

Sunderland City Council and South Tyneside

International Advanced Manufacturing Park Area Action Plan

Design Technical Background Report

February 2017



South Tyneside Council

Sunderland
City Council



ARUP

Sunderland City Council and South
Tyneside Council

**International Advanced
Manufacturing Park Area Action
Plan**

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Report

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This report takes into account the particular
instructions and requirements of our client.

It is not intended for and should not be relied
upon by any third party and no responsibility
is undertaken to any third party.

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1 Introduction

1.1 Overview

1. This is the Design 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.
2. The report 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

3. 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.
4. 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.
5. Present since 1985, Nissan is a major employer in the North East and the Sunderland plant is a good example of a national and regional success in manufacturing. Nissan has been the largest car plant in the UK for 14 years and the largest exporter for 12 years. Overall production surpassed 500,000 vehicles in 2013 and is set to expand further with the plant producing one third of UK car output and over one third of exports. Nissan currently employs over 7,000 people in the Sunderland plant underpinning over 20,000 supplier jobs in the wider North East region.
6. Development of the IAMP will therefore 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 Paper

7. The Report is structured as follows:

- Section 2 Evidence Base Review - sets out the evidence relevant to this Technical Background Report;
- Section 3 Key Issues - draws on the evidence to set out the key issues that should be taken into account in developing the approach and policy of the IAMP AAP; and
- Section 4 Design Response - advises on approach to developing the IAMP master plan and the potential actions that should be considered in further progressing the IAMP proposal to delivery.

2 Evidence Base Review

8. This section presents a summary of the key findings from the evidence review. The information and documents considered in this review are listed in section 2.2 below.

2.1 Overview

9. The key issues relating to the design of the IAMP have been established through reference to national and local policies, best practice guidance, international research into Innovation Districts, research into case studies both in the UK and internationally and workshops with the project team. In summary these are as follows:
10. Policy:
- National Planning Policy Framework (2012)
 - Sunderland Unitary Development Plan (1998) saved policies (SD16)
 - Core Strategy and Development Management Policies Draft Revised Preferred Options (2013) (SD17)
 - South Tyneside Local Core Strategy (2007) (SD22)
 - South Tyneside Development Management DPD (2011) (SD21)
 - South Tyneside Site Specific Allocations (2012) (SD20)
 - South Tyneside Urban Design Framework (2005) (SD44)
11. Best Practice UK Guidance
- CABE's Better Places to Work (2005)
12. International Research
- Bruce Katz and Julie Wagner's, The Rise of Innovation Districts (2014)
13. Project Team Research and Visioning
- Visioning Workshop Booklet: What kind of space, What kind of place?, URBED (April 2015)
 - Plot Ratio Exercise (2016)

2.2 National Planning Policy

14. The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these are expected to be applied. The paragraphs which are considered most relevant to design issues associated with the IAMP AAP site have been outlined below.

15. Paragraph 7 identifies three dimensions to sustainable development – economic, social and environmental. It is the economic and environmental roles which can be considered most relevant to this report, defined as follows:
- ‘An economic role - contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure’; and
 - ‘An environmental role – contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.’
16. Paragraph 17 identifies the core planning principles which should underpin both plan-making and decision taking. Most relevant to this design report are that planning should:
- Always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings; and
 - Support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy).
17. Paragraph 56, requiring good design, emphasises the importance of good design as a key aspect of sustainable development. Paragraph 58 goes on to list a series of objectives, relevant to the design of the IAMP, that new development should:
- Ensure the development will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
 - Establish a strong sense of place, using streetscapes and buildings to create attractive and comfortable places to live, work and visit;
 - Optimise the potential of the site to accommodate development, create and sustain an appropriate mix of uses (including incorporation of green and other public space as part of developments) and support local facilities and transport networks;
 - Respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation;
 - Create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion; and
 - Be visually attractive as a result of good architecture and appropriate landscaping.

2.3 Local Planning Policy

2.3.1 Sunderland City Council

2.3.1.1 Draft Core Strategy

18. The Core Strategy and Development Management Policies Draft Revised Preferred Options (SD17) includes the following design related policies:
19. Policy CS7.1 addresses Caring for the City's Environment and seeks to ensure that the city's environment remains one of its key assets by:
 - seeking resource efficiency and high environmental standards within developments in the city;
 - protecting and conserving the city's natural environment;
 - protecting, preserving and enhancing the built heritage and culture of the city; and
 - protecting local environmental quality.
20. Policy CS7.2 addresses the built environment and states that those parts of the built environment that make a positive contribution to local character, that establish a distinctive sense of place and which represent the unique qualities of Sunderland will be protected, conserved and enhanced.
21. Policy DM7.18 addresses new development in the countryside and reiterates that new development should be well designed, in keeping and in scale with its location and sensitive to the character of the countryside and local distinctiveness.

2.3.1.2 Saved UDP policies

22. There are also a number of relevant saved policies from the UDP (SD16), which was adopted in 1998. This includes saved policy EC1, which relates to developing the city's role as a major manufacturing centre.

2.3.2 South Tyneside Council

2.3.2.1 Core Strategy

23. Core Strategy (SD22) Policy ST2, Sustainable Urban Living, requires that all development proposals must incorporate the highest standards of design and produce safe and flexible buildings and environments.

2.3.2.2 Development Management Policies DPD

24. Development Management (SD21) Policy DM1, Management of Development Section A, seeks to ensure that new development considers its surroundings and where possible local setting, reinforces local identity, having regard to the scale and proportions, alignment, form, use of materials and architectural detailing of the development.

25. Section B seeks to protect residential amenity while Section C seeks to protect existing vegetation, providing replacement planting where necessary. Section D supports the provision of high quality well-designed external spaces which are linked, where possible, into the wider green infrastructure network, improving visual amenity. Section E seeks to incorporate landmarks and focal points within external spaces to aid the legibility of the development.

2.3.2.3 South Tyneside Urban Design Framework

26. Most design guidance for advanced manufacturing parks or similar relates to the design of highways infrastructure and is based around the safe and quick movement of HGVs.
27. However, the South Tyneside Urban Design Framework (SD44) covers the key urban design principles for what it refers to as ‘**Shed Environments**’. Although it is not intended that IAMP is a “shed environment” the document mirrors the approach being pursued and raises a number of key points:
- South Tyneside has many large sheds, and landscaped and pedestrian environments are largely overlooked in favour of internal functionality and vehicle movements; and
 - Typically, buildings are of no architectural merit in a sea of parking with no landscaping screening and no relationship to their context.
28. The document provides the following design guidance;
- Urban Form: Integrate new developments with a mix of uses such as cafés and shops so they benefit the working community;
 - Urban Form: Provide active frontage – avoid presenting blank walls to adjacent streets, but use windows and doors to liven the street front. Use trees and planting to soften blank facades;
 - Linkages: Improve links by public transport, walking and cycling and strengthen connections to other services (cafés, shops etc.) by providing them within the development;
 - Landscape: Public realm and landscaping works should integrate these developments with the existing surroundings, provide public/community spaces and create a sense of place;
 - Landscape: Wildlife habitats should be conserved and enhanced through planting and design using native species with habitat value and using water as a component of the landscape;
 - Landscape: Minimise the car parking effect – by creating internal car parks, undercroft parking and dense planting; and
 - Create sustainable developments which seek to meet BREEAM standards.

2.4 Sunderland City Deal

29. The Sunderland City Deal (SD41) focuses on maximising the opportunities of the growing demand in the advanced manufacturing sector by supporting the

development of an International Advanced Manufacturing Park, with the view that the IAMP will extend the prime location for automotive and other advanced manufacturing and engineering activities that currently comprises the Nissan plant, its supply chain and Sunderland's enterprise zone.

30. It states that to accommodate projected growth, the new developments will be approximately 100 hectares in size. This sets the approximate area parameters for the IAMP, which has been used to inform this report.
31. By 2027 Sunderland City Council predicts the City Deal will deliver:
 - Approximately 260,000sq m of developable floorspace over a 100 hectare advanced manufacturing park;
 - 5,200 new jobs with the vast majority within the manufacturing sector; and
 - An estimated £295m private sector investment in advanced manufacturing in the North East.

2.5 Better Places to Work, CABE

32. The CABE document, 'Better Places to Work' published in 2005 is good practice guidance which recognises the benefits of well-designed and planned work places and sets out six principles to deliver better places to work which should also be considered by the IAMP AAP:
 - **Ease of movement and legibility:** Workplaces should be located to be accessible by a wide range of transport modes, including foot, cycle, public transport and car.
 - **Character, quality and continuity:** Workplaces should exhibit a strong positive relationship with surrounding areas, services and facilities.
 - **Diversity of Workplaces** should be encouraged, contributing to the vitality and viability of their locality by providing, adding to, and supporting a mix of complementary uses.
 - **Sustainability of Workplaces** should be encouraged, seeking to minimise energy use through design, both during construction and in occupation.
 - **Adaptability of Workplaces** should be encouraged, with workplaces that are able to accommodate changing requirements, including responding to changing market forces practically and cost effectively; and
 - **Management of Workplaces** should be incorporated at the outset with buildings that are designed to accommodate systematic management and maintenance regimes so that quality and consistency are maintained.
33. The principles above align with the client's ambitious aspirations for the IAMP by creating a new and innovative scheme, which is well connected to the local area, has its own distinctive sense of place, capable of accommodating a variety of different workplaces within a framework that is flexible enough to accommodate changing requirements of the sectors.

2.6 Innovation Districts

34. “Innovation districts” is a design ethos which seeks to move away from sprawling, isolated and single land use business parks, to compact and mixed use ‘districts’ which cluster entrepreneurs, start-ups, business accelerators and incubators.
35. What differentiates these places from more traditional “industrial estates” constructed within the last 40 years in the UK and the US is that these spaces are easily accessible via public transportation, wired for public Wi-Fi, support mixed use development (housing, business and retail space) all with the aim of nurturing collaboration and knowledge sharing.
36. This concept is promoted by the internationally recognized design academics Bruce Katz and Julie Wagner, who report three models on how innovation districts can be created in their report for the Brookings Institute, titled ‘The Rise of Innovation Districts: A New Geography of Innovation in America’.
 - The “**anchor plus**” model, primarily found in the downtowns and mid-towns of central cities, is where large scale mixed-use development is centered around major anchor institutions and a rich base of related firms, entrepreneurs and spin-off companies involved in the commercialization of innovation.
 - The “**re-imagined urban areas**” model, often found near or along historic waterfronts, is where industrial or warehouse districts are undergoing a physical and economic transformation.
 - The third model, “**urbanized science park**,” commonly found in suburban and exurban areas, is where traditionally isolated, sprawling areas of innovation are urbanizing through increased density and an inclusion of new activities (including retail and restaurants) that are mixed as opposed to separated.
37. Whilst the report focuses on the North American context, it is considered that the third model ‘urbanised science park’ is comparable to the IAMP location and context. Key design principles taken from the study, which could be used in the development of the IAMP master plan include:
 - Greater concentration of buildings to increase the density of the scheme thereby increasing the number of people within smaller areas thereby increasing opportunities for interaction and collaboration. The increased density also reduces the distances between buildings opening up opportunities for pedestrian and cycle journeys within the site;
 - Inclusion of a vibrant central district will be essential. A central hub will provide a focus within the site for interactions both formally i.e. business meetings, hotel etc.; and
 - Promotion of improved public transport accessibility will help to reduce the number of vehicle movements into and out of the site that will have numerous benefits including creating a more attractive walkable environment within IAMP plus the many wider environmental benefits of reducing car movements.

38. In the UK, the Advanced Manufacturing Park at Waverley (South Yorkshire) is generally based around the concepts of Katz and Wagner for an Innovation District.



Figure 1: Waverley Advanced Manufacturing Park

39. An article by Bruce Katz titled ‘An advanced manufacturing innovation district grows in Sheffield, England’¹ asked the question: Can a city metropolis apply the innovation district model to advanced manufacturing? The key messages from the article are cited below:
- Advanced manufacturing appears ill-suited for the mixed, spatially dense, often chaotic environment of innovation districts. Advanced manufacturing is often characterized by isolated, dispersed factories and facilities, large building floor plates (often single storey), proximity to traditional highway infrastructure for the efficient movement of goods, and a workforce that is more likely to be associated to the factory floor than the networking opportunities at the local coffee shop.
 - Yet, advanced manufacturing has mastered the innovation side of the innovation district phenomenon. Indeed, advanced manufacturing is one of the most innovative sectors in the U.S. and the U.K. To compete with lower-wage and lower-cost countries, advanced manufacturers in mature economies rely heavily on continuous innovation in products and processes via applied research; large capital expenditures in sophisticated plant, technology, and equipment; automation of the manufacturing process through robotics; and a highly skilled workforce.

¹ An advanced manufacturing innovation district grows in Sheffield, England
<http://www.brookings.edu/research/opinions/2015/03/25-manufacturing-innovation-district-sheffield-england-katz-kline>

- Advanced manufacturing, despite its distinctive “manufacturing” characteristics, may be evolving in a way that embraces the principles, and even some of the physical dimensions, of innovation districts.
40. The article highlights a number of land uses and activities being accommodated at the AMP which are helping to drive innovation and make the park stand out:
- The Waverley AMP accommodates an Advanced Manufacturing Research Centre, which contains specialised facilities providing advanced manufacturing companies in the region access to industrial expertise, cutting-edge machines and equipment. This helps to provide an innovative eco-system and is largely the result of collaboration between the University of Sheffield and over 100 leading research and development (R&D) and production companies including Boeing, Rolls Royce, BAE Systems, Hitachi, Tata, Forgemasters, Mori Seiki, Dormer Tools, Sanvik Coromant and Castings Technology Int.
 - The park also includes an ‘incubator facility’ which houses 150 small and medium-sized enterprises in areas such as industrial design and information and communications technology. These companies then benefit from proximity to new research and collaboration between high quality engineering and manufacturing companies.
 - AMP also includes a state of the art training centre, which provides apprenticeship opportunities to 250 individuals a year in an effort to bridge the engineering skills gap.
41. Katz also suggests a number of ways for Waverley AMP to improve, lessons which are particularly relevant to the design of the IAMP, which include:
- Creating a sense of place – through attention to simple amenities such as walking paths, bike lanes and green spaces as well as the programming of public spaces (for occasional lectures and gatherings) – which would go a long way in ‘humanising’ the park. The study emphasises that Waverley, which is currently under construction, does not yet have the vibrancy and urbanity of city-centre innovation districts and so creating a sense of place will be important from the off-set to allow the park to develop its own identity; and
 - Improving the connectivity between the park and other business parks in the local area, this could be Nissan, Follingsby Business Park and Boldon Business Park for example, in the IAMP context. The study emphasise the importance of improving connectivity between complementary assets, which can result in smart-place making and increase the potential for innovation.
42. These studies highlight the benefits of promoting and developing the IAMP as an innovation district. In terms of design, a number of points are emphasised in order for the development to achieve this:
- Integration;
 - Proximity;
 - Density;
 - Connectivity; and

- Quality Place Making.

43. These studies also make the case for providing a mix of uses within the park, such as managed work space, incubator spaces, a hotel, cafes and restaurants, leisure facilities and a nursery. This analysis and review provides key learning points for the IAMP and emphasises the importance of the creating a sense of place through the greater concentration of buildings and the inclusion of a central “hub”. The studies also highlight the need for the master plan to be flexible to accommodate a range of occupiers and land uses, which fall under the ‘advanced manufacturing uses’ umbrella.

2.7 What kind of place, what kind of space?

44. As part of the development of the IAMP AAP research has been undertaken exploring comparable examples of science, business and advanced manufacturing parks in the UK, Europe and the USA, in order to inform the design principles for the IAMP AAP. In particular the design team has been seeking a solution that is both practical for the manufacturing businesses that will occupy the park while also creating a unique and strong sense of place. In doing this the experiences of modern science parks, business parks and industrial schemes have been reviewed to draw on current best practice.
45. The most well-known examples of design quality relate to science parks. The first of these, The Cambridge Science Park was established in 1970 and is now home to 100 companies and 5,000 jobs on a site that extends to 60 ha. There are around 100 Science Parks in the UK and the UK Science Park Association estimate that they are home to 4,000 companies and 70,000 jobs. Their design is generally characterised by high quality buildings in a landscape setting. The predominant use is offices and laboratories often in two and three storey buildings. This means that the parks do not need to accommodate manufacturing activity or major logistics and can accommodate a higher employment density than is proposed in the IAMP.
46. In 1990s there was a move to develop ‘Technopoles’. The concept was that these would provide manufacturing move-on space for companies in science parks allowing the local economy to benefit from the jobs and value created by the innovations in the science parks by manufacturing the products invented. A number of technopoles were planned in the UK but in reality none have realised the concept. The trend coincided with the advent of off-shoring manufacturing. So for example ARM Holdings that designs the microchips found in most mobile phones, started on the Cambridge Science Park but licenses its products for manufacture in China not the UK. The best examples of Technopoles are to be found in France, particularly The Sophia Antipolis technopole near Nice and the large Technopolis around the Airbus plant in Toulouse. These are large schemes set within open landscapes and in both cases there is concern that the lack of facilities is undermining recruitment and the creative ethos of the companies located there.
47. The oldest enterprise park in the US, the Research Triangle Park in North Carolina, has experienced similar problems. Set up in the 1959 this had been struggling in recent years as companies preferred to locate in the larger cities

where they had access to a larger, better qualified workforce. Recent developments have therefore sought to create a greater mix of uses and a density of use, including mixing small start-up companies with larger businesses.

48. As outlined above this trend has been picked up by the Brookings Institute who have been promoting the concept of Innovation Districts as an alternative to Science Parks. They are defined as business districts that are 'physically compact, transit-accessible and technically wired'. They offer a mix of uses alongside large-scale industrial and business uses. This is based on the idea that even 'traditional' manufacturing needs to be linked into innovation networks for research and development, design and marketing.
49. The precedent studies below explore a number of case studies to draw out key ideas and concepts to inform the development of the master plan for the IAMP:

2.7.1 Trafford Park

50. Trafford Park in Manchester was the first modern industrial “estate” in the UK. Having originally been a deer park owned by the De Trafford family, it might be the first industrial area to be called a 'park'.
51. In 1911 the Ford Motor Company chose Trafford Park for its first factory outside the US, introducing the revolutionary concept of the production line simultaneously in Detroit and Trafford. The park would also become home to the Rolls Royce factory making Merlin engines for Spitfires and was a major centre for wartime production during both world wars.
52. The design approach for the scheme was masterplanned with a grid of streets. By the 1930s Trafford Park supported 75,000 jobs and its private railway system handled 3% of the UK's freight traffic. In the interwar years the park was hugely successful contributing to making Manchester an industrial powerhouse long after its textile industry had started to decline. In the 1980s it was designated as one of the UK's first Development Corporations and saw widespread environmental improvements. Today it is once more a successful employment location as well as being home to the Imperial War Museum of the North.

2.7.1.1 Key Points

- Mixed use local centre;
- Strong street hierarchy and grid layout;
- Compact setting (restrained by the Bridgewater Canal and the expanding city centre);
- Lack of investment in the public realm in some areas; and
- The plan below shows how the park has been developed around a strong street hierarchy.



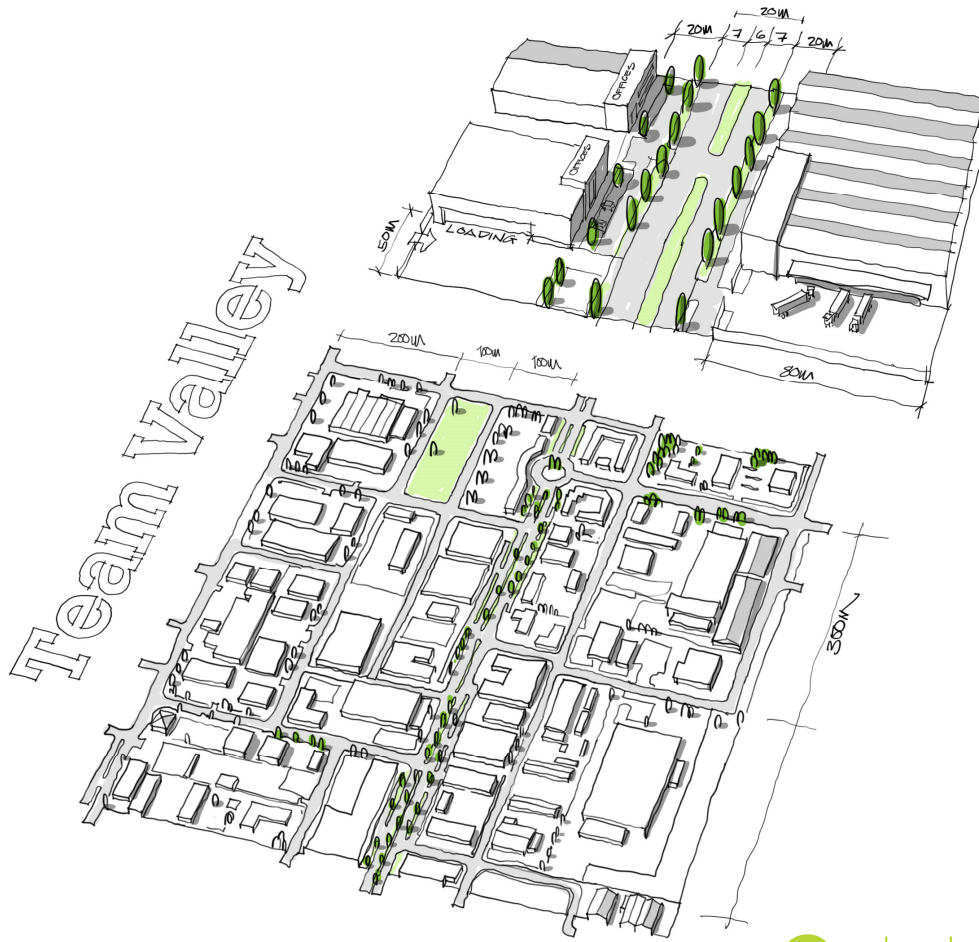
Figure 2: Trafford Park Typology Study

2.7.2 Team Valley

53. Team Valley opened in 1939, covers 280 ha and is planned around a linear central boulevard, with units arranged across a loose grid, which increases permeability through the site.
54. The area provides a range of spaces from retail stores to office space and light industrial uses and warehouses. Today the scheme is privately owned by UK Land Estates, having previously been owned by English Partnerships and the Regional Development Agency One North East. It is home to 700 businesses employing 20,000 people.

2.7.2.1 Key Points

- Strong street network helps with legibility within the scheme;
- Grid accommodates variety of different sized units efficiently enabling a greater density of units;
- Central boulevard/ highway helps create a sense of place;
- Permeable grid layout; and
- 25 minute bus connections to the centre of Newcastle.



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Drawing Title:	
Team Valley Typology Study	
Project Name:	
IAMP Sunderland	
Client:	
Sunderland and South Tyneside Councils	
Project Number:	Issue Status:
943	For discussion
Drawing Number:	Rev:
Scale:	Date:
Not to scale	10.11.2015

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Figure 5: Team Valley Typology Study

2.7.3 Cambridge Science Park

55. A joint venture between Trinity College and Trinity Hall, the park opened in the early 1970s and is now home to over 70 companies, offering space for mostly offices and B1(b) uses with some manufacturing facilities.
56. The park opened the Trinity Centre in 2000, accommodating a new conference centre, restaurant and bar and fitness centre. A 115 place child care nursery was also built in 2001 providing a valuable resource for parents on the Park. Other benefits also brought onto the Park included five broadband services, a park-wide CCTV system and bus service.
57. In 2005, The Cambridge Science Park Innovation Centre opened. The centre provides space for Research and Development (R&D) Businesses and start-ups. Planning consent has also recently been granted for a hotel.

2.7.3.1 Key Points

- Campus style development, with offices in clusters;
- Set around landscaped green space with large lakes. A footpath/ cycle path runs east west through the landscaped area;
- High quality public realm and landscaping, sense of identity in each cluster;
- High quality buildings help create distinct character;
- Buildings front onto landscaped areas, enhancing views and creating more pleasant workspaces; and
- Park is served by the guided bus way, although the stop is not central.



Figure 6: Cambridge Science Park

2.7.4 Waverley Advanced Manufacturing Park (AMP)

58. Waverley is a mixed use development on the edge of Sheffield, where residential, commercial and retail areas are being delivered alongside an advanced manufacturing park.
59. The advanced manufacturing park covers an area of over 40.5 ha and provides space for large industrial units to buy or let, smaller business units and offices and design and build plots for bespoke buildings. The park is designed as a campus and tenants to date include Boeing and Rolls-Royce.

2.7.4.1 Key Points

- Contains a mix of different uses and contains flexibility to accommodate large industrial units alongside smaller business units; and
- Limited public transport connections into Sheffield and Rotherham.



Figure 7: Waverley, Sheffield

2.7.5 Messestadt Riem (Convention City Riem), Munich, Germany

60. The Messestadt Riem is an employment area and convention centre built on the site of the old Munich Airport. Construction started from the mid 1990s, with the corresponding rapid transit connections being built in the following years.
61. The convention fair moved from their original site in the city to the new location in 1998. Many other companies also moved and established themselves on the former airport site.
62. Immediately west of the west entrance, the Messeseer See (Fair lake) was created, 390 m long (north-south) and 46 to 94 m wide (east-west), with a water area of 2.6 hectare.
63. The convention park and employment area are both successful and attractive high quality environments, given the building requirements (large warehouses and standard industrial units).

2.7.5.1 Key Points

- A uniform building line, green verges and tree planting help to create a sense of place on the smaller industrial areas - especially when compared to existing industrial developments in the UK today.
- No boundary fence at the front of the smaller industrial estate making the scheme feel more open.
- A grid layout allows for a compact development.
- Within the convention centre, a landscaping strip connects the warehouses/sheds and forms a link to the water feature to the west of the site, creating a pleasant environment for pedestrians.
- Within the smaller industrial area, parking is out of the way down the side of the industrial units.
- Strong sense of place across whole development
- Smaller units have green roofs which enhances the green credentials of the scheme.
- Smaller industrial area has one unit with lorries parked at the back which suggests the road network as designed can accommodate lorry movements without problems.



Figure 8: Smaller Industrial units adjacent to Messestadt Riem, Germany

2.8 Visioning Workshop

64. Building upon the space requirements for the IAMP set out in the Sunderland City Deal, a ‘visioning workshop’ was held with Sunderland City Council and South Tyneside Council in April 2015 to engage with both Councils in order to establish their aspirations for the IAMP. The workshop identified the following aspirations that were thought to be key to the scheme:

- **A ‘super supplier park’** – to provide the space necessary for automotive industry suppliers with the aim to deliver around 260,000 sq m floorspace over the next 15 years and safeguard land for future expansion;
- **Complementary** – to the functioning of the existing Nissan plant in both location and access arrangements;
- **Unique** –Aspiration to create a truly unique park which serves both the North East region and the UK;
- **Ecological Enhancement** – Aspiration for ecological enhancement of the River Don corridor and the protection of ecological assets around the site where possible alongside recognising the role of Green Belt;

- **Recreation** –A park which makes the most of its green setting and provides recreational networks through the site; and
- **Local Connections** – Connections for cyclists, pedestrians, riders and buses plus increased access to Town End Farm and Hylton Castle Estate through vehicular connections over the A19.

2.9 Plot Ratio and Density of Development

65. Careful consideration has been given to the quantum of land required for the IAMP to accommodate the 260,000 sq m of development. Accordingly, an assessment has been undertaken of the density of a range of comparator schemes which include similar businesses to those proposed for the IAMP, i.e. those from the advanced manufacturing and automotive sectors.
66. The comparator schemes have been reviewed through an assessment of:
 - Plot area (hectares);
 - Approximate total ground floor footprint of buildings within plots, i.e. assumes single storey buildings only; and
 - Generated Plot Ratio (building footprint to plot, which includes car parks, roads, and landscaping).
67. The assessment included such buildings as the Vantec building which operates as part of the Nissan supply chain and has been recently constructed at Hillthorn Business Park (A19 Ultra Low Carbon Enterprise Zone) adjacent to Nissan. This achieved a plot ratio of 0.4.
68. The assessment of comparators showed an average plot ratio of approximately 0.35. It is considered that using such an average figure is a robust means by which to calculate land take as it allows for occupiers to be accommodated both above and below this plot ratio level. It is considered that this is a conservative estimate due to the following reasons:
 - Some buildings within the example plots assessed are two and three storey office buildings, generating a higher GEA, therefore plot ratios will be higher;
 - Some buildings on the IAMP could be multiple storeys achieving a greater floorspace than assumed by the average plot ratio; and
 - Occupiers/ tenants will be likely to design their buildings to fit into the shape of the plot, whereas the analysis took account of leftover/ unused pieces of land which skew the figures.
69. Using the identified average plot ratio of 0.35ha generates a land requirement of 74.3ha. This means that to achieve 260,000 sq m of floorspace the minimum extent of the developable area will need to be 74.3 ha, to include space for the plot, parking, internal roads, landscaping and drainage.
70. The 74.3 ha figure excludes land outside of the development areas including primary roads and strategic landscaping.

2.10 Urban Design Audit of Land within the AAP Area and the Wider Area

2.10.1 Neighbouring Areas

71. The site sits on the edge of the Sunderland and South Tyneside built up areas, lying between West Boldon, the north western suburbs of Sunderland and Washington.
72. There are a number of industrial estates and business parks on the periphery of the site including the Stephenson Road industrial estate, Follingsby Park (Business Park) and Boldon Business Park.



Figure 9: Sites surrounding the IAMP

2.10.2 Connections and Movement

2.10.2.1 Gateway/ Arrival Points

73. The most direct vehicular access point into the site is off of the A19 onto the A1290. The topography of the site provides long views across the site from this point and is therefore an important gateway into the site.
74. A second important gateway exists to the south west of the site where the A1290 kinks to the north as it enters the IAMP site. This change in orientation provides the opportunity for a gateway to be created at this junction to mark the entrance into the site.
75. A foot/cycle bridge connects into the site from the residential areas south east of the site, crossing over the A19. This will be an important arrival point into the site by non-vehicular means.

2.10.2.2 Connections

76. Due to the current nature of the site, which is predominantly agricultural land, connections into and through the site are limited to a number of lanes, access roads to farms and roads which connect into the local highway network, such as the A1290.
 - Primary vehicular access into the site is off of the A19, via the A1290 which feeds into the site and connects with the A195, A182 and the A194 located south west of the site.
 - There are a number of lanes and tertiary roads including Downhill Lane, Follingsby Lane and West Pastures, which connect across the site.
 - The Great North Forest Heritage Trail travels across the site following Follingsby Lane and Downhill Lane. This trail is part of a wider network which follows the route identified on the map below.

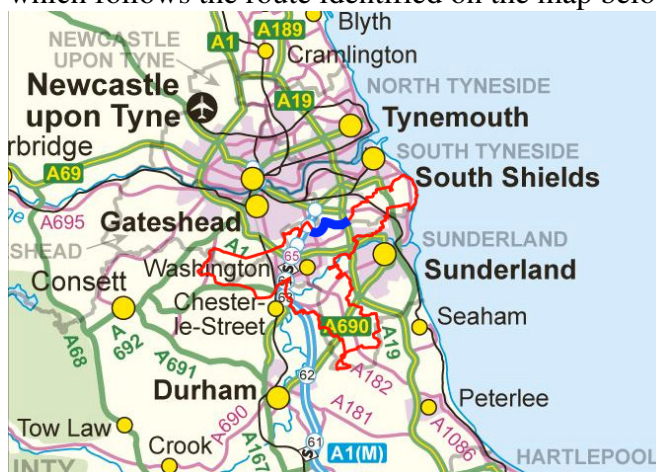


Figure 10: Great North Forest Heritage Trail

77. The section of the trail highlighted in blue passes through the IAMP site.
- There are a number of non-motorised access routes used by pedestrians, cyclists and horse-riders present across the site. These follow tracks along field boundaries, lanes, footpaths and roads.
 - Ordnance survey mapping shows a number of routes which seem to be designated as public rights of way (PRoW) being present within the site:
 - A PRoW is present in the South Tyneside area of the site, and travels east west connecting Follingsby Lane with West Pastures and then towards the A19. Where the path reaches the A19 there is a gate on either side, allowing access across, although this would be dangerous for pedestrians. On the east side of the A19, the PRoW continues and then connects with a bridleway travelling north towards Boldon.
 - The route mentioned above also connects midway with a route travelling northwards, in the South Tyneside area of the site. This PRoW connects to the A184. Once at the A184, the road can be crossed (again there is no designated crossing) and followed eastwards for 600m until it reaches another PRoW which crosses the A19 via a dedicated footbridge and then into the Boldon Business Park site.
 - In the Sunderland area of the site there is a bridleway/footpath west of Nissan which travels southwards and eventually joins the River Wear.
78. Figure 11 on the following page highlights the connections and movement features detailed above:

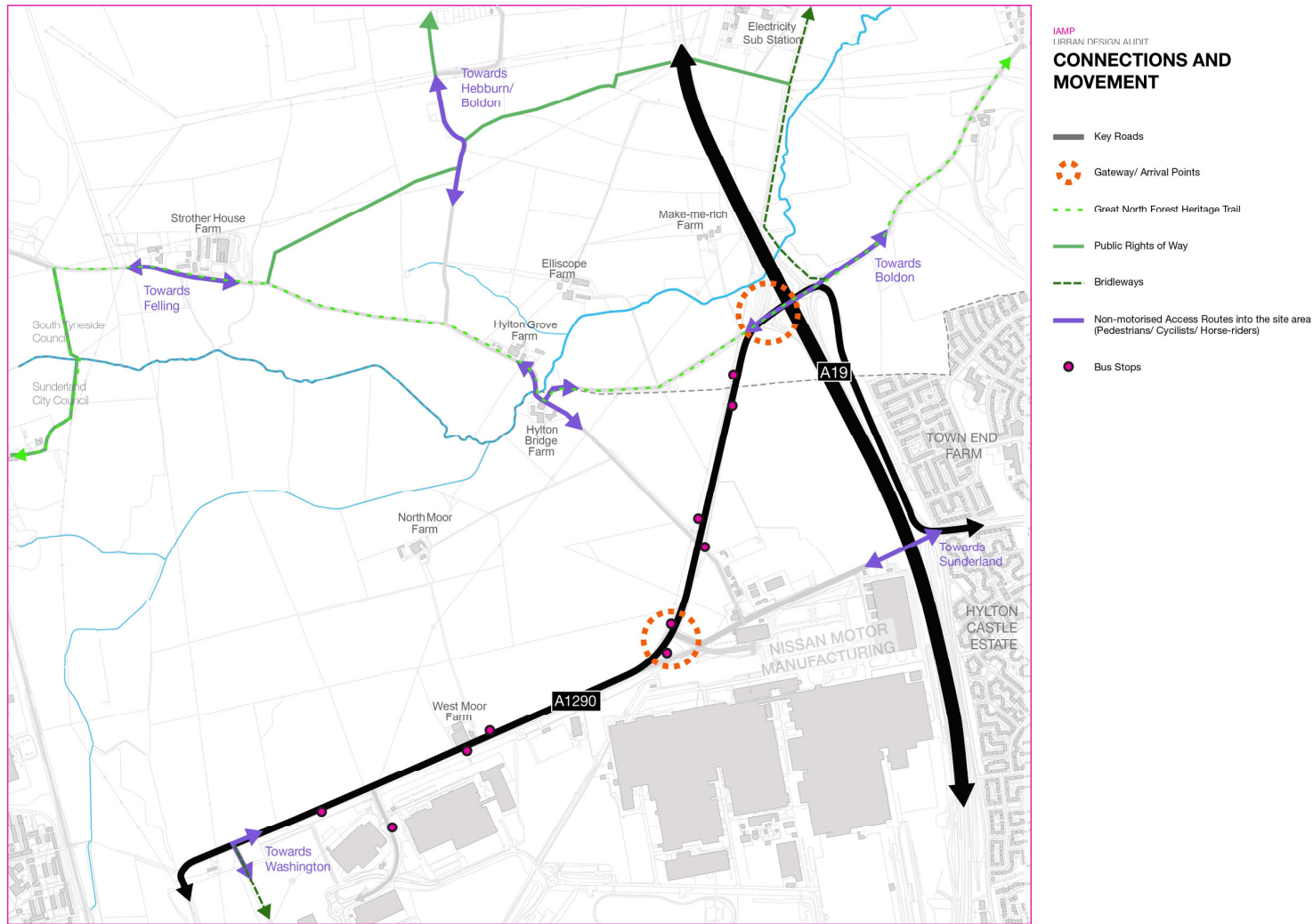


Figure 11: Connection and Movement Features

2.10.2.3 Key Features

Buildings and Listed Buildings

79. Most buildings on the site are farmhouses and farm buildings. There is also a small collection of buildings north of Hylton Grove Bridge.
80. The largest group of buildings lie in the south eastern corner of the site, opposite the Nissan plant. The North East Land, Sea and Air Museum is located off Washington Road, close to the Three Horseshoes Hotel/ Pub and a row of cottages, Usworth Cottages.
81. Hylton Grove Bridge crosses the River Don onto Downhill Lane and is Grade II Listed. The bridge is sandstone ashlar with one arch and likely built in the late 18th/ early 19th century.

Local Wildlife Sites

82. There are several designated local wildlife sites located within and surrounding the site, as identified on the plan shown in Figure 12 below. These are discussed in more detail in the Ecology Technical Background Report.

Areas of Woodland

83. There are also significant areas/parcels of woodland located within the site. The largest areas of woodland are situated close to the River Don, but there are other areas of woodland located in close proximity to Nissan and south of Hylton Bridge Farm.
84. The plan below highlights the features described above.

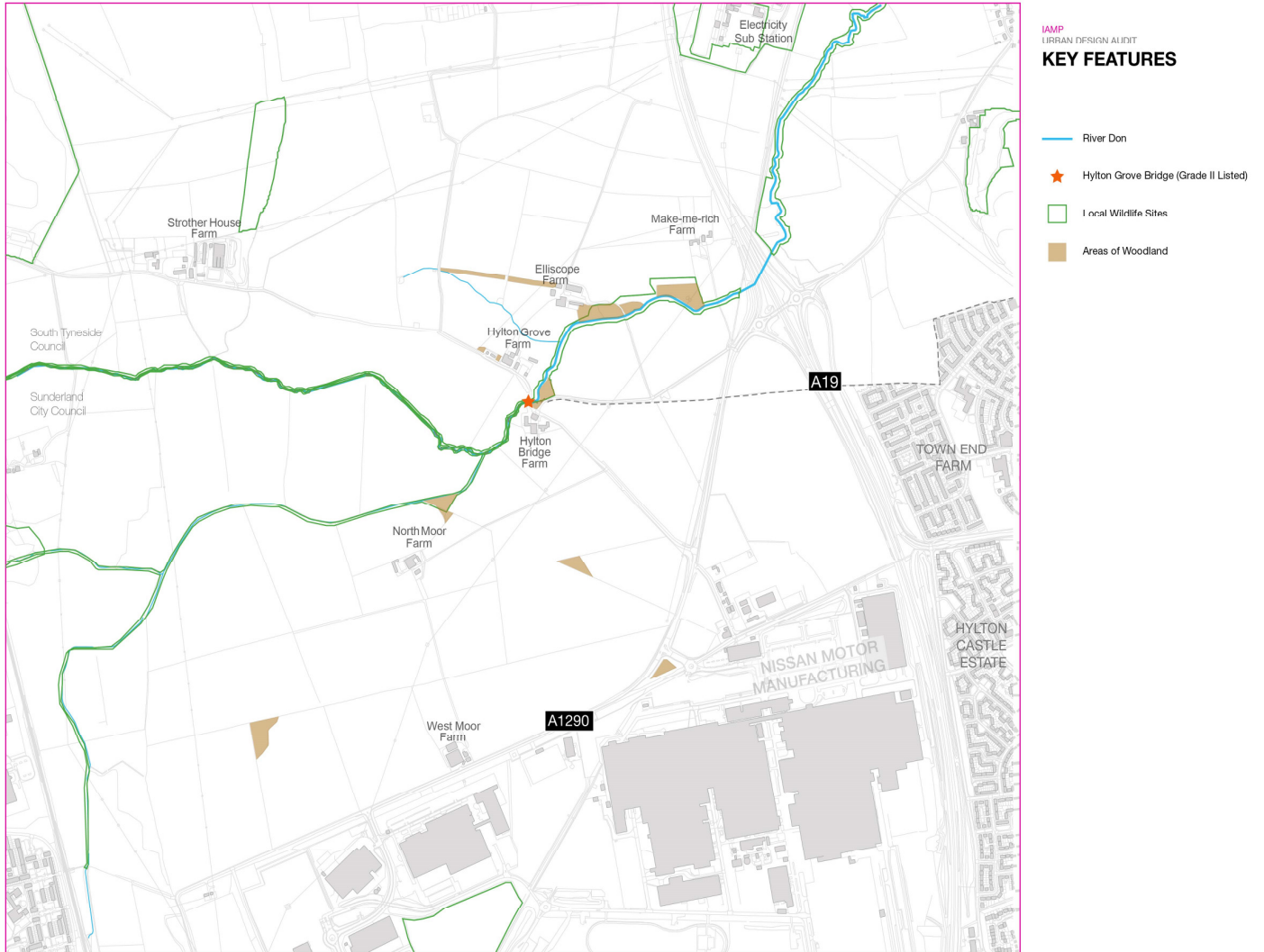


Figure 12: Key Features

Ecology

85. A range of wildlife habitats and ecological features are present across the site and further discussed in the accompanying background papers. Figure 13 below identifies the high number of ecological and landscape features present on the site. The Ecology Technical Background Paper sets out the key issues in detail.

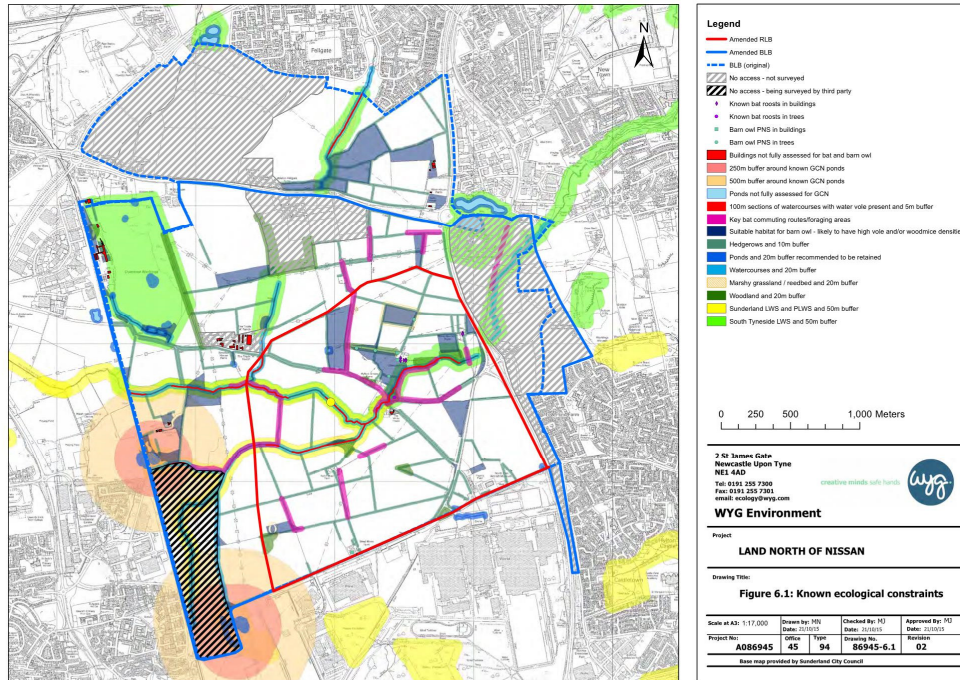


Figure 13: Ecological Constraints

Topography

86. The topography of the IAMP AAP site is relatively flat and low lying and therefore views into and out of site are limited. The River Don gently winds west to east across the centre of the IAMP site and encompasses many streams and ditches, which drain into the River along its length. These streams, along with field ponds and marshy areas located along and around the River Don provide an attractive setting for IAMP that if incorporated in a sensitive manner could provide a unique feature within the park providing attractive amenity space. This character could be further enhanced by integrating shallow sustainable urban drainage throughout the site.

Existing Utilities

87. There are a significant number of utilities lines crossing the site. These are shown on Figure 14 on the following page and include the following:

- Northern Power Grid underground cables;
- National Grid 275kV overhead line;
- Northern Power Grid 66kV overhead line;
- Northern Power Grid 11kV overhead line;
- Northern Gas Networks 'intermediate' pressure gas line;
- Northern Gas Networks 'Medium' pressure gas line;
- Private (non NW) foul;
- Private (non NW) water course;
- Private Main;
- Northumbrian Water combined;
- BT overhead plant; and
- BT underground plant.

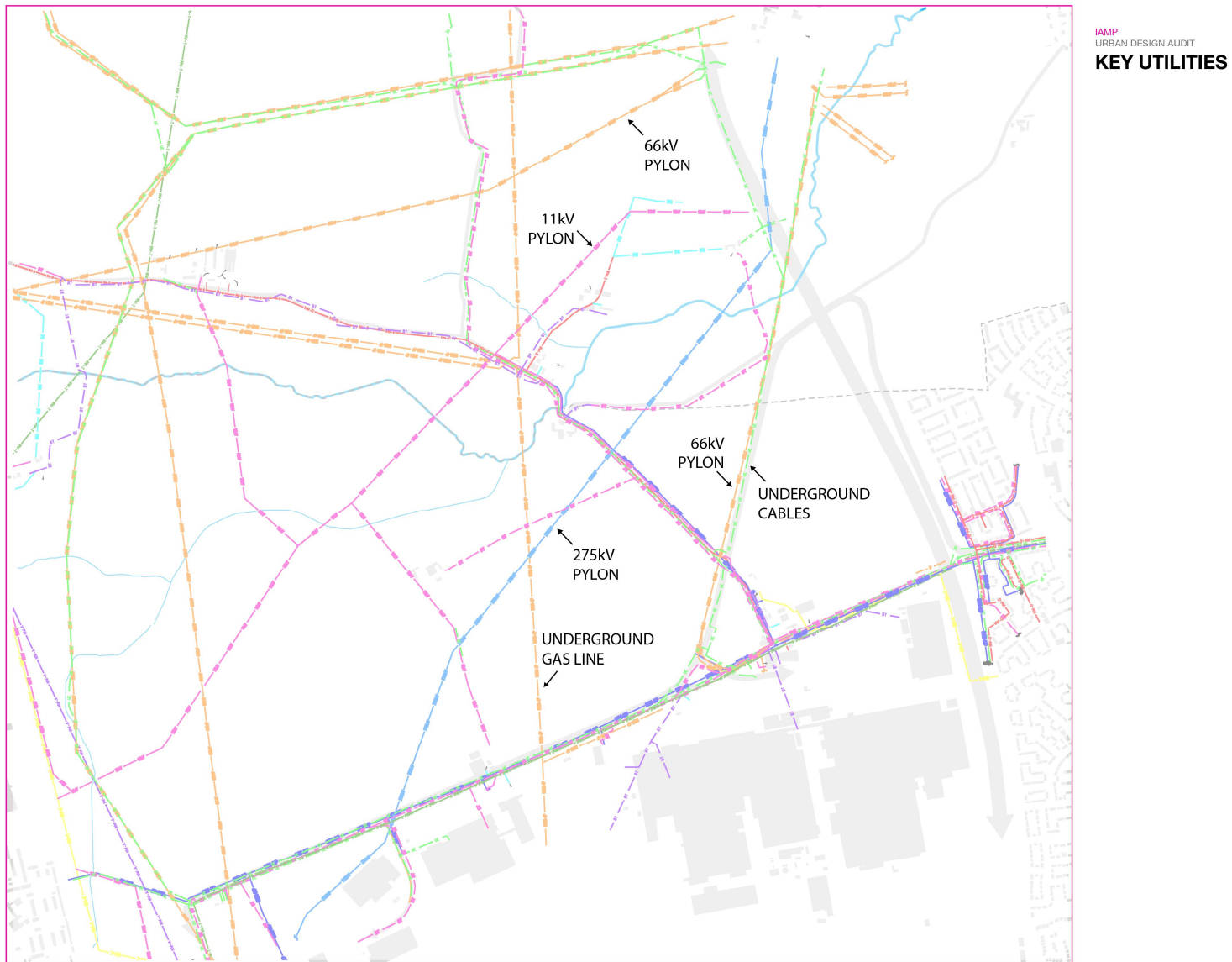


Figure 14: Existing Utilities Plan

88. The Councils' consultant Desco has confirmed the location of utilities and a hierarchy has been determined which identifies which utilities infrastructure will be most difficult to move/re-align. Figure 15 on the following page shows a plan that is colour coded to show an assessment of the impact of alteration or diversion to services. The colours on the plan denote the following:

- Red: Severe impact/cost diversion – services within this category should not be altered. Any alteration will incur severe costs and will be subject to long lead in times of 18 months+;
- Yellow/Orange: High impact/cost diversion – services within this category should be avoided but may be altered. Any alteration will incur high costs and will be subject to long lead in times of 12-18 months;
- Blue: Intermediate impact/cost diversion – services within this category may be altered. Any alteration will incur intermediate costs and will be subject to lead in times 6-12 months; and
- Green: Low impact/cost diversion – services within this category may be altered at low impact to the network. Any alteration will be subject to lead in times of up to 6 months.

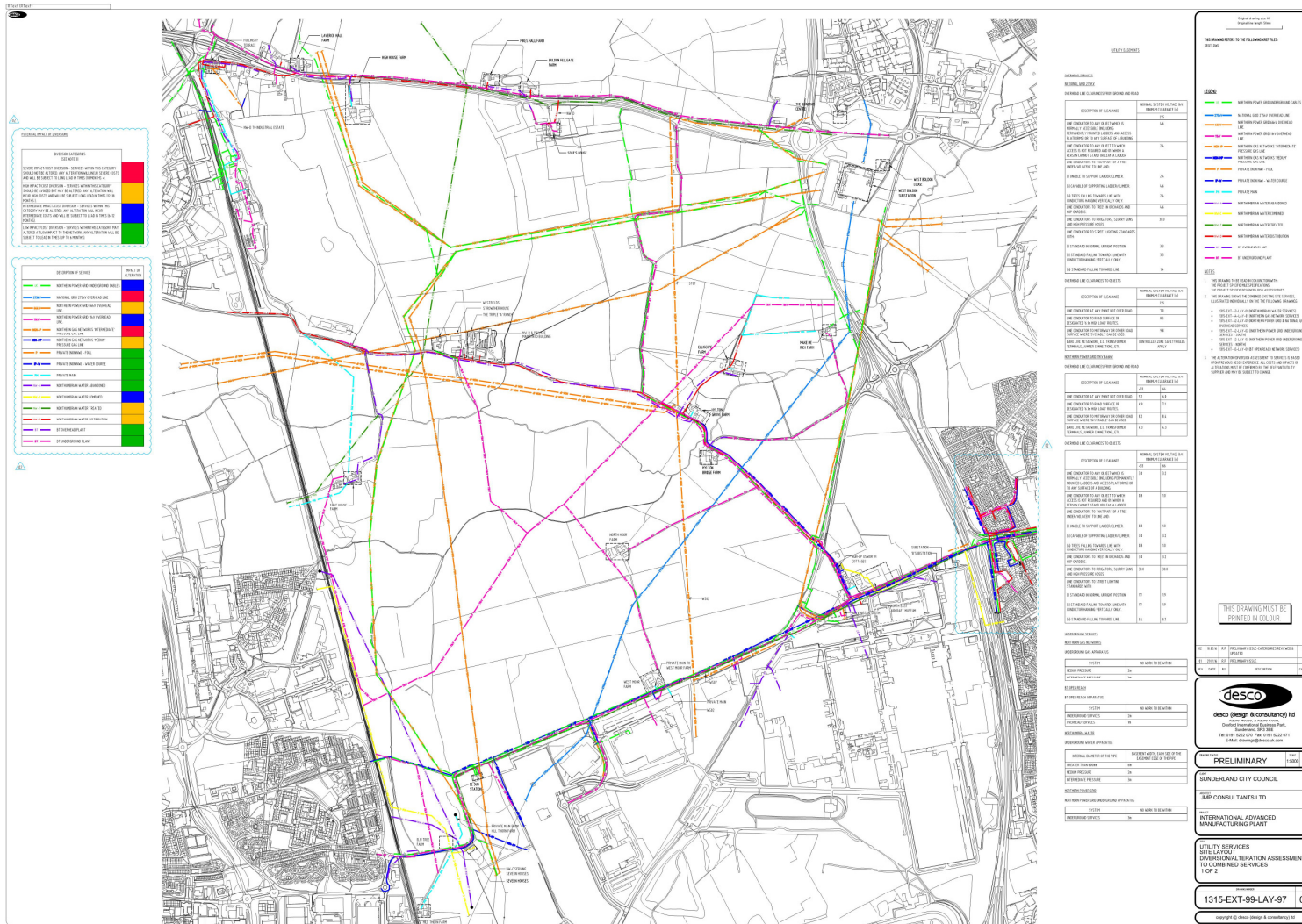


Figure 15: Utilities Constraints Plan

89. Two utilities fall under the ‘Red- Severe impact/cost diversion’ category: the National Grid 275KV overhead pylons that extend diagonally northeast/south west across the site; and the Northern Gas Intermediate Pressure Gas Line, which extends underground north-south. Following the advice from Desco regarding the significant impact in terms of cost and timescale of altering these utilities, these have been integrated into the illustrative Masterplan.
90. The position of both of these utilities, and in particular the overhead pylons, represents a strong, permanent boundary along its western edge, which is a positive feature in determining the extent of the IAMP development.
91. In addition to these ‘red category’ utilities consideration will need to be given to the placement of buildings on the site to ensure that:
 - Required overhead line clearances – which require a no-build buffer around pylons and power lines dependent on the use and pylon type – are adhered to; and
 - No buildings can be built over intermediate pressure gas lines, only roads.

Key Observations

92. The research undertaken in collating the evidence base has identified a number of issues:
 - There is a lack of specific design guidance for advanced manufacturing parks, due to the concept of an automotive-led advanced manufacturing park being relatively recent;
 - With the exception of South Tyneside Urban Design Framework there is a lack of ‘urban design’ guidance for industrial schemes; guidance often concerns the highways network and designing for safety. More detailed ‘urban design’ guidance for business parks does exist, but the IAMP is likely to accommodate large-floorplates manufacturing units and warehouses, which have different design requirements;
 - More modern industrial schemes and business parks tend to be designed around the highways network. Whilst this will be important in terms of movement of HGVs and delivery vehicles around the site, South Tyneside’s Urban Design Framework on ‘Shed Developments’ emphasises that this can result in a poor quality environment, with plots based around impermeable cul-de-sacs and large swathes of car parking; and
 - The earlier industrial schemes such as Team Valley and Trafford Park are planned around a linear grid layout which provides a more permeable development and allows for a range of plot sizes.

3 Key Issues

3.1 Overview

93. In response to the evidence base outlined above, this section identifies the key opportunities and constraints that the IAMP AAP should address.

3.2 Opportunities and Constraints

94. IAMP's location on a greenfield site presents the possibility to design and develop a unique and pro-actively planned employment development. The site does contain a number of constraints that will inform and influence the layout the site but the benefits of a previously undeveloped site mean that layout and plot forms can be optimally designed for a new 21st century advanced manufacturing park, capable of accommodating a range of future users, a high quality public realm and within enhanced high quality environment.
95. The design of the master plan will be important to ensure that the opportunity to develop a new advanced manufacturing park on a relatively unconstrained site is not missed and that the master plan and design of the new park responds to the following opportunities and constraints.

Interface with Nissan

96. The location of the IAMP adjacent to Nissan is a significant opportunity and one of the main drivers for the development of IAMP. The existing activity generated by Nissan along Washington Road/ A1290 will need to be considered when designing the park as a whole as this will play an important role in helping to animate the park during the initial years of its development.
97. As such it would be appropriate to locate the Hub adjacent to Nissan to ensure the hub benefits from the current activity generated by Nissan as well as serving the developing advanced manufacturing park.
98. The key opportunities and benefits for locating the Hub opposite Nissan are further discussed below:
- **Critical Mass of Activity:** Nissan currently employs over 7,000 workers who could directly benefit from services at the Hub, should they be located here. Employees could reach the hub within a five minute walk and those visiting the plant could benefit from the convenience of staying at a hotel in close proximity to Nissan. In the early development phases of the IAMP, having a large number of users already in situ, will also make the Hub more viable in this location.
 - **Creating a sense of place:** The proposed Hub location also links to the suggested network of green spaces and footpaths that extend through IAMP. A significant component of this will be a pedestrian and cycle route that runs along the edge of the development and via a landscaped space directly in the Hub. There will be a strong interrelationship between the Hub in this location and the green space, which together will create an attractive and unique environment.

- **Wider Industrial Land Uses:** The IAMP is not being developed in isolation and will need to respond to the existing industrial facilities, including the Turbine Business Park and within the area west of Nissan. Locating the hub opposite Nissan will mean that employees of these parks could also benefit from the services at the Hub.
- **Existing Uses:** The proposed location for the Hub is already in use in part as a commercial operation, with the pub/hotel and the museum, and has footfall and clientele from within the current development and the surrounding area. There is a strong logic to augmenting this existing facility, which is already established, by introducing additional facilities and attractions to enhance it and build on the current market. These uses would complement the Hub and the hub can draw on the existing building forms and street pattern of the building and uses in this area.
- **Connections:** A Hub in this location could also bring existing Nissan employees and new users of the IAMP together, an objective of the 'innovation districts' in fostering new relationship and creative partnerships.
- **Protecting the River Don Corridor:** Locating the Hub opposite Nissan, rather than in the centre of the IAMP should reduce the activity along the River Don Corridor and distance activity from the sensitive habitats located here.

99. Key constraints for locating the Hub opposite Nissan are also discussed below:

- **Distance from Northern area of the IAMP:** Locating the Hub opposite Nissan would mean those working in the northern area of the site would have longer to travel to get to the facilities located in the Hub. This may discourage employees from using the Hub or encourage them to use their cars. There would however be fewer employees working in the northern part of the site, compared with the current numbers at Nissan.
- In response to this, the masterplan will need to be designed to encourage walking and cycling from the northern areas of the site towards the hub. Public transport links could also be provided to allow quick and efficient connections across the IAMP site towards the Hub.
- The northern part of the IAMP could benefit from a smaller Hub. This would complement the main Hub and deliver services for the businesses located in this area. This could be based around the existing Elliscrope Farm buildings, which is in an accessible location and would benefit from views into the ecological corridor.

3.3 Enhancing the value of the River Don Corridor

100. The presence of River Don Corridor running through the centre of the IAMP site has the advantage of providing a unique setting to the Park providing an ecologically rich open space onto which a number of the buildings could be orientated. The IAMP scheme also provides the opportunity to protect and enhance the River Don ecological corridor through investment and stewardship.

3.3.1 Ecological and Landscape Features

101. A range of wildlife habitats and ecological features are present across the site and further discussed in the relevant technical background reports. A balance needs to be struck between preserving the most important features, meeting the space requirements for future development and providing a compact scheme.
102. Many of the habitats and ecological features sit within the River Don corridor and the introduction of an ecological corridor running along the River Don means that the majority of the important ecological assets sit away from the developable area.
103. There are however a number of ecological features within the developable area and as such it will be important that these are integrated in a sensitive manner.

3.3.2 Greening the Development

104. There is an opportunity for IAMP to take inspiration from the surrounding open and green nature of the site. There are opportunities to bring green corridors into the built areas thereby providing views from the new buildings over green spaces, creating pathways within the open space easily accessed from the development and providing recreation and leisure spaces within the park.

3.3.3 Surface Level Drainage

105. To accommodate a surface water drainage system on site it will be necessary to accommodate swales to capture surface water, dykes to move water across the site and storage ponds to hold the water on site before being released into the wider drainage network. The incorporation of this ecological infrastructure within streets and open spaces provides the opportunity to create 'green streets' and ponds that will create an attractive and biophilic environment thereby providing an attractive environment across the park.
106. These drainage channels also provide an opportunity to bring the character of natural and ecological corridor along the River Don deeper into the site and assist with the greening of the site.

3.3.4 Severance

107. In order to protect the setting of the River Don Corridor, a 50m "no-development" buffer has been defined along the length of the river. The exception to the no-development is a single bridge connecting the two sections of the park. The buffer will increase the separation between the northern and southern sections of the IAMP, but also enhance its semi-rural setting.
108. Uniting the two areas of the park, to ensure the IAMP operates as a single entity will need to be further explored through the more detailed design process. In particular attention will need to be made to alignment and orientation of the buildings and roads to ensure visual connections are maintained.

3.3.5 Floorspace Requirements

109. It will be important to keep the park as compact as possible when accommodating the floorspace requirements for the IAMP, as identified in the Sunderland City Deal. This will reduce the impact on the site and its setting. There are opportunities to learn from the Waverley AMP scheme and create a development with enough critical mass of businesses and people to support an innovation district with a vibrant hub and walkable streets.

3.3.6 User Requirements

110. The plots will also be determined by future user requirements, which are likely to be large units ranging from anywhere between 3,000 sq m to 50,000 sq m. Flexibility needs to be built into the master plan to allow for a range of occupiers to come forward.
111. Many of the proposed units will be designed for function and controls over design will be needed through the production of a design code to control and guide the development of individual buildings within the park, to encourage active streets and for example reduce and avoid the occurrence of large blank facades fronting onto streets.

3.3.7 Connectivity

112. As identified within the research into innovation districts, access to good public transport links is essential to the success of a vibrant and innovative park. As such it will be important that public transport links are provided to the scheme that match the scale and ambition of the project.
113. Any public transport services should be focussed on the primary routes through the site and should connect through to the wider public transport systems such as the Tyne and Wear Metro.

3.3.8 Public Rights of Way

114. A length of the Great North Forest Heritage trail, where it enters from the A19, travels through the IAMP site and onto Hylton Bridge, may need to be diverted. The route could be diverted to pass through the IAMP development, or along the outside edge of the park. The latter could allow it to be re-directed and developed as a non-vehicular access route.
115. The PRoW located in the South Tyneside area of the park travelling east west may also require diverting to the outside edge of the park.
116. The IAMP should not impact on any other public rights of way, although connections to routes into neighbouring areas should be considered when designing the master plan to ensure the site remains well connected for pedestrians, cyclists and horse-riders.

3.3.9 The Visibility of the Site

117. The visibility of the IAMP AAP site from surrounding settlements such as Fellgate to the north, from the Great North Forest Heritage Trail and surrounding public right of way (PRoW) network, and from transport corridors represents a potential constraint, owing to the open and relatively flat nature of the landscape.
118. The impact on views from the diverted PRoW and Great North Forest Heritage Trail routes could be addressed through the master plan by providing tree and foliage screening, restricting building heights in certain areas or positioning roads to maintain key views.
119. There are also public views from elevated areas such as Boldon Downhill and Penshaw Monument (Grade I Listed Building).

3.3.10 Views Towards Landmarks

120. The open and flat landscape of the IAMP AAP site and the surrounding area allows long distance views across the countryside towards elevated landmarks such as Boldon Downhill and Penshaw Monument (Grade I Listed Building). Any development within the IAMP AAP site generally could reduce this visibility.

3.3.11 Listed Buildings

121. Listed Buildings and their respective settings can present constraints to the proposed IAMP development. There are several Listed Buildings within the IAMP AAP area site and the wider surrounding landscape including:
 - Hylton Grove Bridge (Grade II Listed Building) which is located within the site. The bridge and its setting form an important local landscape feature;
 - Penshaw Monument (Grade I Listed Building, officially called the Earl of Durham's Monument) which is located approximately 4.4km to the south of the site and the elevated location of Penshaw Monument means it is a highly prominent landmark with numerous views towards it from the wider landscape;
 - Scots House (Grade II* Listed Building), the stables at Scots House (Grade II Listed Building) and Scots House gatehouse, walls gates and gate piers (Grade II Listed Building) which are located to the north of the IAMP AAP site off the A184;
 - Boldon Fellgate Farmhouse (Grade II Listed Building) also located to the north of the IAMP AAP site off the A184;
 - Laverick Hall and linked outbuildings, and barn ranges at Laverick Hall (both Grade II Listed Buildings) located to the north east of the site off the A184;
 - Downhill House, the pair of lodge cottages at the entrance to Downhill House, Downhill Farmhouse, the limekiln to the south east of Downhill Farmhouse, and the barn and gin-gang to the south of Downhill Farmhouse (all Grade II Listed Buildings) are located to the north east of the IAMP AAP site across the A19; and
 - Usworth Hall Washington Development Corporation Headquarters (Grade II Listed Building) located to the west of the IAMP AAP site in Washington.

122. Development within the IAMP AAP site could adversely affect the setting of these heritage features. The Environmental Statement accompanying the IAMP Development Consent Order (DCO) will consider these issues further and what mitigation may be appropriate.

3.3.12 Existing Utilities

123. There is utilities infrastructure across much of the site. Whilst some overground/underground lines follow road lines and field boundaries, there are a number of lines which cut through the site and create awkward barriers to development.
124. Advice on the location and sensitivity of utilities constraints has been provided by Desco, and the design and layout of the development should seek to integrate the following major utilities infrastructure within the plan:
- National Grid 275kV overhead line;
 - Northern Gas Networks Intermediate Pressure Gas Line;
 - Northern Power Grid 66kV overhead line; and
 - Northern Gas Networks Medium Pressure Gas Line.

3.3.13 Future Utilities

125. Surface water drainage will need to be incorporated across the site. The character of the area where water is present on the surface within streams, ponds and marshes points to the integration of a shallow surface water sustainable urban drainage approach based on swales, dykes and ponds. This strategy is discussed in more detail in the Flood Risk and Water Management Technical Background Report.

4 Design Response

4.1 Overview

126. Creating a scheme of international standing requires a design response of international quality. This should in turn create the environment to attract that international investment and allow the park to thrive.
127. This section sets out the key design requirements to ensure that the delivered scheme matches the ambition of both Sunderland City Council and South Tyneside Council.

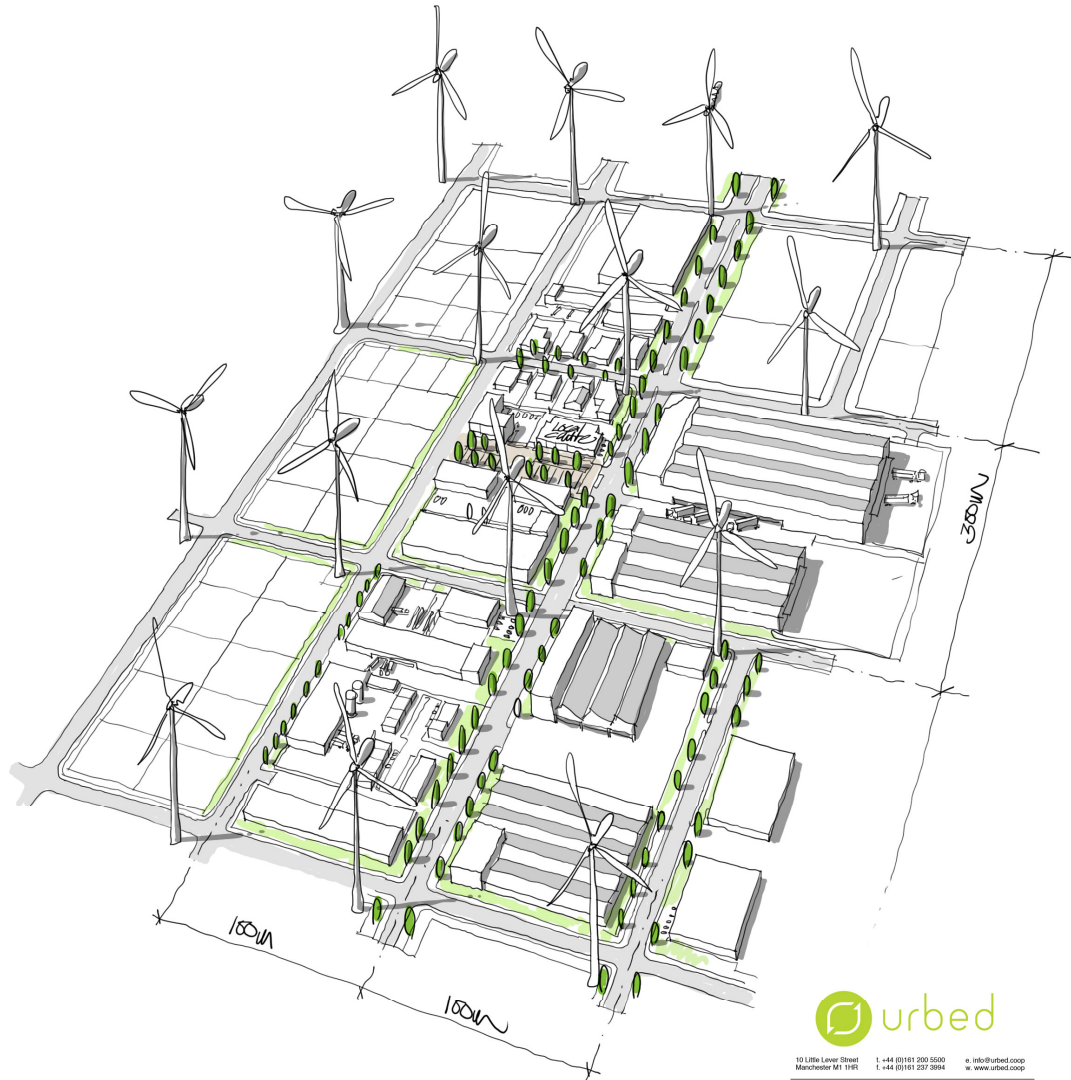
4.2 Design Principles to be Progressed Through the AAP

4.2.1 A New Design Concept

128. The concept for the IAMP is to provide a flexible layout that can accommodate a range of businesses. This involves creating a compact park based on a permeable grid layout that is fully integrated with pedestrian paths and cycle routes, a sustainable urban drainage system and the landscape.
129. The layout should be able to cater for a range of plot sizes but also provide space for a mixed use centre (hub), to provide a range of ancillary uses acting as the local centre for the scheme.
130. Landscaping of the site will be an integral part of the development and should be a thread running through the Design Code accompanying the DCO.
131. The IAMP should involve works to improve the quality of the River Don corridor, which passes through the AAP area, providing opportunities for ecological enhancements. Ecological mitigation will also need to be considered in the design code accompanying the DCO.
132. The design should create a clear and attractive edge to the development so that the green setting of the River Don is not compromised. The green context should also be threaded through the scheme through the SuDS network and the retention of local ecological features.
133. **AAP recommendations:** It is recommended that the AAP includes a policy which sets out the high level principles for the layout and design of the IAMP master plan. This will encourage a compact, permeable development, which is attractive to future occupiers and flexible enough to accommodate a range of businesses. The design principles in the AAP and DCO should be based on this Technical Background Report.
134. The design principles below explore this design concept in more detail and look to provide a creative response to the design of the IAMP, taking note of information gathered in the evidence review.

4.2.2 Creating a Sense of Place

135. A new IAMP typology has been devised through studying precedent schemes from across the UK, Europe and the USA and incorporating the urban design guidance provided in South Tyneside's Urban Design Framework. The ultimate aim of this typology study is to create a development which creates a sense of place but functions efficiently for the businesses located within it. The layout should therefore be dictated by the principles below:
136. **Grid:** The master plan will be based on an open grid rather than a closed set of cul-de-sacs. This has a certain logic since industrial buildings are generally orthogonal and fit best onto rectangular sites. In both cases the grid is based on a module of roughly 100m by 300m (measured to the centre-line of the streets). At the centre of the scheme these blocks might be further broken down to accommodate smaller businesses and offices. Towards the edge of the scheme the blocks are combined to form larger plots accommodating companies, which require larger floor plates.



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Drawing Title:	
IAMP Typology	
Project Name:	
IAMP Sunderland	
Client:	
Sunderland and South Tyneside Councils	
Project Number:	Issue Status:
943	For discussion
Drawing Number:	Rev:
Scale:	Date:
Not to scale	10.11.2015

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Figure 16: IAMP Typology

137. **Hierarchy:** A street network will then be laid over this grid and connected to existing roads and key transport corridors such as the A19. This street network will be hierarchical in order to encourage the efficient movement of people and goods around the park. The SuDS system will also be accommodated within this hierarchy of streets, to ensure the efficient management of water around the site. The streets types to be delivered are explained below.
138. **Boulevard:** This follows the existing A1290 route and acts as the central spine road through the site, connecting the development to the A19. This route will feed into the road network described below, which will serve and connect to all areas of the park.
139. **Primary:** These routes will feed off the boulevard and take traffic across the River Don corridor to the northern area of the park. These routes will carry vehicular traffic, cyclists and pedestrians and will feed into the street types described below.
140. **Secondary:** These routes will prioritise the movement of lorries and vans transporting goods between manufacturers. In particular, this route should be designed to encourage efficient movement of goods between new businesses and the Nissan plant.
141. **Local Streets:** These routes will serve the smaller plots around the scheme.
142. **Existing Roads:** These are the existing roads around the scheme, which will be retained and link into the road network described above. Some of these roads are likely to prohibit vehicle access and instead only permit access to pedestrians, cyclists and accommodate bus services.

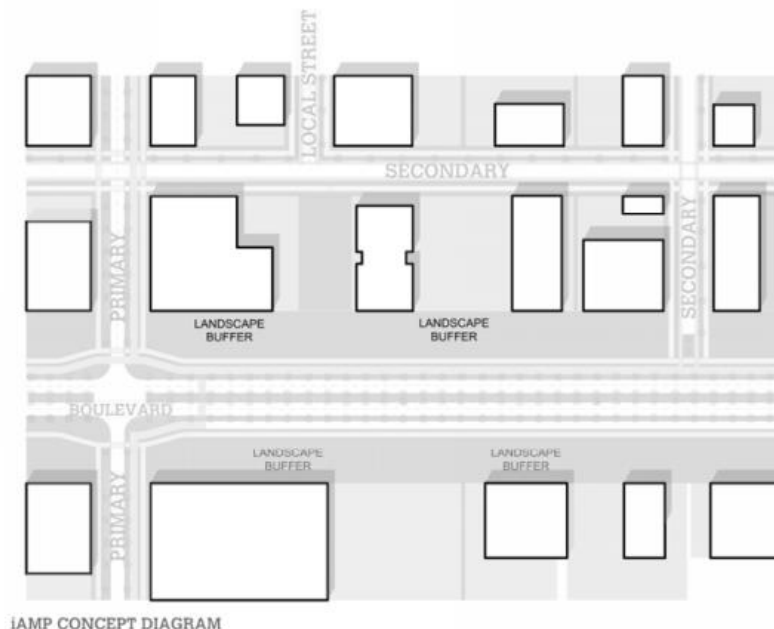


Figure 17: IAMP Concept Diagram

143. **Plot Divisions:** The development blocks can be broken down to create a large variety of plot sizes. A 100m deep block may contain a single company or could

be divided into two 50m deep plots or further broken down into smaller plots. Elsewhere blocks are combined to accommodate much larger companies. Generally the plots are smaller towards the centre and larger on the edge of the site.

144. **Orientation:** Traditionally industrial buildings have had a front, designed for show, and three elevations that are purely functional. The orientation of these "fronts" will be determined by the road hierarchy. Buildings will be required to front onto the street edge which sits higher in the road hierarchy. Along the River Don corridor, there is an opportunity for the 'fronts' to overlook this corridor to make the most of views, meaning for buildings here, fronting onto the River Don Corridor will take precedence over providing a frontage onto secondary streets.
145. **Building line:** On the 'front of house' streets factories all tend to follow a common building line. This will be required to be fixed in a Design Code document submitted with the DCO.
146. **Centre:** This will contain the ancillary uses and has been termed as the 'Hub'. This Hub will accommodate a variety of uses, which will concentrate and encourage social activity and provide opportunities for business development. Design policies relating to the hub should be set out in a separate policy.
147. **AAP recommendations:** It is recommended that the AAP includes a policy which sets out the overarching principles for addressing the key road, public realm and landscape elements of the master plan. This will encourage a consistent approach towards external spaces across the IAMP site, which will help develop a unique sense of place and strong identity.

Interface with Nissan

148. Consultation with Nissan has been undertaken to determine the most beneficial highways layout for both the existing businesses in the local area and future occupiers of the IAMP. The grid allows for internal vehicle movements to and from Nissan avoiding conflict with through traffic, as well as enabling ease of permeability for people and goods, including maximising potential supply chain benefits.
149. This principle has also steered the location of the hub which is proposed close to the main Nissan entrance to increase access from the Nissan plant to encourage employees to use the facilities here. This will seek to ensure successful integration between existing uses and the new development within the AAP area.

4.2.3 Provision of a Hub

150. Alongside the provision of advanced manufacturing and distribution floorspace, this principle seeks to provide a mix of ancillary uses such as managed workspace, training facilities, conference facilities and a hotel.
151. These facilities would be located in a central hub and would be used to attract future occupiers by offering these additional services for employees, and opportunities for future business development.
152. This would be a “Unique Selling Point” for the scheme and is based on the theory of innovation districts, which encourages mixed use parks which attract companies and provide spaces for employees to socialise, network, acquire skills, spread ideas and share knowledge.
153. **AAP Recommendations:** It is recommended that the AAP includes a policy which sets out which ancillary uses are permitted within the IAMP, where they should be located and the scale of the uses considered appropriate to support the employment uses on the IAMP site.
154. The location of the ancillary uses should primarily be located within a ‘hub’ with some allowance for small scale units within other parts of the IAMP site. The AAP policies should also set out guidelines for the development of a “hub” to create a focal point and sense of identity.
155. The AAP should also promote the hub as a node for buses, cycle and pedestrian routes to encourage sustainable forms of transport.

4.2.4 Improving Access and Connectivity

156. This has three aspects: First, it seeks to optimise vehicular access into the site from the existing road network, in particular the A19, as well as promoting new highways connections to optimise access to neighbouring residential areas at Town End Farm and Hylton Castle and on to the City of Sunderland and the Port of Sunderland.
157. Second, this principle seeks to optimise access and permeability for cyclists and pedestrians into the developed areas of the park, to encourage people to walk and cycle to work. The use of a permeable grid, as opposed to the usual cul-de-sac layout, is important in creating a walkable environment.
158. Third, this principle seeks to increase access to the site through sustainable transport networks, providing bus stops across the site.
159. **AAP recommendations:** It is recommended that the AAP includes a policy which sets out how the IAMP will promote and facilitate public transport use. This will ensure that sustainable travel modes are available for workers and visitors, thereby minimising reliance on the private car.

4.2.5 Movement Logistics

160. The layout of the development needs to respond to the nature of business to be carried out in the park. This includes making sure the road network is designed to allow the efficient movement of HGVs around the site. HGVs could potentially

be distributing goods to and from different businesses, as well as from suppliers to the Nissan plant, alongside employees who will be commuting in and out of the park. This principle also seeks to address the impacts of future technologies such as driverless lorries and cars and how the road network can be designed to accommodate these.

4.2.6 Opportunity for Expansion

161. In addition to delivering the 100 ha park, a further 50 ha of land is to be safeguarded for potential future expansion of the park. It is important that this safeguarded land is considered as part of an overall comprehensive design for the entire site to ensure that the safeguarded land is connected and integral to IAMP as a whole.
162. **AAP recommendations:** It is recommended that the AAP includes a policy which identifies areas of safeguarded land within the IAMP. This will ensure that sufficient land is safeguarded to accommodate future development needs, thereby securing the long term sustainability of the IAMP and ensuring that Green Belt boundaries endure beyond the end of the IAMP AAP period.

Enhancing the Value of the River Don Corridor

163. The IAMP presents an opportunity to further safeguard and enhance the River Don corridor for the benefit of the local environment. This principle also seeks to guide development away from any areas which are at significant risk of flooding.
164. As such a 50m buffer zone has been incorporated with the Policy plan to ensure the safeguarding of the River Don Corridor.
165. Designs for the areas adjoining the River Don buffer should look to orientate buildings onto to the corridor and avoid presenting blank facades onto the corridor. In doing so that the buildings will benefit from views over the corridor.
166. **AAP recommendations:** It is recommended that the AAP incorporates a buffer zone along the River Don where development would be restricted. This will ensure the protection of important species and habitats which exist along this corridor. The AAP should also encourage the use of green infrastructure to provide green links between habitats, landscape, connectivity and settlement break.

4.2.7 A Surface Level Strategy for Drainage

167. This principle seeks to incorporate a surface conveyance system into the grid network. This includes a series of dykes and wet and dry swales which will manage water movement around the site at street level as well as introduce planting and landscaping which can improve the street environment.
168. **AAP recommendations:** It is recommended that the AAP includes a policy which sets out how developments will be required to demonstrate that flood risk and drainage have been appropriately considered and addressed.

4.2.8 Providing Opportunities for Recreation

169. This principle seeks to maintain and enhance connections into the Great North Forest Trail which travels through the AAP area. This will increase access to the countryside, particularly from neighbouring areas, and will increase opportunities for recreation, which can benefit health and well-being.
170. **AAP recommendations:** It is recommended that the AAP encourages appropriate recreational use of green infrastructure within the IAMP site, whilst ensuring that there is a low risk of harm to ecological receptors. Recommended provision should include a green buffer along the River Don and the incorporation of informal green spaces within the IAMP site.

4.2.9 Avoidance of Existing Utilities

171. Any future scheme could incorporate the 275KV overhead pylons and the intermediate pressure gas lines, while also seeking to incorporate other utilities infrastructure, to avoid the need to alter infrastructure as much as possible.
172. In a number of cases the overhead features can act as clear boundary that can act as a positive component by providing a strong edge to the IAMP. The design code for the DCO should demonstrate how the scheme has been designed to achieve this, without jeopardising the layout and permeability of the scheme.
173. The principles detailed in the sections above will shape the delivery of a permeable, compact park which creates a sense of place but retains flexibility in form and plot layout for future developers.
174. The plan on the following page seeks to illustrate some of the key design principles outlined above.

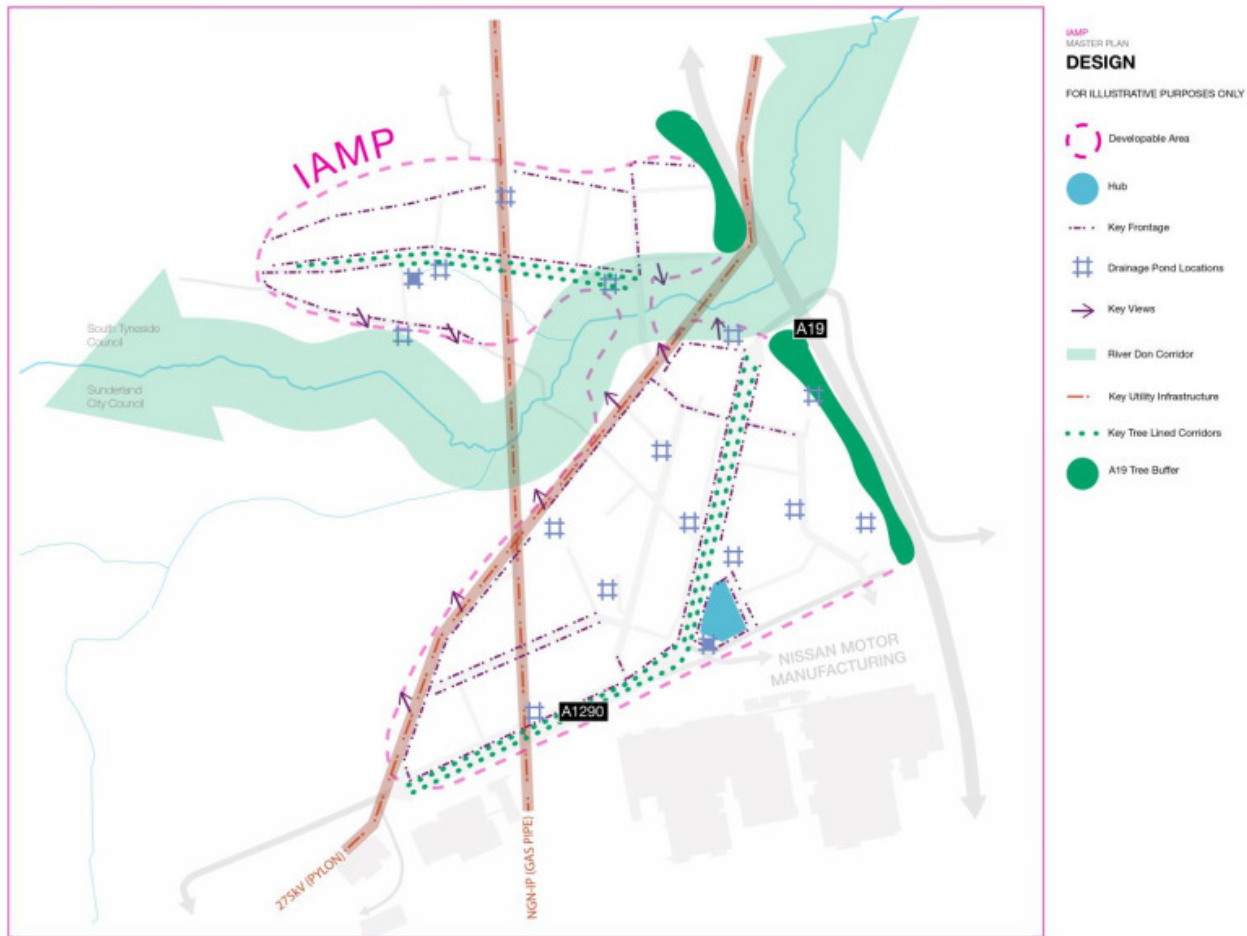


Figure 15: Design principles

4.3 The Design and Access Statement and Design Code

175. In order to identify how the design objectives/ principles described above have been addressed, a detailed and robust Design and Access Statement, Design Code and Landscape Strategy will be required as part of the DCO application for the IAMP.
176. In addition to the design objectives, there are a number of detailed design elements, which will need further consideration in developing the DCO scheme. The extent to which these have been further developed should also be evidenced within the design code. These elements are set out below.

4.3.1 Emerging Highways Layout

177. Following consultation with Highways England and each Council's Highways department, the road network will need to be designed and tracked to ensure it can accommodate the vehicular requirements for the development. The design code accompanying the DCO should also demonstrate the overall approach to parking provision across the AAP area.

4.3.2 Land and Topography

178. The design code accompanying the DCO should demonstrate how the existing topography of the site will be utilised to minimise cut and fill operations and re-use material on site where feasible.

4.3.3 Landscape Strategy

179. A high quality public realm and landscaping scheme should be delivered across the site. This should also be informed by a micro-climate study and daylighting analysis to ensure any public spaces can be used as intended and are pleasant places for people to use.
180. Details and locations of ecological and landscape mitigation works should be an integral part of the design, with opportunities for enhancement identified within the development plots as well as within the River Don corridor. This should consider the use of green/brown roofs and walls.

4.3.4 Building Design

181. The Design Code submitted with the DCO should provide guidance on individual plots, addressing plot layout, lighting, signage and the position of service and delivery areas, as well as detailed design considerations in relation to individual buildings. This will include matters such as the position of entrances, the amount of active frontage, materials and colour palette. The Design Code will seek to guide the development of the site. This will ensure that wayfinding and placemaking will be integrated within the development to enhance the overall character of the development.
182. A key aspect of the Design Code will also be setting out the parameters for building height across the IAMP, which proposals for development will need to address.
183. The Design Code should also explore the potential for the use of grey-water systems to reinforce the landscaping management of the site. This should be explored as part of the site-wide drainage strategy to accompany the DCO.
184. Individual developments should be encouraged to achieve BREEAM Very Good or Excellent ratings, where feasible. It should be recognised that these ratings may not be achievable on all development types dependent on the nature of the activities proposed.
185. The Design Code accompanying the DCO should demonstrate a site-wide approach to the development of low-carbon and renewable technologies. This should include linkages of development plots to any decentralised energy systems.