

## 19 CUMULATIVE EFFECTS

### 19.1 Introduction

19.1.1 This chapter of the Environmental Statement (ES) considers the potential for the proposed development of the AESC Plant 3 site to give rise to significant cumulative effects on the environment and people of the local area.

19.1.2 As set out in Chapter 2 of this ES, the cumulative impact assessment addresses the scope for potential cumulative effects on the environment and people of the area, from intra-cumulative effects of the project alone (i.e. a combination of the effects as assessed within the individual chapters of this ES) and inter-cumulative effects of the project when considered alongside other development proposals within the local area. The potential cumulative impacts are addressed in the subsequent sections of this chapter, drawing upon the list of other developments listed within Table 2.1 within Chapter 2 of this ES.

### 19.2 Methodology for cumulative impact assessment

19.2.1 The methodology for undertaking cumulative impact assessment follows the principles established for the environmental assessment of specific topics, as set out in the preceding chapters of this ES.

19.2.2 Significant cumulative effects, in combination with other projects or plans, can arise from the combined result of individual impacts that may not necessarily be considered significant in isolation. For example, consideration of the potential for significant cumulative effects is particularly important where receptor populations are subject to existing pressures that mean they are close to a critical threshold of viability. Exposure to the combined effects from several proposed developments, which individually may not cause that threshold to be reached, could (for example) result in that population no longer being viable and suffer irreversible decline.

19.2.3 Cumulative effects can be broadly categorised as being either antagonistic, additive or synergistic:

- Antagonistic effects are when the effect of one impact offsets the effect of another (e.g. collision mortality removes birds from a population; assuming no immigration, these birds cannot then be killed by another development);

- Additive effects can result from multiple activities or projects, each with potentially insignificant effects but when combined together result in a significant effect due to their proximity in time and space; and
- Synergistic effects arise where the combined impacts of multiple projects or actions result in an effect that is greater than the sum of the individual impacts.

19.2.4 Although antagonistic or synergistic effects on receptor populations (e.g. of birds, fauna or habitats) or areas have the potential to occur and are likely to reflect some real-world situations, they are often difficult to reliably quantify.

19.2.5 The assessment uses (as its base) the identified residual effects, post-mitigation as these would be the effects with greatest potential for cumulative impacts.

19.2.6 The sensitivity of receptors is taken to be either high or moderate where this involves people residing in or using an area, or where this involves the natural environment as a combination of aspects that (when taken together) can be considered to be of at least moderate sensitivity.

19.2.7 The magnitude of effect will vary depending on the operations being considered as part of this assessment. The duration of operation(s) is also of relevance to the consideration of the magnitude of the effect.

19.2.8 As with other assessments included in this ES, significance is assessed as a combination of sensitivity (which can be a combination of value and susceptibility) and magnitude. Any cumulative effect judged to be 'major' or 'moderate' has been identified as Significant. Effects judged to be 'minor' or 'negligible' are considered to be Not Significant. In general, it is anticipated that effects of medium magnitude on receptors of moderate or high sensitivity would result in moderate effects, effects of high magnitude on receptors of moderate sensitivity would result in moderate effects, and effects of high magnitude on receptors of high sensitivity would result in major effects.

19.2.9 Sections 19.4 to 19.17, below, summarise the findings of the cumulative assessment carried out within each of the technical chapters of this ES. This information is then used to consider (in terms of effects on people and property, and effects on the natural and cultural heritage) whether the project would result in (in combination) cumulative effects and to identify the significance of these.

Data assessment and limitations

19.2.10 Any limitations within this chapter of the ES reflect the limitations as identified in the relevant preceding technical assessment chapters.

### **19.3 The project**

19.3.1 The project is described in detail in chapters 1 and 3 of this ES and indicative masterplans for the potential development of the site are illustrated on RPS drawings 205-P01-Proposed Landscape Plan, 204-P03-Proposed Site Layout and 205-P01-Proposed Landscape Plan. Figures illustrating the baseline environment have been prepared as part of the individual technical chapters of this ES, as appropriate.

19.3.2 A suite of technical drawings have been prepared to indicate the proposed development in terms of area, building heights, access and landscaping (See Appendix 3.1).

### **19.4 Regulatory context**

19.4.1 Assessment of cumulative impacts is a requirement of the Town & Country Planning (EIA) Regulations 2017.

19.4.2 The informal consultation carried out with Sunderland City Council (SCC) in relation to the previous IAMP ONE and AESC Plant 2 development included consideration of cumulative impacts and identified that these would be considered in the assessments in the manner described above. Sunderland City Council raised no objections to this and this approach has been reapplied to this ES. It is relevant to note that developments that are already built will form part of the baseline assessment and are not, therefore, included in an assessment of cumulative effects.

### **19.5 Schemes to be included in the cumulative assessment**

19.5.1 The schemes included in the inter-cumulative assessment for this ES are listed within Table 2.5 within Chapter 2 of this ES.

19.5.2 It is important to note that some or all of the applications may not be relevant to the technical aspects detailed below, which could be due to distance or to the nature of the proposal (e.g. installation of solar panels / water resources).

### **19.6 Cumulative impact assessment – air quality**

19.6.1 No significant cumulative effects have been identified in terms of air quality.

19.6.2 The identified committed developments requiring consideration for potential inter-cumulative effects (i.e. increased disamenity dust and fine particulate matter releases)

will not cause adverse risks during their respective construction periods, should this coincide with that of the proposed development site, due to the distances between these developments and the site. Additionally, the AESC Plant 2 development and the proposed AESC Plant 3 development would be worked in accordance with an approved Construction Environmental Management Plan (CEMP) that will outline an extensive list of mitigation to ensure that the potential for dust and fine particulate matter arising from construction activities will be minimal and controlled. The likelihood of significant effects is, therefore, low.

19.6.3 In terms of road traffic emissions during the operational phase, the presented results (within Chapter 6) incorporate committed developments within both the Construction and the Opening Year scenarios, such that the cumulative impact of the proposed development in combination with other developments has been assessed and any effects would be Not Significant.

19.6.4 In terms of process stack emissions during the operational phase, there are no known similar emission sources proposed in the local area other than the existing AESC battery plant (part of the baseline). The most relevant developments for consideration of inter-cumulative effects are the AESC Plant 2 development and further light industrial, general industrial and storage distribution units (proposed at Hillthorn Farm and consented at Follingsby International Enterprise Park). Whilst these developments do include for light industrial, general industrial and distribution uses, they do not include for a manufacturing facility on the scale of the AESC Plant 3 development. Given the distances involved between these sites and the results of the air quality assessment, it is considered extremely unlikely that any significant cumulative air quality effects would arise.

## 19.7 Cumulative impact assessment - noise

19.7.1 No significant cumulative effects have been identified in terms of noise and vibration.

19.7.2 Development traffic would access from the A19, thereby only driving along a small section of the A1290 (with no ESRs immediately present on either side) linking the development to the A19. As such, the proposed development would not have a substantial impact upon changes to road traffic noise at receptors along the road network. Owing to the distance the nearest noise sensitive receptors, any intra-cumulative effects of noise during construction, from any 'noisy' works occurring at the same time would be temporary and are not expected to give rise to significant

effects. Furthermore, the development is situated a large distance from any receptors and the cumulative construction phase vibration from Plant 2 and Plant 3 would not adversely affect the existing receptors.

- 19.7.3 It is possible that the combined effects of both the AESC Plant 2 development and the proposed development during the operational phase could result in an adverse inter-cumulative noise impact at sensitive receptors. The cumulative rating levels at the sensitive receptors during the daytime are predicted to be equal to or less than the background sound levels. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context. The cumulative rating levels at the sensitive receptors during the night-time, are predicted to slightly exceed the background sound levels. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a minor adverse impact. In accordance with BS4142, this slight exceedance is considered to be minor adverse and Not Significant.

## **19.8 Cumulative impact assessment – landscape character and visual amenity**

- 19.8.1 The existing development at IAMP ONE and the AESC Plant 2 are now part of the baseline, along with the A19 Downhill Lane junction improvements and other previously considered developments in the wider area. The assessment of cumulative impacts, therefore, focuses on IAMP TWO and the Early Infrastructure.

### Cumulative landscape effects

- 19.8.2 Inter-cumulative effects on landscape are assessed in relation to the combination of the proposed development with IAMP TWO and the Early Infrastructure. The assessment is limited to the operational stage of the proposed development as any effects of construction would be short-term, temporary and Not Significant.

### Cumulative effects on the landscape resource

- 19.8.3 Inter-cumulative effects on the landscape resource of the local area would result from the development of the site in combination with the development of the IAMP TWO areas. The inter-cumulative effect on landscape scale and enclosure is not considered to result in any significant inter-cumulative effects on the landscape resource due to the intervening ELMA area.

### Cumulative effects on landscape character

19.8.4 Inter-cumulative effects on landscape character can result from the combination of the proposed development with other developments in the local area. In respect of the IAMP TWO, direct effects on the Coalfield Lowland Terraces LCT and Urban Fringe, Boldon Fell LCA would result from the installation of industrial units within the site, which have been identified as Not Significant. The inter-cumulative effect on landscape character from the combination of the site with the wider IAMP development areas is assessed as Not Significant.

#### Cumulative visual effects

19.8.5 For residential receptors on the north-eastern settlement edge of Washington (>1km away), there may be partial views seen through the intervening tree cover of the development with IAMP TWO and the inter-cumulative effects on visual amenity are considered to be Not Significant.

19.8.6 From properties at Hylton Bridge Farm and the two roadside properties at Hylton Grove Farm, there would be near distance views of the proposed development and the IAMP TWO areas, seen in different fields of view. The combination would result in a Significant effect as the properties would be surrounded by large, built developments (softened in places by proposed planting within IAMP TWO).

19.8.7 The properties at Strother Farm are situated to the immediate west of the IAMP TWO northern development area, with scope for near distance views of this, albeit oblique and from areas surrounding the properties rather than from within the dwellings. Initial inter-cumulative effects from the combination of the development with IAMP TWO are considered to be Significant, reducing with time to become Not Significant as proposed planting within the ELMA land and IAMP TWO establishes. Views from East House of IAMP TWO would also reduce with time as proposed planting within the ELMA land and IAMP TWO establishes. Therefore, the initial effects would also be Significant, reducing to Not Significant in the medium to long term.

19.8.8 Inter-cumulative effects on the visual amenity of properties in the Down Hill Farm area to the north-east of the site from the combination of the proposed development with IAMP TWO would be distant and Not Significant.

#### Users of transport routes and rights of way

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

- 19.8.10 There would be no views of the site from the A19(T) and, therefore, no inter-cumulative visual assessment is required for this route.
- 19.8.11 For users of the A1290, there would be scope for combined and sequential views for road users travelling in either direction. The overall effect on road users would be one of extensive industrial development set within a landscape framework that would establish over time. Inter-cumulative effects on visual amenity would be Not Significant.
- 19.8.12 There would be scope for views of the development and IAMP TWO from the elevated overbridge at the Downhill Lane junction and from Downhill Lane. Inter-cumulative effects on visual amenity would be Not Significant.
- 19.8.13 From Follingsby Lane and from the BOAT / footpath between Follingsby Lane and East House, there would be near-distance views of the IAMP TWO northern development area (seen in a different field of view to the development) that would occupy the middle distance. Inter-cumulative effects on visual amenity would be Not Significant.
- 19.8.14 Any views from the footpath east and north-east of Strother House Farm would be dominated more by the development within the IAMP TWO site, which would lie immediately to the south of this route. Development within the IAMP TWO site is likely to obstruct the majority of views south towards the development. Inter-cumulative effects on visual amenity would be Not Significant.
- 19.8.15 Any views of the development and IAMP TWO From the dismantled railway line to the east of Sulgrave and Usworth Hall (if brought back into service) would be intermittent, and inter-cumulative effects on visual amenity would be Not Significant.

Users of formal and informal open space and recreation areas

- 19.8.16 For visitors to the Penshaw Monument, the distant views northwards would include the development and IAMP TWO. Given the nature of this view, however, which includes extensive areas of industry, any inter-cumulative effects would be Not Significant.
- 19.8.17 From the North East Aircraft Museum, there are no effects on visual amenity from the site and, as such, there are no inter-cumulative visual effects for receptors at this location.

## 19.9 Cumulative impact assessment - waste

- 19.9.1 Inter-cumulative effects of waste generation from neighbouring developments have been considered in relation to the potential to increase the significance of environmental burden of the proposed development. The other developments considered (see Table 2.1 within Chapter 2) are unlikely to generate significant volumes of waste materials, and the local treatment and disposal facilities assessed are deemed to have capacity to accommodate materials from the cumulation of these developments.
- 19.9.2 Other inter-cumulative impacts may arise from the proposed development in combination with improvements to the A19, installation of PV panels on IAMP buildings, developments at Nissan UK's production base (adjacent to the IAMP) and associated amenities for warehousing and factory development.
- 19.9.3 During the demolition phase of the proposed development, no other demolition works are programmed for the IAMP sites surrounding the proposed AESC Plant 3 development. Waste quantities produced are estimated to be minor and initial assessment indicates that the inter-cumulative effect of demolition will be minor adverse (Not Significant). Similarly, inter-cumulative construction impacts will result from development of the wider IAMP sites. The application of consistent mitigation measures across the entire site means that the cumulative development impacts will be moderate to minor adverse (Not Significant).
- 19.9.4 During operation, cumulative waste arisings will arise from the IAMP development sites. In-line with the ES for the wider IAMP site, the inter-cumulative effects will be minor adverse (Not Significant).

## **19.10 Cumulative impact assessment – water resources**

19.10.1 Effects upon the local water environment from a given development are not confined to within the development's site limits and may extend far enough to compound similar impacts generated by other nearby developments. Simultaneous construction is a particular concern until new drainage systems are constructed and begin to manage the quantity and quality of surface and foul flows generated by each site. A full list of the other developments that have been considered as part of the EIA to inform this ES is provided within Table 2.5 within Chapter 2 of this ES. Of these, the following schemes have been considered as part of this assessment:

- Application ref. no. 21/01764/HE4;
- Application ref. no. 18/00092/HE4;



- Application ref. no. 21/02807/HE4;
- Application ref. no. 18/01869/FUL and 19/02161/VAR;
- Application ref. no. 18/01869/FUL and 19/02161/VAR;
- Application ref. no. 18/01964/FUL;
- Application ref. no. 21/00401/HE4 and 21/00605/OU4; and
- Application ref. no. 18/02226/FUL.

19.10.2 Two of the other developments listed above are currently under construction (i.e. AESC Plant 2 and Hillthorn Farm site Hillthorn Business Park. The main construction period for AESC Plant 2 is planned to finish prior to commencement of work on AESC Plant 3, although internal fitout of Plant 2 will overlap with the civils construction of Plant 3. The first phase of the Hillthorn Business Park is close to completion, although parts of the scheme are yet to be built. The dualling of the A1290 is expected to commence in spring 2024 and last until late 2025. The most likely combination of simultaneous construction is the AESC Plant 3 and dualling of the A1290 and, as such, these two developments have been considered further.

19.10.3 In terms of flood risk, neither scheme is directly affected by fluvial flooding at the design standard. Given the separation of respective discharge locations, the risk of cumulative downstream fluvial flooding is negligible. The two schemes do not abut one another and there is no material prospect of surface flooding (should it arise) from one scheme spilling onto the other scheme; the two schemes would behave independently of one another and, as such, any inter-cumulative impact would be Negligible.

19.10.4 In terms of surface and foul drainage, as any storm event would likely affect both sites simultaneously, there is a minor risk of an inter-cumulative impact to the storm sewer system that both developments feed into. The A1290 work has no link to foul drainage and, as such, there would be no potential for inter-cumulative impacts upon that system from these two schemes.

19.10.5 In terms of water quality, there is a high degree of independence between the two schemes and the likelihood of a pollution event on one scheme spreading onto the other is so low as to be negligible. Similar behaviour on each site during a severe storm that exceeds the capabilities of the sites' respective water quality controls will diverge in-line with the surface water drainage behaviour and affect different watercourses.

The risk of cumulative impacts upon surface water quality is, therefore, limited and considered to be negligible. The risk of inter-cumulative impacts upon groundwater quality is constrained by the limited permeability of the ground, which limits how readily water will infiltrate and any inter-cumulative impact would be negligible to minor adverse.

19.10.6 In terms of water supply, whilst there will be a need for water during the construction phase (for welfare and other construction activities), the A1290 has no other need for a permanent water supply. The same will apply to the Plant 3 construction work and there will, therefore, be a minor increase in demand upon the local water supply network for the respective construction supplies, but this will cease once one or other of the schemes is completed.

19.10.7 Overall, no significant inter-cumulative effects have been identified.

### **19.11 Cumulative impact assessment – ground conditions**

19.11.1 Effects relating to soil and ground conditions are site-specific and planned developments in proximity to the proposed development are unlikely to adversely impact shallow soils beneath the site. With regard to groundwater receptors, it is assumed that any development schemes in the surrounding area would have sufficient mitigation measures in place during ground works to prevent adverse effects in accordance with the 2023 National Planning Policy Framework (NPPF) and relevant legislation.

19.11.2 An inter-cumulative impact would be reliant on a number of factors, including construction phases coinciding and industry standard mitigation measures being ineffective at more than one site at a time. The requirements of the Local Planning Authority (LPA) under NPPF (i.e. Phase 1 and Phase 2 Contamination assessments and CEMPs) should effectively mitigate the effects associated with each of the sites; thereby ensuring that there are no significant inter-cumulative effects.

### **19.12 Cumulative impact assessment – ecology and biodiversity**

19.12.1 Within the 2021 AESC Plant 2 ES, it was concluded no significant adverse effects would arise with the implementation of mitigation and long-term compensation provisions via the ELMA (any residual adverse effects in the short-term would become neutral or beneficial upon the maturity of ELMA habitats). However, as the proposed AESC Plant 3 development will result in the loss of part of the ELMA, potential inter-cumulative effects are possible and, as such, alternative offsite provisions are to be secured to. It

is intended that the combination of the retained ELMA area and the offsite provision areas (for farmland bird mitigation) will be sufficient to avoid significant adverse inter-cumulative adverse effects as a result of the AESC Plant 2 and the AESC Plant 3 developments. No other potential significant inter-cumulative effects are anticipated from the combination the developments within the IAMP site.

19.12.2 In terms of potential inter-cumulative effects as a result of the proposed AESC development in combination with the other developments listed within Table 2.5 of Chapter 2, only those other developments within 2 km of the site have been considered (on the basis that the proposed development does not impact upon any statutory designated sites). The schemes present within 2 km have been given due consideration as part of this assessment and, as it is expected that each would bring forward its own mitigation measures in-line with governing policy and legislation, potential significant inter-cumulative effects upon ecology and biodiversity of the local area considered to be unlikely.

### **19.13 Cumulative impact assessment – access and transport**

19.13.1 In terms of potential inter-cumulative effects, an IEMA screening exercise has been undertaken to consider the increase in traffic as a result of the other developments considered (see Table 13.3 in Chapter 13) and the proposed development. This showed that, owing to the large amount of development in area, Links 7, 8, 10, 11 and 13 are expected to exceed the IEMA screening threshold due to the increase in HGV numbers. In addition, Links 7, 8, 10 and 11 are also expected to exceed the threshold for increase in total AADT. It is anticipated, however, that the other developments will adopt a considered / joined-up approach (i.e. work together) to minimise their respective cumulative effects. For example, the developments within the wider IAMP site are to sign-up and contribute to an overarching Travel Plan; thereby permitting a considered / joined-up approach when developing incentives to encourage travel by sustainable modes.

### **19.14 Cumulative impact assessment – climate change**

19.14.1 The atmospheric concentration of GHG emissions and resulting effect on climate change is affected by all sources and sinks, globally, anthropogenic and otherwise. All global cumulative GHG emission sources are relevant to the effect on climate change, with atmospheric GHG concentrations defined as being of ‘high sensitivity to further emissions’. Whilst it is considered that there is potential for cumulative impacts

during the construction and operational phases of the proposed development, consideration of the other developments identified for cumulative effects in relation to climate change has not been undertaken.

19.14.2 In terms of climate change, which is a global issue, comprehensive consideration of inter-cumulative effects would need to account for every other development and activity that generates carbon emissions or releases other GHG effects. As this encompasses (to varying degrees) most of the activity on the globe, 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 that each and every development has a duty to minimise its own emissions as far as technically viable. It is unreasonable for the purposes of a planning application to quantify all sources of emissions from other developments for the following reasons:

- The emissions from other developments fall outside of the system boundary applied for assessing whole lifecycle emissions and do not form part of the assessment under the adopted methodology.
- Technical data requirements from other developments are not accessible.
- It would require a huge interlinking scope of assessment that would exceed that expected of a planning application for any one development.
- It is not feasible to undertake a high-level chemical assessment to analyse likely synergistic impacts between different emissions from varying developments.
- Complicated, unpredictable chemical reactions driven by atmospheric, climatic and behavioural factors are beyond the Applicant's control.

19.14.3 Similarly, intra-cumulative effects are also unrealistic to appraise. Climate change effects manifest as effects considered within other environmental disciplines, but do not 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. It is the additive effects from all the other development going on around the world that poses the potential catastrophic threat.

19.14.4 The proposed development cannot be expected to mitigate against cumulative effects from other project emissions for which the Applicant has no direct control or indirect influence. It is assumed that all of the other developments will have aims to reduce

their direct and indirect GHG emissions, and that the impact of those emissions will have been assessed during the planning of those developments.

### **19.15 Cumulative impact assessment – archaeology and cultural heritage**

19.15.1 Thirty-nine other developments were considered in terms of potential impacts upon archaeology and cultural heritage (see Appendix 16.5). Of these, twenty-nine were considered to result in no impacts and were not considered further. For the remaining eleven, none were considered to result in significant effects upon features of archaeological interest; the effects were assessed as minor to moderate adverse and Not Significant in EIA terms. Whilst the cumulative loss of individual heritage assets could be considered more significant than when assessed, individually, the loss would relate to post-medieval features of agricultural origin and of minimal importance. The inter-cumulative loss is, therefore, considered to be minor adverse (Not Significant).

### **19.16 Cumulative impact assessment – soils and agricultural land**

19.16.1 It is considered that there are no inter-cumulative impacts on soil resources on the basis that any impacts would be limited to / contained within the boundaries of each site.

19.16.2 In terms of inter-cumulative impacts upon agricultural land, the total land-take associated with the other developments is 304.94 ha, of which 293.35 ha is agricultural land and, of this, 72.78 ha is considered to be BMV land. The total land-take associated within the administrative boundaries of Sunderland City Council (SCC) is 264.44 ha, of which 252.85 ha is agricultural land and, of this, 52.53 ha is BMV land. Within the administrative boundaries of SCC, the total amount of land is 13,774.9 ha, of which 5,424.7 ha is agricultural land and, of this 2,712.35 ha is estimated to be BMV land. The proposed development (encompassing 42.44 ha of agricultural land) in combination with the other developments (encompassing 252.85 ha of agricultural land) would occupy an estimated total of 295.29 ha (5.44%) of the 5,424.7 ha of agricultural land within administrative boundaries of SCC. Of the 295.29 ha, 77.33 ha (1.43 %) is BMV land. The 2022 IEMA guidance considers any permanent loss of land over 20 ha as a high magnitude of change from the baseline. Thus, the inter-cumulative effect of land-take associated with the proposed development in combination with the other developments as major (Significant).

### **19.17 Cumulative impact assessment – socio-economics**

- 19.17.1 During construction, should the proposed development and the other developments considered (see Chapter 17, Table 17.13) be delivered simultaneously, this could lead to the generation of approximately 5,360 construction sector jobs, annually. This is equivalent to 89.3% of employment within the construction sector of Sunderland or an uplift of 17.3% relative to existing construction sector employment across the wider Areas of Impact (AOI).
- 19.17.2 The scale of direct construction labour required is likely to interact with the local labour market and would likely require labour to be imported from outside of the AOI. It is unlikely, however, that construction labour will be required at a single point in time, whilst some are expected to be built out over a relatively short period of time. These factors would serve to minimise any adverse impacts upon the labour market. Subject to there being no issues with regards to the availability of labour, it is reasonable to consider that, cumulatively, the delivery of all schemes would represent a Substantial Beneficial inter-cumulative effect in terms of construction industry employment.
- 19.17.3 With regards to economic output, this is quantified on a per annum basis. If the proposed development and the other developments considered were to be delivered simultaneously, it is estimated that their construction could lead to an additional £208.9 million of Gross Value Added (GVA) per annum. This corresponds to an uplift of 63.7% relative to the 2020 GVA figure for the local AOI and equivalent to an uplift in construction GVA of 12.1% relative to the 2020 annual GVA figure for the sector across the wider AOI of £1.7 billion. Aga
- 19.17.4 Again, it is likely that the cumulative schemes will be delivered at different times, whilst some are expected to be built out over a relatively short period of time. Whilst these factors would serve to temper the cumulative economic output effects, the scale of uplift relative to the existing annual sector GVA position is likely to be considerable. Having regard to this, it is anticipated that cumulative delivery of all schemes would represent a Substantial Beneficial inter-cumulative effect in terms of construction industry economic output.
- 19.17.5 During operation, the other developments are expected to support a total of 14,540 operational full Time Equivalent (FTE) jobs once developed. This would be in addition to the new jobs anticipated from the proposed development. It should be noted that, whilst the effects of the majority of the developments (including the proposed development) are derived using a consistent approach, covering total (i.e. direct,

indirect and induced) FTE jobs, some only cover direct employment and, therefore, make no allowance for multiplier effects.

19.17.6 It is estimated that the scale of operational employment would be equivalent to 13.3% of the total workforce of the local AOI and 2.5% of the total workforce of the wider AOI. The local AOI has a low job density, suggesting that the availability of employment opportunities is modest. In addition, claimant unemployment rates are high relative to the national average. Model-based unemployment in the local impact area is low relative to the regional position. Given the level of estimated operational employment associated with the cumulative schemes it is possible that there could be moderate tightening within the labour market. Despite this, levels of labour mobility within the region are good, due to good public transport links and this should help to reduce the extent and impact of any tightening of the jobs market. In this context, the cumulative effect during the operational phase is likely to represent a Moderate Beneficial inter-cumulative effect.

19.17.7 Data regarding the change in economic output associated with operational employment is also available for other developments. The cumulative effect in terms of economic output, should these developments and the proposed development come forward, would equate to an additional £658.3 million of total GVA. Having regard to this uplift the cumulative delivery of the schemes would represent a Moderate Beneficial inter-cumulative effect in terms of operational economic output.

## **19.18 Cumulative impact assessment – vulnerability to major accidents and disasters**

19.18.1 The assessment of the vulnerability of the project to major accidents and disasters has of itself considered the interaction between the different aspects of the environment and the proposed development. This concluded that the vulnerability of the project to this is low. Accordingly, no further assessment of intra-cumulative impacts is required.

19.18.2 In considering the potential for the project in combination with the development of the wider IAMP site (i.e. the IAMP ONE, AESC Plant 2 and IAMP TWO developments), to give rise to an increased risk of major accidents and disasters, it is assumed that the findings of the 2018 ES (Chapter N) for IAMP ONE and the findings of the 2021 AESC Plant 2 ES (Chapter 14) will be applicable to the area.



19.18.3 The potential for UXO within the proposed development area is considered to be low and would be considered within the Construction CEMP developed for the onsite construction works. The 2018 IAMP ONE ES and the findings of the 2021 AESC Plant 2 ES both identified the potential for up to moderate effects on the vulnerability of the development to both natural and industrial hazards, which would be addressed through the preparation of operational management plans, and emergency preparedness and response plans. As such, any residual effects would not be significant. The combination of the proposed development site with the wider IAMP ONE, AESC Plant 2 and IAMP TWO development areas, given the proposed mitigation, is not considered to result in any significant cumulative effects with regard to the vulnerability of the development to major accidents and disasters.

19.18.4 In relation to the potential cumulative risks of the proposed development with other consented or in-planning projects, these would typically be at sufficient distance from the proposed development that any such cumulative risks are not considered likely to increase the scope for major accidents or disasters, either from or to the proposed development. Therefore, no inter-project cumulative effects have been assessed.

### **19.19 Cumulative effects on the natural environment**

19.19.1 The proposed development has the potential for cumulative impacts on the natural environment, in particular from the combination of effects on soil and water, and to a lesser extent air quality, that may affect the natural heritage resource of the local area.

19.19.2 Construction operations in particular have the potential to adversely affect the soils, water and ecological environment of an area, not only as a result of disturbance from excavation and reinstatement, but also as a result of the risk of contamination from construction materials (e.g. fuels and cement, *etcetera*) or from poor construction practices resulting in run-off of soils or silt into groundwater or watercourses. The deposition of dust particles can also adversely affect vegetation and water, though such effects are usually only short-term. Changes to soil structure can alter the vegetation composition of areas, as can changes to the water content of soils (both increases and decreases).

19.19.3 Cumulative operational effects on the natural environment are less likely given that post-construction, the built environment will create a status quo that should of itself



be less damaging, though effects of vehicle disturbance, noise and light pollution may still have scope to give rise to potential effects on the natural environment.

19.19.4 Whilst the residual impacts of individual aspects relating to the natural environment on the whole are predicted to be not significant and, in many cases, are predicted to be negligible, when taken together, there could be some scope for significant cumulative effects.

***Cumulative effects of construction***

19.19.5 Potentially significant cumulative effects on the natural environment during construction could occur in relation to the combination of removal of topsoils from the site in addition to loss of hedgerows and hedgerow trees within the site, resulting in adverse effects on the flora and fauna of the local area.

19.19.6 Given the limited benefits of the existing hedgerow and tree cover to flora and fauna (as identified in ES Chapter 12), any such cumulative effects are expected to be no greater than minor-moderate and not significant during construction. The mitigation measures identified in respect of soils handling and reuse, and for improvements to ecology and biodiversity would ensure that any cumulative effects are minimised and not significant.

***Cumulative operational effects***

19.19.7 Potentially significant cumulative effects on the natural environment during operation of the proposed development could occur in relation to disturbance to native wildlife (in particular, birds and bats) from the combination of noise and the effects of lighting within the development site, together with presence of vehicles / vehicle movements. Such effects could occur during daytime and night-time periods.

19.19.8 Whilst such effects have the potential to be moderate adverse and could be significant in the absence of (or failure to deliver) appropriate mitigation, appropriate mitigation is proposed to address this. This includes areas of habitat creation / enhancement and ensuring that (if possible) there is no / limited lighting associated with the façade of the building(s) facing towards this part of the site. With this mitigation in place, it is considered that any significant cumulative effects on the natural environment would be not significant.

**19.20 Cumulative effects on people and property**

- 19.20.1 Cumulative effects on the people and property of the area of the proposed AESC Plant 3 development could result from the combination of effects associated with (during construction) construction noise, construction air quality, visual impacts of construction, impacts on agricultural land holdings, construction transport and traffic effects, and disturbance during construction to access and recreational amenity.
- 19.20.2 Operational cumulative effects on people and property would be more limited, encompassing combinations of effects associated with visual amenity, access (including access for agricultural land management activities), any effects on land use, operational transport and traffic effects, and from operational noise.
- 19.20.3 The relevant chapters of this ES have identified where such effects would be likely to occur and the mitigation measures necessary to address such impacts. With limited exceptions, residual effects associated with individual aspects of the environment are not predicted to be significant. When these aspects are taken together, however, there could be scope for some significant cumulative impacts.

#### ***Cumulative effects of construction***

- 19.20.4 The nearest residential receptor (Hylton Bridge Farm) is located 300 m from the site boundary (450 m from the nearest noise source) and no significant effects are anticipated. Appropriate mitigation measures will be implemented, however, including delivery of mitigation for noise and air quality through an approved CEMP to ensure that any potential cumulative effects are below significant levels.

#### ***Cumulative operational effects***

- 19.20.5 Cumulative operational effects of the proposed development on the people and property of the area would similarly be limited. Whilst some residual significant effects in relation to visual amenity have been identified, no cumulative effects are anticipated. However, the implementation of the mitigation measures (as outlined in the relevant chapters of this ES), including planting, layout design (e.g. to minimise scope for lighting spillage) and positioning of the compounds and loading bays, will help ensure that any potential cumulative effects of the operational stage of the proposed development would be below significant levels (particularly in the longer-term).

### **19.21 Summary and Conclusions**



- 19.21.1 This chapter of the ES has provided a summary of the cumulative assessment (undertaken for the various technical aspects addressed in ES chapters 6 – 19) of the proposed development in combination with other planned developments within the local area, including the IAMP ONE, AESC Plant 2 and IAMP TWO developments (i.e. inter-cumulative effects).
- 19.21.2 Consideration has also been given to the potential for cumulative effects of the proposed development, during construction and operation, on the natural environment and on the people and property of the local area (intra-cumulative effects).
- 19.21.3 The proposed development is considered to have very limited scope for significant cumulative effects (intra or inter-cumulative) in relation to the combined effects of the proposed development on the natural environment and on the people and property of the area.
- 19.21.4 With the appropriate mitigation measures in place, as outlined in the relevant technical chapters of this ES, any cumulative effects would be Not Significant. No additional mitigation measures are considered necessary in respect of cumulative effects.