

9 WASTE

9.1 Introduction

- 9.1.1 This chapter assesses the likely significant effects of the AESC Plant 3 development in terms of materials and waste in the context of the site and the surrounding area. It considers the likely significant effects associated with the construction, and operational phases. The effects have been assessed in the context of relevant national, regional, and local waste management policies and regional waste management treatment and disposal capacity.
- 9.1.2 This chapter details consideration of both construction and operational waste generation. Specifically, sources, quantities, management techniques and treatment and disposal routes. Where opportunities exist to make use of waste as a resource in redevelopment of the site these will be taken. Such measures will be detailed in the Site Waste Management Plan (SWMP).
- 9.1.3 The principal objective of sustainable resource and waste management is to use materials as efficiently as possible, reduce waste generation, and limit waste disposal to landfill. Where waste is generated, it should be managed in accordance with the Waste Hierarchy as reproduced in Figure 9.1. The Waste Hierarchy advocates an order of preference for the management of wastes.

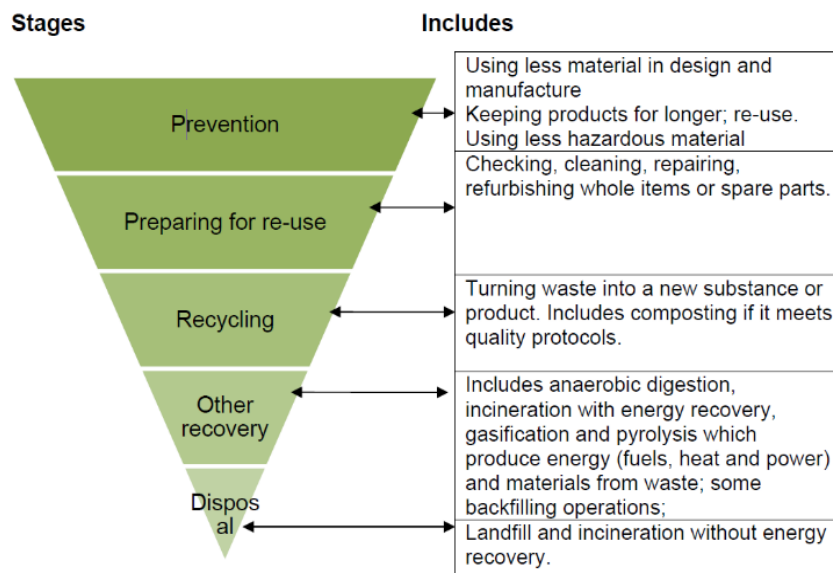


Figure 9.1: The Waste Hierarchy

- 9.1.4 Resource and waste management should actively contribute to the economic, social and environmental goals of sustainable development.

9.2 Proposed development

- 9.2.1 The AESC Plant 3 (i.e. proposed development) is located immediately to the north and west of the existing AESC Plant 2 (original planning ref. no. 21/01764/HE4 / Section 73 planning ref. no. 23/01542/VA4), which was approved in October 2021. To develop another 12GWh battery factory on the site, it is estimated a further 42.39ha of land space is required, including space for a an assembly and warehousing building, offices and other associated amenities and measures.
- 9.2.2 The proposed development will employ up to 1,000 staff. Access to the site will be from the A1290 via International Drive and a carpark will be created to the immediate north-east of the unit.
- 9.2.3 The proposed development consists of a single, three-storey industrial unit that is to house a capacity electrode and battery manufacturing facility with a maximum capacity of up to 12GWh per annum, as well as an adjoined pack warehouse for post-assembly storage. The development also includes a group of offices and 780 car parking spaces (plus up to 80 bicycle/motorcycle spaces), as well as associated amenities including a gatehouse, access roads, waste storage areas and electrical sub-station. The development includes the removal of the existing topsoil within the site to facilitate the development of the site as part of the wider IAMP area.
- 9.2.4 This chapter has been prepared by a team of experienced waste management professionals.

9.3 Consultation and Scope of the Assessment

- 9.3.1 The informal consultation that was undertaken with Sunderland City Council (SCC) in 2019 as part of the previous application concluded that the waste chapter of the 2020 ES would focus in particular on the demolition of West Moor Farm and the disposal of arisings from this, together with the disposal of the topsoil present onsite (whether reused within the wider IAMP site area or removed off the site). This was inclusive of the impacts of the IAMP ONE site.
- 9.3.2 A detailed EIA was carried out in July 2021, with a focus on the construction and operational phase on the AESC Plant 2. This has since been modified for the development of the AESC Plant 3 development as a proposed expansion, which is covered in this EIA/ES.
- 9.3.3 A detailed masterplan (Drawing 201 Proposed Site Plan) has been prepared for the planning application, which has been used as the design basis for this waste

assessment. The assessment considers the development layout, building construction and development envelope for construction and operation.

- 9.3.4 Waste generated during the construction phase will include topsoil and subsoil from excavations, packaging waste from material and equipment deliveries, as well as waste generated during construction (for instance, surplus building materials, food and paper/plastic waste from the site offices, surplus oil/fuels).
- 9.3.5 Waste generated during the operational phase of the development includes that created by site staff and visitors, waste arisings generated by the operations carried out within the development unit, waste from packaging of materials delivered to the manufacturing unit as well as process wastes from the production of batteries, including Waste Electrical and Electronic Equipment (WEEE), metals and hazardous materials. Trace volumes of green waste and road sweepings residues would also be anticipated on the site from maintenance activities. Waste produced by the operational site workers might include non-recyclable residual waste, recycling fractions, and food waste from offices and canteens.
- 9.3.6 The ability of the existing waste facilities within the region to accommodate deliveries of materials for processing during the construction and operational phases of the site has been reviewed as part of this assessment. It is intended that materials will be reused on the development site, reused on alternative developments, recycled or reprocessed offsite, or (as a last resort) sent to a local inert landfill. Further details of the local facilities are provided in Section 9.5 of this chapter.
- 9.3.7 Methods for storing waste onsite will be discussed, as will methods for managing any hazardous or contaminated materials.
- 9.3.8 The assessment takes into account the Interim Advice Note (IAN) prepared by Highways England 'Guidance on Environmental Assessment of Materials Resources' (Design Manual for Roads & Bridges (DMRB) Volume 11).

9.4 Legislation, Policy and Guidance

Legislative Framework

- 9.4.1 The following legislative framework is relevant for the assessment of waste management at the site:

- European Community (EC) Framework Directive for Waste, 2008/98/EC (the Waste Framework Directive); and
- EC Landfill Directive, 1999/31/EC.

9.4.2 The Waste Framework Directive (WFD) requires the EC member states to take the appropriate measures to, firstly, encourage the prevention or reduction of waste production and to, secondly, secure the recovery of waste by means of recycling, re-use or recovery, to extract secondary raw materials, or to make use of the waste as a source of energy. The Waste Hierarchy sets out the stages by which waste is intended to be dealt with, starting with 'prevention', then 'reuse', followed by 'recycling', 'other recovery' and the, finally, 'disposal' as the least preferred option.

9.4.3 The EC Landfill Directive (1999 Directive) aims to prevent or reduce (as far as possible) adverse effects on the environment from landfilling of waste. This would be achieved by the following:

- Ending co-disposal of hazardous and non-hazardous waste in landfill;
- Introducing rigorous technical requirements for landfill sites and waste;
- Phasing in the prohibition of disposal to landfill of specific wastes (including liquid hazardous waste, other hazardous waste, whole and shredded tyres);
- Obliging operators to pre-treat all hazardous waste and all other wastes; and
- The introduction of phased targets for the reduction of biodegradable waste sent to landfill, through to 2020.

9.4.4 The New Resources & Waste Strategy for England was published in 2018 and policy measures contained are currently in final consultation. Major policy changes encompass Extended Producer Responsibility (EPR), Deposit Return Schemes (DRS), WEEE take back schemes and measures to improve collection of specific material streams (e.g. food waste). As part of these plans, the existing battery regulations will be reviewed focusing on sustainable design and recycling. Other key highlights include details of targets for a zero avoidable waste economy by 2050, phasing out avoidable plastic waste by 2042 and eliminating food waste from landfill by 2030.

National Planning Policy

9.4.5 The revised National Planning Policy Framework (NPPF) was first published in March 2012 and was last updated in December 2023. It outlines the Government's economic, environmental and social planning policies for England and sets out how these are to be applied against a background of a presumption in favour of sustainable

development. It is expected that these policies will be interpreted and applied at the local level to meet the requirements of the local area.

9.4.6 With regard to waste and waste management, paragraph 4 of the NPPF states that the Framework should be read in conjunction with the Government's planning policy for waste. This is defined in the national Waste Management Plan (2013) and National Planning Policy for Waste (NPPW) (2014).

9.4.7 The National Waste Management Plan transposes the requirements of the WFD (see above) into English law.

9.4.8 The NPPW sets out detailed waste planning policies and is intended to be read alongside the NPPF and the Waste Management Plan for England. Paragraph 8 of this states that, in determining non-waste related development, local planning authorities should ensure that:

- *“The likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;*
- *New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development and, in less developed areas, with the local landscape.;*
- *The handling of waste arising from the construction and operation of development maximises reuse / recovery opportunities and minimises offsite disposal.”*

Resources and Waste Strategy for England (2018)

9.4.9 Our Waste, Our Resources: A Strategy for England was published in 2018 replacing the previous 2013 waste strategy (Waste Management Plan for England), which sets out the Government's direction in waste management whilst incorporating core principles including the waste hierarchy, resource efficiency and circular economy.

9.4.10 The Strategy sets out how to preserve the stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. It also sets out how to minimise the damage caused to our natural environment by reducing and managing waste safely and carefully, and by tackling waste crime.

9.5 Local Planning Policy

Sunderland Core Strategy & Development Plan (CSDP) 2015-2033

- 9.5.1 The CSDP is the adopted Development Plan for Sunderland and, though this, retains some of the ‘saved’ policies within the Unitary Development Plan (UDP) until such time as the Allocations and Designations Plan is in place. One of the themes of the CSDP is ‘water, waste and energy’; strategic priority 10 is *“to manage waste as a resource and minimise the amount produced and sent to landfill”*. This strategy is supported by a suite of policies (WWE5, WWE6, WWE7, WWE8, WWE9 and WWE10) set out within Section 11 of the CSDP.
- 9.5.2 The CSDP notes at paragraph 2.71 that *“Sunderland is well served by waste infrastructure and is net self-sufficient in the management of waste. The area has significant built waste management capacity which provides for the needs of Sunderland and a number of other authorities across the North East region.”*
- 9.5.3 Within the CSDP, paragraph 2.72 states that *“Local authority waste is managed under the South Tyne and Wear Waste Management Partnership (STWWMP) which is a collaboration between Sunderland, Gateshead and South Tyneside Councils and covers the management of this waste for the duration of the plan period.”*
- 9.5.4 CSDP Policy WWE5 relates to the disposal of foul water; the site will be connected to the public sewers within the local area (as discussed in Chapter 10 of this ES).
- 9.5.5 CSDP Policy WWE6, Waste management, primarily addresses the provision of waste management facilities but also states that development that minimises waste production and encourages the re-use and recovery of waste materials will normally be supported.
- 9.5.6 CSDP Policy WWE7 also relates to new waste facilities; policy WWE8 relates to the safeguarding of existing waste management sites; policy WWE9 relates to the development of new open waste management facilities; policy WWE10 addresses developments relating to the provision of energy from waste. These are therefore not relevant to this assessment.
- 9.5.7 Within other parts of the CSDP, Policy BH2 relates to sustainable design and construction; point 2 notes the requirement for major development, where possible, to reduce waste and promote recycling during construction and in operation.

The International Advanced Manufacturing Park, Area Action Plan (IAMP AAP)

- 9.5.8 The IAMP Area Action Plan (AAP) 2017-2032 was adopted by SCC and South Tyneside Council (STC) in November 2017. The AAP forms part of the SCC Local Plan and STC

Local Plan and sets out the specific policies relating to the delivery of the IAMP. In relation to waste management, the AAP includes the following specific objective:

- Objective 6: Support the efficient use of resources and minimise disposal of wastes to landfill.

South Tyne & Wear Waste Management Partnership

9.5.9 The waste management planning strategies of Gateshead, Sunderland and South Tyneside Councils (which, together, form the South Tyne & Wear Waste Management Partnership) are set out in the South Tyne & Wear Municipal Waste Management Strategy, published in 2021. The Strategy runs from 2021 to 2025 and aims to reduce the quantity of waste sent to landfill across the region. Whilst it covers municipal waste, it does not include demolition, industrial or commercial wastes. As such, it is not relevant to the site.

9.6 Assessment Methodology and Significance Criteria

Scope of the Assessment

9.6.1 This chapter assesses the potential quantities of waste and the various types of waste that can be anticipated from the construction and operational phases (including maintenance) of the site. Consideration is also given to the potential environmental impacts associated with the likely methods of storage of any excavated materials, as well as the management of the different waste streams present onsite at the different phases of the works.

9.6.2 Mitigation measures are outlined that will be adopted to:

- Minimise waste generation;
- Facilitate the re-use or recycling of waste onsite; and
- Minimise the potential exposure to harmful materials and nuisance as part of waste collection, temporary storage and transportation of waste from the site.

9.6.3 This will also include use of appropriate controls for any waste stored onsite, so as to avoid discharge of contaminated material to land or water.

Assessment Methodology

9.6.4 Effects on the environment have been assessed with reference to standards and legislative guidance where this is available. Where quantification of effects has not been possible, qualitative assessments have been carried out based on professional

judgement and current knowledge. Uncertainties are also noted where this is appropriate.

- 9.6.5 This method of baseline data collection and assessment is in accordance with current guidance and industry best practice.
- 9.6.6 Consideration has been given to the estimated amount of waste in terms of the volume of excavated materials that will be generated through the cut and fill activities as part of the proposed development. This activity is likely to be carried out prior to the construction of the proposed commercial properties and associated infrastructure. Owing to the prior developed nature of the site, local topography, proposed plans and lack of available information indicating otherwise, it is assumed that there will be a net zero balance from cut and fill activities.
- 9.6.7 For the construction phase, waste streams have been identified and the mass of each waste stream likely to be generated during the construction phase of development has been estimated using BRE SMARTWaste Benchmarks. This is based on the proposed floor areas and has been annualised based upon the construction being spread over 2.5 years, in-line with the proposed development programme.
- 9.6.8 Predictions of operational phase waste generation from the proposed development are based on BS 5906:2005. The operational waste types that are likely to arise can be broadly subdivided into commercial waste, industrial waste and household waste.
- 9.6.9 Following the assessment, appropriate mitigation measures have been identified to reduce the quantity of waste sent for final disposal and to apply sustainable waste management practices within the development. These include a detailed SWMP for the construction phase in order that waste is minimised, and litter is managed properly; optimising of construction scheduling for material use; identification of neighbouring businesses/land users for reuse of waste materials; and partnership with local recycling facilities.
- 9.6.10 Extending into the operational phase, all waste arising forecasts will be annualised.

Significance criteria

- 9.6.11 The significance criteria used when assessing potential effects of waste and waste management will follow the approach used for the IAMP ONE and AESC Plant 2 EIAs relevant to the AESC Plant 3 site, which are located adjacent to the proposed development. This has had regard for the predicted level of waste arisings and local

waste management capacity, strategies and policies. Table 9-1 (below) defines the criteria used for the assessment of significance.

Table 9-1: Criteria Used in the Definition of Significance of Waste Management	
Significance	Definition
Major Adverse Impact	An effect that in isolation could have a material influence on the decision-making process (significant effect).
Moderate Adverse Impact	An effect that on its own could influence decision-making, particularly if combined with other similar effects (potentially significant – professional judgement to be applied).
Minor Adverse Impact	An effect that on its own is likely to have negligible / no influence on decision-making, but when combined with other effects could have a more material influence (less likely to be significant – professional judgement to be applied).
Negligible Impact	No effects (not significant).

9.6.12 In order to ensure that the worst-case scenario is considered, for the purposes of this assessment both major and greater than moderate adverse impacts will be considered ‘Significant’ (in EIA Terms).

9.6.13 Receptor sensitivity has also been considered (listed in Table 9.2) and covers the degree to which waste facilities would be affected by the waste generated onsite.

Table 9-2: Receptor Sensitivity	
Designation	Receptors
Very High (e.g., International)	Recycling and material recovery infrastructure internationally.
High (e.g., National)	Recycling and material recovery infrastructure in the UK.
Medium (e.g., Regional)	Recycling and material recovery infrastructure in the North East of England. Inert and residual landfill and recovery infrastructure in the North East of England.
Low (e.g., Sub-Region/ Local)	Recycling and material recovery infrastructure in Tyne and Wear. Inert and residual landfill and recovery infrastructure in Tyne and Wear.
Negligible	Residents, businesses, and other sites e.g., Habitats and other designated sites, from litter and other wind-blown waste dispersal.

Assumptions & Limitations

9.6.14 In this detailed application, it has been necessary to make a number of assumptions in order to assess the nature and extent of effects of waste material generated by the proposed development. These include the following:

- Where uncontaminated excavated material arises during construction, this will be considered for reuse onsite; contaminated excavated material (if encountered) will either be treated onsite or removed offsite for treatment and disposal;

- Where materials are available and suitable for re-use, measures will be taken to incorporate this within the construction process, as detailed in the Construction Environmental Management Plan (CEMP);
- Where figures are not available for the calculation of waste arisings, assumptions will be made based on data from similar, constructed major infrastructure projects;
- Information on waste quantities and waste types is typically based on a defined plot size. Therefore, this assessment has considered development parameters using the Rochdale Envelope (i.e. worst-case) principles, applied across the developable land extents; and
- An average depth of 300 mm of topsoil to be removed across the site has been assumed. This will either be reused onsite or transported offsite to (if possible) another development site requiring topsoil or (as a last resort) to inert landfill.

9.6.15 In-line with the Rochdale envelope principles, a worst-case scenario has been used for the impact assessment. To assess worst-case scenarios, it has been assumed that all waste will be removed offsite and is not reused (barring assumptions regarding topsoil levelling and management, where cut and fill operations are assumed for the structure).

9.6.16 No invasive species are recorded as currently being present within the site. Should any invasive plant species subsequently be found at the site, the material will be appropriately and safely removed from site utilising specialist contractors (if required). A Biodiversity Construction Environment Management Plan (BCEMP) is in place for the AESC Plant 2 site and it is assumed that this will also apply to the AESC Plant 3 development as a shared site.

9.6.17 The type and scale of proposed activities will be similar to those considered as part of the assessment for the AESC Plant 2 site in July 2021.

9.7 Baseline Conditions

Current Site Description

9.7.1 The site is currently a semi-developed farmland / brownfield area on the edge of the existing factory complex (IAMP).

9.7.2 A derelict farm, North Moor Farm, is on the edge of the complex, is currently not in use and is to be demolished (with demolition to be completed April 2024). The farm

contains three major structures, with a small quantity of rubble, plaster and other building material scattered across the farm perimeter.

Existing waste facility conditions

- 9.7.3 The information relating to the capacity of existing waste disposal sites within the region is set out in the 2018 ES for IAMP ONE (Chapter H) and the PIER for (now AESC Plant 2) (Chapter H) from the adjacent site to the AESC Plant 3 development. The information used in the capacity review concludes that there is no pressing need to identify new waste management sites in the Plan Area for most reviewed waste types. There could be a shortfall post-2032 in inert landfill capacity, but it was considered by the 2018 Addendum Report that increased recycling could mitigate any requirement to obtain additional capacity. Paragraph H4.3.1 of the 2018 PIER Chapter H concluded that, as part of the baseline assessment, void space should be available throughout the North East region sufficient to accommodate the proposed development.
- 9.7.4 As such, for the purpose of this assessment and in-line with the development of this ES in 2023, WasteDataInterrogator data (2021) has been used to ascertain waste processing facilities and arisings processed within Tyne and Wear. Where available, the remaining site capacity of local waste facilities has been ascertained by subtracting the currently accepted tonnage from the maximum permitted volume from waste site permits, providing an assessment of remaining capacity in the market. Where this is not available, we have drawn conclusions as to the anticipated likely capacity based upon the volumes of waste received by these sites.

Current waste facilities

- 9.7.5 There are numerous permitted waste facilities available for the management of construction, commercial and industrial waste in Tyne and Wear. Table 9.3 shows these waste facilities near to the proposed development and tonnages processed in those facilities in 2021. This covers facilities expected to be utilised by the proposed development, as these sites contain a sufficient range of processing facilities suitable for household, commercial and industrial (C&I) as well as construction and demolition (C&D) wastes that the proposed development would typically be expected to generate. It is expected that, dependent on arrangements of specific contractors, material types and local geographies, some waste may be transported to adjacent counties of the North East for treatment or disposal via a Waste Transfer Station, although these onward sites are not scoped into the waste sites identified (such as specialist battery waste treatment facilities).

- 9.7.6 Given the nature of the proposed facility manufacturing electric vehicle batteries, hazardous waste treatment facilities have been identified that are suitable for transfer or treatment of potentially hazardous wastes that might be generated by the development. Multiple metal recycling sites and Hazardous Waste Transfer Stations that can facilitate or treat hazardous wastes have been marked with an asterisk (*). Owing to the number of waste facilities observed, it is considered that there is sufficient existing sub-regional capacity for managing potentially hazardous waste arising from the proposed development .
- 9.7.7 Where data is not available regarding remaining waste site capacity, a hashtag symbol (#) has been used.
- 9.7.8 Based on the above, in total, circa 2,077,650 tonnes of spare treatment / processing capacity is anticipated to be available for C&D wastes across Tyne and Wear. In comparison, under the same metrics, waste facilities across Tyne and Wear are anticipated to be able to accept circa 2,587,950 tonnes of operational wastes.

Table 9-3 Waste Facilities in Tyne and Wear						
Site	Operator	Permit Number	Site Description	Distance from Site in Kilometres (Road)	Remaining Waste Capacity/Quantity of Waste Accepted in Tonnes (2021)	Typical Waste from Development Accepted
5B Freezemoore Road#	Grab & Deliver Limited	100808	Physical Treatment	10.2	93,030	Demolition / Construction / Operational
Admec Environmental Services#	Admec Environmental Services Limited	100293	Non-Haz Waste Transfer	10.6	17,657	Demolition / Construction / Operational
Bells Waste Disposal Ltd#	BELLS WASTE DISPOSAL LTD	120063	Non Haz Waste Transfer / Treatment	23.6	63,33	Demolition / Construction / Operational
Birtley Depot#	North East Concrete Limited	401477	Physical Treatment	11.3	4,559	Demolition / Construction
Byker Reclamation Plant	Suez Recycling and Recovery U K Ltd	64016	Physical Treatment	14	78,254	Demolition / Construction / Operational
E M R Blaydon - E L V#	European Metal Recycling Ltd	67453	Metal Recycling / WEEE Processing*	21.8	9,0256	Operational
E M R Blaydon - Mixed M R S#	European Metal Recycling Ltd	67490	Metal Recycling*	21.8	13,318	Demolition / Construction / Operational
E M R Tyne Dock#	European Metal Recycling Limited	404706	Metal Recycling / WEEE Waste Processing*	8.9	288,643	Demolition / Construction / Operational
Field House Quarry#	A Mc Call & Sons (Houghton-le- Spring) Ltd	64158	Inert LF	12.2	69,195	Demolition / Construction
Gap Waste Management - EPR/EB3805KW	P A Moody Recycling Ltd	LP3632JD	Haz Waste Transfer / Treatment*	8.4	64,080	Demolition / Construction
Hadrian Yard Central	Biffa Waste Services Limited	100379	Non-Haz Waste Transfer Station	11.9	131,611	Operational
Hendon Dock Process Plant EPR/BV4673IM	Tradebe Solvent Recycling Limited	BV4673IM	Physical-Chemical Treatment*	12.9	14,603	Demolition / Construction
Henry Colbeck Limited#	Henry Colbeck Limited	403587	Physical Treatment	12.9	1,728	Demolition / Construction / Operational

Table 9-3 Waste Facilities in Tyne and Wear						
Site	Operator	Permit Number	Site Description	Distance from Site in Kilometres (Road)	Remaining Waste Capacity/Quantity of Waste Accepted in Tonnes (2021)	Typical Waste from Development Accepted
Hetton Moor Farm Quarry#	Private Individual Operator	101423	Inert Waste Transfer / Treatment	20.6	82,053	Demolition / Construction
J & B Recycling Limited	J & B Recycling Limited	102297	Materials Recycling Facility / Metal Recycling	6.4	16,333	Demolition / Construction / Operational
Jack Crawford House Waste Transfer Station#	Suez Recycling and Recovery U K Ltd	400600	Haz Waste Transfer Station*	12.7	90,486	Operational
Leechmere Waste Transfer Station Facility#	Gentoo Group Limited	64072	Haz Waste Transfer*	12.9	1,458	Demolition / Construction / Operational
M G L Demolition Ltd#	M G L Demolition Ltd	67505	Non-Haz Waste Transfer	23.1	53,321	Demolition / Construction
Marsden Quarry Landfill Site#	O' Brien Aggregate Marsden Limited	64063	Inert Landfill	12.8	356,792	Demolition / Construction / Operational
Monument Park Material Recycling Facility	Veolia E S (UK) Ltd	101949	Non-Haz Waste Transfer	6.4	23,652	Operational
Max Recycle U K Ltd	Max Recycle (UK) Limited	100887	Non Haz Waste Transfer / Treatment	13	72,283	Operational
Middlefields Recycling Transfer Station	South Tyneside Council	404638	Non-Haz Waste Transfer	7.8	4,605	Operational
Monument Park	Premier Waste Recycling Limited	100173	Material Recycling Facility	6.4	228,789	Operational
N W H Waste Services - Cowen Road#	N W H Waste Services Limited	64170	Non-Haz Waste Transfer	21.5	46,809	Demolition / Construction
Nest Road Waste Treatment, Recovery	William Tracey Ltd	PP3633TC	Physical-Chemical Treatment*	8.4	47,540	Operational

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and Transfer Facility - EPR/PP3633TC						
North Tyneside Transfer Station	Suez Recycling and Recovery North East Ltd	64007	Haz Waste Transfer*	9.6	102,478	Operational
Old Neolith Works	Trojan Skips Ltd	406079	Non Haz Waste Transfer / Treatment	24.1	59,618	Demolition / Construction / Operational
Paradise Yard#	Tyne Waste Limited	67558	Haz Waste Transfer*	12	8,544	Operational
Quality Row M R S	Ward Bros (Steel) Limited	102566	Metal Recycling*	13	74,872	Demolition / Construction / Operational
Riverdale Paper Plc - Materials Recycling Facility	Riverdale Paper Plc	401132	Material Recycling Facility	14.6	53,613	Operational
Rooneys Yard	Rooneys Scrap Merchants Limited	403677	Metal Recycling	10.6	21,772	Demolition / Construction / Operational
Salisbury Street Depot#	Mc Kenzie Stuart	64049	Non-Haz Waste Transfer	11	5360.06	Demolition / Construction / Operational
Shearlegs Road Depot#	Gateshead Council	67572	Haz Waste Transfer	10	9,060	Operational
Skippy Waste Services Limited	Skippy Waste Services Limited	403371	Non Haz Waste Transfer / Treatment	8.9	68,117	Demolition / Construction / Operational
South Shields Waste Transfer and Recycling Centre#	Biffa Waste Services Limited	64129	Non-Haz Waste Transfer	6.1	12,519	Operational
Springwell Quarry#	Thompsons Of Prudhoe Limited	64019	Non-Haz Waste Transfer	7.9	245,484	Demolition / Construction / Operational

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Springwell Quarry EPR/HP3530BS#	Thompsons Of Prudhoe Limited	HP3530BS	Non Hazardous LF	7.6	12,527	Demolition / Construction
Station Road#	Jebb Metals (Newcastle) Ltd	67476	Metal Recycling*	15	6,292	Demolition / Construction / Operational
Stoneygate Metals	Willison Christine	100864	Metal Recycling*	8.5	74,117	Demolition / Construction / Operational
Sunderland Recycling Centre and Transfer Station	Biffa Waste Services Limited	103213	Non-Haz Waste Transfer Station	8.2	368,995	Operational
Swinney Skip Hire & Haulage	Ian Rawding & Robert Burnett	67608	Inert Waste Transfer	11.5	22,931	Demolition / Construction / Operational
The Transfer Station	Park Skips Ltd	67617	Non Haz Waste Transfer / Treatment	22.9	72,326	Demolition / Construction / Operational
Thompson Waste Ltd	Thompson Waste Limited	402362	Non-Haz Waste Transfer	12.1	63,690	Operational
Timberpak Limited#	Timberpak Limited	64142	Non-Haz Waste Transfer	13.7	101,739	Demolition / Construction / Operational
Unit 15, The Yard	N W H Waste Services Limited	102944	Non-Haz Waste Transfer	11.8	71,718	Demolition / Construction / Operational
Walker Station (former Grievesons Yard)#	Jebb Metals (Newcastle) Ltd	67561	Metal Recycling*	15	23,770	Demolition / Construction / Operational
Ward Bros (Steel) Limited#	Ward Bros (Steel) Limited	402287	Metal Recycling*	12.2	32,637	Demolition / Construction / Operational
Yard 1 Morston Quays	Mack Contracts Ltd	403201	Inert Waste Transfer / Treatment	11.3	54,449	Demolition / Construction

Future baseline

- 9.7.9 The proposed development area, without any demolition and construction, is likely to remain as semi-developed farmland / brownfield area on the edge of the existing factory complex and is unlikely to generate any further waste volumes due to the lack of use.
- 9.7.10 The availability of facilities to treat generated waste in the region is likely to remain stable, with planned increased recycling and energy from waste capacity (such as through anticipated energy from waste developments in the Tees Valley). It is, therefore, anticipated that capacity within existing and proposed treatment and disposal sites will continue to be available in the medium to long-term for C&D waste generated. Other waste streams are likely to continue to have sufficient processing and disposal capacity at disposal points within Tyne and Wear, or be prepared for processing in the North East of England.

9.8 Potential Effects

During Construction

- 9.8.1 The development of the site will lead to the generation of construction waste, anticipated to be predominantly C&D wastes, as well as some volumes of C&I wastes (e.g. residual waste, recyclables and canteen wastes). This is covered in both excavation and general construction activities for the area.

Excavation for Development

- 9.8.2 Excavation of the site will result in removal of topsoil for any working areas of development in a cut and fill operation.
- 9.8.3 An indicative, worst case calculation has been made based on the assumption that 300 mm depth of topsoil will be removed. This forecasts that there will be requirement to move an estimated 127,160 m³ of material for the whole envelope of the site. Assuming the topsoil is a clay-like loam substance and using a BRE SMARTwaste benchmark of 1.17, this is approximately 148,777 tonnes of material. However, the actual quantities of soil moved are anticipated to be significantly lower than these estimates, as a worst-case scenario has been assumed inclusive of areas beyond the building structures, roads, parking and other amenities designed to be developed onsite. It is more probable that the topsoil waste will be used in a cut and fill operation with material reused directly onsite as engineered fill in order to ensure a level ground for car parks and roads. As such, excavation has not been modelled as part of total waste volumes.

9.8.4 Soil movements have been scoped out of building footprints due to modelling being included as part of the main BRE SMARTwaste calculation for the building footprint itself.

Construction Activities

9.8.5 General construction waste will arise from the development of the site. This will be reused or recycled (wherever possible) and otherwise sent to a local inert landfill facility, as described below.

9.8.6 Some materials used as part of construction activities onsite will be suitable for reuse as part of site operations or in other construction works, such as:

- Wooden pallets can be reused for moving materials;
- Stone and suitable engineered fill may be suitable for site engineering works (roads / tracks);
- Plastic sheeting can be reused for covering items;
- Plastic sheeting can be reused as weather protection;
- Polypropylene bags can be reused for storing waste; and
- Packaging will be returned to suppliers for reuse, where possible.

9.8.7 Other materials will be suitable for recycling applications, such as:

- Canteen wastes (i.e. foods) will be sent to Anaerobic Digesters where possible;
- Recyclables will be segregated and sent to an appropriate Material Recycling Facility (MRF) site;
- Scrap metal will be segregated and sent for a metal recycling site;
- Any WEEE will be segregated and sent for specialist recycling;
- Some plastic wastes will be suitable for segregation and recycled at a MRF site;
- Paper and cardboard will be segregated and sent to a MRF site;
- Timber and wood will be segregated and reprocessed; and
- Stones, tiles and other masonry unsuitable for reuse will be reprocessed.

9.8.8 Waste that cannot be reused or recycled, or which is hazardous, will be sent for appropriate disposal. This might include a small amount of waste oil, cooking oil, animal wastes among other untreatable wastes.

9.8.9 All waste will be handled by licensed operators and disposed of at secure sites.

9.8.10 Most waste arisings from the excavation and construction phase will, in the worst-case scenario, be disposed of to landfill. The potential effects of the development are therefore assessed as Minor Adverse (Not Significant).

9.8.11 The likely amounts of mixed hard construction waste arisings have been assessed using the Building Research Establishment’s (BRE) SMARTwaste Benchmark Data. This is based on the type of property, the size of the development and the costs of construction. The performance indicators developed by BRE are quantifiable indices that can be used by businesses as a measurement tool. The indicators include:

- Environmental Performance Indicators (EPI): m³ of waste/100m² of floor area; and
- Key performance Indicators (KPI): m³ of waste/£100,000 of project value.

9.8.12 The data from approximately 1,500 projects has been analysed and the average EPIs and KPIs for different project types relevant to the proposed development have been identified. For the proposed development, only the EPI indicator will be applied due to a higher confidence interval (listed in Table 9.5, below). To convert the volume of waste to mass, a conversion factor of 0.32 from WRAP’s waste to mass conversion tool was applied for the construction waste.

Project type	Floor area (m ²)	Benchmark (m ³ /100m ²)	Average EPI (m ³ Waste/100m ² floor area)	Estimated tonnage of waste (t)
Commercial Offices	5,835 ¹	18.4	1,074	344
Industrial buildings	182,050	25.4	46,240	14,797
Total			47,314	15,141

9.8.13 The floor area for the combined premises will be circa 187,885m², of which 5,835m² is offices and accommodation. This has been benchmarked to yield an estimated tonnage of construction waste generated. Construction works are anticipated to be phased and take place over approximately two and a half years (30 months). The annual generation of construction waste is, therefore, estimated to be 18,925 m³.

9.8.14 This is without mitigation measures, which are described below. Using WRAP’s waste volume to mass conversion factor (0.32), this volume of waste is equivalent to approximate 6,056 tonnes of waste per annum prior to mitigation. The C&D residues accepted in Tyne and Wear in 2021 was 2,077,649 tonnes and, as such, wastes generated by the site are expected per year to be 0.29% of total waste generation in the sub-region.

¹ Includes office and accommodation space inside the assembly / warehousing unit.

9.8.15 Combined construction waste arisings from the site, therefore, represents a very small percentage of sub-regional waste generation from C&I sources (< 1%). The effect of the proposed development can be considered to be Minor adverse (Not Significant).

During Operation

9.8.16 The C&I Waste will be generated during the operation of the proposed development. Waste materials will include residual and recyclable waste generated by staff employed in the manufacturing units and offices, processing wastes from assembly, manufacture and amenities, and from the manufacturing process itself.

9.8.17 Waste storage facilities will be made available in all primary locations at which waste is generated. Waste will be collected from these units regularly and stored in centrally located storage units, as well as in covered waste storage areas.

9.8.18 The proposed development will operate under a 'segregation at source' policy. This will involve separating waste streams at generation, facilitating high recycling and recovery rates. Waste generated at site will be collected by a suitable waste collection contractor and sent to an appropriate processing / disposal facility, depending on the waste stream. As far as is practicable, waste streams such as packaging and containers will be returned to suppliers for re-use.

9.8.19 The operator(s) of the manufacturing facilities will regularly audit waste management procedures onsite and will ensure that all waste is recorded, handled and managed appropriately.

9.8.20 Waste streams anticipated to be generated onsite will include:

- Packaging waste;
- Waste anode;
- Waste cathode;
- Waste dry cell;
- Waste laminate;
- Electrical module wastes;
- Electrolyte wastes;
- Cell wastes;
- Label waste;
- Waste oils;
- Hydraulic fluids and hoses;

- Fluorescent tubes and light bulbs;
- Paint cans;
- Food and beverage waste and containers;
- General office waste; and
- Batteries.

9.8.21 All waste generated during operation will be managed in accordance with the SWMP². This will be developed following further detailed design and refinement of estimated generated waste quantities. During operation, waste will be managed in accordance with site operation procedures and environmental permits. Hazardous waste will be separately stored in appropriate containment and disposed of to a licensed facility.

9.8.22 The expected waste generation during operation is estimated using BS 5906:2005 Waste Management in Buildings. The total site employment is estimated to be circa 1,000 jobs in total. As described in the Scope and Methodology Chapter, the staff number could grow to 1,911 in future, dependent on the scale of operations within the site. The former figure of 1,000 has been assumed to contribute to office and gatehouse wastes as a baseline and worst-case scenario, and using professional judgement, it is anticipated that any additional staff are likely to contribute to wastes generated in the assembly, warehouse and factory buildings rather than that of the offices and gatehouse. As such, the calculation of waste is based upon a worst-case scenario of full utilisation of the offices, warehouse and factory units.

9.8.23 To convert the volume of waste to mass, a conversion factor of 0.27 was applied for the volume of operational waste, with estimated annual tonnage calculated in Table 9.6.

9.8.24 The car parks, plant rooms and HV substation have been excluded from this assessment as they are unlikely to typically generate operational wastes.

Table 9-5 Operational waste categorised by land use				
Land use	Formula	Weekly waste arising (litres)	m ³ / annum (*52/1000)	Tonnage of waste per annum
Office Buildings (including Gatehouse)	Volume arising per employee [50l] x number of employees [1,000]	50,000	2,600	702
Factory Building	Volume per m ² of floor area [5l] x floor area [130,911m ²]	654,555	34,036	9,189

² The preparation of a SWMP for construction is expected to be a condition of planning requested by Sunderland City Council. This will detail the proposals for the management of demolition waste, excavation waste and construction waste during the development of the site. This will also include an estimate of waste generation against which actual generation will be measured. The principal construction contractor will be responsible for periodically updating the SWMP as works progress.

Assembly and Warehouse Building	Volume per m ² of floor area [5l] x floor area [38,464m ²]	192,320	10,001	2,700
Total		896,875	46,637	12,591

9.8.25 The estimated mass of industrial waste is calculated from the floor area of this type of employment (warehousing and industrial). The total operational floor area indicated for the proposed industrial areas is estimated to be 169,375 m². BS 5906:2005 equates 5 litres of waste per week from each square metre (m²) of floor area and, as such, the anticipated operational waste from the warehouse and factory per annum is 44,037 m³.

9.8.26 The estimated mass of commercial waste arisings per employee is shown as 50L per week using BS 5906:2005. The volume of operational waste from offices generated annually is calculated to be 2,600 m³.

9.8.27 The operational (commercial and industrial / household) arisings and capacity in Tyne and Wear are 2,587,947 tonnes. As such, wastes generated by the site are 0.49% of total waste generation in the total sub-region using an appropriate conversion factor. The combined industrial and commercial waste arisings from the site, therefore, represent a very small percentage of sub-regional waste generation from typical operational sources (< 1%) and the effect of the proposed development is considered to be Minor adverse (**Not Significant**).

Limitations

9.8.28 The baseline data is limited by availability of up-to-date data regarding both C&D and C&I waste arisings at a local level. To compensate for this data limitation, the local treatment capacity is also assessed. All treatment capacities are maximum permitted throughputs and do not necessarily reflect the sites current operations, although reasonable assumptions have been made based on the data that is available.

9.9 Mitigation Measures

During Construction

9.9.1 In order to minimise waste during the construction of the proposed development, the construction contractor will prepare a detailed SWMP covering good practice, waste reduction, re-use, recycling and disposal options.

9.9.2 An approved person will be nominated to manage waste during construction. Their responsibilities will include arranging collection of wastes and effective treatment or disposal at an appropriate facility.

9.9.3 Good practice measures will ensure that the site waste management is effective and achieves high standards, through:

- A system of recording and monitoring to track waste generation, recycling performance, re-use performance and disposal; and
- Training will be undertaken to ensure proper waste management handling procedures are implemented.

9.9.4 Waste reduction will be a key objective of waste management practices at the development. A number of measures will be enacted to support this, including:

- Site practices implemented to minimise damage or contamination of construction materials;
- Effective planning to ensure that over-ordering is prevented, and that wastage is minimised;
- Prefabricated construction panels will be used where feasible to reduce material handling, associated risk of wastage and associated transportation impacts;
- Sustainable procurement practices will be implemented, seeking to minimise packaging and exert influence on contractors to undertake best practice; and
- Materials will be returned to suppliers where not required, or alternatively used elsewhere as part of the development and associated works.

9.9.5 Where waste cannot be prevented, recycling and reuse will be encouraged through the following:

- Cut and fill management will be employed seeking to minimise waste removal offsite using both inert demolition materials and soil;
- Waste will be monitored, sorted and stored in as many segregated waste streams as appropriate to make material available for reuse and recycling applications;
- Onsite processing of waste and reuse of materials to supply secondary aggregate will be investigated and all necessary licences obtained to undertake such operations;
- Where it is possible to do so, and without compromising building integrity, materials with recycled content will be specified;
- All suppliers will be requested to take back unwanted packaging; and
- Where inert demolition and construction wastes that cannot be used onsite are generated, potential offsite users will be identified and approached as part of the development of a materials management plan.

- 9.9.6 Ultimately, some materials will require disposal where none of the above practices are suitable. General site waste will be securely stored in bins or compaction units if appropriate. Wastes will only be removed from the site by registered waste carriers. Waste movements will be accompanied by a Duty of Care Controlled Waste Transfer Note or a Special Waste Consignment Note (if appropriate) and copies of these will be stored onsite throughout construction. Waste permits will be required (and obtained) for any facilities used for offsite recovery, recycling or disposal of waste, and copies of these kept onsite.
- 9.9.7 Any excavated soils will undergo waste acceptance criteria testing to ensure that they are correctly classified prior to disposal at an appropriate landfill or remediation site. Hazardous waste materials will be handled by appropriate licensed operators.

During operation

- 9.9.8 An operational SWMP (or equivalent) will cover the management of waste generated during the operational phase of the development by the operator. All waste materials will be segregated and stored separately. Appropriate outlets will be identified for each recycling and waste stream, with the proximity principle applied to minimise transportation impacts.
- 9.9.9 The proposed development, due to the scale of the buildings and operation, includes facilities to assist in the safe storage and segregation of recyclables as part of an embedded mitigation scheme prior to collection. The design of storage areas will be in accordance with appropriate best practice guidelines, with internal and external design features for waste segregation and storage to be considered. For such commercial buildings as the proposed development, this is linked to greener buildings guidance and Energy Performance Certificates, which have been mandatory for all commercial buildings since 2008.
- 9.9.10 There will be sufficient space for the anticipated collection vehicles to manoeuvre. Containers will be selected in partnership with the collecting authority and private contractors to ensure that they are compatible and can be unloaded safely and efficiently from waste collection areas. The containers will be stored away from parking areas and away from the area(s) where other vehicles will be required to manoeuvre.
- 9.9.11 Suitable collection frequencies will be agreed with the collection contractor / local authority and the storage containers sized appropriately to ensure provision of adequate storage capacity to optimise the collection frequency and to avoid waste

materials being stored onsite for prolonged periods. This includes suitable collection methods and duty of care (Hazardous Waste Transfer) for hazardous wastes generated by the battery production process, ensuring wherever possible materials are reused and recycled through the most efficient means.

9.9.12 The wider plots of the site (e.g. car parks) will also be provided with litter bins for use by people working and visiting the site. It is expected that any waste receptacles and litter bins provided at the site will be emptied regularly under management contracts, with the waste being properly disposed of / treated in licensed facilities.

9.9.13 Provision will be made for the storage of the necessary waste containers (as described above), which may include temporary storage of green waste as part of site maintenance. It is anticipated that all green waste produced during the operational phase of the proposed development will be composted offsite. Collections for fractions (e.g. food waste, recyclates and other suitable fractions for the staff) will be ensured to minimise waste and improve the site recycling performance.

9.9.14 Occupants will be required to regularly audit their waste management systems from generation to treatment or disposal point to ensure compliance with the operational SWMP. Where non-conformances are identified, changes to working practices will be made. The SWMP will be regularly reviewed and updated to ensure that it is suitable and reflects best practice throughout the lifetime of the proposed development.

9.10 Residual effects

Residual Effects During Construction

9.10.1 With the implementation of the SWMP, the residual effects of the waste arisings from excavation and construction are assessed as minor adverse (Not Significant). This is because the main expected type of waste arising (i.e. soil and earth) will be inert and will be safely disposed of to landfill or reused on / offsite. This represents a small proportion of similar waste arisings, regionally. Any hazardous waste will be handled and disposed of in a safe and appropriate manner using specialist contractors.

9.10.2 Previous ground investigations at the IAMP ONE site have not encountered any significant concentrations of contaminated soils. If contamination is encountered during site works, it will be reported to the Local Authority and may require remediation works or collection by a specialist hazardous waste operator. Details of suitable licensed treatment facilities will be included in the CEMP.

Residual Effects During Operation

9.10.3 There will be no additional requirements over and above those included in the mitigation Section 9.7 that will affect waste management operations during the operational phase of the proposed development. There is no additional mitigation or monitoring recommended to further reduce the identified effects, which remain Minor adverse to Negligible (Not Significant).

9.11 Cumulative effects

9.11.1 Inter-cumulative effects of waste generation from neighbouring developments, namely the IAMP ONE, AESC Plant 2 and those identified within Chapter 2 of this ES (including a gasification facility, an extension to a farm shop, an adjacent warehouse and industrial units as part of the wider IAMP development, as well as a hotel and roof-mounted solar panels) have been considered for AESC Plant 3. These have potential to increase the significance of environmental burden of the proposed development. These are unlikely to generate significant volumes of waste materials, and the local treatment and disposal facilities assessed are deemed to have capacity to accommodate materials from the cumulation of these developments.

9.11.2 Other impacts from cumulative site development include improvements to the A19, the installation of PV panels on IAMP buildings, developments at Nissan UK's production base adjacent to the IAMP development, as well as associated amenities for warehousing and factory development.

9.11.3 Across the construction phase, inter cumulative impacts will be minimised through the application of consistent mitigation measures across the entire Site, with waste quantities produced predicted to be minor relative to the total capacity of the region. This means that the cumulative development impacts are likely to be Moderate to Minor adverse (Not Significant).

9.11.4 During operation, cumulative waste arisings will arise from the IAMP development sites. In-line with the ES for the wider IAMP site, the inter-cumulative effects will remain Minor adverse (Not Significant).

9.12 Limitations of Study

9.12.1 The battery factory is a relatively novel industrial process and will not have been considered by typical models in generating their guidance on prediction of waste volumes. As such, there is uncertainty in regard to what types and volumes of waste will be generated. However, based upon the information and data available, and the anticipated minor adverse effect, it is likely that sufficient capacity exists locally for managing any variation in volumes of non-hazardous or hazardous wastes generated.

9.12.2 AESC UK will reuse or recycle chemicals used onsite in battery making (wherever possible) through appropriate hazardous waste collection arrangements, but due to some materials still emerging in terms of design and treatment for recyclability, it is unknown to what degree this can be achieved due to technological limitations. Furthermore, whilst typical volumes of operational waste have been predicted, it is unknown to what extent this will vary or alter dependent on scale of operation or site management.

9.13 Summary and Conclusions

9.13.1 The proposed development will require the levelling and grading of the existing site, construction of the new manufacturing buildings, construction of ancillary buildings and infrastructure, and landscaping. This assessment has focused on the likely quantities and waste types arising from these activities and how they can best be managed.

9.13.2 It is expected that sufficient capacity exists for waste arisings from construction and operations through local landfill sites or suitable offsite locations for reuse, treatment and recycling. The combined waste tonnages that are anticipated form a small fraction of regional waste generation and are below 1% of total waste arisings per annum for the Tyne and Wear sub-region. They are, therefore, not expected to substantially affect landfill void capacity. As such, the effect of waste generation is anticipated to be a **Minor adverse (Not Significant)**.

9.13.3 Any hazardous waste arisings would be dealt with by a specialist hazardous waste operator and an appropriate number of hazardous waste transfer station sites and metal recycling sites have been identified for storage prior to onward treatment. All waste arisings are expected to be managed onsite during all phases of the proposed development through the use of appropriate mitigation measures and through onward transfer to appropriate waste facilities for hazardous and non-hazardous waste. As such, **No Significant effects** have been identified from waste and waste management practices in relation to the proposed AESC Plant 3 development.