

20 SUMMARY & CONCLUSIONS

20.1 Introduction

20.1.1 This chapter of the Environmental Statement (ES) summarises the conclusions of the previous technical chapters in respect of the potential effects of the development of the AESC Plant 3 site (i.e. the 'site') on the environment and people of the local area. Where possible, non-technical information and language is used. Summary tables are provided at the rear of this chapter.

20.1.2 The site and the proposed development are described in detail within Chapters 1 and 3 of this ES. The site is circa 42.39 hectares (ha) in size and is comprised of a land located within the western part of the overall IAMP ONE area (see Drawing 204-P03-Proposed Site Layout and Figure 1.1). Access into the land proposed for development would be via the existing, consented access road. The site falls within existing green belt and a very special circumstances report has been prepared to accompany the planning application for detailed planning consent.

20.1.3 This ES sets out the detail of the context for the project and the project characteristics within Chapters 1 and 3. Effects on the environment of the project area; on planning and development; and on the people of the area have been considered. Cumulative effects for the individual environmental aspects, as well as on the natural environment and the people and property of the local area, have also been considered.

20.1.4 Assessments have been undertaken in accordance with best practice and approved methodologies; this information is set out within the technical chapter of this ES (i.e. Chapter 6 to 19). Consultations with the relevant statutory organisations and others are referenced, where these have occurred. Supporting information is included in Appendices to this ES, with plans and figures illustrating the findings of the assessments also provided.

20.2 Scope and methodology

Informal consultation

20.2.1 Informal consultation with Sunderland City Council (SCC) was undertaken in 2019 and 2020 and informed the scope (content) of the previous IAMP ONE and AESC Plant 2ESs. This ES has adopted a similar approach to that previously agreed with SCC.

Methodology

20.2.2 The assessment of effects on the environment (i.e. the environmental impact

assessment (EIA) for each technical discipline typically considers the following:

- Site activities and / or sources of potential impact for that particular topic.
- Potential effects occurring as a result of the construction and the operation of the proposed development, including cumulative effects.
- Mitigation measures, which may be embedded within the design of the proposed development or provided as additional measures.
- Residual effects, which are those that remain once mitigation measures are assumed to be in place.
- Whether any monitoring or follow-up is necessary to ensure that mitigation remains effective and appropriate.
- Cumulative impacts, which may occur in association with other aspects of the project or with other development projects that have been consented but not constructed or are awaiting determination.
- Any limitations to the assessment.

20.2.3 Assessment methodologies have followed those used for the 2018 IAMP ONE EIA and have been updated where necessary to ensure they are in accordance with current industry best practice and standards, and have been undertaken by experienced, qualified professionals.

20.2.4 Assessments typically consider the sensitivity (or value) of a receptor, the likely magnitude of change (i.e. the impact) anticipated as a result of the proposed development and the resulting level of effect, and whether this would be considered to be 'Significant' or 'Not Significant' in EIA terms.

20.3 Site and scheme description

The site

20.3.1 The site lies wholly within the administrative area of Sunderland City Council (SCC).

20.3.2 The site lies within the IAMP boundary, as identified in the IAMP Area Action Plan (AAP) 2017-2032 (adopted 2017). The majority of the site is designated as Green Belt and land for Ecological and Landscape Mitigation (ELMA), whilst a smaller part of the site is allocated for automotive and advanced manufacturing uses.

20.3.3 The site comprises an area of agricultural land located directly to the west and to the north of the AESC Plant 2 development. The overall area within the application redline boundary of the site is 42.39 hectares (ha) in size.

- 20.3.4 The land is largely level, with only minor variations in elevation. The wider area comprises very gently undulating topography dropping gradually to the north. Further to the south, south of the River Wear, the land rises to a high point of 136m at the Penshaw Monument. The Usworth Burn is a minor watercourse that originates in south Washington, west of the site, and flows eastwards and northwards past the northern edge of the proposed development to a nearby confluence with the River Don before reaching Hylton Bridge.
- 20.3.5 The A1290 runs in an east-west direction to the south of the site, with two new junctions established to link with the new spine road ('International Drive'). Access to the site will be from International Drive. The site also incorporates an access track linking northwards to North Moor Farm, which is to be demolished, with demolition works to be completed April 2024.
- 20.3.6 The site falls within Agricultural Land Classification (ALC) Subgrade 3a (23.93 ha, 56.5% of the site) towards the north of the site and ALC Subgrade 3b (17.31 ha, 40.8% of the site) in the south of the site, with smaller areas of Subgrade 3b present in the north and northeast of the site and a small area of non-agricultural land (1.15 ha, 2.7%).

The proposed development

- 20.3.7 The proposed development will include a factory building for the manufacture of batteries, an assembly and warehouse building for storage and distribution, AESC's office headquarter building, ancillary 'mechanical, electrical and plumbing' (MEP) plant rooms, various ancillary structures, gatehouse, car parking provision, bicycle and motorcycle shelter, high voltage (HV) substation, landscaping and drainage.
- 20.3.8 This application seeks approval for 185,956 m² gross internal area (GIA) across the AESC plant 3 factory building, assembly and warehousing building AESC UK Office HQ building, the MEP plant rooms and the gatehouse. Additional floorspace (8,827 m²) is provided through provision of the ancillary bulk store canopies, waste canopies and mezzanine floors (which are to be used by plant and machinery).
- 20.3.9 A total of 780 car parking spaces are proposed, including 5% accessible spaces and up to 10% electric vehicle charging bays. The proposed development will be access from International Drive.
- 20.3.10 The tallest part of the process is on the northeast of the factory building and the roof height here has been set at 33m to ridge, with a small number of flues, perimeter handrails, and solar PV panels projecting beyond this point. The maximum height of

associated flues is 40m, located in the gantry area between the plant room and Plant 3 Building. The lower parts of the manufacturing plant roof are 26m and 18m to ridge and smaller ancillary stores, canopies, and the goods out area project out beyond the main footprint to provide relief to the building elevations.

20.3.11 In brief, the proposed development consists of:

- Battery manufacturing factory – a three-storey structure (in the north) that reduces to a two-storey structure as the process equipment permits. Includes a central core, substation and plant rooms. Houses multiple types of processes, organised in a linear layout, relating to the electrode and battery manufacture.
- Assembly and warehousing – includes racked storage space in the central area, with assembly / outgoing process areas located to the north and south.
- Ancillary MEP Plant rooms – a three-storey structure housing associated mechanical, electrical and plumbing plant.
- AESC UK office HQ – this structure is to function as a central management point for the AESC development(s). The ground floor is to include a reception area, exhibition space, canteen and welfare facilities, and the upper floors are to include flexible office spaces.
- Gatehouse – this is to be a controlled entry for vehicles into the site's perimeter service roads, as well as a pedestrian access point through controlled turnstiles.
- Other – Two waste canopies are to be sited to the north-west and south-east of the assembly and warehousing building, intended for waste generated by site staff and visitors, waste generated by the operations carried out within the development units, waste from packaging and deliveries to the manufacturing units as well as process wastes. Two bulk stores are to be sited to the north and east of the factory building, intended for raw materials products arriving onsite for the manufacturing process.

20.3.12 The principal uses onsite will remain as production, supply chain and distribution activities directly related to the automotive and advanced manufacturing sectors and related supporting uses. The proposed facility will manufacture lithium-ion battery pouch cells and modules for electric vehicle (and other applications) via four production areas comprising of: electrode manufacture; cell production; formation

and testing; and module assembly. Owing to the storage and use of hazardous substances, the site will be controlled by the Control of Major Accident Hazards (2015) Regulations (COMAH). And, owing to the large volume of a Schedule 1 Part 1 material being processed as a key component of the manufactured batteries, this site will be classed as an Upper Tier COMAH site.

20.3.13 A series of technical drawings have been prepared to support the detailed planning application and define the proposed form of the AESC Plant 3 development (see Appendix 3.1 of this ES). A proposed landscape plan (RPS Drawing 205-P01-Proposed Landscape Plan) has been produced to minimise impacts on landscape character and visual amenity. As part of the proposed development, a Landscape and Ecological Management Plan (LEMP) will be prepared that will include details of how the landscaping scheme will be managed and maintained in the future.

20.3.14 A Design and Access Statement (DAS) is provided as part of the full planning application for the site. This details the appearance, heights and scale of the proposed development.. The roof of the manufacturing plant and the roof of the assembly and warehousing building will incorporate photovoltaic panel arrays.

20.3.15 A surface water design strategy has been established that will rely upon below ground gravity drainage networks to convey runoff to below ground attenuation tanks. The water will then be pumped in order to lift it to the level of the outfall and to manage discharge from the site at greenfield runoff rates. All runoff will be directed to the River Don via Usworth Burn, situated to the north of the site. Prior to discharge to the water courses, proprietary treatment systems will be used to treat the runoff and achieve the required water quality. A new drainage system will be provided for foul water originating from domestic flows from staff welfare and catering facilities, condensate from cooling plants and process effluent. At this stage, the point of discharge into the public sewer network is being determined.

Construction methodology and phasing

20.3.16 It is anticipated that construction will commence in 2024 and the development will become operational in 2027. The hours (excluding deliveries) during which construction is anticipated as occurring onsite are:

- Mondays to Fridays (07:00 – 18:00 hours).
- Saturdays (08:00 – 17:00 hours).
- No working on Sundays and Bank or Public Holidays.

20.3.17 Construction vehicles will be contractually obliged to follow an agreed route to and from the site, as set out in a Construction Traffic Management Plan (CTMP). It is anticipated that Heavy Goods Vehicles (HGVs) accessing the development site will do so via the A19 (north or south) and then travel via the A1290 to access the site via International Drive. This routeing is intended to avoid, as far as possible, sensitive areas such as schools, hospitals, built-up residential areas and sections on the existing road network that experience notable congestion.

20.3.18 A Construction Environmental Management Plan (CEMP) will be prepared prior to the commencement of works onsite, including mitigation identified within this ES relating to construction activities. The CEMP will include a Site Waste Management Plan (SWMP) and Dust Management Plan (DMP), setting out the measures by which construction can take place with minimal impact on the local environment.

20.4 Planning policy context

20.4.1 The following plans and guidance are primary material policy considerations relevant to this detailed planning application:

- The National Planning Policy Framework (last updated, December 2023).
- Planning Practice Guidance (last updated, June 2021).
- The Adopted Development Plan, comprising:
 - Sunderland Core Strategy and Development Plan (CSDP) 2015-2033, adopted January 2020.
 - International Advanced Manufacturing Park (IAMP), Area Action Plan (AAP) 2017-2032, adopted November 2017.

Planning history

20.4.2 The International Advanced Manufacturing Park (IAMP) is allocated within the IAMP Area Action Plan (AAP) (adopted November 2017) for up to 392,000 m² of advanced manufacturing and automotive uses on 150 hectares (ha) of land, with 110 ha of land designated for ecological and landscaping mitigation. IAMP is split into two employment areas: a Northern Employment Area and a Southern Employment Area, as defined by the IAMP AAP. These employment areas are separated by a belt of agricultural land which lies within the Green Belt. This land is also designated as an Ecological and Landscape Mitigation Area (ELMA). The River Don and its tributary (Usworth Burn) run through the centre of the ELMA. Of the 110 ha of land for the ELMA, 43.6 ha relate to IAMP ONE and 66.4 ha relate to IAMP TWO.

- 20.4.3 The first phase of IAMP, known as IAMP ONE, was granted planning permission in May 2018 for up to 156,840 m² of floorspace for automotive and advanced manufacturing uses (around 1.69 million ft²) (ref. no. 18/00092/HE4). To date, three buildings and the internal spine road (known as International Drive) have been completed, whilst the IAMP ONE ELMA has been created. A further planning permission was subsequently granted in June 2020 for a reconfiguration of land to allow the occupancy of larger units (up to 1m ft²) (ref. no. 20/00556/OU4).
- 20.4.4 The AESC Plant 2 application (ref. no. 21/01764/HE4) was granted planning permission in October 2021 and construction work is progressing onsite. Subsequent to receiving planning consent, amendments to the AESC Plant 2 scheme design were proposed that necessitated the submission of a Section 73 application. The Section 73 AESC Plant 2 planning application (ref. no. 23/1542/VA4) was submitted to SSC in June 2023 and planning consent was granted in September 2023. The proposed (AESC Plant 3) development is a further development at IAMP.
- 20.4.5 The part of the site known as IAMP TWO is the second and larger part of the IAMP development previously constituted a Nationally Significant Infrastructure Project (NSIP) that was to be delivered by a Development Consent Order (DCO) application. The DCO application has since been withdrawn and planning consent for the 'Early Infrastructure and Northern Employment Area' applications (21/02807/HE4 and STC/1172/21/FUL) were approved in August 2023.
- 20.4.6 As part of these applications, an extensive landscape and ecological mitigation strategy was agreed for the landscaping / planting of the IAMP TWO ELMA. Whilst the detailed planting plans are yet to be agreed, once planted and as the landscaping establishes and matures, it will help to integrate the development into the surrounding landscape in the long-term. This area of planting is hereinafter referred to as the 'IAMP TWO ELMA'.

20.5 Consideration of alternatives

Alternatives

- 20.5.1 Consideration of the reasonable alternatives studied by the developer and a description of these is a requirement of the Town & Country (EIA) Planning Regulations (2017). Typically, consideration of alternatives includes such aspects as a 'Do Nothing' option, potential alternative sites, designs, site accesses or alternative technologies.

20.5.2 The application is for detailed planning consent and the type of industry that will be developed within the site boundary is known. On this basis, the alternatives that have been considered (within the context of the EIA) in relation to the proposed development are as follows:

- Need for the proposed development: providing a description of the likely evolution of the site in the absence of the proposed development and setting out the need and for and benefits of the proposed development; and
- Design and layout (i.e. the alternative design and layout).

20.5.3 It is considered likely that, in the absence of the proposed development, the site will continue in its current use of providing ecological and landscape mitigation for the IAMP ONE developments.

20.5.4 The objective of the proposed development is to help meet the need for more large-scale battery production to support the move away from internal combustion engines and towards hybrid and electric vehicles. The Government is committed to achieving 'net zero' by 2050 and, in September 2023, announced that 80% of all new cars and 70% of new vans sold should be set to be zero emission by 2030, increasing to 100% by 2035. The switch to zero emission vehicles will be the single biggest carbon saving measure in the UK's journey to net zero.

20.5.5 The Faraday Institution's 'UK Electric Vehicle and Battery Production Potential to 2040' (June 2022) report (hereinafter referred to as the 'Faraday Report') predicts that, by 2030, around 100 GWh of supply will be needed in the UK to satisfy the demand for batteries for private cars, commercial vehicles, heavy goods vehicles, buses, micro-mobility and grid storage. This demand is equivalent to five gigafactories, with each plant running at a capacity of 20 GWh per annum. By 2040, it is predicted that demand will rise to nearly 200 GWh and the equivalent of 10 gigafactories. There is, therefore, an urgent need for the UK to develop large scale battery production capacity in order to enable the transition to EVs and to help the UK become net zero. The proposed development will help meet this demand for batteries for EVs, which will contribute to the UK's target of transitioning current vehicle use to a lower emissions alternative. The new facilities will also create employment opportunities for around 1,000 staff, which could potentially increase to up to 1,911 new jobs at the site.

20.5.6 The site falls within existing green belt and a very special circumstances report has been prepared alongside the Planning Statement that accompanies the planning

application. This provides a rationale as to the appropriateness of the site for the proposed development and the requisite release of the area of land from the green belt. In terms of consideration of alternatives, alternative layouts have been considered in relation to development within green belt.

20.5.7 As part of the consideration of alternatives for the proposed development, alternative site layout options were considered. The building footprint, which was established by the demand of product output and the requirements of the process equipment to provide this demand, was used to determine the optimum building orientation to provide safe and efficient site access, and suitable boundary treatment(s).

20.5.8 The alternative layouts are illustrated by the 'spatial evaluation drawings ENV3-RPS-ST-XX-SK-A-000083 and ENV3-RPS-ST-XX-SK-A-000084, included within Appendix 3.1 of this ES. The first alternative layout was considered to be unviable due to insufficient space to accommodate the factory building factory and the second was considered unviable due to a larger footprint that encroached further into the flood zone and would require ground raising that could potentially result in additional adverse impacts.

20.6 Air Quality

20.6.1 The construction phase risk assessment that has been undertaken concluded that there is a risk of potential disamenity dust and fine particulate matter releases associated with the earthworks, construction and trackout activities during construction of the development. For earthworks and construction, eleven existing sensitive residential receptors (located between 310m and >1.4 km from the site boundary) and fourteen existing sensitive road receptors were considered. For trackout, there are no sensitive receptors located within 50 m of where trackout may occur, extending away for a distance of up to 500 m from the site entrance.

20.6.2 To assess the impacts associated with road traffic emissions during operation of the proposed AESC Plant 3 development, detailed air dispersion modelling has been undertaken to consider the air quality effects at representative existing receptor locations and the impacts have been assessed in accordance with guidance from the IAQM and EPUK. The assessment of operation phase vehicle generation for the proposed development predicted air quality pollutant concentrations at various sensitive receptor locations and for a proposed 2027 future operational year, but predicted negligible air quality changes and pollutant concentrations would be below the air quality objectives and limit values in all scenarios considered.

Process emissions

- 20.6.3 Process emissions include nitrogen oxides¹ (NO_x) and carbon monoxide (CO) from the operation of the steam-generating boilers and LTHW boilers, as well as diethyl carbonate (DEC) solvent vapour, N-methyl-2-pyrrolidone (NMP) and ethyl carbonate (EC) from the operation of the electrode manufacturing and electrolyte coating processes, which have been modelled at a number of existing sensitive receptors / receptor points, where applicable. The background concentrations of nitrogen dioxide (NO₂), CO and benzene (C₆H₆), were used to determine the predicted environmental concentration.
- 20.6.4 The maximum modelled process contributions and predicted environmental concentrations do not exceed the relevant air quality objectives for any of the existing sensitive human receptors considered in the assessment. Taking into account the process contributions and, for long-term emissions, the predicted environmental concentration, the overall air quality effect is classed as a Negligible to Slight Adverse, and **Not Significant**.
- 20.6.5 In terms of the short and long-term process contributions at the existing sensitive ecological receptor points, the maximum modelled results do not exceed 100% of the critical levels for the protection of vegetation within both the nearby Local Nature Reserves and the nearby Local Wildlife Sites. Additionally, the results confirm that the maximum modelled process contributions do not exceed 10% of the short-term nor 1% of the long-term critical levels for the protection of vegetation within the Northumbria Coast Ramsar and Special Protected Area. As such, NO₂ emissions are considered to be **Not Significant** at the designated habitat sites considered.
- 20.6.6 In terms of nutrient nitrogen and acid deposition, the maximum modelled process contributions do not exceed 100% of the long-term critical loads for the protection of vegetation within the nearby Local Nature Reserves. Additionally, the results confirm that the maximum modelled process contributions do not exceed 10% of the short-term nor 1% of the long-term critical levels for the protection of vegetation within the Northumbria Coast Ramsar and Special Protected Area.
- 20.6.7 As such, NO₂ emissions are considered to be **Not Significant** at the designated habitat sites considered.

¹ NO_x concentrations were converted to NO₂ concentrations as per Environment Agency recommendations.

Mitigation measures

20.6.8 During the construction phase, the implementation of effective site-specific mitigation measures will substantially reduce the potential for nuisance dust and fine particulate matter to be generated. This will include the use of best practice dust control measures that will be detailed within a Dust Management Plan (DMP) prepared as part of the CEMP. Such measures include, but not limited to, the following:

- Provision of training to the onsite personnel on dust mitigation.
- Speed restrictions on vehicles within the site.
- Laden lorries covered before leaving the site.
- Regular grading and maintenance of haul roads (if used within the site).
- Minimising of stockpiling heights; thereby reducing wind whipping and lofting.
- Provision of water bowsers to spray haul roads and stockpiles with water to suppress dust emissions, as necessary.

20.6.9 Whilst the changes in road traffic emissions resulting from the operation of the proposed development upon human receptors is considered to be Not Significant and no mitigation measures are required, the implementation of a Travel Plan will assist in reducing any potential impact.

20.6.10 In terms of process emissions during operation, it is considered that there will be sufficient dispersion of all pollutants considered. As such, further mitigation will not be required. It should also be noted that the proposed development will operate under an Environmental Permit that will be regulated by either the Local Authority or the Environment Agency.

20.6.11 Residual effects are those effects of the development that remain after mitigation measures have been implemented. With the implementation of the measures set out in the DMP, residual effects are expected to be Negligible (**Not Significant**) for construction and operation.

20.6.12 In terms of cumulative effects, no significant intra-cumulative or inter-cumulative effects have been identified during either the construction or operational phases of the proposed development.

20.7 Noise

20.7.1 A noise and vibration assessment has been undertaken for the construction and operational phases of the proposed development to assess potential impacts upon

- the nearest existing sensitive receptors (ESRs), the closest of which is situated circa 310m from the site boundary. Whilst North Moor Farm was previously considered to be a sensitive receptor within the AESC Plant 2 assessment, it is now in the IAMP LLP's ownership, vacant and demolition works are due to be completed April 2024. As such, it is no longer considered to be a sensitive receptor.
- 20.7.2 A noise survey was undertaken for the wider IAMP ONE application, the data from which has been used for this assessment. At Hylton Bridge Farm (ML²1 / ESR 1), distant road traffic on the surrounding road network (including on the A1290, A19 and A184) were the dominant noise sources. Noise from the Nissan plant was also audible and included a constant, low-level, low-frequency droning noise and reverse alarms. At the Rustica Trattoria & Inn (ML2 / ESR 2), road traffic was the dominant noise source. Industrial noise from the Nissan plant was also audible.
- 20.7.3 The baseline data was used to establish thresholds for construction and operational noise. Whilst it is acknowledged that the baseline survey was undertaken in 2017 and that the acoustic environment may have changed in the area since then due to additional developments, the additional developments and road traffic are likely to have increased the background sound levels at receptors. As such, the background sound level used in this assessment are likely to be lower than would be measured in 2023 and the use of the 2017 noise data, therefore, provides a robust assessment.
- 20.7.4 Owing to the distance between the ESRs and the site, potential impacts as a result of noise and / or vibration due to activities associated with construction are assessed as Negligible and **Not Significant**. The use of current best practice working methodologies will also be adopted during construction phase to ensure that any potential impacts that may occur are reduced as far as practicably possible.
- 20.7.5 During the operational phase of the proposed development, the character of the residual sound, which will contain broadband noise from road traffic and industrial noise from the Nissan Plant to the south, and the character of the specific sound of the proposed development will be very similar. The proposed development is, therefore, considered to be in keeping with the immediate area.
- 20.7.6 The following mitigation measures will be adopted as part of the development design: Excluding the boiler units, stacks will be limited to 70dB Lw; external plant 'specified' to reduce noise levels; silencers applied (where needed) to plant to attenuate tonal

² Monitoring location (ML).

components; building access points to remain closed (where possible) when not in use; and white noise reversing alarms for movements within yards may be specified.. With these in place, the potential impacts upon the ESRs as a result of noise and / or vibration due to activities associated with the operation of the proposed development are assessed as Negligible and **Not Significant**.

20.7.7 In terms of cumulative effects, no significant inter-cumulative and no significant inter-cumulative effects have been identified.

20.8 Landscape and Visual Impact

Construction effects on the landscape resource and landscape character

Effects on site elements and perceptual aspects

20.8.1 Construction operations are likely to result in the loss of the existing internal trees and internal field boundary hedgerows, but roadside boundary planting would be retained (other than where access is proposed). Changes to landform are expected to be minimal. Changes to the landscape resource would have a local effect on landscape character and would be compensated for in the longer-term with the planting of replacement trees and hedgerows. Overall, effects are assessed as **Not Significant**.

Landscape character

20.8.2 Construction operations would give rise to direct, temporary effects on the Coalfield Lowland Terraces (Usworth Lowland) Landscape Character Type / Landscape Character Area. Overall, the effects on the landscape character of the site and its immediate surroundings are assessed as **Not Significant**. Effects on the landscape character of the wider area of the Usworth Lowland Landscape Character Area and the Urban Fringe, Boldon Fell Landscape Character Type from construction operations would be indirect and limited to changes associated with the noise of construction plant and perception of construction operations. Overall, effects are assessed as **Not Significant**.

Operational effects on landscape character and the landscape resource

Effects on site elements and perceptual aspects

20.8.3 Changes to the scale of the site will result from its development as a part of the wider AESC and IAMP development. The medium scale of the existing landscape is likely to increase to large scale with the development of two large buildings. The scale of the wider landscape is influenced by the presence of the existing and under-construction

- large and medium size buildings within the previous phases. Effects are assessed as Significant, reducing to **Not Significant** in the long-term as the proposed planting within the development, as well as that being brought forward as part of the wider masterplan, which is being brought forward as part of the Early Infrastructure and Northern Employment Area application (i.e. the IAMP TWO ELMA) establishes and matures helping to integrate the development into the surrounding landscape in the long-term. Planning permission was granted for IAMP TWO in August 2023 for up to 168,000 m² of floorspace for automotive and advanced manufacturing uses with around 35.08 ha of land for development, with associated infrastructure works and a central area of land for 'ecological and landscape mitigation' (ELMA) of 75.82 ha.
- 20.8.4 Enclosure within the area will alter as a result of the proposed development. Existing hedgerows within the site would be removed, but this will be partially offset by gapping up retained boundary hedgerows and planting within the site. Additional enclosure will be provided by the development of the proposed industrial buildings. Effects are assessed as Significant, reducing to **Not Significant** in the long-term as the proposed IAMP TWO ELMA planting establishes and matures and helps integrate the development into the surrounding area.
- 20.8.5 Lighting will form part of the site development that will accord with the principles of the Design Code to maintain consistency of appearance and effect on the character of the landscape. It is intended that the northern and western boundaries of the site, including any building facades facing towards these directions, be kept as dark as practicable so as to minimise adverse effects on species and habitats. Overall, effects are assessed as **Not Significant**.
- 20.8.6 The loss of some of the existing trees and hedgerows within the site will be compensated for through the planting of extensive areas of replacement native trees and scrub, and hedgerows / hedgerow trees within the IAMP TWO ELMA. Once established, the planting will contribute positively to the landscape character of the local area. Overall, effects of the developed site on the landscape resource of the local area are assessed as Significant. Effects would reduce with time to become **Not Significant** as proposed planting within the development and that which is to be brought forward as part of the wider masterplan (i.e. part of the Early Infrastructure and Northern Employment Area application IAMP TWO ELMA) establishes and matures; thereby helping to integrate the development into the surrounding landscape in the long-term.

Effects on landscape character

- 20.8.7 The proposed development would result in permanent, direct effects on part of the Coalfield Lowland Terraces (Usworth Lowland) Landscape Character Type / Landscape Character Area. Overall, the effect would initially be Significant, but would then in the long-term reduce to become **Not Significant** as planting within the development and wider (IAMP TWO ELMA) masterplan establishes and matures, helping to integrate the development into the surrounding landscape. Effects on the landscape character of the wider area of the Usworth Lowland Landscape Character Area and the Urban Fringe, Boldon Fell Landscape Character Type would be indirect and limited to changes to the skyline, associated with the presence of a tall, large-scale building on the horizon to the south. Overall, effects are assessed as **Not Significant**.

Effects on visual receptors during construction

- 20.8.8 Given the nature of the site and limited presence of near-distance receptors, the assessment of effects on visual amenity was limited to operational effects. Any adverse effects of construction operations on visual amenity for receptors in the area of the site would be short-term and temporary. As such, it is considered that this **would not give rise to significant effects**.

Effects on visual receptors during operation

Residential receptors

- 20.8.9 Residential receptors with scope for views of the site include the north-eastern settlement edge of Washington to the west of the site. Views from properties on the edge facing east are partially screened by existing tree cover on the edges of the disused railway line and any views towards the site would be seen primarily from upper floor windows. Where visible, the proposed development within the site would be seen in front of and blocking views of the AESC Plant 2. Balancing the distance to the site, intervening vegetation and the presence of AESC Plant 2, the effect on visual amenity for residential receptors is assessed as **Not Significant**.
- 20.8.10 For the properties at Hylton Bridge Farm, there is limited visibility towards the site due to intervening farm buildings and vegetation. Any views towards the site from within the general area of these properties would (at present) look across existing farmland and include the existing, under construction buildings within AESC Plant 2. The factory building of the proposed development would be sited 600 m away and seen alongside Plant 2 but would be a noticeable difference within this general view and the potential

effects are assessed as **Significant**.

20.8.11 From the two, two-storey properties on the roadside at Hylton Grove Farm, there are views south towards the current development at AESC Plant 2. There are also views south-west towards the site. The proposed development would be visible and seen alongside Plant 2 and the potential effects are assessed as **Significant**.

20.8.12 From the properties of East House and Strother House Farm, Plant 2 is visible but partially screened by intervening vegetation. The proposed buildings would be seen in front of Plant 2 and would be larger, and the potential effects are assessed as **Significant**.

20.8.13 For the properties in the Down Hill Farm area, views of the completed development would form part of the wider view of the surrounding developments, located beyond and marginally taller than these, and the effects are assessed as **Not Significant**.

Users of transport routes and rights of way

20.8.14 There would be near-distance views of the completed development from the immediately adjacent sections of the A1290 as it approaches and passes the site. These would be of short duration, transient and varying from more distant, direct views to near-distance and oblique views of the site, seen in the context of Plant 2 and surrounding existing industrial development.

20.8.15 For eastbound road users within sections of the road east of the IAMP ONE access road, the proposed buildings within the site would be the first elements of the development to be seen; occupying part of the forward view, albeit intermittently screened by roadside trees but increasing in prominence as the road users get closer to the site. Overall, having regard for the presence of the completed / under construction developments and the limited duration of the view, the effect on visual amenity for receptors is assessed as **Not Significant**.

20.8.16 There would be **no views of the proposed development from the A19(T)**. From the overbridge at the Downhill Lane Junction with the A19(T) and from elevated sections of Downhill Lane to the north-east of the site, any views of the proposed development would be difficult to discern beyond the built development within the existing and under construction developments. Overall, effects are assessed as **Not Significant**.

20.8.17 From sections of Follingsby Lane to the north-north-west, north and north-east of the site, there would be oblique views, interrupted in places by roadside hedging and tree cover. The site would be seen in conjunction with the wider developments. Overall,

effects are assessed as **Not Significant**.

20.8.18 There would be views of the completed development from the BOAT / footpath between Follingsby Lane and East House, seen in closer proximity than, and in conjunction with, the wider development. The proposed building within the site would break the skyline to a noticeably greater extent than the existing buildings and potential effects are considered to be **Significant**.

20.8.19 Distant views from the footpath to the east and north-east of Strother House Farm towards the proposed development would be interrupted by intervening trees and hedgerows. The proposed buildings within the site would break the skyline, sitting in front of and alongside existing development. Overall, effects are assessed as **Not Significant**.

20.8.20 From the dismantled railway line to the east of Sulgrave and Usworth Hall (if this were to be brought back into service), there would be transient and oblique views of the completed development seen in the context of the wider developments. Overall, effects are assessed as **Not Significant**.

20.8.21 For other roads and rights of way within the study area, any views of the proposed development would typically be distant and interrupted by intervening tree cover and development, and are assessed as **Not Significant**.

Users of formal and informal open space and recreation areas

20.8.22 For visitors to the Penshaw Monument, there would be distant views northwards of the completed development. This would, however, be seen in the context of the wider industrial development areas and the effect is assessed as **Not Significant**.

20.8.23 Views towards the site from the North East Aircraft Museum, are well screened by intervening tree cover (in the area of the junction with the A1290) in addition to the buildings being constructed within the consented IAMP ONE Phase One site. As such, there would be **no effect on visual amenity for visitors to this location**.

Assessment of key views

Viewpoint 1: view from Follingsby Lane at Strother House Farm

20.8.24 The existing view is representative of the views from the properties and for users of Follingsby Lane. The view looks south-south-east between roadside vegetation towards Plant 2, which is a prominent large building. The wind turbines and electricity transmission towers are also prominent features in the view. During construction,

there would be short-term middle-distance views of construction operations and effects assessed as **Not Significant**. Effects on road users would also be **Not Significant**. Upon completion of the construction works, there would be middle distance views of the completed development in front of Plant 2, appearing as a noticeably larger development. The mass and height of the buildings within the site would block views towards the horizon and would be seen against the skyline from this location, and effects are assessed as **Significant**. Effects on road users would, however, be **Not Significant**.

- 20.8.25 It should be noted that Significant effects may reduce to Not Significant in the long-term with the assimilation of the development into the general area. Although not fully screening the building from view, the establishment of intervening planting within the IAMP TWO ELMA would also assist in softening views into the site.

Viewpoint 2: view from the BOAT / footpath at East House

- 20.8.26 The existing view is representative of the views from the properties and for users of the BOAT / footpath. The view looks south-east over intervening vegetation towards Plant 2, which is a prominent large building. The wind turbines and pylons are also prominent features in the view. During construction, there would be short-term middle-distance views of construction operations and effects are assessed as **Not Significant**. Upon completion of the construction works, there would be middle distance views of the completed development in front of Plant 2, appearing as a noticeably larger development. The mass and height of the buildings within the site would block views towards the horizon and would be seen against the skyline from this location and effects are assessed as **Significant**.

Viewpoint 3: view from the A1290 to the west of the site

- 20.8.27 The existing view is representative of the view for eastbound users of the A1290. The view looks east along the A1290 at the start of a straight section of road leading towards the entrance to the Nissan site and, further east, to parts of the local road network and to the A19(T). Scrubby vegetation limits views along the road to Plant 2. The major buildings within the Nissan site are screened by the tree planting on the south side of the A1290. During construction, there would be short-term middle-distance views of construction operations that would be limited by the roadside vegetation and effects are assessed as **Not Significant**. Upon completion of the construction works, once the development plot is operational, there would be views similar to existing, but with built development in closer proximity, limited by roadside

vegetation. In the longer-term, the native tree and scrub planting proposed along the site boundaries would provide more screening and effects are assessed as **Not Significant**.

Viewpoint 4: view from Follingsby Lane to the north-east of the site

20.8.28 The existing view is representative of the view for users of Follingsby Lane. The view looks south-west across open farmland towards the site, with Plant 2 visible and prominent. Fields are bounded in places by gappy hedgerows with occasional groups of trees which break up the vista. Energy infrastructure is a prominent feature in the view, including a high voltage overhead line and transmission towers traversing the landscape in the middle ground.

20.8.29 During construction, there would be short-term middle-distance views of construction operations taking place onsite, seen above and beyond intervening vegetation, and effects are assessed as **Not Significant**. Upon completion of the construction works and the development plot is operational, there would be views of the buildings developed on the site (similar to existing, but with built development in slightly closer proximity and with the taller part of the building breaking the skyline). The viewpoint would be separated from the site by the proposed IAMP TWO ELMA area. In the longer-term, the native planting proposed on the northern boundary of the site would establish and provide some softening of the built development and effects are assessed as **Not Significant**.

Viewpoint 5: view from Follingsby Lane to the north-east of the site

20.8.30 The existing view is representative of the view for users of Follingsby Lane and nearby residents at Hylton Grove Farm. This is very similar to Viewpoint 4, looking across open farmland towards the site with Plant 2 visible and prominent. Energy infrastructure is also a prominent feature in the view.

20.8.31 During construction, there would be short-term middle-distance views of construction operations taking place onsite, seen above and beyond intervening vegetation, and effects are assessed as **Not Significant**. Upon completion of the construction works and the development plot is operational, there would be views of the buildings developed on the site similar to existing, but with built development in slightly closer proximity and with the taller part of the building breaking the skyline. Effects are assessed as **Not Significant**, with the exception of the residents of Hylton Grove Farm for which effects would be **Significant**.

Viewpoint 6: view from Follingsby Lane to the north-east of the site

- 20.8.32 The existing view is representative of the view for users of Follingsby Lane and the nearby residents of Hylton Bridge Farm. This view looks south-west towards the site from the junction with the private access road leading to North Moor Farm. Plant 2 is visible and prominent. Energy infrastructure is a prominent feature in the view including a high voltage overhead line crossing the landscape in the foreground, with the wind turbines on the Nissan site seen in the background. Penshaw Monument is seen distantly on the skyline.
- 20.8.33 During construction, there would be short-term close and middle-distance views of construction operations taking place onsite, seen above and beyond intervening vegetation, and effects are assessed as **Not Significant**. Upon completion of the construction works the development plot is operational, there would be views of the buildings developed on the site similar to existing, but with built development in slightly closer proximity, occupying more of the horizontal field of view and with the taller parts of the buildings breaking the skyline to a noticeable degree although not screening the existing view of Penshaw Monument. Effects are assessed as **Not Significant**, with the exception of the residents of Hylton Bridge Farm for which effects would be **Significant**.

The Green Belt

- 20.8.34 The Green Belt is a planning designation aimed at restricting urban sprawl and encroachment of the countryside, prevent coalescence, preserve the setting and special character of historic towns, and to assist with urban regeneration. The key characteristics of Green Belts are their openness and their permanence. The effect of the proposed development on the spatial and visual openness of the Green Belt has been considered as part of this ES (for additional details, reference should be made to the 'Green Belt: Very Special Circumstances Report (Lichfields, 2024) that accompanies the planning application) and summarised, below.
- 20.8.35 The main aspects of the proposed development that would affect the openness of the Green Belt are the large scale of the proposed buildings themselves. The proposed development would result in **Significant** adverse landscape and visual effects within approximately 1 km of the proposed development. Some of these would reduce in time to become **Not Significant** as the proposed planting to the IAMP TWO ELMA land to the north establishes and matures softening the development and helping to integrate it into the surrounding area.

20.8.36 The proposed development would also initially result in localised **Significant** adverse effects on the visual and spatial openness of this part of the Green Belt, but as the Green Belt to the north would remain and would be enhanced through the extensive area of ecology and landscape mitigation (i.e. the IAMP TWO ELMA), it is considered that the long-term and permanent effects would be **Not Significant**. The EMLA land would create a strong but soft boundary to what would become the new Green Belt boundary to the north of the site, in accordance with the NPPF. The new boundary would follow the River Don tributary that forms the northern site boundary, which is considered a “physical feature that is readily recognisable and likely to be permanent” (NPPF paragraph 148 point f). The current Green Belt boundary within the site is defined by the overhead electricity transmission line on steel towers that previously ran through the eastern area of the site and has recently been diverted round the eastern and northern boundaries of the site.

Cumulative landscape Impacts

20.8.37 The cumulative assessment is limited to the operational stage of the proposed development as any effects of construction would be short-term and temporary and **Not Significant**.

Inter-cumulative impacts on the landscape resource

20.8.38 In terms of inter-cumulative impacts upon the landscape resource of the local area, **no significant inter-cumulative effects** have been identified.

Inter-cumulative impacts on landscape character

20.8.39 In terms of inter-cumulative impacts upon landscape character, **no significant inter-cumulative effects** have been identified.

Inter-cumulative impacts on residential receptors

20.8.40 In terms of inter-cumulative impacts upon residential receptors on the north-eastern settlement edge of Washington and properties in the Down Hill Farm area to the north-east of the site, **no significant inter-cumulative effects** have been identified. In terms of inter-cumulative effects upon properties at Hylton Bridge Farm and the two roadside properties at Hylton Grove Farm, there would be a **Significant** adverse effect as the properties would be surrounded by large built developments (softened in places in the long-term by proposed planting within the IAMP TWO ELMA). In terms of inter-cumulative impacts upon the properties at Strother Farm and East House, there would be an initial Significant adverse effect, subsequently reducing with time

to **Not Significant** as proposed planting within the ELMA land and IAMP TWO establishes.

Users of transport routes and rights of way

20.8.41 In assessing inter-cumulative visual impacts on users of transport routes and rights of way, it is relevant to consider sequential visual effects (views experienced over the duration of a route, or part of a route) as these are the most likely effects to be incurred.

20.8.42 There would be no views of the site from the A19(T) and, as such, no inter-cumulative effects. In terms of inter-cumulative impacts upon visual amenity in relation to users of the A1290, **no significant inter-cumulative effects** have been identified. In terms inter-cumulative impacts upon visual amenity in relation to views from the elevated overbridge at the Downhill Lane junction and from Downhill Lane; views from Follingsby Lane and from the BOAT / footpath between Follingsby Lane and East House; views from the footpath east and north-east of Strother House Farm; and views from the dismantled railway line to the east of Sulgrave and Usworth Hall, effects are assessed as **Not Significant**.

Users of formal and informal open space and recreation areas

20.8.43 In terms of inter-cumulative impacts upon visual amenity for visitors to the Penshaw Monument and the North East Aircraft Museum, **no significant inter-cumulative effects** have been identified.

20.9 Waste

20.9.1 An assessment has been undertaken for potential significant effects of the development of the AESC Plant 3 site (during construction and operation) on waste management, with both hazardous and non-hazardous wastes assessed.

20.9.2 The proposed development will require the levelling and grading of the existing site, construction of the new buildings, 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.

20.9.3 It is expected that the majority of waste arisings will be sent for disposal to local landfill sites or to suitable offsite locations for reuse. The anticipated waste volumes form a small fraction of regional waste generation and capacity. 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. No significant environmental effects have been identified as a result of waste arisings and management practices in relation to the proposed AESC Plant 3 development.

20.9.4 In terms of cumulative effects, no significant inter-cumulative and no significant inter-cumulative effects have been identified.

20.10 Water Resources

20.10.1 The site is located within the Northumbria River Basin but is itself split between two local catchments. The majority of the site drains into the Usworth Burn and, eventually, into the River Tyne. The remainder feeds into the headwaters of the Hylton Dene Burn and through to the River Wear.

20.10.2 In terms of the water environment, the main features are the Usworth Burn (a minor watercourse that originates in south Washington west of the site and flows past the northern edge of the proposed development to a confluence with the River Don), Hylton Dene Burn (a minor watercourse that passes through Hylton east of the A19 and eventually outfalls into the River Wear), field ditches and land drains (serving the former farmland on and near by the proposed development), IAMP surface drainage system (serving the project immediately east of AESC Plant 3 and includes the surface drainage from Plant 2) and any such shallow groundwater that may be present onsite (considered to be perched and confined within granular layers or lenses contained within the superficial soil and dislocated from other similar features).

20.10.3 Other than the North Moor Farm complex, the site is currently undeveloped. The land is poorly permeable and surface ponding in low spots during or after prolonged wet weather is a common occurrence. The local water table beneath the site is heavily constrained by the ground conditions and not amenable to a free flow of groundwater near the surface. The typical soil profile on site is that of glacial till and/or Pelaw clay underlying the topsoil, with mudstones and sandstones forming the bedrock.

20.10.4 Flood Risk - The proposed development is mostly located in Flood Zone 1 and the residual risk of fluvial flooding to the scheme is very low; the residual effect is considered to be Negligible Adverse (**Not Significant**). The risk posed to offsite fluvial flooding from increased runoff is negligible by virtue of the provision of a new surface drainage; the residual effect is considered to be Negligible Adverse (**Not Significant**). The combined residual effects for fluvial flooding affecting or affected by the proposed development is considered to be Negligible Adverse (**Not Significant**).

- 20.10.5 Surface and Foul Drainage - The residual impact associated with the new surface drainage arrangements is very small due to the provision of a new storm drainage system capable of handling and managing the development runoff up to the design standard and including provision for future changes in rainfall behaviour as a result of climate change; the residual effect of the risk is considered to be Negligible Adverse (**Not Significant**). In terms of new demand for conveyance and treatment of sewage and trade effluent originating from the site, the residual effect of the proposed development upon foul drainage is considered to be Minor Adverse (**Not Significant**).
- 20.10.6 Water Quality – The cessation of current farming practices (i.e. applications of fertiliser / pesticide) and the implementation of a new surface water drainage system will help ensure that there is negligible change in water quality within the receiving rivers. Countermeasures for dealing with potential spillages that could contaminate storm drainage and receiving water features will be implemented to manage. Overall, the residual effect upon water quality in the various surface water features on or adjacent to/downstream of the site is considered to be Negligible Adverse (**Not Significant**).
- 20.10.7 The effects upon groundwater are related to paving / building-over the site that will reduce the recharge of the shallow groundwater within the shallow superficial deposits, and the cessation of farming. With the provision of a new drainage system incorporating pollution-control elements, the residual effects on groundwater quality are considered to be Negligible Adverse (**Not Significant**).
- 20.10.8 Water Supply - To mitigate potential impacts upon local water supply networks, upgrades (as needed) will be undertaken to deliver the flow rates needed to serve the proposed development and (if necessary) to improve water treatment facilities upstream to meet increased demand. The residual effect of this upon the local water distribution infrastructure is considered to be Minor Adverse (**Not Significant**).
- 20.10.9 The proposed development's effects upon the local water environment are not confined within the site limits and may extend far enough to compound similar impacts generated by other nearby developments. Similarly effects from other nearby developments may extend to exacerbate those effects generated by the Proposed Development. In terms of inter-cumulative effects, of the other developments considered, the most likely combination of simultaneous construction is the proposed AESC Plant 3 and the dualling of the A1290. It is considered that the any inter-cumulative effect in relation to flood risk, surface and foul drainage, water quality, and

water supply would be Minor to Negligible Adverse (**Not Significant**).

20.11 Ground Conditions

20.11.1 The superficial deposits at the site relate to Alluvium in the north, Pelaw Clay Member, Tyne and Wear Complex and Glacial Till, and the underlying Bedrock consists of the Pennine Middle Coal Measures Formation. There are two faults present, both trending southeast to northwest; the western fault extends across the site beneath the former West Moor Farm and the eastern fault terminates 200 m west of North Moor Farm. The Pelaw Clay Member and the underlying Glacial Till are identified as Unproductive Strata, and the Alluvium and Pennine Middle Coal Measures as Secondary A Aquifers. The site is not located in a groundwater Source Protection Zone. The nearest surface water course is the River Don's tributary (the Usworth Burn), which is located 174m to the north of the proposed development site for AESC Plant 3.

20.11.2 The site is located within a coal mining reporting area but is not located in a development high risk area and there are no recorded mine entries on or near the site. Historically, the site is indicated to have been occupied by North Moor Farm (in the north) and part of West Moor Farm (in the south) since earliest mapping. Both farms have undergone phases of redevelopment over their history. West Moor Farm has been demolished and North Moor Farm is to be demolished by April 2024. Whilst Made Ground is unlikely to be present across most of the site, some localised pockets may be present at North Moor Farm, and along access tracks and drainage features. The previous and current uses at the site are unlikely to have resulted in widespread contamination of soil and groundwater, but there is potential for localised contamination associated with the storage of materials, vehicles and plant.

20.11.3 A Phase 1 Preliminary Risk Assessment has been undertaken and did not identify the potential for significant widespread contamination and ground gas generation. Further, localised investigation will be undertaken at the site to further clarify the risks associated with potential contamination. Best working practice will be adopted throughout the construction phase and managed via a CEMP. Overall, with these in place, any construction phase impacts are considered to be short-term and of local spatial extent; the effect of which would be Negligible (**Not Significant**). Any operational phase impacts to soil and groundwater would be Negligible to Minor Beneficial (**Not Significant**) based on the surface cover provided by the development.

20.11.4 No significant cumulative effects have been identified.

20.12 Ecology & Biodiversity

20.12.1 The assessment, which jointly considers impacts to ecology receptors arising from the proposed AESC Plant 3 development and the AESC Plant 2 development, concludes that (subject to suitable mitigation and compensation provisions³) there will be **no significant adverse effects** to the ecological features considered.

20.12.2 The extent of land required, the enhancement provisions and the resulting positive impact on faunal populations is heavily influenced by the proximity of such areas to the donor site and by the type / quality and extent of habitats present at the mitigation areas prior to enhancement measures (i.e. the baseline populations) and cannot be fully assessed until the sites have been identified and surveyed. It will, therefore, be necessary to consider the selection of such areas carefully such that all necessary species and habitats can be addressed. On the assumption that such measures can be secured, enhanced and monitored, there will be **no significant residual effects**, and the scheme can be delivered in conformity with legislative and policy considerations.

20.13 Access & Transport

20.13.1 Consideration has been given to the potential access and transport impacts of the proposed development during construction and operation in relation to severance, driver stress and delay, pedestrian and cyclist amenity, pedestrian and cyclist delay, fear and intimidation, and highway safety.

20.13.2 Primary mitigation measures are inherent to the design of the proposed development to provide increased capacity. Tertiary mitigation measures identified as part of the assessment include the preparation of a Construction Traffic Management Plan and Travel Plan for the proposed development. Following a screening process, the severity of the potential environmental effects for the construction and operational phases of the proposed development have been assessed.

20.13.3 During construction, the maximum residual impact is Minor Adverse (**Not Significant**).

³ Sunderland City Council's 'Proposed Delivery Model for the provision of Biodiversity Net Gain' (Cabinet Meeting, 14 March 2024) states that "...the Cabinet is recommended to:

- "Approve the principle of the use of appropriate Council sites for the delivery of BNG and authorise the Executive Director of City Development, in consultation with the Deputy Leader and the Director of Finance, to identify and determine which Council sites shall be made available for BNG.
- Authorise the Director of Finance, in consultation with the Executive Director of City Development and the Cabinet Secretary, to grant leasehold interests on such terms as are approved (including where appropriate the grant of rent concessions) to relevant third parties of Council land for the delivery and management of BNG".

During operation, the maximum residual impacts is Negligible (**Not Significant**). In terms of potential inter-cumulative impacts, no significant effects have been identified.

20.13.4 Overall, the most severe environmental effect for the construction and operational stages will be Minor Adverse (**Not Significant**).

20.14 Climate Change

20.14.1 This assessment considered potential impacts of the proposed development upon the climate from greenhouse gas (GHG) emissions over the project's assumed lifetime, as well as the potential impact of the changing climate upon the proposed development.

20.14.2 In terms of potential impacts upon the climate from GHG emissions, with embedded mitigation in place, the proposed development's absolute whole life cycle emissions were modelled to be around 34% below the sectoral business as usual baseline based upon the assumption that roof-top solar PV and heat pumps for space heating will be installed; relative emissions over the assumed 60-year lifetime of the proposed development were estimated at between -31,853 to -26,284 tCO₂e.

20.14.3 Scenario A has a residual reliance on the combustion of fossil fuel to meet the majority of the required operational energy demand, whereas Scenario B represents the shift to all electric to meet the energy demands for the proposed development that will also benefit from the decarbonisation of the national grid. Scenario A would likely have a Moderate Adverse (Significant) effect in the long-term, whilst Scenario B would have a Minor Adverse (Not Significant) effect in the long-term. Scenario B will be the preferred option as far as is reasonably practicable so that the proposed development can demonstrate a contribution to the UK's net zero ambition. The proposed development will comply with current 2021 Building Regulations and meet the minimum emissions targets as set within national and local policy for buildings constructed before the end of 2026. However, the proposed development falls short of fully contributing to the UK's trajectory towards net zero and the residual operational effect for the uses proposed is Moderate Adverse (**Significant**).

20.14.4 It is not practical to consider inter-cumulative effects with locally identified developments, beyond recognising that it is necessary to reduce carbon emissions across the board and each and every development has a duty to minimise its own emissions as far as technically viable. Similarly, intra-cumulative effects are also unrealistic to appraise. Climate change effects manifest as effects considered within

the other environmental disciplines (e.g. air quality and flood risk), but do not really have a quantifiable direct effect on local receptors. The effects act on a global receptor but the individual contribution from a single development of this scale is almost indistinguishable.

20.14.5 In terms of climate resilience, it is not possible to eliminate every risk associated with climate change, but through intelligent design, preparation and responsible construction and operation, these risks will be minimised. The assessment focussed on reducing these risks in key areas and has taken into consideration both the health and safety of the users of the proposed development and the resilience of the proposed development itself to future climate impacts. With the implementation of the embedded mitigation measures the residual effects are deemed to be Minor Adverse (**Not Significant**).

20.15 Archaeology & Cultural Heritage

20.15.1 Construction activities associated with the proposed development will result in the loss of two heritage assets, some geophysical anomalies of probable archaeological origin. The mitigation measures will allow preservation by record (accessible via archive). The construction phase will also result in indirectly effects to the settings of four post medieval farmsteads and a Grade II listed road bridge (within the wider area). These would be permanent, continuing into the operational phase. With the proposed mitigation measures in place, the residual effect on heritage assets would be lessened. Overall, it is considered that effects upon archaeological and heritage assets as a result of the proposed AESC Plant 3 development would be **Not Significant**.

20.16 Soils and Agricultural Land Classification

20.16.1 The site is 42.39 ha in size, of which 41.24 ha is agricultural land and 1.15 ha is non-agricultural land. Of the 41.24 ha agricultural land, 23.93 ha is Grade 3a (good quality) best and most versatile (BMV) land and 17.31 ha is Grade 3b (moderate quality) non-BMV land. The main limitation for the majority of the site is wetness.

20.16.2 The soils across the site belong to the Foggathorpe 1 soil association and range in texture between medium to heavy clay loams and clays, with fine sandy loam and sandy clay loam textures also recorded. The topsoil of the site is best described as a medium clay loam, with one occurrence of each of the following textures: heavy clay loam, sandy clay loam and fine sandy loam. The subsoils are best described as heavy clay loam and clay textures, with one occurrence of each of the following textures:

medium clay loam and sandy clay loam.

20.16.3 The proposed built development will occupy 24.37 ha of land. Associated construction activities will result in a long-term permanent loss of 24.37 ha of agricultural land (11.18 ha Subgrade 3a BMV and 12.76 ha Subgrade 3b non-BMV) and 0.43 ha of non-agricultural land. It is not possible to mitigate the loss and the effect is considered to be moderate to Major Adverse (**Significant**). Of the 42.39 ha, however, 17.30 ha of agricultural land (12.75 ha Subgrade 3a BMV land and 4.55 ha Subgrade 3b non-BMV) and 0.72 ha of non-agricultural land will be retained for onsite green spaces. Taking the proposed embedded mitigation measures into account, the effect to the retained land is Minor Adverse (**Not Significant**). During the operation, it is expected that there would be no further discernible impacts upon 'land' and any effects would remain Minor Adverse (**Not Significant**).

20.16.4 In terms of the onsite soils resource, best working practice will be adopted (including the implementation of the Soil Management Plan) during the construction phase to reduce the risk of potential damage to the soils resource. With these in place, the effect would be Minor Adverse (**Not Significant**). For green space, the effect would be Moderate to Major Adverse (**Significant**). During operation, however, it is expected that there would be no further discernible impacts in terms of damage to the soil resources and, as such, any effects would be Minor Adverse (**Not Significant**).

20.16.5 In terms of the potential loss of the onsite soils resource, the adoption of best working practice and the Soil Management Plan will reduce the risk of this to a minimum. During the construction phase, for areas of 'built environment' and 'green spaces', the effect would be Minor Adverse (**Not Significant**). During operation, it is anticipated that that there would be no further changes to the soils remaining in-situ and any effects would remain Minor Adverse (**Not Significant**).

20.17 Socio-economics

20.17.1 As part of the socio-economic assessment, the following were considered in relation to impacts as a result of the proposed development:

- Construction:
 - Employment.
 - Economic output.
- Operation:
 - Employment.

- Economic output.
- Labour market.
- Commuting.
- Deprivation.

20.17.2 In terms of employment during the construction phase, the receptor is considered to have a low sensitivity and the scale of the additional employment that could be generated within the local / wider Area of Influence (AOI) is considered to be a high magnitude of change. The effect upon direct and indirect employment as a result of the proposed development during construction is assessed as short-term Moderate Beneficial (**Significant**).

20.17.3 In terms of economic output during the construction phase, the receptor is considered to have a medium sensitivity and the level of economic output to be supported by the proposed development is considered to be a high magnitude of change. The effect of direct and indirect economic output within the local area as a result of the proposed development during construction is assessed as short-term Moderate Beneficial (**Significant**).

20.17.4 In terms of employment during the operational phase, the receptor is considered to have a low sensitivity and the level of net additional jobs that will be generated through the proposed development is considered to be a high magnitude of change. The effect of employment as a result of the proposed development during operation phase is assessed as permanent Moderate Beneficial (**Significant**).

20.17.5 In terms of economic output during the operational phase, the receptor is considered to have a medium sensitivity and the level of additional economic output to be supported by the proposed development is considered to be a high magnitude of change. The effect to economic output for the manufacture of metals, electrical products and machinery industry as a result of the proposed development during operation is assessed as permanent Moderate Beneficial (**Significant**).

20.17.6 In terms of the labour market of the local impact area, the effect of the proposed development is assessed as permanent Minor Beneficial (**Not Significant**) effect.

20.17.7 In terms of commuting (both in and out-commuting) within the local AOI, the effect of the proposed development is assessed as permanent Minor Adverse (**Not Significant**).

20.17.8 In terms of deprivation within the local and wider AOI, the effect as a result of new

employment opportunities generated by the proposed development is assessed as permanent Minor Beneficial (**Not Significant**).

20.18 Vulnerability to Major Accidents and Disasters

20.18.1 An assessment has been carried out for the vulnerability of the proposed development to major accidents and disasters. This has considered the scope for the proposed development to be vulnerable to any existing, albeit low-likelihood, environmental hazards that would introduce (or increase) the risk of adverse effects on sensitive receptors (people and the environment). Construction and operational effects have been considered separately; cumulative effects (with IAMP ONE, AESC Plant 2 and IAMP TWO, and the other proposed developments) have also been assessed.

20.18.2 The assessment has considered natural and man-made / industrial hazards and mitigation measures are identified (where required). The assessment concluded that, with the appropriate measures to control such aspects as dust dispersion, fire suppression, uninterrupted power supply and flood risk *etcetera*, the vulnerability of the proposed development to major accidents and disasters, including cumulatively with other developments, is considered to be very Low to Negligible (**Not Significant**).

20.19 Cumulative Effects

20.19.1 An assessment of the potential for the proposed development to result in cumulative effects, from the combination of environmental aspects associated with the proposed development itself (i.e. intra-cumulative effects) and from the combination of the proposed development and other developments within the local area (i.e. inter-cumulative effects), including the wider areas of IAMP ONE, the AESC Plant 2 development and IAMP TWO.

20.19.2 The proposed development is considered to have very limited scope for significant cumulative effects (either intra-cumulative or inter-cumulative effects) in relation to the natural environment, and people and property of the area. The only potential cumulative effects relate the properties at Hylton Bridge and Hylton Grove Farms, for which cumulative visual effects have been identified.

20.20 Summary

20.20.1 The proposed development of the AESC Plant 3 site has been assessed for its potential effects on the environment of the local area, with only a limited number of significant effects identified. These primarily relate to landscape and view and are anticipated to reduce to Not Significant over time. Significant adverse effects will remain in terms of

visual amenity for the occupants of properties at Hylton Bridge Farm, Hylton Grove Farm, Strother House Farm and East House, and for users of the BOAT / footpath from Follingsby Lane to East House. With the implementation of the mitigation measures proposed within this ES, no other significant residual effects (including cumulative effects) on the natural environment or on the people and property of the area have been identified. Overall, it is considered that the effects of the proposed development can be suitably mitigated such that there would be no unacceptable level of harm to the environment of the local area.

Table 20.1: Air Quality Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Construction - dust and fine particulate matter (PM ₁₀ and PM _{2.5})	Potential impact upon residential receptors as a result of dust and fine particulate matter release by earthwork activities.					√	Adverse	R St	Not Significant	Preparation and adoption of a site-specific Dust Management Plan (DMP), prepared as part of the Construction Environmental Management Plan (CEMP) for the site.
	Potential impact upon ecological and landscape mitigation area (ELMA) as a result of dust and fine particulate matter release by earthwork activities.					√	Adverse	R St	Not Significant	
	Potential impact upon residential receptors as a result of dust and fine particulate matter release by construction activities.					√	Adverse	R St	Not Significant	
	Potential impact upon ecological and landscape mitigation area (ELMA) as a result of dust and fine particulate matter release by construction activities.					√	Adverse	R St	Not Significant	
	Potential impact upon residential receptors as a result of dust and fine particulate matter release by trackout.					√	Adverse	R St	Not Significant	
	Potential impact upon ecological and landscape mitigation area (ELMA) as a result of dust and fine particulate matter release by trackout.					√	Adverse	R St	Not Significant	
Operation - Road Traffic Emissions	Potential impact upon human and ecological receptors as a result of changes to air quality due to emissions from vehicles associated with the operation of the proposed development.					√	Adverse	R Lt	Not Significant	Transport-related measures (including junction upgrades, traffic management improvements and a travel plan) required for IAMP ONE.

Table 20.1: Air Quality Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Operation - Process Emissions	Potential impact upon human receptors as a result of changes to air quality due to volatile organic compound emissions (NMP, EC and DEC) from operational processes associated with the proposed development.					V	Adverse	R Lt	Not Significant	Operational design will ensure sufficient dispersion of all pollutants considered such that further mitigation is not required. Plus, the proposed development will operate under a regulated Environmental Permit.
	Potential impact upon ecological receptors as a result of nitrogen and acid deposition due to nitrogen dioxide emissions from operational process emissions (NMP, EC and DEC) from operational processes associated with the proposed development.				V		Adverse	R Lt	Not Significant	Operational design will ensure sufficient dispersion of all pollutants considered such that further mitigation is not required. Plus, the proposed development will operate under a regulated Environmental Permit.
Cumulative Impacts	There are no anticipated intra-cumulative or inter-cumulative impacts for the construction of the proposed development.	-	-	-	-	-	N/A	N/A	N/A	N/A
	Potential inter-cumulative impacts relating to operational process emissions (NMP, EC and DEC) from the under construction AESC Plant 2					V	Adverse	R Lt	Not Significant	Operational design will ensure sufficient dispersion of all pollutants considered such that further mitigation is not required. Plus, the proposed development and the AESC Plant 2 will operate under regulated Environmental Permits.

Table 20.1: Air Quality Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
	Potential inter-cumulative impacts related to road traffic emissions during operation.					√	Adverse	R Lt	Not Significant	N/A
	There are no inter-cumulative impacts anticipated in relation to process emissions during operation.	-	-	-	-	-	N/A	N/A	N/A	N/A

Key:
Geographical Significance: I = International N = National R = Regional D = District L = Local
Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible

Table 20.2: Noise & Vibration - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Noise	Construction: Assessment of the potential effect of construction phase noise on existing sensitive receptors.					√	Negligible	St	None	Best practice mitigation
	Operation: Assessment of the potential effect of operational phase noise on existing sensitive receptors.					√	Negligible	Lt	None	None
Vibration	Construction: Assessment of the potential effect of construction phase vibration on existing sensitive receptors.					√	Negligible	St	None	Best practice mitigation

Table 20.2: Noise & Vibration - Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Key:										
Geographical Significance: I = International N = National R = Regional D = District L = Local										
Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible										

Table 20.3: Landscape and Visual Impact Assessment - Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Landscape character of site	During construction: temporary construction activities, change to land use, land cover, enclosure and scale, construction of large buildings					√	Adverse	St, R	Not significant	Good construction practice
	On completion: permanent change to land use, land cover, enclosure and scale, presence of large buildings and activity at site					√	Adverse	Lt, Ir	Significant	Planting within ELMA and site
	Long term: Proposed planting within the site and to adjacent ELMA land establishing and maturing helping to integrate development into surrounding landscape					√	Adverse	Lt, Ir	Not significant	Planting within ELMA and site
Landscape character of LCA site is within	During construction: temporary construction activities, change to land use, land cover, enclosure and scale, construction of large buildings				√		Adverse	St, R	Not significant	Good construction practice
	Operation: permanent change to land use, land cover, enclosure and scale, presence of large buildings and activity at site				√		Adverse	Lt, Ir	Significant	Planting within ELMA and site

Table 20.3: Landscape and Visual Impact Assessment - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
	Long term: Proposed planting within the site and to adjacent ELMA land establishing and maturing helping to integrate development into surrounding landscape				√		Adverse	Lt, Ir	Not significant	Planting within ELMA and site
Landscape character of surrounding LCAs	During construction: indirect effects of temporary construction activities, change to land use, land cover, enclosure and scale, construction of large buildings within neighbouring LCA				√		Adverse	St, R	Not significant	Good construction practice
	On completion and long term: indirect effects of permanent change to land use, land cover, enclosure and scale, presence of large buildings and activity at site within neighbouring LCA				√		Adverse	Lt, Ir	Not significant	Planting within ELMA and site
Visual impacts on residential receptors	During construction: views of temporary construction activities					√	Adverse	St, R	Not significant	Good construction practice
	Operation: views of completed development from:									Planting within ELMA and site
	Washington					√	Adverse	Lt, Ir	Not significant	
	Hylton Bridge Farm					√	Adverse	Lt, Ir	Significant	
	Hylton Grove Farm					√	Adverse	Lt, Ir	Significant	
	Strother House Farm					√	Adverse	Lt, Ir	Significant, reducing to not significant in long term	
	East House					√	Adverse	Lt, Ir	Significant	
Downhill area					√	Adverse	Lt, Ir	Not significant		

Table 20.3: Landscape and Visual Impact Assessment - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Visual impacts on users of surrounding transport network	During construction: views of temporary construction activities					√	Adverse	St, R	Not significant	Good construction practice
	Operation: views of completed development					√	Adverse	Lt, Ir	Not significant	Planting within ELMA and site
Visual impacts on users of surrounding rights of way network	During construction: views of temporary construction activities					√	Adverse	St, R	Not significant	Good construction practice
	Operation: views of completed development from:									
	BOAT / footpath between Follingsby Lane and East House					√	Adverse	Lt, Ir	Significant	Planting within ELMA and site
	Other rights of way					√	Adverse	Lt, Ir	Not significant	
Visual impacts on other recreational receptors	During construction: views of temporary construction activities					√	Adverse	St, R	Not significant	Good construction practice
	Operation: views of completed development					√	Adverse	Lt, Ir	Not significant	Planting within ELMA and site
Impacts on visual and spatial openness of Green Belt	During construction: loss of openness due to temporary construction activities, change to land use, land cover, enclosure and scale, construction of large buildings			√			Adverse	St, R	Not significant	Good construction practice
	Operation: loss of openness due to permanent change to land use, land cover, enclosure and scale, presence of large buildings and activity at site			√			Adverse	Lt, Ir	Significant	Planting within ELMA and site
	Long term: Loss of openness within site remains. Proposed planting within the site and to adjacent ELMA land establishing and maturing creating a			√			Adverse	Lt, Ir	Not significant	Planting within ELMA and site

Table 20.3: Landscape and Visual Impact Assessment - Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
	strong but soft new boundary to the Green Belt to the north of the site									
Key: Geographical Significance: I = International N = National R = Regional D = District L = Local Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible										

Table 20.4: Waste- Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Waste Generation, Treatment and Disposal	Construction: Demolition of North Moor Farm and associated outbuildings and structures, generation of construction / demolition waste for treatment or disposal using local infrastructure (Metal Recycling, Deposit for Recovery, Inert Landfill, Inert Treatment)			√			Minor Adverse	St,Ir	Not significant	Implement opportunities to minimise demolition and construction waste generation. Strive to reuse/recycle excavation and construction materials onsite. Where this is not feasible, reuse/recycle on other local construction projects
	Operation: Generation of operational waste for treatment or disposal using local infrastructure (WTS, MRF, Inert Treatment, Metal Recycling, Landfill)			√			Minor Adverse	Lt,Ir	Not significant	Employ measures to recycle and recover construction waste, use of inert landfills / deposit for recovery to create engineered fill rather than disposal classification, site design and management

Table 20.4: Waste- Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Key: Geographical Significance: I = International N = National R = Regional D = District L = Local Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible										

Table 17.5: Water Resources - Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Fluvial Flooding	Flooding from Usworth Burn extends onto the northern margins of the site but does not reach the main building and access routes. Increased run-off causes increased flood risk downstream if not controlled.					X	Negligible Adverse	St	Not significant	Affected areas to remain at their existing levels, only landscape planting permitted. Where development footprint rises higher than existing ground, a peripheral retaining wall is provided to contain the extent of ground raising and avoid clash with flood extent.
Surface flooding	Creation of substantial paved and built areas on former farmland creates substantial increase in run-off, spread over a large horizontal area.					X	Negligible Adverse	St	Not significant	Provision of new surface drainage system as part of the development to capture and manage run-off prior to discharge away from the site.
Foul drainage	Connection of Plant 3 foul drainage to nearest communal foul sewer system overloads capacity of that system. Alternative connection point is approx. 1km from site.					X	Minor Adverse	Mt	Significant	Alternative discharge location to be used or upgrade to existing facility. Treatment facility off-site has capacity for the new flow. Some on-site treatment for process effluent flows.

Table 17.5: Water Resources - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Surface drainage	Where any part of development is connected to existing drainage system, insufficient capacity leads to overflowing drainage.				X		Negligible Adverse	St	Not significant	Redirection of surface drainage away from existing drainage plus new surface drainage system to attenuate run-off to restrict discharge rates off-site.
Surface water quality	Run-off from site affected by diffuse highway-type pollution from access routes and parking areas. Offset by cessation of use of agri-chemicals on farmland.				X		Negligible Adverse	Mt	Not significant	New drainage system captures run-off-borne pollution via series of proprietary SuDS features prior to discharge off-site.
Groundwater quality	Run-off from site affected by diffuse highway-type pollution from access routes and parking areas. Offset by cessation of use of agri-chemicals on farmland. Poor permeability of the ground limits rate at which polluted water can soak into the ground and reach groundwater.				X		Minor Adverse	Lt	Not significant	New drainage system captures run-off-borne pollution via series of proprietary SuDS features prior to discharge off-site.
Water resource	The new development imposes a new demand upon the local water supply network during its operational phase.			X			Minor Adverse	Lt	Significant	Efficiency of water use for process and for welfare purposes to minimise demand.
<p>Key: Geographical Significance: I = International N = National R = Regional D = District L = Local Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible</p>										

Table 17.6: Ground Conditions - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Construction phase										
Construction workers (during construction phase);	Potential for contamination to be present in the soils, likely to the localised and discrete sources					x	Negligible	Short term	Not significant	Subject to CEMP, Phase 2 SI and H&S risk assessment. Use of PPE and dust mitigation, etc
Off-site users (during construction phase);	Potential for generating dust and including from contaminated soils					x	Negligible	Short term	Not significant	Subject to CEMP and Phase 2 SI. Dust mitigation
Controlled waters	Piled foundation solution and contaminated soils and groundwater				x		Negligible	Long term	Not significant	Subject to CEMP, Piling Risk Assessment and Phase 2 SI
Ecology and Wildlife	migration of localised contaminants				X		Negligible	Short term	Not significant	Subject to CEMP and Phase 2 SI
Operational Phase										
Future site users (during operational phase);	Existing contaminant						Negligible to Minor Beneficial	Long term	Not significant	Site to be operated under Environmental Management System
	uncontrolled spillages of fuels/oils						Moderate Negative	Long term	Not significant	Site to be operated under Environmental Management System
Maintenance workers (during operational phase);	Existing contaminant						Negligible to Minor Beneficial	Long term	Not significant	Site to be operated under Environmental Management System
	uncontrolled spillages of fuels/oils						Moderate Negative	Long term	Not significant	Site to be operated under Environmental Management System
Off-site users (during operational phase);	Existing contaminant						Negligible to Minor Beneficial	Long term	Not significant	Site to be operated under Environmental Management System
	uncontrolled spillages of fuels/oils						Moderate Negative	Long term	Not significant	Site to be operated under Environmental Management System

Table 17.6: Ground Conditions - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Key:										
Geographical Significance: I = International N = National R = Regional D = District L = Local										
Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible										

Table 17.7: Biodiversity - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance								Impact	Nature	Mitigation Measures	Residual Significance	
		I	N	R	C	D	P	L						
Construction – indirect effects to non statutory Sites	Indirect effects to as a result of water and sediment run-off to non statutory sites that are downstream of the proposed development									x	Minor Adverse	R Lt	<ul style="list-style-type: none"> Retention of an appropriate buffer along the Usworth Burn Pollution Control 	Not significant
Construction - Loss of habitat	The proposal will result in the loss of all central habitats within the AESC Plant 3 site and internal boundary features. Habitat losses for AESC Plant 2 are also considered and in combination will comprise 3.52ha Cropland. 13.85 ha of modified grassland, 32.80 ha of other neutral grassland, 0.178ha of wet ditches, 0.55km of lines of trees, 3 buildings, 1 pond, 4.6ha of sparsely vegetated land and 0.82ha of hard standing.									x	Minor adverse	Ir St	<ul style="list-style-type: none"> Calculation of Habitat Loss through the BNG metric. Offset losses and uplift in offsite locations to be arranged. Creation of species rich grassland, wet woodland and hedgerows to be provided on site post construction. LEMP to be prepared for management of re-created/enhanced habitats 	Not significant
		Loss of 1.88km hedgerows								x	Moderate Adverse	Ir St		
Construction - Disturbance and displacement of fauna species.	Some trees on site to be lost as a result of site clearance works which may result in the loss of a bat roost.									x	Moderate Adverse	Ir St	<ul style="list-style-type: none"> Climbed inspection of tree to confirm impacts Further emergence survey to be undertaken if trees cannot be climbed. Re-inspection prior to removal 	Not significant

Table 17.7: Biodiversity - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance								Impact	Nature	Mitigation Measures	Residual Significance
		I	N	R	C	D	P	L					
												<ul style="list-style-type: none"> Bat mitigation licence prepared (if necessary) and appropriate level of mitigation and compensation. 	
	Bats Foraging habitats shall be lost for predominantly low numbers of common pipistrelles and even lower numbers of soprano and Nathusius pipistrelle.								x	Minor Adverse	Ir St	<ul style="list-style-type: none"> Retain a buffer around the retained western and northern peripheral boundaries. No nighttime working shall be undertaken. A sensitive lighting scheme, avoiding illumination of boundary features. 	Not significant
	Indirect effects – Otter and Water Vole as a result of pollution from site run off.								x	Minor Adverse		<ul style="list-style-type: none"> Retention of a wide buffer between the banks of the Usworth Burn and the development to allow a safe movement corridor for both species. Pollution prevention methods 	Not significant
	Demolition of North Moor Farm may result in the injury and Killing of Barn owl, and the loss of two active roost sites . Loss of foraging habitat shall occur as a result of the proposed works.								x	Minor Adverse	Ir St	<ul style="list-style-type: none"> Pre- commencement check prior to demolition of the buildings to ensure no owls are present. Mitigation has already been provided as part of the AESC Plant 2 development in the form of 2 BO boxes at Hylton Bridge Farm, 3 tree mounted boxes at Eliscope farm, 1 wildlife Tower and 1 tree mounted box along the western AESC Plant 3 boundary. All mitigation shall be retained and unaffected by proposed works. Foraging habitat shall be available around the recreated grassland habitats around the periphery of the site, within ELMA land and within the offsite external offset land (once secured). Annual checks of BO boxes and the Wildlife Tower Monitoring every three years over a 20-year period. 	Not significant
	Construction of the proposed development will result in the loss of habitat known to support breeding bird species(considered to be of district					x				Major Adverse	Ir st	<ul style="list-style-type: none"> Mitigation for farmland birds has been based on bird data for skylark populations as this is the species for which potentially the largest land area is required. 	Not significant

Table 17.7: Biodiversity - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance								Impact	Nature	Mitigation Measures	Residual Significance
		I	N	R	C	D	P	L					
	value) and the displacement of these species into the local area.											<ul style="list-style-type: none"> • Compensation is sought for 11 pairs of skylark (to be lost from AESC Phase 2 and Phase 3) which will amount to 50-70 ha. • It is to be assumed that an area of winter sown cereal field habitat will be purchased and made available to management prescriptions to enhance the area for farmland birds in general. • Upon securing a site a habitat management plan shall be prepared to manage the site for the interest of bird assemblages, including crop rotations, laying of hedgerows, grassland buffers. Arable fields are to be a minimum of 2ha and include damp wader scrapes. • The site will be part of a monitoring protocol, which will monitor the management prescriptions and adapt adverse changes. 	
	Construction of the proposed development will result in the loss of habitat known to support over-wintering bird species (considered to be of district value) and the displacement of these species into the local area.					x				Major Adverse	Ir St	<ul style="list-style-type: none"> • The farmland package will also largely ensure that the wintering assemblage is also provided for in terms of habitat quality and availability. However, a number of shallow pools which retain winter all year will also be required so that habitat for migrating wading birds is provided. 	Not significant
	Construction of the proposed development will result in the loss of habitat with the potential to support hedgehog and brown hare and result in the displacement of this species into the local area.								x	Minor Adverse	Ir St	The remaining areas of the ELMA will support a variety of habitats suitable for use by these species. In addition, new habitats secured to accommodate the loss of habitat on site will be provided for the benefit of all wildlife including hedgehog and brown hare.	Not significant

Table 17.7: Biodiversity - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance								Impact	Nature	Mitigation Measures	Residual Significance
		I	N	R	C	D	P	L					
Operation - nutrient nitrogen and acid deposition	Activities associated with onsite processes have the potential to result in nutrient nitrogen and acid deposition at designated sites within the surrounding area (i.e. the Northumbria Coast Ramsar SPA, Barmston Pond LRN and Hylton Dene LRN)	x				x				Adverse	R Lt	The design proposals allow sufficient dispersion of emissions such that the maximum modelled process contributions for nutrient nitrogen and acid deposition do not exceed 100% of the long-term critical loads (for the protection of vegetation) at the two LNRs. Nor do they exceed 10% of the short-term or 1% of the long-term critical levels (for the protection of vegetation) at the Northumbria Coast Ramsar SPA.	Not significant
Operation - Disturbance of fauna species	An increase in noise and light pollution into adjacent areas of retained / enhanced habitats, displacing bats and reducing the value of these habitats to a range of wildlife (particularly bats and farmland birds)					x			x	Minor Adverse	Ir Lt	Native species of known ecological value will be planted to provide foraging / commuting opportunities and the site boundaries will incorporate hedgehog gateways to allow for continued access and dispersal.	Not significant.
Cumulative impacts	Potential cumulative impact will potentially arise as a result of the combined IAMP developments. In this case a proportion of the ELMA will be lost to the AESC Plant 3 development and hence will not be available, hence it is important that alternative off site provisions are secured.									n/a	n/a	A combination of the remaining ELMA area and the off site areas of land to be purchased for farmland bird mitigation to accommodate displaced populations from AEASC Plant 2 and Plant 3 will be sufficient to ensure cumulative significant adverse effects are avoided	n/a
	There are no significant inter-cumulative impacts anticipated									n/a	n/a	n/a	n/a
Key:													
Geographical Significance: I = International N = National R = Regional C = County D = District P = Parish L = Low to Local													
Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible													

Table 17.8: Access & Traffic - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Severance	Construction: Ability to cross A1290 due to HGV traffic increase					X	Very Low	St	Negligible	CTMP
	Operation: No screening threshold exceeded					X	N/A	N/A	N/A	Travel Plan and HOMP
Driver Stress and Delay	Construction: Congestion on roads near site					X	Low	St	Negligible	CTMP
	Operation: No screening threshold exceeded					X	N/A	N/A	N/A	Travel Plan and HOMP
Amenity	Construction: Increased traffic on local roads					X	Low	St	Low	CTMP
	Operation: No screening threshold exceeded					X	N/A	N/A	N/A	Travel Plan and HOMP
Pedestrian and Cyclist Delay	Construction: Proximity to increased traffic					X	Low	St	Negligible	CTMP
	Operation: No screening threshold exceeded					X	N/A	N/A	N/A	Travel Plan and HOMP
Fear and Intimidation	Construction: Increased traffic on local roads					X	Low	St	Negligible	CTMP
	Operation: No screening threshold exceeded					X	N/A	N/A	N/A	Travel Plan and HOMP

Key:
Geographical Significance: I = International N = National R = Regional D = District L = Local
Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible

Table 20.9: Climate Change - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
All greenhouse gas emissions contribute to human-enhanced global warming and are considered significant, with a permanent adverse and long-term effect on climate change. Consideration given to if the project is adhering to existing and emerging policy and how well it is contributing to the UK's net zero trajectory.	Whole Lifecycle Carbon Emissions (cradle-to-grave): The total whole lifecycle emissions associated with the proposed development over the 60-year reference study period, covering project lifecycle modules A1 – A5 (product and construction), B1 – B7 (in use) and C1 – C4 (end of life), have been estimated at 4,076,082 tCO ₂ e for Scenario A (with gas boilers).	√					Moderate Adverse	Lt Ir	Significant	Adopting and implementing good design.
	Whole Lifecycle Carbon Emissions (cradle to grave): The total whole lifecycle emissions associated with the proposed development over the 60-year reference study period, covering project lifecycle modules A1 – A5 (product and construction), B1 – B7 (in use) and C1 – C4 (end of life), have been estimated at 1,297,412 tCO ₂ e for Scenario B (all-electric heating).	√					Minor Adverse	Lt Ir	Not Significant	Adopting and implementing good design.
	Construction – Project Lifecycle A1-A5: The proposed development as a whole, if constructed to current industry standards, has been estimated to generate around 139,299 tCO ₂ e, which is about 3% of the total whole life carbon emissions associated with the proposed development.	√					Moderate Adverse	St Ir	Significant	Embedded mitigation (e.g. disassembly of components to recover the maximum amount of reusable and recyclable materials in a safe, environmentally responsible and cost-effective manner). Adoption and adherence to best practice working methodology during construction, including the

Table 20.9: Climate Change - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
									preparation of a site-specific Dust Management Plan (DMP), prepared as part of the Construction Environmental Management Plan (CEMP) for the site.	
	Operation – Project Lifecycle B6: Projected total energy use and CO ₂ e emissions for the development’s 60-year operational lifespan (project lifecycle stage B6) has been modelled to produce 3,921,249 tCO ₂ e for Scenario A.	v					Moderate Adverse	Lt Ir	Significant	Adopting and implementing good design to further reduce the reliance on the combustion of fossil fuel to meet the majority of the required energy demand for Scenario A.
	Operation – Project Lifecycle B6: Projected total energy use and CO ₂ e emissions for the development’s 60-year operational lifespan has been modelled to produce 1,142,578 tCO ₂ e for Scenario B.	v					Minor Adverse	Lt Ir	Not Significant	Adopting and implementing good design. Scenario B will be the preferred option as far as is reasonably practicable.
	End of Life – Project Lifecycle C1-C4: The average deconstruction and demolition process at the end of the proposed development’s 60-year lifetime (as assessed using UK default values provided by RICS) accounts for approximately 15,535 tCO ₂ e.	-	-	-	-	-	Excluded as account for less than 1% of the overall total whole lifecycle carbon emissions associated with the proposed development.			End of Life scenarios for the proposed development have not been considered in the technical designs. Potential to develop a Decommissioning Strategy over the course of the proposed development’s useful lifetime.

Table 20.9: Climate Change - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Effects of climate change impacts on the resilience of the proposed development to future climate.	Potential impact upon the proposed development as a result of future climate change leading to soil drying.			√			Minor Adverse	Lt Ir	Not Significant	<p>Adherence to control mechanisms and mitigation measures implemented through the Building Regulations and ensuring good design to meet the standards required.</p> <p>Design will aim to reduce GHG emissions and build-in resilience to future changes in climate (e.g. aim to reduce heat loss during winter, reduce solar gain during summer and maximise effectiveness of natural ventilation).</p> <p>A provision of EV charging points is also to be provided to support UK transition to a green economy.</p>
	Potential impact upon the proposed development as a result of future climate change leading to changes in temperature.			√			Moderate Adverse	Lt Ir	Significant	
	Potential impact upon the proposed development as a result of future climate change leading changes in relative humidity.			√			Moderate Adverse	Lt Ir	Significant	
	Potential impact upon the proposed development as a result of future climate change leading changes in precipitation.			√			Moderate Adverse	Lt Ir	Significant	
	Potential impact upon the proposed development as a result of future climate change leading to changes in snow and ice.			√			Minor Adverse	Lt Ir	Not Significant	
	Potential impact upon the proposed development as a result of future climate change leading to gales, storms, extreme weather.			√			Moderate Adverse	Lt Ir	Significant	
	Potential impact upon the proposed development as a result of future climate change leading to solar radiation.			√			Moderate Adverse	Lt Ir	Significant	
	Potential impact upon the proposed development as a result of future climate change leading changes in cloud cover.			√			Minor Adverse	Lt Ir	Not Significant	

Table 20.9: Climate Change - Summary Assessment Matrix										
Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Cumulative Effects	It is not possible to assess potential intra-cumulative impacts (during construction and / or operation) as a result of the proposed development.	-	-	-	-	-	N/A	N/A	N/A	N/A.
	It is not possible to assess potential inter-cumulative impacts (during construction and / or operation) as a result of the proposed development in combination with other developments.	-	-	-	-	-	N/A	N/A	N/A	N/A
Key: Geographical Significance: I = International N = National R = Regional D = District L = Local Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible										

Table 20.10: Archaeology & Cultural Heritage - Summary Assessment Matrix										
Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation Recording measures
		I	N	R	D	L				
Direct impacts on archaeological or cultural heritage asset/s	Construction Phase and onwards: demolition of North Moor Farm a heritage asset recorded within the local authority HER dataset					v	Loss/High	Lt. Ir	Moderate adverse	Archaeological building recording prior to demolition (if required) – surviving elements may be of modern rather than post medieval origin, and therefore significance less.

Table 20.10: Archaeology & Cultural Heritage - Summary Assessment Matrix

Issue	Description of impact	Geographical significance					Impact	Nature	Significance	Mitigation Recording measures
		I	N	R	D	L				
	Construction Phase and onwards: loss of possible archaeological features within the Site recorded by the geophysical survey of 2022					√	Loss/High	Lt. Ir	Moderate adverse	Archaeological trial trench evaluation to inform on the nature and significance of the assets. This work is already anticipated, and the local planning authority archaeologist has written a 'Specification' document and approved a trench location plan
Indirect impacts on setting of archaeological or cultural heritage asset/s	Construction Phase and onwards: impacts to agricultural setting of designated Grade II listed Hylton Grove Bridge				√		Low adverse	Lt. Ir	Minor adverse	N/A
	Construction Phase and onwards: impacts to agricultural setting of four post medieval farmsteads (Hylton Bridge Farm, Hylton Grove Farm, Strother House Farm and East House Farm) recorded within the local authority HER dataset					√	Low adverse	Lt. Ir	Minor adverse/negligible	N/A
Key: Geographical Significance: I = International N = National R = Regional D = District L = Local Nature: St = Short term Mt = Medium Term Lt = Long term R = Reversible Ir = Irreversible										

Table 20.11: Soils and Agriculture- Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Construction Effect: Loss of Land due to built environment	Permanent loss of 24.37 ha of land (including BMV agricultural land) due to built environment.				X	X	Moderate to Major (Significant)	Lt, Ir	Significant	None
Construction Effect: Land removed from agriculture for use as Green Spaces	Temporary loss of ALC capacity in long term (reversible) as land is removed from agricultural production for use as Green Spaces				X	X	Minor	Lt, R	Not Significant	None
Operational Effect: Loss of land or removal of land from agriculture	Loss of land or removal of land from agricultural production (including BMV agricultural land) due to built environment and Green Spaces.				X	X	Minor	Lt, R	Not Significant	None
Construction Effect: Damage to Soil Resource due to Built Environment	The receptor sensitivity of soil resource to structural damage is high. Potential change to 57.5% of soil resource due to built environment however this can be mitigated with sustainable soil management and reuse.					X	Minor	Lt, Ir	Not Significant	Soil Management Plan implementing best practice guidance on soil handling.
Construction Effect: Damage to Soil Resource as a result of land use change of Green Spaces	The receptor sensitivity of soil resource to structural damage is high. Reversible change to 42.5% of soil resource for green spaces.					X	Minor	Lt, R	Not Significant	Soil Management Plan implementing best practice guidance on soil handling.

Table 20.11: Soils and Agriculture- Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Operational Impact: Damage to Soil Resources	No further damage to soils is expected due to either Built Environment and Green Spaces during the operational phase.					X	Minor	Lt, R	Not Significant	Soil Management Plan implementing best practice guidance on soil handling.
Construction Impact: Loss of Soil Resources	Removal of in-situ soil (considers Built Environment and Green Spaces). 57.5% of soils on site will not remain in-situ due to built environment however this can be mitigated with sustainable soil management and reuse. Soil in Green Spaces (42.5%) will be retained in-situ.					X	Minor	Lt	Not Significant	Soil Management Plan implementing best practice guidance on soil handling
Operational Impact: Loss of Soil Resources	No further change to soil retained in-situ on site is expected during this phase.						Minor	Lt	Not Significant	Soil Management Plan implementing best practice guidance on soil handling
Key: Geographical Significance: I = International N = National R = Regional D = District L = Local Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible										

Table 20.12: Socio-economic - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance					Impact	Nature	Significance	Mitigation Measures
		I	N	R	D	L				
Employment	Construction impact on levels of local FTE employment					√	Moderate Beneficial	St	Significant	Local Labour Agreements
Economic Output	Construction impact on levels of local economic output (GVA)					√	Moderate Beneficial	St	Significant	
Employment	Operational impact on levels of local FTE employment					√	Moderate Beneficial	Lt	Significant	
Economic Output	Operational impact on levels of local economic output (GVA)					√	Moderate Beneficial	Lt	Significant	
Labour Market	Operational impact on labour market opportunities					√	Minor Beneficial	Lt	Not Significant	
Commuting	Operational impact on levels of commuting					√	Minor Adverse	Lt	Not Significant	
Deprivation	Operational impact on levels of deprivation					√	Minor Beneficial	Lt	Not Significant	
Key:										
Geographical Significance: I = International N = National R = Regional D = District L = Local										
Nature: St = Short Term Lt = Long Term R = Reversible Ir = Irreversible										