees Valley so that facilities are well related to the sources of waste arisings, related industries or the markets for any products created

d safeguard the necessary infrastructure to enable the sustainable transport of waste, in particular the use of the existing rail and port facilities in the Tees Valley; and

e develop the regional and national role of the Tees Valley for the management of specialist waste streams

J2.28 Other relevant policies include;

i MWC2: Provision of Primary Aggregate Minerals: Provision made for the supply of primary aggregate minerals between 2010 and 2026 to meet the identified need in the Tees Valley.

ii MWC3: Alternative Materials for Aggregates Use: development of facilities to process materials which can be used as alternatives to primary aggregate resources

iii MWC7: Waste Management Requirements: development of waste management facilities to meet the identified requirements of the Tees Valley

iv MWC11: Safeguarding of Port and Rail Facilities: development which is proposed on or in the vicinity of Tees Dock (Redcar and Cleveland) only permitted where it would not prejudice the transportation of minerals resources and waste materials by water and rail.

J3.0 Assessment Methodology & Significance Criteria

Assessment Methodology

J3.1 Waste is defined by the Waste Framework Directive (Directive 2008/98/EC) as 'any substance or object which the holder discards or intends or is require to discard'. The directive definition includes any substance or object that is discarded for disposal or that has not been subject to acceptable recovery (including reuse and recycling).

J3.2 Where waste is disposed of, resources are lost, and the potential for indirect impacts exists (e.g. atmospheric emissions, pollution of water bodies, visual impact).

J3.3 According to the IEMA guidance (Materials and Waste in Environmental Impact Assessment, 2020) (herein referred to as the IEMA guidance, 2020), materials are substances used in each lifecycle stage of a development, with particular focus on the construction, operation and maintenance, and decommissioning or 'end of first life' (deconstruction, demounting, demolition and disposal) phases.

J3.4 In line with IEMA guidance, 2020 the study area for the proposed development will be the North East of England region for waste and materials.

J3.5 The following tasks will be carried out to determine the impact in relation to waste generation and materials use resulting from the proposed development:

i Review of relevant waste legislation, national, regional and local planning policies and guidance to identify materials and waste management objectives and targets

ii Review of the design and data from the client (where available) to estimate the quantities and types of materials to be used and wastes to be generated during construction and operation

iii Establish the sensitivity of receptors in accordance with the IEMA guidance, 2020. Materials are in their own right sensitive receptors as consuming materials unavoidably impacts upon their availability, resulting in the natural depletion of resources. For waste, landfill capacity is considered a finite resource and through disposal, there is an ongoing need to develop new landfills, resulting further in the depletion of the natural environment.

iv Identify and evaluate the impacts of the proposed development against regional landfill capacity for waste and regional material availability for materials

v Identify opportunities/mitigation measures to reduce, re-use, recover and/ or recycle materials and wastes through a review of the proposed developments design

J3.6 The assessment has been undertaken by quantifying the likely volumes of waste and materials which will be generated during both the construction (including excavation and demolition) and operational phases of the proposed development, and by considering its potential impact on the known regional landfill void capacity. Similarly, for materials, the estimated quantities of material required for construction of the proposed development have been supplied to Atkins by the client and their impact assessed on the regional materials availability.

J3.7 Waste arisings from the following activities are considered:

a Waste generated by demolition activities:

i Demolition of the railway bridge in the north western portion of the site

b Demolition wastes are likely to include but not limited to concrete, inert material, timber, and metals (WRAP, Overview of Demolition Waste in the UK, 2009)

c Waste generated by excavation activities:

i Hardstanding/ topsoil removal

ii Ground preparation for machinery/ equipment (including piling)

iii Site levelling

iv Remedial capping (0.3 m layer assumed across the site)

d Waste generated by construction activities:

i Construction of B2 General Industry, B8 Storage and Distribution, B1 Office and associated hardstanding/ carparking

e Construction waste is likely to include but not limited to concrete, aggregates, asphalt, bricks, ballast, mortar, glass, and timber (IEMA guidance, 2020).

f Waste generated by operation:

i Municipal solid waste (MSW) (e.g. food, plastic, paper, glass) and commercial & industrial (C&I) (e.g. metals, timber, electronic waste) waste generated by general activity and users of the site once operational.

J3.8 Estimations/ assumptions of both demolition and excavation waste arising within the development site have been based an understanding of the site's existing baseline conditions.

J3.9 Excavation material arising at the site is intended to be reused within earthworks and landscaping, such that the cut and fill balance for the proposed development will aim to be neutral. This will be considered within the early stages of design to ensure waste is not generated in earthworks.

J3.10 Calculation of the different quantities of construction and operational waste has been undertaken by applying standard waste indices to the known land uses and floor areas for the existing and proposed masterplans for the proposed development. Regional remaining landfill capacity data has been informed by the Environment Agency Conditional Licence Register, 2018.

Significance Criteria

J3.11 The receptors in this assessment are considered to be:

i Regional landfill void capacity; and

ii Regional materials availability.

J3.12 The sensitivity of each receptor will first be considered based on the criteria in Table J3.1. This is in accordance with the IEMA Guidance, 2020, and considers the future availability of materials/ landfill capacity in the region to determine whether the receptor is highly sensitive or not sensitive.

J3.13 The quantity of waste generated throughout each phase of the proposed development is then assessed against the regional landfill void capacity and expected material use is assessed against regional material availability, to determine the effect classification and thus if a significant impact is anticipated. The level of significance is determined based on the significance criteria outlined in Table J3.2 (IEMA Guidance, 2020)

Table J3.1 Sensitivity of Receptors

Sensitivity of receptor	Definition (highest category applies where one or more criteria are met)
Very high	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. Inert and non-hazardous waste baseline 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. Hazardous waste baseline landfill void capacity is expected to reduce very considerably (by >1%)/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.
High	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 benefits compared to industry-standard materials. Inert and non-hazardous waste baseline landfill void capacity is expected to reduce considerably by 6-10% as a result of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce considerably by 0.5-1% as a result of wastes forecast.
Medium	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. Inert and non-hazardous waste baseline landfill void capacity is expected to reduce by 1-5% as a result of wastes forecast. Hazardous waste baseline landfill void capacity is expected to reduce by 0.1- 0.5% as a result of wastes forecast
Low	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. Inert and non-hazardous waste baseline landfill void capacity is expected to reduce by <1% as a result of wastes forecast Hazardous waste baseline landfill void capacity is expected to reduce by <0.1% as a result of wastes forecast
Negligible	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. * Inert and non-hazardous waste baseline landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity. Hazardous waste baseline landfill void capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.

J3.14 * Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts.

Table J3.2 Magnitude of Change

Impact severity	Definition (highest category applies where one or more criteria are met)
Major	The consumption of one or more materials would be >10% by volume of the regional baseline availability; and/or more than one allocated mineral site would be substantially sterilised by the proposed development rendering it inaccessible for future use. Inert and non-hazardous waste generated by the proposed development would reduce regional landfill void capacity baseline by >10%. Hazardous waste generated by the proposed development would reduce national landfill void capacity baseline by >1%
Moderate	The consumption of one or more materials would be between 6-10% by volume of the regional baseline availability; and/or one allocated mineral site would be substantially sterilised by the proposed development rendering it inaccessible for future use. Inert and non-hazardous waste generated by the proposed development would reduce regional landfill void capacity baseline by 6-10%. Hazardous waste generated by the proposed development would reduce national landfill void capacity baseline by 0.5-1%
Minor	The consumption of one or more materials would be between 1-5% by volume of the regional baseline availability; and/or the proposed development would have the potential to adversely and substantially impact access to one or more allocated mineral site (in their entirety), placing their future use at risk. Inert and non-hazardous waste generated by the proposed development would reduce regional landfill void capacity baseline by 1-5%. Hazardous waste generated by the proposed development would reduce national landfill void capacity baseline by 0.1-0.5%
Negligible	The consumption of no individual material type would be equal to or greater than 1% by volume of the regional baseline availability Inert and non-hazardous waste generated by the proposed development would reduce regional landfill void capacity baseline by <1% Hazardous waste generated by the proposed development would reduce national landfill void capacity baseline by <0.1%
No change	No consumption of materials is required. Inert and non-hazardous waste generation and disposal from the proposed development would be zero. Hazardous waste generation and disposal from the proposed development would be zero.

J3.15 The overall significance criteria of the effect is determined by combining the sensitivity of the receptor (Table J3.1) and the magnitude of impact (Table J3.2) as identified in Table J3.3 (in accordance with IEMA Guidance, 2020). Please note that for the purposes of this chapter that Substantial, Moderate and Minor effects are Adverse and that significant adverse effects are those of Moderate and Substantial significance.

Table J3.3 Overall Significance Criteria

		Magnitude of Impact				
Sensitivity of receptor		No change	Negligible	Minor	Moderate	Major
	Very high	Neutral	Minor	Moderate	Substantial	Substantial
	High	Neutral	Slight	Minor / Moderate	Moderate	Substantial
	Medium	Neutral	Negligible / Nil	Slight	Moderate	Moderate
	Low	Neutral	Negligible / Nil	Negligible / Nil	Slight	Minor / Moderate
	Negligible	Neutral	Nil	Negligible / Nil	Negligible / Nil	Slight

J3.16 Following the assessment, mitigation measures will be identified where practicable. All mitigation measures identified will aim to ensure waste and materials are managed in accordance with best practicable means ('BPM') and in line with the principles of the waste hierarchy.

Consultation

J3.17 Consultation on the methodology and approach to the assessment, including data sources used to inform the baseline assessment, has been undertaken with the relevant officer from Redcar and Cleveland Council.

J3.18 Advice on the assessment approach in line with the IEMA guidance (Materials and Waste in Environmental Impact Assessment, 2020) was sought. The response included general agreement and confirmation of the intended approach as well as a note of consideration of the remedial strategy for the site.

J3.19 Email correspondence is provided in Appendix J1.

Assumptions and Limitations

J3.20 The proposed development will include the construction of:

i B1 Office buildings (41,804 m^2)

ii B2 General Industry and B8 Storage and Distribution buildings (376,236 m^2)

J3.21 The remainder of the site will be covered with hardstanding/ carparking (1,321,960 m^2) This has been calculated by total footprint area (1,740,000 m^2) minus the total building footprint area (418,040 m^2).

J3.22 The hardstanding/ carparking is expected to require the following materials and quantities:

i Concrete hardstanding depth assumptions: 650mm pavement concrete. 300mm granular subbase (aggregate).

ii Asphalt depth assumptions: 300mm surface layer. 300mm granular subbase (aggregate)

J3.23 All material quantities will be converted into tonnes using industry standard conversion rates.

J3.24 All materials will be grouped according to main material types.

J3.25 The proposed development is currently at outline stage and it comprises a set of high-level development parameters. This ES chapter is based on the information available at the time of submission and it is anticipated that as the scheme develops further information and assessments will be undertaken to calculate the waste and materials associated for both the construction and demolition stages of development.

J3.26 As this scheme is in outline and where information is unknown, previous or similar developments or industry baselines have been used to provide estimates. In the case that none of this information is available, the assessment will not be fully complete against the criteria set out in the Significance Criteria and Magnitude Criteria tables within this section.

J3.27 No bill of quantities (types and quantities of construction materials to be used) information or similar has been made available at the point of submitting this application, and therefore this information will be submitted as an addendum.

J3.28 The construction waste arisings from the proposed development have been calculated based on data compiled from the Building Research Establishment (BRE) SMARTstart tool, together with completed projects on the SMARTWaste Plan for the construction of new build projects.

J3.29 The construction programme is based on the information included within Chapter B of this ES. It is assumed that material use, and waste generation will be spread equally across the construction period (5-8 years). 5 years has been assumed for the purposes of this assessment, as a worst-case annual scenario.

J3.30 It is assumed that there is a neutral cut and fill balance for excavation material only for the proposed development. This does not include construction waste.

J3.31 Demolition quantities have been based on an understanding of the existing buildings on site. As discussed in Chapter B of this ES, these are subject to separate prior approval applications. It is STDC's intention that these will be demolished prior to construction starting on site, however as there is no firm commitment, this ES assumes that they will be part of this application. This assumes the worst-case scenario.

J3.32 The remaining landfill capacity includes data for inert and non-hazardous landfills in the region only, as waste arising from the proposed development is expected to be largely inert/ non-hazardous.

J4.0 Baseline Conditions

Existing Conditions

J4.1 The STDC area presents a significant opportunity to convert brownfield sites into new industrial areas. This can be achieved with sustainability in mind by utilising site-won materials generated during the development from earthworks and the demolition of existing assets. Site-won and imported primary/secondary materials and wastes will require storage and movement across the site, and, where possible, the existing transport infrastructure should be utilised. The current site has an extensive network that includes roads, rail and port connections at Teesport, Redcar Bulk Terminal (RBT) and South Bank Wharf. The location of stockpiles and construction compounds should also consider use of the existing transport infrastructure, where feasible.

J4.2 Made Ground is present at the surface across the STDC area and is several metres thick. The composition of the Made Ground is highly variable but largely consists of slag arising from historic iron and steel works and was deposited as part of land raising and reclamation. It is underlain by superficial deposits consisting of tidal and glacial deposits.

J4.3 The finished floor levels at the site will be a minimum of 5.79 m AOD in the north west of the site, nearest to the River Tees. This will rise across the site to accommodate a cut and fill neutral position (based on EA LiDAR).

Remaining Landfill Capacity within the North East Region

J4.4 The total remaining landfill capacity for the North East of England region is estimated to be 19,451,401 m3 (based on data from 2018) or 23,341,681 tonnes.

J4.5 This is based on information from the Environment Agency Conditional Licence Register, 2018, and takes into consideration inert and non-hazardous landfills only.

J4.6 The client has confirmed that the Teesport 3 hazardous landfill located within the STDC area will be the designated site for any hazardous waste which arises during the construction phase of the proposed development.

J4.7 Landfills operated by Highfield Environmental at the STDC site are included within the total landfill capacity data for the region.

J4.8 Landfill capacity within the region is considered to be sufficient in comparison to typical quantities of waste arising from construction projects in the UK. Furthermore, the consideration of high rates of materials reuse/ recycling within construction projects, supported by national targets, means the risk to remaining landfill capacity is low, and has been used to establish the sensitivity of the receptor.

J4.9 Based on Table J3.1, the remaining landfill capacity in the region is considered to be a low sensitivity receptor.

Materials Availability within the North East Region

J4.10 Data from the Profile of the UK Mineral Products Industry (2018) indicates that primary aggregate availability in the North East region is estimated at 7 million tonnes. This is based on primary aggregate sales by region.

J4.11 Ready-mixed concrete availability is estimated at 0.7 million cubic metres (0.84 million tonnes).

J4.12 Asphalt availability for the region is estimated at 0.8 million tonnes.

J4.13 Materials availability within the region is considered to be sufficient compared with the typical volumes of material used within construction projects in the UK. Additionally, there is more onus on ensuring the use of recycled aggregates and secondary materials over primary materials in the construction sector, which further reduces the pressure on natural resources. This, together with the ongoing mineral extraction of sands, gravels, and crushed aggregate in the North East region, has been used to establish the sensitivity of the receptor.

J4.14 Therefore, material availability within the region is considered to be a low sensitivity receptor.

Future Baseline

J4.15 The future landfill capacity within the North East region is expected to decrease per year as the void space is used up by other proposed developments in the region, however the maximisation of reuse of materials within construction projects is a fundamental component of sustainable development, and therefore waste to landfill is also expected to decrease. With this in consideration, it's likely the remaining landfill capacity in the region will still decrease per year but at a slower rate than in the last decade.

J4.16 The availability of materials in the region is likely to remain constant. Whilst primary minerals will still be used in future developments, there will be a larger focus on the use of secondary minerals/ recycled material in construction, reducing the need for primary minerals. Furthermore, primary mineral extraction (i.e. sand, gravel, crushed aggregate) is likely to continue in the future, feeding the supply of primary resources.

J5.0 Potential Effects

J5.1 This section considers the potential effects of the proposed development (and its development parameters) in relation to the forecast volume of waste generated and material used during the construction and operational phases of the proposed development. Regards has been had to the Parameters Plan and the construction methodology set out in Chapter B.

Embedded Mitigation

J5.2 In assessing the effects, it assumes that the following embedded mitigation measures apply to the proposed development:

i The proposed development will aim to be cut and fill neutral, ensuring the reuse of suitable uncontaminated excavated materials is maximised. This comprises of the excavated material;

ii In the above context, waste will be designed out in the early design phases to ensure the volume of waste generated is minimised;

iii Actions will be taken in the early design phases to ensure the use of recycled/ reclaimed materials are maximised in line with the Waste Hierarchy; and

iv Utilisation of existing waste management facilities (Highfield landfill sites) within the STDC site will be prioritised, in accordance with the proximity principle whereby waste should be treated/ disposed of as close as possible from the point of generation.

During Construction

J5.3 The construction phase of the development will generate predominantly inert and non-hazardous type wastes with the potential for some hazardous waste to arise. For the purposes of this assessment, the construction phase is considered to include demolition (as describe in the above sections of this chapter), excavation, and construction activities.

J5.4 Excavation material would comprise inert soils and stones and Made Ground. In line with the assumption that the site will be cut and fill neutral, this material will be re-used on site, subject to geotechnical and chemical testing requirements.

J5.5 Construction waste materials would comprise of concrete, other inert materials, masonry, steel, wood, plastic, glass, plasterboard, mixed waste, canteen waste and hazardous waste.

Demolition

J5.6 Demolition activities are expected to generate approximately 50,000 m^3 (60,000 tonnes assuming 1.2 conversion factor) of waste which will take place in the initial phases of the proposed development, prior to construction works.

J5.7 Waste arising from demolition activities is expected to be predominantly inert/ non-hazardous and will either be reused on site or disposed if in the Highfield Teesport 2 and 3 landfills located to the north east, just outside of the red line boundary. However, for the purposes of this a worst-case scenario which assumes demolition waste will be disposed of in any regional landfill has been assumed.

J5.8 Demolition arisings from the proposed development will utilise 0.26% of the remaining regional landfill capacity in the North East of England.

J5.9 These calculations assume all demolition waste will be disposed of within the same year, as a worst-case scenario.

J5.10 Therefore, the magnitude of the impact of demolition waste is considered to be negligible (<1%). This, combined with the 'low' sensitivity of the receptor (the regional landfill capacity), means that the overall significance of the potential effect is nil or negligible (not significant).

Excavation

J5.11 Activities requiring the use of excavated materials are outlined in paragraph J3.7. The finished floor levels at the site will be a minimum of 5.79 m AOD in the north west of the site, nearest to the River Tees (based on EA LiDAR).

J5.12 As the EIA assumption is that the site will be cut and fill neutral, there will be no surplus material or no void space remaining. This assumption is supported by STDC's intention to maximise the reuse of excavation material at the site and within its wider masterplan area.

J5.13 This assumption will be reviewed and quantified when the design has been developed further. Appropriate geotechnical and chemical testing will be required on any excavated material to ensure it is suitable for reuse (in accordance with the Definition of Waste: Development Industry Code of Practice), or relevant Environment Agency exemption.

J5.14 Excavation material is expected to have a 0% impact on landfill capacity as the proposed development will aim to be cut and fill neutral, as intended to be included within the early stages of design. Any surplus or unsuitable material will be captured by the Definition of Waste: Development Industry Code of Practice to be reused within the wider STDC site on another nearby development site. This can include reuse of contaminated materials on the site of origin, or treatment at a licenced facility and subsequent transfer to be used within another part of the STDC site or another nearby development.

J5.15 However, any material that is classified as hazardous, following testing, will need to be disposed of at a licenced hazardous waste facility (Highfield Teesport 3 Landfill Site).

J5.16 Therefore, the magnitude of impact of excavation materials is considered to be negligible. This, combined with the 'low' sensitivity of the receptor (the regional landfill capacity), means that the overall significance of the potential effect is nil or negligible (not significant).

J5.17 No information on quantities of primary aggregates for earthworks has been made available at this stage in the design, however in addition to maximising the reuse of site-won materials, the production and procurement of alternative/ recycled aggregates to reduce the need for raw primary aggregates should also be sought out where possible.

Construction

J5.18 The construction waste arisings for the proposed development have been calculated based on data compiled from the Building Research Establishment (BRE) SMARTstart tool, together with completed projects on the SMARTWaste Plan for the construction of new build projects. These benchmarks are based on construction works only and do not include demolition, excavation or groundworks waste.

J5.19 Based on the construction assumptions in paragraphs J3.20 and J3.21, the waste arising from the construction of the buildings has been estimated and is shown in Table J5.1 For the purposes of this assessment B2 and B8 land uses have been considered as industrial buildings.

Table J5.1 – Estimated Construction Waste Arisings

Land use	Waste per 100m² floor area (tonnes)	Estimated construction waste arisings (tonnes)
Industrial buildings	12.6	47,406
Commercial offices	23.8	9,949
Total		**57,355**

J5.20 Based on the assumptions set out in paragraph J3.22, the anticipated waste arisings from the construction of the hardstanding/ carparking for each material have been calculated using standard WRAP SMARTwaste wastage rates for concrete, asphalt, and aggregate, and are shown in Table J5.2 below.

Table J5.2 – Estimated Construction Waste (Hardstanding/ carparking area)

Material	Volume required for construction (tonnes)	Estimated waste arising (tonnes)
Concrete	928,016	25,574
Asphalt	47,591	188
Aggregate	475,906	20,952
Total	1,451,513	46,714

J5.21 Therefore, the total construction waste arisings for the proposed development are estimated to be 104,069 tonnes.

J5.22 A certain volume of municipal type waste will also be generated by the construction workers themselves (examples of this waste are set out in paragraph J3.7). Based on the assumption that the proposed works will require 420 FTE, the total waste generated by employees is estimated to be 4.2 m³ per day or 1,570 m³ per year (1,883 tonnes per year).

J5.23 Waste generation calculations made in this section represent total waste generated for the entire construction period (5-8 years), however these can be broken down on an annual basis. For the purpose of this EIA it has been assumed that waste will be generated in equal quantities across the construction period.

J5.24 For the purposes of this assessment, a worst-case scenario (with regards to waste) of a 5-year construction period has been assumed i.e. higher waste quantities per year. It is estimated that 20,814 tonnes of waste would arise per year of construction (5 years), equating to a total of 104,069 tonnes of construction waste over the 5 years. Taking into consideration the MSW arising from construction workers, the total construction waste anticipated to arise from the proposed development is 22,697 tonnes per year.

J5.25 This equates 0.10% of the remaining landfill capacity for the North East of England, therefore, the magnitude of the impact of construction waste is considered to be negligible (<1%). This, combined with the 'low' sensitivity of the receptor (the regional landfill capacity), means that the overall significance of the potential effect is nil or negligible (not significant).

Materials

J5.26 Information on materials to be used in the construction of the buildings (i.e. bill of quantities or similar) within the proposed development has not been made available for this assessment.

J5.27 Materials consumption information is limited to the construction of the carpark and hardstanding area (shown in Table J5.3).

J5.28 Table J5.3 below shows the anticipated impacts on material availability within the region. It assumes a 5-year construction period, and that materials will be utilised equally across this period.

Table J5.3 – Impacts of materials on regional availability

Material	Quantity required per construction year (tonnes)	Regional annual material availability (tonnes)*	Utilisation of regional annual material availability (%)
Concrete	185,603	840,000	22 %
Asphalt	9,518	800,000	1.2 %
Aggregate	95,181	7,000,000	1.4 %
Total	**290,303**	**8,640,000**	**3%**

*data from 2017 (Mineral Products Association, 2018)

J5.29 The quantity of all materials combined compared with the total regional material availability is 3%, therefore materials required for the construction of hardstanding/ carparking only within the proposed development would have a magnitude of impact of minor (1-5%) on the regional annual material availability. Given the low sensitivity of the regional material availability as a receptor, the overall significance of the effect is considered to be nil or negligible (not significant).

J5.30 It should be noted that building materials are typically sourced on a 'just in time' basis for construction works and this further strengthens the conclusion of no significant impact in EIA terms.

During Operation

J5.31 The operational phase is expected to generate largely municipal type waste with some commercial and industrial waste.

J5.32 To estimate the volume of waste that would arise during the operational phase of the proposed development, published indices from the British Standard (BS) 5906:2005 Waste Storage in Buildings have been used. These assume that 0.002 m^3 (0.0024 tonnes) of waste will arise per week for every square metre of a B1 office land use and 0.001 m^3 (0.0012 tonnes) for B2 general industry and B8 storage and distribution.

J5.33 Based on an area of 376,236 m^2 for B2 and B8 land uses and 41,804 m^2 for B1, the total operational waste arisings are estimated to be 552 tonnes per week or 28,704 tonnes per year (assuming 52 weeks per year of operation).

J5.34 The estimated total annual operational waste arisings from the proposed development will occupy 0.12% of the remaining landfill capacity for the North East of England.

J5.35 Therefore, the magnitude of the impact of waste generation in the operational phase of the proposed development are considered to be negligible. Given the low sensitivity of the regional landfill capacity as a receptor, the overall significance of the effect is considered to be neutral or slight (not significant).

J6.0 Mitigation and Monitoring

During Construction

J6.1 The proposed development is expected to be cut and fill neutral and this is embedded into the design of the scheme.

J6.2 The site is located within STDC's wider masterplan area. A masterplan wide waste management strategy is currently being developed and this includes the following principles and aspirations:

- Generation of the scheme (and zone) specific architecture associated with the re-use of site-won materials and generation of earthworks wastes;
- Develop mechanisms to re-use site won materials through the use of the CL:AIRE DoW CoP and/ or Environment Agency exemptions;
- Sustainable management of wastes requiring treatment and/ or off-site disposal to minimize waste going to landfill and demonstrate end-of-waste.

J6.3 It is anticipated that the proposed development will be developed in accordance with this site wide strategy and this ES has demonstrated conformity with the above. The extent to which the development accords with the strategy will be determined once the detailed design is known.

J6.4 As aforementioned it is assumed that the development site will be cut and fill neutral. Further information will be summited at the reserved matters stage of the development. If this position changes, there is an expectation that site won material will be reused within the masterplan area as a priority and in accordance with the emerging waste strategy.

J6.5 A Construction Waste Management Plan will be prepared. The contractors should be committed to achieving a high recycling and recovery rate for all waste generated on site. Table J6.1 demonstrates standard, good and best practice for construction material recovery rates. Based on this it should be possible to achieve a minimum of a 55% recovery rate although the Principal Contractor should aim for a best practice recovery rate of 90% and above.

Table J6.1 – Standard, good and best practice recovery rates by material (WRAP)

Material	Standard Practice Recovery (%)	Good Practice Recovery (%)	Best Practice Recovery (%)
Timber	57	90	95
Metals	95	100	100
Plasterboard*	30	90	95
Packaging	60	85	95
Ceramics/Masonry	75	85	100
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical Equipment	Limited Information	70**	95
Furniture	0-15	25	50
Insulation	12	50	75
Cement	Limited Information	75	95
Liquids and Oils	100	100	100

Material	Standard Practice Recovery (%)	Good Practice Recovery (%)	Best Practice Recovery (%)
Hazardous	50	Limited information***	Limited Information***
Total	55%	78%	90%

* Excludes plasterboard from demolition.
** This is a required recovery target for the type of WEEE likely to be produced from construction sites.
*** This cannot be 100% as a large proportion of hazardous waste (e.g. asbestos) must be landfilled.

J6.6 The contractors will work to ensure sustainable procurement of construction materials and minimise waste to landfill. In addition, during construction, the site should be managed so as to avoid unnecessary waste such as excess material brought to the site without need and left to be damaged or wasted.

J6.7 Best practice waste and materials management on construction projects include:

i Setting targets for waste recovery and recycling to enable those working on the project to have a clear understanding of what is expected;

ii Reviewing opportunities to utilise excavated materials from other developments in proximity, using a Materials Management Plan under the Definition of Waste: Development Industry Code of Practice;

iii Production and maintenance of a Site Waste Management Plan during the design and construction phases of the proposed development;

iv Adhering to the project construction environmental management plan (CEMP) and updating it as necessary throughout the project;

v Procurement of secondary aggregates/ recycled materials for use in construction;

vi Incorporating source segregation of waste and providing enough space to do so at all stages of the proposed development

vii Specification and use of industry standard sizes for materials and products, wherever possible (e.g. standard height plasterboard sheets);

viii Using precast concrete and other materials that can be prepared off site to minimise waste generation on site;

ix Not over ordering materials and using materials brought to site as efficiently as possible;

x Organising deliveries so materials arrive on site as they are needed to reduce the possibility of damage and wastage occurring;

xi Having clearly defined and separated skips on site and a clearly demarked waste area;

xii Setting down site rules for good practice for procurement, on-site handling and storage of materials to prevent wastage; and

xiii Training staff to understand how they should sort any waste and having regular reminders and updates.

J6.8 Using the mitigation measures above and the appointment of a licensed and high performing waste contractor should help enable the proposed development to achieve high recovery rates which would reduce the waste requiring disposal by at least 80%, in accordance with the targets for construction and demolition waste in the Tees Valley Joint Minerals and Waste Core Strategy Development Plan Documents, 2011.

During Operation

J6.9 The waste objectives for the operational phase should aim to reduce, re-use, recycle and recover waste as much as possible before considering disposal. An efficient waste management system needs to consider the whole process of waste management including storage, collection, waste transport, treatment and disposal.

J6.10 To mitigate the impact of the operational waste generation the following steps can be taken:

i Provision of adequate internal storage space and containers for office units;

ii Residual and recyclable office wastes to be stored and collected separately via provision of clearly marked and/or colour-coded bins aligned with the local authority's guidance and infrastructure;

iii Provision of recycling facilities within the proposed development (i.e. card compactors, woodchippers/ pelletizers, etc.);

iv Development of an Environmental Management Plan incorporating waste or a standalone Operational Waste Management Plan;

v Provision of education and awareness to end-users on recycling and waste reduction.

J7.0 Residual Effects

During Construction

J7.1 The recovery target for construction, demolition and excavation waste for the Tees Valley is 80% (Tees Valley Joint Minerals and Waste Core Strategy Development Plan Documents, 2011). If this recovery/ recycling rate was achieved in the construction phase of the proposed development, the total construction waste to landfill (104,069 tonnes) for the entire construction period would reduce to 20,814 tonnes. This equates to 4,163 tonnes per year based on the worst-case scenario of a 5-year construction period.

J7.2 The Tees Valley Joint Waste Management Strategy 2020-2035 states that the region has in place a 60% recycling target for municipal solid waste and commercial and industrial wastes by 2030. If this recycling rate was applied to the municipal solid waste expected to arise from construction workers within the proposed development (1,883 tonnes per year), municipal solid waste to landfill would reduce to 753 tonnes per year.

J7.3 Therefore, the total waste to landfill during the construction phase would equate to 4,916 tonnes per year and equate to 0.0002 % of regional landfill capacity.

J7.4 As demolition works are expected to take place prior to construction works starting, the annual impact has been considered separately to construction waste arisings per year. If the same recovery rate was applied to demolition waste (60,000 tonnes), it would reduce demolition waste sent to landfill to 12,000 tonnes, therefore decreasing the impact to landfill capacity to 0.0005%.

J7.5 Excavation material is expected to have a 0% impact on landfill capacity as the proposed development will aim to be cut and fill neutral, as intended to be included within the early stages of design. However, in the event that material is classified as hazardous, following testing, it will be disposed of a licenced hazardous waste facility (Highfield Teesport 3 landfill site), which would increase the impact on landfill capacity slightly. Any surplus or unsuitable material will be captured by the Definition of Waste: Development Industry Code of Practice to be reused within the wider STDC site or another nearby development. This can include reuse of contaminated materials on the site of origin, or treatment at a licenced facility and subsequent transfer to be used within another part of the STDC site or another nearby development, and still avoid waste to landfill.

J7.6 Therefore, residual effects of the construction phase of the proposed development would be neutral or slight which is not considered significant.

J7.7 The Profile of the UK Mineral Products Industry (2018) by the Mineral Products Association indicates that in 2018, recycled and secondary materials formed 30% of the total material consumption in the UK for that year. Using this as a guideline, and assuming 30% of construction materials required for the proposed development are recycled/ secondary, the quantity of primary material required would reduce to 203,212 tonnes per year of construction. This equates to 2.3% of regional material availability, and therefore residual effects would remain as negligible or nil (not significant).

During Operation

J7.8 The Tees Valley Joint Waste Management Strategy 2020-2035 states that the region has in place a 60% recycling target for MSW and C&I wastes by 2030. If this recycling rate was achieved in the operational phase of the proposed development, the total waste to landfill (28,694 tonnes)

would reduce to a total of 11,482 tonnes per year. This would reduce the impact on landfill capacity to 0.005%.

J7.9 Therefore, residual effects of operational waste arising from the proposed development would be nil or negligible which is not considered significant.

J8.0 Summary & Conclusions

J8.1 The Proposed development will result in the generation of 104,069 tonnes of construction waste, and 60,000 tonnes of demolition waste in the construction phase (assumed to be 5 years). Excavation waste is assumed to be zero (or cut and fill neutral) for the purposes of this assessment. Construction waste per year of the proposed development period is estimated to be 22,697 tonnes.

J8.2 During the operational phase, the proposed development is expected to generate a total of 28,704 tonnes of waste per year, largely comprising municipal solid waste and commercial and industrial wastes.

J8.3 Based on a worst-case scenario (if all waste arisings were sent to landfill), construction waste arisings would account for 0.10% of the regional landfill capacity (neutral or slight impact), whilst demolition waste would account for 0.26% (neutral or slight impact) and excavation arisings 0%, with a small quantity of hazardous waste going to landfill (neutral or slight impact). Operational waste arisings would account for 0.12% of the regional landfill capacity (neutral or slight impact). Material consumption would account for 3% of regional material availability.

J8.4 In the case that good recycling and recovery practices are adopted, it is possible the volumes of waste requiring disposal may be reduced by at least 80% for construction, demolition, and excavation waste (mostly construction phase) and 60% for municipal solid waste (mostly operational phase). For materials, it has been assumed that 30% would comprise recycled/ secondary materials and the remaining 70% would be primary materials.

J8.5 Where these targets are met, it is possible to reduce the waste sent to landfill to 4,916 tonnes per year (construction waste) and 12,000 tonnes (demolition waste). Operational phase waste could reduce to 11,482 tonnes per year. This would account for an average of 0.0002% (construction waste), 0.0005% (demolition waste), and 0.005% (operational waste) of regional landfill capacity. The impacts from this would be neutral or slight/ not significant (construction phase) and neutral or slight/ not significant (operational phase). Adopting these recycling and recovery rates will reduce the impact of the waste arising from the proposed development on the existing regional landfill capacity and associated environmental impacts.

J8.6 The use of materials for construction of the proposed development is estimated to be 290,303 tonnes, which equates to 3% (minor impact) of the regional material availability. This data does not include material required for the construction of the buildings and relates to the construction of hardstanding/ carparking areas only. The use of secondary aggregates and recycled materials will be sought out where possible. For the purposes of this assessment, a recycled/ secondary material content of 30% has been assumed, which would reduce the primary material consumption of the proposed development to 203,212 tonnes per year. This equates to 2.3% of regional annual material availability and therefore, the residual effects remain neutral or slight (not significant).

Table J8.1 Summary of Effects

Receptor	Effects	Mitigation	Residual Effects
During Construction			
Regional landfill capacity	60,000 tonnes (demolition) Total 104,069 tonnes (22,697 per annum) (construction)	Design Out Waste. Appropriate segregation and management of waste on site.	The total estimated C&D waste arisings for the project equate to 0.26% and 0.10%, respectively, of the regional landfill capacity. This is based on a worst-case scenario and assumes all waste is sent to landfill.

Receptor	Effects	Mitigation	Residual Effects
	0 tonnes (excavation) Demolition waste equals 0.26% of regional landfill capacity Construction waste equals 0.10% of landfill capacity over 5 years Level of Significance: Neutral or slight	Reuse and recovery as per targets.	If the CD&E recovery target was applied to the construction phase of the project, the volume of construction waste sent to landfill would decrease to approximately 4,916 tonnes per year. This equates to 0.0002% of the regional landfill capacity, assuming generation over a 5-year construction period. If the same recovery target was applied to demolition waste, it would reduce to 12,000 tonnes with a 0.0005% impact on regional landfill capacity. Neutral or slight (not significant)
Regional materials availability	290,303 tonnes of material required for hardstanding area This equals 3% of regional material availability (8,640,000 tonnes) Level of Significance: Neutral or slight	Secondary aggregates/ recycled materials will be sought out wherever possible.	Assuming a recycled/ secondary material content of 30%, primary material consumption for the proposed development would reduce to 203,212 tonnes per year. This equates to 2.3% of regional annual material availability Neutral or slight (not significant)
During operation			
Regional landfill capacity	5,217 tonnes per annum (MSW) 23,477 tonnes per annum (C&I) 0.12% of regional landfill capacity Level of Significance: Neutral or slight	Segregation and separation of waste streams Recycling as per targets	The total estimated operational waste arisings for the project equate to an average of 0.12% of the regional landfill capacity. This is based on a worst-case scenario assuming all waste was sent to landfill. If the municipal waste recycling target of 60% was applied to the project, the volume of waste sent to landfill would decrease to approximately 11,482 tonnes. This equates to 0.0005% of the regional landfill capacity. Neutral or slight (not significant)

J9.0 Abbreviations & Definitions

i MSW -Municipal solid waste
ii C&I – Commercial & industrial
iii C&D – Construction & demolition
iv CD&E – Construction, demolition, & excavation
v CEMP – Construction environmental management plan
vi SWMP – Site waste management plan
vii MMP – Materials Management Plan
viii DoW CoP – Definition of Waste: Development Industry Code of Practice
ix WRAP – Waste and Resources Action Programme
x EA – Environment Agency

J10.0 References

i IEMA guide to: Materials and Waste in Environmental Impact Assessment - Guidance for a proportionate approach (March 2020)

ii South Tees Regeneration Masterplan, 2019, South Tees Development Corporation (2019);

iii Tees Valley Joint Waste Management Strategy (2020-2035)

iv Defra - Digest of Waste and Resource Statistics (2018)

v Tees Valley Joint Minerals and Waste Core Strategy DPD (2011)

vi Tees Valley Joint Minerals and Waste Policies & Sites DPD (2011)

vii Government Officer for the North East of England, North East of England Regional Spatial Strategy (2008)

viii Defra, Draft 16 UK Waste Classification Scheme: www.sustainabilityexchange.ac.uk

ix Environment Agency Conditional Licence Register (2018).

x Waste and Resources Action Programme, Overview of Demolition Waste in the UK (2009)

xi Mineral Products Association, Profile of the UK Mineral Products Industry (2018)

xii Building Research Establishment (BRE) SMARTstart tool (2012)