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17 CUMULATIVE EFFECTS

17.1 Introduction

17.1.1 This chapter considers the potential for the proposed development to give rise to significant cumulative effects on the environment and people of the local area. As discussed within Section 2.3 of 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 both:

- Intra-Cumulative Effects - These are in combination effects of the project in isolation (i.e. a combination of the effects as assessed within the individual chapters of this ES).
- Inter-Cumulative Effects - These are in combination effects of the proposed development when considered alongside other development proposals within the local area (as set out in ES chapter 2 at para. 2.3.4).

17.1.2 These potential cumulative impacts are addressed in the subsequent sections of this chapter. A cut-off date of June 2021 has been applied to the consideration of other developments proposed within the areas adjacent to the site. These are detailed in Table 2.5 within Chapter 2 of this ES.

Methodology for cumulative impact assessment

17.1.3 The methodology for undertaking Cumulative Impact Assessment (CIA) follows the principles established for the environmental assessment of specific topics, as set out in the preceding chapters of this ES. 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. 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 developments that, individually, may not cause that threshold to be reached could result in that population no longer being viable and suffer irreversible decline.

17.1.4 Cumulative effects can be broadly categorised as being either 'antagonistic', 'additive' or 'synergistic'. These are explained, as follows:

- 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 that, when combined together, result in a significant effect due to their proximity in time and space.
- 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.

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

17.1.6 The assessment uses as its base, the identified (post-mitigation) residual effects as these would be the effects with greatest potential for cumulative impacts. 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. The magnitude of impact (i.e. change) will vary depending upon 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 impact.

17.1.7 As with other assessments included in this ES, the level of impact is assessed as a combination of receptor sensitivity (which can be a combination of value and susceptibility) and the magnitude of impact. Any cumulative level of impact that is considered to be major or moderate is identified as 'Significant' and any level of impact considered to be minor or negligible is considered to be 'Not Significant'.

17.1.8 In general, it is anticipated that impacts of a medium magnitude on receptors of moderate to high sensitivity would result in a moderate level of impact, impacts of a high magnitude on receptors of moderate sensitivity would result in a moderate level of impact and impacts of a high magnitude on receptors of high sensitivity would result in a major level of impact.

17.1.9 The sections, 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

17.1.10 Any limitations within this chapter of the ES reflect any limitations identified within the relevant preceding technical chapters.

17.2 The proposed development

17.2.1 The proposed development is described in detail within Chapters 1 and 3 of this ES and illustrated by the Masterplan (Drawing 101 Proposed Site Plan / Drawing 103 Proposed Landscape Plan) for the site. Figures illustrating the baseline environment have been prepared as part of the individual technical chapters of this ES, as appropriate.

17.3 Regulatory context

17.3.1 Assessment of cumulative impacts is a requirement of *Schedule 4 of the Town & Country Planning (Environmental Impact Assessment (EIA)) Regulations 2017*.

Scoping

17.3.2 The informal consultation undertaken with Sunderland City Council (SCC) in 2019 included consideration of cumulative impacts and identified that these would be considered in the 2020 assessment in the manner described above. As SCC raised no objections to this, this approach has been reapplied to the 2021 assessment.

17.3.3 It is important to note that developments that are already built form part of the baseline assessment and are, therefore not included in an assessment of cumulative effects.

Schemes to be included in the cumulative assessment

17.3.4 The following schemes are included in the inter-cumulative assessment:

- The combination of the site with IAMP ONE and IAMP TWO development areas.
- The combination of the site with IAMP ONE, IAMP TWO and, separately, the approved but not constructed / in-planning schemes listed within Table 2.5.
- The combination of the site with IAMP ONE and IAMP TWO development areas and all of the consented and awaiting determination developments listed within Table 2.5.

- 17.3.5 It is important to note that some or all of the applications may not be relevant to some technical aspects due to distance and / or the nature of the proposals (e.g. installation of solar panels / water resources).

17.4 Air Quality

Construction phase

- 17.4.1 The construction and working of land within the site will be completed as part of the construction of IAMP ONE. The identified committed developments requiring due consideration for cumulative effects will not cause adverse risks during their construction period, should this coincide with that of the site (i.e. increased disamenity dust and fine particulate matter releases) due to the distances between these developments and the site. No consideration of potential cumulative effects of construction is, therefore, required for these.

Both IAMP ONE, this development and the future developments at IAMP TWO would all be worked in accordance with an approved CEMP, which will outline an extensive list of mitigation ensuring that the potential for dust and fine particulate matter arising from construction activities will be minimal and will be controlled.

Operational phase - road traffic emissions

- 17.4.2 In relation to the cumulative effects associated with traffic generation and air quality, the outline submission considered two committed developments within the traffic data modelled: Hillthorn Farm Commercial Park and Turbine Business Park. Owing to the low pollutant concentration predictions presented in the air quality report accompanying the 2018 outline submission, it is anticipated that any additional committed developments that might be considered would not change the overall conclusions of the assessment and would remain as Negligible and **Not Significant**. There is no additional vehicle generation arising from IAMP ONE Phase Two.

Operational phase - process emissions

- 17.4.3 A review of nearby committed and proposed developments suggests that there are no known similar emission sources proposed in the local area. The most relevant developments for consideration of cumulative effects are the IAMP One Phase 1 development, and further light industrial, general industrial and storage distribution units proposed at Hillthorn Farm (approximately 1.21 km to the south west of the

site) and consented at Follingsbury International Enterprise Park (approximately 2.49 km to the north west).

17.4.4 Although these developments do include for light industrial, general industrial and distribution uses, these do not include for a manufacturing facility on the scale of that proposed for the IAMP One Phase 2 development. The use of NMP and Ethyl Carbonate in particular is restricted to certain types of processes and, therefore, would be unlikely to be used in significant quantities elsewhere.

17.4.5 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 will arise.**

17.5 Noise

17.5.1 No significant cumulative effects are anticipated in respect of noise, either during construction or at the operational stage, from the proposed development in combination with IAMP ONE, for the identified existing sensitive receptor 'North Moor Farm'. The IAMP TWO development area is further away and would not give rise to cumulative impacts. Similarly, none of the other consented but not constructed or in planning applications are sufficiently close to North Moor Farm as to give rise to the potential for cumulative effects on noise.

17.6 Landscape Character and Visual Amenity

17.6.1 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, therefore, **Not Significant.**

Cumulative effects on the landscape resource

17.6.2 Inter-cumulative effects on the landscape resource of the local area would result from the overall development of the site in combination with the development of the IAMP ONE Phase One and IAMP TWO areas. There would be some loss of hedgerows and individual trees within these development areas that would impact upon the landscape resource, but the effect would reduce over time via the establishment of landscaping within the site and within the adjacent ELMA area. The cumulative effect on landscape scale from the combination of the proposed development with the wider IAMP development is **not considered to result in any significant cumulative effect** on the landscape resource.

- 17.6.3 With regards to the proposed development in combination with the other developments listed within Table 2.5 of Chapter 2, **no significant cumulative effects** are predicted in relation to the landscape resource of the local area.

Cumulative effects on landscape character

Inter-cumulative effects on landscape character can also result from the combination of the proposed development with other developments in the local area. In respect of the proposed development of IAMP ONE Phase One and IAMP TWO, these lie entirely within the Coalfield Lowland Terraces Landscape Character Area. Direct effects on the character of this landscape would result from the installation of the industrial units within the IAMP ONE Phase One and IAMP TWO sites, but these have not been identified as significant. The cumulative effect on landscape character from the combination of the site with the wider IAMP development areas is assessed as a medium-high magnitude of effect on low-medium sensitivity receptors: **Not Significant**.

- 17.6.4 With regards to the proposed development in combination with the other developments listed within Table 2.5 of Chapter 2, **no significant cumulative effects**, either direct or indirect, are predicted in relation to the landscape character of the local area as a result of the proposed development of the site.

Cumulative effects on visual amenity

- 17.6.5 There is relatively limited visibility of the existing site from within the surrounding area. This is mainly limited to locations close to the site or more distant, elevated positions to the north-west and south of the site.

Residential receptors

- 17.6.6 A Significant cumulative effect on the visual amenity of the occupants of North Moor Farm is identified for the combination of the proposed development and the wider IAMP ONE Phase One and IAMP TWO (northern development area). No other significant cumulative effects on visual amenity have been identified for the remainder of the residential receptors present within the study area.

Users of transport routes and rights of way

- 17.6.7 No significant cumulative effects on the visual amenity (including sequential effects) of users of the various transport routes and rights of way have been identified as part of this assessment.

Users of formal and informal open space and recreation areas

- 17.6.8 No significant cumulative effects on the visual amenity of users of the various formal and informal open space and recreation areas have been identified as part of this assessment.

Viewpoints - assessment of cumulative effects

- 17.6.9 In the long-term, the establishment of perimeter and internal planting within the general area of the proposed development will assist in softening views. The inter-cumulative effects (where these have been identified) upon visual amenity from Viewpoint 1 (view from the A1290 at the new entrance road), Viewpoint 13 (view from the Penshaw Monument), Viewpoint 16 (view from the A1290 to the west of the site), Viewpoint A (view from Follingsby Lane to the north of the site), Viewpoint B (view from Follingsby Lane to the north of the site) and Viewpoint C (view from Follingsby Lane to the north of the site) are assessed as **Not Significant**.

17.7 Waste

- 17.7.1 Cumulative effects of waste generation from neighbouring developments (i.e. the wider IAMP ONE development, IAMP TWO and also those detailed within Table 2.5 in Chapter 2 of this ES) have been considered as these have potential to increase the significance of environmental burden of the proposed development. These are, however, 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.
- 17.7.2 During the demolition phase of the proposed development, no demolition works are programmed for the IAMP ONE site. There is, however, likely to be some degree of demolition involved in IAMP TWO. Both IAMP ONE and IAMP TWO and the other planned developments identified within Table 2.5 are likely to include some ground works and / or the excavation of soils. Waste quantities produced are estimated to be minor and initial assessment indicates that the cumulative effect of demolition remain minor and **Not Significant**.
- 17.7.3 Excavation works for the entire IAMP site (i.e. IAMP ONE and TWO) are programmed to be undertaken as part of the development and it was determined that the overall site development has a minor impact in terms of potential excavation wastes. Cumulative construction impacts will result from development of the wider IAMP ONE and IAMP TWO site, but the application of consistent mitigation measures

across the entire site means that the cumulative effects are likely to be moderate to minor and **Not Significant**.

- 17.7.4 During operation, cumulative waste arisings will arise from the IAMP ONE and IAMP TWO development sites. In-line with the ES for the wider site, the cumulative impacts will remain minor to negligible and **Not Significant**.

17.8 Water Resources

- 17.8.1 The potential inter-cumulative effects that may occur when two or more major developments are constructed within the same catchment at the same time include the deterioration in water quality as a result of pollutants entering waterbodies during construction and alteration to the hydrological regime from inappropriate drainage design resulting in increased flood risk downstream of both developments.
- 17.8.2 During operation, however, inter-cumulative effects are considered unlikely to occur as, in order to be acceptable in planning terms, the developments would be designed to the appropriate standards to comply with strict planning guidance and regulations relating to the water environment. Consideration of cumulative impacts in relation to the water environment is, therefore, limited to the construction phase.
- 17.8.3 Of the other developments listed within Table 2.5 of Chapter 2, the following developments have been considered as they are all within 2 km of the site and located within the same surface water catchment and groundwater catchment as the site, and could potentially be constructed at the same time:
- Application ref. 18/00092/HE4 - construction of light industrial, general industrial and storage distribution (IAMP ONE Phase One).
 - Application ref. 18/02055/FUL - provision of solar panels on building roof, Unipres, Washington Road.
 - Application ref. 18/01869/FUL and 19/02161/VAR - proposed 3 storey, 36 bed hotel on land adjacent to the Three Horse Shoes, Washington Road.
 - Application ref. 18/01869/FUL and 19/02161/VAR - erection of two extensions to the existing press and assembly shop buildings and creation of external hardstanding area, landscaping and fencing on the Unipress Site.
 - Application ref. TR010024 - enhancement of the junction capacity to support IAMP.

- Application ref. 18/01964/FUL - extension to existing farm shop, tearoom and other facilities at Elm Tree Nursery, Washington Road.
- Application ref. 21/00401/HE4 and 21/00605/OU4 - erection of light industrial, general industrial and storage distribution (awaiting determination) at Hillthorn Farm.
- Application ref. 18/02226/FUL - extension to Unit 1 Spire Road Glover Washington.

17.8.4 Owing to strict planning guidance and regulation over the water environment, the other major developments within the same catchment as the site, including IAMP TWO, will have to demonstrate that appropriate drainage design and pollution prevention measures have been incorporated into their site design and will be in place during the construction and operational periods. Any development requiring permitted activities would also be subject to control and regulation by the relevant issuing authority. Given the proposed SuDS for the site, it is likely that any adjacent developments will involve the same systems as those proposed for the site and not use such features as deep soakaways as they are not supported by the geology.

17.8.5 In addition, pollution prevention measures in a CEMP (or equivalent) including emergency response plans are likely to be implemented during the construction of other developments. The potential cumulative effects on the water environment arising from other major developments within the same catchments as the site are, therefore, considered to be negligible and **Not Significant**.

17.9 Geology and Soils

17.9.1 Cumulative effects have been considered both in terms of the cumulative effects of the various elements of the proposed development (i.e. intra-cumulative effects) and the of the proposed development with other development proposed in the vicinity (i.e. inter-cumulative effects).

17.9.2 As the only source of impact is permanent development, including permanent land use change on land that is not classed as best and most versatile (BMV), there are no intra-cumulative effects on the permanent loss of BMV land. There are also no intra-cumulative effects on soil resources and no intra-cumulative effects on the disturbance to or loss of soils, as the only sources of impact are construction activities. The following, therefore, relates to inter-cumulative effects, only.

Agricultural land

- 17.9.3 The other developments ‘in combination’ with the proposed development would result in the permanent loss of 109.92 ha of agricultural land, 104.09 ha of which is Subgrade 3b non-BMV land and 5.83 ha of which is BMV land. As such, the cumulative loss is considered to be **Not Significant**.

Soil resources

- 17.9.4 The residual impacts for disturbance and loss of soil resources for the proposed development were assessed as **Not Significant**. Impacts to soil resources are site specific and, with the exception of IAMP ONE Phase One, none of the boundaries of the ‘other developments’ intersect with the boundary of the proposed development. In these cases, as none of the developments impact upon the soils within the site, there is no potential for inter-cumulative effects to occur.
- 17.9.5 Whilst the IAMP ONE Phase Two boundary and the IAMP ONE Phase One boundary overlap by 18.74 ha, no development within the IAMP ONE Phase Two boundary is proposed as part of the IAMP ONE Phase One works and, therefore, the soils in the site are not expected to be subject to inter-cumulative effects. Should IAMP ONE Phase One works occur within the IAMP ONE Phase Two boundary, however, in order to conform with planning policy and good practice guidance, the works would be expected to apply soil management measures to as to ensure that the disturbance and loss of soil resources is reduced to a level where it is acceptable in planning terms. The impact, therefore, would be as assessed for the proposed development and **Not Significant**, with no significant inter-cumulative effects occurring.

17.10 Ecology and Biodiversity

- 17.10.1 It is considered that the primary driver of any significant cumulative effects will be the wider IAMP development. It was concluded within the 2018 IAMP ONE ES, however, that although negative residual impacts would be experienced in the short-term, these would become neutral or positive in the medium to long-term with the implementation of the Biodiversity Construction Environment Plan (BCEMP), Habitat Management Plan (HMP) and Ecological and Landscape Mitigation Area (ELMA) (IAMP ONE 2018 ES, chapter K, section K.7.0, final para.).
- 17.10.2 The HMP for IAMP ONE proposes frequent surveys for bats, birds and invertebrates. These species groups can act as indicators for the biodiversity being achieved within

IAMP and the ELMA. To help ensure that cumulative effects are assessed and addressed, and biodiversity net gain achieved, it is recommended that standard survey techniques, such as the British Trust of Ornithology (BTO) territory mapping method for breeding birds and fixed transect routes for bat and invertebrate surveys are agreed. Targets can then be set based on the population levels needed to demonstrate no net loss from the pre-development baseline, and measures identified to address any shortfall (including, if required, revisions to the management of the area). Given this and the anticipated limited residual effects for the proposed development, **no significant inter-cumulative effects** are anticipated from the combination of effects of the site with the wider IAMP development or with other planned developments within the local area.

- 17.10.3 In respect of the planning applications set out within Table 2.5, these developments will have been subject to their own assessments and development of mitigation (as appropriate) and, therefore, the combination of the effects of the site with these is **unlikely to result in any significant inter-cumulative** effects on the ecology and biodiversity of the local area.

17.11 Access and Transport

- 17.11.1 The quantity of traffic on the road network in the wider area surrounding the site, its distribution, speed and its movement have been derived from a traffic model that has (in accordance with standard guidelines) assumptions about traffic growth arising from Local Plan sites over the plan period(s) built into it. As such, the future operational traffic forecasts consider other proposed developments and infrastructure projects within the surrounding area. This means that inter-cumulative impacts in relation to traffic are already built into the assessments.
- 17.11.2 Notwithstanding the above, a list of other developments has been produced by SCC for the consideration of the cumulative assessment and are included within Table 2.5 of Chapter 2. There is, naturally, a high number of developments for which access and transport may be a consideration. Following a review of each of the proposals, however, it can be broadly summarised that the proposed development would have an inter-cumulative impact on these typically ranging from negligible to low and, therefore, **Not Significant** effect.

17.12 Vulnerability to Major Accidents and Disasters

- 17.12.1 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 effects is required.

17.12.2 In considering the potential for the project, in combination with the development of the wider IAMP site (i.e. IAMP ONE and IAMP TWO), 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 the IAMP ONE area will be applicable to the IAMP TWO area. As noted above, the potential for UXO within the development area is considered to be low and would be considered within the CEMP developed for the onsite construction works. The IAMP ONE 2018 ES (Table N4) identified the potential for up to moderate effects on the vulnerability of the development to both natural and industrial hazards. These hazards, however, would be addressed through the preparation of operational management plans, emergency preparedness and response plans. As such, any residual effects would be **Not Significant**.

17.12.3 The combination of the Site with the wider IAMP ONE and IAMP TWO development areas, given the proposed mitigation, is not considered to result in any significant adverse cumulative effects with regard to the vulnerability of the proposed development to major accidents and disasters.

17.12.4 With regards 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). As such, no inter-cumulative effects have been assessed.

17.13 Climate Change

17.13.1 As climate change is a global issue, a comprehensive consideration of inter-cumulative effects would need to account for every other development and activity that generates carbon emissions or releases other greenhouse gas effects. As this encompasses (to varying degrees) most of the activity on the globe, it is not practical to consider inter-cumulative effects 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.

17.13.2 Similarly, intra-cumulative effects are also unrealistic to appraise. Whilst climate change effects manifest as effects considered within other environmental disciplines and (where they occur) they are assessed within the relative chapters of this ES, they do not have a quantifiable direct effect on local receptors. Rather, the effects act on a global receptor. As such, 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.

17.14 Archaeology and Cultural Heritage

17.14.1 No significant cumulative (intra-cumulative or inter-cumulative) effects have been identified. For further information, reference should be made to the Land at West Moor Farm, Usworth, IAMP One Phase 2, Sunderland, Archaeological Evaluation Report (2021 AD Archaeology Ltd.) that is included within Appendix 16.1 of this ES, plus the Heritage Impact Assessment (2021, Lichfields) that has been submitted as a standalone document to accompany the planning application.

17.15 Cumulative Effects on the Natural Environment

Introduction

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

17.15.2 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 (fuels, cement and so on) 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).

17.15.3 Intra-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.

- 17.15.4 On the whole, the residual impacts of individual aspects relating to the natural environment are predicted to be Not Significant and, in many cases, are predicted to be Negligible. When considered together, there could be some scope for Significant inter-cumulative effects. This is discussed further, below.

Cumulative Effects of Construction

- 17.15.5 Potentially significant inter-cumulative effects on the natural environment during construction could occur in relation to the combination of removal of topsoil from the site in combination with the loss of hedgerows and hedgerow trees within the site; thereby resulting in adverse effects on the flora and fauna of the local area.
- 17.15.6 Given the limited benefits of the existing species-poor hedgerow and tree cover to flora and fauna as identified in Chapter 12 of this ES, any such intra-cumulative effects are expected to be short-term and no greater than Minor-Moderate and **Not Significant** during construction. The mitigation measures identified in respect of soil handling and re-use, and enhancements to ecology and biodiversity would ensure that cumulative effects are minimised and **Not Significant**.

Cumulative Operational Effects

- 17.15.7 Potential significant cumulative effects on the natural environment during operation of the proposed development could occur in relation to the disturbance of native wildlife (e.g. bats and birds) from the combination of noise and the effects of lighting within the site, together with presence and movement of vehicles. Such effects could occur during both daytime and night-time periods and have the potential to be moderate adverse (Significant) in the absence of or failure to deliver appropriate mitigation.
- 17.15.8 Landscaping mitigation measures are proposed (see Drawing 103 Proposed Landscape Plan) to address these and, with these in place, it is considered that any cumulative effects on the natural environment would be **Not Significant**.

17.16 Cumulative Effects on People and Property

- 17.16.1 Intra-cumulative construction effects on the people and property of the local area of the proposed IAMP ONE Phase Two development could result from the combination of effects associated with 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.

17.16.2 Intra-cumulative operational 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), effects on land use, operational transport and traffic effects, and from operational noise.

17.16.3 The relevant chapters of this ES have identified where such effects would be likely to occur and the mitigation measures necessary to address them. With limited exceptions, the residual effects associated with individual aspects of the environment are predicted to be Not Significant. There may, however, be scope for potential significant cumulative effects. These are discussed further, below.

Cumulative Effects of Construction

17.16.4 The occupants of North Moor Farm are located within circa 350 m to the north of the site and, although visual amenity effects during construction are expected to be Not Significant (due to the short-term nature of these), the combination of this in addition to effects of noise and air quality, and disruption of the access to the farm, could result in Significant cumulative effects. With the implementation of mitigation measures to address these, including the delivery of mitigation for noise and air quality through an approved CEMP, as well as appropriate traffic management in relation to the access to North Moor Farm, the cumulative effects would reduce to **Not Significant**.

17.16.5 There are no other people, or property with scope to experience cumulative effects from the construction of the proposed development.

Cumulative Operational Effects

17.16.6 Intra-cumulative operational effects of the proposed development on the people and property of the area would also be limited to the occupants of North Moor Farm. Intra-cumulative effects would relate to the combined effects of visual amenity, operational noise, lighting and access. In the absence of mitigation, such cumulative effects would be Significant. With the implementation of the mitigation measures outlined in the relevant chapters of this ES, the residual cumulative effects of the operational stage of the proposed development would reduce to **Not Significant** in the longer-term.

17.16.7 There are no other people, or property with scope to experience cumulative effects from the operation of the proposed development.

17.17 Summary & Conclusions

17.17.1 This chapter provides a summary of the cumulative assessment undertaken for the various technical disciplines assessed in Chapters 6 to 16 for the proposed development in combination with other planned developments within the local area. In addition, 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.

17.17.2 The proposed development is considered to have very limited scope for significant intra-cumulative and inter-cumulative effects in relation to the combined effects of the proposed development on the natural environment and on the people and property of the area.

17.17.3 In the short to medium-term, there would be a significant cumulative effect upon visual amenity for the occupants of North Moor Farm, only. In the longer-term, however, the effect would reduce to **Not Significant** by the assimilation of the development into the general area and the softening effect of the proposed perimeter planting would make a positive contribution to the landscape character and visual amenity of the local area.

17.17.4 No additional mitigation measures are considered necessary in respect of cumulative effects.