PSD19

Sunderland City Council and South Tyneside Council

International Advanced Manufacturing Park Area Action Plan

Transport Technical Background Report

Updated February 2017

South Tyneside Council

Sunderland City Council

JMP

Contents

Tables and Figures

Glossary

AAP	Area Action Plan
BIS	Department of Business, Innovation and Skills
CIRIA	Construction Industry Research and Information Association
DBAP	Durham Biodiversity Action Plan
DCO	Development Consent Order
DEFRA	Department of Environment, Food and Rural Affairs
DPD	Development Plan Document
EZ	Enterprise Zone
EU	European Union
FRA	Flood Risk Assessment
IAMP	International Advanced Manufacturing Park
GBSSO	Green Belt and Site Selection Options Report
LDF	Local Development Framework
LHA	Local Highways Authority
LPA	Local Planning Authority
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
MoU	Memorandum of Understanding
NELEP	North East Local Enterprise Partnership
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NWL	Northumbrian Water Ltd
PwC	Price Waterhouse Coopers
SA	Sustainability Appraisal
SEA	Strategic Environmental Assessment
SEP	Strategic Economic Plan
SCC	Sunderland City Council
SCI	Statement of Community Involvement
STC	South Tyneside Council
SuDS	Sustainable Drainage System
UDP	Unitary Development Plan

1 Introduction

1.1 OVERVIEW

1.1.1. This is the Transport Technical Background Report for the International Advanced Manufacturing Park (IAMP) Area Action Plan (AAP). The aim of this report is to provide the technical evidence to inform the approach and policies in the IAMP AAP.

1.1.2. The Paper is one of a suite of Technical Background Reports which form part of the evidence base for the IAMP AAP. The full set of reports can be accessed using the following links:

- www.sunderland.gov.uk/ iamp
- www.southtyneside.gov.uk/localplan

1.2 INTRODUCTION TO THE IAMP

1.2.1. The International Advanced Manufacturing Park (IAMP represents a unique opportunity for the automotive sector in the UK. Located next to Nissan UK's Sunderland plant, the UK's largest and most productive car manufacturing plant, the IAMP will provide a bespoke, world class environment for the automotive supply chain and related advanced manufacturers to innovate and thrive, contributing significantly to the long-term economic success of the North East of England and the national automotive sector.

1.2.2. The proposal is for a 260,000 sq m Gross Internal Area (GIA) development aimed primarily at the automotive, advanced manufacturing and related distribution sectors. The IAMP 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, rail and port infrastructure.

1.2.3. Development of the IAMP will underpin the continued success of the automotive and advanced manufacturing sectors in the United Kingdom and North East of England.

1.3 STRUCTURE OF THIS REPORT

1.3.1. The Report is structured as follows:

- Section 2 sets out the evidence relevant to this Background Report.
- Section 3 draws on the evidence to set out issues that should be taken into account in developing the approach and policy of the AAP.
- Section 4 advises on the potential actions that should be considered in further progressing the IAMP proposal to delivery.

2 Evidence Review

2.1. This section presents a summary of the key findings from the evidence review. A full list of the evidence reviewed can be found in section 2.1 below.

2.2 OVERVIEW

2.2.1. The IAMP site is located to the west of the A19, which forms part of the trunk road network and provides good connectivity to the region's ports. Highways England have designated the A19 as an 'Expressway', a type of road aimed at providing a high standard of safety and performance similar to that of a motorway. Highways England are currently promoting improvements to the A19 and its associated junctions, including Downhill Lane and Testos, as a nationally significant infrastructure project.

2.2.2. To the west of the IAMP, the Leamside railway line, offers future potential for connectivity. The Leamside Line branches off from the East Coast Main Line at Tursdale in County Durham and continues north to join the Newcastle to Sunderland line at Pelaw.

2.2.3. A collaborative and transparent approach has been taken with regard to considering the transport implications of the IAMP AAP. Sunderland City Council, South Tyneside Council, Highways England and representatives from Nissan have attended monthly Stakeholder Meetings, at which the scope and methodologies to assessing transport issues have been discussed and agreed.

2.2.4. The key issues relating to transport are established through a number of studies and assessments of the existing road network operations and forecast changes in traffic following the introduction of the IAMP. The documents supporting this evidence review include:

- Base Modelling Approach - JMP Technical Note, July 2015 (SD60)
- Future Year Modelling – JMP Technical Note, July 2015 (SD61)
- Multi-Modal Trip Generation Assessment – JMP Technical Note, November 2015 (SD62)
- IAMP Vehicle Trip Distribution – JMP Technical Note, November 2015 (SD63)
- Local Model Validation Report – JMP Report, December 2015 (SD64)
- Washington Road Bridge Option Testing – JMP Technical Note, December 2015 (SD65)
- Existing Network Trigger Point Assessment – JMP Technical Note, April 2016 (SD66)
- Feasibility Study into a Metro Extension Serving the International Advanced Manufacturing Park – Arup on behalf of Nexus, March 2016 – Draft report, awaiting publication
- Bus Requirement Study – Arup on behalf of Nexus - Draft report, awaiting publication
- North East Combined Authority,Transport North East Sub-Committee report, February 2016 (SD67)

2.3 PLANNING POLICY

2.3.1. The supporting Planning Policy Technical Background Report identifies and assesses the planning policy which informs the approach and policies in the IAMP AAP. This includes reference to South Tyneside's Core Strategy (2007) (SD22) and the emerging Sunderland Local Plan. These documents consider the priorities for improving accessibility within the boroughs and highlight that the IAMP is a development which will generate significant levels of traffic and may require improvements to the highway network. Policies also focus on improvements for walking, cycling, horse-riding, public transport and parking.

2.4 BASE TRAFFIC OPERATIONS

2.4.1. A micro-simulation model of the existing road network in the vicinity of the IAMP AAP boundary has been prepared. The extent and scope of the model were agreed with Sunderland City Council, South Tyneside Council and Highways England.

2.4.2. The extent of the micro-simulation model is shown in Figure 2.1 and 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.

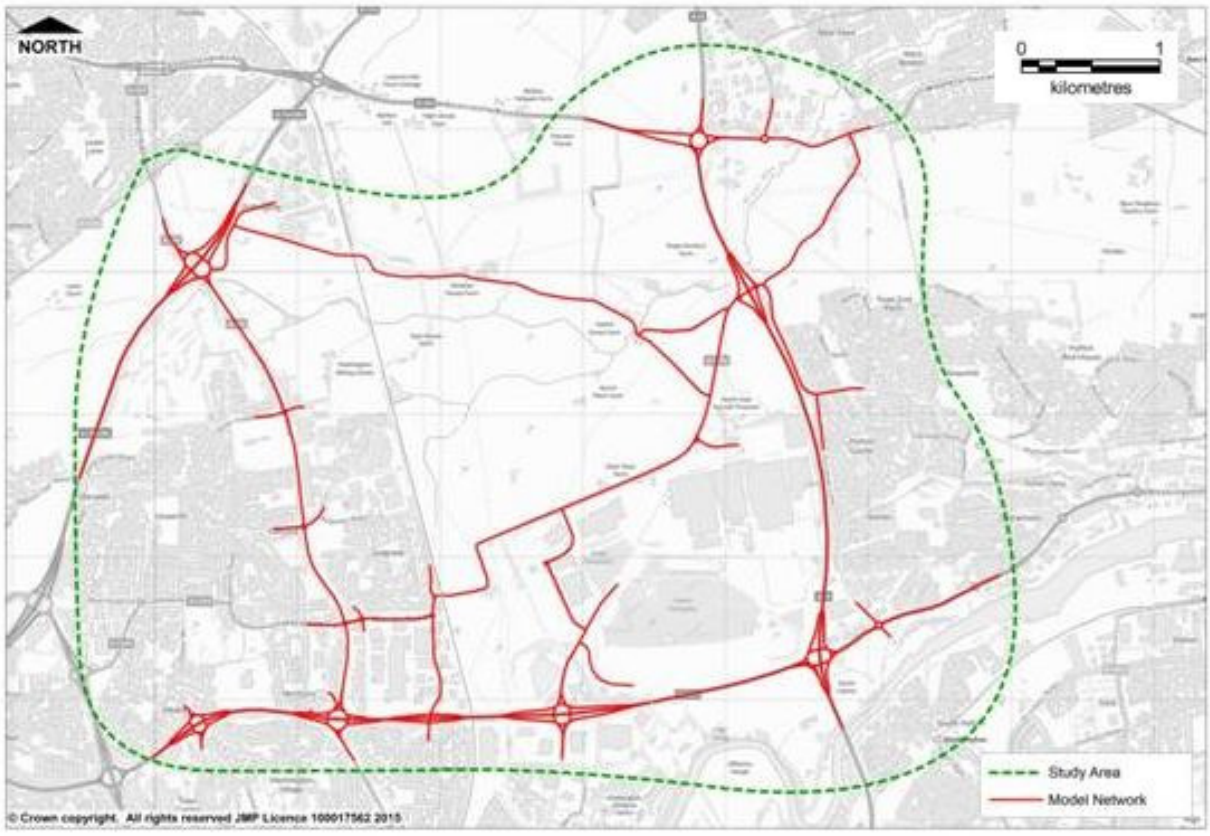


Figure 2.1: Study Area Map and Model Extents

2.4.3. 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 in the AM and PM respectively.

2.4.4. The scheduling of traffic surveys was discussed and agreed with Sunderland City Council, South Tyneside Council and Highways England, with all parties in agreement that traffic volumes and flows would reflect typical operations. Whilst it is acknowledged that traffic levels may potentially be influenced by continued road upgrade works being undertaken elsewhere on the network, such as the A1 Western Bypass, it was considered that this influence, if any, would have led to an increase in traffic volume on the A19 and therefore, provide a robust assessment of operations.

2.4.5. Within all the assessment work undertaken regard has been had to 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.

2.4.6. 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.

2.4.7. Nissan have confirmed that their shift-operation times are not subject to any change in the short-term. Any proposed changes to shift patterns require contract negotiations with Union representatives. The peak period for employees arriving to Nissan is between 07:00 – 08:00hrs, with the previous period of 06:00 – 07:00hrs also busy. Throughout the rest of the day, numbers are significantly less.

2.5 Strategic Road Network

2.5.1. On the Strategic Road Network (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).

2.5.2. The A19 / A1290 Downhill Lane Junction is a key node on the network in respect of the IAMP AAP as it provides the main access into the IAMP AAP area from the SRN. It is therefore important that this key node operates in a satisfactory manner. The junction 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.

2.5.3. 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.

2.5.4. 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 on the SRN adjacent to the AAP area, most notably at the A19 / A1290 Downhill Lane junction.

2.6. Local Road Network

2.6.1. The A1290 and Follingsby Lane currently form the main road links within the IAMP AAP boundary. The A1290 is a wide single carriageway with kerbed edges, drainage gulleys and centre line markings.

2.6.2. Follingsby Lane is more rural in nature and is a narrow single carriageway with soft verge and/or hedgerow, which narrows further at the existing Grade II listed bridge structure over the River Don, which is also subject to a 2.5 tonne weight limit.

2.6.3. As the A1290 approaches the Leamside Line and Glover Road from the east, its horizontal alignment deflects through a tight bend southward, before undertaking another tight bend westward. As part of highway improvement works associated with Sunderland's 'A19 Ultra Low Carbon Enterprise Zone' the alignment of this section of highway will be improved to remove the existing horizontal deflection. In addition to re-alignment works, the road will be widened to increase its capacity and better accommodate HGV movement, furthermore, right-turn pockets will be included to ensure that turning vehicles do not block the through movement of other vehicles.

2.6.4. During the Nissan shift change-over period, congestion and delay typically occurs from within the IAMP AAP area, extends along the A1290, up to and including the A19 Downhill Lane junction. Outside of the Nissan shift change-over period the local road network within the IAMP AAP boundary proximity operates in a generally satisfactory manner, with traffic moving in more free-flow conditions. However, even in those conditions limited spare capacity remains, frequently leading to short periods of congestion and queuing.

2.7. Future Year Operations

2.7.1. The performance of the road network post the IAMP development has been considered within the micro-simulation model. It is apparent that much of the SRN and local road network is already at capacity, experiencing peak period congestion and capacity constraint.

2.7.2. The Highways England proposed improvements on the Testos and Downhill Lane junctions on the A19 will offer improvements to capacity. The IAMP AAP needs to carefully consider the interface with the Highways England improvements and ensure that the schemes do not conflict.

2.7.3. Whilst there is significant scope to improve walking, cycling and bus travel provision to the area, these will only substitute for relatively short journeys and as such, measures to increase the road network capacity will be required.

2.7.4. Sensitivity testing of the existing road network operations has been undertaken using the micro-simulation model, with incremental loading of IAMP development related trips. The findings of this exercise concluded that approximately 10% of the forecast IAMP development traffic could be brought forward before any highway interventions are required. This clearly demonstrates the limitations of the existing network with regard to the capacity to accommodate traffic growth within the AAP area. The further future-year modelling assessments of the IAMP development will ensure that any adjustments in traffic routing and flows resulting from other highway works or committed development being undertaken in the local area are fully considered. Also, continued liaison with Nissan will ensure that traffic modelling work and mitigation proposals are mindful of Nissan's "just in time" approach to deliveries. With Nissan's just-in-time approach, specific vehicles and their components are produced just-in-time to meet the manufacturing demand. Each vehicle is automatically monitored through production via a transponder attached to the chassis leg, which contains the vehicle's production data. The transponder then sends a message to the supply company at the appropriate time to trigger the production need and schedule for the specifically produced item to arrive just-in-time.

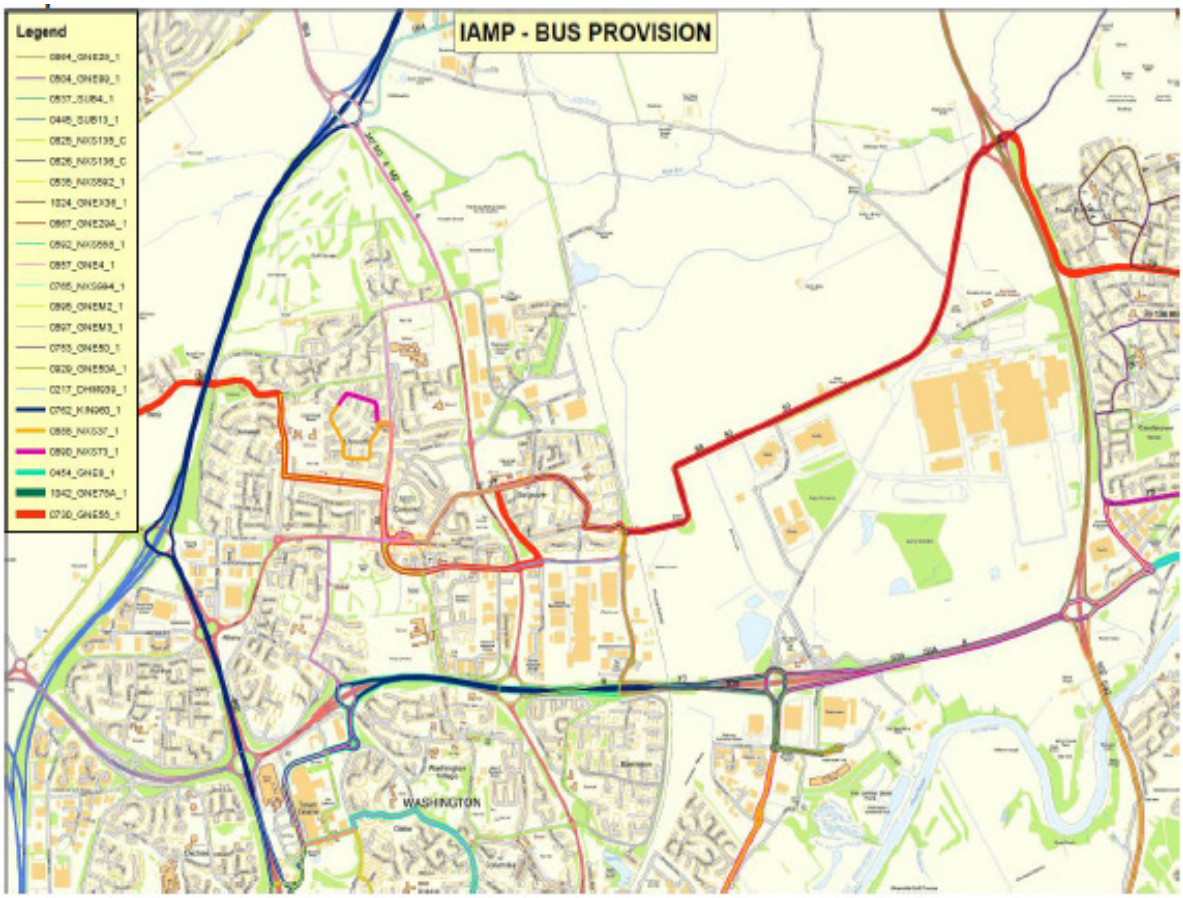
2.8 PUBLIC TRANSPORT

2.8.1. The IAMP AAP area is currently directly served by two bus services, the Service 50/50A and Service 56, both of which pass the Nissan site every 30 minutes and 12 minutes respectively. The earliest bus service currently arrives at Nissan at 06:22hrs. Current approximate journey times are set out below:

- Newcastle – Sunderland (1 hour 16 minutes)
- Newcastle – Nissan (52 minutes)
- Sunderland – Nissan (24 minutes)
- Durham – South Shields (1 hour 25 minutes)
- Durham – Nissan (57 minutes)
- South Shields – Nissan (26 minutes)

2.8.2. Journey times from Newcastle to the IAMP AAP area at 52 minutes, are not necessarily comparable by car. A car journey from Newcastle (New Bridge Street) to NMUK takes approximately 21 minutes (via A184). From Gateshead Interchange to the NMUK, a car journey takes approximately 19 minutes (via A184). Journey times from Durham to NMUK are reported at 57 minutes, compared to an approximately car journey from Durham city centre to NMUK (via A690) of 23 minutes. From this, it is clear that bus services do not compare favourably with car journeys.

2.8.3. There are currently other services which operate close to the IAMP AAP boundary but do not currently cross the A19. Map 1 provides the routes of current services.



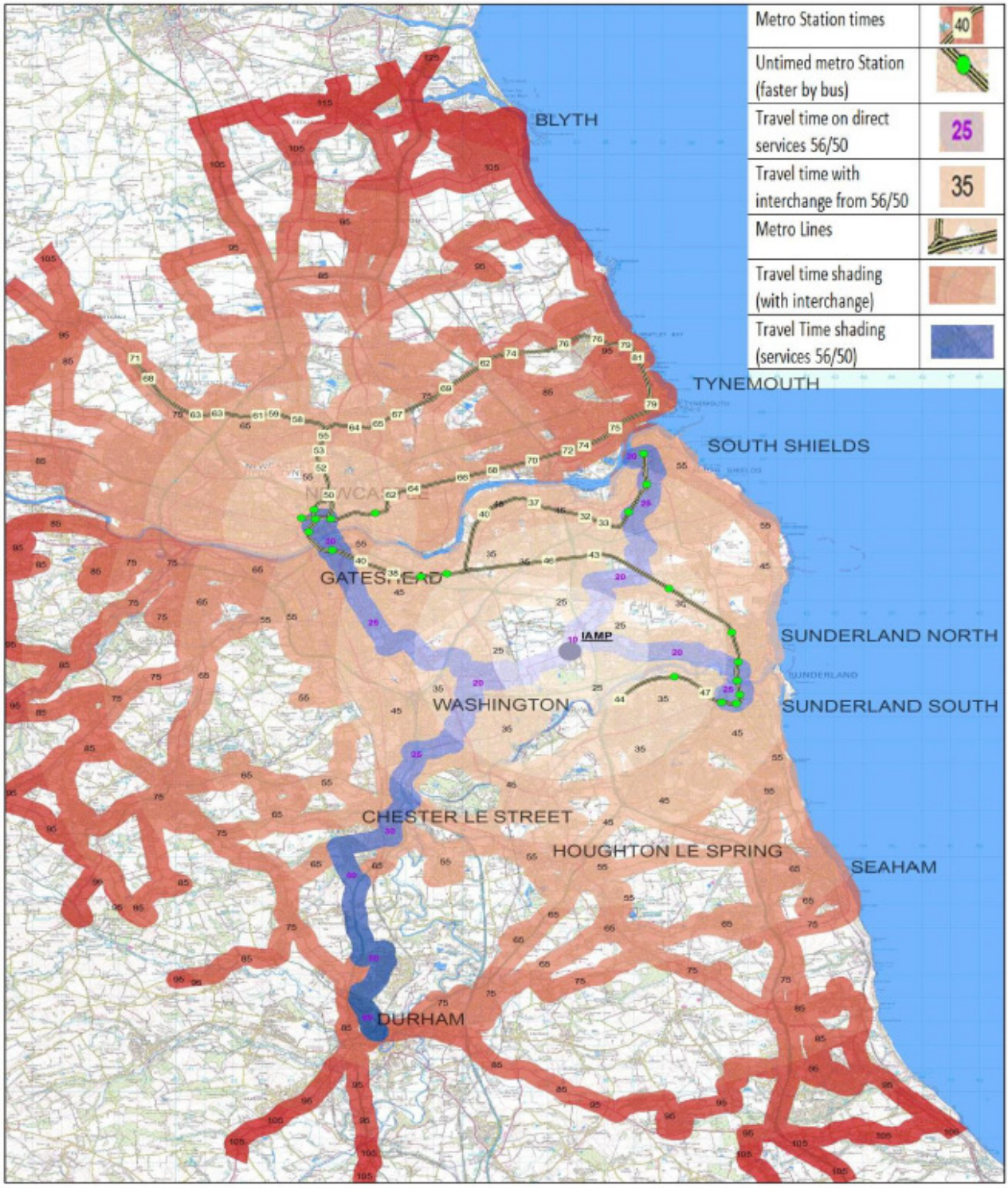
Map 1 – Existing Bus Services within proximity to AAP Boundary

2.8.4. To provide a baseline of the current accessibility of the IAMP AAP area, GIS has been used to map journey times via bus and Metro. The results of this exercise are given in Map 2. The blue lines on the map represent the current bus routes passing in close proximity to the IAMP AAP area; the red areas on the map show areas served by buses from different origins, with one interchange required to get to the AAP area. Journey times have also been mapped via Metro stations, with interchange.

2.8.5. There are many areas, (for example parts of South Tyneside Whitburn, Harton and the eastern parts of South Shields, Jarrow and Hebburn) where journey times are in excess of 45 minutes from the IAMP AAP area, whilst they are only between 8 and 13 km away. Similarly, areas within the Sunderland Coalfields and Ryhope are 45 minutes or more away via bus and involve at least one interchange.

2.8.6. Journey times from the AAP area to areas beyond Sunderland and South Tyneside can also be described as unfavourable for public transport:

- Whickham (Gateshead) – 70 minutes
- Stanley (County Durham) – 75 minutes
- Peterlee (County Durham) – 95 minutes
- Cramlington (Northumberland) – 95 minutes
- Whitley Bay (North Tyneside) – 80 minutes
- Newcastle West End – 75 minutes



Map 2 – Current Public Transport Journey Times to AAP area

2.8.7. A draft study being undertaken by Arup, on behalf of Nexus, considers the feasibility of extending the Tyne and Wear Metro to serve the proposed IAMP. Once finalised, the report will be considered by Sunderland City Council and South Tyneside with a view to exploring the opportunities identified.

2.8.8. The draft study considers four route options and three options for connecting to the existing network. The route options selected for appraisal are:

- Route 1 – Wardley to Sulgrave
- Route 2 – Wardley to IAMP
- Route 3 – Wardley to South Hylton
- Route 4 – Wardley to Durham Park & Ride at Belmont

2.8.9. Each of these could be connected to the existing network via one or more of the potential connection options:

- Connection 1 – Wardley to South Shields line by Pelaw junction flyover
- Connection 2 – Wardley to Sunderland line via Bowes chord, and then to South Shields via Tyne Dock connection
- Connection 3 – Wardley to Pelaw via Leamside chord

2.8.10. Routes 1, 3 and 4 would utilise a hub station at Sulgrave to allow interchange with a bus shuttle service to IAMP.

2.8.11. All the routes within the draft study are considered to be feasible from a technical perspective and are deemed to be deliverable without significant challenges.

2.8.12. The draft study considers Route 3 combined with the Leamside Chord provides the optimal operational solution, as it is the most efficient layout, and provides connection to the IAMP from Sunderland and the coast, as well as destinations to the north and west.

2.8.13. All of the routes utilise a section of the former Leamside line, which is currently owned by Network Rail. Early engagement with Network Rail and relevant stakeholder is outlined, to determine the viability of considering the use of the Leamside corridor for Metro services.

2.9 MODE OF TRAVEL SURVEY

2.9.1. To provide a greater understanding of the current mode split of transport in and around the IAMP AAP area, data from Sunderland City Council, who undertook an employee travel to work survey in February 2014, has been reviewed. The results in Table 2.1 show the percentage of people arriving to work by mode of transport.

Table 2.1 – Existing Mode Split within close proximity to Nissan

Mode of Transport	Number of Respondents	% of total
Car (lone driver)	1090	68%
Car Share (driver)	198	12%
Car Share (passenger)	128	8%
Motorcycle	27	2%
Bus	29	2%
Train	0	0%
Bicycle	100	6%
Foot	28	2%
Other	2	0%
Total	1602	100%

2.9.2. Table 2.1 shows that the mode share for non-car based journeys is low, including bus travel, which represents just 2% of the total. To allow for a greater comparison to be made of potential mode splits for the IAMP, modal split information was obtained from other employment parks in the region.

2.9.3. Modal share data from the Tyne and Wear Local Sustainable Transport Fund Submission, 2011, brought together data from business parks across Tyne and Wear based on travel plan surveys at various sites. The results of these are provided in the Table 2.2 and provides an indication that bus modal share aspirations for travel to/from the IAMP should be in the region of 15-20%.

Table 2.2 – Mode Share Data for Other Business Parks

Location	Bus Modal Share	Total Number of Employees (2009)
Team Valley, Gateshead (Source HA, Monitoring Report 2008)	13%	23,500
Sunderland Enterprise Park (Source HA, Monitoring Report 2008)	16%	3,400
Waterview Park and Pattinson Industrial Estate, Washington (Source, Framework Travel Plan, 2010)	10%	6,700
Doxford Park, Sunderland (Source, 2005 Travel Plan)	6%	8,500
Cobalt Business Park, North Tyneside (Source, Cobalt 2008 Travel Plan Report)	17%	9,500
Quorum Business Park, North Tyneside (Source, 2011 Quorum Travel Plan)	16%	7,500

3 Key Issues

3.1. In response to the evidence base outlined above and summary of the existing situation, this section provides an overview of the key issues, constraints and opportunities that the IAMP AAP is seeking to address. This is structured around the following headings:

- Connectivity for all modes
- Highway capacity
- Public transport
- Follingsby Lane

3.2 CONNECTIVITY FOR ALL MODES

3.2.1. A key characteristic of a successful transport network, including pedestrian and cycle networks, is to provide connectivity between origin and destination for all users. The transport network which supports the IAMP AAP area requires detailed consideration as it forms the skeleton around which any developments will fit, providing connectivity to the wider area.

3.2.2. The IAMP AAP area has clearly defined constraints to its boundaries; to the immediate east lies the A19; to the immediate south lies the Nissan plant; to the west is the former Leamside railway line; and to the north is the A184. In addition, the River Don runs through the IAMP AAP area.

3.2.3. It is important that if the IAMP is to provide a permeable scheme for all modes of transport, additional links will be required, including a bridge within the IAMP site over the River Don and a crossing to connect to the east of the A19.

3.2.4. In addition, a permeable network within the IAMP AAP area will be needed to accommodate and promote walking and cycling. Importantly, these links will support access from the surrounding residential areas, from which IAMP employees may travel, such as Washington, Town End Farm, Hylton Castle and beyond. Such links do not currently exist due to the nature of the existing land use, but will play an important role both internally within the IAMP AAP area and connecting to the wider network.

3.3 HIGHWAY CAPACITY

3.3.1. It has been outlined above that both the SRN and local road network are operating with high levels of congestion in the peak periods, with limited capacity to accommodate additional development traffic, or indeed background traffic growth.

3.3.2. The A1290 is a single carriageway road, which experiences high volumes of traffic, especially during periods of shift change-over at Nissan. The limited link capacity of the A1290 to accommodate traffic volume results in congestion and queuing.

3.3.3. The route alternatives on the local road network to gain access to the IAMP AAP area are currently limited and as such, results in notable queuing at the key nodes onto the wider network. If the network is to accommodate the levels of traffic anticipated by the IAMP, then an additional vehicular link into the area is required to provide a viable route choice alternative, which will in-turn disperse traffic more effectively and provide the network with additional capacity.

3.3.4. The A19 / A1290 Downhill Lane Junction has a single bridging structure over the A19, which acts as a constraint to the volume of through-traffic to the IAMP AAP area. This junction is a key node on the network, providing access to and from the trunk road and as such, plays an important role in the access strategy for the IAMP.

3.3.5. In addition to the Highways England commitment to undertake junction capacity improvements at the Testos and Downhill Lane junctions of the A19, Highways England have designated the A19 as an Expressway – a new classification between an A-road and a motorway. The A19 does not currently meet the design criteria for the Expressway standards and Highways England will continue to invest in this area of the strategic road network to improve capacity and operations.

3.3.6. One of the main vehicular accesses into the Nissan plant for staff is from the A1290, via a signal controlled junction, leading to a roundabout. This access is also the means of access for the Gateshead Skills Academy and the North East Air, Land and Sea Museums. Limited opportunity is available in this vicinity to improve operations within the existing constraints, without causing notable impact on the operations of Nissan. These junctions have no capacity to accommodate additional traffic associated with the IAMP and will require to remain in their existing form.

3.3.7. Transport for the North (TfN) seeks to establish the North as a global powerhouse, of which transport will play a fundamental part. Creating the 'Northern Powerhouse' of economic growth, requires a long-term investment programme for transport and the strategic road network in the region has already seen commitment to invest in highway infrastructure. It is clear that the proposed creation of the IAMP is aligned with the aspirations of the 'Northern Powerhouse' but it is similarly evident from the above, that highway improvement measures are required to provide the road network with additional capacity in order for the development to be fully realised.

3.4 PUBLIC TRANSPORT

3.4.1. As part of a 'call for evidence for barriers to employment' in Sunderland, funded by the Go Smarter to Work programme, employees and employers were asked to provide evidence of issues that prevented them from accessing employment.

3.4.2. The main issues that were identified through the research were those associated with areas located in different bus zones and different bus operators, resulting in no through-ticketing. In addition, other issues identified included: some sites were not served by public transport; the timing of buses; and services not being conducive for those people working shifts. As a consequence, recommendations are put forward for the diversion of existing bus services and the provision of new services to provide an attractive means of sustainable travel to the IAMP.

3.4.3. As outlined previously, a study undertaken by Arup, on behalf of Nexus was commissioned to establish the feasibility of a Metro extension to serve the IAMP and identifies possible routes to be considered further. A key issue for the delivery of an extension to the Metro system is the need to utilise the Leamside corridor, which is in the ownership of Network Rail. There have been a number of studies in recent years by various parties into opening the line for different transport options, including high speed rail, freight, heavy rail passenger service and Metro. It is important that any alternative proposals for the Leamside corridor do not conflict with the interests of providing attractive links to the IAMP from the west.

3.5 FOLLINGSBY LANE

3.5.1. Follingsby Lane provides a direct link off the A194 (M) to the IAMP. However its existing road width is only just sufficient for two cars to pass, it has a deteriorating road condition and has an unfavourable horizontal alignment in places. It also currently has soft verges and no street lighting. In addition, there is currently an environmental weight restriction over the Grade II listed Hylton Grove Bridge, which limits access to light good vehicles only.

3.5.2. Existing non-motorised users on Follingsby Lane are subject to fast moving vehicles rat-running along this route and indiscriminate use by Heavy Goods Vehicles, which discourages use. To make this an attractive route for non-motorised users, vehicle movements require restriction.

3.5.3. Follingsby Lane is considered not suitable as a viable means of access to the IAMP for volume traffic or HGV use, as it would require considerable upgrade to enable it to become a viable link for the volume and grade of traffic likely to be generated by the IAMP. In addition, concern is raised that if this link were to be upgraded, it could become an attractive route for through-traffic from the A194(M) to the A19, leading to unrelated IAMP traffic causing congestion locally. Improvements to this road could however be undertaken to create an attractive link into the IAMP for non-motorised users.

3.5.4. It is important to note that Highways England are bringing forward highway improvement schemes to increase capacity at the A19 Testos junction and A19 Downhill Lane junction. At the A19 Testos junction, the existing at-grade layout will be amended to provide grade separation between mainline A19 traffic and traffic on the A184. These improvement measures will facilitate reductions in journey times through this section of the network. As such, vehicles travelling from areas such as Follingsby Industrial Park will be able to continue to benefit from their close proximity to IAMP and experience improved journey times along this route.

3.5.5. Access to and from Follingsby Industrial Park needs to be considered on a Network Management basis, with the A184 and A19 being the most appropriate route due to increased traffic activity around IAMP and the environmental considerations associated with the existing Grade II listed bridge.

4 Potential Opportunities

4.1. On the basis of the above summary of key issues the following section provides an overview of the strengths and opportunities presented by the IAMP site.

4.2. Location to Strategic Road Network

4.2.1. The IAMP AAP boundary is located adjacent to the A19 with a direct link onto the strategic road network via the Downhill Lane junction and as such, offers a significant strength for the site, allowing traffic to gain immediate access to the trunk road network for wider destinations, including the nearby ports.

4.2.2. Access to the strategic road network offers significant benefit to end users with distribution requirements and with visitors travelling from outside of the region. It is therefore important that, as the IAMP is built-out, at each stage, the junction onto the A19 has sufficient capacity to accommodate the forecast levels of increased traffic.

4.3. Unconstrained network

4.3.1. One of the many challenges faced by other development proposals generally, is a constrained network in which the developments sits and the limited opportunity to provide good connections, restricted by existing buildings and / or infrastructure. However, this is not the case for the IAMP site, which instead offers the potential for the delivery of a permeable network, designed to meet the needs of its end users. This will be achieved by the masterplan for IAMP adopting a flexible grid approach for development plots and including a set of design principles by which forthcoming developments must comply.

4.4. Sustainable Travel

4.4.1. Once the IAMP is operational there is the potential for a significant market for bus services. Whilst IAMP is being developed, in the first phase, developer contributions could be sought to provide funding for the pump priming of bus services.

4.4.2. The IAMP offers the opportunity to create a sustainable travel ethos from the outset and this could be encouraged by the provision of good infrastructure and promotion of sustainable travel modes through the design process.

4.5. Proximity to Nissan

4.5.1. A key advantage of the IAMP location is the close proximity to the Nissan plant. Many of Nissan's supply chain transport their goods to and from the Nissan plant from outside the region. The development of the IAMP offers the supply chain the opportunity to be located adjacent Nissan, which in turn reduces haulage distances and contributes to reductions in traffic levels on the strategic road network.

5 Interventions and Actions

5.1. This section summarises the key proposed interventions and actions which will be progressed through the IAMP AAP and presents these under the following headings.

- Connectivity for all modes
- Highway Capacity
- Bus Travel
- Other sustainable transport measures

5.2. Mitigation Measures

5.2.1. Outlined below is a summary of the key proposed mitigation measures which will be progressed through the AAP to address the key issues and constraints identified above.

5.3. Connectivity for all Modes

5.3.1. It is important to ensure that the IAMP connects effectively to the surrounding areas of Tyne and Wear, County Durham and Northumberland. It will therefore be necessary to provide a new, good standard access road, with a suitable bridging structure over the River Don to ensure full integration between the areas of IAMP in South Tyneside to the north of the Don, and those to the south of the Don in Sunderland.

5.3.2. Improvements to the western end of the A1290 alignment as part of Sunderland's 'A19 Ultra Low Carbon Enterprise Zone' will remove the existing horizontal deflection and better accommodate HGV movement to/from the west.

5.3.3. The A19 represents a barrier to movement between the IAMP site and land to the east of the A19. If a permeable network is to be created, which offers route choice for all means of travel, including sustainable transport, it is important that the supporting infrastructure is in place. The new bridge over the A19, as identified as a requirement for capacity in the 'Washington Road Bridge Option Testing' report (SD65), will provide a suitable connection between the AAP area and the local road network to the east of the A19. This bridge will cater for all modes of transport, including non-motorised users, and will enable a greater route choice for all modes of transport.

5.3.4. Providing for all modes of transport and creating a sustainable development will be key to the success of the IAMP and as such, a permeable network for all modes of transport within the AAP, including walking and cycling will be provided. This will be achieved through the design principles ingrained within the masterplan document for the AAP area, which each development will be required to adhere to through their individual planning application submissions.

5.4. Highway Capacity

5.4.1. Micro-simulation modelling of the base network has demonstrated that the existing highway infrastructure has limited capacity to accommodate the anticipated increase in traffic resulting from the IAMP (approximately 10% of the forecast IAMP development traffic could be brought forward before any highway interventions are necessary). If the traffic forecast to be generated by the IAMP is to have minimal detrimental effect on traffic operations in the area, improvements to highway capacity are required.

5.4.2. As outlined previously, a new bridge over the A19 will be important for connecting the AAP area to land to the east. It will also however serve as an important link for the distribution of IAMP related traffic, providing an alternative route choice and avoid congested areas such as the A19 / A1290 Downhill Lane junction. The operation and capacity benefits of this new bridge on the road network are demonstrated within the traffic modelling work, which is summarised in 'Washington Road Bridge Option Testing' Note

(SD65). The Technical Note considers a future year scenario with IAMP with and without the proposed bridge over the A19 and identifies significant difference in queue length at key junctions, which unacceptable levels reported when tested without the new bridge.

5.4.3. The A1290 will continue to form the main link through the AAP area and will be the primary route into the IAMP for the majority of those accessing the area. The A1290 will experience high volumes of traffic movement when the IAMP 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. This high standard link, with landscaping, will form a boulevard type arrangement feature for the IAMP, with signalised junctions providing access to adjacent development area.

5.4.4. In addition, to further alleviate congestion and queuing at junctions along the A1290 and provide additional network capacity, a new link road is required to the west of the A1290. This link road would provide additional capacity by providing further routing choice for vehicles travelling to and from land to the west of the A1290 and indeed IAMP land to the north of the River Don.

5.4.5. Whilst a key strength of the IAMP is its location in the context of the A19, which forms part of the Strategic Road Network, access onto and from the A19 requires improvement. The A19 junctions at Testos and Downhill Lane currently act as a network constraint for access to the AAP area and require improvement to their capacity. Highways England is progressing with design considerations to provide additional capacity at these junctions, which include the Testos junction becoming grade-separated. Highways England have confirmed their commitment to deliver these schemes by undertaking Consultation on their proposed improvements, outlining their preferred layout for Downhill Lane, which is supported by Nissan. The design and implementation of these schemes are themselves the subject of a separate Development Consent Order and independent of the IAMP scheme.

5.4.6. With the improvements to the A19 Testos and Downhill Lane junctions coming forward, along with the inclusion of a new bridge over the A19 and the upgrade of the A1290 to a dual carriageway, additional network capacity is provided, which is reflected within the future year traffic modelling scenarios to confirm their effectiveness and demonstrate that Nissan's "just in time" approach to deliveries are not compromised.

5.4.7. To further assist with easing network operations within the IAMP road network, 'Clearway' markings will be applied to all new primary and secondary roads to prohibit parking on the side of the road by vehicles, therefore improving flow capacity. Each development plot which comes forward as part of the IAMP will be responsible for ensuring that adequate levels of car parking are provided. This level of parking will be determined on a plot-by-plot basis. Sunderland City Council are aware of existing issues relating to indiscriminate HGV parking in the AAP area and the potential for these issues to continue following the development of the IAMP and are currently exploring opportunities to address this issue, along with potential options for providing a dedicated lorry parking provision in the vicinity.

5.5. Bus Travel

5.5.1 The internal road layout within the IAMP AAP area 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 turn into the site, navigate the internal road network and exit the area.

5.5.2 Nexus have been commissioned to determine an appropriate framework of public transport options for the site, including possible integration with the existing Metro network. The provision of high quality public transport is key to the sustainability of the IAMP and an alternative to the use of private car for commuting purposes will play an important role.

5.5.3 The number of shelters will need to be determined, but these should be designed to Nexus specifications, with enhanced safety and security provision.

5.5.4 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 IAMP AAP area from the Heworth area.

5.5.5 New traffic signals should have the capability and capacity to provide priority for buses and be linked up to the Region wide Urban Traffic Management and Control system.

5.6. Other Sustainable Transport Measures

5.6.1. It is important that the IAMP 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. For example, to discourage single occupancy car use and promote car-sharing, each development that comes forward within the IAMP will be required to provide dedicated car parking spaces for car-sharing only.

5.7. Actions

5.7.1. The micro-simulation traffic model of the network will be progressed to include future year scenarios that fully consider the on-going temporary and permanent changes to the road network in the region. From this assessment, a package of measures will be identified and their timetable for implementation linked with network capacity thresholds. It is however possible at this stage to summarise the key actions identified from this evidence review, which includes:

- **A19 Testos and Downhill Lane Junctions**

  These improvement works to increase capacity at these junctions on the A19 form part of a separate DCO application by Highways England. Work includes the A19 being raised above the A184 on a flyover at the Testos junction. Continued liaison with Highways England will be required to ensure that works to these junctions and that required for the IAMP road network are constructed in a phased manner to minimise traffic disruption.

- **Link between IAMP land on either side of the River Don**

  To ensure suitable connectivity is achieved between the area of IAMP to the south of the River Don and that located to the north of the River Don, a new link road and bridge is required. Without such a link and bridge structure, the northern area of the IAMP is not deliverable in transport terms and as such, this mitigation is required from the outset and will be delivered through the DCO process for the IAMP.

- **A1290 Upgrade**

  To provide the required level of additional capacity on the road network, it will be necessary to upgrade the link capacity of the A1290 from its junction with the A19 at Downhill Lane, through to West Moor Farm. The A1290 along this section will need to be a dual carriageway standard, with signal controlled junctions, street lighting and landscaping. The masterplan design aspiration for this important link into the IAMP from the A19 is for the creation of a boulevard type arrangement. The current A1290 does not provide sufficient capacity to accommodate the envisaged increase in traffic levels and already experiences congestion and as such, this mitigation is required from the outset and to be delivered through the DCO process for the IAMP.

- **New bridge over the A19**

  A new bridge over the A19 forms a key mitigation for the development of the IAMP. It provides enhanced connectivity over the barrier created by the A19 but importantly, plays a key role in the disbursement of traffic by providing an alternative route choice for those travelling from the IAMP to residential areas of Sunderland to the east. In providing additional route choice, traffic levels on the A1290 are reduced and provide the capacity necessary to accommodate IAMP related traffic on the network. This mitigation is required from the outset and will be delivered through the DCO process.

- **New link road to the west of A1290**

The provision of a new link road to the west of the A1290 will provide an additional route choice to and from the west for vehicles travelling to and from the IAMP area in the north. This link road will alleviate traffic levels on the A1290 and importantly, ease the operations of the junctions along the A1290, including that used to access Nissan.

- **Follingsby Lane**

  In its current form, Follingsby Lane does not have sufficient capacity to accommodate the levels of traffic envisaged for the IAMP. It does however offer the ability to serve as a suitable means of access for non-motorised vehicles, such as walking and cycling. Follingsby Lane could be enhanced to provide an attractive cycle link and/or bus route into the IAMP. Access to any properties retained within the IAMP AAP which are served by this road would need to be accommodated, either by a suitable alternative or an exemption for their access granted. Alterations to use would only be applicable to the extent of Follingsby Lane contained within the DCO boundary i.e., the eastern end of Follingsby Lane. This mitigation would promote sustainable travel and could be phased as the take-up of IAMP progresses.

- **Rail / Metro extension**

  The findings of the Nexus study, when finalised, will be considered and opportunities explored to incorporate a suitable and commercially viable metro link to the IAMP. Measures should be taken to ensure that access across the Leamside Line is safeguarded if any other alternative propositions are brought forward.

- **Permeable internal network**

  The masterplan for the IAMP will set out the design principles to be adopted when each land parcel is brought forward. Within this design criteria will be the requirement for the IAMP to maintain a grid network of roads and non-motorised user links. The creation of a permeable road network with clear route choices will encourage end users to travel by alternative modes to the private car. This philosophy will be delivered within the masterplan for the IAMP, which forms part of the DCO submission.

- **New and Diverted Bus services**

  New and diverted bus services are required to contribute to the sustainable ethos of the IAMP and encourage travel by public transport. Working in partnership with Nexus, a public transport strategy for the IAMP is required. Bus services to the IAMP will be introduced to reflect the demand generated at the site and will be a phased process. Discussion with adjoining local authorities will be key to refining the bus strategy for IAMP, for example, exploring mutual benefits from linking with the proposed Park and Ride facility at Follingsby.

Date 01 December 2016 **Job No** NEA1301

File Note

Subject New IAMP Bridge Over A19

1 Introduction

1.1 As part of the proposed highway mitigation measures for the IAMP, a new vehicular bridge over the A19 is proposed. This Note has been produced to provide a background to the micro-simulation traffic modelling work which has been undertaken to support the proposal.

1.2 This Note summarises the results of the network performance reported from the micro-simulation modelling of the proposed junction improvements at Testo's and Downhill Lane with and without the inclusion of a new bridge over the A19 as part of the IAMP development.

2 Downhill Lane Junction

2.1 The preferred Highways England option for the Downhill Lane junction improvements broadly comprise of the construction of a new bridge to the south of the existing bridge to create a raised roundabout above the A19 and construction of new slip roads connecting to the A19 and Testos junction.

3 Journey Time paths

3.1 To provide a measurable comparison between the 'with' and 'without' bridge scenarios, journey time paths have been coded between various origins and destinations (OD) in order to determine the shortest journey times between OD pairs.

3.2 The origin and destinations used for coding journey time paths can be summarised as:

1. A1290 West
2. IAMP East of A1290
3. IAMP North West of A1290
4. A19 North of Downhill Lane
5. Downhill Lane east of A19 Junction
6. Washington Road, east of A19
7. IAMP East of A1290
8. Ferryboat Lane
9. Nissan Access
10. A19 South of Downhill Lane

3.3 The main movements between the locations listed above are presented in the Table 3.1. These selected OD pairs have been analysed in terms of journey time paths.

Table 3.1: Main journey movements in study area

O-D	1	2	3	4	5	6	7	8	9	10
1		✓	✓	✓		✓	✓	✓	✓	
2	✓									
3	✓			✓						✓
4	✓		✓			✓	✓	✓	✓	✓
5							✓			
6	✓			✓				✓	✓	✓
7	✓			✓	✓					✓
8	✓			✓		✓				
9	✓			✓		✓				✓
10			✓	✓		✓	✓		✓	

4 Hourly flows via Washington Bridge

4.1 To gain an understanding of the level of traffic movement likely to use the new bridge over A19, hourly flows for eastbound and westbound movements via the new bridge and shown in the Table 3.2.

Table 4.1: Hourly flows via Washington Bridge

Tested option:	Option 2A	
Direction:	EB	WB
07:00-08:00	**280**	**262**
08:00-09:00	258	238
09:00-10:00	220	140
15:00-16:00	302	246
16:00-17:00	**338**	**346**
17:00-18:00	346	202

4.2 Table 4.1 shows the hourly movements via the new IAMP bridge and interestingly, demonstrates that there is a consistent volume of traffic using the bridge each hour.

4.3 Trips using the bridge in the morning peak hour are mostly routing:

Eastbound direction:

- From Nissan and IAMP to East Boldon and Hylton – around 45% of the traffic;
- From Washington to East Boldon and Hylton – around 25% of the traffic;

Westbound direction:

- From East Boldon and Hylton to Nissan and IAMP - nearly 50% of the trips;
- From East Boldon and Hylton to Washington area – around 16% of trips;

4.4 Trips using the bridge in the evening peak hour are mostly routing:

Eastbound direction:

- From Nissan and IAMP to East Boldon and Hylton area – around 41% of the traffic;
- From Washington area to East Boldon and Hylton area – almost 33% of the traffic;

Westbound direction:

- From Testos (zones 1 and 2) to Nissan and IAMP – 5% trips;
- From Hylton and East Boldon (zones 4, 5 & 6) to Nissan and IAMP - 49% of the traffic;
- From Hylton and East Boldon to Washington – around 14% of the traffic;

5 Overview of Network Operation

5.1 The following commentary is provided of the network operations reported from the micro-simulation modelling.

With New IAMP bridge over A19

The morning period operates well, with no notable queuing, although queuing is noted at Testo's and this has been discussed in other studies and notes. In the evening period queuing is noted on the southbound movement on the A1290 approach to the first junction from Downhill Lane; this is caused by the high volume of right turn movements into IAMP area. The queuing is brief and disperses over a short period of time, importantly, it does not block back to the Downhill Lane junction.

Without New IAMP bridge over A19

This option considers the same layout as one above, but without the inclusion of a new bridge over the A19 as part of the IAMP development.

Notable queuing occurs from the A19 southbound approaching the Downhill Lane roundabout in the morning peak, which is caused by traffic redirected from / to the Hylton area to the Downhill Lane roundabout; the traffic signals as this junction were adjusted to accommodate this traffic. In the evening peak, significant queuing occurs, which is caused by right turn movements from the A1290 (North) to IAMP. Queuing blocks back to the Downhill Lane roundabout, as well as having an impact on queues at the A1290 northbound, as a result of time being provided for right-turning vehicles to IAMP from the opposite direction.

5.2 Traffic flows at the Downhill Lane roundabout have been checked for the peak hours to establish the routing implications of not having the new bridge over the A19. The main movements affected are the East – West and West – East, which are increased by approximately 250 trips on the eastbound direction in the morning peak hour and 340 trips in the evening peak hour. Westbound movements in the morning peak have an additional 200 trips and 260 trips in the evening peak. Without the new bridge over the A19, this additional traffic requires to be accommodated at the Downhill Lane roundabout and causes queuing.

Table 5.1: Downhill Lane Roundabout Movements

	DHL with new IAMP Bridge		DHL without new IAMP Bridge	
	07:00 -08:00	16:00 – 17:00	07:00 -08:00	16:00 – 17:00
A1290 West – Washington Road	98	84	356	398
Washington Road – A1290 West	86	74	288	332

6 Queue Length Comparison

6.1 The following tables provide a summary of the noted maximum queue lengths on the local highway network on the approaches to the Downhill Lane junction. Results are presented for both the 'with bridge' and 'without bridge' scenarios considered. Queue length values are presented in 'metres'.

Table 6.1: Comparison of peak period queue lengths

	DHL: North		DHL: South East		DHL: South		DHL: West	
	AM	PM	AM	PM	AM	PM	AM	PM
With Bridge	81	78	49	82	50	174	46	89
Without Bridge	121	133	571	727	54	298	98	297
Difference	+40	+55	+522	+645	+4	+124	+52	+208