REPORT
IAMP TWO:
Preliminary Environmental Information Report
Non-Technical Summary

Submitted to:
IAMP LLP

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INTRODUCTION

1.1 Background

1.1.1 This document presents a non-technical summary (NTS) of the Preliminary Environmental Information Report (PEIR) that has been prepared in support of an application for a development consent order (DCO) for the second phase of the International Advanced Manufacturing Park (IAMP), known as IAMP TWO (the Proposed Development). The Proposed Development is planned to be built in Sunderland and South Tyneside, on land to the west of the A19 and to the north of Nissan's factory.

1.1.2 The purpose of this NTS is to describe the Proposed Development and provide a summary in non-technical language of the key findings of the PEIR for the benefit of consultees and stakeholders. The PEIR is a document to enable stakeholders to understand the potential environmental effect of the Proposed Development as they have been assessed at this time, so as to inform feedback regarding the Proposed Development.

1.1.3 Environmental impact assessment (EIA) is a process used to predict the adverse and beneficial impacts of a proposed development. The Proposed Development falls under The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) and is classed as an EIA development due its size, location and the nature of the proposals. This means that an Environmental Statement (ES) will be prepared to accompany the DCO application, which will describe the likely significant effects of the Proposed Development on the environment.

1.1.4 The PEIR has been prepared to comply with the EIA Regulations and the guidance provided by the Planning Inspectorate (PINS) in ‘Planning Advice Note 7: Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping’.

1.1.5 It explains the EIA process and presents the preliminary findings of the EIA that has been carried out for the Proposed Development. It details the mitigation that is currently proposed and any likely significant residual environmental effects of the Proposed Development following the application of the proposed mitigation.

1.1.6 This NTS and the accompanying PEIR are available for viewing at:

- The IAMP TWO consultation website (http://www.iamp-consultation.com/);
- All public libraries in South Tyneside and Sunderland;
- South Tyneside Council, Town Hall and Civic Offices, Westoe Road, South Shields, NE33 9AR; and
- Sunderland City Council, Civic Centre, Burdon Road, Sunderland, SR2 7DN.

1.1.7 Consultation on the PEIR provides the opportunity for the local community and key stakeholders to be informed and to influence the evolution and design of the Proposed Development, including the EIA process and outcomes.

1.1.8 Consultation responses received on the PEIR will be reported in a separate consultation report submitted with the DCO application for the Proposed Development, summarising how the Applicant has considered these responses and where the EIA and/or design of Proposed Development have evolved as a result. Stakeholder engagement will continue following the submission of the DCO application.
1.2 The Applicant
1.2.1 The Applicant for the DCO is IAMP LLP, a joint venture formed by SCC and STC. IAMP LLP owns the site of IAMP ONE, as well as much of the land needed for IAMP TWO.

1.3 About IAMP
1.3.1 The Proposed Development is part of a larger project, the International Advanced Manufacturing Park or IAMP. The purpose of IAMP is to support growth in the automotive and advanced manufacturing sectors in the United Kingdom and the North East of England.

1.3.2 IAMP as a whole will create over 7,000 jobs for companies within the automotive and advanced manufacturing sectors. These companies will also benefit from the skilled workforce that will be trained for the future at IAMP. The Proposed Development will create 4,500 of those jobs.

1.3.3 The need for IAMP was established through the examination and adoption of the IAMP Area Action Plan (IAMP AAP) by SCC and STC. The IAMP AAP was adopted by SCC and STC on 30 November 2017. This document forms the local planning policy for the area and provides for the comprehensive development of IAMP.

1.3.4 The need for the Proposed Development flows from the wider need for IAMP. It has a site area of approximately two thirds of IAMP as a whole and will deliver between 50% and 60% of the commercial floorspace of IAMP overall. It will include the Hub, which will provide an interface with existing businesses to the south. The Proposed Development will also deliver crucial infrastructure necessary for IAMP as a whole, including bridges over the River Don and A19, with improved access to Nissan's plant; together with extensive highway and drainage works.

1.3.5 Alternatives to IAMP as a whole were assessed during the production of the IAMP AAP. This concluded that the land to the north of Nissan was the preferred option due to its size and availability for development, adjacency to Nissan, and its links to transport networks. A summary of this assessment of alternatives, the conclusions drawn and the justifications for selecting the chosen design is provided in the PEIR. An assessment of alternatives for IAMP TWO is also included in the PEIR.

1.3.6 IAMP is divided into two main parts, indicated on the Parameters Plan (Figure NTS 2):
   a) IAMP ONE: Phase 1 of IAMP ONE has planning permission under the Town and Country Planning Act 1990 and is being built now. Planning permission for Phase 2 will be sought in the future; and
   b) IAMP TWO: the Proposed Development, which will be the subject of the DCO application. The Proposed Development is described in Section 3.0 below.

1.4 The Development Consent Order Process
1.4.1 The Secretary of State (SoS) has designated the Proposed Development as a project of national significance under the provisions of the Planning Act 2008. Consequently, the Proposed Development has to be consented through the DCO process.

1.4.2 IAMP LLP intends to submit an application to the SoS under section 37 of the Planning Act 2008, seeking a DCO for the Proposed Development, in summer 2019.

1.4.3 The DCO would provide the necessary authorisations and consents for the construction, operation and maintenance of the Proposed Development on the site shown on Figure NTS 1.
2.0  THE SITE

2.1.1  The Proposed Development is located within the administrative boundaries of SCC and STC, on agricultural land to the north of the existing Nissan car manufacturing plant, to the west of the A19, and to the south of the A184.

2.1.2  The extent of the Proposed Development is shown on Figure NTS 1, which indicates the proposed DCO Application Boundary. The site is approximately 210 hectares in area. It is currently predominantly used for farming, with a small number of residential and recreational properties.

2.1.3  It is intended that 9 existing buildings within the footprint of the Proposed Development will be demolished at the start of the construction phase.

2.1.4  A number of environmental receptors have been identified in and around the site. These are considered where appropriate within each of the technical assessments undertaken to inform the PEIR.

3.0  THE PROPOSED DEVELOPMENT

3.1  Development Description

3.1.1  The Proposed Development includes:

- Buildings for automotive and advanced manufacturing – up to a maximum floorspace of 232,300 sq m (2.5M sq ft).

- The Hub – This is an area within which the DCO will seek approval for a range of uses in accordance with the IAMP AAP, including hotel, gym, education and training facilities, managed workspaces, nursery and child care, small retail units and transport facilities. The Hub is immediately to the west of the North East Land, Sea and Air Museums (NELSAM).

- Roads – The A1290 will be widened to form a dual carriageway. From the A1290, two new spine roads will be created into the Proposed Development. A new single carriageway road will be constructed from this spine road into the Nissan car park. To the west of the A1290, the junction created by IAMP ONE will be extended and signal controlled.

- Bridges – A new single span bridge will be built over the A19, with new embankments to raise the level of the roads approaching it and to support the new bridge. The bridge will link Washington Road and the Proposed Development. Another vehicular bridge will also be constructed over the River Don to connect the northern and southern parts of the Proposed Development.

- Ecological and Landscape Mitigation Area (ELMA) – around 66 ha of the Proposed Development will provide mitigation and/or compensation for the impacts on the Site’s habitats, species and landscape. The delivery of the IAMP TWO ELMA will be guided by a detailed Habitat Management Plan, which will be prepared in support of the DCO application.

- Utilities and drainage - Existing services will be diverted where necessary and new service networks, including water, gas, electricity and telecommunications will take place. Two new electricity substations will be built. Drainage will be managed carefully, with a series of ponds and swales across the Site.

- Landscaping - Existing mature trees, woodland and hedgerows around the edges of the Proposed Development, along the River Don and to the east of Elliscope Farm, will be retained. Green linkages along main roads will be provided, where appropriate.
3.1.2 Other aspects of the Proposed Development include:

- Diverting a 1 km long section of the Great North Forest Heritage Trail and provision of an alternative route.
- Providing new ground-level, signal-controlled crossings suitable for non-motorised users, including horse-riders, on the A1290.
- Re-aligning a 475 m long section of the public footpath (as shown on Figure NTS 2) that runs between Strother House Farm and West Pastures Lane.
- Connecting to Follingsby Lane at the north western corner of the Site, allowing for a potential future bus route along Follingsby Lane, if required.

3.1.3 The Proposed Development will necessitate the permanent stopping-up of a section of Downhill Lane between North Moor Farm and the A1290. The Proposed Development would also require the permanent restriction of vehicles heading north along West Pastures Lane from Follingsby Lane. Access to the Travellers’ Site from the A184 would be maintained.

3.1.4 During construction, temporary closures of the A19 will be needed to allow the bridge over the A19 to be lifted into place. Those closures are expected to take place overnight at weekends.

3.1.5 There are some aspects of the Proposed Development that have yet to be fixed. It will not be possible to fix these elements in advance of submitting the DCO application. For example, the precise location, scale and design of buildings within the Proposed Development will vary depending upon the requirements of future occupiers. The design of the Proposed Development therefore needs to incorporate a degree of flexibility (an envelope) to allow for such circumstances; this is known as the ‘Rochdale Envelope’.

3.1.6 Where the description of the Proposed Development presents a range of options, the technical assessments have considered the worst-case option. This provides robustness to the assessment. Details of the assumptions and the worst-case scenarios that have been applied are defined in the relevant chapter of the PEIR. An example would be that in assessing the landscape and visual impacts of the Proposed Development, we have assumed a worst case building massing (i.e. the largest buildings possible within the envelope). The PEIR has also been prepared using the maximum floorspace figure above, which represents the worst-case.

3.1.7 To set the limits of the Rochdale Envelope, a Parameters Plan has been prepared (see Figure NTS 2). This shows a series of development plots across IAMP TWO. For each plot, the Applicant has established a maximum building height in metres and development floorspace.

3.1.8 The Applicant has prepared a draft Design Code, which provides guidelines for the design of IAMP TWO’s buildings, bridges and public spaces. This will be the subject of statutory consultation alongside this PEIR. The final version will be submitted in support of the DCO application.

3.2 Relationship with Neighbouring Developments

3.2.1 The A19 trunk road lies to the east of the Proposed Development. Highways England (HE) is proposing to make improvements to the A19 to relieve congestion and improve road safety. Those improvements relate to the A19/A184 Testo’s Junction and A19 Downhill Lane Junction, both of which are next to IAMP.

3.2.2 Both junction improvements projects are classified as ‘Nationally Significant Infrastructure Projects’ and are therefore being delivered under the DCO process. Their location is shown on Figure NTS 4.
3.2.3 The A19/A184 Testo’s Junction Improvement DCO was granted development consent by the SoS on 12 September 2018 and is currently being built. The A19 Downhill Lane Junction Improvement DCO application was accepted by the Planning Inspectorate for examination on 22 February 2019.

3.2.4 The Proposed Development will have an inter-relationship with those two projects and the other elements of IAMP:

- IAMP ONE Phase 1 – buildings for automotive and advanced manufacturing businesses on 61 ha of land. It was granted planning permission in May 2018 (SCC planning reference 18/00092/HE4) and is currently under construction. It is related to the Proposed Development as both form part of IAMP; and

- IAMP ONE Phase 2 – one or more buildings to be built on land in the south-west corner of IAMP ONE that was not included in the IAMP ONE Phase 1. Development of this land, in accordance with the IAMP AAP, will happen in the future. A planning application will be made during 2019. The extent of IAMP ONE Phase 2 is shown on the Parameters Plan (Figure NTS 2). IAMP ONE Phase 2 is related to the Proposed Development as both form part of IAMP.

4.0 ASSESSMENT METHOD

4.1 Screening and scoping

4.1.1 The first stage of EIA is 'screening', where the need for an EIA is considered. This was completed when the Applicant confirmed to the Planning Inspectorate that they would be submitting an ES with the DCO application.

4.1.2 Later, a scoping process was undertaken to identify the environmental topics and issues that may result in effects, thus requiring detailed assessment in the EIA. Scoping represents the second stage in the EIA process and is the process for identifying the issues that require detailed assessment (and so are 'scoped in') and the issues that may result in effects that are minor and not significant (and so are 'scoped out').

4.1.3 For our scoping exercise, we used an area - the IAMP TWO Scoping Boundary shown on Figure NTS 3 - which included land within IAMP ONE and its part of the ELMA. This was to allow for any interface between Proposed Development and IAMP ONE, such as highways, utilities infrastructure and mitigation works, to be considered.

4.1.4 As part of the scoping process, a Scoping Report for the Proposed Development was produced (Golder, 2018) to describe the proposed scope and approach to completing the EIA. The Scoping Report was submitted to the Planning Inspectorate in September 2018.

4.1.5 The Planning Inspectorate prepared a responding Scoping Opinion in October 2018 that identified which environmental assessments topics are relevant to the EIA process. Those topics have therefore been assessed and reported within the PEIR, and summarised in this NTS.

4.1.6 The PEIR sets out the findings of the EIA work undertaken to date. The finalised findings, which will take into account issues raised during the consultation on this PEIR, will be included in the ES that will accompany the DCO application.

4.2 EIA methodology

4.2.1 Although each technical environmental topic necessarily has separate legislative, policy and best practice requirements, our assessments have applied the same standard approach. These include:
- Confirming the relevant legislative and policy context;
- Determining the applicable study area for that discipline;
- Establishing the baseline conditions for that discipline;
- Identifying potential receptors and their importance;
- Predicting potential sources of impact (change) to the receptors for the Proposed Development;
- Applying a risk-based assessment methodology to evaluate the level of significance of environment effects resulting from each of the potential impacts;
- Where applicable, developing a mitigation, compensation or management strategy to avoid, prevent, reduce or, if possible, offset, the magnitude/severity of the impacts and thereby reduce the level of significance of each potential effect; and
- Conducting a final assessment of residual environmental effects, factoring in the proposed mitigation, compensation and management strategies.

4.2.2 The Proposed Development is a long-term project, with no definitive end point for its operation, and no defined plan for decommissioning. As such, it was not considered appropriate to assess decommissioning.

4.2.3 The assessment work has been completed assuming a worst-case scenario to ensure the impact assessment is robust.

4.2.4 Where limitations have arisen in individual topic areas, these are addressed in each technical chapter, as appropriate. In summary, the EIA has been completed on the following basis:

- The EIA technical chapters consider the likely significant environmental effects of the Proposed Development based on available knowledge of the site and its surroundings;
- The EIA has been completed with reference to best practice and relevant legislation and has addressed all those matters that could reasonably be required to assess the impacts of the Proposed Development which could result in significant environmental effects;
- An extensive amount of information has been used to establish the baseline position and the assessment of the likely significant effects of the Proposed Development; and
- Assessment of construction is based on broad parameters ahead of detailed design for the Proposed Development. Potentially different construction programmes may be identified based upon supplier requirements for the different units on the site.

4.2.5 The following sections of the NTS outline the environmental assessments undertaken and the initial findings of those assessments as reported in the PEIR.

5.0 AIR QUALITY

5.1 Introduction

5.1.1 The air quality assessment considers the potential impact from construction dust, construction traffic and operational traffic emissions on ecological receptors, including protected sites such as Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), and human receptors, including homes and educational facilities.
5.1.2 It uses computer models to predict the potential effects arising from road traffic emissions associated with the construction and operation of the Proposed Development at nearby receptors. The potential effects arising from dust during the construction of the Proposed Development are predicted using a ‘qualitative’ approach (i.e. assessing relative amounts of dust (e.g. more/less dust generated) and looking at potential ‘pathways’ from the source of the dust and potential receptors).

5.1.3 Information relating to existing background air quality within the study area was gathered from a review of publicly available sources and databases. That was supplemented by monitoring of current NO\textsubscript{2} (nitrogen dioxide) levels at nine locations close to roads within and around the study area. The locations of the tubes are shown in Figure NTS 5.

5.2 Effects during construction

5.2.1 Impacts during construction could arise as a result of emissions from construction vehicles and plant on site. Dust could be produced from construction activities, such as demolition and earthworks.

5.2.2 Construction management and mitigation will be used during construction. These will be secured through a document known as the Construction Environment Management Plan (CEMP). Potential measures include:

- The use of screens or barriers around dusty activities;
- Ensuring vehicles switch off engines when stationary; and
- Avoiding bonfires and burning of waste.

5.2.3 Dust soiling and human health impacts for demolition, earthworks and construction activities associated with the Proposed Development are assessed to have no significant adverse effects. The predicted impact from construction traffic emissions is assessed to be negligible.

5.3 Effects during operation

5.3.1 Operational impacts include emissions from traffic associated with the Proposed Development. The predicted impact from all operational traffic emissions is assessed as negligible.

5.3.2 Where required (e.g. significant air emissions are likely to produced), future air emissions from the manufacturing processes of future occupiers at the Proposed Development would need to be assessed in detail before that unit begins operation.

5.4 Conclusions

5.4.1 Following the application of the proposed mitigation measures it is considered that there will be no significant air quality effects associated with the construction or operational phases of the Proposed Development.

6.0 NOISE & VIBRATION

6.1 Introduction

6.1.1 This assessment identified sensitive receptors within a study area, which includes a buffer of 1 km beyond the IAMP TWO Scoping Boundary. The assessment considered the closest identified sensitive receptors in all directions, and the roads that may experience significant increased traffic flow as a result of the Proposed Development.
6.1.2 Potential noise and vibration sensitive receptors (NSRs) close to the Proposed Development were agreed with SCC and STC. These are shown on Figure NTS 6. Other potential NSRs in proximity to the Proposed Development will either be demolished or will be non-residential prior to the start of construction. These other potential NSRs have therefore not been considered in this assessment.

6.1.3 A survey of current noise conditions was undertaken at representative NSRs, and further data obtained from the IAMP ONE Environmental Statement was used to understand the existing noise environment in the study area, which was found to be dominated by road traffic on the A19 and A1290. Industrial noise from the existing Nissan factory and nearby industrial units was prevalent at NSRs at the south of the Site, but the majority of these will be demolished before construction begins.

6.2 Effects during construction

6.2.1 Noise arising from the construction of the Proposed Development was predicted using noise modelling software, based on a list of proposed construction plant and activities provided by the Applicant (representing a reasonable worst-case). Predicted noise levels for each stage of the construction works were considered.

6.2.2 Noise and vibration effects associated with construction of the Proposed Development will be controlled and minimised using methods which will be set out in the CEMP.

6.2.3 Road traffic noise impacts due to construction traffic associated with the Proposed Development have been assessed as not significant.

6.2.4 Rotary and driven piling were identified as having the greatest potential to generate vibration at NSRs. Vibration levels were predicted at the closest NSRs to proposed piling works and evaluated against standard thresholds of perception/likely annoyance. Construction vibration impacts associated with Proposed Development have been assessed as not significant.

6.2.5 The worst-case predicted noise levels for all stages of construction works associated with Proposed Development exceed the weekend noise limits for Saturday afternoons and Sundays at all NSRs except NSR2 (Travellers’ Site) and NSR7 (Houses on Washington Road). Site preparation is predicted to be the noisiest stage of site construction works associated with Proposed Development at the majority of NSRs, with the highest noise levels predicted at NSR5 (Hylton Bridge Farm). For NSR6 (Houses on Baltimore Avenue), the construction of the new bridge over the A19 will be the noisiest stage of works associated with the Proposed Development. However, with the application of measures and controls in the CEMP, the noise impacts of construction are not predicated to give rise to significant effects.

6.3 Effects during operation

6.3.1 Operational noise from individual units, and heavy goods vehicle (HGV) movements, within the Site, has been evaluated using modelling software.

6.3.2 The noise model indicates that the greatest contributor to total operational noise levels at NSRs is movement of heavy goods vehicles on the spine road serving the Proposed Development. Road traffic noise impacts due to changes in traffic flows during the operation of the Proposed Development have been predicted and assessed as not significant.

6.3.3 Noise effects due to operational noise arising from activities at the Proposed Development have been assessed as not significant. Individual units within the Proposed Development will be subject to detailed noise assessments before they are occupied and any appropriate mitigation measures put in place as needed.
6.3.4 Noise and vibration effects associated with the operation of the Proposed Development have been evaluated as not significant.

6.4 Conclusions

6.4.1 Noise and vibration effects associated with the construction phase of the Proposed Development have been evaluated as not significant.

6.4.2 Noise and vibration effects associated with the operation of the Proposed Development have been evaluated as not significant.

6.4.3 Road traffic noise and vibration effects associated with the operation of the Proposed Development have also been evaluated as not significant.

7.0 LANDSCAPE & VISUAL

7.1 Introduction

7.1.1 The study area for landscape and visual effects was based on the area in which the Proposed Development is likely to be visible (known as the zone of theoretical visibility or ZTV). This is defined as 4 km from the IAMP TWO Scoping Boundary and shown on Figure NTS 7. Beyond that distance there are comparatively few locations from which the Proposed Development would be visible.

7.1.2 The study area includes the northwest part of Sunderland between the Queen Alexandria Bridge and the A19, including the Nissan factory and other industrial buildings, as well as the urban areas of Washington, Simonside, Southwick, Boldon, Offerton and Springwell. The Penshaw Monument lies on the southern edge of the study area.

7.1.3 The assessment considers two separate but related issues:

- Landscape effects: changes in the fabric, character and quality of the landscape. These include direct physical impacts, such as loss of vegetation, or less perceptible effects, such as changes to tranquillity. Landscape effects do not need to be visible.

- Visual effects, which relate to specific changes in views and the effects on visual receptors (e.g. residents, users of Public Rights of Way or recreational facilities).

7.1.4 The landscape within the study area is not subject to any statutory landscape designations, i.e. it is not within a National Park, Area of Outstanding Natural Beauty, or ‘high landscape value’. The farmland outside the urban areas has been extensively changed by previous industrial activity and by current roads, overhead electricity lines and large manufacturing facilities.

7.1.5 Some farmland between Sunderland and Washington is designated as green belt. This is not an indicator of landscape quality or condition. The IAMP AAP removed IAMP from the green belt. Whilst the ELMA remains in the green belt, no works proposed there will be contrary to the objectives of the green belt to prevent neighbouring settlements merging.

7.1.6 The agricultural landscape between Sunderland, Washington, Gateshead and Boldon is relatively dark at night, although the IAMP ONE Phase 1 development, which is currently being developed, will introduce lighting to the arable area northwest of the A1290, thus reducing the visual sensitivity of the area.
7.2 Landscape effects during construction and operation

7.2.1 The main landscape effect, which will be gradual during construction and permanent during operation, is predicted to be the urbanising effect on the open farmland in which the northern part of the Proposed Development is located. This would consist of site clearance, construction activity, the erection of large buildings and two bridges, and their long term use. Open farmland will be lost permanently and there may be a perception of intrusion into the countryside. Those adverse effects are assessed to be significant.

7.2.2 Adverse effects on the local landscape character would be minimised in the long-term (more than 15 years) through the establishment of trees and hedgerows around the Proposed Development, but would remain significant.

7.3 Visual effects during construction and operation

7.3.1 The Proposed Development would be mainly visible from the low-lying agricultural land between the urban areas of Sunderland, Washington, Gateshead and Boldon. There would be comparatively few views towards the Proposed Development from within the urban areas themselves.

7.3.2 The assessment has identified significant adverse effects in relation to views around the northern part of the Proposed Development, specifically those around Follingsby Lane. This is due mainly to the size and proximity to the proposed industrial buildings, which would obstruct views and change their character and composition.

7.3.3 No significant effects are identified in relation to views of prominent landmarks or important panoramic views.

7.3.4 Lighting proposals have the potential to introduce additional glare and light intrusion on nearby residential properties, including Town End Farm. These could be minimised or avoided by designing lighting to minimise light spill, but even without that the effects are considered unlikely to affect residential amenity or living conditions.

7.3.5 Planting a tree and hedgerow buffer around the edge of the Proposed Development would reduce the visual effects in the long-term, although it is predicted that adverse impacts on the views along Follingsby Lane and from other locations would remain significant. As the proposed planting matures the appearance of the Proposed Development will be ‘softened’ and screened in the long-term.

7.4 Conclusions

7.4.1 Our assessment predicts that there will be some significant adverse landscape and visual impacts of the Proposed Development during construction and operation. Although they will remain significant, these impacts will be reduced over time as planting matures.

8.0 CULTURAL HERITAGE

8.1 Introduction

8.1.1 The assessment considered designated assets (i.e. those granted protection by legislation, such as Scheduled Monuments and Listed Buildings) and non-designated assets (i.e. those not protected by specific statutory legislation).
8.1.2 The cultural heritage study area includes all land within the IAMP TWO Scoping Boundary, plus buffer areas of 0.5 km and 1 km respectively to cover non-designated assets and designated assets located nearby. For designated assets, the assessment also sought to identify any further assets located outside the study area that should be considered in the assessment, up to 4 km away.

8.1.3 A desk-based assessment used recognised local and national data sources. Additional investigations included air photo analysis and a remote surveying method (known as LiDAR), geophysical survey and archaeological evaluation by trial trenching.

8.1.4 There is one designated asset – a Grade II Listed Building - within the DCO Application Boundary. That is Hylton Grove Bridge, lying on Follingsby Lane across the River Don, near to the junction with Downhill Lane. A further 18 designated assets, comprising 2 Scheduled Monuments, 15 Listed Buildings and 1 Conservation Area, lie within 1 km of the IAMP TWO Scoping Boundary or within the ZTV. These are shown in Figure NTS 8.

8.1.5 A total of 95 non-designated assets were identified within the study area, the vast majority of which are associated with the former RAF Usworth site, which is located partly within the DCO Application Boundary. Of the 95 non-designated assets within the study area, 28 are located within the DCO Application Boundary.

8.1.6 The assessment identified that direct disturbance of cultural heritage assets (e.g. through groundworks) and indirect impacts upon the setting of cultural heritage assets as a result of visual changes to the landscape were the only potential sources of effect during construction and operation.

8.2 Effects during construction

8.2.1 The construction of the Proposed Development will have no direct impact on designated assets.

8.2.2 However, moderate adverse indirect visual effects to the setting of 6 designated assets are predicted during construction (LB-06 to LB-11: Downhill Farmhouse; pair of lodge cottages at entrance to Downhill House; barn and gin-gang to south of Downhill Farmhouse; limekiln to south east of Downhill Farmhouse; Downhill House; and Hylton Grove Bridge) and a minor adverse effect at one designated asset (LB-03: Scots House).

8.2.3 Adverse impacts are anticipated at 19 non-designated assets during construction as a result of ground disturbance. These will only be minor 17 of those assets, however, they will be substantial at 2 non-designated assets (AR-94 and AR-95; a potential enclosure and a ditch) as a result of their relatively higher value.

8.2.4 For those 2 non-designated assets, our assessment recommends further work to improve understanding of them. That work will focus on recovering material that can be used to more accurately date the features, to help identify suitable mitigation. For example, if the ditches are proven to be post-medieval field boundaries or modern features, no mitigation may be needed. However, if they are Bronze Age, full archaeological excavation of the features may be appropriate.

8.2.5 Best practice measures for protecting cultural heritage will also be included in the CEMP, such as making contractors aware of the location and nature of cultural heritage assets, as well as areas of archaeological sensitivity.

8.2.6 The setting of NELSAM will be unaffected by the construction of the Proposed Development.
8.3 Effects during operation

8.3.1 During operation, adverse impacts will be limited to indirect impacts upon the setting of 7 designated assets (LB-06 to LB-11: Downhill Farmhouse; pair of lodge cottages at entrance to Downhill House; barn and gin-gang to south of Downhill Farmhouse; limekiln to south east of Downhill Farmhouse; Downhill House; and Hylton Grove Bridge), which will be moderate adverse effects at 6 designated assets and a minor adverse effect at one designated asset (LB-03: Scots House).

8.3.2 NELSAM will likely experience visual effects, although it is considered that this will not have an adverse effect upon the museum.

8.3.3 No mitigation is proposed for the visual impacts predicted during operation. The closeness of the affected assets or their elevation relative to the Proposed Development, mean that there is no feasible landscape mitigation available.

8.4 Conclusions

8.4.1 There will be visual impacts on the setting on 7 designated assets during both construction and operation. Those adverse impacts will be moderate or minor, and cannot be mitigated.

8.4.2 For 2 non-designated assets expected to be affected during construction, once mitigation measures have been taken, those effects are expected to be neutral.

9.0 WASTE

9.1 Introduction

9.1.1 The study area for the purposes of the waste management assessment includes those local authority areas in the North East region with existing waste management facilities able to receive the waste from the Proposed Development during the construction and operation.

9.1.2 The assessment considers the potential amounts and type of waste which will be generated during demolition works, construction and operation of the Proposed Development. It also assesses the potential environmental impacts associated with the storage of any excavated materials, as well as the management of waste. It outlines mitigation measures that will be used to minimise waste generation; facilitate reuse or recycling of waste on-site; and minimise potential exposure to any harmful material and nuisance during the collection, temporary storage and transportation of waste, including the use of appropriate control processes for any stored waste to avoid discharges of contaminated material.

9.1.3 All existing buildings within the DCO Application Boundary will be demolished, except for the main farmhouse at Elliscope Farm. A worst-case approach has been taken to predicting the types and volumes of waste materials generated from the Proposed Development. Predicted amounts of waste have been calculated for the demolition phase prior to construction, as well as waste generated during construction and operation.

9.1.4 Our assessment shows that throughout the North East England region existing waste management facilities have enough space for waste from the Proposed Development.

9.2 Effects during construction

9.2.1 The Proposed Development will be developed in phases. Excavation and construction may happen at the same time, with the main waste consisting of excavated soil. We therefore assessed the excavation and construction phases together.
9.2.2 It is estimated that 592 m$^3$ (or approximately 369 tonnes) of mixed demolition waste would be generated from the demolition of nine existing properties. Where possible, materials will be sorted and segregated to allow waste to be minimised at the point of demolition. If possible, waste will be re-used, recycled or recovered prior to disposal.

9.2.3 Once the existing buildings have been demolished the ground surface will require excavation before building work can start. The amount of waste arising from the excavation of the Site has been estimated at 362,800 m$^3$ of earth (topsoil). This figure is indicative based on average depth of soils derived from the results of the site investigations undertaken on-site. The actual quantities will be confirmed once excavation begins.

9.2.4 It is also assumed that all material will need to be removed and transported off-site requiring significant HGV movements, whereas in practice some of the topsoil may be re-used (e.g. in forming landscaping bunds), depending on requirements and suitability of the material.

9.2.5 The majority of waste arisings from the excavation and construction phase of Proposed Development will, in the worst-case scenario, be disposed of to landfill, resulting in the potential effects during this phase being of moderate adverse significance.

9.2.6 The Applicant’s construction contractor will be required to produce a detailed Site Waste Management Plan (SWMP), which will provide details of the types and volumes of demolition, excavation, and construction waste arisings from the Proposed Development.

9.2.7 The measures set out in the SWMP will focus on promoting sustainable waste management and reduce potential for any other negative environmental effects like odour and litter.

9.3 Effects during operation

9.3.1 Waste generated during operation of the Proposed Development will come from occupiers of the manufacturing units, related offices, and the Hub.

9.3.2 Based upon the type of waste likely to be generated and the expected numbers of staff to be employed at the Proposed Development, the potential significance of the adverse effects of waste generated during the operational phase will be minor, or negligible.

9.3.3 Plot specific SWMPs will cover the management of all waste generated during the operation of the Proposed Development at the individual plots once occupied. All waste materials will be separated and stored appropriately, collected and moved off-site to an appropriate recycling or disposal facility.

9.4 Conclusions

9.4.1 The effects of waste from demolition activities on the environment are judged to be of minor adverse significance, with the implementation of the SWMP. This is because the expected type of waste arising (mostly hardcore) is largely non-hazardous and is expected to be disposed of off-site to be re-used where possible (most likely), or to landfill. Any hazardous waste arisings, including asbestos and controlled invasive species, will be handled and disposed of in an appropriate manner.

9.4.2 The effects of waste from excavation and construction on the environment are judged to be of minor adverse significance, with the implementation of the SWMP. This is because the expected type of waste (earth) is largely inert and is expected to be disposed of off-site to be re-used where possible (most likely), or to landfill. Any hazardous waste, including waste oils and epoxy packaging, will be handled and disposed of in an appropriate manner.

9.4.3 Traffic relating to the disposal of waste is considered in the Access and Transport chapter of the PEIR.
10.0 WATER RESOURCES & FLOOD RISK

10.1 Introduction

10.1.1 The water resources and flood risk assessment considers the potential effects of the Proposed Development on the environment with respect to surface water quality, surface water resources, flood risk (surface water and groundwater flooding), hydrology and drainage. The main surface watercourses in the site are the regionally important River Don and a tributary, Usworth Burn.

10.1.2 The study area for this assessment has been chosen to allow consideration of potential changes at the Proposed Development (e.g. drainage changes or water quality changes) that could impact receptors both within the Proposed Development and downstream. The study area includes the land within the DCO Application Boundary itself and extends 1 km downstream along the watercourses leaving the study area.

10.1.3 The assessment considers the potential effects during the construction and operational phases of the Proposed Development. It takes into account a range of information about the existing water environment. This includes land use and levels, existing watercourses and drainage, flood risk, surface water quality and identifying parties who currently abstract from or discharge to watercourses. It also considers the presence of international, national or locally protected ecological sites that could be reliant on the current surface water environment.

10.1.4 The following primary receptors were identified:

- Surface water in the Usworth Burn and River Don;
- Existing local surface drains receiving site discharge;
- Surrounding lands in the study area at potential increased risk of flooding; and
- Land within the DCO Application Boundary in terms of changes to flood risk and drainage.

10.2 Effects during construction

10.2.1 A number of activities during construction of the Proposed Development may have effects on the identified receptors. These include earthworks, building works, re-aligning watercourses, using construction plant, and potential discharges into watercourses.

10.2.2 These activities have the potential to affect the selected receptors by changing surface water quality, changing the shape of a watercourse, changing surface water flows, or changing flood risk.

10.2.3 During construction, measures in the CEMP will reduce the risk of those adverse effects, for example by avoiding fuel leaks from construction equipment. Pollution prevention measures will be put in place to prevent contamination of watercourses. As a result, no significant impacts are predicted.

10.2.4 Prior to construction, groundwater monitoring will be included in the embedded mitigation to inform the design with respect to the potential for groundwater flooding.

10.3 Effects during operation

10.3.1 The Proposed Development has been designed in order to reduce the potential for flooding, both within the Proposed Development and downstream. For example, floor levels will be high enough to limit the flood risk to buildings, drainage across the site will be managed in a series of carefully designed ponds and water features, and an area along the River Don will be left undeveloped, allowing it to serve as flood plain storage. The effects of the operation of the Proposed Development on flood risk are assessed to be not significant.
10.3.2 The effects of the operation of the Proposed Development on surface water quality are assessed as not significant, and will not hinder the Environment Agency's aim of improving the River Don’s water quality. Sustainable drainage systems (SuDS) will be used to reduce the potential for polluting substances to enter the surface water environment and discharges to surface water will be controlled and monitored.

10.3.3 The surface water drainage system in the Proposed Development is predicted to be an improvement on the existing system. The change in land use is predicted to result in a reduction in the use of fertilisers, pesticides and herbicides.

10.4 Conclusions

10.4.1 During construction and operation of the Proposed Development the impacts on surface water and drainage are assessed to be not significant.

10.4.2 There is potential for the Proposed Development to result in improvements to surface water drainage and quality.

11.0 GEOLOGY, GROUND CONDITIONS & GROUNDWATER

11.1 Introduction

11.1.1 This assessment considers the potential effects of the Proposed Development on soils, geology, land quality and the groundwater environment. In addition to this, the potential impacts of the existing land quality/conditions on human health from the Proposed Development and associated construction plant are also considered.

11.1.2 Our assessment used two study areas; one for geology and ground conditions and another for groundwater. The geology and ground conditions study area focuses on the land within the DCO Application Boundary and land up to 500 m from that boundary. The groundwater study area focuses on the DCO Application Boundary and extends to 1 km from it.

11.1.3 There are no designated/protected geological features or groundwater abstractions for drinking water within the study areas.

11.2 Effects during construction

11.2.1 During construction of the Proposed Development, potential impacts include:

- Changes in groundwater flows, flow direction or levels;
- Changes to land and/or groundwater quality;
- Sterilisation of coal resources;
- Impact on the health of construction workers if they are exposed to existing or new sources of contaminated land or water;
- Impacts on workers, plant and features under construction due to mine collapse; and
- Impacts on workers due to detonation of unexploded ordnance.

11.2.2 During construction, mitigation measures will be followed as set out in the CEMP. Those measures may include:

- Site investigations to identify ground conditions that would influence building design;
Good practice construction techniques and pollution management measures to prevent contamination during construction;

- Groundwater quality monitoring;
- Soil sampling and human health risk assessment in the Hub, e.g. if food might be grown at the childcare facility;
- Appropriate design, assessment and monitoring of ground improvement works; and
- Appropriate selection of piling type and installation method.

11.2.3 With the CEMP in place, our assessment concludes that many of the effects during construction will be neutral or minor. Significant effects, however, are predicted to land and the water environment as a result of potential pre-construction ground improvement works and piling.

11.3 Effects during operation

11.3.1 The drainage systems for the Proposed Development will be complete before it operates. Impacts include:

- Changes in land and/or groundwater quality due to discharges from the operational development (e.g. from car parking areas, unintentional spills of fuel/oil/lubricants from operational vehicles and machinery, and/or storage and use of potentially hazardous substances);
- Abstraction of groundwater for supply;
- Impact on the health of operational workers if they are exposed to contaminated land; and
- Impacts on operational workers and the completed development due to mine collapse.

11.3.2 Significant effects include those resulting from the potential impacts of abstraction (i.e. removing water from the ground) for water supply and effects to human health because of potential contact with contaminated land or water. Potential measures to reduce such impacts include:

- Building design;
- Preventing discharges to ground or groundwater from the car park areas;
- Maintenance checks to reduce the potential for leaks and spills from vehicles and machinery;
- Controlling activities (e.g. through licensing and permits), including storage and use of hazardous substances, any abstractions, treatment processes and discharges; and
- Plans to deal with emergencies.

11.3.3 Our assessment concluded that, taking account of those measures, the predicted adverse effects are not significant.

11.4 Conclusions

11.4.1 Our assessment concluded that the predicted adverse effects to geology, ground conditions and groundwater are not significant.
12.0 ECOLOGY & BIODIVERSITY

12.1 Introduction

12.1.1 This assessment considers the potential effects of the Proposed Development on ecology and biodiversity.

12.1.2 The study area for ecology and biodiversity includes all habitats, including the built form, within the IAMP TWO Scoping Boundary, which is shown on Figure NTS 9.

12.1.3 Ecological surveys within the study area have taken place since 2014 and information is still being provided. Good practice methods have been used throughout this work.

12.1.4 There are no statutorily designated nature conservation sites within the study area, although there are a number that are known to exist within 10 km of the study area (including Special Areas of Conservation (SAC), Special Protection Areas (SPA’s), Ramsar sites and Sites of Specific Scientific Interest (SSSI). Three International/European designated sites occur within 10 km of the study area. These are:

- Durham Coast SAC – located 6.5 km northeast of the study area, designated for the only example of vegetated sea cliffs on magnesian limestone exposures in the UK; and
- Northumbria Coast Ramsar and SPA (two sites) – located 6.4 km east of the study area, designated as both a Ramsar site and a SPA for its populations of three bird species of European importance.

12.1.5 There are no statutory protected sites (e.g. SSSI) within the study area. However, there are 21 SSSIs within 10 km of the study area. Of these, there are five SSSI’s situated within 3 km of the Study Area, comprising: Claxheugh Rock & Ford Limestone Quarry; Hylton Castle Cutting; West Farm Meadow, Boldon; South Hylton Pasture; and Wear River Bank.

12.1.6 Twenty Local Nature Reserves (LNRs) occur within 10 km of the study area, the closest two of which (within 2 km) are Barmston Pond and Hylton Dene.

12.1.7 There are two non-statutory Local Wildlife Sites (LWS), Elloscope Farm/Hylton Bridge and The River Don, East House, located within the study area.

12.1.8 Species such as breeding and over wintering birds, otter, water vole, badger, brown hare and bats have been recorded within the study area. Himalayan balsam and Japanese knotweed, which are classed as invasive species, have also been recorded within the study area.

12.2 Effects during construction

12.2.1 The Proposed Development will involve the construction of new buildings, roads, two bridges, car parking, drainage and other infrastructure. This will take place on an area around 88 hectares of land, which is currently mostly open farmland.

12.2.2 The most significant effects of the Proposed Development without mitigation will be the loss of habitat and impacts on breeding birds and bats.

12.2.3 These impacts will be mitigated by the improvement of existing habitat, and the creation of new habitat, in the Ecological and Landscape Mitigation Area - the IAMP TWO ELMA, shown on Figure NTS 10. Works to create the ELMA will take place concurrently with the early works to build infrastructure across the Proposed Development, so that the relevant species have available replacement habitats.

12.2.4 Within the IAMP TWO ELMA and on-site the following habitats will be created and managed:

- Skylark plots;
- New hedgerow;
- Conservation grazing pasture;
- Marshy grassland habitat, for wading birds, riparian mammals and invertebrates;
- Arable field margins and tussocky grassland, for barn owl foraging; and
- A buffer alongside the River Don.

12.2.5 A Habitat Management Plan (HMP) and Biodiversity Construction Environmental Management Plan (BCEMP) will also be prepared. The HMP and BCEMP will guide the management of habitats within the IAMP TWO ELMA, protecting habitats during construction and maximising biodiversity benefits for the habitats and species that will be affected by the Proposed Development.

12.2.6 Mitigation designed into the Proposed Development will address construction impacts to riparian mammals (e.g. otter) associated with changes to water quality. These include:
- Development of a drainage system that will mimic existing conditions as closely as possible;
- Water flow to the drainage network (e.g. the River Don) will mimic the existing conditions using sustainable drainage (e.g. drains, swales, filter drains and attenuation ponds); and
- The provision of pollution hazard reduction measures by sustainable drainage.

12.2.7 Our assessment concludes that, taking into account the IAMP TWO ELMA and other mitigation, the predicted adverse effects of the Proposed Development on ecology and biodiversity during construction are not significant.

12.3 Effects during operation

12.3.1 The majority of adverse effects on ecology and biodiversity are predicted to occur during construction of the Proposed Development. The mitigation for those effects is explained above.

12.3.2 No effects to habitat are predicted during operation, and effects upon specific species (e.g. brown hare, badger) are predicted to be negligible or minor, with mitigation for these operation phase effects captured by delivery of the IAMP TWO ELMA, as well as the HMP and BCEMP.

12.3.3 Our assessment is therefore that the effect of the operation of the Proposed Development on ecology and biodiversity is not significant.

12.4 Conclusions

12.4.1 With the implementation of the BCEMP and HMP, alongside the delivery of the IAMP TWO ELMA, our assessment is that any negative impacts experienced in the short term will become neutral or positive in the medium to long term, and are therefore not significant.
13.0 ACCESS & TRANSPORT

13.1 Introduction

13.1.1 The assessment of access and transport considers the potential effects of the Proposed Development on access and transport in the surrounding area.

13.1.2 We have assessed a study area based on the most likely routes for traffic during the construction and operation of the Proposed Development, shown on Figure NTS 11. Our assessment uses computer models to replicate how traffic moves around the study area, both now and in the future, using 2018 survey data.

13.1.3 The assessment considers the anticipated number of vehicle movements during construction and operation of the Proposed Development, the movement of traffic on the local road network and potential impacts on road users, including pedestrians and cyclists.

13.1.4 Our assessment also considers information about past collisions, accidents and personal injuries on the relevant roads. We have sought to identify patterns or clusters of collisions which could be made worse by the increases in traffic generated by the Proposed Development. The analysis demonstrates that the majority of the collisions were caused as a result of driver error and lack of awareness of other road users, rather than highway design issues.

13.1.5 The assessment of the construction traffic takes account of the overlap with the construction periods of the highway improvement works on the A19 at Testo’s and Downhill Lane Junction. Our assessment of operational traffic for the Proposed Development is based on assumptions relating to the future capacity of the network and operations at Nissan.

13.2 Effects during construction

13.2.1 Construction traffic will consist mostly of heavy goods vehicles (HGVs) and cars driven by construction workers. Construction of the Proposed Development will take place over a period of up to 12 years.

13.2.2 A Construction Traffic Management Plan will be produced to mitigate the impact of the construction traffic. This will include the timing of deliveries and construction working hours. The plan will also detail the routes for HGVs making construction deliveries.

13.2.3 The management of construction traffic will be co-ordinated with that serving other developments: IAMP ONE and the two junction improvements on the A19, at Testo’s roundabout and Downhill Lane junction.

13.2.4 The assessment of the construction period considers: severance; driver stress and delay; pedestrian and cyclist amenity and delay; fear and intimidation; and highway safety. The greatest level of impact from construction activity would be along the A1290 and Washington Road due to their proximity to the Proposed Development and their existing levels of traffic. The assessment concludes that the effects of construction traffic on all road links within the study area are considered to result in a minor adverse impact.

13.2.5 During some periods of construction, temporary road closures of the A19 and Washington Road will be required. The A19 will be closed temporarily to enable the new bridge over it to be lifted into place. Those closures will be temporary and are planned to take place overnight at weekends, so are not expected to have any significant impact.
13.3 Effects during operation

13.3.1 The Proposed Development will improve the capacity and safety of the local road network. Improvements include dualling the A1290, new roads within the Proposed Development, a new bridge over the A19 to Washington Road, a new road to the Nissan factory, a new bridge over the River Don and new signal controlled junctions and crossing facilities. The Proposed Development will benefit from improvements to junctions on the A19 at Testo’s roundabout and Downhill Lane Junction.

13.3.2 During operation, traffic related to the Proposed Development will mostly include vehicles for staff, deliveries, servicing and public transport.

13.3.3 Measures will be taken to reduce the impact of traffic from the operation of the Proposed Development. These will include managing vehicles carrying freight to and from the Proposed Development; providing appropriate car parking for staff and visitors; encouraging car users to walk, cycle or use public transport; and improving facilities within the Proposed Development for public transport.

13.3.4 Our assessment shows that in the worst-case locations, the operational traffic will have a moderate adverse impact on severance, pedestrian and cyclist amenity, pedestrian and cyclist delay and fear and intimidation. A minor adverse impact is reported for driver stress and delay and highway safety.

13.4 Conclusions

13.4.1 During construction of the Proposed Development there will be a minor adverse impact on access and transport, however a Construction Traffic Management Plan will be produced to mitigate impacts during this period.

13.4.2 There is potential for the Proposed Development to result in moderate adverse impacts on some road links during the operational period, however a number of mitigation measures will be implemented to alleviate the impact of the operational traffic associated with the Proposed Development.

14.0 SOCIO-ECONOMICS

14.1 Introduction

14.1.1 The socio-economic effects of the Proposed Development have been assessed across a local area which includes SCC and STC, where a large proportion of effects are expected to be felt.

14.1.2 A wider area of impact was also considered, being the area from which the majority of the workforce will be drawn. That includes Sunderland, South Tyneside, Gateshead, County Durham and Newcastle upon Tyne (Figure NTS 12). The socio-economic effects of the Proposed Development, as a nationally important and internationally respected location for advanced manufacturing, are likely to extend beyond the defined impact areas and be felt more widely.

14.1.3 Socio-economic effects have been assessed in relation to the local and wider impact areas with the exception of fiscal effects which have been assessed in relation to just the local impact area, as SCC and STC will receive business rates from the Proposed Development.

14.2 Effects during construction

14.2.1 During construction of the Proposed Development, a beneficial effect on the local economy is expected through the creation of an estimated 225 FTE (Full Time Equivalent) construction jobs and a further 340 FTE supported jobs in the construction industry supply chain.
14.2.2 While the construction of the Proposed Development will involve the loss of existing agricultural land, the scale of agricultural employment losses would be small and indeed very minor in comparison with the employment opportunities created during the construction phase.

14.2.3 No significant adverse effects are predicted on amenity or the availability of housing.

14.3 **Effects during operation**

14.3.1 To predict socio-economic effects during operation of the Proposed Development, our assessment considered both the upper and lower bounds of the range of floorspace that the Proposed Development could deliver. Our assessment concludes that under both scenarios the Proposed Development will have significant beneficial effects on the area.

14.3.2 Occupiers of the Proposed Development will create around 4,500 jobs. The new buildings mean that there will be an increase in business rates payable to STC and SCC.

14.3.3 Our assessment considered the wider economic impact of the Proposed Development across the North East region. The Proposed Development will support growth in the automotive and advanced manufacturing sectors in the North East, enhancing the area’s existing international recognition as an automotive manufacturing location due to Nissan’s presence. Supporting existing employment and the supply chain employment across the regional economy, it is predicted that the Proposed Development will have a wider economic impact that is significant and beneficial.

14.3.4 Our assessment found that effects on amenity would be beneficial, owing to owing to changes to Public Rights of Way and non-motorised user (NMU) routes that will improve the accessibility of the site to the public.

14.3.5 Our assessment considered whether the Proposed Development would have an adverse impact on the availability of housing locally. Our assessment concludes that the Proposed Development could have such an effect, but it is likely to be negligible as STC and SCC should plan to meet housing need in their area. Even if housing delivery across the wider area fails to meet the housing needs associated with the Proposed Development, then our assessment is that the effects on housing would not be significant.

14.4 **Conclusions**

14.4.1 The Proposed Development will have significant beneficial socio-economic effects, in both the local area and wider region. It will have beneficial effects on amenity.

14.4.2 The only potential adverse effect assessed relates to housing. This is predicted to be negligible.

15.0 **HUMAN HEALTH**

15.1 **Introduction**

15.1.1 The potential adverse effects of the Proposed Development on human health are considered in several of the chapters discussed above, including Air Quality, Noise & Vibration, Access & Transport, Water Resources & Flood Risk, Socio Economics and Geology, Ground Conditions & Groundwater.

15.1.2 We are also carrying out a separate Health Impact Assessment (HIA) to assess the potential effects of the Proposed Development upon the health of the local population. This will consider potential effects on physical and mental health and well-being. The HIA will be finalised later this year and submitted with the DCO application.
15.1.3 The HIA will consider the impact of the Proposed Development upon the health of 7 receptor groups:

- General population of the area;
- Children and young people (aged 0-17);
- Long-term unemployed;
- Those affected by respiratory disease;
- Those affected by heart attacks, obesity and circulatory diseases;
- Residents of dwellings in close proximity to the site; and
- The traveller community living close to the site.

15.1.4 The health impacts of the Proposed Development will differ between the construction and operation phases.

15.2 Effects during construction

15.2.1 Construction activities will generate new employment which has the potential for positive health outcomes through improved access to employment and social interaction.

15.2.2 There are not anticipated to be any significant adverse effects on health during the construction phase. Construction activities will generate some noise and air quality effects, but the proposed mitigation measures will minimise the impacts upon local people. Other short term adverse effects include the closure of access routes, the change in character to the local area, and the potential reduced access to green corridors. These are predicted to be negligible to moderate.

15.3 Effects during operation

15.3.1 The operation of the Proposed Development is predicted to have a long-term, positive impacts on the health and well-being of local people. These positive outcomes are linked to the generation of employment and training opportunities, the creation of social networks, improved access routes that will encourage physical activity and enhanced green infrastructure corridors. The generation of employment and training opportunities is expected to have a positive change due to the scale of the Proposed Development.

15.3.2 The Proposed Development includes several routes for overhead and underground electricity cables. Routes run broadly north-south (including along the boundaries of IAMP ONE) and also east-west along the northern part of the Proposed Development. The layout of the Proposed Development includes appropriate stand-off distances to cables from buildings, none of which will be used as dwellings.

15.4 Conclusion

15.4.1 There are not anticipated to be any significant adverse effects on health during the construction phase. The operation of the Proposed Development is predicted to have a long-term, positive impact on the health and well-being of local people.

15.4.2 A number of mitigation measures have been identified to reduce any potential adverse impacts and provide potential opportunities for improving the community's health.
16.0 CLIMATE CHANGE RESILIENCE

16.1 Introduction

16.1.1 We have assessed climate change resilience and adaptation, which considers how the Proposed Development may interact with a changing climate and whether this interaction could result in significant environmental effects. The assessment looks at both the impact of climate change on the Proposed Development (i.e. how resilient the design of the Proposed Development is to predicted changes in climate, such as increased rainfall) and the impact of climate change on sensitive receptors that may be impacted by the Proposed Development (i.e. whether changes to climate will make the impact upon sensitive receptors detailed in each technical assessment (as summarised in this NTS) greater or lesser).

16.1.2 The climate change resilience assessment predicted a range of potential effects on the Proposed Development and on sensitive receptors as a result of climate change, specifically relating to air quality; noise; landscape and visual; water resources and flood risk; geology, ground conditions and groundwater; and ecology and biodiversity. These are largely predicted to be positive effects, with some adverse effects possible. Generally, the effects predicted as a result of changes in climate are applicable during both construction and operation. The assessment concluded that climate change would not change any of the outcomes of the EIA.

16.2 Effects during construction

16.2.1 Potential effects during construction, which is scheduled to be complete by 2032 (i.e. relatively soon in terms of climate change projections, with the least change relative to the present day), are largely positive, and include effects such as increased rainfall helping to suppress dust.

16.3 Effects during operation

16.3.1 During operation, predicted changes in climate have the potential to result in a range of effects. As during construction, predicted changes may result in positive effects, such as increased wind speeds helping to keep the air cleaner.

16.3.2 Potential adverse effects include increased rainfall and changes to seasonality (e.g. warmer summers and wetter winters) resulting in more stress to plants.

16.3.3 The potential effects of climate change on the Proposed Development with respect to flooding have been incorporated into the design and drainage strategy. It is also proposed that drought and water tolerant plant species are included in the landscape planting. Any dead or defective plants will be replaced annually as part of ongoing maintenance.

16.4 Conclusions

16.4.1 Our assessments have not identified any impacts as a result of climate change, following the application of the proposed mitigation measures, that would result in any changes to the outcomes of the EIA.
17.0 CUMULATIVE EFFECTS

17.1 Introduction

17.1.1 The cumulative effects assessment (CEA) considers the combined effects of the Proposed Development with ‘other development’ in the local area.

17.1.2 The selection of development schemes included in the assessment was provided by the planning departments of the three Local Authorities closest to the Proposed Development, namely SCC, STC and Gateshead. Emerging sites from the three councils’ local plans relevant to the study area were also considered.

17.1.3 In addition, given their specific traffic capacity considerations, the cumulative effects of the proposed HE improvements to the A19 Downhill Lane Junction and A1 Birtley to Coal House, and the proposed renewable energy centre at Hillthorn Farm, are included for the Proposed Development.

17.1.4 A combined list of 359 proposed and emerging developments, including two HE DCO schemes, were considered.

17.2 Effects during construction

17.2.1 Potential effects during construction include changes in dust soiling, noise and vibration leading to significant effects during a worst-case scenario. However, mitigation measures will be secured through the DCO process to reduce these effects. The urbanising effect of the Proposed Development with ‘other developments’ will be initially significant adverse reducing over time as landscaping matures.

17.2.2 There will be a severance of transportation routes which may lead to stress and delay; these may be minor to moderate adverse with the potential to be reduced over time.

17.2.3 There will be a significant beneficial effect on employment and economic output with the creation of construction (and supply chain) jobs.

17.3 Effects during operation

17.3.1 Potential effects during operation include changes in noise and vibration, including road traffic through the Proposed Development. This may lead to significant effects during a worst-case scenario, but mitigation measures will be secured through the DCO process.

17.3.2 However, mitigation measures will be secured through the DCO process to reduce these effects. The urbanising effect of the Proposed Development with ‘other developments’ will be initially significant adverse reducing over time as landscaping matures. Any degradation of ecological features will be mitigated through the IAMP TWO ELMA.

17.3.3 There will be a severance of transportation routes which may lead to stress and delay; these may be minor to moderate adverse with the potential to be reduced over time.

17.3.4 There will be a significant beneficial effect on employment and economic output with the creation of new office, industrial and ancillary floorspace to create new employment opportunities and additional permanent economic output. This is likely to lead to approved amenity for NMU’s and increase housing demand in the local area.
17.4 Conclusions

17.4.1 The CEA has concluded that for the majority of the ‘other developments’ there would be no significant cumulative effect. For the following topics: Air Quality, Noise & Vibration, Cultural Heritage, Waste, Water Resources & Flood Risk, Geology, Ground Condition & Groundwater, Ecology & Biodiversity, and Access & Transport, there are predicted to be no significant cumulative effects.

17.4.2 For Landscape & Visual, the combined effects of the Proposed Development and the A19 Downhill Lane Junction Improvements DCO scheme is predicted to be significant due to the collective urbanising effect on the A19 corridor.

17.4.3 For Socio-Economics, the ‘other developments’ would have no significant adverse effect and would be beneficial overall.

18.0 SUMMARY & CONCLUSIONS

18.1.1 The initial findings of our EIA for the Proposed Development are detailed in the PEIR, based on the information currently available.

18.1.2 The range of environmental topics to be assessed was agreed through the scoping process. After applying mitigation, our assessments identified the following remaining significant effects:

- Landscape and Visual - our assessment predicts that there will be some significant adverse landscape and visual impacts of the Proposed Development during construction and operation. Although they will remain significant, these impacts will be reduced over time as planting matures.

18.1.3 Our assessments found no other significant environmental effects.

18.1.4 Measures have been identified to avoid or reduce environmental impacts during construction and operation of the Proposed Development. Some of these form part of the design of the Proposed Development itself. Others, such as management plans, will be secured by provisions in the draft DCO known as "requirements", which are like planning conditions.

18.1.5 The EIA for the Proposed Development is ongoing. It will be finalised after consultation on the PEIR and reported in the ES which will accompany the DCO application.
19.0 **ABBREVIATIONS & DEFINITIONS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tbody>
<tr>
<td>AAP</td>
<td>Area Action Plan</td>
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<tr>
<td>BCEMP</td>
<td>Biodiversity Construction Environmental Management Plan</td>
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<td>CEA</td>
<td>Cumulative Effects Assessment</td>
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<tr>
<td>CEMP</td>
<td>Construction Environmental Management Plan</td>
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<tr>
<td>DCO</td>
<td>Development Consent Order</td>
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<td>DS</td>
<td>Drainage Strategy</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>ELMA</td>
<td>Ecological and Landscape Mitigation Area</td>
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<td>ES</td>
<td>Environmental Statement</td>
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<td>FRA</td>
<td>Flood Risk Assessment</td>
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<td>Hectare</td>
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<td>Highways England</td>
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<tr>
<td>HGV</td>
<td>Heavy goods vehicle</td>
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<tr>
<td>HIA</td>
<td>Health Impact Assessment</td>
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<tr>
<td>HMP</td>
<td>Habitat Management Plan</td>
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<tr>
<td>IAMP</td>
<td>International Advanced Manufacturing Park</td>
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<td>Kilometre</td>
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<td>LWS</td>
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<td>m</td>
<td>Metre</td>
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<tr>
<td>NELSAM</td>
<td>North East Land, Sea and Air Museums</td>
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<td>NMU</td>
<td>non-motorised user</td>
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<tr>
<td>NSR</td>
<td>Noise and vibration sensitive receptor</td>
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<td>Preliminary Environmental Information Report</td>
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<td>The Planning Inspectorate</td>
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<td>Sunderland City Council</td>
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<tr>
<td>SoS</td>
<td>Secretary of State</td>
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<tr>
<td>SPA</td>
<td>Special Protection Areas</td>
</tr>
<tr>
<td>sq ft</td>
<td>square foot</td>
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sq m  square metre
SSSI  Sites of Specific Scientific Interest
STC  South Tyneside Council
SWMP  Site Waste Management Plan
SuDS  Sustainable Drainage System
ZTV  Zone of Theoretical Visibility
Figures

Figure NTS 1 – IAMP TWO PROPOSED DCO APPLICATION BOUNDARY
Figure NTS 2 – PARAMETERS PLAN
Figure NTS 3 – IAMP TWO SITE LOCATION AND DESCRIPTION
Figure NTS 4 – HIGHWAYS ENGLAND A19 DCO PROJECTS AND IAMP TWO
Figure NTS 5 – LOCATION OF PROJECT DIFFUSION TUBES
Figure NTS 6 – STUDY AREA, NOISE SENSITIVE RECEPTORS AND NOISE MONITORING POSITIONS
Figure NTS 7 – ZONE OF THEORETICAL VISIBILITY AND VIEWPOINT LOCATIONS
Figure NTS 8 – CULTURAL HERITAGE DESIGNATED ASSETS WITHIN STUDY AREA
Figure NTS 9 – PHASE 1 HABITAT
Figure NTS 10 – PROPOSED MITIGATION HABITATS
Figure NTS 11 – EXTENT OF STUDY AREA INCLUDING HIGHWAY LINK LABELS
Figure NTS 12 – LOCAL AND WIDER AREA OF IMPACT WITHIN A REGIONAL CONTEXT
Figure NTS1 - IAMP TWO Proposed DCQ Application Boundary

1. Do not scale from this drawing

Key
- Land to be acquired or used permanently for construction, operation and/or maintenance works.
- Land to be used temporarily for material storage, construction access, storage of plant and temporary road closures.
IAMP TWO DCO Application Boundary
Land to be used temporarily for material storage, construction access and storage of plant.

IAMP ONE Phase 1 and 2 Boundary

IAMP TWO Development Parcels

IAMP TWO Development Constraints Zones
Highway and Drainage Extents

IAMP TWO Ecological Landscape Mitigation Area

IAMP TWO Access for Works to Usworth Burn

IAMP TWO Access for Works to IAMP ONE Foul Water Pumping Station

Electricity Primary Sub-Station

Existing Watercourses

Existing Section of Footpath to be Closed

Redirected Section of Footpath

Buffer Zone

Figure NTS2 - Parameters Plan
1. Do not scale from this drawing.
2. This drawing is for planning purposes only.
3. This drawing is based upon Ordnance Survey Mastermap data. Highways England copyright 2019. All rights reserved. © Crown Copyright and Database rights 2019 Ordnance Survey 10070949.

**KEY**
- IAMP TWO DCO Application Boundary
- Downhill Lane Junction DCO Application Boundary
- Testo’s Junction DCO Application Boundary

**Figure NTS4 - Highways England A19 DCO Projects and IAMP TWO**
Figure NTS6 - Study Area, Noise Sensitive Receptors and Noise Monitoring Positions
Zone of Theoretical Visibility

Zone of Theoretical Visibility is generated using 'OS Terrain 5' (digital terrain data at 5 m resolution), based on the following heights:

- Proposed Development Areas: AOD +30m (Worst case)
- Viewer eye-level: AOD +1.7m

The heights of existing vegetation/structures are estimated using combination of online aerial imagery and field observations.

Visual barriers less than 4 m high have not been modeled.

The ZTV identifies those areas from which the potential areas would be theoretically visible.

Due to the frequency of buildings, hedgerows and low-level vegetation the actual visibility is likely to be less extensive than the drawing indicates.
LEGEND
- Listed Building
- Conservation Area
- Scheduled Monument
- IAMP TWO Scoping Boundary
- 500 m Buffer
- 1 km Buffer
- 4 km Buffer (Indicative Extent of ZTV)

NOTE(S)
1. INSET MAP PRESENTS SMALLER SCALE VIEW OF LISTED BUILDINGS LB-06 TO LB-10.

REFERENCE(S)
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PROJECT
IAMP TWO

CULTURAL HERITAGE - DESIGNATED ASSETS WITHIN STUDY AREA

Figure NTS8 - Cultural Heritage Designated Assets within Study Area
Figure NTS9 - Phase 1 Habitat
Figure NTS10 - Proposed Mitigation Habitats