IAMP LLP

International Advanced Manufacturing Park

Environmental Impact Assessment Scoping Report

ARUP-REP-EIA-SCOP

Issue | 15 August 2016

Job number 242745-30

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Document Verification

ARUP

Job title		International Advanced Manufacturing Park		**Job number** 242745-30
Document title		Environmental Impact Assessment Scoping Report		**File reference**
Document ref		ARUP-REP-EIA-SCOP		
Revision	**Date**	**Filename**		
Draft 1	15 Jun 2016	**Description**	First draft – template for Issue to Pinsent Masons	
			Prepared by	Checked by	Approved by
		Name	Jenna Beckett	Fraser Maxwell	James Lough
		Signature	[redacted]	[redacted]	[redacted]
Draft 2	29 Jun 2016	**Filename**		
		Description	Second draft –Issue to Pinsent Masons	
			Prepared by	Checked by	Approved by
		Name	Jenna Beckett and Topic Leads	Fraser Maxwell / Matt Verlander	James Lough
		Signature	[redacted]	[redacted]	[redacted]
Draft 3	14 Jul 2016	**Filename**	73945821_1_Draft3_review by PM.docx	
		Description	Review by Pinsent Masons	
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Draft 4	25 Jul 2016	**Filename**	25-07-16-IAMP-ScopingReport-MASTER-WORKINGDRAFT.docx	
		Description	Edits by chapter specialists following review by PM	
			Prepared by	Checked by	Approved by
		Name	Jenna Beckett and Topic Leads	Fraser Maxwell	James Lough
		Signature	[redacted]	[redacted]	[redacted]
			Issue Document Verification with Document		✓

Document Verification

Job title		International Advanced Manufacturing Park			**Job number** 242745-30
Document title		Environmental Impact Assessment Scoping Report			**File reference**
Document ref		ARUP-REP-EIA-SCOP			
Revision	**Date**	**Filename**	Arup-IAMP-EIAScopingReport-client issue-020816.docx		
Issue	2 Aug 2016	**Description**	For issue to STC and SCC for client comment		
			Prepared by	Checked by	Approved by
		Name	Fraser Maxwell	Peter Hulson	James Lough
		Signature	[redacted]	[redacted]	[redacted]
Final Issue	15 August 2016	**Filename**			
		Description	Reflecting Pinsent Masons, STC and SCC review comments		
			Prepared by	Checked by	Approved by
		Name	Jenna Beckett and topic leads	Fraser Maxwell	James Lough
		Signature	[redacted]	[redacted]	[redacted]
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

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AADT – Annual Average Daily Traffic

AAP – Area Action Plan

ALC – Agricultural Land Classification

AONB – Area of Outstanding Natural Beauty

AQMA – Air Quality Management Area

BNL – Basic Noise Level

CCG – Clinical Commissioning Group

CEMP - Construction Environmental Management Plan

CERC – Cambridge Environmental Research Consultants

CIfA – Chartered Institute for Archaeologists

Councils – South Tyneside Council and Sunderland City Council

CRTN – Calculation of Road Traffic Noise

DCO – Development Consent Order

DfT – Department for Transport

DMRB – Design Manual for Roads and Bridges

DS – Drainage Strategy

DWT – Durham Wildlife Trust

EA – Environment Agency

EIA – Environmental Impact Assessment

EIA Regulations – Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations) (as amended)

EPUK – Environmental Protection UK

ES – Environmental Statement

EU – European Union

FRA – Flood Risk Assessment

FWMA – Flood and Water Management Act

GIS – Geographical Information System

GLVIA – Guidelines for Landscape and Visual Impact Assessment

HDV – Heavy Duty Vehicle

HE – Highways England

HER – Historic Environment Record

HGV – Heavy Goods Vehicle

HIA – Health Impact Assessment

HRA – Habitat Regulations Assessment

IAMP – International Advanced Manufacturing Park

IAMP LLP – special purpose vehicle incorporated by SCC and STC to be DCO applicant and promoter of the IAMP Project

IAQM – Institute of Air Quality Management

IEA – Institute of Environmental Assessment (now known as IEMA)

IEMA – Institute of Environmental Management and Assessment

IMD – Index of Multiple Deprivation

LAF – Local Access Forum

LCA – Landscape Character Area

LCT – Landscape Character Type

LDV – Light Duty Vehicle

LNR – Local Nature Reserve

LSOA – Lower Super Output Area

LVIA – Landscape and Visual Impact Assessment

NE – Natural England

NELNP – North East Local Nature Partnership

NHS – National Health Service

NMUK – Nissan Motor Manufacturing Plant UK

NPPF – National Planning Policy Framework

NPSE – Noise Policy Statement for England

NRMM – Non-Road Mobile Machinery

NSIP – Nationally Significant Infrastructure Project

NSR – Noise Sensitive Receptor

NTS – Non-Technical Summary

OS – Ordnance Survey

PA 2008 – Planning Act 2008 (as amended)

PINS – Planning Inspectorate

PM – Particulate Matter

PPG – Pollution Prevention Guidelines

PROW – Public Right Of Way

RBMP – River Basin Management Plan

RSPB – Royal Society for the Protection of Birds

SAC – Special Areas of Conservation

SCC – Sunderland City Council

SEP – Strategic Economic Plan

SofS – Secretary of State

SPA – Special Protection Area

SRN – Strategic Road Network

SSSI – Site of Special Scientific Interest

STC – South Tyneside Council

SuDS – Sustainable Drainage System

WFD – Water Framework Directive

WHO – World Health Organisation

WRAP – Waste and Resources Action Programme

ZTV – Zone of Theoretical Visibility

1 Introduction

This Scoping Report has been prepared by Ove Arup and Partners Ltd. (Arup) on behalf of IAMP LLP as part of the Environmental Impact Assessment (EIA) process for the proposed International Advanced Manufacturing Park (IAMP).

This Scoping Report sets out the proposed scope of the Environmental Statement (ES) to be submitted with the application for a Development Consent Order (DCO) for the IAMP to the Secretary of State (SofS) for Examination. A Scoping Opinion is sought from the SofS, in accordance with the requirements of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) ("EIA Regulations").

1.1 Overview of the Proposed Development

To accommodate the projected growth in the automotive and advanced manufacturing sectors, the aim is that the IAMP will provide up to 260,000m^2 of floor space along with ecological and landscaping mitigation space on a 100ha site. This is estimated to create over 5,200 new jobs[1] in the medium term (see Appendix C). A further 50ha will remain as safeguarded land for development in the future as demand for floor space and services increases. A full description of the proposed scheme is provided in Chapter 2 of this report.

The IAMP development will be located on land to the north of the existing Nissan car manufacturing plant, to the west of the A19 and to the south of the A184. This location benefits from its close proximity to Nissan and excellent transport links with opportunities for integrated connectivity provided by the surrounding Strategic Road Network (SRN), rail and port infrastructure. A full description of the site and surrounding area is provided in Chapter 3 of this report.

1.2 The Project and Nationally Significant Infrastructure Projects

On 15th September 2015, pursuant to Section 35 of the Planning Act 2008 (as amended) (PA 2008), the SofS for Communities and Local Government confirmed that the IAMP project qualifies as a nationally significant business or commercial project for which Development Consent is required under the PA 2008. IAMP LLP must therefore apply to the SofS for a DCO. The EIA will be undertaken to help inform the appointed persons as the Examining Authority and subsequent SofS's decision on this application.

[1] Sunderland City Council, South Tyneside Council and North East Local Enterprise Partnership (2014). *Sunderland City Deal: In partnership with South Tyneside.*

1.3 Purpose of the Scoping Report

The primary purpose of this Scoping Report is to provide sufficient information to allow the SofS to provide an opinion on the scope of the EIA, i.e. a "scoping opinion".

The purpose is also to define the potentially significant effects that will need to be assessed in the EIA and to agree these, along with the proposed assessment methodologies that will be used, prior to the assessment being undertaken.

The request for a scoping opinion is made under Regulation 8 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the EIA Regulations) (as amended).

1.4 Developer and Project Team

The EIA Scoping Report has been prepared for IAMP LLP the promoter of IAMP.

1.5 Structure and Approach to the EIA Scoping Report

The report has been prepared in accordance with Regulation 8 of the EIA Regulations and reflects the guidance provided in PINS Advice Note 7 *Environmental Impact Assessment: Screening, Scoping and Preliminary Environmental Information* (version 5, March 2015).

The EIA Scoping Report includes the following in accordance with Regulation 8 of the EIA Regulations:

a) A plan sufficient to identify location and extent of the development (Appendix A and Appendix B); and

b) A brief description of the nature and purpose of the development (Chapter 2) and of its possible effects on the environment (Chapter 5-15).

Information is also provided on the characteristics of the proposed development and the environmental features that might be affected.

The information in this report is set out as follows:

- Chapter 2 describes the proposed development, the IAMP and incorporates, in Section 2.6, a consideration of alternative sites;
- Chapter 3 provides context in terms of the current state of the site and the surrounding land;
- The general approach to the EIA and proposed structure and content of the ES are set out in Chapter 4;
- Chapters 5–15 describe the scope of the topics to be included in the EIA on a topic-by-topic basis. These chapters share a common structure, providing the following information:

  - An overview of the topic under consideration;
  - A description of current environmental conditions, termed the baseline, relevant to that topic in as far as is known at this stage of the project;
  - Consultation to be undertaken as the EIA is progressed;
  - A description of potential environmental impacts;
  - The proposed methodology and scope of the assessment under each topic to be assessed;
  - The proposed approach to mitigation and assessment of residual effects; and
  - The proposed approach to assessing cumulative effects.
- Chapter 16 describes those environmental topics proposed to be scoped out of the EIA, including reasons for doing so; and
- Chapter 17 provides a summary of the environmental parameters that are considered likely to be impacted by the proposed development.

1.6 Stakeholder Consultation

Consultation is an important component of the EIA process, allowing interested and potentially affected parties and organisations to become involved in the planning and development process of the project, and to ensure that full regard is had to their views as the scheme evolves. Feedback is invited from consultees on the development proposals and proposed scope of the EIA as part of ongoing engagement with stakeholders. Early engagement has already been undertaken with some stakeholders and this is referenced and reflected in the relevant topic chapters.

1.7 References and Sources of Information

Most topics presented within the Scoping Report have to date primarily been informed by desktop reviews of available baseline data. In addition, the following topics have been the subject of more detailed surveys or investigations as part of the scoping process:

- Access and Transport;
- Ecology;
- Landscape and Visual; and
- Water resources and flood risk.

All specific sources of information related to each technical discipline are outlined further in Chapters 5-15.

2 The Proposed Development

2.1 Project Aims/Need for the Project

The IAMP project seeks to build on the north east's international reputation in the automotive and advanced manufacturing industries and capitalise on the projected growth in these sectors within the Sunderland and South Tyneside area. The project is a key component of the Sunderland City Deal[1] which aims to significantly increase opportunities for enterprise and employment in the north east of England.

2.2 Project Background

The development of the IAMP will underpin the continued success of the automotive and advanced manufacturing sectors in the UK and north east region. The north east of England is recognised internationally as a centre for the automotive industry due to Nissan's presence in the region since 1985.

Nissan is a major employer in the north east and has been the largest car plant in the UK for 14 years and the largest exporter for 12 years. Nissan Manufacturing UK (NMUK) in Sunderland accounts for one third of all UK car production. Over 7,000 people are employed in Sunderland's Nissan plant underpinning over 20,000 supplier jobs in the wider north east region.

The development of the IAMP will contribute to achieving key objectives of the Government's Northern Powerhouse agenda[2]. The Northern Powerhouse seeks to rebalance and grow the UK economy by devolving political power and fostering economic activity in the north of England. The Government is committing £13bn of investment to the transport sector in the north of England; backing major new science technology and culture projects; and agreeing to devolve significant powers. Projects such as the IAMP are critical to the success of the Government's Northern Powerhouse strategy.

2.2.1 Project Vision

The vision for the IAMP development is:

'A nationally important and internationally respected location for advanced manufacturing and European-scale supply chain industries. A planned and sustainable employment location that maximises links with Nissan and other high value automotive industries as well as the local infrastructure assets, including the ports, airports and road infrastructure.

The type of place which the Councils wish to create is an attractive working environment that creates the conditions in which businesses can establish and thrive and where people choose to work. A unique opportunity for increased job

[2] In 2014 the then Chancellor of the Exchequer, George Osborne set out the government's pathway to a northern economic powerhouse https://www.gov.uk/government/news/northern-powerhouse-chancellor-sets-out-pathway

and business creation and the promotion of regional prosperity whilst taking advantage of natural assets and green infrastructure including the River Don corridor.'

2.3 The Proposed Development

The IAMP will extend the prime location for automotive and other advanced manufacturing and engineering activities that currently comprises the NMUK, its supply chain and Sunderland's Enterprise Zone. The new development will be approximately up to 260,000m^2 over a 100ha site and will host new and expanding businesses primarily in the automotive and advanced manufacturing sectors[1]. The indicative Masterplan is provided in Appendix D.

In addition to the development of the floorspace indicated above, the following elements are likely to form part of the scheme:

- Internal access roads and footways;
- Landscaped areas;
- Ecological and landscape mitigation area, surrounding the River Don;
- Bridge across the River Don;
- A road bridge across the A19 to connect with Washington Road;
- Other associated ancillary uses (including a public transport interchange, retail, leisure and a hotel, known as 'the Hub'); and
- Utilities provision with the potential provision of an energy centre, and electricity sub-station upgrades.

Anticipated enabling infrastructure is likely to include:

- Upgrading and improving the key junctions within the existing transport network, although these are yet to be confirmed they are likely to include the junctions with Downhill and Follingsby Lanes, and the interface with Nissan;
- Construction of new, and expansion of existing, cycle-ways and footpaths to support sustainable transport options for employees on the site; and
- Construction of key utility links to the site.

In addition the IAMP development will make use of the opportunities created by the Department for Transport (DfT) investments in key regional transport links. These include Improvements to the A19/A184 Testos Junction and Downhill Junctions, scheduled for delivery before 2020/21.

2.4 Programme for the Development

2.4.1 Construction

It is anticipated that the IAMP would be built out over a period of 15 years from the date of commencement, with safeguarded land (identified in the IAMP Area

Action Plan (AAP)) potentially to be developed beyond that (although not forming part of this application). The rate of build out is anticipated to be in line with the timing/phasing as outlined in the PwC Financial Model (Appendix C).

2.4.2 Operation

It is anticipated that the operational lifespan of the IAMP development would be over a period of not less than 50 years.

2.5 Planning and Policy Context

2.5.1 Area Action Plan

SCC and STC are currently progressing the adoption of an AAP for the IAMP. The IAMP AAP is being prepared jointly by the Councils (i.e. SCC and STC) in support of the Sunderland City Deal (in partnership with South Tyneside).

The IAMP AAP will form part of the statutory Local Plans for SCC and STC and will have Development Plan status for the purposes of plan making decisions.

The Publication draft version of the AAP was made publicly available in July 2016 and was the subject of consultation in the summer of 2016. In summary, the following are key points relating to the AAP:

- The IAMP AAP is a plan for the period up to 2033. It will be the key document through which the vision and objectives of the IAMP will be led and ultimately achieved;
- The AAP sets out the planning policies to direct and enable the comprehensive delivery of a development that is of high quality and advanced manufacturing-led employment;
- The IAMP AAP is proposing to release 100ha of land to the north of Nissan within the IAMP AAP boundary from the Green Belt for allocation as a strategic and comprehensive development of advanced manufacturing employment uses. The scale of Green Belt release is based on the need to support the economic opportunity for the north east from the expansion of the automotive and advance manufacturing sectors;
- In order to accommodate future demands for advanced manufacturing employment, related development and growth of established specialised and key businesses, the Councils propose to ensure that sufficient land is made available for the long term sustainability of the IAMP. The IAMP AAP is therefore also proposing the designation of 50ha of safeguarded land for development to ensure Green Belt boundaries endure beyond the end of the IAMP AAP period and support the future sustainability of the IAMP. Areas of ‘safeguarded land’ between the urban area and the Green Belt will be identified in order to meet longer term development needs beyond the plan period;
- The area of land identified for ecological and landscape mitigation along the River Don corridor will remain in the Green Belt; and

- Appropriate boundary treatments and green buffers will be put in place to ensure existing and revised Green Belt boundaries are readily recognisable and likely to be permanent or endure for the long term.

2.5.2 Wider Policy Context

Proposals for the IAMP were first considered by SCC and STC in partnership with the North East Local Enterprise Partnership (NELEP). NELEP's Strategic Economic Plan (SEP) set the strategic context for the IAMP, whilst the City Deal introduced the IAMP proposals to secure funding and a commitment to delivery.

The Sunderland City Deal (in partnership with South Tyneside) aims to enable the local economy to build on its strengths in advanced manufacturing, with a focus on the automotive sector but also expanding the opportunities for enterprise and employment in the area. The City Deal supports the development of the IAMP as the proposal builds on the strengths of Sunderland and South Tyneside.

2.6 Alternative Options

The EIA Regulations require that an ES must include an outline of the main alternatives considered by the applicant and an indication of the main reasons for the choice made, taking into account the environmental effects.

As part of the preparation of the IAMP AAP (see above) high level alternatives were considered before selection of the proposed location:

The economic scenarios to determine the scale of the proposal

↓

Alternative locations across the North East region

↓

Alternative locations within Sunderland and South Tyneside

↓

Alternative locations within the broad area of land to the north of Nissan

Of the locations within the broad area of land north of Nissan, three options were considered[3]. All three options related to the land to the north of the existing Nissan plant and are summarised as follows:

[3] IAMP AAP Green Belt and Site Selection Options Paper, December 2015

- Option 1 - a scheme to the north of Nissan, in two connected parts along the A19 corridor, with a total development area of 174ha. The River Don is at the centre of the scheme, providing a central focus for a green corridor and providing a good setting for a central hub. The scheme has a frontage along the A19 corridor;
- Option 2 - a scheme crossing diagonally across the River Don on a north west to south east axis, with a total development area of 170ha. The River Don is at the centre of the scheme, providing a central focus on the green corridor. A commercial "hub" is located on land directly to the north of the main Nissan site, which would help the site integrate with the existing economic activities at Nissan; and
- Option 3 – a scheme along an east-west axis in the southern part of the area, with a total development area of 170ha. This option allows for a generous buffer to the River Don, safeguarding the existing wildlife habitats. A commercial "hub" is located on land directly to the north of the main Nissan site, which would help the site integrate with the existing economic activities at Nissan. The scheme would be primarily accessed from the existing A1290 road which would be upgraded.

2.7 Preferred Option

The options presented in the Green Belt and Site Selection Paper were appraised to inform the identification of a preferred option for the IAMP AAP. The 'AAP Options Appraisal Framework' included a broad range of criteria to assess the performance of the three site options. The appraisal criteria included consideration of the technical constraints, findings of the initial sustainability appraisal and outcome of previous consultations. Details of consultation during the option appraisal are provided in Section 4.5 of this Report.

This appraisal process concluded that Option 1 was preferable, but positive elements of Options 2 and 3 were incorporated into the preferred option, including the location of the 'Hub' so that it could be accessed by employers on existing sites and new employees at the IAMP, and the location of the safeguarded land was moved to the west to maintain a larger expanse of Green Belt land north-south.

The preferred option forms the basis of the Publication Draft version of the AAP. The Indicative Masterplan in Appendix D illustrates the key elements of the preferred option.

2.8 Scheme Description

In order to achieve the delivery of a high quality, world class advanced manufacturing park, the scheme will involve the following elements.

2.8.1 Principal Land Uses

The principal use of the IAMP is to build on the area's international reputation in the automotive industry; to support Nissan in its investment in the UK and to

attract European-scale 'super suppliers' linked to the automotive industry. The 100ha site has the potential to accommodate approximately 260,000m^2 of development.

The development will seek to satisfy the demand from the automotive and advanced manufacturing sectors; protecting the IAMP from other uses such as general employment development, residential development and large scale retail or standalone leisure uses above 1,500m^2.

2.8.2 Mix of Land Uses

The focus for the IAMP is for the provision of employment development in use classes B1(c), B2 and B8 to meet the needs of the automotive and advanced manufacturing sectors. The IAMP masterplan will make provision for a range of unit sizes to encourage companies of varying scales to locate on the site. However, this will need to be demand driven.

An element of B1(a) and B1(b) space will be required either as research and development space, as ancillary offices for B2 and B8 uses, or for supporting business services.

2.8.3 Associated development and the Hub

The IAMP will include associated developments to provide an attractive working environment and meet the needs of a skilled workforce. Developments associated with retail, leisure and hotel facilities, managed workspace, nursery and child care facilities and space for education and training provision will be provided to meet the vision and objectives for the IAMP.

These associated developments will allow existing and new employees the opportunity to access facilities and services locally, making the development more sustainable.

The majority of these services will be located in what will be called the "IAMP Hub". It will be approximately 22,500m^2 and will perform the role of a local centre. This will aid the delivery of the aspiration to create an 'innovation district', and will also help create an identity for the IAMP, by providing a focal point including a range of supporting facilities such as retail uses, restaurants, cafes, a hotel and leisure facilities. The Hub will also encourage public transport provision, walking and cycling.

2.8.4 Timing/Phasing and Floor Space

The timing/phasing, floor space and employment numbers for the IAMP (Appendix C) are drawn from the PwC Financial Model, dated 13th May 2014 which was prepared to inform the submission for City Deal status.

2.8.5 Building Heights

At the time of writing, there are no confirmed building heights for the main elements of the development (which exclude the Hub) of the proposed IAMP

development. Recent approved planning applications surrounding the site have detailed heights ranging from 11-44m (Table 2.1). It is anticipated that the building heights for the IAMP will be within the range 20-30m, but could be as high as the proposed Nissan extensions to existing Body, Trim, Press and Paint Shops (44m) in a worst case scenario (13/01580/FUL in Table 2.1 below). This worst case scenario in terms of building heights will be assessed within the EIA.

Table 2.1: Outline of Planning Applications and their Proposed Height for Developments Neighbouring the IAMP

Application Ref.	Proposal	Height	Decision Date
15/00314/REM	Reserved matters application for the erection of a B8 distribution unit (up to 10,000 m2 in size), including detailed permission for means of access, including stopping up and diversion of public footpath and bridleway. Plot 2 Mandarin Way Pattinson Industrial Estate Washington	15m	Current
15/00039/FU4	Erection of a new 40,500m^2 B8 warehouse facility with 475m^2 first floor offices, together with associated ancillary buildings, external yard and parking areas, hard and soft landscaping, perimeter fencing, utility diversions, site set up compounds and temporary haul road with associated access on to A1290. Land At Hillthorne Farm Washington	11.4m	Approved Fri 27 Mar 2015
15/00787/FUL	Development Control, Full Application,,Fergusons unit Bramston Lane, NE38 8QN	14.2m	Approved Wed 12 Aug 2015
13/01580/FUL	Extensions to existing motor manufacturing plant to provide production space, storage and support spaces. Extensions are to existing Body, Trim, Press and Paint Shops. Works to include necessary alterations to roads, car parking and other hardstanding areas including the QA test track Nissan Motor Manufacturing (UK) Limited Washington Road Usworth Sunderland SR5 3NS	44m	Approved Mon 09 Sep 2013
11/02220/FUL	Erection of Phase1 assembly shop extension, Phase 2 press shop extension, Phase 3 assembly shop extension, Phase 4 logistics centre and Phase 4 creation of 160 car park spaces to reduce size of Phase 4 Logistics centre to 5310m^2. Unipres UK Ltd Cherry Blossom Way, SR5 3NT	16.2m	Approved Thu 18 Aug 2011

2.8.6 Road and Bridge Layout

The likely road layout for the IAMP is somewhat dependant on the opportunities created by the DfT investments in key regional transport links e.g. the options being considered for the improvements to the A19/A184 Testos Junction and Downhill Junctions. However, it is anticipated that the IAMP scheme will include a new road bridge across the A19 to the south of the Downhill Junction, which will connect with Washington Road and the A1290. There will also be a new road

bridge crossing of the River Don, likely to be in close proximity to Elliscope Farm. Within the development area there will be a road hierarchy that will include central boulevards either side of the A1290, primary, secondary and local roads.

2.9 Design

The sections below provide an overview of the key components of the initial design principles of the development.

2.9.1 Masterplan Design

The IAMP Masterplan design will encourage a compact, permeable development, which is attractive to future occupiers and flexible enough to accommodate a range of businesses (Appendix B and Appendix D). The Masterplan is only indicative at this stage and will continue through a process of refinement as the EIA progresses in accordance with the highest landscape and environmental standards.

2.9.2 Public Realm and Landscape

The public realm and landscape elements of the masterplan will ensure a unique identity and a sense of place (Appendix D).

2.9.3 Ecological and Landscape Mitigation Area

Within the ecological and landscape mitigation zone, areas of land will be provided for ecological enhancement (Appendix B and Appendix D). This will involve restoration or creation of habitats of ecological value such as semi-improved and marshy grassland, hedgerows, scattered trees, and wetlands featuring marsh, swamp, ponds and reed beds. Areas of existing woodland will also be retained wherever possible.

An integrated sustainable drainage system (SuDS) will be incorporated into the masterplan. This will include a series of dykes and wet and dry swales which will manage water movement around the site as well as introduce planting and landscaping within the development areas.

2.9.4 Highway Infrastructure

The location of the IAMP benefits from its close proximity to Nissan and excellent transport links, with opportunities for integrated connectivity provided by the surrounding SRN, rail and port infrastructure. The local and SRN including the A1290 and A19 experience congestion and delay at peak periods, and are close to capacity, influenced in part by the shift operations of local businesses in the area and the limitations of the existing highway infrastructure.

There are requirements to ensure appropriate access to the IAMP and sufficient capacity on the strategic highway network. The development of the IAMP site, therefore, provides an opportunity for highway improvements to the road network to be implemented through the creation of new links and junctions.

2.9.5 Walking, Cycling and Horse Riding

The creation of good quality pedestrian, cycle and bridleway links through the site, and connected with the surrounding area, is an important element of the overall strategy for the site. In order to tie into existing provision, a safe network of footways, links and bridleways will play an important role in encouraging pedestrian, equestrian and cyclist movement and will seek to improve existing provision along Follingsby Lane and West Pastures.

2.9.6 Public Transport

The IAMP will be a significant employment destination with public transport playing an important part in providing access to the site. Infrastructure for bus services will be required, with safe and attractive routes to and from bus stops.

The IAMP offers the opportunity for developments to be located within the proximity of bus services and will assist in encouraging travel to/from the site by public transport, which in turn will contribute towards alleviating traffic congestion along the A1290 and A19.

A new vehicular crossing will be required and provided on site. There is an existing bridge over the River Don, but it is not of a sufficient standard to accommodate the IAMP traffic, therefore a new bridge over the Don is proposed, which should be designed to accommodate buses as well as other vehicles.

2.9.7 Parking

Appropriate levels of parking will be provided at the IAMP. This is vital to ensure operational and market needs are met. However, availability of too many parking spaces increases the reliance on cars, reduces the use of sustainable transport modes and can increase congestion. Too little parking provision can result in indiscriminate parking, and the spread of parking pressures to the external highway network. The IAMP will seek to ensure that an appropriate number of parking spaces are implemented on site to meet the needs of the development.

2.9.8 Utilities Infrastructure Provision

An electricity sub-station is proposed to meet the energy needs of new businesses locating at the IAMP. The electricity sub-station will have the potential to link to any potential provision of an energy centre and future renewable energy sources, if these are developed.

2.9.9 Flood Risk and Drainage

The River Don runs through the centre of the IAMP area. Flood risk and drainage issues will be taken into consideration in order to mitigate the risks of fluvial and surface water flooding and to maintain effective operation of the site.

There will be some hard surface run-off from buildings and hard landscaping areas. SuDS will be implemented across the area to allow for a comprehensive and sustainable Drainage Strategy (DS) to be delivered. This will involve measures designed into the streets based on the road hierarchy.

The new bridge proposed over the River Don will be designed with a clear span over the River and will minimise impacts on flood behaviours. The IAMP development proposals will lead to no net loss in floodplain storage capacity nor an increase in maximum flood levels within adjoining properties as a consequence of the proposed works.

The foul sewer network has sufficient capacity both on and off-site. There is a need to provide an off-site sewer/pumping mains connection for foul drainage from IAMP to one of the discharge points, either on Cherry Blossom Way or on land adjacent to the Leamside line (nominally east of Sulgrave Road, Washington).

3 The Site and Surrounding Area

3.1 Overview

The IAMP site crosses the boundaries of the SCC and STC local authorities.

3.2 The Existing Site

The site of the proposed IAMP development is located approximately 6km northwest of Sunderland City Centre. The site is directly to the north of the existing NMUK (grid reference NZ 34269 58568); directly to the west of the A19 and Downhill Junction (grid reference NZ 434158 559861); and approximately 0.7km to the south of the A184 and Testos Roundabout (grid reference NZ 33804 60915) (see Appendix A).

There are several heritage assets in the area surrounding the proposed development site (see Chapter 10). These include:

- Hylton Grove Bridge, a Grade II Listed building on Follingsby Lane within the proposed development site;
- Scot's House, a Grade II* Listed building located to the north of the proposed development site; and
- The Earl of Durham's Monument (also known as Penshaw Monument), a Grade I Listed building located approximately 4.4km to the south of the proposed development site.

The land on site is predominately arable fields with small pockets of plantation and semi-natural woodland. The River Don, a tributary of the River Tyne, flows through the site in a west to east direction.

Seven electricity pylons carry overhead lines across the IAMP site (Appendix G). Three Northern Power Grid 11kV lines, one National Grid 275kV line and one Northern Power Grid 11kV line cross the site from a point in the south west of the site (grid reference NZ 32943 58571) across to the north east of the site (grid reference NZ 34018 60066). A further two Northern Power Grid 11kV lines cross from a point in the west of the site, across to the north east of the site (grid reference NZ 34018 60066). The Masterplan (Appendix D) anticipates minimal diversion of power lines.

3.3 Surrounding Area

The proposed IAMP site is surrounded by a number of large towns and cities in the north east:

- Washington Town Centre is approximately 2.8km south west;
- Sunderland City Centre is approximately 6km south east of the site;
- North Shields and South Shields are approximately 9km and 8km to the north east respectively; and

- Gateshead and Newcastle upon Tyne are approximately 7.8km and 8.9km northwest respectively (Appendix A).

A number of Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SAC) and Ramsar sites are found within 10km of the proposed IAMP site. However, none are found within the site boundary or closer than 1.5km. These designated sites are largely found to the east of the proposed IAMP site, with some also falling to the south and north. No SPAs, SACs or Ramsar Sites are found within 20km and no SSSIs are found within 10km to the west of the site (see Appendix H).

3.3.1 Land to the North

The land to the north of the site is arable farm land, bounded by the A184 (Newcastle Road) approximately 0.7km north of the site boundary. A single track road, known as West Pastures, crosses through this arable land in a north/south direction, connecting the A184 in the north with Follingsby Lane crossing west/east through the proposed IAMP site.

The A184 travels west to Gateshead before joining the A1 approximately 2.9km to the south west of the town. The road also travels east through West Boldon and East Boldon before joining the A1018 at grid reference NZ 38971 60109. Beyond the A184 to the north are further arable fields before the residential settlement of Fellgate.

Overhead power lines cross the site (Appendix G):

- 275kV National Grid (seven steel lattice pylons);
- 66kV Northern PowerGrid (six steel lattice pylons); and
- 11kV Northern PowerGrid (a number of poles located across the site).

A group of buildings comprising residential and commercial properties are found approximately 750m north of the site, centred around Scott's House Farm (NZ 32657 60983). An area of woodland included within the national inventory of woodland and trees is found to the west and south of these buildings.

The River Tyne is approximately 4.4km to the north west of the proposed IAMP site boundary, 9km upstream from the mouth of the river at Tynemouth where it meets the North Sea.

Designated Sites

West Farm Meadow SSSI is located approximately 2.6km north east of the proposed IAMP site and is designated as it is one of very few surviving semi-natural hay meadows in the coastal plain between the Rivers Tyne and Tees[4].

[4] Natural England. Last accessed June 2015 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1004259.pdf

3.3.2 Land to the East

Directly to the east of the site is the A19 which runs from north to south. The A19 crosses the River Wear approximately 2.3km to the south of the site and passes through two Tyne Tunnels, under the River Tyne, approximately 5.6km to the north. The land to the east of the A19 is split in two by Downhill Lane which runs from Downhill Junction to join the A184.

To the east of the A19 on the land to the south of Downhill Lane are the residential areas of Town End Farm and Downhill, separated from the A19 by a slip road leaving the junction and an area of deciduous woodland. Town End Farm and Downhill are largely residential areas with a number of local amenities. Two schools are found in Town End Farm, within approximately 450m of the site boundary, these are the Town End Academy and Bexhill Academy.

The land to the east of the A19 and north of Downhill Lane is predominantly farmland. The River Don flows through this land in a south west to north east direction. West Boldon sub-station is also located in this area (grid reference NZ 34036 60725), directly to the north of the site boundary and south of the A184 and Testos Roundabout.

Designated Sites

The Northumbria Coast SPA (SPA EU code: UK9006131) is made up of multiple sites, the closest of which is approximately 6.4km east of the proposed IAMP site. The Northumbria Coast SPA includes much of the coastline between the Tweed and Tees Estuaries in north east England and covers an area of 1,107.98ha. The site consists of mainly discrete sections of rocky shore with associated boulder and cobble beaches. The site supports birds of European importance. During the breeding season, Little Tern (*Sterna albifrons*) are found within the SPA and over winter, Purple Sandpiper (*Calidris maritime*) and Turnstone (*Arenaria interpres*) are also present[5].

The Northumbria Coast Ramsar Site (ID: 1019) covers the same area footprint as the SPA and regularly supports internationally important numbers of Purple Sandpiper and Turnstone. The Ramsar site also includes an area of sandy beach which supports a nationally important breeding colony of Little Tern and parts of three artificial piers which form important roost sites for Purple Sandpiper.

The nearest Durham Coast SAC (SAC EU code: UK0030140) site is approximately 6.6km east of the proposed IAMP site. The Durham Coast is the only example of vegetated sea cliffs on magnesian limestone exposures in the UK. These cliffs extend along the North Sea coast for over 20km from South Shields southwards to Blackhall Rocks. Their vegetation is unique in the British Isles and consists of a complex mosaic of paramaritime, mesotrophic and calcicolous grasslands, tall-herb fen, seepage flushes and wind-pruned scrub[6].

[5] Joint Nature Conservation Committee (2001). Last accessed June 2015 via http://jncc.defra.gov.uk/default.aspx?page=1997
[6] Joint Nature Conservation Committee (2015). Last accessed June 2016 http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030140

A number of SSSIs are found surrounding the proposed IAMP site. The closest, Hylton Castle Cutting, lies approximately 1.5km to the east. This SSSI is designated due to rocks of Middle Magnesian Limestone that are exposed in a road cutting through the core of a late Permian reef. The reef-core sediments here yield a rich marine fauna of brachiopods, bivalves, bryozoans and gastropods making this an important site for the study of ancient reefs and their faunas[7].

Approximately 4.3km to the east are the Fulwell and Carley Hill Quarries SSSI. The disused quarries are of national geological importance showing a great variety of dolomites and dedolomites in the Late Permian Concretionary Limestone Formation. Associated areas of semi- natural Magnesian Limestone grassland are fragments of an important vegetation type which was previously more widespread within the region[8].

Approximately 4.5km to the east of the site is the Boldon Pastures SSSI designated for its unimproved neutral grassland formerly subject to ridge and furrow cultivation, with associated hedgebanks and drainage channels.[9].

3.3.3 Land to the South

Directly to the south of the site is Nissan Motor Manufacturing UK (NMUK) and three sites comprising Sunderland's Enterprise Zone. These manufacturing centres are located on the former RAF Usworth base. The Tyne and Wear Fire and Rescue service base is located in the south west corner of the NMUK and Sunderland Enterprise Zone site.

Nissan has been in operation at this location since the late 1980s with the site comprising areas of hard standing, car parking, roads and buildings as well as incorporating natural wildlife areas including ponds, lakes and woodland. The NMUK site also currently has 10 onsite wind turbines.

The NMUK and Sunderland Enterprise Zone are bounded to the south by the A1231 (Sunderland Highway). This connects to the east with a roundabout at North Hylton where it becomes Wessington Way. To the west, the A1231 travels through the settlements of Barmston, Washington, Armstrong and Crowther.

A large meander of the River Wear is found further south of the A1231, approximately 7km upstream of the estuary with the North Sea.

Designated Sites

The Wear River Bank SSSI is approximately 1.8km south east of the proposed IAMP site and is designated as it provides the best exposure of the highest Carboniferous, early Westphalian C age, strata in the Northumberland and

[7] Natural England. Last accessed June 2016 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1001075.pdf
[8] Natural England. Last Accessed June 2016 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1000369.pdf
[9] Natural England. Last Accessed June 2016 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1002859.pdf

Durham Coalfield[10]. The Claxheugh Rock and Ford Limestone Quarry SSSI is approximately 2.3km south east of the site and is designated for national geological interests, specifically exposures of Magnesian Limestone. Areas of associated and semi-natural Magnesium Limestone grassland are also significant[11]. The South Hylton Pasture SSSI is approximately 2.8km south east of the proposed IAMP site and supports unimproved neutral grassland, with associated wet flushes. A herb-rich sward has been maintained at South Hylton Pasture SSSI due to traditional management for hay production followed by winter grazing[12].

3.3.4 Land to the West

The land directly to the west of the site is arable farm land with the River Don flowing from west to east through this land before entering the proposed IAMP site at the north west boundary of the site (grid reference NZ 32364 59706).

A group of buildings mainly comprising residential properties is found directly to the west of the site at grid reference NZ 32295 60004.

The land to the west of the proposed IAMP site is bounded by a disused railway line, formally the Leamside line which runs from north to south. At its nearest point this is approximately 850m from the site boundary and at its farthest, approximately 1.7km west. The land further west of the railway line is a combination of farm land, residential and industrial areas.

Reinstatement of the Leamside line (as a rail or Metro line) is a key element of the connectivity strategy outlined in the SCC Local Plan[13]. The line is also mentioned in the Gateshead Local Plan[14] which suggests that the site and corridor should be safeguarded for long-term proposals for re-opening.

3.4 Other Applications

There are currently two Nationally Significant Infrastructure Projects (NSIPs) being progressed on sites to the north of the Nissan plant. One of these is IAMP and the other is Highways England's (HE) A19 Testos and Downhill Lane Junction Improvements.

[10] Natural England. Last accessed June 2015 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1001193.pdf
[11] Natural England. Last accessed Jun 2015 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1000336.pdf
[12] Natural England. Last accessed June 2015 via http://www.sssi.naturalengland.org.uk/citation/citation_photo/1001601.pdf
[13] Sunderland Local Plan, http://www.sunderland.gov.uk/CHttpHandler.ashx?id=14055&p=0&fsize=6Mb&ftype=Core Strategy (Revised preferred options) - for consultation.PDF
[14] Planning for the future, Core strategy and urban core plan for Gateshead and Newcastle upon Tyne 2010-2030 http://onecorestrategyng.limehouse.co.uk/file/3381750

3.4.1 A19 Testos and Downhill Lane Junction Improvements

HE is proposing to make major improvements to the A19 Testos and Downhill Lane junctions located to the east and north east of the proposed IAMP site.

The proposal at the Testos junction is for a grade-separated A19 (T) which is aimed at helping to relieve congestion and improve road safety at the current roundabout. Improvements are also proposed to the Downhill Lane junction on the A19.

It is understood that HE is consulting on options for the scheme in autumn 2016 with a preferred option to be announced before the end of 2016. It is currently anticipated that the DCO application will be submitted in late 2017. This proposed project will be considered in the cumulative impact assessment for the development, as detailed in Section 4.3.

4 EIA and ES

4.1 Legislation and the Requirement for an EIA

In accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) ('the EIA Regulations'), the applicant will undertake an EIA and will submit an ES with the DCO application for the project. This Scoping Report has been prepared pursuant to these obligations and the PINS Advice Note 7 (EIA: Preliminary Environmental Information, Screening and Scoping).

The EIA Regulations set out the procedural requirements for the carrying out of EIA in relation to projects requiring Development Consent under the PA 2008.

Under Regulation 6(1) of the EIA Regulations, a person who proposes to apply for a DCO must, before carrying out consultations under Section 42 of the PA 2008, either request an EIA screening opinion or notify the SofS in writing that the applicant will provide an ES in respect of the proposed development.

This Scoping Report constitutes written confirmation under Regulation 6 (1) (b) of the EIA Regulations that the applicant will provide an ES for the IAMP project.

Regulation 8 of the EIA Regulations concerns applications for EIA Scoping Opinions. This current report complies with Regulation 8 (3), which sets out the essential information that a Scoping Report should include.

Regulation 9 requires the SofS to notify the consultation bodies of a DCO application requiring EIA. Under Regulation 9 (3), subject to conditions, consultation bodies must make information relevant to the preparation of an ES in their possession available to the Applicant upon request.

The overall scope and structure of the ES is outlined in Section 4.8 of this report. Chapters 5 to 15 provide details of the topics to be scoped in, and Chapter 16 provides details of the topics proposed to be scoped out of the ES.

4.2 General Approach to the EIA

The EIA will be undertaken in accordance with the EIA Regulations, and relevant topic specific guidance.

In addition, best practice guidance from the Institute of Environmental Management and Assessment (IEMA) will inform the assessment. Relevant to this Scoping Report is the growing emphasis on undertaking proportionate assessments. This is to reflect those aspects of the environment with potential to have significant effects and clarify those areas where there is little reasonable potential for this.

The EIA is proposed to be carried out in stages as follows:

- Scoping and consultation with stakeholders;
- Baseline data gathering and consultation;

- Preliminary effect assessment;
- Identification of mitigation measures;
- Residual effect assessment;
- Cumulative effect assessment; and
- Preparation of the ES.

Interface between the EIA and design team will continue throughout the design process with the aim of avoiding and reducing, where possible, any significant adverse effects on the environment.

For each topic included in the scope of the EIA, the likelihood of significant effects arising will be considered in terms of:

- Demolition/construction effects, i.e. temporary effects caused due to the removal of the surrounding buildings on site (for example dust and air quality issues arising due to demolition affecting nearby receptors) or temporary effects likely to arise from construction activities (for example noise from construction plant affecting nearby sensitive receptors); and
- Operational effects, i.e. effects likely to arise from operational activities (for example the effects of operational traffic generation on the surrounding road network).

Effects will be described as significant or not significant, beneficial or adverse, consistent with the EIA Regulations which requires "*A description of the likely significant effects of the development on the environment…"*[15]. The effects arising directly from the project as well as associated secondary effects that may arise will be encompassed by the assessment.

Within the assessment, a description will be given of the topic specific methodology including significance criteria to be applied based on guidance and legislation specific to that topic. The topic specific sections within the Scoping Report provide an overview of the proposed assessment methodology.

A review of developments that may give rise to cumulative effects will be undertaken. The specific surrounding developments to be included in the cumulative assessment will be discussed and finalised with the Councils prior to the EIA commencing.

Given the scale of the scheme, the length of time the development will take and the likely operational life of the development (over 50 years), any determination of the effects of decommissioning and/or possible reinstatement will be outside the scope of this EIA.

4.2.1 Zone of Influence

The spatial scope addressed in this Scoping Report has been based on the proposed development as described in Section 2.3 and 2.8. However, the temporal and geographical extent of the assessments will vary depending on the

[15] Town and Country Planning (Environmental Impact Assessment) England. Regulations 2011.

environmental aspect being assessed. Where relevant, each topic has identified the extent of their specific assessment area within Chapters 5-15.

4.2.2 Baseline Definition

The current understanding of the baseline for each topic is outlined in Chapters 5-15, and the methods by which this will be developed are also described.

4.2.3 Approach to Identifying Potentially Significant Effects

Criteria for determining whether environmental effects are significant for the topic assessments are specific to each individual discipline and are explained in more detail in Chapters 5-15. These criteria are stated in recognised guidance and will either state whether effects should be regarded as simply significant or not significant, or whether levels of significance (minor, moderate, major effects) should be reported.

No singular, uniform method for reporting significance across all topics is available. Therefore, it will be clearly stated within each chapter what constitutes a significant environmental effect for that particular topic. These significant effects will also be reported within the assessment summary matrix found at the end of each chapter of the ES, consistent with the EIA Regulations which require: "*A description of the likely significant effects of the development on the environment…*". The effects arising directly from the proposed development as well as indirect, secondary and cumulative effects will be encompassed by the assessment. Reasonable 'worst case' assumptions will be applied to ensure the assessment is robust and these will be explained within each topic chapter as necessary.

4.2.4 Development of Mitigation

At the current time, no detailed mitigation measures have been developed, although work is ongoing with regard to the Ecology and Landscape Mitigation Area in the central area of the scheme.

Mitigation will involve close liaison between the masterplanning and design team, the EIA topic specialists and consultees, to ensure that the mitigation hierarchy (avoid, minimise, compensate/offset) is implemented to ensure that the scheme results in as few significant environmental impacts as possible.

4.3 Cumulative Effects

Schedule 4, Part 1 of the EIA Regulations requires an ES to include an assessment of cumulative effects. ‘Cumulative’ is not defined in the EIA Directive or Regulations and there is no standard approach to the assessment of cumulative

effects, with different projects adopting different approaches. The approach adopted by this project is informed by PINS Advice Note Seventeen[16].

4.3.1 Methodology

The purpose of undertaking a cumulative assessment is to identify whether other developments may lead to an elevated effect on the environment during construction, (including demolition), or once a development is built and in use. Other developments need to be of a sufficient scale or proximity to the development being assessed for cumulative effects to be likely. Other developments may also precede the proposed development being assessed thereby changing the future baseline conditions, and in some cases introducing new sensitive receptors.

4.3.1.1 Significant Developments

The area of significant developments has been identified as the area in which developments may interact with this proposed development, taking into account for the size and location of the site and the nature and development density of the surrounding area. Initially, a widespread search of all major planning applications was undertaken on 1st April 2016 and on 10th August 2016 from the following sources:

- National Infrastructure Planning Portal;
- SCC Planning Portal;
- STC Planning Portal; and
- Gateshead Council Planning Portal.

The applications from these sources were filtered according to type, size, planning status and professional judgement. The criteria used are outlined in Sections 4.3.1.2 to 4.3.1.4 below.

An area representing a 6km radius from the IAMP development is proposed as the search area for projects to be considered in the assessment of cumulative effects. Based on professional judgement, this is considered to be sufficient given the scale and location of the development. Opinion is sought on the proposed search area.

4.3.1.2 Type and Size of Developments

The assessment will consider developments that have the potential to result in significant cumulative effects. An initial review of developments using the four portal sites (as mentioned in Section 4.3.1.1) yielded many proposals, including small scale and minor works. It was therefore necessary to impose a threshold to include only relevant developments to be factored into the assessment.

This was taken to be major developments[17] as there is a greater potential for significant environmental effects. National Projects are also considered.

[16] The Planning Inspectorate (December 2015), Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects

Furthermore, if any development intersected the site boundary, it was automatically considered within the assessment (however none are considered to exist at the current time).

4.3.1.3 Planning Status

Developments within the cumulative catchment area and which meet the criteria already described will be at one of three stages in the planning process:

- Under construction;
- Permitted but not yet implemented; and
- Submitted and validated but yet to be determined.

The stage of each development will determine whether it will precede the construction of the proposed IAMP (and hence potentially change future baseline conditions including the introduction of new receptors), or be concurrent with the construction and operation of it. Developments may also be phased and therefore change baseline conditions as well as creating potential for cumulative effects.

4.3.1.4 Professional Judgement

Professional judgement will also be used in circumstances where it is felt planning applications should be excluded or additional developments should also be considered. This list of projects will be updated and reviewed throughout the EIA and during preparation of the ES, and will be discussed and agreed with the Councils and PINS. The justification and reasoning for the inclusion of any projects will be outlined in the ES.

4.3.2 Results

By applying the criteria described in Section 4.3.1, nine planning applications have been identified to date for inclusion within the cumulative effects assessment. These are outlined in Appendix E. These will be updated and reviewed as the EIA progresses, and are subject to change.

4.4 Analysis of Residual Effects

This stage will produce a clear summary of the significant residual impacts of the project incorporating mitigation and enhancement measures. Where significant impacts cannot be avoided or reduced, the stage will identify residual effects and the potential for compensation measures to be implemented. It will also consider the consequences of significant residual impacts in the light of planning policies and legislation.

Chapters 5 to 15 detail how residual effects will be analysed in relation with each topic area.

[17] As defined in The Town and Country Planning (Development Management Procedure) (England) Order 2015

4.5 Stakeholder Consultations

As described under Section 42 of the Planning Act 2008, as part of the DCO application there is a requirement to consult with statutory or prescribed consultees, and those with a land interest.

4.5.1 Consultation to date

Consultation has been taking place in relation to the development of the AAP which will provide a planning policy framework for IAMP. The initial public consultation on key issues, options and alternatives for the proposed IAMP took place between 23 February and 27 March 2015.

The consultation workshop was attended by 35 people, including local residents, landowners, business interests and developers/agents. Leaflets and consultation questionnaires were available at Council offices and libraries in Sunderland and South Tyneside, local newspapers and Council newsletters. Information was also available on the Councils' websites.

Questionnaire responses were received from 81 people, the vast majority received from local residents.

The feedback provided can be summarised as follows:

- The majority of respondents supported the business case for IAMP;
- The moderate growth scenario was selected as the preferred choice, this identified scope for significant growth requiring an IAMP of around 140 – 150 hectares to support the automotive and other advanced manufacturing sectors;
- The majority of respondents agreed that Sunderland/South Tyneside is the most appropriate location for the IAMP; and
- Respondents considered land to the immediate north of Nissan to be the most appropriate location for the IAMP.

The findings from the consultation supported proposals for an IAMP of around 150 hectares located on land to the north of Nissan.

Further, the 'Green Belt and Site Selection Options' consultation assessed the impact of the proposed development options and informed the selection of the preferred option out of the three outlined in Section 2.6 of this Scoping Report. This consultation took place between 16 December 2015 and 3 February 2016. The consultation fed into the options appraisal which identified Option 1 as the preferred option.

4.5.2 Ongoing Consultation

Presently there are two fora to enable consultation to take place, these are the Environmental Forum (Section 4.5.2.1) and the Access Forum (Section 4.5.2.2).

4.5.2.1 Environmental Forum

The Councils has engaged in three environmental workshops which took place between January and July 2016 to discuss various aspects related to the development of the IAMP. The minutes from the Environmental Forum are detailed in Appendix F1.1.

4.5.2.2 Access Forum

The Councils have also engaged in a pre-application Access Forum which took place on 15th March 2016 and 26th May 2016 to discuss various access aspects related to the development of the IAMP. The minutes from the Access Forum are detailed in Appendix 0.

4.5.3 PINS Consultations

Three meetings with the PINS have been held to date and took place on the 21th July 2015, 5th November 2015 and 1st March 2016. A summary of the key points taken from the meeting minutes are provided in Appendix F1.3.

4.6 Rochdale Envelope

For practical reasons and to ensure the consenting process is fit for purpose in development of an advanced manufacturing employment scheme over a period of time, the applicant is seeking to maintain flexibility with respect to the detailed design of certain elements of the project. However, it is acknowledged that there is a need to provide sufficient information about the project to inform the EIA. Accordingly, the EIA will be undertaken in accordance with the 'Rochdale Envelope' principles, based on a development envelope, thresholds and limits of deviation. The EIA will be based on a 'worst case scenario'.

These principles are explained in PINS Advice Note Nine: Using the 'Rochdale Envelope' (version 2, April 2012), and will be explained fully within the ES.

4.7 Request for Scoping Opinion

The SofS is requested to provide a scoping opinion in accordance with Regulation 8 of the EIA Regulations. In July 2013 PINS published Advice Note 7: Environmental Impact Assessment: Screening and Scoping. Advice is provided within this advice note with respect to the information which should be included within a scoping opinion request.

To assist the SofS and PINS in formulating a scoping opinion, the Scoping Report includes the following information as shown in Table 4.1.

Table 4.1: Compliance with Advice Note 7

Compliance with Advice Note 7	
Suggested Information to be Included Within the Scoping Report	**Location Within this Report**
A plan showing: • The proposed draft DCO site boundary (identified by a red line) including any associated development.	Chapter 2, Appendix B, Appendix G, Appendix H The following are not included in the Scoping Report because they are currently unknown, however they will be provided as part of the ES assessment: • Any permanent land take required for the proposed development; • Any temporary land take required for construction, including construction compounds though it is anticipated that this won't be a greater area than that required for the permanent landtake; • Any existing infrastructure which would be retained or upgraded for use as part of the proposed development and any existing infrastructure which would be removed; • Features including planning constraints and designated areas on and around the site, such as national parks or historic landscapes; and Referenced plans presented at an appropriate scale to convey clearly the information and all known aspects associated with the proposal.
A brief description of the nature and purpose of the development and of its possible effects on the environment.	Chapters 2, 5-15
An outline of the main alternatives considered and the reasons for selecting the preferred option.	Section 2.6
Results of desktop and baseline studies where available.	Chapters 2, 3, 5-15
Guidance and best practice to be relied upon, and whether this has been agreed with the relevant bodies (for example the statutory nature conservation bodies or local authorities) together with copies of correspondence to support these agreements.	Chapters 4, 5-15
Methods used or proposed to be used to predict impacts and the significance criteria framework used.	Chapters 5-15
Any mitigation proposed and predicted residual impacts.	Chapters 5-15
Where cumulative development has been identified, how the developer intends to assess	Section 4.3, Appendix E, Chapters 5-15

Compliance with Advice Note 7	
these impacts in the ES.	
Any indication of any European designated nature conservation sites that are likely to be significantly affected by the proposed development and the nature of the likely significant impacts on these sites.	Appendix D
Where a developer seeks to scope out matters, a full justification for scoping out such matters, preferably supported by evidence of agreement with the relevant bodies.	Chapter 14
Key topics covered as part of the developer's scoping exercise.	Chapters 5-15
An outline of the structure of the proposed ES.	Section 4.7

4.8 Structure and content of the ES

It is proposed to structure the ES in the following manner:

- A main volume;
- Subsequent volume(s) of appendices if required; and
- A non-technical summary (NTS) volume with associated drawings.

4.8.1 ES – Main Volume

It is proposed to include the following content in the main volume of the ES:

- Glossary and abbreviations;
- Introduction:
  - The ES – an overview of how the ES is structured;
  - Environmental Impact Assessment – general information on the EIA process;
- The site and surrounds – a general description of the site location and characteristics;
- The proposed development – a comprehensive description of the proposed project, including operational and construction elements, with scheme drawings and relevant documents appended as necessary. This section will also include consideration of alternatives as required by the EIA Regulations;
- Topic (the same format will be applied for each topic):
  - Introduction – outlining broad scope of topic assessment;
  - Review of proposed development – a description of the aspects of the project (design, construction and operational) relevant to the assessment of the topic;
  - Engagement – scoping, ongoing technical engagement and public consultation;

- Methodology – outlining relevant guidance and legislation to inform the methodology applied including determination of significance, assessment year(s), assessment area and interaction with other topics;
- Limitations and assumptions – a description of any limitations encountered in the assessment and assumptions made, including justification for why the assumptions are reasonable;
- Baseline – the baseline information on which the assessment is based referring to desk-based sources and primary data gathering;
- Assessment – the results of the assessment during demolition/construction and operation of the IAMP;
- Mitigation – a description of the measures to prevent, reduce and avoid adverse effects, not including any measures 'designed in' to the project and already taken into account in the assessment;
- Residual effects – the results of any re-assessment taking in to account mitigation measures and recommended monitoring for significant adverse residual effects where appropriate; and
- Cumulative effects – the assessment of the likely effects of IAMP in combination with other nearby developments as outlined in Section 4.3 above;
- Assessment summary matrix – a tabular presentation of the significant effects, mitigation and significant residual effects for this topic.

Appendices to the main volume will be included in additional volume(s).

4.9 Non-Technical Summary (NTS)

A separately bound NTS volume will be prepared containing a summary of the information provided in the main volume and appendices. This will be structured to communicate information about the proposed development and the likely effects of it on the environment in the most effective and accessible format. Regard will be given to IEMA's guidance note, 'Effective Non-Technical Summaries for Environmental Impact Assessment.'

4.10 Additional Environmental Documents

In addition to the ES, the application for the DCO will be accompanied by the environmental related documents, to include:

- Land Plans and Work Plans;
- Parameters Plan;
- Design and Access Statement;
- Sustainability Statement;
- Construction Management Framework Plan; and
- Statements of Common Ground.

4.11 Overview of the Proposed Scope of the EIA

Chapters 5 – 15 of this report provide an explanation of the proposed scope of the EIA and ES for the IAMP development.

5 Access and Transport

5.1 Overview

This chapter will provide an assessment of the access and transport related effects of the proposed development on the surrounding transport network. Information on conditions for all modes will be presented from a combination of desk-based research, site visits and micro-simulation traffic model validated and calibrated against traffic surveys.

The assessment will consider the likely construction and operational effects arising from the proposed development and their duration. Any mitigation measures required to prevent or reduce adverse effects arising from the construction and operation of the proposed development will be recommended.

5.2 Baseline

A micro-simulation model of the existing road network has been prepared and will be used to assess the baseline operations and forecast future operations. The extent and scope of the model have been agreed with SCC, STC and HE.

The extent of the micro-simulation model includes the following junctions:

- A19/A184 Testos Roundabout;
- A19/A1290 Downhill Lane Junction;
- A19/A1231 Wessington Way Junction;
- A1231/Nissan Way Junction;
- A1231/Spire Road Junction;
- A1231/A195 Junction;
- A1231/Windlass Lane Junction;
- A194(M)/A195/Follingsby Lane Junction;
- Junctions along the A195, between A1231 and the A194(M); and
- Points of access into the Nissan plant.

A comprehensive traffic data collection exercise was undertaken in March 2015, which included junction turning count surveys, queue length surveys, Automatic Number Plate Recognition surveys (to establish vehicle route choice and journey times) and Automatic Traffic Count loops. From this data, the average peak periods across the whole of the study area network were established as being 07:00 – 10:00hrs and 15:00 – 18:00hrs.

Within all the assessment work it is important to be mindful of the impact that the Nissan shift-operations have on the road network. The shifts on Nissan Production Line 1 are:

- Monday – Friday: 07.00 – 15.35hrs;

- Monday – Friday: 15.30 – 23.20hrs; and
- Night Shift: Monday – Friday: 23.15 – 07.05hrs.

Employees working at the offices at Nissan work between the hours of 07.55 – 16.40hrs (Monday – Thursday) and 07:55 – 14:25hrs on Friday.

On the SRN, at the A19/A184 Testos Junction, notable queuing occurs on all arms of the junction in both the AM and PM network peak periods (i.e. 07:00 - 10:00hrs and 15:00 - 18:00hrs).

The A19/A1290 Downhill Lane Junction is a key node on the local network and will provide one of the main accesses into the proposed development from the SRN. The junction currently operates as two signalised junctions on either side of the A19. The conflict in traffic flows resulting from the inbound and outbound flows to/from Nissan currently lead to both junctions experiencing high levels of queuing and congestion in both the AM and PM peak periods.

At the A19/A1231 Wessington Way junction, congestion is less pronounced, although queuing traffic occurs on the Wessington Road arm in the peak periods. Also, northbound traffic on the A19 turning west onto the A1231 experiences delay from queuing as traffic filters into the mainline flow.

During the Nissan shift change-over, staff arrive and depart the site concurrently within a short period of time. During these periods of shift change-over, notable congestion occurs locally on the SRN, most notably at the A19/A1290 Downhill Lane junction.

The A1290 is a wide single carriageway which runs in a south-west to north-east direction through the proposed development. Follingsby Lane, which runs from a north-west to south-east direction into the proposed development, is more rural in nature and is a narrow single carriageway with soft verge and/or hedgerow. Follingsby Lane narrows in the vicinity of the existing bridge structure over the River Don, which is also subject to a 2.5 tonne weight limit.

During the Nissan shift change-over period, congestion and delay typically occurs along the A1290, up to and including the A19 Downhill Lane junction. Outside of the Nissan shift change-over period the local road network operates in a more generally satisfactory manner, with traffic moving in more free-flow conditions, however limited spare capacity remains, frequently leading to short periods of congestion and queuing.

The proposed development area is currently directly served by two bus services, both of which pass and stop at the Nissan plant site.

To provide a baseline of the current accessibility of the proposed development, Geographical Information System (GIS) software has been used to map journey times via bus and Metro. There are many areas where journey times are in excess of 45 minutes (for example parts of South Tyneside (Whitburn, Harton and the eastern parts of South Shields, Jarrow and Hebburn)), whilst they are only between 8 and 13km away. Similarly, areas within the Sunderland Coalfields and Ryhope are 45 minutes or more away via bus and involve at least one interchange.

5.3 Consultation

Appropriate officers from SCC, STC and HE have been engaged throughout the development of the micro-simulation model. Furthermore, these parties have also been present at monthly Stakeholder meetings, at which, the scheme's progress and development have been discussed.

Officers from SCC, STC and HE will continue to be consulted and engaged directly during the preparation of supporting submission documents. A formal scoping opinion will also be requested from these officers.

5.4 Potential Impacts on Access and Transport

The assessment of the potential environmental impact of the proposed development on transport and access will be based on reference to the guidelines produced by the Institute of Environmental Assessment (IEA) (1993)[18]. The IEA is now recognised as the IEMA. The following are potential environmental impacts will be considered during both the construction phase and the operational phase of the development, if/when appropriate:

- Severance;
- Driver stress and delay;
- Pedestrian amenity and delay;
- Cyclist amenity and delay;
- Fear and intimidation; and
- Accidents and safety.

These apply both during construction and operational phases.

5.4.1 Severance

Severance is defined in the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 8 (June 1993) as *"…the separation of residents from facilities and services they use within their community caused by new or improved roads or by changes in traffic flows*."

Several factors are considered in determining the existing level of severance. These include road width, traffic flow and composition, traffic speeds and the availability of pedestrian crossing facilities.

The DMRB provides a set of measures for the identification of community severance and offers guidance as to the level of pedestrian diversion that may follow in terms of the two-way flow present on a road link. The DMRB provides guidance on the level of severance relief that may be afforded by pedestrian crossings.

[18] Institute of Environmental Assessment (1993) Guidelines for the Environmental Assessment of Road Traffic, Guidance Note No. 1, IEA.

5.4.2 Driver Stress and Delay

Driver stress, as outlined in the DMRB (Vol 11, Sec 3 Part 9), comprises three principal elements: frustration, fear of potential accidents, and uncertainty relating to the route being followed. The weight of these factors varies depending on the driver, leading to a subjective assessment. For example, drivers commuting will frequently experience a higher stress threshold due to experience and knowledge of a route compared to those who may only drive occasionally for leisure or personal purposes.

The DMRB outlines the thresholds of traffic flow and average journey speeds at which driver stress is perceived to change. Thresholds in the DMRB are provided only to guide the assessment of driver stress and delay levels. The DMRB suggests that consideration of driver stress incorporates qualitative elements, such as driver perceptions, and quantitative assessments related to vehicle speeds and the ability for drivers to overtake slower vehicles and so inform levels of delay.

5.4.3 Pedestrian Amenity and Delay

The IEA Guidelines broadly define amenity as “the relative” pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.

There are few quantitative methods available for assessing pedestrian and cycle delay. The IEA Guidelines suggest a range of pedestrian crossing times of 10 seconds (lower threshold) to 40 seconds (higher threshold) which equate to a road link with no crossing facilities and two-way traffic flows of approximately 1,400 vehicles in the peak periods. However, the IEA Guidelines also recommend that assessments of environmental effects should be based on judgement rather than specific thresholds.

5.4.4 Cyclist Amenity and Delay

Cyclist amenity and delay is similar to that for pedestrians, however, step free access and wider routes with enhanced visibility and appropriate surface conditions and separation are more important.

5.4.5 Fear and Intimidation

Fear and Intimidation criteria are considered within the IEA Guidelines to be dependent on the volume of traffic, its Heavy Goods Vehicle (HGV) component, its proximity to people or the lack of protection caused by factors such as narrow pavement widths.

5.4.6 Accidents and Safety

The IEA Guideline state that an assessment of road safety on the road network should be undertaken and informed by recent data.

5.5 Methodology of Assessment

The IEA Guidelines set out a methodology for assessing potentially significant environmental effects where a proposed development is likely to give rise to changes in traffic flows. The IEA guidelines suggest that, in order to determine the scale and extent of the assessment and the level of effect which a given development will have on the surrounding road network, the following two 'rules' should be followed:

1. Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
2. Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

The IEA guidelines state that projected changes in traffic of less than 10% creates no discernible environmental effect, given that daily variations in background traffic flow may fluctuate by this amount, and that a 30% change in traffic flow represents a reasonable threshold for including a highway link within the assessment. The threshold for a detailed assessment will therefore be set at a 30% change in traffic flow and at 10% in sensitive areas, and will be agreed with the respective local highway authorities and HE.

The IEA Guidelines also detail which areas can be considered sensitive, defined by the presence of sensitive receptors. For the purposes of this assessment, the sensitivity of receptors are classified as follows:

- Areas of low sensitivity to traffic flows, such as the A19 – Receptors of negligible sensitivity;
- Public open space, nature conservation areas, residential areas with adequate footways – Receptors of low sensitivity;
- Congested junctions, hospitals, community facilities, conservation areas – Receptors of medium sensitivity; and
- Sections of highway close to schools and colleges, accident black-spots, and numbers of non-motorised users residential dwellings within the IAMP which will remain and the Travellers' site to the south of the A184 – Receptors of high sensitivity.

The significance of each effect will be considered against the criteria within the IEA guidelines, where possible. However, the IEA Guidelines state that:

"For many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources."

In the absence of established significance criteria for traffic and transport effects, professional judgement will be used to assess whether the effects on traffic and

transport are considered to be significant. This will be carried out using the IEMA Guidelines to determine the scale and extent of the assessment to be undertaken. The significance falls into two categories; not significant and significant; the latter corresponding to significant effects in accordance with the EIA regulations.

Baseline traffic data has been recorded through the traffic surveys undertaken in March 2016 as detailed in Section 5.2. This data has been used to establish a micro-simulation traffic model for the area which will enable a quantitative assessment made of the percentage increase resulting from development related traffic during the operational and construction phases.

The main consideration relating to the assessment will be the impact of vehicular movements on the road network, particularly in terms of safety and sustainability, during construction and operational phases. The study area to be assessed within the ES Section will be informed by the IEA Guidelines, with specific consideration given to sensitive receptors. Mitigation, where appropriate, will be identified and incorporated into the scheme design.

5.6 Approach to Mitigation

Appropriate mitigation will be identified to address the potential impacts, key issues and constraints. Mitigation will likely focus on:

- Connectivity for all modes;
- Highway capacity;
- Bus travel;
- Safety;
- Other sustainable transport measures; and
- Construction Traffic Management Plan.

5.6.1 Connectivity for all Modes

It is important that the proposed development connects effectively to the surrounding areas and it will therefore be necessary to provide new, good standard access roads, with a suitable bridging structure over the River Don.

It is anticipated that a new bridge over the A19 will be required to provide a suitable connection between the proposed development and the local road network to the east of the A19. This bridge will cater for all modes of transport and will enable a greater route choice for all modes of transport.

Providing for all modes of transport and creating a sustainable development will be key to the success of the proposed development and as such, a permeable network for all modes of transport will be provided.

5.6.2 Highway Capacity

A new bridge over the A19 will be important for connecting the proposed development to land to the east. It will also serve as an important link for the

distribution of traffic generated by the proposed development, providing an alternative route choice and avoid congested areas such as the A19/A1290 Downhill Lane junction.

The A1290 will experience high volumes of traffic movement when the proposed development is operational and the current capacity of this single carriageway will be insufficient. It will, therefore, be necessary to upgrade this link to provide a dual carriageway, with two lanes in each direction. Furthermore, a new link road running parallel and to the west of the A1290 may also be necessary to assist in the distribution of development related traffic.

The A19 junctions at Testos and Downhill Lane currently act as a network constraint for access to the proposed development and require improvement to their capacity. HE are progressing with design considerations to provide additional capacity at these junctions, which include the Testos junction becoming grade-separated. The design and implementation of these schemes are themselves the subject of a separate DCO and independent of the proposed development.

5.6.3 Bus Travel

The internal road layout within the proposed development will need to ensure that buses can be accommodated with a key masterplan design principle being to incorporate options for a “bus loop”, where buses will be able to turn into the site, navigate the internal road network and exit the area.

It may also be possible to consider options for upgrading Follingsby Lane, so that buses could be accommodated to provide an alternative link to the proposed development from the Heworth area where there is also a Metro (local rapid transit rail network and service) interchange.

5.6.4 Other Sustainable Transport Measures

It is important that the proposed development promotes a sustainable travel ethos from the outset and to this end, each end user on the site will be part of an over-arching Travel Plan. Within the Travel Plan, a number of initiatives and measures will be identified to promote travel by sustainable means.

5.6.5 Construction Traffic Management Plan

The purpose of the Construction Traffic Management Plan will be to set out the transport arrangements (such as the intended HGV routes) for the proposed development and to demonstrate how the impact of vehicles will be mitigated on the local road network so that existing users and local residents are not adversely affected.

5.7 Residual Effects

It is envisaged that with appropriate mitigation measures in place to manage the residual effects, construction related activities will lead to temporary, medium term, negligible to minor negative effects.

The proposed development, once operational, will, by virtue of generating additional movements onto the local highway network, continue to have an overall environmental effect. The package of mitigation measures will seek to manage any residual effects.

5.8 Cumulative Effects

Committed developments for inclusion within the assessments will be agreed with the respective local highway authorities. These agreed scheme will be included in all future year traffic flow scenarios and their cumulative impact considered.

Consideration will be given to the potential cumulative environmental effects resulting from any potential over-lap in construction programmes for nearby major highway improvement schemes, including HE's anticipated DCO for the Testos Roundabout and Downhill Junction improvements.

6 Air Quality

6.1 Overview

This chapter outlines the existing baseline conditions for air quality in the area around the proposed IAMP development. The methodology proposed for assessing air quality impacts at the proposed development site is also set out.

During construction, dust and vehicle emissions may be a concern due to earthworks and construction activity, this would need to be mitigated by following best practice construction guidance.

During operation, the proposed development has the potential to impact on existing air quality as a result of road traffic exhaust emissions, such as NO_2 and PM_{10}, associated with vehicles travelling to and from the site, and emissions arising from the proposed energy centre and other end use processes such as motor manufacturing.

6.2 Baseline

A review of existing air quality conditions in the surrounding area of the proposed development has been undertaken. A review of the latest air quality progress reports produced by SCC and STC indicated that the area of the proposed development is not at risk of exceeding air quality standards which are outlined in EU and UK legislation. The proposed development does not lie within an Air Quality Management Area (AQMA). The closest AQMA, designated by STC for exceedances of the annual mean NO_2 objective lies approximately 3km north of the proposed development at Lindisfarne roundabout.

The closest air quality monitoring to the proposed development is shown in Appendix I, and details of these monitoring locations is shown in Table 6.1: Details of Local Air quality Monitoring Locations.Table 6.1.

Monitored annual mean NO_2 concentrations recorded at automatic monitors operated by South Tyneside and Sunderland Council are shown in Table 6.2. The automatic monitoring station at Dunn House was installed in July 2014 and was in operation until November 2015. The 2014 annual mean NO_2 concentration presented in Table 6.2 for Dunn House has been annualised as less than six months' worth of monitoring data were available. Monitored data for 2015 at SCC has not yet been made available.

Monitored data from the closest automatic monitors to the proposed development show that the annual mean NO_2 objective has been met in the area over recent years. A review of hourly mean NO_2 concentrations has also shown that there are no hours where the recorded hourly mean is greater than 200µg/m^3 and therefore the hourly mean NO_2 objective is also met.

Table 6.1: Details of Local Air quality Monitoring Locations.

ID	Name	Local Authority	Type	X	Y
Automatic Monitors					
A2	Lindisfarne Roundabout	South Tyneside	Roadside	434068	563695
57 (CM3)	Dunn House	Sunderland	Roadside	439661	557921
Diffusion Tubes					
DT2	Sunderland Road	South Tyneside	Roadside	438542	562321
DT3	Station Road	South Tyneside	Roadside	437118	561461
DT4	Grange Terrace/Front Street	South Tyneside	Roadside	436524	561275
DT5	Henley Way	South Tyneside	Roadside	434307	561640
DT9	Fellgate Estate A19	South Tyneside	Roadside	433739	562070
DT10	Fellgate Estate A19	South Tyneside	Roadside	433883	562644
DT11	Follingsby Terrace (No.1)	South Tyneside	Roadside	431152	561268
DT12	Lindisfarne Roundabout	South Tyneside	Roadside	433716	563805
DT13	Lindisfarne Road	South Tyneside	Roadside	433708	563805
DT15	York Avenue	South Tyneside	Roadside	432733	563068
DT16	Hadrian Road	South Tyneside	Roadside	433471	563393
DT17	Edinburgh Road (triplicate)	South Tyneside	Roadside	434068	563695
DT18					
DT19					
DT21	Newcastle Road (near Mcdonalds)	South Tyneside	Roadside	434313	563963
DT22	Newcastle Road (adj to Henderson Road)	South Tyneside	Roadside	434402	563976
DT29	Harton Grange	South Tyneside	Roadside	436062	563849
DT30	John Reid Road	South Tyneside	Roadside	435086	563450
57	5/6 North Bridge St	Sunderland	Kerbside	439664	557829
109	23 Newcastle Road	Sunderland	Roadside	439648	558120
132	Dunn House	Sunderland	Kerbside	439661	557901
133	26 Northern Way	Sunderland	Roadside	438153	558344
134	Southwick Road/Thompson	Sunderland	Roadside	438563	558517
135	Merle Terrace	Sunderland	Roadside	437561	557538

Table 6.2: Monitored Annual Mean NO_2 Concentrations from Automatic Monitors.

ID	Name	2014 Data Capture (%)	Annual Mean NO_2 Concentrations ($\mu g/m^3$)				
			2010	2011	2012	2013	2014
A2	Lindisfarne Roundabout	89.9	-	27.2	-	25.5	23.8
57 (CM3)	Dunn House	39.4	-	-	-	-	34.7
Annual Mean NO_2 Objective			**40µg/m^3**				

Monitored PM_{10} concentrations at the automatic monitor operated by STC are presented in Table 6.3. The automatic monitor operated by Sunderland Council does not monitor particulate matter (10µm) (PM_{10}) concentrations. No monitoring of fine particulate matter $PM_{2.5}$ is undertaken by either Council at the automatic monitors closest to the proposed development. Monitored concentrations show that the annual and daily mean PM_{10} objective is met within the AQMA to the north of the proposed development.

Table 6.3: Monitored PM_{10} Concentrations from Lindisfarne Roundabout Automatic Monitor

Lindisfarne Roundabout	Objective	2014 Data Capture (%)	2010	2011	2012	2013	2014
Annual Mean PM_{10} Concentration ($\mu g/m^3$)	40µg/m^3	89.9	-	20.0	-	18.9	16.8
No. of Days where Daily mean Concentrations were > 50µg/m^3	35 days		-	15	-	3	2

Monitored annual mean NO_2 concentrations at diffusion tube locations within the vicinity of the proposed development are shown in Table 6.4. Monitored concentrations at all locations, with the exception of Dunn House, are within the annual mean NO_2 objective and are likely to be representative of concentrations at the proposed development itself. The monitoring location at Dunn House, which is located approximately 5.3km south east of the proposed development, is at a busy junction near Sunderland Stadium. Exceedances of the annual mean NO_2 objective recorded in 2011, 2012 and 2013 are unlikely to be representative of concentrations near the proposed development.

Table 6.4: Monitored Annual Mean NO_2 Concentrations from Diffusion Tubes

ID	Name	2014 Data Capture (%)	Annual Mean NO_2 Concentrations ($\mu g/m^3$)					
			2010	2011	2012	2013	2014	2015
DT2	Sunderland Road	100	29.2	18.7	28.3	26.4	27.1	-
DT3	Station Road	100	22.4	18.7	19.8	27.8	21.8	-
DT4	Grange Terrace/Front Street	100	25.9	23.1	21.6	-	22.9	-

ID	Name	2014 Data Capture (%)	Annual Mean NO_2 Concentrations ($\mu g/m^3$)					
			2010	2011	2012	2013	2014	2015
DT5	Henley Way	100	28.0	24.7	20.7	25.7	29.8	-
DT9	Fellgate Estate A19	58	19.9	8.2	14.5	28.7	24.7	27.3
DT10	Fellgate Estate A19	42	21.8	15.9	12.1	29.5	27.5	22.9
DT11	Follingsby Terrace (No.1)	100	31.0	21.1	24.9	38.5	32.3	35.8
DT12	Lindisfarne Roundabout	83	36.0	27.0	30.5	37.3	30.4	32.5
DT13	Lindisfarne Road	75	29.5	23.0	20.1	35.9	25.7	30.2
DT15	York Avenue	83	27.7	11.9	13.9	19.0	24.1	21.3
DT16	Hadrian Road	100	23.0	20.5	19.8	22.8	24.9	26.2
DT17	Edinburgh Road (triplicate)	100	27.2	21.2	20.6	35.0	24.0	26.2
DT18		100	30.0	22.7	23.5	33.0	27.2	27.1
DT19		100	30.8	19.6	20.9	35.3	30.2	28.0
DT21	Newcastle Road (near Mcdonalds)	100	41.6	34.2	32.6	32.8	34.8	32.3
DT22	Newcastle Road (adj to Henderson Road)	100	34.7	30.3	30.7	34.1	27.0	29.2
DT29	Harton Grange	100	29.1	27.4	18.4	22.4	21.9	21.2
DT30	John Reid Road	100	27.8	27.1	22.2	34.4	24.6	22.4
57	5/6 North Bridge St	75	33.4	33.7	36.8	34.6	35.4	-
109	23 Newcastle Road	25	31.8	15.3	34.4	29.1	32.3	-
132	Dunn House	92	38.9	42.2	46.2	48.0	39.1	-
133	26 Northern Way	100	31.8	32.9	32.2	31.5	31.3	-
134	Southwick Road/Thompson	83	29.1	32.8	35.2	31.9	30.3	-
135	Merle Terrace	100	23.3	22.1	25.1	25.9	24.1	-
Annual Mean NO_2 objective			**40µg/m³**					

In addition to local air quality monitoring data undertaken by the local authority, Defra publishes background pollutant mapping[19] for every 1km x 1km grid square across the UK. Background pollutant mapping has been reviewed for those grid squares in which the IAMP development lies and is presented in Table 6.5. Background annual mean nitrogen dioxide (NO_2), PM_{10} and $PM_{2.5}$ concentrations in those grid squares are well below the relevant air quality objectives at the proposed development.

Table 6.5: Defra Estimated Background Pollutant Concentrations

Year	Grid Square X	Grid Square Y	2016 Annual Mean Concentration (µg/m^3)			
			NOx	NO_2	PM_{10}	$PM_{2.5}$
2016	432500	560500	18.8	13.5	15.0	9.1
	432500	559500	19.3	13.9	16.2	9.5
	432500	558500	21.1	15.1	16.6	9.7
	433500	560500	22.3	15.8	15.9	9.6
	433500	559500	21.2	15.1	15.8	9.5
	433500	558500	26.0	18.0	17.1	10.3
	434500	560500	21.4	15.2	15.5	9.4
	434500	559500	28.4	19.5	16.7	10.4
	434500	558500	51.8	31.3	20.9	13.1

6.3 Consultation

Consultation will be undertaken with the Environmental Health Officers at SCC and STC to agree the proposed approach to the air quality assessment. Discussions will aim to agree the sensitive receptors to be assessed and the emission factors, background pollutant concentrations and meteorological data to be used in the assessment.

6.4 Potential Impacts on Air Quality

During construction the generation of dust on-site has the potential to cause adverse air quality impacts where human receptors exist within 350m and ecological receptors exist within 50m of construction works. Human receptors are present at isolated residential properties on the proposed development site and at residential properties to the east of the A19 within 350m of the site boundary. The Nissan manufacturing facility to the south would also be particularly sensitive to dust arising from construction works. Ecological receptors within 50m of the site boundary include the local wildlife sites listed in Table 7.3 and Table 7.4.

The potential impacts that may arise as a result of the construction of the proposed development are dust deposition, resulting in the soiling of surfaces; visible dust plumes; elevated PM_{10} concentrations as a result of dust generating activities on

[19] Defra, Background Pollutant Mapping, http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

site; and an increase in NO_2 and PM_{10} concentrations due to exhaust emissions from non-road mobile machinery (NRMM) and vehicles accessing the site.

When operational, the proposed development has the potential to impact on existing air quality on-site and off-site as a result of road traffic exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$, associated with vehicles travelling to and from the site. In addition, the proposed energy centre which will form part of the development has the potential to impact on existing air quality both on-site and off-site. Pollutant concentrations affected by the proposed energy centre will depend on the choice of fuel or feedstock.

6.5 Methodology of Assessment

An assessment of local air quality will be undertaken following all relevant guidance produced by the Department of Environment, Food and Rural Affairs (Defra), the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK). This will include:

- A review of relevant legislation and policy at national, regional and local levels;
- A review of the existing air quality conditions in the area and the main sources of pollutants;
- A qualitative assessment of dust emissions during construction following the IAQM guidance;
- An assessment of the effects of traffic emissions and energy centre emissions on air quality using dispersion modelling;
- An assessment of the significance of these effects following the EPUK/IAQM land-use planning guidance; and
- Formulation of construction and operational measures, where necessary, to mitigate the effects of the development on local air quality.

6.5.1 Construction

6.5.1.1 Construction Dust

The construction dust assessment will be undertaken following the risk-based approach outlined in the IAQM guidance for the assessment of dust from demolition and construction. This will consider receptors within 350m of the proposed development site boundary and within 20m of routes used by construction vehicles up to 500m from the proposed development site access, as well as any ecological receptors within 50m of the site boundary (Elliscope Farm East / Hylton Bridge Local Wildlife Site).

The IAQM guidance considers the potential for dust emissions from the following activities:

- Demolition;
- Earthworks i.e. soil stripping, ground levelling, excavation and land;

- Construction; and
- Trackout i.e. incidental movement of dust and dirt from the construction or demolition site onto the public road network.

For each of the above activities, the guidance considers three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of health effects due to a significant increase in PM_{10} exposure.

The methodology takes into account the scale to which the above effects are likely to be generated (classed as small, medium or large). Also the distance of the closest receptors and background PM_{10} concentrations are taken into account in order to determine the sensitivity of the surrounding area. This is then taken into consideration to derive an overall site risk and identify suitable mitigation measures. Receptors can be either human or ecological and are chosen based on their sensitivity to dust soiling and PM_{10} exposure.

6.5.1.2 Construction Traffic

The construction traffic assessment will consider sensitive receptors (human and ecological) within 200m of the local road network where changes in traffic meet the following criteria:

- A change of Light Duty Vehicle (LDV) flows of more than 500 Annual Average Daily Traffic (AADT); or
- A change of Heavy Duty Vehicle (HDV) flows of more than 100 AADT.

It is considered unlikely that the construction traffic will reach the relevant criteria stated above however if necessary, dispersion modelling will be undertaken using ADMS-Roads as outlined in the operation assessment methodology below.

6.5.2 Operation

6.5.2.1 Road Traffic

The operational traffic assessment will consider sensitive receptors (human and ecological) within 200m of the local road network where changes in traffic and changes to the highway network meet the following criteria as a result of the IAMP development:

- A change of LDV flows of more than 500 AADT;
- A change of HDV flows of more than 100 AADT;
- A realignment of roads where the road layout changes by 5m or more; or
- Introduce a new junction or remove an existing junction near to relevant receptors.

Given the extent of the IAMP development it is anticipated a detailed assessment of road traffic effects on air quality will be required.

The assessment will be undertaken using ADMS-Roads (version 4) atmospheric dispersion model from Cambridge Environmental Research Consultants (CERC). Traffic data will be obtained from transport planners for the development in 24 hour AADT format with the calculated percentage of HDVs and average speed data (kph). Using this data the latest vehicle emission factors released by Defra will be used to calculate road-traffic emissions.

The assessment will focus on concentrations of NO_2, PM_{10} and $PM_{2.5}$ for which air quality objectives and EU limit values are set in legislation.

The assessment of air quality effects from road traffic will include a baseline scenario to allow verification of the air quality model against local authority air quality monitoring locations and an opening year scenario both with and without the proposed development in operation. It is anticipated that the traffic data obtained for the opening year scenario both with and without the proposed development will include traffic associated with any committed development in the area.

A comparison of the results from the opening year with and without proposed development scenarios allows the magnitude of change in pollutant concentrations arising as a result of the proposed development to be determined. The EPUK/IAQM land-use planning guidance provides an approach to determining the significance of likely effects resulting from a proposed development on local air quality. Also provided is advice on how to describe the significance of the effects predicted from air quality modelling, specifically for the pollutants NO_2 and PM_{10}. The guidance incorporates the latest position of the IAQM on effect significance.

6.5.2.2 Energy Centre

The design proposals for the on-site energy centre have not yet been finalised. However, it is likely that the proposed energy centre will meet the criteria included in the EPUK/IAQM land-use planning guidance[20] and will require assessment. The guidance sets out criteria which provide more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area. The criteria include the following:

- The development will have one or more substantial combustion processes; and
- The development will have a combustion process of any size

These are the two criteria out of seven that would relate to the Energy Centre.

It is likely that at the stage of submission of the EIA detailed design information for the proposed energy centre will not be available. Therefore, an indicative assessment (informed by reference to the Rochdale principle) will be undertaken using technical information available for plant representative of those proposed for installation as part of the development.

[20] Environmental Protection UK and Institute of Air Quality Management, May 2015, Land-Use Planning & Development Control: Planning For Air Quality

A dispersion modelling assessment will be undertaken using the ADMS 5.1 dispersion model to determine the impact of the proposed energy centre on pollutant concentrations within the vicinity of the proposed development. The pollutants to be assessed will depend on the feedstock for the proposed energy centre. The assessment will include consideration of off-site receptors, the proposed development itself and any open communal spaces which have the potential to be affected by emissions from the combustion plant.

The EPUK/IAQM land-use planning guidance will be used to assess significance for the operational phase. Emissions from the on-site combustion plant and road traffic will be assessed cumulatively in order to ensure emissions from the whole development are considered.

6.6 Approach to Mitigation

Following the assessment of construction and operational air quality effects, mitigation measures will be recommended where required. It is likely that mitigation will be required for the construction phase to minimise the effect of construction dust on nearby properties. Dust suppressant measures outlined in the IAQM guidance for the assessment of dust from demolition and construction will be recommended as required.

7 Biodiversity & Ecology

7.1 Overview

7.1.1 Introduction

This scoping report describes the approach to the Ecological Impact Assessment (EcIA), which will be presented as a chapter within the ES (ES). The EcIA will consider impacts of the proposed development on ecological features (sites designated for their nature conservation value, habitats and species), and determine whether the effects are significant. Where possible, the proposed development will be designed to avoid and/or reduce adverse effects on important ecological features, and deliver benefits for biodiversity in accordance with national and local planning policy and best practice.

The purpose of this scoping report is to set out information to the SofS in providing a Scoping Opinion as follows:

- The zone of influence of the proposed development (see Section 7.5);
- An initial understanding of the baseline ecological conditions (see Section 7.2);
- The proposed surveys and methods for survey, evaluation and assessment (see Section 7.5 and 7.6); and
- The potential significant effects on ecological features that could arise as a result of the proposed development (see Section 7.4).

In addition to the EcIA, it is anticipated, that a Habitat Regulations Assessment (HRA) 'Statement to Inform' will need to be prepared for the IAMP proposed development. This will be the first stage (screening) of the HRA process.

7.1.2 Relevant Policy, Legislation and Guidance

Planning policies relevant to this assessment comprise:

- The National Planning Policy Framework (NPPF)[21];
- The adopted Sunderland Unitary Development Plan[22];
- The emerging Sunderland Local Plan[23]; and
- The South Tyneside Core Strategy[24].

[21] Department for Communities and Local Government (2012) National Planning Policy Framework.
[22] Sunderland City Council Unitary Development Plan (including adopted alteration no. 2) http://www.cartogold.co.uk/sunderland/text/00cont.htm Accessed 22 May 2016.
[23] Sunderland City Council (August 2013) Sunderland Local Plan: Core Strategy and Development Management Policies. Draft Revised Preferred Options. http://www.sunderland.gov.uk/CHttpHandler.ashx?id=17920&p=0&fsize=6Mb&ftype=Draft Core Strategy Sept 2013.PDF Accessed 19 May 2016.

Legislation relevant to this assessment comprises:

- The Conservation of Habitats and Species Regulations 2010 (as amended)[25];
- The Water Environment (Water Framework Directive (WFD)) (England and Wales) Regulations 2003[26];
- The Hedgerows Regulations 1997[27];
- The Wildlife and Countryside Act 1981 (as amended)[28];
- The Countryside and Rights of Way Act 2000[29];
- The Natural Environment and Rural Communities (NERC) Act 2006[30]; and
- The Protection of Badgers Act 1992[31].

Guidance documents relevant to this assessment comprise:

- The Durham Biodiversity Action Plan (BAP)[32]; and
- Birds of Conservation Concern (BoCC) 4: The population status of birds in the UK, Channel Islands and Isle of Man[33].

7.2 Baseline

The baseline, against which the assessment will be undertaken, will be established from a combination of existing information (desk-study data) and site survey information, to be obtained throughout 2016 and part of 2017.

Information on internationally/European designated sites within 10km and legally protected/notable habitats and species within 2km of the full extent of the

[24] South Tyneside City Council (2007) South Tyneside Core Strategy. http://www.southtyneside.gov.uk/CHttpHandler.ashx?id=2468&p=0 Accessed 19 May 2016.
[25] The National Archives: The Conservation of Habitats and Species Regulations 2010 http://www.legislation.gov.uk/uksi/2010/490/pdfs/uksi_20100490_en.pdf Accessed 11 March 2016.
[26] The National Archives: Water Environment Regulations 2003 http://www.legislation.gov.uk/uksi/2003/3242/contents/made Accessed 11 March 2016.
[27] The National Archives: The Hedgerows Regulations 1997 http://www.legislation.gov.uk/uksi/1997/1160/made Accessed 11 March 2016.
[28] The National Archives: Wildlife & Countryside Act 1981 http://www.legislation.gov.uk/ukpga/1981/69 Accessed 11 March 2016.
[29] The National Archives: Countryside and Rights of Way Act 2000 http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf Accessed 11 March 2016.
[30] National Archives: Natural Environment and Rural Communities Act 2006 http://www.legislation.gov.uk/ukpga/2006/16/contents Accessed 11 March 2016.
[31] The National Archives: Protection of Badgers Act 1992 http://www.legislation.gov.uk/ukpga/1992/51/contents Accessed 11 March 2016.
[32] Durham Biodiversity Partnership (July 2007) Durham Biodiversity Action Plan. http://www.durhambiodiversity.org.uk/biodiversity-action-plan/ Accessed 22 May 2016.
[33] Eaton et al. (2015) Birds of Conservation Concern 4: The population status of birds in the UK, Channel Islands and Isle of Man. British Birds 108, 708-746. Available online at: https://www.britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf Accessed 26 May 2016.

proposed development site was obtained from the Environmental Records Information Centre North East (ERIC NE) in 2014, and will be updated in 2016.

The majority of the other existing desk study information is available in the form of a comprehensive Ecology Report[34], produced by White Young Green (WYG) in 2015.

The WYG 2014-2015 study and range of ecological surveys covering an area of land north of the Nissan car manufacturing plant, in Sunderland, was commissioned by SCC in April 2014, in view of the proposed development to create a new IAMP. The survey area, as agreed with SCC, is shown in Figure 1.3v1 in Appendix J. A broad suite of surveys was undertaken within the blue line boundary shown in Figure 1.3v1, and a more detailed set of surveys was undertaken within the red line boundary shown in Figure 1.3v1. The survey area was reduced during the commission, to focus on a smaller, more central area, as shown by the dotted blue and red lines in Figure 1.3v1. The figure also shows where access restrictions prevented surveys from being undertaken.

The study and surveys comprised:

- A desk top review of statutory and non-statutory designated sites within 2km of the blue line boundary (Figure 1.3v1, Appendix J), and within 10km from the survey area specifically for internationally/European designated sites such as SAC, SPAs and Ramsar sites;
- A desk top review of all records of legally protected and notable species within 2km of the blue line boundary (Figure 1.3v1, Appendix J);
- A desk top review of all farmland within the blue line boundary (Figure 1.3v1, Appendix J), which is subject to some form of agri-environment scheme;
- Phase 1 Habitat survey of all habitats within the blue line boundary (Figure 1.3v1, Appendix J);
- Scoping of all buildings and trees within the red line boundary (Figure 1.3v1, Appendix J), for their potential to support roosting bats, and bat activity surveys comprising dusk emergence/dawn re-entry surveys on trees and buildings assessed as having a moderate or high bat roost potential, static detector surveys and walked transects;
- Scoping of all ponds within 500m of the blue line boundary (Figure 1.3v1, Appendix J), for their suitability to support great crested newt (*Triturus cristatus),* and presence/absence surveys of ponds with potential to support great crested newt (or review of third party data where access was not available);
- Scoping and searching of watercourses and adjacent water bodies and wetland areas within the blue line boundary (Figure 1.3v1, Appendix J), for signs of otter (*Lutra lutra*) and water vole (*Arvicola amphibius*), and for any holts and burrows respectively;

[34] White Young Green (10 December 2015) Land North of Nissan Ecology Report. Sunderland City Council and South Tyneside Council.

- Scoping of buildings, trees and habitats within the red line boundary (Figure 1.3v1, Appendix J), for their potential to support barn owl (*Tyto alba*);
- Suites of breeding bird and wintering/passage bird surveys (walked transects) within the blue line boundary (Figure 1.3v1, Appendix J);
- A suite of brown hare (*Lepus europaeus*) surveys (walked transects) within the blue line boundary (Figure 1.3v1, Appendix J);
- A search for signs of badger (*Meles meles*) and their setts within the red line boundary (Figure 1.3v1, Appendix J); and
- Noting down incidental results of hedgehog (*Erinaceus europaeus*), water shrew (*Sorex palustris*) and notable invertebrate species, when recorded during other species surveys.

Dormouse surveys were not undertaken as part of the 2014-2015 suite of studies and surveys, and dormouse has been scoped out from further assessment as the proposed development site is at the northern extent of the known dormouse distribution. Furthermore, there are no large blocks of woodlands within the proposed development site suitable to support a viable population, and although the hedgerow network is extensive, it is disjointed, and it's species-poor nature means it is unlikely to provide the year-round food source that dormouse would require.

Based on the existing survey information, a further suite of habitat and protected species surveys have been planned for 2016, in consultation with the SCC ecologist, and are currently underway. Consultation with the STC ecologist will be undertaken prior to finalisation of the survey programme.

Sections 7.2.1 to 7.2.3 of this scoping report, describe the preliminary ecological baseline information, features of which could be impacted by the proposed development. More detailed habitat and species information will be available to inform the EcIA, following completion of further ecological surveys, proposals for which are outlined in Section 7.5.1.

7.2.1 Designated Sites

7.2.1.1 Internationally/European Designated Sites

There are three internationally/European designated sites within 10km of the proposed development, as shown in Table 7.1.

Table 7.1: Internationally/European Designated Sites within 10km of the Proposed Development

Site Name	Designation	Distance from Proposed Development	Reason for Designation
Durham Coast	SAC	Approximately 6km east	Annex 1 Habitat 1230 Vegetated Sea Cliffs of the Atlantic and Baltic Coasts.
Northumbria Coast	SPA	Approximately 6.5km east	Breeding little tern (*Sternula albifrons*), wintering purple sandpiper (*Calidris maritima*) and wintering turnstone (*Arenaria interpres*).
Northumbria Coast	Ramsar	Approximately 6km east	Ramsar criterion 6 – species populations occurring at levels of international importance. Site regularly supports little tern during the breeding season. Peak counts of purple sandpiper and ruddy turnstone during the winter.

7.2.1.2 Statutory Designated Sites

There are four statutory designated sites within 2km of the proposed development, as shown in Table 7.2, of which none fall within the boundary of the proposed development.

Table 7.2: Statutory Designated Sites within 2km of the Proposed Development

Site Name	Designation	Distance from Proposed Development	Reason for Designation
Hylton Dene	Local Nature Reserve (LNR)	Approximately 800m south-east	Habitats include meadows, woodlands and wetlands. The main feature of the Dene is its mature woodland, part of which is designated as ancient semi- natural. It is important for birds such as great-spotted woodpecker (*Dendrocopos major*) and tawny owl (*Strix aluco*) and other protected species including the pipistrelle bat (*Pipistrellus* sp.) which breeds, roosts and feeds in the Dene. The Dene also contains neutral grasslands and a rich marsh area supporting common valerian (*Valeriana officinalis*), marsh pennywort (*Hydrocotyle vulgaris*), wild angelica (*Angelica sylvestris*), northern marsh orchid (*Dactylorhiza purpurella*) and giant horsetail (*Equisetum telmateia*). Part of the site; 'Bunny Hill', is managed as a meadow to help sustain magnesian limestone grassland plants such as quaking grass (*Briza media*), cowslip (*Primula veris*) and field scabious (*Knautia arvensis*), and as a breeding site for birds such as meadow pipit (*Anthus pratensis*), skylark (*Alauda arvensis*) and linnet (*Carduelis cannabina*).
Barmston Pond	LNR	Approximately 800m south	Pond and meadows. The pond is especially important for birds and autumn waders. Species recorded include wood sandpiper (*Tringa glareola*),

Site Name	Designation	Distance from Proposed Development	Reason for Designation
			green sandpiper (*Tringa ochropus*), ruff (*Philomachus pugnax*), redshank (*Tringa totanus*), bar-tailed godwit (*Limosa lapponica*) and black-necked grebe (*Podiceps nigricollis*). The meadow areas are managed for wildflowers, insects and other animal life. Early purple orchid (*Orchis mascula*) and self-heal (*Prunella vulgaris*) are present in spring, meadow sweet (*Filipendula ulmaria*) and birds foot trefoil (*Lotus corniculatus*) provide nectar for butterflies such as orange tip (*Anthocharis cardamines*) and red admiral (*Vanessa atalanta*) in summer. Damselflies and dragonflies are seen.
Hylton Castle Cutting	Site of Special Scientific Interest (SSSI)	Approximately 1.1km south-east	Designated for its geological and palaeontological interest. At Hylton Castle, rocks from the middle magnesian limestone are exposed in a road cutting through the core of a late permian reef. The reef-core sediments here yield a rich marine fauna of brachiopods, bivalves, bryozoans and gastropods making this an important site for the study of ancient reefs and their faunas.
Wear River Bank	SSSI	Approximately 1.8km south-east	Designated for its geological and palaeontological interest. The Wear river bank provides the best exposure of the highest carboniferous, early westphalian C age, strata in the Northumberland and Durham coalfield.

7.2.1.3 Non-Statutory Designated Sites

There are 27 non-statutory designated sites, in this case LWSs, within 2km of the proposed development, as shown in Table 7.3, of which two fall within the boundary of the proposed development.

Table 7.3: Local Wildlife Sites within 2km of the Proposed Development

Site Name	Designation	Distance from Proposed Development	Reason for Designation
River Don, East House	LWS	Within Proposed Development	In this stretch the River Don has mostly unmodified riverbank. Recent surveys have recorded occupied breeding habitat for water vole and use by otter. Breeding yellowhammer, reed bunting and grey partridge (*Perdix perdix*). Wintering fieldfare (*Turdus pilaris*) and redwing (*Turdus iliacus*) present.
Elliscope Farm East / Hylton Bridge	LWS	Within Proposed Development	Forms part of River Don unmodified riverbank. Occupied breeding habitat for water vole and used by otter. Contains scrub and broadleaf woodland. Small pond at east end with reed canary grass and branched bur reed (*Sparganium erectum*).

Site Name	Designation	Distance from Proposed Development	Reason for Designation
Make-Me-Rich Meadow	LWS	100m east	An area of species-rich, damp, unimproved grassland and a section of the River Don. Evidence of occupied breeding habitat for water vole and use by otter.
Strother House Farm	LWS	200m north	Lowland fen habitat. An area of marshy ground bounded by ditches. Arable land bounded by a ditch to the north.
Mount Pleasant Marsh	LWS	250m north	Ponds, lowland fen, meadows and pasture and broadleaf plantations. Small but very species-rich, damp, ridge and furrow meadow – rare in the north-east. A large population of breeding toad (*Bufo bufo*), frog (*Rana temporaria*) and smooth newt (*Lissotriton vulgaris*). Willow tit (*Poecile montanus*), bullfinch (*Pyrrhula pyrrhula*) and six *Odonata* species present.
Peepy Plantation	LWS	500m south	A mature plantation with interesting woodland flora and fauna is also notable for invertebrates and woodland birds. A small pond on the edge of the plantation supports emergent vegetation and breeding habitats for several species of bird.
Usworth Pond	LWS	500m west	This shallow, well established, mining subsidence pond is fringed with emergent vegetation and provides a habitat for breeding birds and a staging post for migrant birds. Amphibians are well represented, as are invertebrates.
Wardley Colliery	LWS	600m north-west	A former colliery site with a large raised area of colliery spoil. The largest early successional brownfield site in South Tyneside. Holds wall brown (*Lasiommata megera*) and dingy skipper (*Erynnis tages*) butterflies. Territorial behaviour suggests breeding lapwing (*Vanellus vanellus*) and skylark.
Boldon Lake	LWS	600m north	Man-made lake with species-rich damp grassland alongside. South of the lake is a remnant of exceptionally rich, damp ridge and furrow grassland closely related to MG4 – rare in the region. Only breeding site for reed bunting (*Emberiza schoeniclus*) in the borough.
Severn Houses	LWS	600m south-west	The site includes an elongated subsidence pond located within an old ridge and furrow pasture which is locally dominated by gorse scrub and is particularly notable for a large population of great crested newt which is present together with other amphibians.
Downhill Meadows	LWS	700m east	The site incorporates large areas of calcareous grassland with species autumn gentian, yellow rattle, burnet saxifrage. Areas of tree planting, rank neutral grassland and small amounts of scattered scrub.

Site Name	Designation	Distance from Proposed Development	Reason for Designation
Downhill Old Quarry	LWS	700m north-east	Magnesian limestone grassland, broadleaf woodland and scrub. Includes ten indicator species for magnesian limestone plus musk thistle (*Carduus nutans*), glaucous sedge (*Carex flacca*), black medick (*Medicago lupulina*), yellow rattle (*Rhinanthus minor*), lesser knapweed (*Centaurea nigra*), autumn gentian (*Gentianella amarella*), cowslip, common centaury (*Centaurium erythraea*), common-spotted orchid (*Dactylorhiza fuchsii*).
Calf Close Burn	LWS	800m north	Lowland fen habitat. A linear site following the course of a small burn as it flows north across agricultural land. Includes the largest long-standing reedbed in the borough.
Tilesheds	LWS	800m south-east	A varied site with a wooded area, wetlands and an area of open magnesian limestone grassland. Notable species present include common water-plantain (*Alisma plantago-aquatica*), brooklime (*Veronica beccabunga*), great willowherb (*Epilobium hirsutum*), marsh thistle (*Cirsium palustre*), lesser bulrush (*Typha angustifolia*), reed canary grass (*Phalaris arundinacea*) and hard rush (*Juncus inflexus*).
Follingsby Pond / River Don Streambank	LWS	800m west	Pond and stream habitats of particular botanical interest exhibit luxuriant flora associated with steep clay river banks and overhanging crack willow. Kingfisher (*Alcedo atthis*) and water vole present.
Follingsby	LWS	800m west	A short section of the River Don with mostly unmodified riverbank. The riverside margin to the east has a dense cover of trees and shrubs. Small amounts of branched bur reed, reed canary grass, fool's watercress (*Apium nodiflorum*). Long and short eared owl (*Asio otus* and *Asio flammeus*) and grey partridge present.
River Don, North Road	LWS	900m north-east	Has mostly unmodified riverbank with damp species-rich neutral grassland. Recent surveys have recorded occupied breeding habitat for water vole and use by otter.
Hylton Plantation	LWS	900m south	A mixed plantation dominated by coniferous trees with scattered broad-leaved trees. Trees and scrub provide shelter for a thriving woodland bird community.
Barmston Pond	LWS	1000m south	A large subsidence pond lying amongst pasture with extensive rush dominated marsh border, and many submerged plants. The site is an important post for wintering and passage birds. There is a breeding population of great crested newt.

Site Name	Designation	Distance from Proposed Development	Reason for Designation
Hylton Castle Grassland	LWS	1000m east	The hillside displays magnesian limestone grassland and scrub adjacent geological exposures of ford formation (reef facias) at Hylton Castle Cutting SSSI. Birds include skylark, meadow pipit, linnet, yellowhammer (*Emberiza citrinella*) and whitethroat (*Sylvia communis*).
River Don, West Boldon	LWS	1300m north-east	A linear site covering the banks of the River Don. This is one of the best breeding sites for water vole in the region. Likely to be used by otter and banded demoiselle damselfly (*Calopteryx splendens*) are present.
Hylton Dene	LWS	1400m south-east	One of the very few surveying examples of a semi-natural valley within the urban area of Sunderland. The considerable botanical interest of the dene is centred upon mature woodland, calcareous grassland, flushed herb-rich marsh and stream bank habitats.
Turner's Hill	LWS	1700m north-east	An area of grassland on a small circular hillock within Boldon Golf Course. It has an exceptionally diverse flora with typical magnesian limestone grassland species. Autumn gentian, dyers greenweed (*Genista tinctoria*), twayblade (***Neottia ovata*)**, burnet saxifrage (*Pimpinella saxifraga*) and glaucous sedge present.
Barons Quay Wood and Barons Quay	LWS	1800m south	Mixed deciduous woodland and hawthorn scrub are of particular botanical interest, with extensive areas of rough grassland of high nature conservation value. An important and integral part of the salt marsh complex along the River Wear,
Black Plantation	LWS	2000m north-east	Broadleaf woodland. Habitat suitable to sustain population of white-letter hairstreak butterfly (*Satyrium w-album*). Avian species present include barn owl, jay (*Garrulus glandarius*) and breeding great-spotted woodpecker.
Wear River Bank Woods	LWS	2000m south	Steep River Wear valley has areas of mixed deciduous woodland. These vary with the type of soil (predominantly calcareous) and position, producing a varied collection of plant communities. Active badger setts. Tidal salt marsh. Ornithological interest.
Washington Wildfowl and Wetlands Centre	LWS	2000m south	Artificially constructed lakes and scrapes adjacent to River Wear are an important refuge for wintering and passage migrant birds. Associated woodland, pond and marsh habitats are also of ornithological, botanical and invertebrate interest.

There are also two proposed LWSs which fall within the boundary of the proposed development, as shown in Table 7.4 below.

Table 7.4: Local Wildlife Sites within the Proposed Development Boundary

Site Name	Designation	Reason for Proposed Designation
Usworth Burn	Proposed Local Wildlife Site (PLWS)	The site consists of the two and a half kilometre long course of the Usworth Burn, a tributary going south towards Seven Houses and an adjacent copse. The banks of the river provide suitable habitat for water vole and they are present along the whole length of this local wildlife site. Water shrew are present on the river and otter are occasionally present, with individuals travelling up the river from the Tyne. The water is fairly clean and supports many invertebrates, including banded demoiselle. The invertebrates, and a large population of three-spined stickleback (*Gasterosteus aculeatus*), provide food for birds such as mallard (*Anas platyrhynchos*), moorhen (*Gallinula* sp.), kingfisher, heron (*Ardea cinerea*), pied wagtail (*Motacilla alba*) and grey wagtail (*Motacilla cinerea*). The steep banks provide several suitable nest sites for kingfisher. Barn owl are regularly present. Lapwing are present in the winter months. Linnet, reed bunting and a number of other small bird species nest in the scrub along the riverbanks.
River Don	PLWS	The site consists of the southern half of a two kilometre stretch of the River Don between Hylton Bridge and the disused Wardley to Washington rail line. The banks of the river provide suitable habitat for water vole and they are present along the whole length of this local wildlife site. Water shrew are present on the river and otter are occasionally present, with individuals travelling up the river from the Tyne. The water is fairly clean and supports many invertebrates, including banded demoiselle. The invertebrates, and a large population of three-spined stickleback, provide food for birds such as mallard, moorhen, kingfisher, heron, pied wagtail and grey wagtail. The steep banks provide several suitable nest sites for kingfisher. Barn owl are regularly present. Lapwing are present in the winter months. Linnet, reed bunting and a number of other small bird species nest in the scrub along the riverbanks.

7.2.1.4 Environmental Stewardship Schemes

Some areas of farmland within the proposed development site are managed under Entry Level Stewardship schemes. These are land management schemes in England which involve simple and effective land management agreements with priority options. No areas within the proposed development site are managed under Higher Level Stewardship schemes, which involve more complex types of management and agreements tailored to local circumstances.

7.2.2 Habitats

7.2.2.1 Arable Fields

Large arable fields supporting a variety of crops dominate the area within the proposed development. The arable fields themselves are of low intrinsic ecological value, although they are important for breeding bird species such as skylark and lapwing. Arable field margins that are managed specifically to

provide benefits to wildlife are habitats of principal importance[35]. It is not currently known which (if any) field margins within the proposed development are managed to provide benefits to wildlife, and this would be examined as part of the EIA process.

7.2.2.2 Marshy Grassland

The largest area of marshy grassland within the proposed development is located just north of Elliscope Farm. There are also smaller areas of marshy grassland around ponds, and inundated areas along the River Don. Floodplain grazing marsh is a habitat of principal importance and a Durham BAP habitat.

7.2.2.3 Species-Poor Semi-improved Grassland

Areas with species-poor semi-improved grassland include agricultural fields subject to lower levels of management and set aside areas/field margins/water course verges, potentially under entry-level stewardship or low intensity management. These areas are found primarily in the northern part of the proposed development, clustered around Elliscope Farm and Make-Me-Rich Farm. This is not a habitat of principal importance or a habitat listed on the Durham BAP.

7.2.2.4 Improved Grassland

There are small fields of improved grassland, used as agricultural pasture. These are primarily located within the northern part of the proposed development, although there are a number of small fields near West Moor Farm, North Moor Farm and The White House. This is not a habitat of principal importance or a habitat listed on the Durham BAP.

7.2.2.5 Amenity Grassland

Small areas of amenity grassland are present in the form of gardens to residential properties. This is not a habitat of principal importance or a habitat listed on the Durham BAP.

7.2.2.6 Hedgerows

The majority of hedgerows are species poor and varying between intact and defunct throughout. These form boundary features surrounding most arable fields. A small number of hedgerows within the proposed development site are species-rich. It is not currently known if any of these hedgerows qualify as ‘Important’ under The Hedgerows Regulations 1997 but this will be established as part of the EIA process. Hedgerows are a habitat of principal importance and listed on the Durham BAP.

7.2.2.7 Broad-leaved Semi-natural Woodland

There are a number of small patches of broad-leaved semi-natural woodland within the proposed development, primarily along the River Don between Make-Me-Rich farm and Elliscope Farm. There is also a long thin strip of woodland

[35] These are habitats listed as being of principal importance on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

north of Elliscope farm, and a small copse just north-east of North Moor Farm. Broad-leaved woodland is a habitat of principal importance and listed on the Durham BAP.

7.2.2.8 Scattered Trees

Occasional broad-leaved scattered trees are found acting as field boundary trees, particularly on the southern boundary and around Hilton Grove Farm. Scattered trees are not a habitat of principal importance or a habitat listed on the Durham BAP, unless they are veteran trees or a feature of parkland, however, they often form part of a hedgerow, in which case they will fall under the definition for hedgerows.

7.2.2.9 Scrub

There are patches of scattered scrub throughout the proposed development area. Scrub is not a habitat of principal importance, however it is listed in the Durham BAP, as it forms an essential structural element of many habitat mosaics.

7.2.2.10 Tall Ruderal Vegetation

Areas of tall ruderal vegetation are found primarily along field boundaries and along the edges of watercourses. This is not a habitat of principal importance or a habitat listed on the Durham BAP.

7.2.2.11 Ponds

There are three ponds within the proposed development site, identified in 2014, 2015 and/or in 2016 scoping surveys. These are all small in size, and have a tendency to dry out in the summer months. Ponds are a habitat of principal importance and listed on the Durham BAP.

7.2.2.12 Watercourses

The River Don runs from west to east through the centre of the proposed development. In the immediate vicinity there are two tributaries running into this, Calf Close Burn and ditches within Wardley ex-colliery site. Watercourses are a habitat of principal importance and listed on the Durham BAP.

7.2.2.13 Dry Ditches

There are dry ditches present throughout the proposed development, most often at the base of hedgerows, and dry at the time of survey in 2014/2015. This is not a habitat of principal importance or a habitat listed on the Durham BAP.

7.2.2.14 Bare Ground

Small areas of bare ground are present throughout the proposed development site, often created as a result of farming practices. Bare ground occasionally qualifies as a habitat of principal importance, ('Open Mosaic Habitats on Previously Developed Land'), however, it does not in this instance. It is also not listed on the Durham BAP.

7.2.3 Legally Protected/Notable Species

7.2.3.1 Invasive Plant Species

Indian balsam (*Impatiens glandulifera*) has been identified during 2014-2015 surveys, in four locations within the proposed development site, along the River Don and its tributary.

Japanese knotweed (*Fallopia japonica*) has been identified during 2014-2015 surveys, in one location within the proposed development site, by the woodland east of Elliscope Farm.

Montbretia (*Crocosmia x crocosmiiflora*) has been identified during 2016 surveys, on the road verge in the south of the proposed development site, and in the woodland in the east of the proposed development site.

All three of these plant species are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to cause the spread of these species in the wild.

7.2.3.2 Bats

The watercourses, ponds, swamps, marshy grassland, semi-improved grassland, plantation and semi-natural woodland and hedgerows within the proposed development site are likely to provide insect prey as a foraging resource for bats in pockets of the site, however the arable fields which dominate the site are unlikely to provide a high quality foraging resource for bats.

A 2014 data search identified historical records of common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (P*lecotus auritus*), noctule (*Nyctalus noctula*), Daubenton's bat (*Myotis daubentonii*), whiskered/Brandt's bat (*Myotis* sp.) and Natterer's bat (*Myotis nattereri*) within 2km of the proposed development site, however there were no historical records of roosts within the proposed development site.

Several groups of buildings and built structures with the potential to support roosting bats were identified during the Extended Phase 1 Habitat Survey in 2014 and 2015 of the proposed development area.

Buildings and trees or groups of trees within the proposed development site that were considered to potentially offer suitable habitat for roosting bats, were categorised according to their bat roost potential, and subsequently surveyed in 2014 and/or 2015 according to the Bat Conservation Trust's 2nd edition of 'Bat Surveys: Good Practice Guidelines'[36].

Common pipistrelle roosts (maximum count two) were identified in three buildings at Elliscope Farm and one building at Make-Me-Rich Farm and one soprano pipistrelle roost (maximum count one) was identified in a tree near Elliscope Farm.

[36] Hundt et al. (2012) Bat Surveys: Good Practice Guidelines. 2nd edition. Bat Conservation Trust, London.

Within blocks of woodland, only trees on the edge of the woodland were individually assessed for their potential to support roosting bats. This was based on the assumption that the proposed development will not impact upon trees within blocks of woodland. Woodland edge trees are also both more likely to be used by roosting bats and more likely to be indirectly impacted by adjacent development, for example through increased light levels and disturbance.

The culvert which carries the River Don under the A19 was assessed to have moderate roost potential for both summer roosting and winter hibernating bats. This was not subject to further survey in 2014 or 2015.

An initial hibernation check was undertaken in March 2016, and no bats or signs of bats were found in the culvert during the inspection.

Approximately 10m from the south-western end of the culvert, a 7m section of sandstone blocks forms the barrel of the culvert. Research suggests that this is a former railway underbridge. The 7m section of sandstone-lined bridge barrel towards the south-western end of the culvert was assessed as having 'moderate' bat roost potential on account of multiple cavities between the sandstone blocks extending to >30cm depth, and which are sufficiently wide (15mm wide) to afford bat access. There is also continuous cavity between the sandstone bridge barrel and the newer corrugated iron culvert on the upstream side, which also offers bat roost potential.

The only thing which prevents the bat roost potential of the culvert being assessed as 'high' is the evidence that the culvert floods up to the roof on occasion.

See Section 7.5.1 for details of further bat surveys proposed for 2016.

7.2.3.3 Great Crested Newt

Suitable terrestrial habitat for great crested newt is present within the proposed development site including woodland, scrub, hedgerows and grassland. The majority of the proposed development site is however dominated by arable farmland, which provides sub-optimal terrestrial habitat for great crested newt.

A 2014 data search identified historical records of great crested newt within 500m of the proposed development, with the closest record approximately 100m south-west of the proposed development.

There are three ponds within the proposed development site, and a further ten ponds within 500m of the proposed development site, identified in 2014, 2015 and/or in 2016 scoping surveys.

Presence/absence surveys for great crested newt were undertaken of various ponds by Durham Wildlife Services (DWS) in 2013, by Aecom in 2014 and by WYG in 2014 and 2015. No ponds with great crested newts have been identifiedwithin the proposed development itself, however a medium population of great crested newt was identified by DWS and Aecom in 2013 and 2014 respectively, approximately 100m south-west of the proposed development site's western extent.

See Section 7.5.1 for details of further great crested newt surveys proposed for 2016.

7.2.3.4 Otter

The watercourses within the proposed development site provide suitable habitat for otter to commute through the area. Throughout the majority of the study area, the close proximity of arable farmland to the watercourses leaves only small strips of undisturbed woodland and scrub for use by otter, primarily towards the eastern extent of the proposed development area.

A 2014 data search identified eleven historical records of otter on the River Don within the proposed development site, three of which were recorded close to Elliscope Farm and Hylton Bridge Farm.

No field signs to indicate the presence of otter within the study area were identified during the surveys undertaken in 2014. In March 2015, there was one incidental sighting of an otter on the River Don between Elliscope Farm and Hylton Grove, and otter footprints were recorded on the watercourse. No resting areas or couches have been confirmed.

In March 2016, during an initial bat hibernation check, otter spraint and scratch marks were recorded inside the culvert that carries the River Don underneath the A19.

The survey information to date indicates that otter are present on the River Don, and the A19 culvert does not pose a barrier to their movement, however given the scarcity of signs, otter are unlikely to regularly be using this section of the watercourse. This may be due to a possible lack of food resource, due to physical obstructions to the River Don downstream[37] hindering fish species from reaching this section of the River Don.

See Section 7.5.1 for details of further otter surveys proposed for 2016.

7.2.3.5 Water Vole

The River Don and its tributaries within the study area provides suitable habitat for water vole throughout much of its length. A sandy substrate aids the formation of burrows, and the banks of the watercourses are rich in grasses and herbs which provide a food resource for water vole, although through much of the site the riparian habitat is narrow and closely bounded by arable land.

A 2014 data search identified the presence of water vole on the River Don, within the proposed development site.

Surveys in 2014 and 2015 identified field signs to confirm the presence of water vole along the majority of the River Don and its tributaries within the proposed development site.

Desk study data, informal consultation and anecdotal survey results from walkover surveys in 2016, indicate that the water vole population is on this stretch of the River Don forms part of a larger population on this catchment. A survey visit to the River Don on the eastern side of the A19, in March 2016, identified

[37] Personal Communication with Cameron Sked, Environment Agency (06 May 2016) at the IAMP Environmental Workshop #3.

likely water vole burrows on the River Don immediately adjacent to the culvert which runs under the A19.

See Section 7.5.1 for details of further water vole surveys proposed for 2016.

7.2.3.6 Barn Owl

Barn owl will hunt along woodland edges, hedgerows and field margins, all of which are present within the proposed development area.

A 2014 data search identified the closest records of barn owl (eight records) in 2009-2010, at Washington Wetland Centre, approximately 1.8 km south of the proposed development site.

Areas of habitat particularly likely to support a high density of prey items such as short-tailed vole (*Microtus agrestis*) and wood mouse (*Apodemus sylvaticus*) were identified during the 2014 and 2015 surveys, primarily in the area surrounding Elliscope Farm. The majority of the study area however, consists of intensively managed arable land with narrow field margins, which are unlikely to support a high density of barn owl prey species.

Several buildings and trees with the potential to support roosting and/or nesting barn owl were identified within the study area, and were subject to further assessment.

A temporary roost site, active roost site and potential nest site was identified at West Moor Farm, in the south-west of the proposed development area.

Temporary roost sites and active roost sites were identified in five of the buildings at Elliscope Farm, and potential nest sites were also identified in two of these buildings.

Barn owl were confirmed to be breeding at Elliscope Farm in 2015, although the chick subsequently died due to the nest box falling from its position.

See Section 7.5.1 for details of further barn owl surveys proposed for 2016.

7.2.3.7 Breeding Birds

The arable fields, narrow field margins, hedgerows and woodland within the proposed development site have the potential to support breeding birds, including BoCC red and amber listed species, species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), species of principal importance, and Durham BAP species.

Across the breeding bird surveys conducted in 2014 and 2015, twelve BoCC red list species, 14 BoCC amber list species, and 30 BoCC green list species were recorded within the proposed development site. Of these species:

- One species is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), namely barn owl;
- Eleven are species of principal importance, namely dunnock (*Prunella modularis*), reed bunting, lapwing, skylark, starling (*Sturnus vulgaris*), song thrush (*Turdus philomelos*), yellowhammer, house sparrow (*Passer*

domesticus), linnet (*Linaria cannabina*), tree sparrow (*Passer montanus*) and yellow wagtail (*Motacilla flava*); and

- Twelve are species listed on the Durham BAP, namely reed bunting, house martin (*Delichon urbica*), willow warbler (*Phylloscopus trochilus*), barn owl, house sparrow, lapwing, linnet, skylark, starling, song thrush, tree sparrow, yellowhammer and yellow wagtail.

Breeding bird surveys in 2014 and 2015 also identified some non-breeding bird species, including two BoCC red listed species, seven amber listed species and five green listed species[38]. Of these species:

- Three are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), namely kingfisher, hen harrier (*Circus cyaneus*) and fieldfare;
- One is a species of principal importance, namely herring gull (*Larus argentatus*); and
- Two are species listed on the Durham BAP, namely common swift (*Apus apus*) and hen harrier.

See Section 7.5.1 for details of further breeding bird surveys proposed for 2016.

7.2.3.8 Wintering and Passage Birds

The large arable fields, field margins, marshy grassland, and hedgerows within the proposed development site have the potential to support wintering and passage birds during the winter months, including BoCC red and amber listed species, species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), species of principal importance, and Durham BAP species.

Across the winter and passage bird surveys conducted in 2014 and 2015, 14 BoCC red list species, 23 BoCC amber list species, and 30 BoCC green list species were recorded within the proposed development site. Of these species:

- Four are species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), namely fieldfare, kingfisher, peregrine (*Falco peregrinus*) and redwing;
- Thirteen are species of principal importance, namely bullfinch, reed bunting, herring gull, house sparrow, lapwing, curlew (*Numenius arquata*), linnet, skylark, starling, song thrush, willow tit, yellowhammer and yellow wagtail; and
- Twelve are species listed on the Durham BAP, namely curlew, reed bunting, snipe (*Gallinago gallinago*), house sparrow, lapwing, linnet, skylark, starling, song thrush, tree sparrow, yellow wagtail and peregrine.

[38] The UK's leading bird conservation organisations have worked together to review the status of birds in the UK. The red, amber and green listings (red representing the highest conservation priority, with species needing urgent action; amber is the next most critical group, followed by green) are based on the historical decline of each species, trends in species population and range, rarity, localisation and international importance of each species and their global and European threat status.

The bird species of European importance for which Northumbria Coast SPA and Ramsar is designated (little tern, ruddy turnstone and purple sandpiper) are unlikely to use the habitats present within the proposed development site and they have not been recorded during any bird surveys to date.

See Section 7.5.1 for details of further wintering and passage bird surveys proposed for 2016 and 2017.

7.2.3.9 Badger

The areas within the proposed development site are suitable for use by foraging badger and by badger commuting between foraging habitats. The areas most suitable for badger sett creation are the pockets of semi-natural woodland and hedgerows bordering the arable fields.

A 2014 data search identified four records of badger within approximately 2km of the proposed development site, but none within it.

One single entrance badger sett was identified in 2014 to the west of the proposed development site. In 2015 there were no field signs present to indicate current use.

See Section 7.5.1 for details of further badger surveys proposed for 2016.

7.2.3.10 Brown Hare

As the proposed development site is dominated by open farmland, the area provides suitable habitat for use by brown hare, a species of principal importance and a Durham BAP species.

A 2014 data search identified one record of brown hare within the proposed development site, approximately 300 m north of Elliscope Farm.

Surveys for brown hare (transects) were undertaken across the majority of the proposed development site in 2014 and 2015.

Brown hare were recorded within the proposed development area, at a low density. Anecdotal evidence from landowners / users suggests that hunting of hare occurs in the area.

No further brown hare surveys are proposed for 2016 as it is not considered that the surveys would provide much more useful information than already exists, however brown hare remain scoped into the EcIA for consideration

7.2.3.11 Invertebrates

The species-poor hedgerows, woodland, scattered trees, species-poor semi-improved grassland and narrow arable field margins are likely to provide some suitable habitat for a wide range of invertebrate species, however, the majority of the study area consists of intensively managed arable land which is unlikely to support a high abundance or diversity of invertebrates.

Specific surveys for invertebrates were not undertaken in 2014 or 2015, however, any notable invertebrates observed as incidental results of other surveys within the study areas were recorded.

Twenty eight invertebrate species were recorded within the study area as an incidental result of other surveys, including wall brown butterfly and small heath (*Coenonympha pamphilus*), both species of principal importance.

No invertebrate surveys are proposed for 2016. However, the available information on invertebrates will be considered as part of the EcIA, and mitigation appropriate to invertebrate species known and likely to occur in the area will be incorporated in the mitigation design of the proposed development.

7.2.3.12 Hedgehog

Overall, the proposed development site is sub-optimal for hedgehog, a species of principal importance and Durham BAP species, due to the predominance of arable farmland. The areas of species-poor semi improved grassland, some of which are used as horse pasture, species-poor hedgerows, scattered scrub and woodland present within the proposed development site, however, provide some foraging and refuge opportunities for hedgehog.

During the 2014 and 2015 surveys, there were six incidental sightings of hedgehog within the proposed development site, with a maximum count of two being recorded on two occasions at Hylton Grove Farm. Hedgehog sightings were associated with gardens, grassland and in particular the woodland associated with the River Don in between Hylton Bridge Farm and Elliscope Farm.

No hedgehog surveys are proposed for 2016 as it is not considered that the surveys would provide much more useful information than already exists, however hedgehog remain scoped into the EcIA for consideration.

7.2.3.13 Water Shrew

Habitats within the proposed development site, such as ponds and surrounding habitats, banks of watercourses and adjacent reed beds, provide some suitable habitat for use by water shrew.

Specific surveys for water shrew were not undertaken in 2014 or 2015, and there were no incidental sightings of water shrew within the proposed development area.

No water shrew surveys are proposed for 2016. However, a provision of habitat for water shrew will be considered in the EcIA.

7.2.3.14 Harvest Mouse

As part of the desk study, ERIC NE returned one record of harvest mouse (*Micromys minutus*), a species of principal importance and Durham BAP species within 2km of the proposed development site, recorded approximately 1.2 km south-west of the site in 1950. The Durham BAP quotes recent Durham records being scarce with only nine since 1960, in present county boundaries, and a further five within Cleveland north of the river Tees.

In view of the mostly arable nature of the study area, changes in agricultural practices since the last local record of the species in the area, combined with the

study area being beyond the regular range of the species (Cresswell et al., 2012) the presence of harvest mouse is considered to be unlikely.

On this basis, no harvest mouse surveys are proposed for 2016, and this species will be scoped out of assessment in the EcIA.

7.2.3.15 Red Squirrel

As part of the desk study, ERIC NE returned nine records of red squirrel (*Sciurus vulgaris*), a species of principal importance and Durham BAP species which also receives protection under the Wildlife and Countryside Act 1981 within 2km of the proposed development, recorded between 1998 and 2008. These records were recorded over 1.3 km to the west or south-west of the proposed development site. Twenty records of grey squirrel (*Sciurus carolinensis*) were also returned within 2km of the proposed development site, recorded between 1991 and 2013.

The areas of woodland within the study area may provide some suitable habitat for use by red squirrel; however in view of the small size and isolated nature of these blocks of woodland, together with the presence of grey squirrel, the presence of this species is considered to be unlikely.

On this basis, no red squirrel surveys are proposed for 2016, and this species will be scoped out of assessment in the EcIA.

7.2.3.16 Reptiles

ERIC NE returned no records of reptiles within approximately 2 km of the proposed development site.

The River Don and its tributaries provide some connectivity for grass snake (*Natrix natrix*) through the landscape, however for other reptile species, the proposed development site is not well connected to suitable reptile habitat in the wider surroundings.

The proposed development site is dominated by intensively managed flat arable farmland providing little structural diversity, and few sunny banks for basking or naturally occurring refugia such as logs and rocks for reptiles to seek refuge under.

The proposed development site overall is therefore considered to be of low suitability for reptiles, and specific surveys for reptiles were not undertaken in 2014 or 2015.

No reptile surveys are proposed for 2016, and this species group will be scoped out of assessment in the EcIA.

Table 7.5: Summary of EcIA Scope and Species Surveys

Species	Within EcIA Scope	Proposed survey
Bats	Yes	Roost potential Roost risk assessment Dusk emergence and pre-dawn entry survey Hibernation checks
Great Crested Newts	Yes	Presence/absence surveys
Otter	Yes	Check for holts and laying up areas
Water Vole	Yes	Checking survey
Barn Owl	Yes	Nest checks
Breeding Birds	Yes	Breeding bird survey
Wintering and Passage Birds	Yes	Passage/Wintering bird survey
Badger	Yes	Badger survey and activity check
Brown hare	Yes	No surveys
Invertebrates	Yes	No surveys
Hedgehog	Yes	No surveys
Water Shrew	Yes	No surveys
Harvest Mouse	No	No surveys
Red Squirrel	No	No surveys
Reptiles	No	No surveys

7.3 Consultation

To date, informal consultation has been undertaken with the SCC ecologist in relation to the scope of ecology survey to be undertaken in 2016.

Informal consultation in the form of environmental workshops, regarding general avoidance, mitigation, compensation and enhancement measures, has been undertaken with the SCC ecologist, the STC ecologist, the Gateshead Council ecologist, Natural England (NE), the Environment Agency (EA), the Durham Wildlife Trust (DWT), the North East Local Nature Partnership (NELNP) and the Royal Society for the Protection of Birds (RSPB).

Consultation responses about the approach to the EcIA and proposed mitigation will be sought from these organisations.

7.4 Potential Impacts on Biodiversity

The proposed development is not considered likely to have any construction or operational impact on International or European designated sites due to its distance from these, the nature of habitats present and the designating features.

Notably the species of European importance for which Northumbria Coast SPA and Ramsar is designated are unlikely to use the habitats present within the proposed development site and they have not been recorded during any bird surveys to date.

This will be addressed fully in the form of a Statement to Inform a Habitat Regulations Assessment (HRA), which will determine whether an Appropriate Assessment is required for the proposed development. See Section 7.5.2 for details of the methodology.

This section describes the potentially significant ecological impacts arising from the construction and operation of the proposed development.

7.4.1 Enabling Works

It is possible that, in the absence of mitigation, there could be impacts to designated sites and/or legally protected or notable habitats and species, as a result of preliminary activities prior to the main construction contract, such as:

- Ground investigations;
- Demolition of existing structures;
- Vegetation clearance; and/or
- Archaeological excavations.

Particular attention will need to be given to the presence of invasive plant species, where enabling works are required. If invasive plant species are identified on site, these will either be treated on site prior to development, managed (e.g. barrier membrane or bunded) or buried at appropriate depth below landscaping areas. Off-site disposal will be considered as a last resort.

7.4.2 Construction

7.4.2.1 Designated Sites

There are possible construction phase impacts anticipated to LWSs, through direct habitat loss, disturbance (e.g. lighting, noise), habitat severance and/or hydrological changes, in particular if the proposed development works involve construction of a bridge across the River Don. LWSs within the proposed development site which could be affected comprise Elliscope Farm East/Hylton Bridge LWS, River Don, East House LWS and River Don PLWS and Usworth Burn PLWS.

7.4.2.2 Habitats and Species

As indicated by local records and surveys to date, the habitats within the proposed development site are of some intrinsic biodiversity importance, and also provide suitable habitat for legally protected and notable species to rest, breed, feed and commute.

The following potential impacts could occur in the absence of mitigation:

- Loss of habitats of principal importance (e.g. rivers and streams, ponds, arable field margins, hedgerows, woodland, lowland meadow and marsh), some of which are also Durham LBAP habitats, through vegetation removal and earthworks associated with site works (e.g. storage compounds, assembly areas, haul roads, provision of services and utilities and the development footprint);
- Direct disturbance or harm to legally protected or notable species including great crested newt, barn owl, breeding birds, wintering and passage birds, bats, otter, water vole, badger, brown hare, invertebrate species and hedgehog through vegetation removal and earthworks associated with site works, and structural works to existing buildings;
- Direct loss of suitable breeding, foraging and commuting habitats for these legally protected and notable species through vegetation removal and earthworks associated with site works;
- Prevention of species dispersal, breeding and foraging through severance and fragmentation of habitats;
- Displacement of bats, or other nocturnal wildlife, from their foraging habitat, and disturbance to nesting birds, through temporary alterations in night time light conditions;
- Displacement of species such as otter, water vole and badger, and bird and bat species, as a result of noise, vibration and visual disturbance, arising from site construction activities;
- Increase in the risk of barn owl suffering a road traffic collision due to the presence of construction vehicles;
- Harm to aquatic plants and animals such as water vole from run-off arising from the construction; and
- Food sources of certain species could be affected by dust, in high volumes, which would predominantly be generated from on-site soils or demolition of any buildings.

7.4.3 Operation

7.4.3.1 Designated Sites

It is possible that there could be operational phase impacts to LWSs through disturbance (e.g. from lighting, noise and recreation), in particular if the proposed development works involve construction of a bridge across the River Don.

7.4.3.2 Habitats and Species

The following potential impacts could occur in the absence of mitigation:

- An increased collision risk to birds, bats, badger, hedgehog and other species, and in particular to barn owl, as a result of the presence of newly constructed roads;

- Legally protected and notable species could be prevented from accessing feeding, breeding and/or hibernation areas, as a result of newly constructed roads and buildings which could sever habitat connectivity for particular species;
- Birds, bats and badgers could be displaced, or their foraging behaviour could be affected by noise, vibration and visual disturbance arising from an increase in nearby road vehicles;
- Bats and birds and their food sources (invertebrates) could be displaced from their breeding/roosting sites and their foraging habitat, or their use of foraging areas could be affected by permanent alterations in night time light conditions;
- Pressure on ecologically sensitive areas could be increased by allowing public access to the proposed development site and 'ecological and landscape mitigation area';
- Ground conditions for vegetation growth could be altered due to changes in land use, ground compaction and soil disturbance; and
- Aquatic plants and animals could be negatively affected by run-off contaminated with oils and salts arising from newly constructed roads.

7.5 Methodology of Assessment

7.5.1 Ecological Impact Assessment (EcIA)

The EcIA will be undertaken in accordance with the second edition of the Guidelines for Ecological Impact Assessment in the UK and Ireland (2016)[39].

The existing ecological baseline conditions will be established from a combination of desktop study, site survey and consultation.

The importance of each ecological feature identified will be determined, and the rationale for determining this will be explained. Importance may relate, for example, to the quality and extent of designated sites or habitats, to habitat/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline. The importance of each ecological feature will also be considered within a defined geographical context.

Likely direct, indirect, secondary and cumulative impacts to designated sites, habitats and species, which may occur as a result of the proposed development, will be identified. The EcIA will characterise the impacts (where relevant) by their positivity/negativity, extent, magnitude, duration, timing, frequency and reversibility.

Developments to be included in the cumulative impact assessment are anticipated to include the following types of future development within the same zone of influence:

[39] CIEEM (2016) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal*. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

- Proposals for which consent has been applied which are awaiting determination in any regulatory process (not necessarily limited to planning permission);
- Projects which have been granted consent (not limited to planning permissions) but which have not yet been started or which have been started but are not yet completed (i.e. under construction);
- Proposals which have been refused permission but which are subject to appeal and the appeal is undetermined; or
- To the extent that their details are in the public domain, proposed projects that will be implemented by a public body but for which no consent is needed from a competent authority.

Appendix E of the scoping report details the proposed projects which will be included in the cumulative impact assessment. This list will be will be updated should there be any new developments within the above categories in the course of this EcIA.

The EcIA will make clear both the potential significant effects without mitigation, and the residual significant effects following mitigation. Once measures to avoid and mitigate ecological impacts have been finalised (see Section 7.6 for approach to mitigation), assessment of any residual impacts will be undertaken to determine the significance of their effects on ecological features.

An effect will be considered to be significant if it is "an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general".

In broad terms, significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).

Conservation status of a habitat is defined as "its long-term distribution, structure and function" and conservation status of a species is defined as "the long-term distribution and abundance of the species' populations."

Wherever possible, maintaining favourable conservation status will be determined by reference to literature, including the Durham BAP objectives and targets, and by professional judgement in the absence of clear guidance. An effect will be considered '*beneficial*' if it helps to deliver conservation policy or '*adverse*' if it is contrary to conservation policy (see Section 7.1.2 for summary of the conservation policies against which this judgement will be made).

7.5.1.1 Further Surveys Required to Inform EcIA

The following surveys have either already been undertaken, or will be undertaken, during 2016 and the first half of 2017, in order to supplement/update the existing survey information from 2014 and 2015, or fill in data gaps where there was previously no land access, to inform the EcIA:

- An extended Phase 1 Habitat Survey in line with best practice guidance from the Joint Nature Conservation Committee (2010)[40], in summer 2016, of any areas not previously surveyed or scoped in 2014-2015, for example a small area east of the A19, proposed for the construction of a new road bridge over the A19 (precise location yet to be confirmed);
- Verification/update of Phase 1 Habitat Survey information in summer 2016, in line with best practice guidance[40], within the proposed development site;
- A Hedgerow Regulations assessment[41] in summer 2016, on any hedgerows within the proposed development site which could qualify as 'Important' under the Regulations, unless these can be scoped out from assessment based on existing survey information;
- Presence/absence surveys for great crested newt between March and June 2016, in line with best practice guidelines[42], for all ponds within 500m of the proposed development boundary, which were subject to survey in 2013 or 2014, for which there are no barriers to movement between the pond and proposed development site. As an alternative, in case land access becomes available late in the survey season and there is not enough time to complete a presence/absence survey, eDNA surveys are proposed. Surveys to ponds which are dry during the newt breeding season, and those for which third parties hold suitable survey data which can be used, are excluded;
- Checks for otter holts and suitable laying up areas along the River Don in 2016, with particular focus on the blocks of woodland along the watercourse;
- A water vole 'checking survey' in summer 2016, on the sections of River Don and its tributaries which are within the proposed development site, to update the survey information available from 2014, with a particular focus on any locations where there may be a bridge crossing over the River Don;
- A badger survey[43] in 2016, within the proposed development site, and up to 100m from the proposed development site boundary, in any areas not previously subject to a badger survey. In addition to this, an activity check will be undertaken on the one identified badger sett within the proposed development site;
- A breeding bird survey[44] of all suitable areas within the proposed development site, to update existing bird survey information from 2014 and 2015, for the proposed development site, during the bird breeding season in 2016. Three site visits will be undertaken to ascertain and map the location of breeding territories and nest sites;

[40] Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey - a technique for environmental audit. JNCC, Peterborough.
[41] Defra (1998) The Hedgerows Regulations 1997: A Guide to the Law and Good Practice.
[42] Planning and Development Guidance. Great crested newts: surveys and mitigation for development projects. https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects#survey-methods. Accessed 05 May 2016.
[43] Harris, S., Cresswell, P. and Jefferies, D. (1989). Surveying Badgers. Mammal Society, Southampton.
[44] Marchant, J.H. (1983). BTO Common Bird Census Instructions. British Trust for Ornithology, Tring.

- A passage/wintering bird survey of all suitable areas within the proposed development site, to update existing bird survey information from 2014 and 2015, for the proposed development site, during the winter season in 2016/2017. Three site visits will be undertaken;
- Nest site checks for barn owl at potential, actual and temporary nest site locations identified during the 2014 and 2015 surveys, and territory surveys to gather more information on barn owl commuting and foraging routes;
- Targeted kingfisher surveys along the River Don and its tributaries, to identify potential nest sites and territory use, with particular focus on the area where any bridge crossing may be proposed over the River Don;
- In relation to bats:
    - An update check for on all buildings (and trees, although there were none) subject to emergence/re-entry surveys in 2014. This will comprise confirmation of whether the features with bat roost potential have changed since 2014;
    - Bat roost risk assessment and possible subsequent emergence/re-entry surveys of The White House (although current land access restrictions to this building are acknowledged);
    - One dusk emergence and one pre-dawn re-entry survey of the culvert which carries the River Don under the A19, to check this structure with moderate bat roost potential for summer roosting bat species; and
    - Two hibernation checks of the culvert which carries the River Don under the A19 in January and February 2017.

7.5.2 Habitats Regulations Assessment (HRA)

In addition to the EcIA discussed in Section 7.5.1, a Habitat Regulations Assessment (HRA) is required for any plan or project that, either alone or in combination with other plans or projects, is likely to have a significant effect on the integrity of a site protected by the Habitat Directive (a Natura 2000 site), and that is not directly connected with the management of the site.

Natura 2000 sites are nature conservation sites of European importance and are designated either SPAs (for birds) or SACs (for animals and habitats). In addition, Ramsar sites (Internationally Important Wetlands) are treated as if they were Natura 2000 sites in accordance with Government policy.

The closest European Designated Sites are Northumbria Coast SPA (and Ramsar) and Durham Coast SAC, all approximately 6km east of the proposed development.

It is anticipated, that a ‘Statement to Inform’ will need to be prepared for the IAMP proposed development. This will be the first stage (screening) of the HRA process. The statement will provide information for the ‘competent authority’, the SofS, regarding potential effects of the proposed development on nearby European sites, as required by Regulation 61(1) of the Conservation of Habitats

and Species Regulations 2010 (as amended) (hereafter referred to as the 'Habitat Regulations').

The Statement to Inform will be used to determine whether an Appropriate Assessment is required for the proposed development.

7.5.3 Water Framework Directive Assessment

In addition to the EcIA discussed in Section 7.5.1, a WFD Assessment may be required for plans or projects that affect water bodies. Any works that are likely to affect the WFD status of a water body will require a compliance assessment explaining how any impacts to the water body will be mitigated[45].

In the case of the IAMP proposed development, it is possible that the River Don could be affected if a new bridge were to be built across the watercourse, or if changes are made to the existing drainage system, leading to a change in discharge into the River Don.

The River Don, is classified as a 'Heavily Modified Water Body', and has been classified as having good ecological potential. Despite this, the overall biological quality of the river is classified as poor[46].

It is anticipated that a WFD is likely to be required for IAMP, in relation to the River Don (Section 15.5). JMP will lead the WFD assessment, however Ecological input will be provided by Arup.

7.6 Approach to Mitigation

7.6.1 The Mitigation Hierarchy

A sequential process will be adopted to avoid, mitigate and compensate ecological impacts. Avoidance, mitigation, compensation and enhancement measures will be identified as part of the EcIA process, as outlined below.

Avoidance

Measures will be taken at the initial design development stages, to avoid and minimise effects on ecological features where possible. These will be detailed in the EcIA.

Mitigation

Mitigation measures or mechanisms to reduce any potential significant adverse effects arising from construction or operational impacts of the proposed development will be proposed in the EcIA following the completion of field surveys.

Compensation

[45] With river restoration schemes the compliance assessment allows for an independent quality assurance check to make sure that the intended improvements are feasible, appropriate and will not have unexpected consequences.
[46] Sunderland City Council (March 2016) Local Flood Risk Management Strategy.

Compensation describes measures taken to make up for residual effects resulting in the loss of, or permanent damage to, ecological features despite mitigation. The EcIA will include a description and evaluation of any such measures (if required).

Enhancement

Enhancement is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures.

National planning policy promotes the inclusion of measures to enhance biodiversity within development proposals.

Opportunities to enhance the intrinsic value of habitats, and enhance habitats for a range of species will be sought through woodland and hedgerow planting and reinstatement, pond creation, and species rich and marshy grassland creation.

7.6.2 Residual Effects

The assessment will determine whether there would be any residual effects with respect to biodiversity (positive or negative), following the construction, and in consideration of the operation, of the proposed development.

7.6.3 Cumulative Effects

The assessment will identify any other projects/proposed developments which, in combination with the proposed IAMP development, could give rise to a significant cumulative effect with respect to ecology. The assessment will consider whether there will be any cumulative effects (positive or negative), of the Proposed development when combined with the effects of other proposed major construction projects in the area.

8 Cultural Heritage and Archaeology

8.1 Overview

This chapter outlines the approach that will be adopted for the assessment of the effects on cultural heritage and archaeological assets which may arise as a result of the construction and operation of the proposed development. The cultural heritage impact assessment and subsequent ES chapter will be produced by CFA Archaeology Ltd.

8.2 Baseline

8.2.1 Cultural Heritage Assets within the Proposed Development Area

There is one listed building within the proposed development area, the Grade II Listed Hylton Bridge. No other designated heritage assets are located within the proposed development area.

The Tyne and Wear Historic Environment Record (HER) records several cultural heritage assets within the proposed development area which date predominantly from the early modern and modern eras, although there are some of medieval and post-medieval date. A summary description of the recorded sites is presented below inTable 8.1.

Table 8.1: Summary Description of HER records on site

Cultural Heritage Asset	Description
West Boldon Farm (now known as Elliscope Farm)	This is the earliest site recorded and has its origins in the 14th century. This farm along with the farms at Hylton Grove and Make-Me-Rich are shown on the 1840 tithe map as a single holding known as the Hylton Bridge Estate.
West Moor and North Moor Farms	These are first shown on Greenwood's map of 1820. Hylton Bridge Farm is first shown on the 1st edition Ordnance Survey (OS) map of 1856.
Three Horseshoes Pub	The pub is shown, but not named on Greenwood's map of 1820. It is named on the 1st edition OS map of 1862, where it is shown as a single range running north to south along Hylton Lane. The pub has been extended since then to form the larger hotel that is now present.

Cultural Heritage Asset	Description
Hylton Bridge	Built in the 18th century, this bridge is protected as a Grade II Listed Building, carried Hylton Lane across the River Don. An early 19th century dam along the River Don is likely to have been associated with a nearby engine house. Neither the dam nor the engine house is shown on the 2nd edition OS map of 1895.
Route of an unnamed waggonway	Shown on Gibson's map of 1788 and became a railway line in 1834. The line closed in 1981 and the A1290 road now runs along the route of the old railway line where it crosses the proposed development area. The 1st edition OS map of 1856 shows the Hylton Depot (Manure) and the Hylton Lane Cabin (a probable signal box) along the railway line.
Ridge and furrow cultivation remains of medieval or post-medieval date	These are visible on aerial photographs to the south of Elliscope Farm; in the vicinity of North Moor Farm; and on the northern edge of the proposed development area, although much has now been built over.
Two possible enclosures of unknown date	Recorded as cropmarks on aerial photographs within the proposed development area.

Further to the above features, World War II concrete roadblocks were once present along the A1290 at the south-western corner of the proposed development site, but are no longer present. An extensive system of World War II aircraft obstructions, including ditches, mounds and banks, can be seen on aerial photographs at the northern edge of the proposed development area. They have been ploughed flat. Although traces of the defences were discovered by geophysical survey, a trial-trenching evaluation carried out in 2013 found no remains. The former location of a Picket Hamilton Fort (a type of subsurface pillbox that could be raised and lowered as necessary and was used on airfields in World War II) is recorded adjacent to Unsworth RAF base. The northern portion of the former Unsworth RAF base, now forms the North East Aircraft Museum, and is located within the south-eastern part of the proposed development area. Oral testimony records that there was formerly a decontamination unit for injured and uninjured servicemen to the north of the airfield along Hylton Lane. The building was described in the oral testimony as being of brick with a concrete roof and a tall square chimney, but no longer survives.

8.2.2 Cultural Heritage Assets within 1km of the proposed development area

The Grade II Listed Hylton Bridge is located within the proposed development area. There are few other listed buildings within 1km of the boundary of the proposed development area: most are Grade II listed, but there is one Grade II* listed building, the early 18th century Scots House, which is located on the south side of Newcastle Road, to the north of the proposed development area.

There are no scheduled monuments, historic battlefields or other designated assets located within 1km of the proposed development area.

8.3 Consultation

Details of previously recorded cultural heritage assets within the proposed development area have been obtained from Tyne and Wear HER in advance of the submission of this scoping report. No other consultation has been undertaken to date.

As part of the impact assessment process, consultation with both the Tyne and Wear Archaeology Officer (advisor to SCC) and Historic England will be undertaken, to clarify any issues which they consider to require particular assessment.

8.4 Potential Environmental Impacts

8.4.1 Potential Construction (Direct) Impacts

Construction of the proposed development has the potential to disturb, damage or destroy features or buried remains of cultural heritage or archaeological interest. Other construction activities, such as vehicle movements, soil and overburden storage and landscaping also have the potential to cause direct permanent and irreversible effects on heritage assets.

The proposed development area boundary will form the basis for the identification of heritage assets that could be directly affected by the proposed development. A study area extending to 100m from the site boundary will be used to acquire data on the heritage assets in the local area in order to inform the assessment of the potential of the proposed development area to contain previously unknown buried archaeological remains.

8.4.2 Potential Operational (Indirect) Impacts

The proposed development has the potential to affect the settings of cultural heritage assets in the wider landscape. In particular, the proposed development may be present in key views to and from Scheduled Monuments, Listed Buildings and other designated cultural heritage assets in the vicinity of the proposed development area.

An initial assessment suggests that a 1km buffer from the proposed development area will form an appropriate study area for the assessment of potential operational impacts on cultural heritage assets. No cultural heritage assets beyond that distance have been identified as having settings which are likely to be adversely affected by the proposed development.

8.5 Methodology of Assessment

The assessment will be conducted in accordance with the relevant planning legislation, policy and guidance.

Legislation governing the protection and conservation of cultural heritage sites and features (cultural heritage assets) includes:

- The Ancient Monuments and Archaeological Areas Act, 1979;
- The Planning (Listed Buildings and Conservation Areas) Act ,1990;
- The Town and Country Planning (Development Management Procedure) (England) Order, 2015; and
- The Infrastructure Planning (Decisions) Regulations, 2010

Planning policy comprises:

- The NPPF, 2012;
- Sunderland Unitary Development Plan, 1998;
- Sunderland Local Plan Core Strategy and Development Management Policies Draft Revised Preferred Option, August 2013;
- South Tyneside Local Development Framework, 2007; and
- Draft South Tyneside Development Plan Document, 2017.

Guidance includes:

- Chartered Institute for Archaeologists (CIfA) 'Code of Conduct', 2014 and 'Standard and Guidance for Historic Environment Desk-Based Assessment', 2014;
- Historic England Guidelines including: 'Seeing the History in the View. a Method for Assessing Heritage Significance within Views', 2016; 'The Setting of Heritage Assets', 2016; 'Conservation Principles Policies and Guidance for the Sustainable Management of the Historic Environment', 2016; and
- 'Shared Visions: The North-East Regional Research Framework for the Historic Environment', Petts and Gerrard 2006.

8.5.1 Desk-Based Assessment and Field Survey

A desk-based assessment will be conducted of the proposed development area, to identify all known cultural heritage assets, both designated and non-designated, including all assets recorded in the Tyne and Wear HER.

Ordnance Survey First Edition OS 6" to 1 mile maps will be examined together with any other readily available cartographic sources to obtain information on pre-recent land use in the area.

The results of the desk-based assessment will be augmented by a reconnaissance field survey of the proposed development area. The field survey will locate and

record visible cultural heritage assets, both those identified during the desk-based assessment and those previously unrecognised; and identify areas with the potential to contain unrecorded, buried archaeological remains.

Intrusive field evaluation will not be undertaken as part of the baseline study as desktop studies have not suggested the likelihood of there being buried assets. However, should the findings of field surveys indicate that there may be buried assets, then intrusive evaluation may be carried out following consultation.

8.5.2 Assessment of Construction (Direct) Effects

The data from the desk-based assessment and reconnaissance survey will be mapped and the resultant map will be used to assess the potential for the development to have a direct effect on known cultural heritage and archaeological assets. The results of this assessment will be used in the iterative design process to develop the best layout within the context of all environmental and technical constraints. The assessment of direct effects presented in the cultural heritage chapter will assess the effects of the final layout derived through this iterative process.

8.5.3 Assessment of Operational Effects (Effects on Setting)

Details will be obtained for previously recorded cultural heritage assets with statutory and non-statutory designations (Scheduled Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, Historic Battlefields), and undesignated archaeological sites of likely national importance inside the proposed development site and within 1km of its boundary. The effect on the setting of these cultural heritage assets will be assessed.

8.6 Approach to mitigation

A suitable programme of archaeological mitigation measures, designed to prevent, reduce or offset significant adverse effects, will be agreed with the Tyne and Wear Archaeology Officer (archaeological advisor to SCC). The report will include assessment of residual effects, taking into consideration the likely effectiveness of the mitigation proposed.

9 Geology, Soils and Contaminated Land

9.1 Overview

The information provided in this chapter is taken from the Geotechnical Technical Background Report for the IAMP, which summaries WSP/Parsons Brinckerhoff's 'Sunderland IAMP Geotechnical Desk Study Constraints Report' (March 2016).

This chapter will provide an assessment of the potential significant effects of the proposed development on geology, soils and contamination, and in turn the effects that these may have on the environment as a result of the proposed development. The effects will be assessed in the context of national, regional/local standards and guidance.

9.2 Baseline

There are no SSSIs or other designated sites located within the site boundary. Hylton Castle Cutting SSSI is approximately 1.5km to the east and is designated due to rocks of Middle Magnesian Limestone that are exposed in a road cutting through the core of a late Permian reef[12] (more information is provided in Section 3.3.2). The Claxheugh Rock and Ford Limestone Quarry SSSI is approximately 2.3km south east of the site and is designated for national geological interests, specifically exposures of Magnesium Limestone[11].

No geological places to visit[47] (England) are found within the site boundary. The nearest, Tunstall Hills, is approximately 6.6km south east.

9.2.1 Geology

Superficial deposits – Pelaw clay underlain by the Tyne-Wear Complex may be present across the site and has an inverted strength profile. This can result in rapid excavation collapse and may pose complications for shallow foundations. The underlying Tyne-Wear complex may cause difficulties due to unforeseen ground conditions, even following a ground investigation. Historic boreholes indicate extensive thicknesses of soft and loose materials, making foundations challenging. High plasticity of the clay may also cause difficulties.

Alluvium is present along the River Don;

Variable rockhead level is evidenced from the available information. Building across such areas may induce differential settlement and associated structural damage. Within the bedrock, several geological faults are present. Movement may take place periodically along these features and could result in surface expression if the overlying drift cover is thin.

9.2.2 Soil and Contamination

Available maps for the site indicate the underlying soils to comprise slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils.

[47] This is a Natural England non-statutory landscape designation

Made Ground is inherently variable and is generally not considered suitable as a founding material due to the possibility of low strength and differential settlement. Other issues associated with Made Ground can be ground gas emissions; underground combustion of colliery spoil is present in the North West corner and thinner areas of Made Ground are present elsewhere;

Contamination associated with historic land use – railway lines, sidings, colliery, quarries, landfills and farming. The associated contamination could pollute the environment, including the River Don, and cause illness to future site workers and users. Exposure by dermal contact, inhalation and ingestion will be dependent on the development end-uses and construction methods;

9.2.3 Mineral Resources and Mining Activity

A capped disused mineshaft is present in the north west of the site and high risk development areas are present in the south west corner. Risks associated with mining activities include collapse of underground workings or shafts leading to damage to overlying structures and danger to site users, ground gas emissions from worked coal seams and groundwater contamination. However, the shaft is shown to be present outside the site boundary. The property is in the likely zone of influence from underground coal working in 8 seams of coal at 190m to 570m depth, last worked in 1981. However, given the depth of the workings these are not anticipated to significantly impact the development.

Two shallow coal seams (the Top Hebburn Fell and Bottom Hebburn Fell) subcrop in the south west corner of the site. Risk at ground, surface including potentially harmful mine gasses, from these seams is considered high and should be assessed of part of future ground investigation works.

A sand and gravel quarry may have been present near East House Farm. This could result in localised soft spots depending on the quality of the reinstatement and differential settlement at the transition line between natural and quarried ground. Typically backfill materials are not engineered or compacted and may include contaminated soils. This quarry raises the possibility of other unrecorded quarries in areas of similar ground conditions across the site.

9.2.4 Hydrology and Hydrogeology

As indicated in Chapter 15, there is a high risk of flooding around the River Don and locally across the site as surface water. The presence of wetland vegetation indicates some persistent wet conditions. However, the roads and railway lines across the site were typically at-grade suggesting widespread deep flooding is uncommon.

Soft ground surface due to surface water accumulation – Accumulation of surface water was observed during the site walkover and identified by the EA's surface water flood risk map. Clay softening due to this water may cause difficulty trafficking the site during construction and premature road damage.

There are no aquifer source protection zones within the site. In general the superficial deposits are classified as 'Unproductive Strata' i.e. negligible significance to water supply and river flow. The alluvium is classified as a 'Secondary A aquifer' i.e. permeable layers capable of supporting water supply at

a local level. The underlying bedrock is also classified as a Secondary A aquifer'. It is currently unknown if there are any public or private ground water abstractions on or within the vicinity of the site. Enquiries are currently on-going.

9.2.5 Agricultural Land

The site is currently largely under agricultural use. Information provided on MAGIC.gov.uk for Agricultural Land Classification (ALC) as supplied by DEFRA indicates that the majority of soils for the site are classified as Grade 3a/b 'Good and Moderate Quality' land. There is a small area of Grade 2 'Very Good Quality' land located along the banks of the River Don.

9.3 Consultation

The following consultees will be consulted as part of the ground investigation and EIA process:

- STC;
- SCC;
- The Coal Authority;
- Land and minerals owners in order to agree access arrangements; and
- The EA;
- MAGIC (DEFRA), Agricultural Land Quality.

9.4 Potential Environmental Impacts

During the construction phase of the proposed development, contaminated material could result in harm to construction workers and users of the site as well as the wider environment, including the River Don. Potentially contaminated soils have development implications which may include transport and disposal costs, regulatory implications, re-use of site won materials, importation of clean soils, planning restrictions and onerous construction procedures.

However, it is considered that adoption of good construction practice, implementation of a Construction Environmental Management Plan (CEMP) including appropriately controlled stockpiling of soils will reduce the significance of these impacts.

Earthworks will need to be undertaken in accordance with BS6031:2009, Code of Practice for Earthworks. Construction practice should include Guidance detailed in relative Pollution Prevention Guidelines (PPG), as detailed in PPG01, General Guide to the Prevention of Pollution.

Spillages of fuels from construction plant may may lead to soil contamination including agricultural soils. Chemicals, fuels, oils and materials will need to be stored in secured compounds, be appropriately bunded in accordance with appropriate regulations as detailed in the Control of Pollution (oils storage)

(England) Regulations 2001 and relevant Control of Hazardous Substances to Health (COSHH) Regulations 1994.

Scheme construction and operation will result in loss of topsoil and agricultural land. In addition, there will be a loss of potential coal mineral resources below the proposed development area, although this effect is not considered significant.

9.5 Methodology of Assessment

An assessment will be made of the potential significant effects of the proposed development in relation to geology and contamination, and in turn the effects that these may have on the wider environment as a result of the proposed development.

The assessment will consider potential impacts associated with both the construction and operational phases of the development mainly arising from existing contamination, potential ground gas and any stabilisation of mine workings that may be required. The assessment will also consider potential impact on geological resources and potential issues associated with earthworks that could be required as part of the scheme.

The assessment of any potential impacts of the development on geological resources will be carried out on a qualitative basis. Recognised locally and regionally important geological sites will be identified and any potential impact of the development on exploitation will be assessed.

At the time of writing, information on proposed levels and hence requirements for cut and fill activities were not known. It is considered likely that the scheme will actively work towards achieving an earthworks balance. As part of the assessment, comment will be made on potential viability of re-use of materials and any conditions likely to preclude retention of materials on the site. Earthworks design will need to be undertaken in accordance with BS6031:2009, Code of Practice for Earthworks. Construction should be undertaken in accordance with the DMRB Manual of Contract Documents for Highway Works or similar.

9.6 Ground Investigations

The assessment will comprise a review of all available desk study information. Ground investigation will be carried out as part of future phases of ground conditions assessment and design. Ground investigation will be specified in accordance with the UK Specification for Ground Investigation, 2nd Edition, 2012 (Site Investigation in Construction, Site Investigation Steering Group) and carried out in accordance with BS EN 1997-2:2007 (Eurocode 7: Geotechnical Design – Part 2).

Ground investigation is required to quantify risks and allow detailed environmental and human health risk assessment. Ground investigation will also be targeted to aid in classifying soils, which may be regarded as waste, in accordance with criteria set out in the Hazardous Waste Directive. This will allow emphasis to be placed on defining material re-use and requirements for waste

treatment/s in order to reduce requirement for land filling of surplus / waste soils or excessive import of earthworks materials. Ground investigation will also aid assessment of subsequent environmental impacts of reused and placed soils.

The construction methodology will be reviewed and considered in relation to potential impacts of the development's interaction with the ground. Particular focus will be given to ground works aspects of the proposed development.

Intrusive preliminary ground investigation should be undertaken to target specific constraints identified above and profile/ characterise the ground conditions across the site. The full scope of the ground investigation was under preparation at the time of this submission but is anticipated to include the components shown in Table 9.1 below.

Table 9.1: Preliminary Ground Investigation Components.

Component	Location	Purpose
Exploratory holes with in-situ and laboratory geotechnical testing including: • Electronic cone penetration tests with piezocone measurement; • Cable Percussive Boreholes with rotary follow-on; and • Trial pits.	Distributed across development area and targeted on critical areas	To characterise ground and groundwater conditions and improve understanding of rockhead profile.
	Targeted areas including: • Historic landfill; • Area of Hylton Bridge sidings; and • Quarry near East House Farm	To assess presence and extent of Made Ground.
Environmental testing	Targeted areas of potential contamination source areas.	To assess presence and type of contamination and inform contamination risk assessment,
Plate Load or CBR test at varying depths	Targeted to areas of proposed highways.	To assess the CBR at shallow depths to predict required roadway composition.
Groundwater monitoring	Selected boreholes across site	To understand groundwater regime
Ground gas monitoring	Selected boreholes with Made Ground or organic strata.	To assess risk posed by ground gas emissions.

9.7 Assessment of Contamination

The assessment of existing contamination will be risk-based and will consider sources, receptors and plausible pollutant linkages in accordance with government guidance and the UK framework for the assessments of risk arising from contaminated land. The assessment will take into account principles adopted by the EA in Model Procedures for the Management of Land Contamination,

Technical Report CLR 11[48]. The significance of impacts will take into account the principles of assessment identified in CIRIA Report C552, "Contaminated Land Risk Assessment – a guide to good practice"[49]. Agricultural Land

Government policy seeks to protect best and most versatile (BMV) agricultural land. Agricultural land loss will be assessed based on magnitude (area of land loss) against (ALC) grades. Socio-economic considerations relating to agricultural land loss are addressed in Chapter 13 of this Scoping Report.

9.8 Approach to Mitigation

The assessment will identify the requirements for any mitigation measures during construction works and for any remediation or particular protection measures that may require incorporation into the design of the development.A summary of the proposed mitigation, identified in the Geotechnical Desk Study, is as follows:

- Made Ground – Development on top of the spoil tip in the north west corner will be avoided. The intrusive ground investigation should target areas of known historic development to identify presence or otherwise of Made Ground and the associated depth. Presence of ground gas should be monitored and suitable protective measures incorporated;
- Superficial deposits – Ground conditions in some locations are unlikely to be suitable for heavily loaded shallow foundations and therefore ground improvement or deep (piled) foundations are likely to be necessary. An intrusive ground investigation will help characterise the site, particularly in assessing the extent of Pelaw clay and depth to rockhead. Areas of both deep rockhead and soft or loose ground are best avoided, with development targeted on areas with superficial deposits of sufficient strength or shallow rockhead. Piling methodology will be assessed to reduce the risk of development of preferential pathways (e.g. groundwater flow) between any made ground present and the underlying Secondary A bedrock aquifer;
- Variable rockhead – The intrusive ground investigation should identify depth to rockhead so such areas can be assessed as part of future phases of design.
- Contamination associated with historic land use – A contamination risk assessment should be undertaken prior to development in accordance with current guidelines and legislation, with appropriate mitigation measures implemented;
- Historic Quarrying and Mining – If possible, known areas of mining and quarrying should be avoided. If developing on a quarry, sufficient ground investigation should be undertaken to map its extent such that any structure does not cross the boundary. The intrusive ground investigation should target the location of East House Quarry to assess its presence and depth.

[48] Environment Agency, Model Procedures for the Management of Land Contamination, CLR11, September 2004.
[49] Rudland DJ, Lancefield RM, Mayell PN, Contaminated Land Risk Assessment – A guide to good practice (C552), CIRIA, London. 2001.

Unrecorded quarrying will remain a risk. The ground investigation should investigate the two coal seam subcrops (Top Hebburn Fell and Bottom Hebburn Fell) in the south west corner of the site.- The impact on remaining mineral coal resources, e.g. from sterilising of coal resources by development is not anticipated significant.

- Soft ground surface due to surface water accumulation – Surface water flooding should be controlled through appropriate drainage design as part of the development. Suitable road foundations, including subgrade improvement where necessary should be used for all highways in accordance with the Manual of Contract Documents for Highways Works, notably any soft spots should be excavated out. Suitable drainage and raised levels should be incorporated into the development to reduce damage from surface water accumulation.
- Given the site is largely of agricultural use, loss of agricultural soils is inevitable. When development proposals have been further advanced, earthworks cut and fill will be assessed to, where possible, provide cut-fill balance in order to reduce requirement for land filling of surplus / waste soils or excessive import of earthworks materials. During earthworks construction, soils will be stored for reuse in such a way as to minimise damage and deterioration in soil quality.
- If invasive plant species are identified on site, these will either be treated on site prior to development, managed (e.g. barrier membrane, bunded) or buried at appropriate depth below landscaping areas. Offsite disposal will be considered as a last resort as these will classify as Hazardous Waste.

10 Landscape and Visual

10.1 Overview

This chapter outlines the approach that will be adopted for the assessment of the effects on landscape character and visual amenity, which may arise as a result of the construction and operation of the proposed development. The landscape and visual impact assessment (LVIA) will consider and report the likely significant effects on landscape character and visual amenity. Cumulative effects, arising from the proposed development in conjunction with other developments (as defined in Section 4.3), will also be considered.

10.2 Baseline

The proposed development site is located to the west of the A19 and crosses the administrative boundaries of SCC and STC.

The proposed development site is made up of small to medium scale predominantly arable fields bound by 'gappy', species poor hedgerows. Small pockets of plantation and semi-natural woodland are found within the proposed development site, generally associated with the River Don, which runs west to east through the proposed development site.

Arable farmland extends to the north of the proposed development site with the A184 located beyond approximately 0.7km north of the site boundary. The proposed development site is bound to the east by the A19. To the east of the A19 the land to the north of Downhill Lane is predominantly arable farmland, while the land to the south of Downhill Lane comprises the residential areas of Town End Farm and Downhill. Directly to the south of the site is Nissan Motor Manufacturing UK (NMUK) and three sites comprising Sunderland's Enterprise Zone. The NMUK and Sunderland Enterprise Zone are bounded to the south by the A1231 (Sunderland Highway). The land to the immediate west of the proposed development site is arable farmland with the eastern residential edge of Washington beyond.

The busy A1290 passes through the proposed development site linking the western edge of Washington with the A19 which forms the eastern boundary of the proposed development site. The Great North Forest Heritage Trail runs along Follingsby Lane and Downhill Lane, two minor roads which pass through the proposed development site.

Several lines of pylons pass through the proposed development site and the immediate surrounding area extending from a substation adjacent to the Testos roundabout (A19/A184 junction) to the north east of the proposed development site (see Section 3.2 for further detail).

There are several heritage assets in the area surrounding the proposed development site including Hylton Grove Bridge a Grade II Listed building on Follingsby Lane within the proposed development site, Scot's House, a Grade II* Listed building located to the north of the proposed development site, and the Earl

of Durham's Monument (also known as Penshaw Monument), a Grade I Listed building located approximately 4.4km to the south of the proposed development site. These heritage assets are considered further in Chapter 7.

10.2.1 Landscape Designations

The proposed development site is not covered by any national landscape designations (i.e. Area of Outstanding Natural Beauty (AONB) or National Parks) within 2km of the proposed development site. The closest national landscape designation is the North Pennines AONB which is located approximately 25km to the west.

In terms of local landscape designations, the proposed development site is located within a wider parcel of land identified as the Great North Forest, a Community Forest, which spans the boundary between South Tyneside and Sunderland. Community Forests are a partnership between local authorities and local regional and national partners including the Forestry Commission and NE. They were set up with the aim of *"creating high-quality environments for … people by revitalising derelict land, providing new opportunities for leisure, recreation, and cultural activities, enhancing biodiversity, preparing for climate change and supporting education, healthy living and social and economic development"*[50].

Whilst not a landscape designation, it is noted that the proposed development site is located within an area of Green Belt which extends from between the conurbation of Sunderland and those in South Tyneside.

10.2.2 Landscape Character

The proposed development site is covered by two separate landscape character assessments for the two local authority areas – the City of Sunderland Landscape Character Assessment[51] and the South Tyneside Landscape Character Assessment[52].

The City of Sunderland Landscape Character Assessment[51] shows the part of the proposed development site which is covered by this assessment to be located in the Coalfield Lowland Terraces Landscape Character Type (LCT), also known as LCT 2 and, at a more detailed level, the Usworth Lowland Landscape Character Area (LCA), also known as LCA 2a.

The Coalfield Lowland Terraces LCT is identified as transitional gently rolling or flat lowland landscape between the Magnesian Limestone escarpment to the east and Wear Valley to the west. The LCT contains areas of predominantly arable farmland bound by low hawthorn hedges with pockets of recently planted woodland. It contains reclaimed former colliery workings and tips, large industrial complexes and industrial estates, and is fragmented by industrial and residential development.

[50] http://www.communityforest.org.uk/aboutenglandsforests.htm accessed on 22.06.2016
[51] Land Use Consultants (LUC) on behalf of Sunderland City Council (September 2015) City of Sunderland Landscape Character Assessment
[52] Land Use Consultants (LUC) on behalf of South Tyneside Council (March 2012) South Tyneside Landscape Character Study Part 1 Landscape Character Assessment

Key characteristics of LCA 2a Usworth Lowland include:

- An almost entirely flat landscape lying between 30m and 45m;
- The north of the area contains large scale arable fields bound by remnant and weak hedgerows with sparse tree cover and a few isolated farms;
- In the south of the area industrial development becomes the main land use;
- High voltage electricity lines, with large pylons cross the area;
- There are a limited network of Public Rights of Way (PROWs) crossing the area and the Great North Forest Heritage Trail passes through the north between Washington and West Boldon; and
- The area is bound by the A19 to the east and is crossed by the A1290 and A1231. These roads are all typically busy with traffic.

The South Tyneside Landscape Character Assessment[52] shows the part of the proposed development site which is covered by this assessment to be located in the Urban Fringe LCT, and, at a more detailed level, LCA 31 Boldon Fell.

Within the Urban Fringe LCT built form, while it may be present, is not noted to be the dominant characteristic. It includes farmland (pastoral and arable) as well as some development, vacant land, nature reserves, golf courses, and other informal or semi-natural open space.

Key characteristics of LCA 31 Boldon Fell are identified as:

- *"Large scale arable fields with gappy hedges;*
- *Overhead power lines converging on the substation by the A19;*
- *Busy dual carriageways subdivide the area;*
- *Regenerating woodland and scrub on former extraction sites; and*
- *Farms and country house with associated woodland."*

10.2.3 Visual Characteristics

The generally flat nature of the proposed development site and immediate surrounding area means closer distance views and views from the north are frequently restricted by vegetation, minor changes in topography and intervening built form. Longer distance views are possible from the elevated land to the south of the River Wear.

An initial desk-based study and site visit have identified the following existing visual receptors which may be affected by the proposed development:

- Residential receptors, including residents at nearby scattered farms and residential properties within the surrounding residential areas such as the eastern edge of Washington and residential areas within Sunderland, as well as the traveller site on West Pastures;

- Recreational receptors, including users of the network of the Great North Forest Heritage Trail and PROWs within the wider surroundings. Also people visiting Penshaw Monument to the south;
- Transport receptors, including receptors on Follingsby Lane which passes through the proposed development site, the A19 to the east and the A1290 to the south of the proposed development site, and other roads within the wider area;
- Employment receptors, including employees at the Nissan car manufacturing plant to the south of the site and agricultural workers; and
- Educational receptors, including Castle View Enterprise Academy, Hylton Castle Primary School, Townend Academy, Sunderland College (Washington Campus) and Marlborough Primary School.

10.3 Consultation

No consultation has been undertaken to date with SCC, SCC or NE with regards to the topic of landscape and visual amenity. Consultation will be undertaken to agree the following:

- The extent of the study area for the collation of baseline information and the consideration of potential landscape and visual effects; and
- Number and location of viewpoints for the visual assessment as well as the number of required wirelines or photomontages.

10.4 Potential Landscape and Visual Impacts

Based on information gathered during the preparation of the Scoping Report and the initial site survey, issues of likely significance are considered to include effects on the following:

- Landscape features within the proposed development site such as the hedgerows and woodland along the River Don;
- The character of the proposed development site and immediate surrounding area;
- Residential receptors in close proximity to the proposed development site;
- Recreational receptors using the Great North Heritage Trail and PRoWs in the surrounding area; and
- Transport receptors using road network which passes through or in close proximity to the proposed development site including the A19 and A1290.

During the construction phase the main sources of potential landscape and visual impacts relate to the clearance of vegetation within the proposed development site, the introduction of the site hoarding as well as the site compound, including site offices, storage of construction materials, plant, machinery and parking, the movement of construction vehicles and cranes, and the wider construction and demolition activities associated with the new built form.

During the operational phase the main sources of landscape and visual impact relate to the existence of the proposed development, primarily the size and scale of the proposed buildings within the site. The appearance, i.e. the materials used on the facades of the proposed buildings as well as lighting, landscape planting and the incorporation of innovative landscape and planting features into built surfaces and facades will also influence the level of effect experienced.

The construction and operational impacts that would arise as a result of the proposed development, and the resulting effects, will be considered further in the ES.

10.5 Methodology of Assessment

The LVIA will be carried out in accordance with current guidance and best practice methodologies. The assessment methodology will be informed by the Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3)[53].

The existing landscape and visual baseline conditions will be identified from a combination of desktop study and site survey. The value of the landscape will be clearly identified within the baseline.

At this stage a 2km study area is proposed for the collation of baseline information and the assessment of likely significant effects on landscape character and visual amenity.

It should be noted that the LVIA will not assess the impact of the proposed development on the Green Belt. This will be considered in a separate Green Belt Assessment. In addition, the LVIA will not consider the impact of the proposed development on the setting of heritage receptors such as listed buildings but will consider the impact on visual receptors at these heritage locations, where agreed with the PINS.

The landscape assessment will consider the features which shape the character of the landscape and the effect the proposed development will have on the landscape character. The landscape assessment will also consider the potential effect on any relevant national or local landscape designations within the study area.

The visual assessment will consider the existing views and the effect that the proposed development will have on the baseline visual amenity. The effect on visual receptors will be assessed with particular regard to recreational/amenity receptors, transport routes, employment/education receptors and where agreed residential properties.

A Zone of Theoretical Visibility (ZTV) map will be prepared to define the area within which the proposed development (as defined by its maximum parameters) would be visible. The ZTV will be based on OS data and refined during site visits. The ZTV will be used to confirm viewpoints already identified in the field and identify potential additional visual receptors and viewpoints for consideration. We will liaise closely with the specialists preparing the cultural heritage chapter with

[53] Landscape Institute and Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment 3rd Edition*

regard to the identification of viewpoint locations. The number and location of viewpoints for the visual assessment, as well as the possible number and location of required wirelines or photomontages, will be agreed in advance.

An assessment will be made of the susceptibility and arising sensitivity of the landscape, taking into account the identified value of the landscape. Similarly the sensitivity of visual receptors will be identified taking their susceptibility to change in their view and the value that is placed on the views into account. The sensitivity of the landscape and visual receptors will be considered with the magnitude of change that would be caused by the proposed development to identify the significance of effect that would arise. The determination of the significance of effect will require the application of professional judgement. Landscape and visual effects will be described according to their nature, which may be beneficial, adverse or in some cases neutral and by reference to the duration of the identified effects i.e. short term, medium-term or long-term in nature.

The LVIA will identify and assess the likely significant effects which would arise as a result of the construction and operational phases of the proposed development. Mitigation measures will be incorporated into the design to prevent, reduce or compensate for any potential adverse effects on landscape and visual resource, which may occur during the construction or operational phase.

A high level commentary on potential effects of lighting will be included in the LVIA.

10.6 Approach to Mitigation

Potential mitigation will be delivered through a range of measures in the development design (e.g. influencing the layout, density of buildings, height of buildings) and supplementary measures (e.g. landscape planting to integrate the development into the surrounding landscape or break up dominant views and incorporation of innovative landscape and planting features into built surfaces and facades).

At this stage it is considered that the following mitigation, identified in the emerging AAP, will be incorporated into the design of the proposed development:

- Maintain a landscape buffer (minimum 50m wide) along the A19;
- Incorporate a landscape buffer (minimum 20m wide) around the development edges; and
- Incorporate green and brown roofs and green walls.
- Additional mitigation measures will be identified as the design progresses.

10.7 Residual Effects

The assessment will determine whether there would be any residual effects with respect to landscape and visual amenity (whether positive or negative), following

the construction, and in consideration of the operation, of the proposed development.

10.8 Cumulative Effects

The assessment will identify any other projects/proposed developments which, in combination with the proposed IAMP development, could give rise to a significant cumulative effect with respect to landscape and visual amenity. The assessment will consider whether there will be any cumulative effects (positive or negative), of the proposed development when combined with the effects of other proposed major construction projects in the area.

11 Noise and Vibration

11.1 Overview

This chapter considers the potential for significant effects in relation to noise and vibration from the proposed development during construction and operation.

11.2 Baseline

The proposed development site is located directly to the west of the A19 and north of the NMUK and A1290. Road traffic from the A19 is likely to be the dominant source of noise at the proposed site. This noise source is most significant to the east of the proposed site, becoming less significant moving west, away from the A19.

As the site is sparsely populated by a small number of residential properties, other sources of noise are considered minimal and are limited to agricultural activities and local traffic.

The existing NMUK may also influence the noise climate by introducing noise of an industrial nature together with delivery/service vehicle noise.

Baseline noise measurements would be undertaken at the closest noise sensitive receptors (NSR) in the vicinity of the proposed scheme during day and night-time to establish the prevailing conditions of the site.

The details of the surveys, including the NSRs to be assessed, would be agreed with SCC and South Tyneside local authorities.

11.3 Consultation

Consultation with the Environmental Health Officers (EHO) of SCC and SCC will be undertaken in order to agree the scope of the assessment and proposed methodologies.

11.4 Potential Noise and Vibration Impacts

Whilst methodologies of construction activities are not yet known, it is likely that the following works may give rise to temporary impacts:

- Construction traffic noise;
- Construction activity noise; and
- Construction vibration.

The proposed development could also give rise to significant permanent impacts, and consideration will be given to:

- Traffic on the proposed new roads;
- On-site service vehicle noise and deliveries;

- Mechanical services plant;
- Industrial and commercial sources;
- Car parking activity noise; and
- Traffic flow changes on the wider road network.

11.5 Assessment

The proposed assessment approach has regard to the EIA Regulations and the requirements of Government's noise policy as described in the NPPF[54]. The NPPF planning objectives are addressed through the Noise Policy Statement for England (NPSE)[55], which states the following aims:

"*Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *Avoid significant adverse health impacts on health and quality of life;*
- *Mitigate and minimise adverse impacts on health and quality of life; and*
- *Where possible, contribute to the improvement of health and quality of life".*

11.5.1 Spatial Scope

An assessment of airborne noise due to construction activities will be undertaken within 300m of the site boundary. The closest NSRs are described as following:

- To the east of the A19 on the land to the south of Downhill Lane are the residential areas of Town End Farm and Hylton Castle Estate;
- Also east of the A19 are educational institutions such as Castlegreen Community School and Townend Academy.
- A group of buildings comprising residential properties, a branch of Prince Bishop Veterinary Hospital and a business called Mypetstop are directly to the west of the site on Follingsby Lane; and
- There are also some farms including Make-me-Rich Farm, Elliscope Farm, Hylton Grove Farm, Hylton Bridge Farm and North Moor Farm, Hylton Bridge within 300m of the proposed development.

The construction traffic and operational traffic noise assessment will be limited to the nearby road network where changes in traffic flows are expected to be sufficient to cause changes in levels of noise as a direct or indirect consequence of construction activities or operation of the proposed development.

[54] Department for Communities and Local Government (2012); *National Planning Policy Framework*; http://www.communities.gov.uk/publications/planningandbuilding/nppf
[55] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/pb13750-noise-policy.pdf

11.5.2 Construction Noise

The construction noise assessment will be based upon methodology assumptions and experience from other projects and BS5228 Part 1: Noise[56]. Construction noise levels would be predicted based upon the plant sound power level (either provided by the manufacturer or benchmarked with similar construction activities), typical percentage on-times, distance, reflections and screening attenuation.

11.5.3 Construction Traffic Noise

The number of heavy vehicles passing along a road link is likely to increase as a result of construction during the different stages of the project. It is therefore necessary to assess change in noise levels at the construction vehicle route.

11.5.4 Construction Vibration

The levels of vibration generated by construction will be assessed according to established empirical calculation methods, such as those described in BS5228: Part 2: Vibration[57].

11.5.5 Operational Airborne Noise

Details of any potential stationary airborne noise sources associated with the proposed development such as production/manufacturing facilities, energy or building services plant will be assessed in accordance with BS4142: 2014[58].

Consideration will also be given to noise from car parking activity, deliveries and service yards.

11.5.6 Operational Road Traffic Noise

The noise exposure arising from changes in traffic flows on the existing road network nearby the proposed site will be calculated. If there are changes that are potentially significant, their effect will be assessed by considering the number and nature of affected NSRs.

[56] British Standard 5228 (2009+A1:2014) – Code of practice for noise and vibration on construction and open sites – Part 1: Noise, BSI 2014
[57] British Standard 5228 (2009+A1:2014) – Code of practice for noise and vibration on construction and open sites – Part 2: Vibration, BSI 2014
[58] British Standard 4142: 2014 Methods for rating and assessing industrial and commercial sound, BSI 2014

11.6 Methodology

11.6.1 Construction Noise

Significance criteria for construction noise will be developed using the ABC method described in Annex E of BS 5228 Part 1. The 'ABC' method defines the thresholds of potential significant noise effects associated with construction noise in relation to the baseline noise climate.

An indication of a potential significant effect would be identified where the construction site noise emissions exceed the threshold of potentially significant effects. The final assessment of significance is made using professional judgement and by considering various other factors such as the number of properties affected, the magnitude of exceedance and any potential longer term benefits.

11.6.2 Construction Traffic Noise

The assessment considers the change in road traffic noise between the current situation and the increase of vehicles due to the construction of the proposed development. Construction traffic noise predictions will be undertaken in accordance with the methodology defined in the Calculation of Road Traffic Noise (CRTN)[59], as appropriate. A potentially significant effect would be taken as an increase of 3dB or more in the noise levels.

The identification of significant noise effects would be based upon:

- The severity of impacts and the quality of the utility of the resources affected;
- Number of properties affected; and
- Professional judgement.

11.6.3 Construction Vibration

Vibration impacts will be assessed against the criteria set out within BS5228 Part 2 and BS6472 Part 1[60] for the perception of vibration and BS7385 Part 2[61] for building damage.

11.6.4 Stationary Airborne Noise

Noise emissions from stationary and industrial type sources will be undertaken in accordance with the methodology specified in BS4142: 2014[62]. Stationary and industrial sources include:

[59] Calculation of Road Traffic Noise (CRTN), HMSO 1988
[60] British Standard 6472: Part 1 Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting, BSI 2008
[61] British Standard 7385: Part 2 Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration, BSI 1993
[62] British Standard 4142: 2014 Methods for rating and assessing industrial and commercial sound, BSI 2014

- Sound from industrial and manufacturing processes;
- Fixed installations which comprise mechanical and electrical plant and equipment;
- Loading and unloading of goods and materials; and
- Mobile plant and vehicles that would be an intrinsic part of the sources of overall sound emanating from the proposed development, such as forklift trucks or lorry movements.

Assessments will also be undertaken for car parking activity. The identification of significant noise effects will be based upon:

- The severity of impacts and the nature of NSRs affected;
- Number of properties affected (impacted); and
- Professional judgement.

11.6.5 Operational Road Traffic Noise

The noise exposure arising from changes in traffic flows on the existing road network nearby the proposed site will be calculated using the CRTN method, to derive the Basic Noise Level (BNL) at locations 10m perpendicularly from the kerb. This enables a direct comparison to be made of the change in noise level as a result of the proposed development associated with particular sections of road. If there are changes that are potentially significant, their effect will be assessed by considering the number and nature of affected NSRs.

The significance of effects due to operational road traffic noise is assessed based on guidance provided in Section 3 of DMRB HD 213/11. It is stated that "*A change of 1dB(A) in the short-term (e.g. when a project is opened) is the smallest that is considered perceptible. In the long-term, a 3dB(A) change is considered perceptible, and such an increase should be mitigated if possible.*"

DMRB provides categories for assessing road noise impact magnitude. On the basis of the available guidance, Arup has developed significance criteria for changes in road traffic noise at sensitive receptors. The impact criteria and potential significance thresholds are given below in Table 11.1.

Table 11.1: Summary Table of Noise Impact Evaluation Criteria for Changes in Traffic Noise

Change in Noise Level dB(A)	Impact Category	Initial Indicator of Significance
>+10	Major adverse	Potential for significant increase
+5 to +10	Moderate adverse	
+3 to +5	Minor adverse	Unlikely to be significant
0 to +3	Negligible	
-3 to 0	Negligible	

Change in Noise Level dB(A)	Impact Category	Initial Indicator of Significance
-3 to -5	Minor beneficial	
-5 to -10	Moderate beneficial	Potential for significant decrease
<-10	Major beneficial	

11.7 Approach to Mitigation

Where possible, embedded mitigation measures, such as good construction practice and careful design and orientation of operational plant and equipment, will be implemented to minimise the requirement for mitigation. Best practicable means will also be employed.

Where likely significant effects are identified, suitable sustainable mitigation measures will be investigated for construction and operation of the proposed development.

11.8 Residual effects

The ES will report any likely significant residual effects for construction and operation of the proposed development.

11.9 Cumulative effects

The assessment will consider the effect of the Scheme taking account of other committed developments. Section 4.3.2, identified nine planning applications to be included within the cumulative effects assessment. These are outlined in Appendix E. These will be updated and reviewed as the EIA progresses, and are subject to change.

12 Population and Human Health

12.1 Overview

This chapter outlines the proposed approach to the assessment of health effects which may arise as a result of the construction and operation of the proposed development. The aim of the assessment is to assess the health consequences of a project and to use this information to maximise the positive and minimise the negative health impacts of a proposal.

12.1.1 Relevant Policy, Legislation and Guidance

At the European level, the revised EIA Directive 2014/52/EU aims to achieve high levels of protection of human health and the environment. One of the key changes in the revised directive is that direct and indirect significant effects of a project on population and human health should be identified, described and assessed in a manner appropriate to each individual case.

The NPPF (2012) encourages the preparation of an HIA for planning applications, with paragraph 171 stating that:

'Local planning authorities should work with public health leads and health organisations to understand and take account of the health status and needs of the local population (such as for sports, recreation and places of worship), including expected future changes, and any information about relevant barriers to improving health and well-being.'

The National Planning Policy Guidance (2014) provides further guidance on the importance of addressing health and wellbeing through planning, including how:

- development proposals can support strong, vibrant and healthy communities and help create healthy living environments which should, where possible, include making physical activity easy to do and create places and spaces to meet to support community engagement and social capital;
- the healthcare infrastructure implications of any relevant proposed local development have been considered;
- opportunities for healthy lifestyles have been considered (e.g. planning for an environment that supports people of all ages in making healthy choices, helps to promote active travel and physical activity, and promotes access to healthier food, high quality open spaces, green infrastructure and opportunities for play, sport and recreation);
- potential pollution and other environmental hazards, which might lead to an adverse impact on human health, are accounted for in the consideration of new development proposals; and
- access to the whole community by all sections of the community, whether able-bodied or disabled, has been promoted.

At the local level, Sunderland was accredited as a World Health Organisation (WHO) Healthy City in 2003. Sunderland's website states that 'A healthy city is one that is continually creating and improving the physical and social environments and expanding the community resources that enable people to support each other, lead a healthy and active daily life and develop to their maximum potential. A healthy city is one which identifies health as a priority and aims to improve it'. The website for WHO work in Sunderland[63] highlights initiatives to 'raise the profile of HIA' and consider its use in future planning applications. It also provides guidance on undertaking a HIA.

12.1.2 Definitions and determinants of health

Many groups concerned with health, including the WHO, advocate a wider, social understanding of health. The broader understanding of health is captured in the WHO definition:

'Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity '.

The social model of health considers the range of environmental, social, economic and fixed factors (or determinants) that influence health and wellbeing. The key determinants of health can be categorised as follows:

- Pre-determined factors such as age, genetic make-up and gender are fixed and strongly influence a person's health status;
- Social and economic circumstances such as poverty, unemployment and other forms of social exclusion strongly influence health, and improving them can significantly improve health;
- How the environment in which people live, work and play is managed – its air quality, built environment, water quality – can damage health, or provide opportunities for health improvement;
- Lifestyle factors such as physical activity, smoking, diet, alcohol consumption and sexual behaviour, can have significant impacts on health; and
- Accessibility of services such as the National Health Service (NHS), education, social services, transport (especially public transport) and leisure facilities influence the health of the population.

Of these, only the pre-determined factors are unlikely to be influenced by a development proposal. The Health Impact Assessment (HIA) will therefore consider all relevant health determinants other than pre-determined factors.

12.2 Baseline

The proposed site is located within the boundaries of SCC and South Tyneside local authorities. The site is located approximately 6km north west of Sunderland city centre.

[63] http://www.hcsunderland.org.uk

A number of scattered rural residential properties lie within the proposed development footprint. These properties fall within Washington North ward, which is within Sunderland City Council, and Fellgate and Hedworth ward, which is within South Tyneside Council.

The nearest significant volume of residential receptors is located adjacent to the eastern boundary of the proposed development site, at the closest point, in the residential areas of Town End Farm and Castle Hylton Estate. These residential areas fall within Castle ward which is within Sunderland City Council.

12.2.1 Community profile

This section provides a brief summary of the community profile for the study area. Statistics are reported at local authority level (Sunderland City Council) and ward level (Washington North ward, Fellgate and Hedworth ward, and Castle ward). Some data is also provided at Lower Super Output (LSOA[64]) level for Sunderland 007a and South Tyneside 020C (the area within the proposed development site red line boundary), Sunderland 003E (the area covering the majority of Town End Farm), Sunderland 003A (the area covering the southern portion of Town End Farm and the northern end of the Hylton Park Estate) and Sunderland 008C (the area covering the western portion of the Hylton Park Estate). See Appendix K for a map showing the relevant ward and LSOA boundaries.

The National Statistics socio-economic classification (NS-SeC)[65] indicates that the majority of residents in Washington North, Fellgate and Hedworth and Castle wards fall within the lowest grade routine and semi-routine occupations, and lower supervisory occupations. Both these categories have numbers higher than the national average.

In terms of industry of work a large proportion of residents in Castle ward work in the ‘Manufacturing’ sector (15.5%) compared with a national average of 8.8%. A significant number of residents (17.7%) are also employed in the ‘Wholesale and retail trade; repair of motor vehicles and motor cycles’ sector. This figure is just above the national average of 15.9%[66]. Within Washington North 19.4% of residents work in the ‘Manufacturing’ sector and 17.9% in the ‘Wholesale and retail trade; repair of motor vehicles and motor cycles’ sector. Within Fellgate and Hedworth ward there is a greater diversity in industry of work, however, 15.8% still work in the ‘Wholesale and retail trade; repair of motor vehicles and motor cycles’ sector, and 11.5% in the ‘Manufacturing’ sector.

Levels of employment in Castle ward are similar to the national average with 52.2% employed either on a full-time or part-time basis, compared with a national average of 52.3%, although slightly higher numbers are employed part-time than the national average. Levels of unemployed (economically active) persons is

[64] Lower Layer SOAs were first built using 2001 Census data from groups of Output Areas (typically four to six) and have been updated following the 2011 Census. They have an average of roughly 1,500 residents and 650 households. Measures of proximity (to give a reasonably compact shape) and social homogeneity are also included.
[65] ONS, 2011. NS-SeC, 2011 (KS611EW)
[66] ONS, 2011. Industry (KS605EW)

higher than the national average at 6.8% compared to 4.4%[67]. Levels of employment in Washington North and Fellgate and Hedworth wards are just above the national average with 53.2% employed either on a full-time or part-time basis; although levels of unemployed (economically active) persons are also high at 7.8% and 6.2% respectively.

Looking at the profiles for the three identified LSOAs covering Town End Farm and Hylton Park, the 2015 Index of Multiple Deprivation (IMD[68]) shows that the local area experiences relatively high levels of deprivation, falling within the 20% most deprived LSOAs in England. LSOA's Sunderland 007a and South Tyneside 020C which fall within the red line boundary of the proposed development site, in contrast, experience relatively lower levels of deprivation, ranking in the middle percentile of all LSOAs.

A notable statistic is that all of the five identified LSOAs, including those within the red-line boundary and those covering Town End Farm and Hylton Park, rank in the top 20% of LSOAs for Living Environment[69] on the English Indices of Deprivation indicating that the quality of the local environment[70] is good.

Levels of ethnic diversity in Castle, Washington North and Fellgate and Hedworth wards are very low, with the majority of residents being of white ethnicity[71].

12.2.2 Health profile

Levels of self-rated health in Castle ward are generally low with 10.4% rating their health as either 'Bad' or 'Very bad', compared with an England average of 5.4%[72]. Levels of self-rated health are slightly better in Washington North and Fellgate and Hedworth wards, but are still poorer than the national average with 8.7% and 7.5% respectively rating their health as either 'Bad' or 'Very bad'.

The area around Town End Farm and the Hylton Park Estate (LSOAs Sunderland 003E and 008C) has notably high levels of deprivation with regard to Health deprivation and Disability on the Indices of Deprivation[73], falling within the 10% most deprived LSOAs in England. This domain measures the risk of premature death and the impairment of quality of life through poor physical or mental health. It also measures morbidity, disability and premature mortality. Within the red-line boundary, levels of deprivation with regard to Health deprivation and Disability are not as bad, although Sunderland 007a still falls within the 20-30% most deprived LSOAs and South Tyneside 020C falls within the 30-40% most deprived.

[67] ONS, 2011. Economic activity, 2011 (KS601EW)
[68] DCLG [Accessed 20/06/16]. English Indices of Deprivation, Index of Multiple Deprivation, 2015.
[69] DCLG [Accessed 20/06/16]. English Indices of Deprivation, 2015.
[70] This indicator is made up of two sub-domains. The 'indoors' living environment measures the quality of housing; while the 'outdoors' living environment contains measures of air quality and road traffic accidents.
[71] ONS, 2011. Ethnic Group, 2011 (KS201EW)
[72] ONS, 2011. Health and Provision of Unpaid Care, 2011 (KS301EW)
[73] DCLG [Accessed 20/06/16]. English Indices of Deprivation, 2015.

Levels of 'Long term sick or Disabled' within Castle ward are high at 8.3% compared with a national average of 4.0%[74]. Levels of 'Long term sick or Disabled' within Washington North and Fellgate and Hedworth wards are slightly lower at 7.3 and 6.2% respectively, but are both still above the national average.

Life expectancy at birth in Sunderland is lower than the England average for both males and females, being 2.2 years less for men, and 2.4 years less for women[75]. In South Tyneside it is 2.4 years less for men and 1.6 years less for Women.

Smoking related deaths in both Sunderland and South Tyneside are notably high at 401.7 and 391.3 per 100,000 compared with an England average of 274.8[76]. Under 75 mortality rates from cardiovascular disease and cancer in both local authorities are also higher than the England and the north-east region averages[77].

12.3 Consultation

This Scoping Report will be circulated for comment to the following stakeholders:

- Director for Public Health (South Tyneside);
- Director for Public Health (Sunderland)
- Public Health England;
- South Tyneside Health and Wellbeing Board;
- Sunderland Health and Wellbeing Board;
- South Tyneside Clinical Commissioning Group; and
- Sunderland Clinical Commissioning Group (CCG).

12.4 Potential Impacts on Population and Human Health

12.4.1 Construction

During construction, there is the potential for some short term positive and negative health effects, related to the following impacts on the health determinants. These may include the following:

- Impacts on environmental conditions in and around existing residential properties in close proximity to the construction site through increased levels of noise and vibration, dust and traffic, and visual effects. Properties most likely to be affected would be those closest to the construction site at Town End Farm and Hylton Park Estate to the east of the A19, a group of residential

[74] ONS, 2011. Economic activity, 2011 (KS601EW)
[75] PHE [Accessed 20/06/16]. http://fingertips.phe.org.uk/profile/health-profiles. Health profiles. Life expectancy at birth, 2012-14.
[76] PHE [Accessed 20/06/16]. http://fingertips.phe.org.uk/profile/health-profiles. Health profiles. Smoking related deaths, 2012-14.
[77] PHE [Accessed 20/06/16]. http://fingertips.phe.org.uk/profile/health-profiles. Health profiles. Under 75 mortality rate, 2012-14.

and commercial properties directly to the west of the site on Follingsby Lane, and some farm buildings within 300m of the proposed development;

- The addition of construction related traffic on local roads affecting their use by cyclists and altering perceptions of road safety for both cyclists and pedestrians, and particularly more 'vulnerable' users such as children and the elderly;
- Increased risk and fear of crime caused by the presence of construction compounds and construction sites which can provide opportunities for theft and vandalism and other anti-social activities if not properly lit and managed;
- Potential for impacts on air quality and the noise environment for local sensitive receptors; and
- Employment and training opportunities on the construction site, which would be available to local communities.

12.4.2 Operation

At the operational phase, the proposals are considered likely to impact on the following determinants of health either positively or negatively and it is therefore concluded that these topics should be scoped into the assessment of health in the EIA (see Table 12.1).

Table 12.1: Operational phase, health determinants to be scoped into the EIA.

Health determinant	Scoping conclusions
Education, Employment and Income	The proposed development is considered likely to have a positive health effect through the creation of new jobs. There will also be benefits to the wider economy through additional supply chain effects related to the procurement of services and equipment. There may also be some negative impacts on employment resulting from the loss of existing businesses within the proposed development envelope, including a number of farms, the pub and potentially the museum. It is considered that further assessment of the potential health effects related to education, employment and income impacts should be scoped into the EIA.
Air Quality	The Air Quality assessment scoping text (Chapter 5) indicates that, when operational, the proposed development has the potential to impact on existing air quality on-site and off-site as a result of road traffic exhaust emissions, such as NO2, PM10 and PM2.5, associated with vehicles travelling to and from the site. In addition, the proposed energy centre which will form part of the development has the potential to impact on existing air quality both on-site and off-site (dependant on the choice of fuel or feedstock). There is evidence of a link between air pollutants, particularly PM10 and health impacts. Therefore, it is considered that further assessment of health effects related to air quality should be scoped into the EIA.
Noise and Vibration	The Noise assessment scoping text (Chapter 11) indicates that at the operational phase the proposed development has the potential for significant noise impacts as a result of traffic on the proposed new link

Health determinant	Scoping conclusions
	road; on-site vehicle noise and deliveries; mechanical services plant; industrial and commercial sources; car parking activity noise; and traffic flow changes on the wider road network. There is a wealth of evidence on the potential health and wellbeing effects of certain types and levels of noise. Therefore, it is considered that further assessment of health effects related to noise impacts should be scoped into the EIA.
Neighbourhood Quality - including greenspace and contact with nature, landscape and visual effects	The proposed development will result in the loss of green belt land as well as an area of community forest (Great North Forest). The proposed development has the potential to impact on views and the enjoyment of a number of publically accessible areas; the Great North Forest Heritage Trail and minor rights of way; views from surrounding residential areas including the eastern edge of Washington and residential areas within Sunderland; and views from nearby road infrastructure, such as Follingsby Lane, the A19 to the east and the A1290 to the south. Evidence exists on the links between access to green space, views of nature, and physical and mental health outcomes. Therefore, it is considered that further assessment of health effects related to neighbourhood quality should be scoped into the EIA.
Transport – including active travel, road safety and traveller stress	The proposed development is likely to result in additional traffic movements on neighbouring roads. The potential impacts on health of increased traffic congestion and traveller stress should be reviewed. Any potential impact on road safety, including perceived risks, should be assessed, particularly in regard to cyclists and pedestrians. The proposals will also directly affect a local cycle route that runs through the site on Follingsby and Downhill Lane. Therefore, it is considered that further assessment of health effects related to transport should be scoped into the EIA.
Housing	Demand for housing and house prices may be impacted by the creation of 5,200 new jobs and the associated demand for housing that may accompany that. The Socio-Economic assessment (Chapter 0) will qualitatively assess the mix, tenure and suitability of housing. There is evidence on the links between home ownership and health, as well as housing quality, and overcrowding and health outcomes. It is therefore considered that further assessment of health effects related to housing should be scoped into the EIA.
Accessibility of Services	The proposed development is considered unlikely to impact on the physical accessibility of services. Services such as shops, health centres and schools are all located away from the proposed development site and within the residential areas of Town End Farm and Hylton Castle Estate. However, there is a potential impact on demand and access to services resulting from the creation of 5,200 new jobs and the associated demand for housing and services such as school and healthcare places that may accompany that. It is therefore considered that further assessment of health effects related to accessibility of services should be scoped into the EIA.

At the operational phase, the proposals are considered unlikely to impact on the following determinants of health positively or negatively and it is therefore concluded that these topics should be scoped out of the assessment of health in the EIA (see Table 12.2).

Table 12.2: Operational phase, health determinants to be scoped out of the EIA.

Health determinant	Scoping conclusions
Social capital	The proposed development is considered unlikely to have a significant impact on social capital. Only one community facility (the Three Horseshoes pub) would be lost as a result of the proposals. No significant impacts on large areas of residential development are anticipated either. It is therefore considered that further assessment of health effects related to social capital should be scoped out of the EIA.
Lifestyle factors	The project is considered unlikely to directly affect lifestyle factors such as physical activity or diet. Therefore it is considered that further assessment of health effects related to lifestyle factors should be scoped out of the EIA.

12.5 Methodology of assessment

12.5.1 Nature of Change

We will prepare a qualitative impact assessment which will describe the nature of the change in the health determinant resulting from the Proposed Scheme, including:

- the aspect of the Proposed Scheme causing the change;
- the nature of the receptor(s);
- the direction of change (which is classified as positive, negative, neutral or uncertain);
- the perceptions of the community, which may influence the way in which people experience or react to a change; and
- the extent to which the change can be reduced or controlled in order to minimise adverse health effects or enhance beneficial effects.

12.5.2 Duration of change

Operational effects are assumed to be permanent in most cases. Construction effects will generally be defined as ‘short term’ if under six months, ‘medium term’ if six months to two years, or ‘long term’ if more than two years in duration. Very short term effects, such as those lasting less than one month, will be scoped out.

12.5.3 Intensity of change

The intensity of the change to a health determinant will be judged as ‘low’, ‘medium’ or ‘high’ taking into account factors such as the magnitude, frequency and duration of the effect, and/or the value and replaceability of the affected resource(s).

The intensity of change may be expressed as a range (e.g. 'low to medium') to take account of the different levels of intensity experienced by different groups and individuals within the population.

12.5.4 Extent of exposure to change

The size of the population exposed to the change will be described as 'low', 'medium' or 'high'.

Professional judgement will be used in the application of the above terms on a case-by-case basis, taking into account the local context. The judgement will consider the proportion of the community exposed to a change, as well as the absolute number of people exposed. In many instances the extent to which a change will be experienced by the population cannot be accurately determined, and a reasonable assumption will need to be made.

12.5.5 Strength of evidence

Based on a literature review links will be made between the identified impacts on the selected determinants and potential health effects/outcomes. The literature review would comprise an evidence review of epidemiological and health studies to establish causal and compounding links between the effects likely to be associated with the proposed development and health outcomes.

12.5.6 Sensitivity of the affected population

The sensitivity of the affected population will be considered, based on information contained in the community profile and feedback received through community engagement. This will include, where appropriate, an assessment of effects on sections of the community with particular characteristics that may make them more vulnerable to adverse effects, or more likely to benefit from positive effects. The data reviewed during the scoping exercise suggests that the following vulnerable groups are present in the affected community:

- Low income groups
- Communities with high levels of overall deprivation (up to 20% highest deprivation levels nationally)
- Communities with high levels of health deprivation (up to 10% highest health deprivation nationally)

In addition to these groups the health assessment will consider specific effects on groups such as older people, children and people with physical or learning disabilities. Further information will be gathered during the assessment which may result in the identification of further vulnerable groups.

12.5.7 Cumulative Effects

The assessment will also consider the cumulative effects of changes in a number of determinants on a given receptor (i.e. cumulative impacts from changes in the

air quality, noise and visual environment on a residential receptor), as well as the cumulative effects of any other proposed developments in the area.

12.6 Approach to mitigation

Where impacts are identified in the HIA, recommendations will be proposed to reduce any negative impacts and maximise any positive impacts on health. Recommendations may include detailed design considerations or recommendations for management practices during the construction and operation of the proposed development. The responsible organisation(s) and the timing of actions required to implement any recommendations made in the HIA will be identified.

13 Socio-Economic

13.1 Overview

This chapter will assess the socio-economic effects of the proposed development on employment, housing, and amenity. A review of baseline conditions and the proposed development has informed the position that socioeconomic impacts should be scoped into the EIA.

This chapter sets out the proposed methodology and scope for the assessment that would seek to determine socio-economic effects relating to:

- Employment and skills, including impacts on agricultural holdings and existing businesses;
- Housing demand; and
- Amenity.

The assessment will be desk-based and will consider effects from construction and operation using both qualitative and quantitative analysis techniques. Assessment areas will be considered at the local and regional level relevant to socio-economic characteristics.

13.2 Baseline

The north east of England has a strong advanced manufacturing and engineering industry – focussed around the existing NMUK plant to the north of Sunderland. Nissan's presence since 1985 has led to the development of an 'automotive cluster' centred on the plant north of Sunderland, with the nearby location of manufacturers linked to the Nissan supply chain.

Nissan is a major employer in the north east and has been the largest car plant in the UK for 14 years and the largest exporter for 12 years. NMUK in Sunderland accounts for one third of all UK car production. In addition, in the north east region there are 25 tier one automotive suppliers. Over 7,000 people are employed in Sunderland's Nissan plant underpinning over 20,000 supplier jobs in the wider north east region.

NMUK, the European home of Nissan, as well as three sites comprising Sunderland's Enterprise Zone are to the south of the proposed site. The proposed site is located within the boundaries of the SCC and South Tyneside local authorities. It is located approximately 6km north west of the Sunderland city centre.

Sunderland had a population of over 277,200 in 2015[78]. The area has an above average unemployment rate compared with the national average. From January

[78] Office for National Statistics, Population Estimates 2015

2015 to December 2015, the unemployment rate in Sunderland was 8.5%, compared with 7.6% in the north east region and 5.2% nationally[79].

The industrial base in Sunderland has a relatively high presence of manufacturing and public administration, education and health activity compared with nationally. In 2014, the manufacturing sector accounted for 16.8% of employee jobs, compared with 10.8% in the north east region and 8.5% nationally[80]. Public administration, education and health activities accounted for 30.7% of all employee jobs compared with 27.4% nationally. This is less than the respective figure for the north east region (33.7%) however.

Sunderland experienced growth in employee jobs of 6.5% over the period 2010 to 2014, exceeding the growth in the north east region (2.1%) and nationally (5.2%).

South Tyneside had a population of 148,700 in 2015[81]. Similarly to Sunderland, the area has an above average unemployment rate compared with the national average. From January 2015 to December 2015, the unemployment rate in South Tyneside was 9.0%, compared with 7.6% in the north east region and 5.2% nationally[82].

The industrial base in South Tyneside has a relatively high presence of manufacturing and public admin, education and health activity compared with nationally. In 2014, the manufacturing sector accounted for 11.0% of employee jobs, compared with 10.8% in the north east region and 8.5% nationally[83]. Public administration, education and health activities accounted for 34.7% of all employee jobs compared with 33.7% in the north east region and 27.4% nationally. South Tyneside has a greater proportion of employee jobs in the service sector (84.1%) than Sunderland (76.3%), just below the respective figure nationally of 85.6%.

South Tyneside experienced growth in employee jobs of 4.0% over the period 2010 to 2014, exceeding growth in the north east region (2.1%) and nationally (5.2%).

In relation to the proposed site, there are a number of existing land uses that fall within its boundary. These include residential properties, farms, a pub, a museum and an electricity substation. Accordingly, there is existing economic activity that will need to be considered as part of the socio-economic assessment.

13.3 Consultation

Informal consultation prior to the submission of the scoping request has not been undertaken to date.

Consultation will be carried out with regeneration officers at SCC and SCC. The economic lead at the North East Local Enterprise Partnership (NELEP) will also

[79] Office for National Statistics, Annual Population Survey January 2015-December 2015
[80] Office for National Statistics, Business Register and Employment Survey 2010-2014
[81] Office for National Statistics, Population Estimates 2015
[82] Office for National Statistics, Annual Population Survey January 2015-December 2015
[83] Office for National Statistics, Business Register and Employment Survey 2010-2014

be consulted. These discussions will be used to agree the extent of the study area and background date used for the assessment.

13.4 Potential Socio-Economic Impacts

The proposed scope for the assessment of socio-economic effects has been informed by baseline conditions and an understanding of the components of the proposed development relevant to socio-economic impacts.

The likely socio-economic impacts will be centred on job creation, both during the construction and operation phases of the proposed development. There will also be benefits to the wider economy through additional supply chain effects related to the procurement of services and equipment.

Issues of likely significance are considered to include effects on the following:

- Employment and training opportunities;
- Wider economic contribution to the Northern Powerhouse[84] vision;
- Additional housing demand relating to new jobs; and
- Amenity access.

The primary impacts of the proposed development – in the form of job creation and support of the Northern Powerhouse vision – are expected to be long-term in duration.

The assessment will be desk-based and combine quantitative economic assessment and qualitative social assessment techniques. The assessment would include a review of baseline conditions and effects from construction (employment) and operation (all issues of significance referenced above). Cumulative impacts of the proposed development will be considered as set out in Section 4.3 of this Scoping Report.

There is no definitive set of regulations for assessing the significance of socio-economic effects, although there are conventions and good practice guidance. The assessment will therefore be based on convention, professional judgment and experience and consider the value and sensitivity of receptors from the baseline socio-economic characteristics, based on their importance, size and potential for substitution, as well as the magnitude of the net additional impact based on qualitative and quantitative (where applicable) evidence.

The socio-economic assessment will identify the geographical areas within which socio-economic effects are likely to occur. This is likely to consider local level effects and any more strategic effects that are likely to be generated for Sunderland, South Tyneside and the wider north east region.

[84] The Northern Powerhouse is a broad based initiative covering investment in science and technology, transport, digital and innovation, culture and tourism across the North, to devolvement of powers to local people through ground breaking Devolution Deals.

13.5 Methodology of Assessment

The approach to socio-economic assessment is based principally on a widely accepted methodology set out in the Homes and Communities Agency Additionality Guide[85]. This includes the estimation of effects on a "with development" and "without development" basis to identify the "net additional" effect compared to what would have otherwise happened. The assessment will take account of leakage, deadweight and displacement in order to determine the genuinely additional outputs offered by each option.

Effects will be identified as beneficial or adverse with a level of significance (minor, moderate, or major).

The assessment will be desk-based and will be informed by relevant publically available datasets, background studies and consultation responses.

The assessment will be based on the principles of the following guidance:

- Additionality Guide: 4th Edition, Homes and Communities Agency (2014); and
- Employment Densities Guide: 3rd Edition, Homes and Communities Agency (2015);

A review of baseline conditions will be undertaken at the local level and for the Local Authority areas of Sunderland and South Tyneside. This will include demographics, employment and economic data, housing and amenity.

13.5.1 Construction

The construction of the proposed development is likely to support construction employment opportunities. Although any elements of specialist construction may be sourced from outside the local area, the nature of the proposed development is likely to support significant levels of employment at the local and regional level. Wider effects on employment such as impacts on local supply chains will also be identified where possible.

Employment effects and opportunities including the level of employment in construction will be assessed based on a calculation of Full Time Equivalent employment based on the capital expenditure of the project. Opportunities for upskilling (local labour sourcing, apprenticeships and other means of enhancing local ability to compete for employment opportunities) will be considered qualitatively as part of the assessment.

13.5.2 Operation

13.5.2.1 Employment and training

The quantum of services and retail to be included in the proposed development is not yet known. The proposed development will include a "Hub" alongside the

[85] Homes and Communities Agency (2014) Additionality Guide Fourth Edition, January 2014

core employment floorspace. This seeks to provide a mix of ancillary uses such as managed workspace, conference facilities, a hotel, retail and leisure. These facilities will be located in the Hub and will be used to attract future occupiers by offering these additional services for employees, and opportunities for future business development.

In the absence of evidence to suggest otherwise, operational employment associated with such services has been scoped into the assessment.

This assessment would comprise a calculation of Full Time Equivalent employment based on existing and proposed floor space and employment densities guidance[86]. This will be supported by a qualitative assessment of opportunities for local labour sourcing, training and opportunities for upskilling.

The assessment of employment and training impacts will include consideration of the impacts on agricultural holdings: specifically, the impacts on the viability of the farms within the IAMP area and their associated employment needs. To accommodate the proposed development, all land and buildings within the site boundary could require clearance and demolition. This will directly impact the owners and residents of such land and properties. The associated impacts could include impacts on the economic viability of agricultural holdings whose total scale is reduced. Further to agricultural holdings, there may also be other businesses (such as the Museum) that would be required to relocate. Accordingly, there will be adverse impacts on existing economic activity to consider in addition to beneficial impacts on employment.

13.5.2.2 Wider economic contribution to the Northern Powerhouse vision

The Government's long-term economic plan seeks to rebalance growth across the regions and nations of the UK, and to build a Northern Powerhouse. The Northern Powerhouse is a broad based initiative covering investment in science and technology, transport, digital and innovation, culture and tourism across the North, to devolvement of powers to local people through ground breaking Devolution Deals.

The scale and prestige of the proposed development mean that it has the potential to make a significant contribution to the Northern Powerhouse vision. The assessment will consider the potential scale and breadth of this contribution. The assessment will be qualitative.

13.5.2.3 Housing

The quantum of the proposed development and associated job creation is likely to contribute to increased housing demand.

The assessment would consider the net additional demand associated with the additional employment delivered by the proposed development.

13.5.2.4 Amenity

[86] Homes and Communities Agency and Drivers Jonas Deloitte (2010); Employment Densities Guide 2nd Edition.

The proposed development may cause changes to existing access to amenity for the community such as PROWs. Amenity associated with changes to access would be assessed qualitatively based on information in the baseline conditions and professional judgment. This would also include an assessment of any change in the quality or level of access to publically accessible open space and PROWs associated with the proposed development.

13.5.3 Development of Mitigation

The assessment will consider supplementary mitigation options in order to reduce potential impacts to an acceptable level. This would be based on best practice guidance and an assessment of residual impacts following the implementation of any suggested control methods would be provided.

13.5.4 Cumulative effects

The assessment will consider cumulative effects of the proposed development in conjunction with over significant developments. The assessment will apply the approach outlined in Chapter 4 and focus on employment impacts.

13.5.5 Analysis of Residual Effects

The assessment will produce a clear summary of the significant residual impacts of the project incorporating mitigation and enhancement measures. Where significant impacts cannot be avoided or reduced, the assessment will identify residual effects and the potential for compensation measures to be implemented.

14 Waste

14.1 Overview

This chapter will provide an assessment of the likely significant effects of solid waste generation associated with the construction and operational phases of the proposed development. The effects will be assessed in the context of relevant national, regional and local waste management policies and regional waste management treatment and disposal capacity.

14.2 Baseline

The farms at the existing site generate some agricultural and household waste. Very low volumes of commercial waste are currently generated at the North East Aircraft Museum.

The assessment will focus on the potential effects resulting from solid waste generation and management from developing the site, during the construction and operational periods.

14.3 Consultation

Consultation with SCC and STC will be undertaken in order to agree the scope of the assessment and proposed methodologies.

14.4 Assessment

An assessment of the impacts of the proposed development on waste management infrastructure during the construction and operational phases of the development will be undertaken. The likely significant effects of the proposed development will be assessed by predicting the future generation of waste streams and assessing this against current baseline and the local/regional waste management arrangements. This will be undertaken within the context of sustainable resource management guidance, legislation, and regional and local waste planning constraints.

The principal objective of sustainable waste management is to use material resources more efficiently and to reduce the amount of waste requiring final disposal by landfill. Where waste is generated it should be managed in accordance to the waste hierarchy which advocates, the following order of preference:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery; and
- Disposal as a last resort.

14.5 Methodology

The design team will provide an initial estimation for the volume of excavated materials that would be generated through the cut and fill activities as part of the submission. Excavation quantities will be estimated by a project engineer.

Demolition waste will be estimated using measurements of existing buildings to estimate existing structural dimensions. These structural dimensions will be entered into the Demolition Waste Calculator of the Waste and Resources Action programme's (WRAP's) Net Waste Tool (nwtool.wrap.org.uk) to estimate the mass (in tonnes).

The mass of waste likely to be generated during the construction phase of the proposed development will be estimated using BRE SMARTWaste Benchmarks[87]. Floor areas of the proposed buildings will be provided by the project client.

The future predictions of operational commercial and industrial waste generation from the proposed development will be based on guidance given in BS 5906:2005[88].

14.6 Approach to Mitigation

Following assessment, appropriate mitigation measures will be identified to reduce the quantity of waste sent for final disposal and to apply sustainable waste management practices within the development.

14.7 Residual Effects

The assessment will determine whether there would be any residual effects with respect to waste management (whether positive or negative), following the construction, and in consideration of the operation, of the proposed development.

14.8 Cumulative effects

There are a number of other planned developments located close to the proposed development, which could potentially produce additive impacts. In order to assess the likely cumulative effects of waste generation on local waste management infrastructure, construction and operational waste generation will be estimated for the planned developments plus the proposed development itself.

[87] Buildings Research Establishment (BRE) (2012) *Waste Benchmark Summary Data June 2012.*
[88] British Standards Institution (2005) BS 5906:2005; 'Waste Management in Buildings – Code of Practice

15 Water Resources and Flood Risk

15.1 Overview

This chapter deals with the Water Environment and the consequences of the proposed development upon the local drainage, water-body and water-quality aspects of the environment for the following aspects.

- Effects of routine run-off on surface waters;
- Effects of routine run-off on groundwater;
- Pollution impacts from spillages; and
- Assessing flood impacts both on and off-site.

A similar approach can be taken when considering the impacts arising from run-off from the building footprints.

15.1.1 Legislative Background

As well as the wider DMRB guidance on EIA, there are key items of legislation and guidance specific to the water environment that should be considered as part of the assessment of water-related aspects of this scheme.

The Water Framework Directive (WFD) is a European Union (EU) directive designed to improve and integrate the way water, from all sources, is managed throughout Europe. In the UK, much of the implementation work will be undertaken by competent authorities such as the EA and Local Authorities. It came into force in 2000 and was transposed into UK law in 2003. Member States are required to achieve good chemical and ecological status for inland and coastal waters by 2015.

Following the issue of the WFD, the UK Government commissioned '*Making Space for Water*'. The aim of the document is to manage the risks resulting from flooding and coastal erosion by employing an integrated portfolio of approaches that reflect both national and local priorities.

The NPPF was implemented in March 2012 and its chief role in drainage and flood-risk terms is that it carries on the principles set out in PPS25 *Development and Flood Risk* which it superseded. NPPF and its accompanying guidance provide a framework with which to assess the associated impact on and from development. The purpose is to ensure that development-planning decisions are made in a manner that delivers sustainable development in terms of flood-risk and drainage management.

The technical guidance to the NPPF, into which the principles and content of PPS25 were transposed in 2012, was itself replaced by an on-line version in 2014 which has been updated further since, most notably in February 2016 with revised climate-change provisions for fluvial and rainfall assessment.

The Flood and Water Management Act (FWMA) 2010 sets out how flood and coastal risk management in England and Wales is now to be managed and,

amongst other provisions, provided for a formal framework for design and adoption of SuDS which had not hitherto existed. That particular part of the Act has not however been fully implemented and instead alternative provisions were issued in 2015 which omitted the adoption and approving-body elements.

The SCC and STC's Core Strategies provide the primary guidance on flood risk and drainage management at local level. The authorities' earlier Strategic Flood Risk Assessments (SFRA) and successor documents provide a more general guide on local flood-risk and drainage management.

The Northumbria River Basin Management Plan (RBMP) encompasses the River Don catchment under the '*River Don (source to tidal limit)*' water-body. This provides information on the current classification status of the River Don and local groundwater units and future targets for their status in line with the WFD.

Both Councils are currently developing Flood Risk Management Strategies to formalise their current strategic policies for dealing with flood risks locally.

15.2 Baseline

The key water environment issues are as follows:

- Flood risk;
- Surface water – quantity and quality;
- Groundwater – quantity and quality;
- Existing drainage; and
- Water resources.

15.2.1 Flood Risk

The IAMP site is bisected by the River Don and a tributary which originate beyond the Leamside railway west of the site. The tributary channel joins the Don between North Moor Farm and Hylton Bridge. A minor stream rises east of Strother House Farm and passes round Hylton Grove Farm before joining the river.

A number of embankments have historically been constructed alongside sections of the River Don and its main tributary upstream of Hylton Bridge. These provide only a limited level of protection to the farmland.

A detailed 1- and 2-dimensional hydraulic model has been compiled for the Don and its main tributary between the former Leamside railway and the A19 in order to refine earlier coarse flood extent forecasts.

The site is dominated by farmland with isolated farmsteads or other buildings. There is no widespread existing sewer system and the site is essentially devoid of existing public sewers apart from a localised system on Washington Road serving the buildings around the Air Museum. The risk of drainage flooding is therefore currently confined to localised areas around these building clusters.

There is a patchy system of field ditches providing land drainage. The land south of the Don falls mainly south-eastwards towards the intersection of the Washington Road and the A19. There is only a relatively narrow strip of land falling northwards towards the Don and its tributary. North of the Don, the topography is more conventional and falls chiefly towards the river. The very north-western corner of the site drains north-eastwards towards the Testos junction between the A19 and A184 via a land-drain which is culverted beneath the A19 and which ultimately drains into the Don east of the A19.

A culverted land-drain runs eastwards along/beside Washington Road as far as the A19, at which point it turns southwards to run alongside the A-road until it turns eastwards again to cross beneath the A19 and is believed to feed into the natural streams in Hylton Castle. There has been past flooding on Washington Road in the vicinity of the Air Museum and the public house nearby: this is believed to have originated from a blockage in the land-drain culvert that has not yet been properly repaired.

The land is of moderate to poor natural-drainage quality, being dominated locally by “Pelaw Clay, laminated clay and glacial till” and alluvial material. This is borne out by the spread of field ditches within the site and past observations of low-lying areas becoming waterlogged or subject to ponding during prolonged wet weather.

15.2.2 Development Location

The site extent avoids the main river flood areas: the chief interaction between the development and the River Don in development footprint terms is from the new road linking the southern and northern sites which crosses the Don near Elliscope Farm. A small number of surface-drain outfalls will also be constructed but these will only affect localised small areas.

The northern part of the site incorporates part of the route of a minor stream that joins the Don downstream of Hylton Bridge. This channel was not explicitly included as part of the river modelling on the grounds of its small scale and that its floodplain is considered to be confined close to the stream channel. This watercourse has only very localised impacts upon the proposed development area.

The site lies upstream of areas in Boldon that have experienced flooding problems associated both with the River Don and with local drainage systems. The site is currently undeveloped and contributes flows to the river at corresponding rates commensurate with this undeveloped condition. Any development on this land poses the risk of increasing discharge rates into the watercourses that in turn leads to increased flood risk downstream.

15.2.3 Other Drainage

The nearest foul sewers of any relevance to the scheme as a whole are located to the west. A small sewer originates on Cherry Blossom Way approximately 250m south of Washington Road and flows southwards. A large trunk foul sewer flows parallel with and east of the former Leamside railway bordering Washington, bound for the treatment works near Pattinson above the River Wear. A minor foul

sewer runs eastwards along Washington Road from the cluster of buildings by the Air Museum.

15.2.4 Water Quality

Most of the site lies within the River Don (source to tidal limit) water-body within the Tyne catchment. The southern part of the site that drains towards Hylton Castle falls within the Wear Lower and Estuary body but is outside any specific surface water operational district.

The 2015 Northumbria River Basin District management plan (RBMP) records the conditions for the River Don river body as follows:

- Hydromorphological classification: heavily modified;
- Ecological quality: poor (was rated 'good' in 2009);
- Chemical quality: good (not assessed in 2009); and
- Overall river quality: poor (was rated 'good' in 2009).

The RBMP has no classifications recorded for the Wear Lower and Estuary area for surface water.

General pressures from urban run-off and an unknown source are cited in relation to the chemical quality though not explicitly in relation to the river's ecological quality.

No underlying groundwater units are recorded locally.

15.2.5 Water Resource

Northumbrian Water Ltd has confirmed that a water supply can be made available to the IAMP scheme without the need for off-site reinforcement of the mains network for the anticipated demands of the scheme. There are no known restrictions upon supplies and water resources locally at present.

15.3 Consultation

The following bodies have been consulted during the early investigation stages of work on the IAMP scheme in relation to the local water environment with particular reference to land drainage and flooding matters:

- EA;
- SCC; and
- SCC.

The two Councils are the Lead Local Flood Authorities within their respective areas.

Northumbrian Water Ltd have been consulted with regard to the availability of sewer capacity for foul drainage needs and enquiries have also been made concerning water supply capacity.

In addition publicly-available documents including the following have been reviewed:

- SCC and STC's Strategic FRAs;
- SCC and STC's Core Strategies; and
- Northumbria RBMP 2015.

15.4 Potential Impacts on Water Resources and Flood Risk

The main potential impacts upon the water environment are:

- Managing flood risk from large paved areas;
- Controlling run-off from new built development;
- Crossing the River Don clear of predicted flood levels; and
- Managing water quality of development run-off.

15.4.1 Managing Flood Risk from Large Areas of Impermeable Surfacing

The development is at risk of surface flooding and of causing surface flooding beyond its borders. This is most likely to occur during short-term high-intensity storms during which substantial quantities of water arrive on the paved surfaces very quickly and are unable to drain away into the sewers quickly enough. Water then moves on the surface as the topography directs and can follow flow routes that affect property within or beyond the development borders.

This scheme is particularly prone to the risk of surface flooding due to its nature, comprising large building footprints, service yards and parking areas, compared to (e.g.) a residential development where impermeable areas are more fragmented and interspersed with unpaved areas. This in turn leads into the following issue.

15.4.2 Controlling Run-off from New Built Development

The scale of the proposed development and, as noted above, its characterisation with large buildings and yards/parking areas will generate surface run-off much faster and in much greater quantities than the land's present character. If not adequately controlled by the new drainage systems, this risks flooding both the site itself and off-site areas as well.

15.4.3 River Don Crossing

A proposed link road between the southern and northern parts of the proposed development needs to cross the River Don. Initial discussion with consultees has confirmed that a design commitment will ensure the bridge structure avoids obstructing the river's behaviour when in flood up to at least the design-standard flood as cited earlier. This is best done by ensuring that the bridge deck and

abutments are clear of the predicted flood level with sufficient clearance to avoid interfering with any water-borne debris.

15.4.4 Run-off Water Quality

Diffuse pollution from urban development and particularly from highways or industrial areas is a major source of pollution to watercourses. A site of this scale has the potential to contribute significant quantities of pollutants to the receiving watercourses unless the quality of run-off can be managed as part of the drainage process. Silt control and light-liquid management are particularly important as these represent major components of the contamination load generated by such areas. The Drainage Strategy needs to determine how SuDS features or other aspects of the scheme design can work to manage the run-off quality whether by downstream control or reductions at source.

15.5 Methodology of Assessment

A formal FRA is to be prepared for the scheme with the following key objectives:

- Identify all pertinent sources of material flood-risk to the IAMP scheme or which are generated in turn by the new development;
- Identify where and how the development needs to provide mitigation measures to manage impacts generated by the site or to manage the impacts of external flooding risks upon the development;
- Demonstrate compliance with the requirements of national and local planning policy on flood risk management; and
- Demonstrate how the surface water drainage strategy will operate and the arrangements for ownership and future maintenance.

A formal Drainage Strategy is to be prepared for the scheme with the following key objectives:

- Record the process by which the overall surface drainage approach has been derived;
- Identify the means of discharge of surface run-off and specific points of discharge where appropriate;
- Demonstrate compliance of an outline drainage network with the corresponding national and local planning policies and appropriate design standards;
- Identify the means of discharge of foul sewage from the site and the likely quantities or flow-rates involved;
- Identify specific provisions needed in the masterplanning process for the strategic foul drainage arrangements; and
- Record relevant consultations with the adopting authority and other relevant parties.

A Water Framework Assessment (WFA) is to be carried out to identify impacts generated by the development that may impede the WFD objectives for the relevant water bodies and to identify, where appropriate, opportunities for works associated with the scheme that contribute to those objectives.

The FRA, DS and WFA reports will form appendices to the ES in support of this chapter.

15.5.1 Significance Criteria

15.5.1.1 Flood Risk

The key assessment criteria will relate firstly to likelihood of Occurrence, then Impact and Sensitivity. The descriptions in the following table against each flood source correspond to a subjective valuation of Occurrence with some nominal quantitative element associated. For example, fluvial flood zones 1 to 3 have specific probabilities of occurrence assigned to them (e.g. Zone 1 has a probability of annual flooding of less than 0.1%). A summary of the significance criteria used to assess the flood-risk impact is given in Table 15.1.

Table 15.1: Flood risk impact significance criteria.

Impact Significance	Fluvial	Sewers	Groundwater	Pluvial
Substantial	Change of risk resulting in a change of more than one Flood Zone e.g. Zone 1 – 3 or 3 – 1.	Significant change of instances of sewer flooding.	Significant change in groundwater levels affecting the whole annual variation.	Significant change in surface water run-off.
Moderate	Change of risk resulting in a change of a single Flood Zone.	Moderate change of instances of sewer flooding.	Significant change in groundwater levels affecting maximum levels only.	Moderate change in surface water run-off.
Minor	Change in risk of insufficient magnitude to change the Flood Zone.	Small change in instances of sewer flooding.	Minor change in groundwater levels with annual variation left largely unchanged.	Small change in surface water run-off.
Negligible	No change in flood-risk.	No change in flood-risk.	No change in groundwater levels.	Surface water run-off unchanged.

15.5.1.2 Foul and Surface Water Sewerage Systems

A summary of the significance criteria used to assess the impact on the local foul and surface water sewerage systems is given in Table 15.2.

Table 15.2: Foul and surface water sewerage Impact Significance Criteria.

Impact Significance	Foul and Surface Water Sewerage
Substantial	System requires large-scale works over a large geographical area to operate within recognised standards.
Moderate	System requires localised works to operate within recognised standards.
Minor	Change in system behaviour not requiring any works to accommodate.
Negligible	No changes needed to existing system.

15.5.1.3 Water Quality

The assessment of the likely impact of the project on water quality will be qualitative. Details of the corresponding impact significance criteria are given in Table 15.3.

Table 15.3: Water Quality Impact Significance Criteria.

Impact Significance	Watercourses	Groundwater
Substantial	Change in both biological and chemical water quality.	Change in both chemical and quantitative water quality.
Moderate	Change in either biological or chemical water quality.	Change in either chemical or quantitative water quality.
Minor	Minor change in water quality.	Minor change in water quality.
Negligible	No change in quality.	No change in quality.

15.5.1.4 Water Supply

The impact significance criteria to be used for the water supply assessment are given in Table 15.4.

Table 15.4: Water Supply Impact Significance Criteria.

Impact Significance	Water Supply
Substantial	Large change in demand requiring large-scale works to accommodate.
Moderate	Change in demand sufficient to require local works on the water supply system.
Minor	Minor change in demand, not requiring works on the existing supply system.
Negligible	No change in demand.

15.6 Approach to Mitigation

15.6.1 Flood Risk

The key means of mitigating flood risk is to avoid it to begin with if at all possible. The proposed development layout is outside the projected extents of Flood Zone 3 from the Don or its tributary even under the highest climate-change increase although the development extent east of North Moor Farm comes very close to the edge of the projected Zone 3 flooding. If existing flood defences along the Don are allowed to degrade however, the flooding pattern is altered and is actually less extensive in this area. In either case however, there is no need for direct mitigation as there is no direct impact created at the design-standard event.

Any new structure crossing the river should be designed to stand clear of the design-standard flood level and extent to avoid obstruction of the flood and thereby risk increased flooding upstream. Allowance should be made for clearance to avoid snagging water-borne debris that might otherwise become stuck and create a blockage to flow through the structure.

Surface flood risk can be managed by providing features that either intercept overland flows – such as dykes or swales – that return run-off into the drainage system. Where this is not possible, the scheme layout should define flow routes where overland flow in extreme circumstances can be tolerated and managed without posing undue risk to users or to property and which lead to safe points of discharge within or beyond the site limits.

The risk of worsening river flood risk off-site is to be addressed by providing a site drainage system of adequate proportions under the prevailing design standards, for which specific mitigation elements are described below.

15.6.2 Drainage

The surface drainage system for the development must mitigate two aspects of the surface run-off: quantity and quality. There is clear guidance in planning policy at local and national level and in the industry design standards as to the hierarchy of drainage methods to be used. Infiltration is preferred over attenuation and in turn, where attenuation is found to be necessary, discharge to natural watercourse is preferred to discharge to sewer or culvert.

The drainage design process must establish whether infiltration is practicable or not. The initial evidence suggests strongly that this is not the case and that discharge of run-off will need to be directed to the appropriate receiving watercourse. Rates of discharge are to be controlled to match the existing land-drainage behaviour or, where necessary, to avoid exacerbating any existing off-site flood problems. The scheme design must also provide sufficient storage to hold the excess water pending discharge.

The drainage network must also incorporate features which address the pollution risks that run-off from the scheme will generate. These should deal with silt loading and the capture of hydro-carbon contamination (oil, fuel) from vehicle

wash-off or spillage. The CiRIA SuDS Manual[89], re-issued in December 2015, provides particular guidance on this aspect and may be considered the industry standard in such matters at present. Appropriate landscape design will also play an important role in run-off pollution control.

15.7 Residual Effects

The proposed development is at potential residual risk from the most severe river flooding, from surface flooding in storms too severe for the drainage to cope and at risk of causing pollution through contaminated run-off to the water bodies within or bordering the site.

15.8 Cumulative Effects

The assessment will identify any other projects/proposed developments which, in combination with the proposed IAMP development, could give rise to a significant cumulative effect with respect to water resources and flood risk. The assessment will consider whether there will be any cumulative effects (positive or negative), of the Proposed development when combined with the effects of other proposed major construction projects in the area.

[89] The SuDS Manual (C753) (2015) CiRIA

16 Topics to be Scoped Out

On the basis of the scope set out in previous chapters of this Scoping Report, the following environmental topics are proposed to be scoped out of the EIA and ES:

- Community amenities: Aside from the PROWs that cross some of the IAMP site, there are no existing community facilities within the proposed development area. The cycling and pedestrian provision and amenity for users will be assessed within the Access and Transport chapters. Specific impacts upon the local community will also be assessed in the EIA within the Air Quality, Socio-economic, Noise and Vibration, Landscape and Visual, and Population and Human Health chapters of the ES;
- Daylight, sunlight and overshadowing. Sunlight and daylight availability is considered in reference to the following guidance document: BRE 209, Site Layout Planning for Daylight and Sunlight – A guide to good practise[90]. This document describes the possible effect of a new development on the surrounding buildings and area and identifies the element of investigation for effects of the proposed development on sunlight and daylight availability for surrounding properties, effects of the proposed development on solar penetration for the surrounding amenity areas, and effects of the proposed development on solar dazzle and glare for the surrounding areas. The proposed development will not be of such a scale that it would cause a significant loss of daylight or sunlight to neighbouring properties. In terms of overshadowing of open, public spaces, its massing will be such that it is not likely to cause a significant effect. Thus it is believed that the effect of the proposed development on the surrounding buildings and area sunlight and daylight availability need not be further investigated and is scoped out of the EIA. It should be noted that any effects of artificial lighting on ecological resources will be assessed in the Biodiversity Chapter; and
- Environmental wind. Environmental wind assessments consider the effects a proposed development may have on the pedestrian level wind environment in terms of suitability for undertaking the intended activities and the potential to create unsafe environments. Wind conditions at a site depend on both the massing of existing and proposed buildings and structures within their surroundings and their orientation with respect to the prevailing winds. It is considered that the massing of the proposed development will be such that it would not significantly affect the pedestrian level wind environment, and indeed that pedestrian use of the site will be limited. As such, it is proposed to scope environmental wind out of the EIA;
- Utilities. The extensive construction works are needed for the wider scheme construction within the development areas (with landtake from current arable farming areas for the ecology and landscape mitigation corridor), and provision of utilities will not add to the landtake required. In addition, any changes to existing utilities or the provision of new utilities, will be addressed in individual chapters where required e.g. the landscape and visual impacts.

[90] Littlefair, P. (2011), BRE 209, Site Layout Planning for Daylight and Sunlight – A guide to good practise.

There isn't a specific Agriculture Chapter within the Scoping Report, but the impacts upon agriculture are assessed in two separate Chapters, Geology Soils and Contaminated Land (Chapter 9), and Socio-Economic (Chapter 13). Chapter 9 will include an assessment of the loss of agricultural soils (Agricultural Land Classification), and Chapter 13 will include an assessment of the impacts upon the viability of the farms within the IAMP area and their associated employment needs.

17 Summary

The following list summarises the environmental parameters that are considered likely to be impacted by the proposed development and are thus proposed to be scoped into the EIA and ES:

- Access and Transport;
- Air Quality;
- Biodiversity and Ecology;
- Cultural Heritage and Archaeology;
- Geology and contaminated land;
- Landscape and Visual;
- Noise and Vibration;
- Population and Human Health;
- Socio-Economic;
- Waste; and
- Water resources and flood risk.

This Scoping Report is based on information available at the time of writing. Additional information may become available that could alter the anticipated level of impact by the proposed development.

On behalf of the applicants, it is requested that a Scoping Opinion is issued by PINS from the SofS, in relation to the proposed development, in accordance with the requirements of the EIA Regulations.

Appendix A

Site Location Plan

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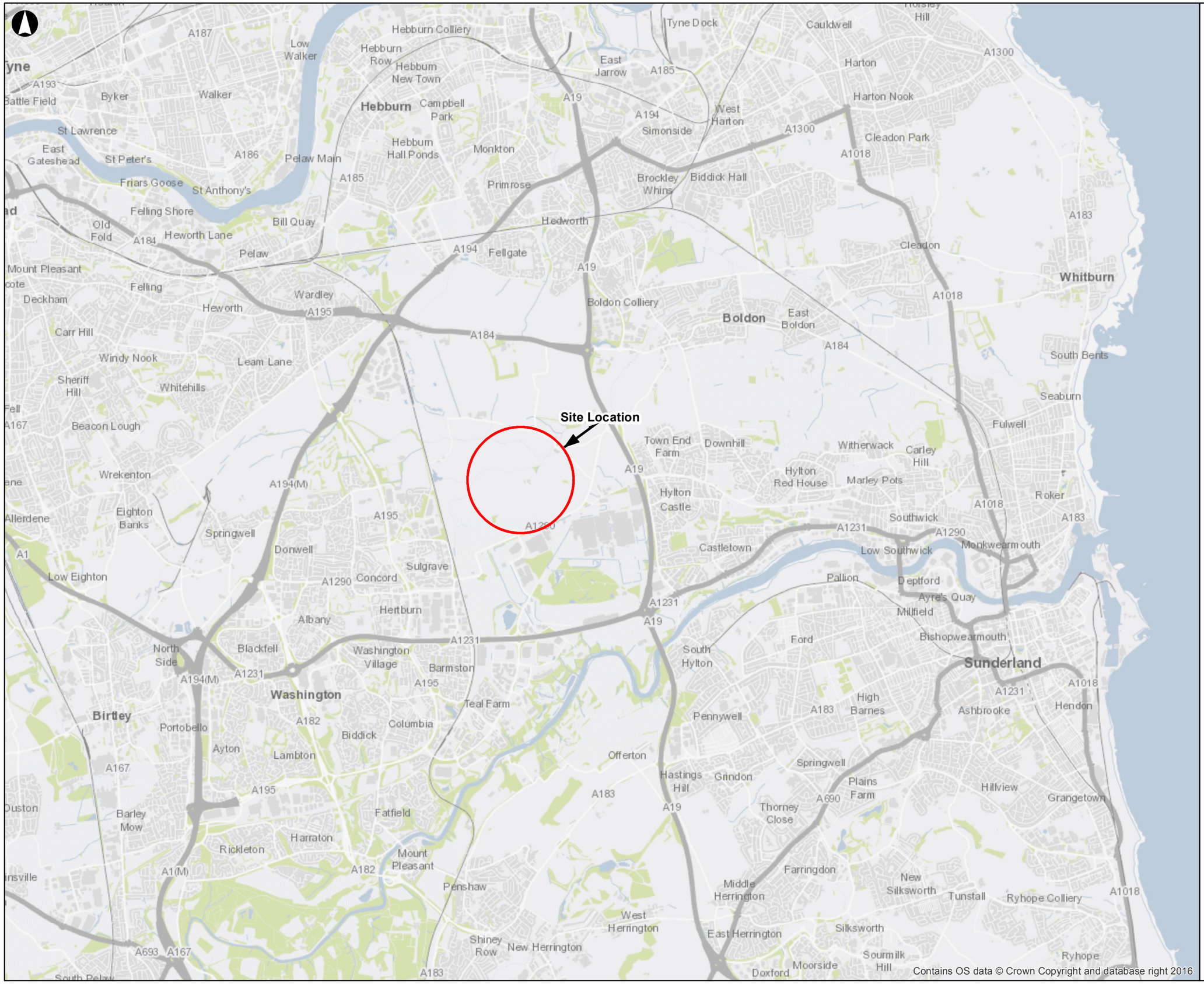
A3



Issue	Date	By	Chkd	Appd
I1	30-06-2016	NM	JB	FM

Metres

0 650 1,300 2,600

ARUP

Central Square
Forth Street
Newcastle Upon Tyne
NE1 3PL
www.arup.com

Client

Sunderland City Council and South Tyneside Council

Job Title

International Advanced Manufacturing Park

Site Location Plan

Scale at A3

1:50,000

Job No	Drawing Status
242745-00	**Issue**

Drawing No	Issue
Appendix A	**I1**

MXD Location

Appendix B

Indicative Site Boundary

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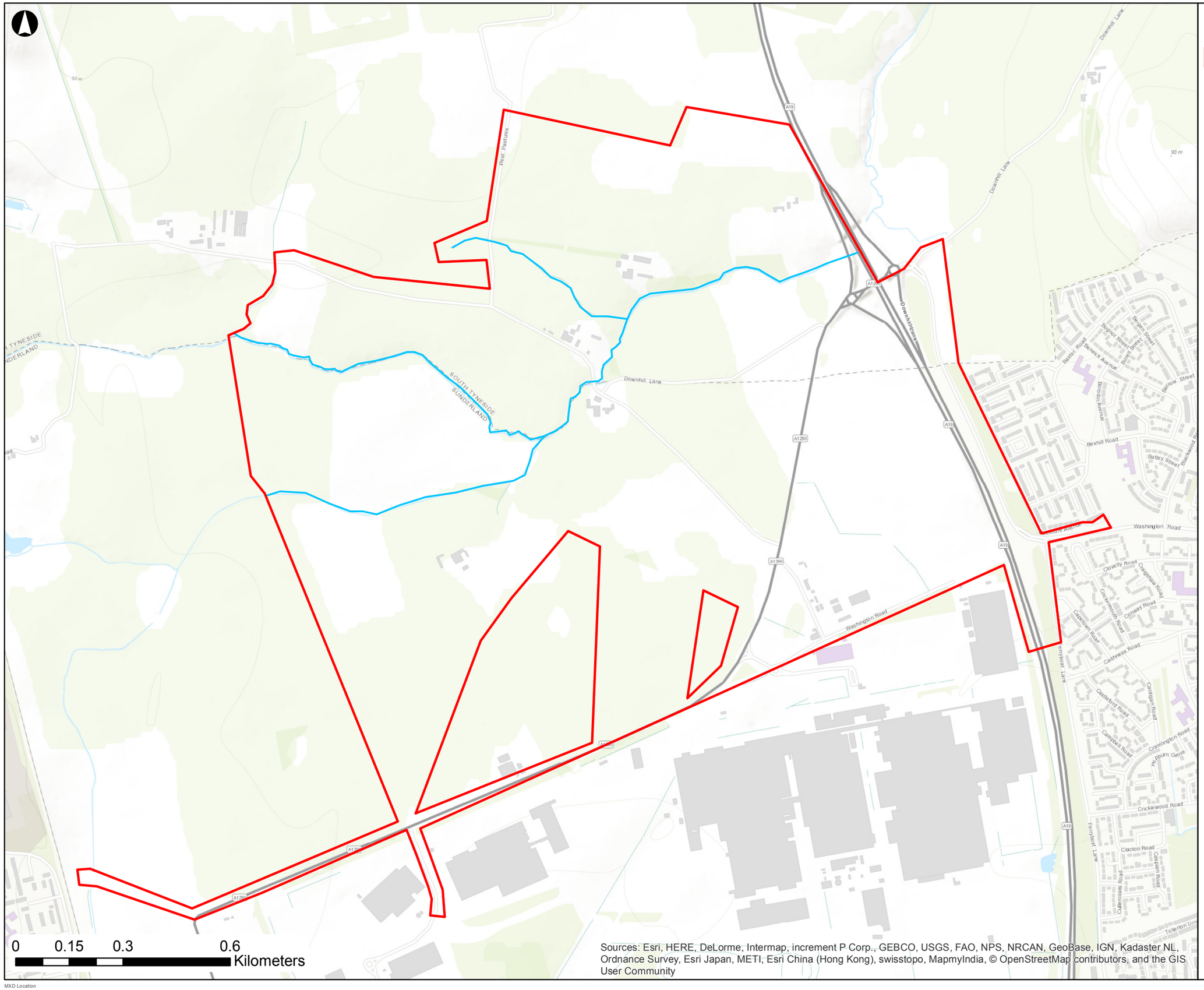
A3



Legend

- Proposed application boundary
- River Don

Issue	Date	By	Chkd	Appd
I1	30-06-16	NM	JB	FM

ARUP

Central Square
Forth Street
Newcastle Upon Tyne
NE1 3PL
www.arup.com

Client

Sunderland City Council and South Tyneside Council

Job Title

International Advanced Manufacturing Park

Drawing Title

Indicative Site Boundary

Scale at A3

1:10,000

Job No	Drawing Status
242745-00	**Issue**

Drawing No	Issue
Appendix B	**I1**

MXD Location

Appendix C

Proposed Floor Space and Employment per Phase

C1 Proposed Floor Space and Employment per Phase

Table 1: IAMP - proposed floor space and employment per phase

	Phase One				Phase Two				Phase Three				Totals
Year	**Offices (m^2)**	**Office Jobs**	**B2/B8 (m^2)**	**B2/B8 Jobs**	**Offices (m^2)**	**Office Jobs**	**B2/B8 (m^2)**	**B2/B8 Jobs**	**Offices (m^2)**	**Office Jobs**	**B2/B8 (m^2)**	**B2/B8 Jobs**	
18/19	2,500	147	25,000	403									
19/20	2,500	147	25,000	403									
20/21	700	41	7,000	113	1,700	100	17,000	274					
21/22					3,200	188	32,000	516					
22/23					3,200	188	32,000	516					
23/24					3,200	188	32,000	516					
24/25									2,250	132	22,500	363	
25/26									2,250	132	22,500	363	
26/27									2,250	132	22,500	363	
Totals	5,700	335	57,000	919	11,300	665	113,000	1,823	6,750	397	67,500	1,089	
m^2/phase			62,700				124,300				74,250		261,250
Jobs/phase				1,255				2,487				1,486	5,228

Appendix D

Indicative Masterplan

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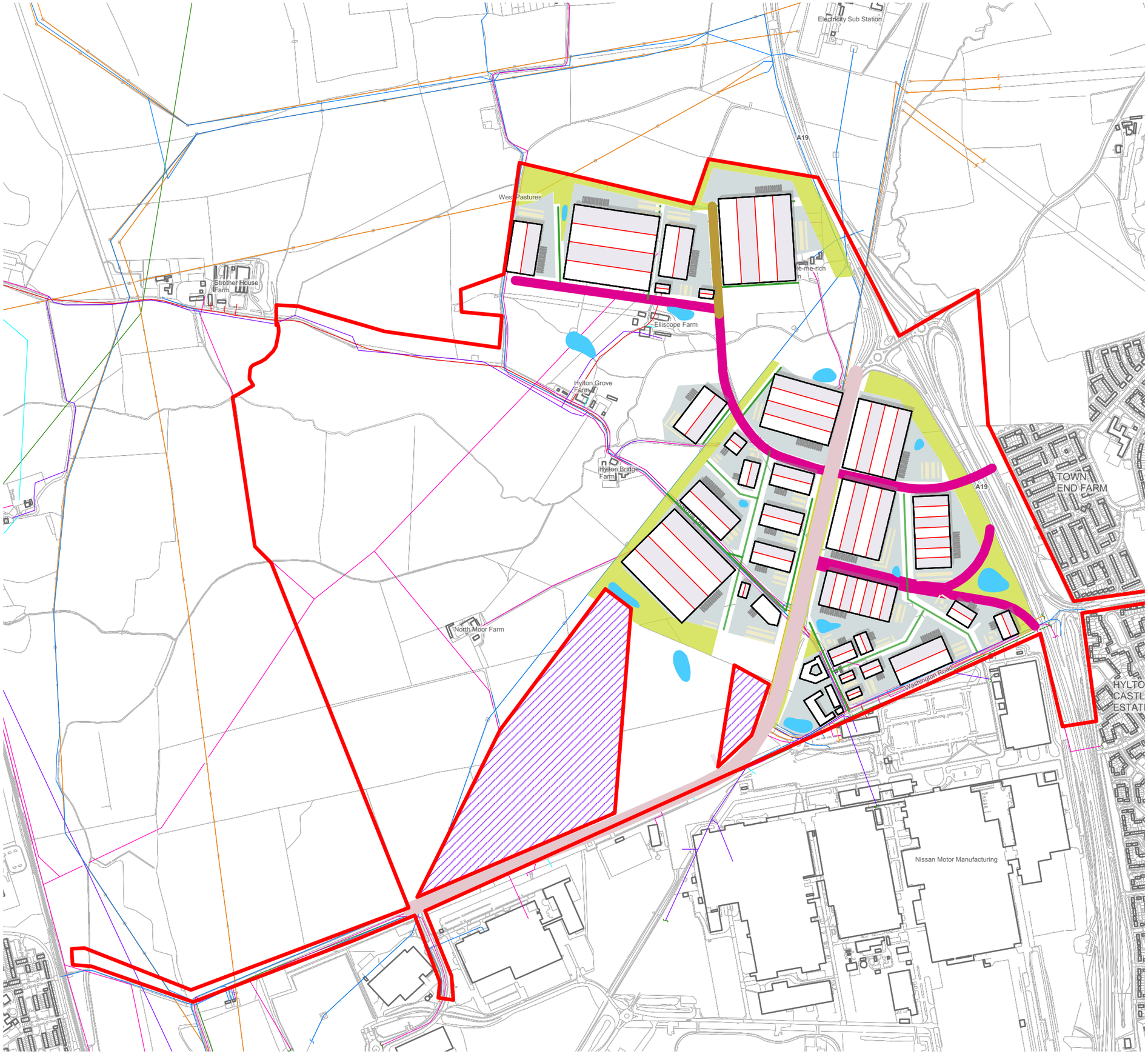

KEY

- EIA RED LINE BOUNDARY
- AREA OF LAND EXCLUDED FROM APPLICATION BOUNDARY
- GREEN SPACE/ LANDSCAPING

PROPOSED HIGHWAYS

- CENTRAL BOULEVARD
- PRIMARY
- SECONDARY
- TERTIARY

UTILITIES

SEE DESCO DRAWING:

1315-EXT-99-LAY-96 REV02

urbed

10 Little Lever Street
Manchester M1 1HR
t. +44 (0)161 200 5500
f. +44 (0)161 237 3994
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w. www.urbed.coop

Drawing Title:
IAMP: Indicative Masterplan RevF

Project Title:
International Advanced Manufacturing Park DCO

Client:
STC and SCC

Project Number:	Issue Status:	
998	FOR ILLUSTRATIVE PURPOSES ONLY	
Drawing Number:		Revision:
998-MP06		C
Scale:	Date:	
1:10,000 @ A3	15-08-2016	

Appendix E

Cumulative Impacts

E1 Cumulative Impacts

GIS Map No.	Application Ref.	Name	Proposal	Status
Sunderland Planning Portal				
1	15/02116/LP3	Land at and Adjacent to Nissan Way, Barmston Lane and Barmston Pond. Including Land at Nissan Motor Manufacturing (UK) Ltd. Washington	A19 Enterprise Zone - Phase 2 Highways Infrastructure. Comprising:- (i) Upgrading of Nissan way to dual carriageway; (ii) Construction of new Nissan way- A1290 link road and hardstanding area; (iii) Construction of new Turbine way/Barmston Lane link road; including stopping ups and diversions of highway/bridleway and associated landscaping works.	Approved Jan 2016
2	16/00178/VAR	Nissan Test Track Nissan Motor Manufacturing (UK) Limited Washington Road Usworth Sunderland SR5 3NS	Variation of Condition 8 of planning application 15/00942/FUL (Construction, Operation and Decommissioning of a 4.774MWp Solar Photovoltaic (PV) Array comprising 19,096, 250W, 60 Cell 1650 x 990 x 35mm Photovoltaic Panels, Mounting System, Holtab 400kVA stations, DNO Connection, Cabling and Cable Trenches, CCTV, Weather Station and Temporary Storage Area), to extend construction hours to include weekend and bank/public holiday working hours of 07:00 - 19:00	Approved April 2016
3	15/02550/FUL	Nissan Motor Manufacturing (UK)	Construction and operation of a five turbine extension to the operational Nissan Wind Farm and associated infrastructure.	Current
4	15/02247/FUL	Nissan Motor Manufacturing (UK)	Construction of new paint shop building, including link bridge into existing building, alteration of external service road, and reprovision of car parking at north western edge of site	Approved Mon 01 Feb 2016

GIS Map No.	Application Ref.	Name	Proposal	Status
5	15/02229/AM1	Hylton Castle Primary School Cramlington Road Hylton Castle Sunderland SR5 3QL	Non-material amendment to planning application 14/01702/LP4 (Demolition of the existing school and redevelopment of the site to provide new two storey school building, car parking with associated access, landscaping and sports facilities.) to provide roof access door to South West elevation, removal of selected windows from South East elevation and additional windows to be added to north east elevation.	Approved Nov 2015
6	16/00379/AM1	Land at Kidderminster Road, Rhondda Road, Ravenna Road and Robertson Square Sunderland	Non material amendment to planning application 15/00123/FUL (The erection of 88 dwellings consisting of 2,3 and 4 bed homes with associated hard and soft landscaping. To include stopping up and diversion of highway) for the omission of gates and steps to the rear of plots 11, 75, 76, 77, 78, 81, 82, 83, 86, 87 and 88.	Approved March 2016
7	15/02060/AM1	Land at Lisburn Terrace/Pallion New Road Sunderland	Non material amendment following the planning approval of 11/00982/REM (Reserved matters application for approval of details relating to scale, layout, appearance and landscaping of planning application 10/01549/OUT for the erection of 212 dwellings.) for highway amendments.	Approved Nov 2015
8	16/01050/FU4	Land At Nookside Sunderland	Erection of 77no. dwellings for sale and affordable rent comprising of 2b3p houses, 2b3p bungalows, 2b3p apartments, 3b5p houses and 1b1p suites for learning difficulty in partnership with Grindon Mews, with associated landscape works.	Current
Gateshead Planning Portal				
9	DC/16/00220/FUL	NE10 0ES	Erection of anaerobic digestion facility, biogas generation plant and associated infrastructure	Validated Feb 26 status unknown

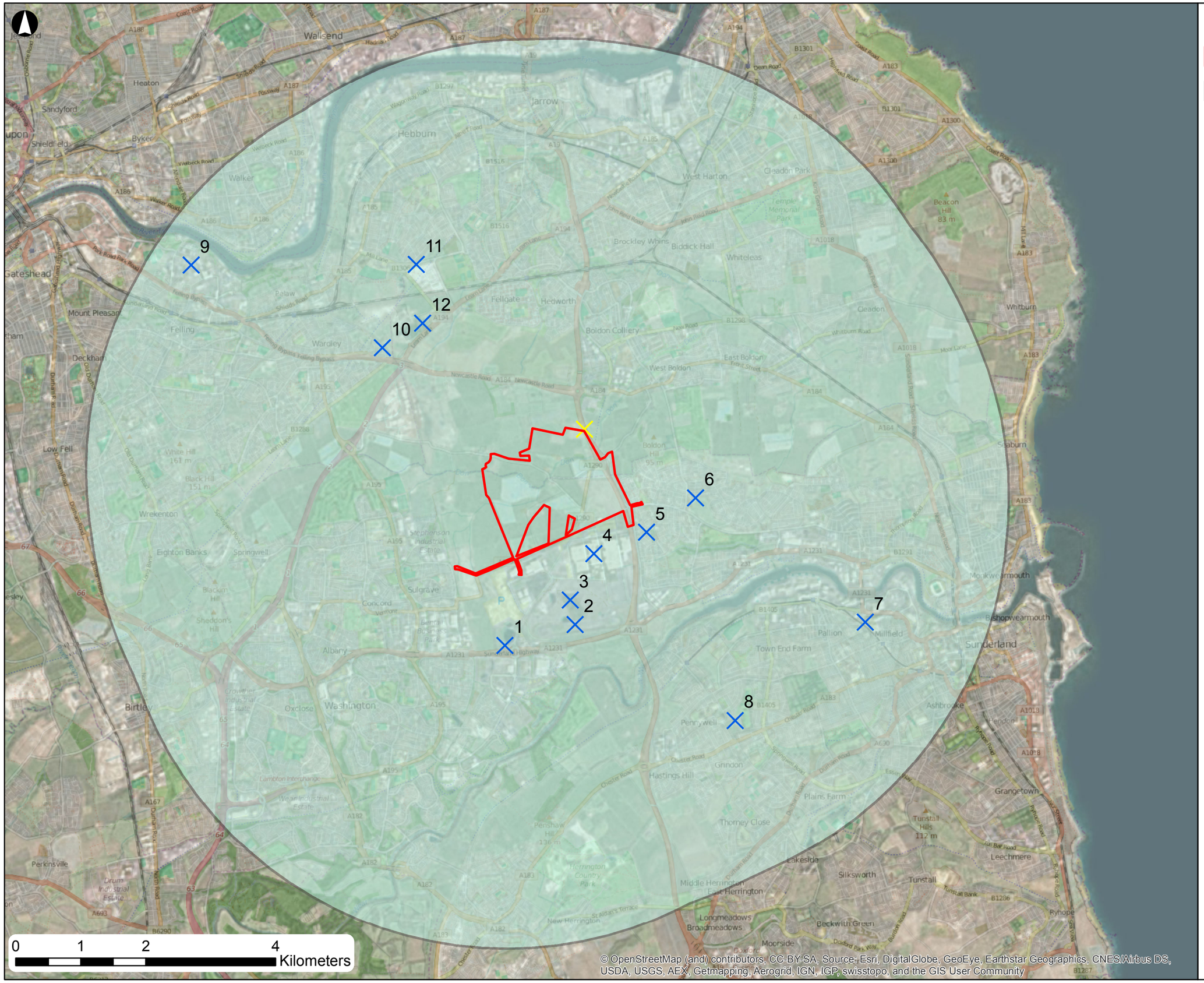
GIS Map No.	Application Ref.	Name	Proposal	Status
10	DC/16/00698/OUT	Former Wardley Colliery Wardley Lane Felling Gateshead NE10 8AA	Outline application for approximately 150 new residential dwellings (C3 use) with associated new highways access, landscaping and infrastructure and all site remediation works, with all matters reserved. Same development as EIA/16/003 but not directly linked through the planning portal (Residential development of approximately 150 dwellings (use class C3) on land of former Wardley Colliery and breaking yard, Wardley | Former Wardley Colliery And Breaking Yard Wardley)	Validated Jul 13 status unknown
South Tyneside Planning Portal				
11	ST/0197/16/COND	Land either side of Monkton Lane/Luke's Lane (Known locally as Monkton Fell) Hebburn NE31 2HB Phase 2: Bruce Drive/Gresford Close/Holmes Drive/1-9 (odd & even) Lukes Lane/60-76 (odd & even) Monkton Lane/Penrose Place/Saint Close/Victoria Walk/Wollaston Way Taylor Wimpey north east Residential development	Discharge of Condition 5: Sustainable drainage attenuation pond, scheme for maintenance and provision - relating to previously approved planning application Ref. ST/0461/15/RES (Phase 2)	02-03-2016
12	ST/1207/14/FUL	Red Barns Quarry Leam Lane West Boldon NE10 8YD	Deepening and lateral extension of existing brick shale quarry with revised scheme of phased extraction and restoration and extended quarry completion date. Application accompanied by an Environmental Statement.	Registered January 2015

E1.1 DCO Applications

E1.1.1 Testos Downhill Lane Junction

Improvements to the A19/A184 Testos Junction and Downhill Junctions, scheduled for delivery before 2020/21. Refer to Section 3.4.1 for more information.

A3



Legend

- Proposed application boundary
- 6km Buffer
- Developments
- Testos Downhill Lane Junction

Issue	Date	By	Chkd	Appd
I1	30-06-16	NM	JB	FM

ARUP

Central Square
Forth Street
Newcastle Upon Tyne
NE1 3PL
www.arup.com

Client

Sunderland City Council and South Tyneside Council

Job Title

International Advanced Manufacturing Park

Drawing Title

Cumulative Impacts

Scale at A3

1:55,000

Job No	Drawing Status
242745-00	**Issue**

Drawing No	Issue
Appendix E	**I1**

MXD Location

Appendix F

Consultations

F1 Consultations

F1.1 Environmental Forum

Date	Attendees	Summary of Key Points Discussed
26-01-16	IAMP Project Coordinator (1 attendee) Arup (2 attendees) SCC Ecologist (1 attendee) South Tyneside Countryside Officer (1 attendee) Gateshead Council Ecologist (1 attendee) DWT /NELNP (1 attendee) NELNP (2 attendees) NE (1 attendee) RSPB (1 attendee) EA (2 attendees) NE (2 attendees)	• Ecology to inform landscape mitigation; • Strong links between ecology, flood/drainage and landscape solutions to provide multifunctional spaces, including the use of the WFD to make the most of opportunities and improve habitats; • Key issues noted are the breeding and wintering farmland birds, barn owl and water vole: habitat and population size; and • River Don: good WFD classification. Opportunities for seasonal wetland to form part of the ecology solution. Opportunities and constraints: • Tie in ecological buffer along watercourse with flood risk management; • Wetland areas for birds; • Cross-boundary wildlife corridors; • Woodland planting risk to farmland birds; • Long length of bridge over River Don to reduce impacts on watercourse; • Public access issues; • Management strategy; and • 'No net loss' calculations – approach to offsetting.
17-03-16	IAMP Project Coordinator (1 attendee) Arup (3 attendees) SCC Ecology (1 attendee) South Tyneside Countryside Officer (1 attendee) Gateshead Council	Landscape strategy broad aims: • Integrate development with existing landscape character; • Integrate development from viewpoints; and • Integrate development from PROWs. Key ideas discussed: • Bund and tree line along A19 for screening and to create impression of separation between settlements;

Date	Attendees	Summary of Key Points Discussed
	Ecologist (1 attendee) JMP (1 attendee) NELNP (1 attendee) EA (1 Attendee) NE (1 attendee)	• Form of planting along north and western edges of development to screen development and protect setting for surrounding houses; and • Access for recreation. Drainage and flood management strategy: • All possible flood extents fall within the proposed 50m 'green' buffer along the watercourse; • Need to consider flooding downstream as a result of the development; and • Discussion around possible funding opportunities for River Restoration. Biodiversity strategy: • Key ecological considerations should include how to avoid impacts to Local Wildlife Sites, reduce loss of semi-natural habitats, avoid impacting legally protected species, mitigate habitat loss and create a green network across the scheme.
06-05-16	Arup (2 attendees) SCC (2 attendees) Gateshead Council (2 attendee) JMP (1 attendee) DWT (1 attendee) NELNP (1 attendee) RSPB (1 attendee) EA (2 attendees)	• Ecological data – surveys currently being undertaken in 2016 are to fill data gaps where land access was not available, and to build on survey information from 2014-2015; • Level of importance of bird assemblage needs to be established; • Geographic level of importance of the water vole population – potentially of national significance; • Camera traps along River Don to establish whether water vole pass through the A19 culvert; • River Don fish survey data; • Summary note of first iteration of the No Net Loss calculations was shared and discussed; • Explanation of preferred option selection – Options Appraisal Framework; and • An indicative first iteration of the emerging red line boundary and masterplan was shared.
19-07-16	Arup (3 attendees) SCC (2 attendees)	• Minutes from previous meeting – ecological issues regarding bridge crossing the River Don. Value of historic bridge also highlighted;

Date	Attendees	Summary of Key Points Discussed
	STC (1 attendees) Jacobs (2 attendees) Gateshead Council (2 attendee) JMP (1 attendee) DWT (1 attendee) NELNP (1 attendee) RSPB (1 attendee) EA (3 attendees) Natural England (1 attendee)	• AAP work – going to be presented to council cabinets on the 20th July; • Scoping Report - couple of client reviews and then go to PINS – late August. Scoping Consultation end of August; • DCO Consultation – statutory consultation on Masterplan to take place in October 2016; • Flood risk not a huge issue, however flood risk is present further downstream and drainage development would need to be managed. EA has comments on JMP model already submitted; • Discussion relating to the location of the AAP Blue Line boundary and protection of the River Don; • Update on EIA technical topics and various baseline studies and surveys including bird surveys; • Outcomes from the masterplanning workshop (22 June 2016) presented and an updated provided on the No Net Loss calculations; and • Discussion around the objectives of the River Don Partnership and potential for river restoration.

F1.2 Access Forum

Date	Attendees	Summary of Key Points Discussed
15-03-16	Sunderland LAF member (2 attendee) Gateshead LAF representative (1 attendee) British Horse Society (1 attendee) Cyclists Touring Club (1 attendee) South Tyneside LAF and Ward member (1 attendee) SCC (1 attendee) IAMP Coordinator (1 attendee)	• Clarification provided that the LAF is an advisory body only and cannot object to proposals; • High growth in cycling in the area. NMUK and IAMP need to continue to be accessible by bikes and provide opportunities to link into wider cycle networks; • Bridleways/footpaths are fragmented in the area, general discussion on how rights of way could be more effective and linked up across this general area: o Make use of Follingsby Lane; o Walkway along the River Don; o Additional NMU provision along A1290; o There is a Rights of Way Improvement Plan which should be considered; and o Perimeter route around the western and northern

Date	Attendees	Summary of Key Points Discussed
	Arup (1 attendee) HE (1 attendee) Costain (1 attendee) Jacobs (1 attendee)	boundary of the site. • Great North Trail policy objective needs to be reflected in the masterplan.

F1.3 PINS Meeting Minutes

Date	Attendees	Summary of Key Points Discussed
21-07-15	Sunderland City Council Representative 2 Arup representatives PINS, Infrastructure Planning Lead PINS, EIA Advisor	• Introductions • Highlighted that any advice given under section 51 does not constitute legal advice upon which applicants (or others) can rely. • SCC representative provided an up-date on actions/activities since the last meeting with the Planning Inspectorate, including a brief update on the programme for the Area Action Plan (AAP). An update was also provided on ecological survey work that had been completed and the forthcoming programme of works. They noted that survey work had been on-going for about 18 months. The possible issues in respect of the River Don were noted and discussed. • The developers indicated that they intended to submit a request for a "Section 35 Direction" to the Secretary of State imminently and were hopeful that it would be determined by Autumn 2015. • The Planning Inspectorate were keen to understand more about the likely detail of the project and encouraged the developers to seek to provide more clarity about the project description in any request to the Secretary of State. • The developer explained that given the likely size of the whole project it would be developed in phases but that the current expectation was that one Development Consent Order would cover all phases of the proposed development. • In relation to the Rochdale Envelope approach PINS indicated that the system is based on as complete an application as possible on submission. • Notable developments and proposals in the vicinity of the site were discussed including a Highways England project for improvements to A19 Testos / Down Hill Lane Junction. The impact of this scheme in terms of transport modelling, consultation and submission dates was

Date	Attendees	Summary of Key Points Discussed
		discussed. • PINS noted the potential for consultation on this scheme, the AAP and a Highways England scheme to coincide or create a repetitive consultation environment for local communities and statutory consultees. PINS encouraged caution to ensure awareness of consultation timetabling and to ensure that those being consulted were clear what they were being consulted upon and by whom. • PINS advised the developer to produce a document in advance of undertaking work on the Statement of Community Consultation, that sought to explain how they would approach their joint role of relevant local authority and "the developer". • Agreed actions: o Inform the Planning Inspectorate when a Section 35 direction has been submitted o Engage in future discussions about the level of contact with PINS over the next year including possibility for outreach activities and a site visit
05-11-15	The PINS (7 attendees) IAMP Project Coordinator (1 attendee) Arup (2 attendees) HE (1 attendee)	• General progress update on the IAMP project; • Update on programme for the DCO application; • Review of ecological survey work undertaken to date; • Discussion on red line boundary - being informed by the AAP process and ongoing discussions with HE; • Review of highways modelling issues; • AAP update; • Landownership issues; • The scheme promoter for the IAMP project will be a development company owned by the two host authorities: SCC and SCC; • IAMP will be delivered in a number of phases. All phases will be covered by a single DCO application; • HE advised that the A19 Testos project will be submitted late 2017. Scoping is planned for autumn 2016 and statutory consultation in late 2016; and • Possibility of the Inspectorate holding an outreach event for local authorities in the area.

Date	Attendees	Summary of Key Points Discussed
01-03-16	The PINS (3 attendees) IAMP Project Coordinator (1 attendee) Arup (2 attendees)	• HE (HE) progressing with a shortlist of options with a view to consultation on these in June. JMP working with HE to model options; • Progress update on geo-environmental desk study; • Status of River Don and any associated water quality issues – surveys may be needed if proposing discharge into the River; • Client group and stakeholders receptive to biodiversity offsetting and "no net loss" approach to mitigation; • Confirmation that masterplanning has commenced at a high level; • Interest for PINS outreach event - thoughts to align event with a "North East Heads of Planning" meeting; and • The "hub" confirmed as ancillary commercial and supporting facility uses.

Appendix G

Local Receptor Plan

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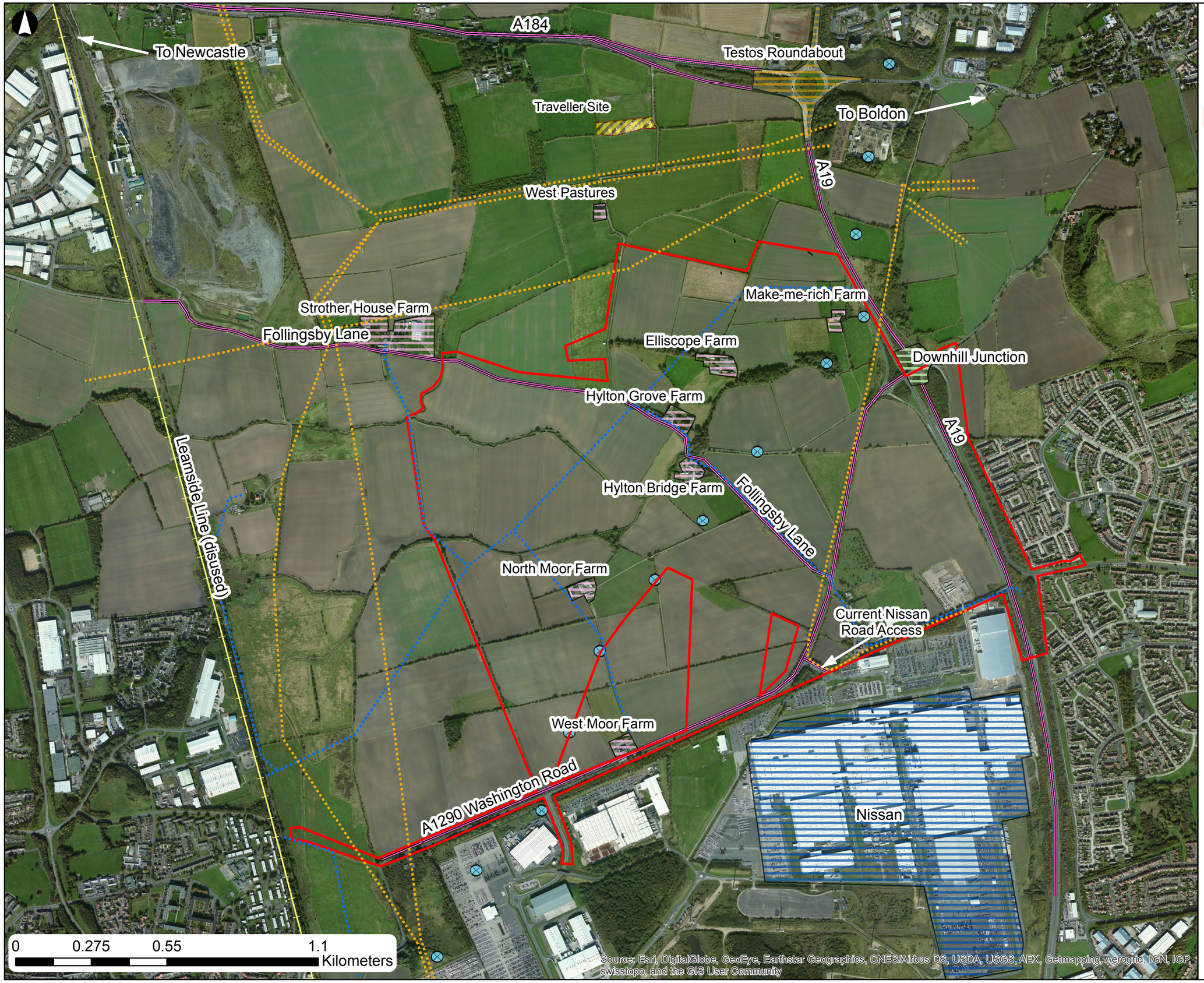
A3



Legend

- Northern Powergrid 66kV
- Northern Powergrid 11kV
- Proposed application boundary
- National Grid 275kV pylons
- Disused Railway Line
- Key Access Roads
- Downhill Junction
- Nissan
- Testos Roundabout
- Farms
- TravellerSite

Issue	Date	By	Chkd	Appd
I1	30-06-16	NM	JB	FM

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Client

Sunderland City Council and South Tyneside Council

Job Title

International Advanced Manufacturing Park

Drawing Title

Local Receptor Plan

Scale at A3

1:13,000

Job No	Drawing Status
242745-00	**Issue**

Drawing No	Issue
Appendix G	**I1**

MXD Location

Appendix H

Constraints Plan

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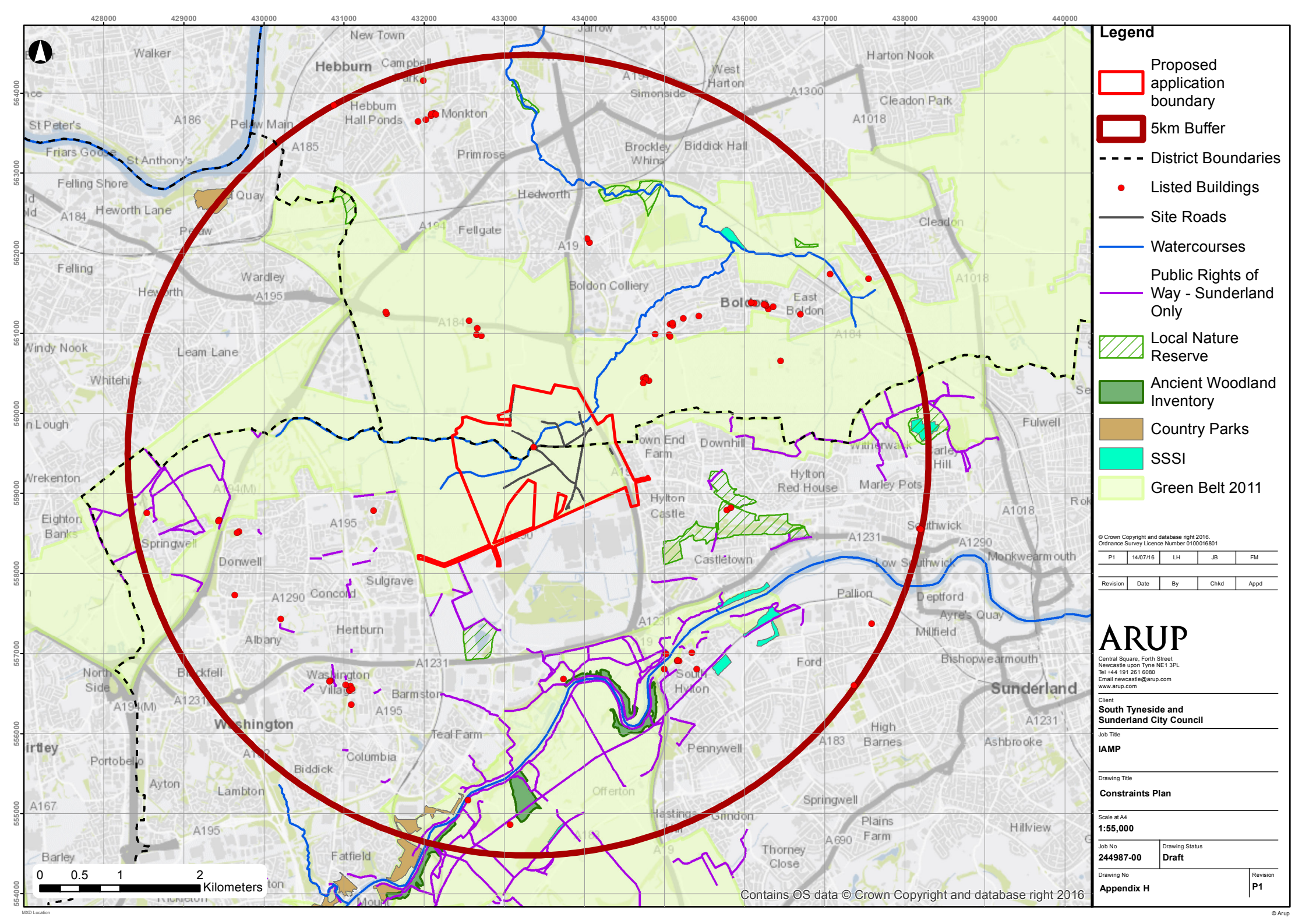

Revision	Date	By	Chkd	Appd
P1	14/07/16	LH	JB	FM

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Client
South Tyneside and Sunderland City Council

Job Title
IAMP

Drawing Title
Constraints Plan

Scale at A4
1:55,000

Job No
244987-00

Drawing Status
Draft

Drawing No
Appendix H

Revision
P1

Appendix I

Local Air Quality Monitoring

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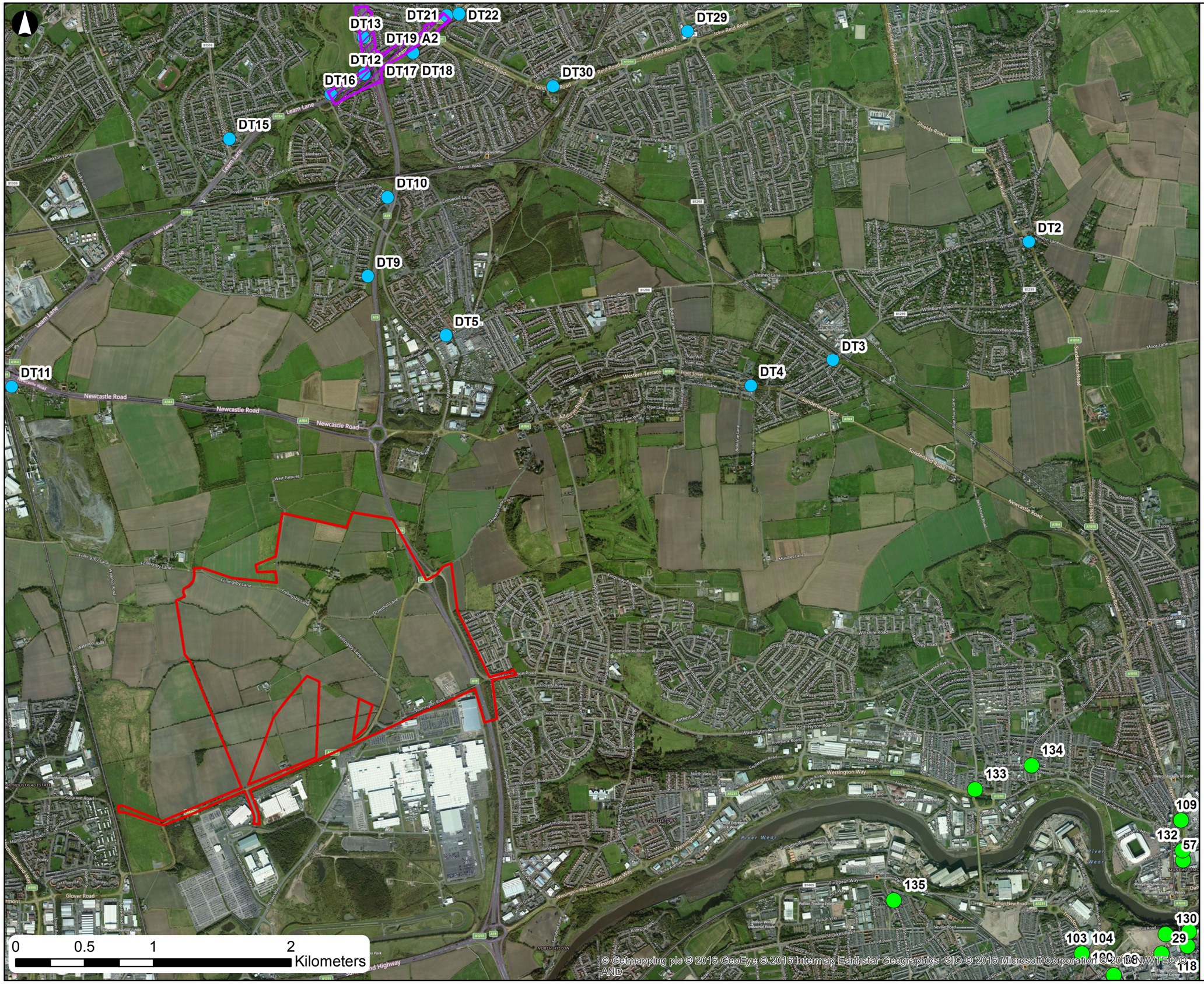
A3



Legend

- Proposed site boundary
- Air Quality Management Area
- Sunderland Monitoring Locations
- South Tyneside Monitoring Locations

Issue	Date	By	Chkd	Appd
I1	29-07-16	LAS	MC	FM

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Client

Sunderland City Council and South Tyneside Council

Job Title

International Advanced Manufacturing Park

Drawing Title

Local Air Quality Monitoring

Scale at A3

1:26,000

Job No	Drawing Status
242745-00	**Issue**

Drawing No	Issue
Appendix I	**I1**

MXD Location

Appendix J

Access Restrictions

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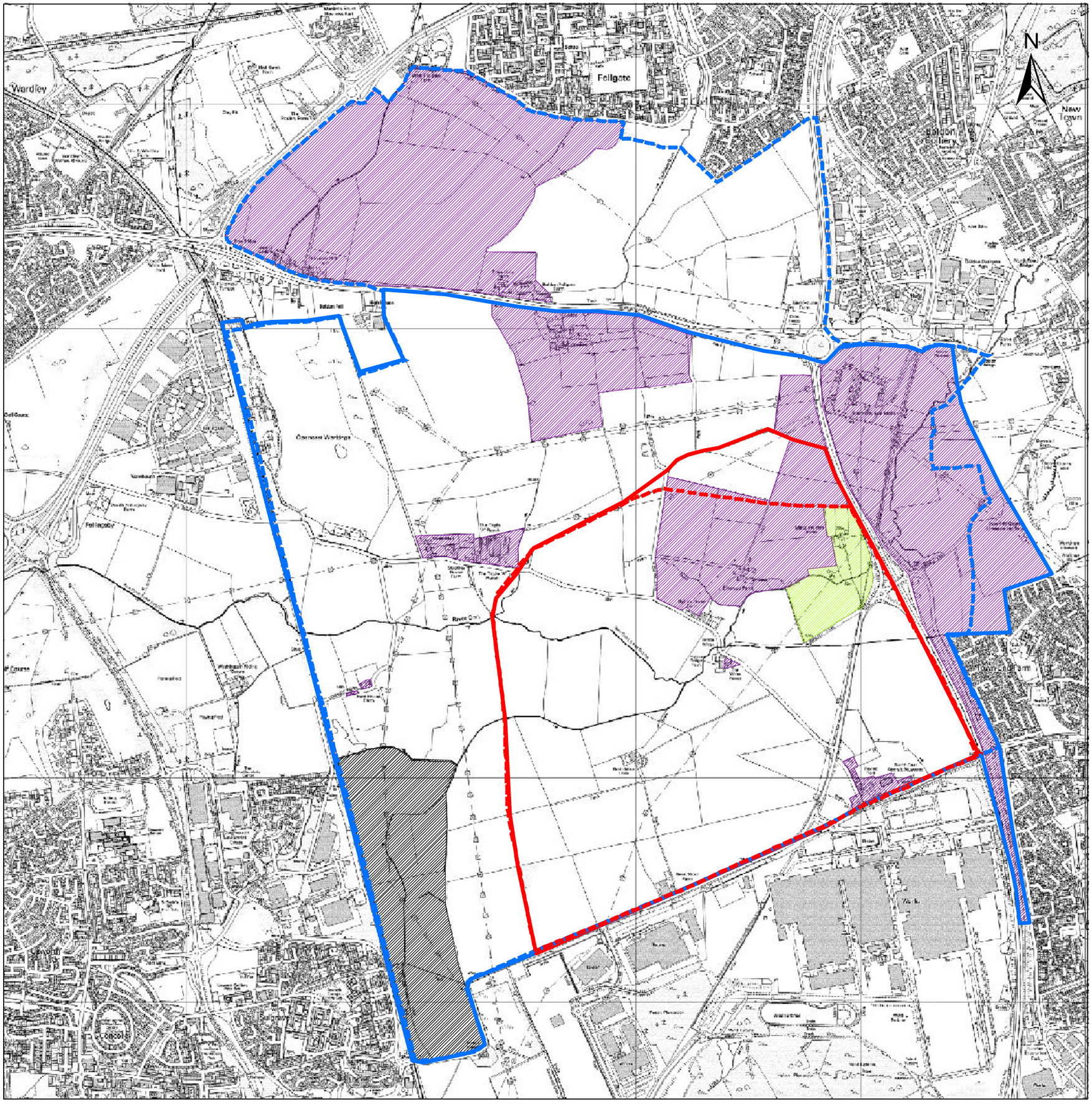

Legend

- RLB (original)
- BLB (original)
- Amended RLB
- Amended BLB
- No access - no surveys undertaken
- No access - surveys being undertaken by third party
- Access retricted - no surveys other than Phase 1 Habitat and Bat Roost Assessments

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creative minds safe hands

WYG Environment

Project

LAND NORTH OF NISSAN

Drawing Title:

Figure 1.3v1 : Areas within the amended BLB where access restrictions have prevented survey

Scale at A3: 1:17,000	Drawn by: MN Date: 14/01/15		Checked By: MJ Date: 14/01/15	Approved By: MJ Date: 14/01/15
Project No:	Office	Type	Drawing No.	Revision
A086945	45	94	86945-1.3v1	01

Base map provided by Sunderland City Council

Appendix K

Ward Boundaries

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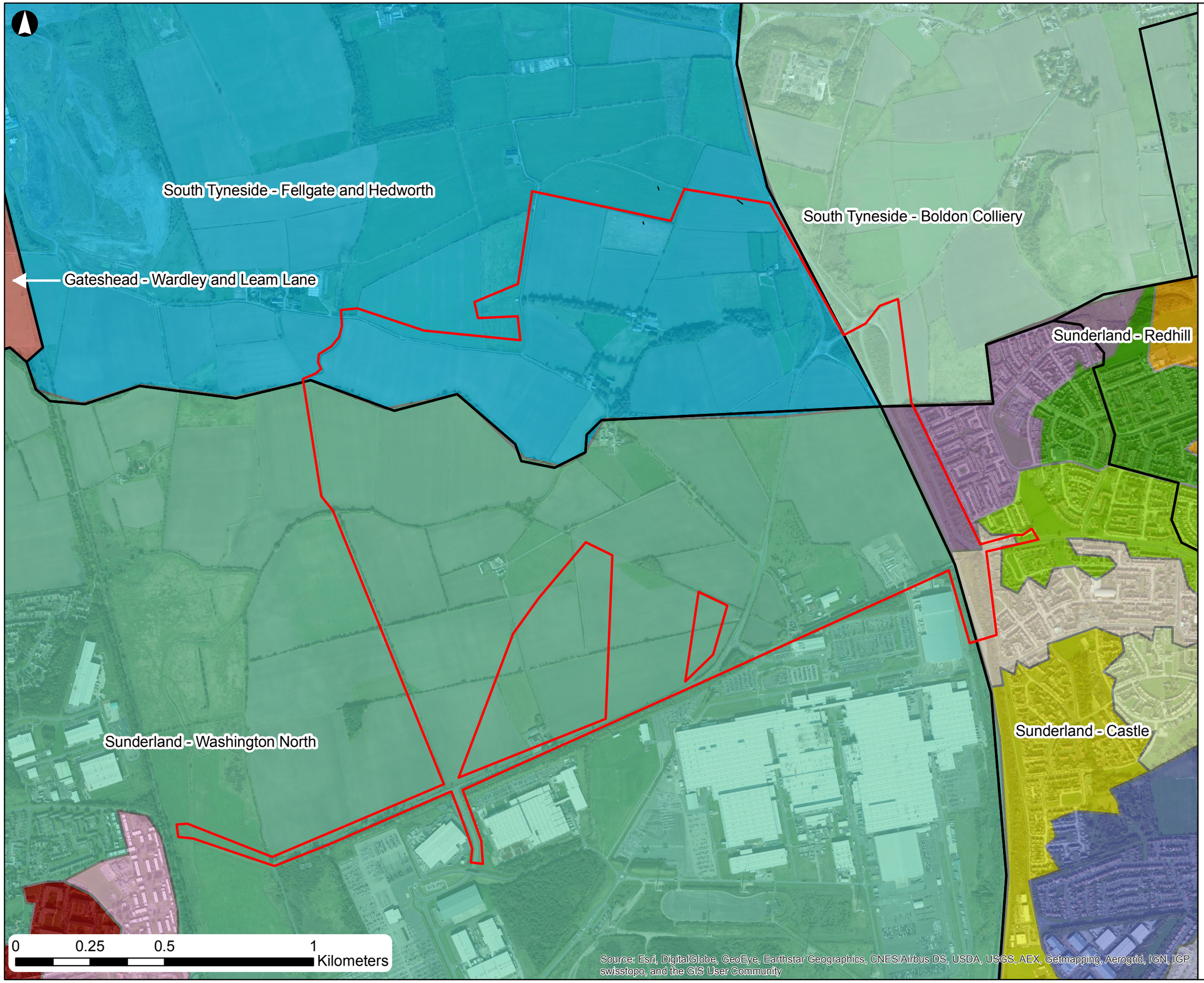
A3



Legend

Proposed application boundary

Wards

Wards

Lower Super Output Areas

- Gateshead 014A
- South Tyneside 020C
- South Tyneside 023B
- Sunderland 003A
- Sunderland 003B
- Sunderland 003C
- Sunderland 003E
- Sunderland 003F
- Sunderland 007A
- Sunderland 008A
- Sunderland 008B
- Sunderland 008C
- Sunderland 008D
- Sunderland 008E
- Sunderland 008F
- Sunderland 009B
- Sunderland 009E

Issue	Date	By	Chkd	Appd
I1	29-07-16	CD	MC	FM

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Client

Sunderland City Council and South Tyneside Council

Job Title

International Advanced Manufacturing Park

Drawing Title

Ward boundaries

Scale at A3

1:12,000

Job No	Drawing Status
242745-00	**Issue**

Drawing No	Issue
Appendix L	**I1**

MXD Location