

Economic Benefits and Needs Assessment



# A Report by Nicol Economics

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# 1. Introduction

# **Purpose of the report**

1.1 This report has been commissioned by Humber Tech Park Ltd. It sets out an assessment of the overall economic benefits from the proposed Humber Tech Park development.

# The site and development proposal

- 1.2 The proposed development is a new type of data centre that is designed to "train" Artificial Intelligence (AI) models. These data centres require very high levels of computing capacity and, in consequence, power capacity.
- 1.3 The proposed Humber Tech Park application site extends to 76 hectares overall and is located in North Lincolnshire. This site is located between the A160 and the A180 to the west of Immingham and South Killingholme. The site lies within the North Lincolnshire local authority area but is adjacent to the boundary with North East Lincolnshire.
- 1.4 The nearest large settlement is Immingham (in North East Lincolnshire) which is about four miles away, Barton upon Humber, Grimsby and Scunthorpe are respectively 10, 11 and 19 miles distant from the site. The site is located close to the South Humber Bank port and energy cluster and employment area. This is one of the largest industrial and energy locations in the UK.
- 1.5 The proposed data centre campus would provide an IT Load<sup>1</sup> of up to 384MW. The data centre facilities when complete would cover an area of around 24.8 hectares (61 acres) within the overall site and would compromise three buildings totalling 309,000 sqm (GEA) including all plant and machinery<sup>2</sup>. This area excludes access and landscaping areas and the proposed glass houses. This would be the largest data centre in the northern part of the UK<sup>3</sup>.
- 1.6 The Proposed Development a covered by the planning application comprises:

"The construction of a data centre of up to 309,000 sqm (GEA) delivered across up to 3no. buildings, including ancillary offices, internal plant and equipment and emergency back-up generators and associated fuel storage. Other works include internal roads and footpaths, cycle and car parking, hard and soft landscaping, security perimeter fence, lighting, drainage, an electricity substation, a district heating unit, horticultural glass house, and other associated works and infrastructure on land south of A160, South Killingholme."

- <sup>2</sup> The total floor areas consist indicatively of: offices and data centre, 128,000 sqm; enclosed generator area, 46,000 sqm; and gantries (for storage and location of M&E equipment and other plant), 135,000 sqm.
- <sup>3</sup> By the end of 2024, the total supply of co-location data centre capacity across the North of England was forecast to be around 60 MW. These are figures from research by CBRE in their "North of England Data Centre Market Study", February 2023. There has been a recently approved 36MW data centre in Stockport in Greater Manchester, but nothing approaching the scale of what is proposed at the Humber Tech park



<sup>&</sup>lt;sup>1</sup> "IT load" or "critical power" is the key measure of data centre capacity. It refers to the data centre power load that is consumed or is dedicated to IT equipment such as servers, storage equipment and communications switches and routers. Power for lighting or cooling the data centre is excluded from "critical" power. Data centres - whether managed internally or outsourced - are sized based on the current or expected amount of critical power.



# 2. Data centres

# The history of data centres

- 2.1 Data centres have been around for many years, but their role, until recently, has been localised and business specific. The precursor to modern day data centres were the large servers (or mainframes) that were developed in the 1950s and 1960s. These provided secure data storage for industrial business or organisations in the days before the internet and network computing. Even small firms would have their own server that provided back-up data storage for the data generated within an enterprise. These were, in effect, very small and local data centres. These early data centres were often in a specific part of an enterprise's building, but in some cases were off-site for further security and backup but dedicated to the business.
- 2.2 When the internet took off in the 1990s and 2000s, the amount of data generated by individuals and organisations started to grow very rapidly, as did the means of internet and digital based communication. Increasingly, organisations across the private and public sectors moved to business models where data and information was shared via intranets that required data to be shared and stored somewhere secure (in what became known as enterprise data centres). In parallel, the development of social media platforms such as Facebook, Instagram, YouTube, Twitter etc led to an explosion in the amount of personal data generated and shared that also had to be stored.
- 2.3 During the 2000s, cloud computing became commercially available and revolutionised the nature of data centres. Cloud computing is defined as the use of "pooled, centralised computing resources (including data storage and processing) that are provided to customers on-demand, often over the internet"<sup>4</sup>. The key revolution was that third party providers were now able to store data for individuals and organisations over or in "the cloud", thereby supporting intranets and business wide platforms rather than this being done in-house. The term "cloud" is something of a misnomer as this data storage takes place in data centres located in physical sites on the ground.
- 2.4 Every time a mobile phone, smart TV or computer user accesses internet services such as search engines, apps, or documents, this requires instant access to the data needed for and associated with these activities. This is as true for an on-line flight or holiday booking service as it is for the NHS App that stores Covid-19 passports or a whole range of cloud-based services from Spotify for music, to BBC iPlayer and Netflix for TV and films. It is also true for document editing and sharing platforms (such as Google Docs) and video conferencing services such as Zoom and Microsoft Teams.
- 2.5 The data economy and society that we now live in requires **key digital infrastructure** to operate successfully. The UK Government's National Data Strategy<sup>5</sup> describes this as "the virtualised or physical data infrastructure, systems and services that store, process and transfer data" and explains that this includes:
  - Data centres providing the physical space to store data;
  - Peering and transit infrastructure enabling the exchange of data (what is sometimes referred to cabling or fibre optic connections); and



<sup>&</sup>lt;sup>4</sup> "Cloud Computing", POSTNOTE Number 629, The Parliamentary Office of Science and Technology (POST), June 2020

<sup>&</sup>lt;sup>5</sup> The "UK National Data Strategy, Consultation", DCMS December 2020, leading to "Government response to the consultation on the National Data Strategy", DCMS, May 2021 (the NDS is an evolving strategy that is updated online)

• Cloud computing - providing, as noted above, the virtualised computing resources that are accessed remotely.

# The main types of data centres

- 2.6 There are a variety of types of data centres. Until the very recent advent of AI training data centres, the four main types of data centres developed<sup>6</sup> are:
  - **Enterprise** data centres (that are bespoke to one firm and are a continuation of the earlier forms of data centres). They are owned and operated by the business or organisation (although elements can be provided by a third party provider).
  - **Co-location** data centres that are operated by one business but are shared by several firms or groups of enterprises (also called multi-tenant data centres). This approach is sometimes referred to as "retail" colocation. A "wholesale" colocation data centre is where the data centre operator provides the whole data centre to a single third party user (who therefore does not own the data centre) and who might be a provider of cloud computing services.
  - Edge data centres are smaller data centres that are located close to the edge of a network. They provide the same devices found in traditional data centres, but are contained in a smaller footprint, closer to end users and devices<sup>7</sup>.
  - **Hyperscale** data centres are a specific form of data centre used by the tech giants and major cloud and internet service firms and others.
- 2.7 Each type of data centre above has different locational requirements, which can also vary within type of data centre from operator to operator.
- 2.8 The most rapid growth in data centres has been in ones supporting **cloud computing** for business and individuals. These required proximity to major centres of business and also to other data centres to provide resilience. The size of these data centres has been increasing rapidly and now typically form hyperscale data centres requiring 20MW to 60MW of IT Load and in buildings of 15,000 sqm to 50,000 sqm.

# The development of AI training data centres

- 2.9 The launch of ChatGPT (Chat Generative Pre-trained Transformer) by OpenAI in November 2022 which is a large language model (LLM) Chatbot has accelerated interest in the development of AI across a wide range of applications. By January 2023, it had become what was then the fastest-growing consumer software application in history, gaining over 100 million users. All major tech companies, governments and the business world are considering how to respond to the opportunities and challenges from AI.
- 2.10 Major tech companies are all seeking to develop new and improved AI models. These require large scale computing power to "train" these models. This is leading to extremely strong interest in "AI training data centres" which need to have the computing power to train and develop these models in a safe and secure environment. The activity in AI training data centres can be carried out further away from other data centre and so they are much more footloose in locational terms than many other types of data centres.



<sup>&</sup>lt;sup>6</sup> These types of data centres feature in the various statistics about data centres. However, the statistics quoted often focus on colocation data centres as these are the ones for which there is most market knowledge.

<sup>&</sup>lt;sup>7</sup> There is also a variant of edge data centre which is a "portable" data centre that is mobile and can be "lifted and shifted."

# 3. National policy considerations for the proposed development

## **Planning Policies - NPPF and PPG**

- 3.1 There are no direct references to "data centres" in either National Planning Policy Framework (NPPF) or national Planning Practice Guidance (PPG). That is not surprising given how recently they have become visible in economic terms (unlike telecoms cabling infrastructure for instance). However, there is clear policy support of a more general nature for data centres within NPPF (para 85, 86, 87 and 118).
- 3.2 For instance, Paragraph 87 of NPPF states that "planning policies and decisions should recognise and address the specific locational requirements of different sectors". The list in this paragraph of the NPPF covers storage and distribution but also specifically refers to "making provision for clusters or networks of knowledge and data-driven, creative or high technology industries". It is clear that data centres are covered by this description and so are given specific support as part of Section 6 of NPPF on "building a strong and competitive economy".
- 3.3 Also, Paragraph 118 considers communications infrastructure which of course covers digital infrastructure. It notes that "planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections" and that "policies should set out how high quality digital infrastructure, providing access to services from a range of providers, is expected to be delivered and upgraded over time". Although the focus of this policy statement is around mobile technology and fibre connections, it provides clear support for the wider role of all forms of digital infrastructure, which would of course include data centres. As set out in this report, government data and digital policy make it very clear that data centres are a key part of the UK's digital infrastructure.

# **UK Economic Policy**

- 3.4 The importance of the digital economy, tech sectors or digital sectors is a very strong thread that runs through all recent significant economic policies and plans from government. To summarise:
  - In 2017, the government published the White Paper on a new national **Industrial Strategy**. This strategy identified as one of four "Grand Challenges" the need to put the UK at the forefront of the "Artificial Intelligence (AI) and data revolution." The Strategy noted that the "data driven economy" is typified by "a digitally connected economy that realises significant value from connected, large scale data that can be rapidly analysed by technology to generate insights and innovation."
  - The Industrial Strategy was updated during 2021 in the new **Plan for Growth**. Here the Plan emphasised the importance of *"backing the sectors and technologies that will shape the UK's future"* and stated that *"the digital and creative industry sectors are a major success story for the UK, and a critical driver of innovation and growth. We will work to ensure that these sectors can flourish by nurturing a safe, fair and open digital economy, growing more creative businesses around the country and building on our advantages in foundational technologies like AI, quantum computing and digital twins, including through the National Data Strategy and upcoming Digital Strategy."*



• Last year's **Autumn Statement** from HM Treasury emphasised the importance of boosting UK economic growth rates and that states that *"the government will ensure that those sectors which have the most potential for growth - such as digital, green technology and life sciences - will be supported through measures to reduce unnecessary regulation and boost innovation and growth" (page 3, our emphasis added). The March 2023 Budget stated again that the UK's: <i>"digital, life sciences and creative sectors are amongst the largest in the world. The UK is on track to become a world leading science superpower, supported by the newly established Department for Science, Innovation and Technology."* 

# **UK Digital Strategy**

- 3.5 The UK Government's specific digital ambitions are set out in the UK Digital Strategy. This was originally published in May 2017 (before the Industrial Strategy White Paper). A new version of the strategy was launched in June 2022<sup>8</sup>.
- 3.6 As well as showing the breadth and importance of the digital sector to the economy and society, the digital strategy also highlights the importance of data centres in several areas:
  - As part of ensuring a "world class and secure digital infrastructure" (1.1).
  - To help "promote digital exports and attract inward investment" (6.2) (of which the proposed Kenwood Road data centre would be an example in respect of UK digital expertise).

## UK National Data Strategy

- 3.7 The aim of the National Data Strategy (NDS) is: "to drive the collective vision that will support the UK to build a world-leading data economy." It is an evolving strategy that was started in June 2019 with a "call for evidence", leading to publication of a consultation draft in September 2020 which was updated in December 2020.
- 3.8 This strategy includes a clear acknowledgement of the role of data centres in supporting the digital economy and the UK economy. The strategy sets out five priority areas of action for government (or "missions") which are:
  - 1) Unlocking the value of data across the economy;
  - 2) Securing a pro-growth and trusted data regime;
  - 3) Transforming government's use of data to drive efficiency and improve public services;
  - 4) Ensuring the security and resilience of the infrastructure on which data relies; and
  - 5) Championing the international flow of data.
- 3.9 The fourth mission is of very particular relevance to this project. The government states here that:

"The use of data is now a central part of modern life, so we need to make sure that the infrastructure underpinning it is safe and secure. The infrastructure on which data relies is a vital national asset that needs to be protected from security risks and other concerns, such as service disruption. Interruption to data-driven services and activities can cause disruption to businesses, organisations and public services. While these are also commercial risks to manage, the government has a responsibility to ensure that data and its supporting

<sup>8</sup> "UK Digital Strategy", DCMS, May 2022, updated in October 2022 (the update did not change the strategy but reported on progress)



infrastructure is resilient in the face of established, new and emerging risks, protecting the economy as it grows".

3.10 The NDS specifically notes that the: "infrastructure on which data relies is the virtualised or physical data infrastructure, systems and services that store, process and transfer data. This **includes data** centres (that provide the physical space to store data), peering and transit infrastructure (that enable the exchange of data), and cloud computing that provides virtualised computing resources (for example servers, software, databases, data analytics) that are accessed remotely" [page 23, our emphasis added].

# UK National Cyber Strategy

- 3.11 The National Cyber Strategy (NCS) was published in February 2022<sup>9</sup>. The purpose of this strategy is to set out the government's "plan to ensure that the UK remains confident, capable and resilient in this fast-moving digital world; and that we continue to adapt, innovate and invest in order to protect and promote our interests in cyberspace." The NCS was of course prepared against a backdrop of increased cyber-attacks globally by hostile states and criminal actors and so concerns about UK security as well as cyber security at the level of businesses and individuals.
- 3.12 The NCS vision for the UK in 2030 is that it *"will continue to be a leading responsible and democratic cyber power, able to protect and promote our interests in and through cyberspace in support of national goals"* (para 5, page 11). There are four national goals (page 11) which are described as:
  - 1) A more secure and resilient nation, better prepared for evolving threats and risks and using our cyber capabilities to protect citizens against crime, fraud and state threats.
  - 2) An innovative, prosperous digital economy, with opportunity more evenly spread across the country and our diverse population.
  - 3) A Science and Tech Superpower, securely harnessing transformative technologies in support of a greener, healthier society.
  - 4) A more influential and valued partner on the global stage, shaping the future frontiers of an open and stable international order while maintaining our freedom of action in cyberspace.
- 3.13 The NCS makes several points relevant to data centres:
  - First, it emphasises the rapidly increasing importance of digital and cyberspace to all aspects of life *"exponential advances in technology combined with decreasing costs have made the world more connected than ever before, driving extraordinary opportunity, innovation and progress"* (para 1, page 10).
  - Second, it highlights the opportunity but also dependency that this creates. In drivers for change it notes that "the coming decade will see the continued rapid expansion of data and digital connectivity to almost every aspect of our lives. Huge global growth in Internet access and usage, underpinned by data and the infrastructure upon which data use relies, is creating new markets and increasing convenience, choice and efficiency. But it also makes countries much more dependent on interconnected digital system" (para 33, page 29).

<sup>9</sup> An update was published in December 2022 and an annual progress report for 2022/23 in August 2023



• Third, as with the NDS it emphasises the importance of ensuring that "the infrastructure on which our data use relies is **secure and resilient**. This infrastructure is a vital national asset – one that supports our economy, delivers public services and drives growth, "we will take a greater role in ensuring that data is sufficiently protected when processed, in transit, or stored at scale, for example in external data centres" (para 111, page 71, our emphasis added).

### UK Government and AI

- 3.14 The UK Government has adopted a supportive approach to AI and aims to be amongst one of the world leaders. In March 2023, it published a White Paper entitled "A pro-innovation approach to AI regulation"<sup>10</sup> and this was updated in February 2024 in response to consultation on the White Paper<sup>11</sup>. The White Paper talks about the government's desire to "*drive forward our plans to make Britain the safest and most innovative place to develop and deploy AI in the world*".
- 3.15 The initial White Paper and the Government's response highlight the value it sees in the application of AI, in the UK's role in leading R&D and the importance of the right regulatory framework for AI, an area where the UK is taking a global lead.

### Conclusions

- 3.16 There is much that can be drawn from this review of government policy that is highly relevant to the importance of data centres:
  - 1) First, the recognition of the importance of the digital economy to UK prosperity and effective functioning of our public services, government and society.
  - 2) Second, further recognition that this role is becoming ever more important, presenting great opportunities but also challenges.
  - 3) Third, the importance of a secure and reliable digital infrastructure to ensure the smooth functioning and maximise the growth prospects of the economy.
  - 4) Fourth, a recognition that data centres are a critically important part of that digital infrastructure.
  - 5) Fifth, a clear desire to be at the forefront globally of the development of AI.

<sup>&</sup>lt;sup>10</sup> Presented to Parliament by the Secretary of State for Science, Innovation and Technology on 29 March 2023. <u>Command Paper</u> <u>Number: 815</u>

<sup>&</sup>lt;sup>11</sup> Consultation Outcome, Command Paper: CP 1019

# 4. Local and sub-regional policies

4.1 This section explores the current policies for Greater Lincolnshire and for North Lincolnshire that are of relevance to this proposed development as well as data on the local economy.

## Greater Lincolnshire

- 4.2 For economic development purposes, North Lincolnshire now sits within the "Greater Lincolnshire" area. This comprises the unitary authorities of North Lincolnshire and North East Lincolnshire as well as the county of Lincolnshire (and its seven districts). There has been a Local Enterprise Partnership (LEP) operating over the Greater Lincolnshire area since 2014 (GLLEP). The GLLEP launched its Strategic Economic Plan in 2014 which covered the prospects for the whole of the areas. It described its "priorities and drivers for success" as:
  - 1) The growth of the area's three defining and strongest sectors that offer the most competitive advantage: agri-food, manufacturing, and the visitor economy.
  - 2) To grow specific opportunities identified as future defining features of the area: health and care; low carbon; ports and logistics.
  - 3) To drive this growth by putting expansion into new markets, modern telecommunications, infrastructure improvements and the skills of individuals and business owners at the forefront of what we do
  - 4) To promote Greater Lincolnshire as a place for sustainable growth through improved transport infrastructure to connect us with national and international markets, enabling wider enjoyment of our world-class heritage sites, culture and strong communities
  - 5) To recognise the need for new housing for the existing local population and those moving to the area, and to support balanced housing and economic development through promoting the area's capacity to deliver high-quality growth.
- 4.3 The current website for the LEP identifies its key sectors as: agri-food; manufacturing; the visitor economy; energy; health & care; ports & logistics; and defence & security. There is no mention of the digital sector in this initial strategy.
- 4.4 However, a 2019 report by Business Lincolnshire on the digital economy<sup>12</sup> identified that:
  - The digital tech sector continued to grow strongly in terms of the number of businesses, jobs and the value that it generates for the Greater Lincolnshire economy. The sector encompasses a wide breadth of activities, with electronic components, communications equipment, and data processing standing out as key strengths.
  - The report noted that the expansion of the sector had affected the availability of skilled workers, which continues to be a major concern for digital businesses.
  - Accessing the right training is a related concern, although the development of the Institute of Technology (see below) provides scope to build the digital skills capacity of the region.

<sup>&</sup>lt;sup>12</sup> Greater Lincolnshire's Digital Landscape, Business Lincolnshire, December 2019

#### Box 4.1: The Lincolnshire Institute of Technology (LIoT)

Lincolnshire Institute of Technology (LIoT) is a partnership between the University of Lincoln, North Lindsey College and University Campus North Lincolnshire, University Centre Grimsby, Boston College, Grantham College and University Centre, Lincoln College, Riseholme College and Lincoln UTC. It has sites across Greater Lincolnshire including in North and North East Lincolnshire.

The partnership states it: "supports the economic growth and prosperity of Greater Lincolnshire by preparing individuals for work and supporting their development and progression within employment". It aims to "support Greater Lincolnshire as a great place to learn, work, recruit, invest and innovate in the engineering and manufacturing, digital, and construction sectors".

Source: <a href="https://www.liot.ac.uk/">https://www.liot.ac.uk/</a>

- 4.5 Recently, the government has agreed a <u>Devolution Deal</u> with Greater Lincolnshire<sup>13</sup> including North Lincolnshire. This will lead to the creation of a Greater Lincolnshire Mayoral County Combined Authority (MCCA) with the first mayoral election for the MCCA will be held in May 2025. There will be the integration of the current LEP functions into the Greater Lincolnshire MCCA.
- 4.6 The Devolution Deal does not set out a different strategy for the Greater Lincolnshire area nor have specific implications for the Proposed Development. The MCCA will have powers in respect of: *"economic development and regeneration functions, including the preparation of an economic assessment for the area; to embed a strong, independent, and diverse local business voice into local democratic institutions and to carry out strategic economic planning that clearly articulates the area's economic priorities and sectoral strengths".* It will not replace the planning powers of the LPA.

## The Freeport and Enterprise Zone

- 4.7 The Proposed Development is located close to the North Lincolnshire part of the larger former Humber Enterprise Zone, the largest in the UK, and the new Humber Freeport.
- 4.8 The **Enterprise Zone** was created in 2012 and compromised 1,238 hectares spread across a range of sites either side of the Humber, of which several are in North Lincolnshire and North East Lincolnshire:
  - In North Lincolnshire as part of the South Humber Bank area there were three sites:
    - The 251 hectare **Able Marine Energy Park** land allocated for B1 Business/Light Industrial, B2 General Industry, B8 Storage and Distribution, Estuary related. The intended focus was on off shire wind sector.
    - The 290 ha **Able Logistics Park** land allocated for B1 Business/Light Industrial, B2 General Industry, B8 Storage and Distribution, Estuary related. The EZ brochure describes the site as with the road and utility infrastructure allowing access into the site and the development of the business park and extensive warehousing (c. 1,700,000 m2) alongside external storage and transport depots.
    - The 62 ha EZ site a **Humberside Airport** with land allocated for B1 Business/Light Industrial, B8 Storage and Distribution.



<sup>&</sup>lt;sup>13</sup> Greater Lincolnshire devolution deal 2023, Proposed agreement for a devolution deal between the government and the local authorities of Lincolnshire County Council, North East Lincolnshire, and North Lincolnshire Council. November 202

- In North East Lincolnshire, the EZ comprised 9 separate and smaller sites of which the largest at 64 has is **Stallingborough**. This described as "a greenfield site offering prime industrial development opportunities with excellent access to the port and A180. Ideally suited to logistics/distribution-based development linked to increases in containerised freight volumes at the port of Immingham or to manufacturing businesses".
- 4.9 The original EZ incentives have now relapsed, although some businesses continue to benefit from previous incentives.
- 4.10 In 2021, the government announced that the Humber had been successful in its application to become a Freeport<sup>14</sup> (in part a successor to Enterprise Zones) and Humber Freeport's Final Business Case was approved in March 2023. The Freeport area includes three tax sites<sup>15</sup> where tax incentives are available (at Hull East, Goole and Able Humber Port) and one customs site<sup>16</sup> (located in Grimsby). A key part of the pitch to become a Freeport was the Humber's role as "the UK's Energy Estuary". This is described in the Freeport brochure<sup>17</sup> as: "the pre-eminent energy cluster in North West Europe and a thriving hub for renewable energy production, renowned especially for the development and deployment of the largest offshore wind farms in the world. This cluster hosts various energy industries, including carbon capture and storage, hydrogen and biomass, as well as research and development facilities for new technologies".
- 4.11 The Able Humber Port site is located on the south bank of the river Humber and provides 285 hectares of land plus an additional 43.7 hectares of new quayside when developed. Of this area, 178 hectares of this land is designated as a Freeport Tax Site.

## North Lincolnshire economy and policies

4.12 North Lincolnshire has recently developed a new borough-wide economic growth plan to 2028<sup>18</sup>. This describes the vision for the local area as:

"North Lincolnshire is a place with strong and sustainable economic growth, leading to wellbeing and prosperity for our businesses, residents and communities".

- 4.13 The Growth Plan sets out three priorities each with three underpinning objectives:
  - Priority 1: A place where people, places and products are connected globally to deliver sustainable economic growth.
    - Further enhance North Lincolnshire as a global trade gateway connecting businesses across the UK, Europe, and worldwide.
    - Deliver high quality, sustainable, resilient infrastructure.
    - Secure greater freedoms and flexibilities at a local level.
- <sup>14</sup> Freeport is a designated area where businesses can invest in productive capacity receiving capital allowances, tax and regulatory incentives and deferred customs duties
- <sup>15</sup> Offering incentives in respect of: Stamp Duty Land Tax relief; Business Rate Relief for five years; Enhanced capital allowances for investment in machinery, structures and buildings; and Employer National Insurance contributions relief.
- <sup>16</sup> A Freeport customs site is a secure, enclosed site where some normal tax and customs rules do not apply. Businesses within customs sites receive a range of tariff benefits, including duty deferral while the goods remain on-site and suspended import VAT on goods entering the customs site. This means that businesses operating inside designated areas in and around the port may manufacture goods using these imports, before exporting them again without paying the tariffs, and benefit from simplified customs procedures.
- <sup>17</sup> Humber Freeport, UK's Global Gateway, November 2023, humberfreeport.org
- <sup>18</sup> North Lincolnshire Economic Growth Plan, 2023 2028, North Lincolnshire Council, March 2023



- Priority 3: A place where businesses and residents make positive changes to create a cleaner, greener, healthier and more sustainable future for North Lincolnshire.
  - Move to a net zero economy.
  - Enable high quality and environmentally sustainable homes in flourishing communities.
  - Promote health, wellbeing, and a good quality of life.
- Priority 3: A place which enables and encourages businesses, residents and communities to achieve their full potential:
  - Ensure everyone has the opportunity to learn, work, upskill, re-skill and build a career.
  - Drive growth and innovation in our key sectors.
  - Regenerate town centres.
- 4.14 In respect of **key sectors** the document lists seven<sup>19</sup> of which one is **digital**. The overall "intent" as stated in the Growth Plan for this objective is to have a "*strong, diverse, and sustainable economic base driven by innovation and new technologies. Increased productivity levels, services and business growth creating high level, high value added jobs." [our emphasise added].*
- 4.15 In respect of skills in the Growth Plan, the "intent" here includes that "people have the right skills to build a career to enrich their lives and reach their full potential". The interventions mentioned include ones to enhance job and training opportunities, including applying the Skills and Employability Plan<sup>20</sup> into every major development to increase opportunities for apprenticeships, work experience and access to highly skilled jobs.

#### The North Lincolnshire Local Plan

- 4.16 North Lincolnshire does not have an up to date adopted Local Plan. The North Lincolnshire Core Strategy, which was adopted in June 2011, sets out the long term vision for North Lincolnshire and a blueprint for managing growth and development in the area up to 2026. A Housing and Employment Land Allocations Development Plan Document (DPD) was adopted in March 2016. A Submission Local Plan was submitted for Examination in November 2022 and it is scheduled to be examined during 2024. As the emerging new Local Plan is yet to be examined only limited weight can we attached to it. However, we refer to it because of the recent evidence base that has been prepared during its development.
- 4.17 The proposed spatial strategy for North Lincolnshire (Policy SS2: spatial strategy for North Lincolnshire) includes the following in respect of employment land:
  - B. Support the creation of 11,500 new jobs in our priority sectors and encouraging innovation.
  - C. Develop at least 131.7 hectares of employment land in key locations that supports the delivery of housing growth, and provides opportunities for our priority sectors to grow and meets the requirements of the commercial property market. Amongst these areas are South Humber Gateway; Scunthorpe; Humberside Airport; and strategic locations on Transport Corridors.



<sup>&</sup>lt;sup>19</sup> Construction, Digital, Energy & Chemicals, Food, Health & Care, Manufacturing & Engineering, Ports & Logistics

<sup>&</sup>lt;sup>20</sup> North Lincolnshire Skills & Employability Plan 2023/2028, North Lincolnshire Council, March 2023

4.18 According to Policy EC1 (Employment Land Supply) in the Submission Local Plan, the identified need is around 132 of land and the allocated supply is around 184 has (excluding strategic sites). The largest allocated sites (apart from Strategic Sites) are in the west part of the local authority area (around Scunthorpe and to the west of Scunthorpe). Proposed Policy SS8: Employment Land Requirement (Including Strategic Employment Sites) makes it clear that, in addition to the allocated employment sites, the following **Strategic Employment** sites are identified:

Table 4.1: Strategic Sites in North Lincolnshire						
Name	Ref	Land use	Area (has)			
South Humber Bank	SS10	E(g), B2, B8 Estuary Related, including energy generation	900			
North Killingholme Airfield	SS9	E(g), B2, B8	138			

#### South Humber Bank

- 4.19 This site has long been the key strategic site for North Lincolnshire. It has special advantage of its location within an existing port environment, flat topography and being adjacent to a deep water channel of the Humber Estuary. The site is located between and around the two existing ports of Grimsby and Immingham and the Humber Sea Terminal. As noted earlier, part of the site benefits from Freeport status.
- 4.20 The Submission Local Plan describes the site as North Lincolnshire Council's "premier employment site" and notes it is a large part of the South Humber Gateway (taking up a four mile area fronting the Humber Estuary). It states that the employment allocation is "one of the last undeveloped deep-water estuaries in Europe" and so provides a "unique opportunity for the economy of North Lincolnshire and the Humber to create high value and substantial employment opportunities on a transformational scale". As such the Submission Plan notes the site "must be safeguarded from piecemeal proposals".

#### North Killingholme

- 4.21 The North Killingholme Airfield is the west of North and South Killingholme villages and to the north of the A160. It lies to the west of the South Humber Bank employment allocation. The Submission Plan notes that the development of North Killingholme Airfield is seen as an "essential and integral part of the nearby South Humber Bank proposal and is, therefore, also identified as a Strategic Employment Site in order to assist in the deliverability of the South Humber Bank. North Killingholme Airfield is to be utilised, but not solely, for land intensive storage and distribution uses that would effectively sterilise prime industrial land set adjacent to the Humber Estuary".
- 4.22 The site is previously developed land and forms part of a former World War II airfield including buildings and former runways/access strips, although there are large tracts of undeveloped agricultural land that surrounds the former runways. The site is surrounded by agricultural land to the north, south and west. There are a significant number of existing businesses that have developed on the airfield site.



## The North Lincolnshire economy

- 4.23 North Lincolnshire is a unitary authority with a population of around 170,000 and a total local labour force of around 84,000<sup>21</sup> and with 87,000 jobs located in the area<sup>22</sup>. Its economy, as of 2021, generated around £5.36 billion in economic output according to the ONS (or around £6.13 billion in 2024 price levels). Its largest settlement is Scunthorpe and other important population centres include Barton-on-Humber and Brigg.
- 4.24 North Lincolnshire's economy and labour market is closely linked to that of North East Lincolnshire (covering Immingham, Grimsby and Cleethorpes) which is a slightly smaller economy (population of around 157,000, a local labour force of around 74,500 and 74,000 jobs located in the area).

#### Structure of the economy

4.25 Table A2 in Appendix A summarised the economic structure of the local area as measured by employment. The key feature of North Lincolnshire is the high level and share of manufacturing employment (19,000 jobs or 26% of the total) reflecting its large industrial base and the importance of locations such as South Humber Bank. It also has high concentrations of jobs on transport and logistics (6,000 jobs) reflecting its ports and in construction (5,000 jobs). A noticeable feature of the local economy is the low share of employment in the ICT (Information and Communication) sector, with just 600 jobs less than 1% of all jobs, half the relative share for all Greater Lincolnshire and under a third of relative employment level at a regional level. Overall, employment levels have remained broadly constant in the local areas although the structure has changed over time (see Figure 4.1).



<sup>21</sup> All people economically active (ie in work and seeking work). Data sourced from the ONS Annual Population Survey via NOMIS for the period October 2022 to September 2023

<sup>22</sup> Employee jobs and the self-employed as measured by the ONS for 2022



#### Labour market: unemployment

4.26 As of February 2024, depending on the measure used, there were between 5,000 to 8,000 unemployed adults across the North Lincolnshire and North East Lincolnshire areas combined (not all but many of whom are seeking work). Unemployment rates in North Lincolnshire are on par with those nationally and slightly lower than the average for Yorkshire and the Humber region and above those for all Greater Lincolnshire. They are slightly higher in North East Lincolnshire.

Table 4.2: Current employment and unemployment in the local area									
Measure	North	North East	All Greater	Yorkshire	Great				
	Lincolnshire	Lincolnshire	Lincolnshire	& Humber	Britain				
Unemployed (ONS model-	2,500	2,600	15,400						
based, November 2024)									
Rate (%)	2.9	3.5	2.8	4.1	3.7				
Claimant count (Feb. 2024)	3,770	4,230	23,550						
Rate (%)	3.7	4.5	3.5	4.2	3.8				
Total employees (2022)	73,000	66,000							
Total jobs (2022)	87,000	74,000							

Source: NOMIS, data for February 2024. Rates are % is the number of claimants as a proportion of resident population of area aged 16-64. They are not seasonally adjusted

#### Labour market: skills and qualifications

- 4.27 Tables A3, A4 and A5 in Appendix A set out current information on the pool of the local labour force by qualifications level and types of occupations/skills. Key points are that:
  - North Lincolnshire has a relatively well-qualified workforce with the proportion of those of working age holding degree the qualifications above the Greater Lincolnshire and similar to the regional average (but below the national average), in contrast qualification levels are lower in North East Lincolnshire.
  - There were in 2021 1,300 and 900 residents working in IT-related occupations in 2021 in North Lincolnshire and North East Lincolnshire, respectively. At 1.7% and 1.3% respectively these were relatively low share of all those in work compared to Greater Lincolnshire (2.0%) or the region (2.9%), reflecting the relatively small size of the digital sector in the local area and scope for it to grow.
  - There were many more residents working in engineering and allied occupations (3,200 or 4.6% and 3,400 or 4.4% for North Lincolnshire and North East Lincolnshire respectively). This reflects the industrial base of the areas and suggests that, in respect of the construction and engineering related jobs in the proposed development and operation stage, there is a good skills base locally. This is supported by the information in Table A5 on the industrial sectors in which residents work

#### Labour market: wages

- 4.28 Table 4.3 below sets out annual pay by area of workplace for 2022 (the last year for which data is available for Greater Lincolnshire and North East Lincolnshire). This shows that:
  - In North Lincolnshire average annual salary for those working full-time in the areas was around £30,4000 (median) and the mean average salary was £36,000 (respectively 9% and 12% below the England averages, but equal to or higher than the Greater Lincolnshire or Yorkshire and Humber averages). In 2023 overall average full-time pay in North Lincolnshire had risen by 6% to around £32,300 (median) and by 9% to £39,000 (mean).



Table 4.3	Table 4.3: Annual gross pay 2022 by area of workplace, for those in full-time jobs £000s									
Measure Gender		North	North East	Greater	Yorkshire	England				
		Lincolnshire	Lincolnshire	Lincolnshire	and the					
					Humber					
Median	Male	£32.1	£33.5	£32.3	£32.9	£35.7				
	Female	£24.1	£25.3	£25.1	£26.9	£29.9				
	Total	£30.4	£27.8	£29.8	£30.4	£33.3				
Total, Engl	and=100	91	83	90	91	100				
Mean	Male	£40.7	£33.8	£36.5	£38.4	£44.3				
	Female	£27.7	£28.2	£28.9	£30.9	£35.6				
	Total	£35.9	£31.3	£33.4	£35.4	£40.8				
Total, Engl	and=100	88	77	82	87	100				
Source: Ann	ual Survev Of	Hours And Earning	ıs (ASHE) - workpl	ace analvsis. ONS	Crown Copvriaht					

#### • Pay is significantly lower on average in North East Lincolnshire

Conclusions

- 4.29 Out key conclusions are:
  - 1) Greater Lincolnshire and North Lincolnshire have economic and other policies which in recent documents are highlighting the actual or potential importance of the digital sector as well as strength in engineering and construction. These are all relevant to the proposed development.
  - 2) The recent and now current North Lincolnshire Economic Growth Plan highlights the desire to have a "strong, diverse, and sustainable economic base driven by innovation and new technologies. Increased productivity levels, services and business growth creating high level, high value added jobs." The proposed development would quite clearly contribute to this ambition.
  - 3) Although unemployment rates, as in other parts of the UK are currently relatively low. There are still of the order of 5,000 to 8,000 unemployed adults across the North Lincolnshire and North East Lincolnshire areas depending on the precise measured used. Most of these will be seeking work.
  - 4) The review of data shows that in both North Lincolnshire and North East Lincolnshire the digital/IT sector is currently modest in size, so with the potential to expand. There is a developing technology training infrastructure (LifT) for the digital sector.
  - 5) There are strengths in the engineering and construction sectors locally as evidenced by the number of residents working in related occupations and sectors.
  - 6) Wage rates are well below national average in both North Lincolnshire and North East Lincolnshire.



# 5. Evidence on current and future need for data centres

# Relationship between data and the economy

- 5.1 The growing importance of data to businesses is being driven by several mechanisms, with potential for overlaps between them<sup>23</sup>. The mechanisms are:
  - Improved business intelligence and decision-making. The generation of ever-greater volumes of data provides the potential for the development of more detailed insights into a wide range of issues and challenges facing businesses. These include better insights into customer behaviour and market trends; more efficient procurement and management of supply chains and inventories; improved environmental performance; more cost-effective compliance with labour market, environmental and other forms of regulation; and better identification and management of business threats and risks.
  - **Cost-efficiencies and revenue growth**. In sectors such as manufacturing and construction, efficiencies can be achieved through better procurement, better utilisation of machines and vehicles, and the identification and elimination of wasted resources and energy used in production.
  - **Opportunities for product and service innovation** and related opportunities for new business creation.
- 5.2 There are strong technological and other drivers that are increasing the demand and need for data globally and in the UK. These drivers are also well documented in the various government strategies covered in the previous section. In summary they include:
  - The rise of **cloud computing** where data and applications are held in the "cloud" and accessed by workers and individuals remotely using applications and data stored in data centres.
  - The growth of the **Internet of Things** (the increase in the use of connected devices and the proliferation of smart sensors and meters), the move to smart technologies (including in the future driverless cars etc).
  - The rise of **data analytics** (or sometimes called Big Data) requiring the analysis of large and very complex data sets.
  - The rapid growth of **Artificial Intelligence/Machine Learning** which requires very substantial levels of computer processing power. The very recent arrival of ChatGPT and other "AI chatbots" has and will rapidly transform demand for a whole new host of digital services. It is also true that the use of AI in data centres will help them become more efficient.
- 5.3 These trends are impacting on all sectors of the economy and parts of society. Hence, access to data is becoming increasingly essential for a successful and effectively functioning economy.



<sup>&</sup>lt;sup>23</sup> Drawn from the "Data Economy Report", Digital Realty, May 2018

# Drivers for the location of AI data centres to meet societal and business needs

- 5.4 The need for data centres capacity to store and often process all the data generated by human activity has been growing very rapidly (at about 20% annually). This is being driven by the rapid growth of the use data in almost every aspect of human activity social, economic and governmental. The growth in data centres is responding to the economic, societal and technological drivers. Where additional data centre capacity needs to be located to meet this rapidly growing need is covered below.
- 5.5 The launch of ChatGPT (Chat Generative Pre-trained Transformer) by OpenAI in November 2022 which is a large language model (LLM) chatbot has accelerated interest in the development of AI across a wide range of applications. By January 2023, ChatGPT had become what was then the fastest-growing consumer software application in history, gaining over 100 million users. All major tech companies, governments and the business world are considering how to respond to the opportunities and challenges from Al<sup>24</sup>.
- 5.6 All is not a homogeneous entity, but a technology that is often described as being split into two distinct phases:
  - The initial and ongoing "training" of the AI technology and then
  - Its use/application sometimes called "inference".
- 5.7 Al **training** require less focus on resilience and redundancy in data centres<sup>25</sup>, and more on cost, PUE (power usage effectiveness), and general efficiency. Inference, in other words responding to requests and questions from users, is in contrast very latency sensitive<sup>26</sup> and will require proximity to the concentrations of users (ie metropolitan hubs) to ensure quick response times for user interfaces and applications
- 5.8 Major tech companies are all seeking to develop new and improved AI models. These require very large scale computing power to "train" these models. This is leading to extremely strong interest in in a new form of data centre: "AI training data centres". These need to have the computing power to train and develop these models in a safe and secure environment. AI model training is especially energy intensive. It requires the use of graphic processing units (GPUs) which are specialized chips that multi-task better and work faster than the central processing units (CPUs) which run most traditional data centre cloud services.
- 5.9 Major tech companies are therefore seeking to develop a series of strategically located "AI Giga sites"<sup>27</sup> that are major investments. These data centres need to be on large scale to provide the concentrated computing power required for training the AI technologies and will require a minimum of around 200MW of IT load.
- 5.10 This need is **developing extremely rapidly** and major tech firms have already embarked on a search for sites. The activity in AI training data centres can be conducted further away from other data centre and so they are much more footloose in locational terms than many other types of data centres. Put another way they are less "latency sensitive" than other types of data centres that need to be located close to customer and other data centres to provide resilience.

<sup>&</sup>lt;sup>24</sup> Other LLMs that have been developed by tech firms include: Google's PaLM 2 which will power Google Bard (their version of ChatGPT); Llama 2 by Meta; Claude 2 from Anthropic; and Amazon Q.

<sup>&</sup>lt;sup>25</sup> These are about the ability of data centres to ensure continued service

<sup>&</sup>lt;sup>26</sup> The speed of service

<sup>&</sup>lt;sup>27</sup> See JLL (2023b)

#### AI Giga Site - Locational Requirements

- 5.11 This need is developing **extremely rapidly** and major tech firms have already embarked on searches for suitable sites for investment in such facilities. The need is an imminent one with potential locations across Europe in a **rapid race** to attract these large scale investments.
- 5.12 Recent research by property advisory firm JLL<sup>28</sup> has highlighted several key location factors for AI data centres:
  - (1) access to large scale supply of power, ideally renewal power<sup>29</sup>;
  - (2) high-speed and reliable network connectivity (vital for transferring large volumes of data during AI model training);
  - (3) large scale supply of **land**, cooler climates and access to water;
  - (4) stability of the **political and legal** landscape; and
  - (5) and a thriving **research and innovation** ecosystem.
- 5.13 These factors operate at different spatial levels. The last two operate more at a country level. A site requiring 200MW of IT load would typically need to be at least 20 to 30 hectares in size.

#### At a country level

- 5.14 The activity in AI training data centres can be carried out further from other data centre and so they are **much more footloose in locational terms** than many other types of data centres. Put another way, they are less "latency sensitive" than other types of data centres that need to be located close to and other data centres and to customer to provide resilience.
- 5.15 The UK in the sense of its stable legal and regulatory framework and strong tech innovation system is ideally placed to attract AI training centres. However, within the UK, access to the scale of power required, connectivity and large sites available for immediate use is much harder to provide. The whole of London and the South East for instance does not have suitable sites and there are major issue with grid connectivity and so access to power there.

#### At a local site level

- 5.16 As with all data centres the specific site location is important is terms of the **physical resilience** of the site. This means that sites at risk of flood, earthquakes, potential accidents (eg airport flightpaths or hazardous processes) and several other factors are not suitable for data centres.
- 5.17 In a UK context, the South Humber Bank area is an ideal location for a large-scale AI training data centre. The location's large scale energy supply from both North Sea gas and now offshore wind is a key locational advantage. There are few other locations in the UK that offer the **scale of power supply and immediate availability of power** as well as other important location characteristics.
- 5.18 The proposed Viking Carbon Capture and Storage (CCS) development (which is a separate development from the proposed Humber Tech Park)<sup>30</sup> also offers the potential for large scale net zero energy supply, with construction anticipated to start by 2025.



<sup>&</sup>lt;sup>28</sup> <u>4 strategic location factors for AI training data centres, September 27, 2023</u>

<sup>&</sup>lt;sup>29</sup> Data centre operators and major tech giants are concerned about their carbon footprint

<sup>&</sup>lt;sup>30</sup> Led by Harbour Energy, Viking CCS is a CO2 capture, transport and storage network targeting start-up in 2027. Working with a wide range of cluster members including Associated British Ports, Phillips 66, RWE, VPI And West Burton Energy the network is targeting a reduction of 15 million tonnes of UK emissions per annum by 2035.

- 5.19 The proposed site at South Killingholme is an ideal location for a large scale AI training data centre complex as:
  - It benefits from all the **locational advantages** of the South Humber Bank area for data centres needing large scale power supply. It has access to the energy supply and grid capacity of South Humber Bank (indeed key supply routes pass through or close by the site).
  - It is a **physically robust and secure** site, which is not suspectable to flood risk from the sea/rivers (sitting on land that is 10 to 20 meters above sea level) or from surface drainage flood risk.
  - It is a **large site** in single ownership and therefore readily deliverable (subject to planning).

### Conclusions

- 5.20 There are several key conclusions that can be drawn from this review of need and location drivers:
  - 1) First, there is a growing need for data centre capacity driven by fundamental changes in the economy and society. Much of this capacity has, hitherto, been focussed on the main metropolitan areas of the UK and globally.
  - 2) Second, the advent of mass applications of AI has further driven this demand for data centres.
  - 3) Third, a new type of data centre is emerging rapidly required to train the AI applications on vast amounts of data and using very high level of computational power and so energy (AI Giga sites). The major tech companies are seeking to establish a small network of such very large data centres across the globe including in Europe. However, the data centres could be located in different countries and regions within Europe.
  - 4) Fourth, there are different location factors for these data centre: they are very large in scale with concomitant high power requirements and site size. However, they are more locationally footloose at a country and locality level than most other types of data centres.
- 5.21 The Proposed Development at South Killingholme site is the most suitable site in North Lincolnshire to attract this current inward investment opportunity.



# 6. The economic benefits from the proposed development

- 6.1 The economic benefits from the proposed development considered cover:
  - 1) The benefits in terms of economic injection and employment that would stem from the **construction** of the proposed new data centre.
  - 2) The **local level** economic benefits that would stem from the operation of the data centre.
  - 3) The **wider benefits** to the local economies from the scale and nature of the proposed investment.
- 6.2 The likely jobs and other benefits are estimated using the following parameters that are based on the fully completed scheme delivering total 384MW of IT load supplied in a total of 309,000 sqm of building area (GEA).

# **Economic impacts from the construction of the data centre**

#### Scale of the investment

- 6.3 The Humber Technology Park development would represent a **very substantial investment for North LincoInshire**. Large data centre require very significant expenditure in the <u>initial set-up</u> <u>phase</u> in both buildings and plant and equipment. The data centre will then undergo periodic expansion and renovation as the operator updates its infrastructure to meet customer demand and integrate the latest technological advances. There is, therefore, ongoing capital expenditure throughout the life of all data centres. Often repairs, replacement, and upgrade of IT equipment and infrastructure begin in year three of operation.
- 6.4 Work by the US Chamber of Commerce (USCoC)<sup>31</sup> helpfully set out the cost components of data centres. The USCoC explains the construction of a "typical" data centre covers:
  - Base building construction architectural, planning and design, building permits, local taxes, land excavation and grading, roadways, tie-ins to utilities, and the building shell (around 20% of all capital costs excluding land).
  - Mechanical and electronic equipment purchases and installation costs include mechanical and electronic equipment (account for an estimated 75% to 80% of the initial capital costs).
- 6.5 A more detailed breakdown is that the cost components of construction based upon USCoC comprise:
  - Land and building shell (15% to 20%): covering building shell, raised floor.
  - Electrical systems (40% to 45%): covering electrical backup generators, batteries, power distribution units (PDU), uninterruptible power supply (UPS), switchgear/transformers.
  - HVAC/mechanical/cooling systems (15% to 20%): covering computer room air conditioners, computer room air handlers, air cooled chillers, chilled water storage and pipes.

<sup>31</sup> USCoC (2017)



- Building fit-out (20% to 25%): covering lobby / entrance, meet-me room, shipping & receiving area.
- 6.6 There are few precedents for data centres of this scale and indeed for this type of application globally. However, we have been able to apply parameters from other data centres and industry standards to develop broad estimates for the total construction cost of the proposed development when complete. The large data centre users are of course seeking economies of scale from developing larger data centres. However, the demands of the high powered computing needed for AI training application creates other demands.
- 6.7 The range of total construction cost for the completed data centre will depend on the precise specification and construction techniques used. However, as shown in Table A1 in Appendix A, the cost is likely to range from as a very minimum around **£2 billion to well over £3 billion**. There are likely to be significant economies of scale for such a large data centre, therefore the total cost is likely to be towards the lower end of the range.
- 6.8 These figures <u>exclude</u> the cost of the actual computing equipment installed inside the data centre. Such a level of investment would represent one of the largest inward investment projects in the UK.

#### Construction jobs and GVA supported

- 6.9 This level of investment would support a very large number of construction and related jobs during the build out phase. The two current \$800 million (£645 million) Meta AI data centres being built in Texas and Idaho are each projected to have 1,000 to 1,200 skilled construction workers on site during their peak construction period<sup>32</sup>. These data centres are of the scale of one of the proposed three buildings at Humber Tech Park. The scale of construction activity on and off site and in the supply chain will be very significant. The actual number of jobs supported will depend on the speed of construction, the methods used and supply chains and sourcing.
- 6.10 Previous research has indicated that 1 FTE job for one year is supported for roughly every £180,000 of construction spend in a data centre<sup>33</sup>, taking account of potential economies of scale and potential for modular construction we have also used a higher figure of around £220,000 of spend per FTE job (see Table A1). This produces a core range of from around **10,000 up to 13,000 person years of employment** supported by the proposed development.
- 6.11 These construction jobs will be a mixture of on and off site jobs and the numbers at their peak will depend on the speed of development. If the whole project were built out over a three to four year period, the project would be supporting at least **2,500 to 3,500 jobs a year** on and off site. Such numbers are consistent with the scale of jobs forecast for the two new Meta data centre in the USA.
- 6.12 These jobs would be a mixture of jobs in construction groundworks, demolition, utilities, steelwork, plus many in mechanical and electrical engineering and professional services. The jobs would be located both on and off site.



<sup>&</sup>lt;sup>32</sup> Data centres in Temple, Texas, and Kuna, Idaho reported to have 1,000 and 1,200 skills workers on site (

<sup>&</sup>lt;sup>33</sup> The figure is sourced from the capital cost per job from a report on data centres in Northern Virgina (the largest cluster in the world in 2021) which is \$198,000 converted to value in £s (£159,000) and then updated to 2023 prices using the UK GDP deflator rise of 12% to £178,000. The base report is "<u>The Impact Of Data Centers On The State And Local Economies Of Virginia</u>", March 2022. Northern Virgina Technology Council

Table 6.1: Construction jobs supported by the Humber Tech park data centre development							
Measure		Based on lower end of US based	Based on UK construction				
		estimates	sector data				
All person years	of employment*	10,000	13,000				
		Average annual FTE jobs supported*					
Assumed building	3.0	3,300	4,300				
	3.5	2,900	3,700				
period (years)	4.0	2,500	3,300				
Source: Nicol Economics estimates. Note: * on and off site							

- 6.13 As well as supporting jobs, the investment in the new facility would provide a GVA boost for the local and sub-regional economies during the construction period. At a national level, the ratio of GVA to direct turnover in the construction sector was 39% in 2021 (based on the Annual Business Survey data). Applied to the estimated value of the scheme, this would imply an **initial direct GVA boost of some £850 to £1,100 million**<sup>34</sup>. The extent that this boost occurs in locally and sub-regionally will depend on location of suppliers in the construction and fit out work and then the subsequent supply chains involved (i.e. degree of leakage of the construction activity out of the local area and region).
- 6.14 The study referred to previously for Northern Virginia calculated that for every \$1 of economic output created in construction there was around \$0.65 in further indirect and induced multiplier economic effects in Northern Virginia. The economy and population of Greater Lincolnshire is considerably smaller than that of North Virginia<sup>35</sup> so such multipliers need to be used with caution. Nevertheless, there would be significant further multiplier effects during the construction phase.

## Local economic impacts from the operation of the data centre

6.15 Data centres are very large scale and capital intensive projects that involve significant energy and IT infrastructure. They are highly automated forms of economic activity but still do require significant numbers of skilled and well-paid on-site staff to ensure they can remain operational at all times. The number of staff and types of jobs will depend, ultimately, on the nature of the customers using the data centre and their business models. Nicol Economics have also reviewed a wide range of studies on the economic impact of data centres (see Box 6.1).

Box 6.1: Sources used to estimate economic impacts of the proposed new data centre							
Source	Comments						
Magnum Economics (2022)	Estimates of the importance of data centres in North Virginia to the State economy of Virginia for the Northern Virginia Technology Council (NVTC).						
Dutch Data Centre Association (DDCA) (2018, 2019 and 2020)	Produce estimates of total jobs, total area and total power of colocation data centres for these three years. Averages are taken the from these.						
Copenhagen Economics (2019)	A study of the forecasts benefits of a proposed new hyperscale Google data centre (now built) in Denmark. The forecasts of direct operational jobs are used.						
Oxford Economics (2018)	Study of the economic benefits of six major Google data centres in six different states in the USA. For comparability, the direct operational jobs figures only and the areas of the data centres are used.						

<sup>34</sup> Based on the lower end of the range of potential overall construction costs

<sup>35</sup> 3.07 million in Northern Virginia (2020) compared to 1.1 million in Greater Lincolnshire



Box 6.1: Sources used to estimate economic impacts of the proposed new data centre					
Source	Comments				
Broxbourne Borough Council (2019 and 2020) and RPS (2018)	Job estimates for the new Google hyperscale data centre that has recently received planning permission at a site in Cheshunt in Hertfordshire. The updated job estimates were 200 to 300 FTE jobs for a 62,200 sqm data centre.				
IDA (2018)	Study by Grant Thornton for the Ireland Development Agency of the economic footprints of data centres in Ireland (which are focussed on hyperscale data centres).				
Menon Economics (2017)	Includes an assessment of the forecast direct jobs numbers for a new data centre in Norway with three computer halls each "approximately 30,000 sqm with an installed electrical power of just above 30 MW".				

#### Direct on-site jobs created

- 6.16 Applying in a mechanistic way the rules of thumb of FTE jobs per MW of IT load or building area from other hyperscale data centres would in theory imply of the order of 900 FTE jobs, given the scale of the proposed data centre in terms of IT Load.
- 6.17 However, the new generation of AI training data centres have a different ratio of jobs relative to the size of the data centre and it would be misleading to apply such simple jobs per sqm or MW of IT load to the proposed data centre to establish the number of jobs on-site.
- 6.18 There is limited information in the public domain on the number and type of jobs in the new large AI-training data centres. However, Meta has announced plans for its latest generation of data centre investment in the US at Temple, Texas, and Kuna, Idaho. These AI data centres are around 84,000 sqm to 89,000 sqm in area respectively with just 100 operational jobs reported, or 1 FTE job for every 840 to 890 sqm<sup>36</sup>. We consider that this is the most reasonable stating point to estimate the number of jobs at the Humber Tech Park when it is fully operational. Applying these ratios would predict a figure of **around 350 to 370 FTE operational jobs** for the completed development, although the actual number will depend on the precise configuration of the activities.
- 6.19 These jobs would be in a range of activities including jobs in data centre operations (facilities management, mechanical engineers, electrical engineers and systems technicians), data centre hardware operations (network engineers and hardware engineers), security, maintenance, catering and cleaning.
- 6.20 The new jobs in the data centre would provide an opportunity to support **upskilling** locally and the development of training and other programmes. Currently the ICT sector in North Lincolnshire and North East Lincolnshire is small and there are few job opportunities. There were just over 1,000 people employed in the whole ICT sector in 2022 or only around 0.8% of all jobs locally<sup>37</sup> compared to 2.7% across all Yorkshire and the Humber and 4.6% in Great Britain.



<sup>&</sup>lt;sup>36</sup> The total <u>reported cost</u> is some \$800 million (£645 million) with, at the peak, around 1,200 construction workers on site

<sup>&</sup>lt;sup>37</sup> There were about 139,000 employees working in the two Unitary Authorities in 2022 (73,000 in North Lincolnshire and 66,000 in North East Lincolnshire)

6.21 There are excellent opportunities to develop local **apprenticeship and apprenticeship programmes** linked to the jobs at the data centres providing pathways to jobs and skills in engineering (electrical and mechanical) and IT sector jobs. The developers of Humber Tech Park are already in conversation with training and education bodies that could manage and deliver apprenticeships and other training and will provide funding to support such programmes (to be agreed via Section 106 arrangements).

#### Wages paid

6.22 The jobs in data centres are often highly skilled. Experience from other data centres in the UK suggests that the average annual wage paid for a full time job at the data centre is likely be in the range of £48,000 to £55,000 (and higher for specialist skills)<sup>38</sup>, giving an annual wages bill for a total of 350 to 370 FTE staff of **£18 million to £20 million** (in 2023 prices). The wages paid would be **well above** the average of North Lincolnshire or North East Lincolnshire - around 50% higher than the median annual wage for the local area<sup>39</sup>.

Table 6.2: Estimates of wages paid, Humber Tech Park (when fully operational)								
Range	£000s pa per FTE	Assumed FTE jobs on site						
		346	370					
Higher	£55.0	£19.1	£20.3					
Lower	£49.5	£17.1	£18.3					
Average <b>£52.3 £18.1 £19.3</b>								
Source: Nicol Economics estimates								

Direct Gross Value Added (GVA) created

- 6.23 As explained above, data centres are extremely capital intensive forms of economic activity resulting from the high costs of construction and the value of the equipment located within a data centre. There is limited robust data on the economic value of the output from data centres (in part because they are a very new form of economic activity). In the UK, the closest approximation is the data on the "data processing and hosting" sector (SIC 63.11). In 2021, according to the Annual Business Survey (ABS)<sup>40</sup>, the total amount of GVA (economic output) from the information services sector (SIC 63) was £11.8 billion of which the data processing and hosting sector accounted for £9.0 billion<sup>41</sup>.
- 6.24 The GVA per job filled in 2019 was £140,000 for the whole information services sector (SIC 63) and around £130,000 for the "data processing and hosting" sector (SIC 63.11). In 2024 price terms these would be, respectively, around £170,000 and £155,000 per job.

- <sup>39</sup> In 2022, according to Annual Survey of Hours and Earnings (ASHE) data average annual wages for those working full-time were: North Lincolnshire, £28,800 median and £34,000 mean; North East Lincolnshire, £29,900 median and £35,200 mean.
- <sup>40</sup> The ABS is an annual sample survey of approximately 73,000 businesses across the United Kingdom by the ONS. The ABS draws its sample from the Inter-Departmental Business Register (IDBR).
- <sup>41</sup> The total estimated value of GVA from SIC 61 to 63 (what is referred to as the "data/information economy" in this report) was £116 billion.



<sup>&</sup>lt;sup>38</sup> Based on a mix of information from confidential information from actual data centre operators, online recruitment sites such as <u>Total Jobs</u> and the Annual Survey of Hours and Earnings (ASHE). ASHE reported the mean UK full time salary in the Information and Communication sector (ICT) in 2023 as around £53,000 (<u>Table 29.7a Annual pay - Gross</u>) and for Yorkshire and the Humber region around £48,000 (<u>Table 5</u>).

- 6.25 Given the highly capital intensive nature of the proposed development we have also looked at the estimate for Northern Virginia of the direct economic output produced per job in data centres there (which are comparable in terms of scale). This was around \$600,000 per job in 2021 (or £550,000 in 2024 UK prices).
- 6.26 Using this higher figure of GVA per job leads to a much larger estimate of around **£190 to £200 million** in direct GVA generated by the data centre. Given the scale and capital intensity of the proposed development, this higher figure is, we consider, the more robust one to use as a measure of the <u>direct</u> GVA generated by the development in North Lincolnshire. To put this figure into context, it would represent about a 3% increase in the total estimated GVA generated in North Lincolnshire in 2024<sup>42</sup>.

#### Other indirect and induced economic effects

- 6.27 All forms of economic activity produce wider benefits via so-called **multiplier effects**. These stem from: supply chain effects ("indirect impacts"); and from the jobs and economic activity supported by the wages of those employed directly and indirectly ("induced impacts").
- 6.28 The scale of these effects depends on a wide range of factors: the nature and location of key purchases by the data centre; the area of impact considered (the larger the area the bigger will be their effect); and the economic base of the surrounding area (if businesses located there can provide the key inputs and purchases or if these need to be supplied from further afield or abroad).
- 6.29 It is not possible to assess the precise scale and location of these effects for the proposed project. However, there are useful <u>indicators</u> of the potential scale of these effects at the level of the UK or regional economy:
  - The research from the recent study on data centres in Northern Virginia showed that the multipliers (ratio of indirect and induced effects to direct effects) were 3.9, 1.7 and 1.1 for jobs, wages and GVA respectively (at the level of Northern Virginia<sup>43</sup>).
  - A study by Oxford Economics<sup>44</sup> for Google estimated the indirect effects at a US state level to be around 0.94 indirect jobs for every one direct job in a Google data centre.
  - The estimates for the country of Norway were an overall multiplier of 1.22 for jobs and 1.25 for GDP (and for just indirect effects around 0.7 for jobs and 0.8 for economic value)<sup>45</sup>.
- 6.30 These multipliers relate to larger and more complex economic geographies than that of North Lincolnshire. The 2014 HCA Guidance on additionality suggests that most projects will be in the category of median multiplier levels (for "average linkages"). The multipliers they suggest are 1.1 at a neighbourhood level and 1.5 at a regional level. More recently the HM Treasury Green Book (2020) has advisory estimates for job multipliers for different sectors. This project would be classify as tradable<sup>46</sup> and so the potential multiplier is 1.3 extra jobs for every 1 job created (0.9 non-tradable and 0.4 tradable sector jobs for the Green Book central estimates).

<sup>43</sup> The GDP of the State of Virginia was around \$557 billion dollars in 2019 or roughly a fifth (20%) of the size of the UK economy £2,170 billion (its population at 9 million is about 13% of the UK's population)

- <sup>45</sup> The GDP of the whole country of Norway was around \$403 billion dollars in 2019 or roughly a fifth (14%) of the size of the UK economy £2,172 billion (its population at 5.3 million was about 13% of the UK's population)
- <sup>46</sup> A sector where the output is sold mostly outside the local area as in the case of a data centre



<sup>&</sup>lt;sup>42</sup> Estimated at around £5.36 billion in 2021 according to the ONS, increased to £6.13 billion in 2024 by applying the GDP deflator from 2021 to 2024 (14.4%)

<sup>&</sup>lt;sup>44</sup> Oxford Economics (2018) but ranged from 0.7 in South Carolina up to 1.35 in Georgia.

6.31 We have constructed an <u>initial</u> estimate of GVA generated and associated jobs and wages bill in the supply chain in Greater Lincolnshire arising from the wages bill and local spend by the data centre operator at Humber Tech Park.

Table 6.3: Initial estimates of overall jobs and GVA creation by the proposed new data centre for the Greater Lincolnshire area (2024 prices)								
Type of economic effect	Jobs (FTEs)	GVA (£ms)	Pay (£ms)					
Direct (A)	370	£203	£19.3					
Indirect and induced (or multiplier effects) (B)*	480	£34	£17					
Total (C=A+B) 850 £237 £36								
Source: Nicol Economics estimates. Notes: these assume the development is fully built out; these are the gross effects and assume the economic benefits are fully realised, they do not consider any possible displacement or								

effects and assume the economic benefits are fully realised, they do not consider any possible displacement or substitution (crowding out) effects in the labour market. \* based on applying the average GVA per job in North Lincolnshire of an estimated £68,100 in 2024 prices<sup>47</sup> and 50% of that remaining as local wages.

#### Location of job and supply chain benefits

- 6.32 Humber Tech Park is located in the local authority area of North Lincolnshire. This is where the direct economic activity will take place and jobs located. However, the site is located close to the boundary with North East Lincolnshire so employees will travel from there as well. It is difficult to say with any degree of certainty how many of the jobs would be taken by residents of North Lincolnshire. In 2021, overall 80% of jobs located in North Lincolnshire at the time were filled by residents of North Lincolnshire and a further 5% by residents of North East Lincolnshire<sup>48</sup>. In the South Killingholme area due to its proximity to North East Lincolnshire (and so the settlements of Immingham and Grimsby), the share of workers commuting in from North East Lincolnshire will be higher<sup>49</sup>.
- 6.33 The proposed development will also benefit the economies, businesses, and residents across Greater Lincolnshire including North Lincolnshire via the wider supply chain.

#### **Non-domestic rates impacts**

6.34 Under current arrangements North Lincolnshire Council stands to retain some of the additional business rates from any new development to help support local services and investment in the local area. We have assessed the likely total rateable value for the completed development to be around £23.5 million for the buildings including an amount for the plant and machinery. This is based on other large data centres in England and Wales<sup>50</sup>.



<sup>&</sup>lt;sup>47</sup> The estimate of £6.13 billion in GVA and the figure of 87,000 total jobs based in North Lincolnshire according to ONS estimates for 2022.

<sup>&</sup>lt;sup>48</sup> The next two most important locations were: Kingston upon Hull and West Lindsey (in both cases their residents accounting for 3% of jobs). It is important to note that due to the impact of Covid at the time of the 2021 Census (April 2021) more people were on furlough or working from home than normal, so these proportions will have changed more recently. Nevertheless, they indicate that North Lincolnshire is a relatively self-contained labour market and that the most important source of workers is North East Lincolnshire

<sup>&</sup>lt;sup>49</sup> The Middle Super Output Area (MSOA) of Barnetby, Ulceby and Killingholme (North Lincolnshire 004 or E02002752) covers the Proposed Development site. In 2021, of the 5,130 people working there, 50% were residents of North Lincolnshire, 42% were residents of North East Lincolnshire and 8% from elsewhere (source Origin-Destination data, England and Wales: Census 2021)

<sup>&</sup>lt;sup>50</sup> Based in large part on the Vantage, data centre in Newport, Wales. This a 36,000 sqm data centre whose total rateable value is £2.8 million and taking account of the mix of floor areas etc. The rateable value (RV) assessed excludes the gantry floors. The average RV per sqm across 11 data centres was £148 per sqm, applied to the proposed development excluding gantries this would be higher at £26 million in RV.

6.35 For such a building, the current rates paid based on rates multiplier of £0.512 for every £1 of rateable value would be around £12 million<sup>51</sup>. The amount that could be retained locally (by North Lincolnshire) is based on 50% of the extra rates paid would be around £6 million. To put this in context, the net revenue budget for the council in 2022/23 was £170 million.

# **Economic impacts from the proposed greenhouse**

6.36 The development proposals include the provision of a "horticultural glass house". This would be a high-tech greenhouse for growing crops such as tomatoes. The greenhouses would be linked to the data centre and benefits from the supply of heat from the data centre. Work for Humber Tech Park Ltd by Collison and Associates Limited as assessed the potential of a series of greenhouses covering 2.8 hectares (7 acres). The agricultural output would be around £3.5 million and the activity would support an estimated 28 FTE on-site jobs (with up to 10 additional off-site jobs in the supply chain).

#### Conclusions

- 6.37 The development of a 384MW IT load AI data centre in North Lincolnshire would provide a major boost to the local and wider economy:
  - The c. £2 billion plus million investment will support 10,000 to 13,000 person years of employment both on and off site during the construction and fit-out stage and around 2,500 up to 3,700 annual jobs on and off site. This will provide a direct c. £850 to £1,100 million GVA boost in total during the construction period.
  - 2) When fully operational, the data centre will support around 370 direct FTE on-site supporting a £19 to £20 million annual wage bill and an estimated £200 million in direct GVA. It would deliver a 3% increase in the total estimated GVA generated in North Lincolnshire in 2024
  - 3) Taking account of potential supply chain and other multiplier effects, a further potential 480 FTE jobs (or a total of c. 850 FTE jobs) and £17 million of wages (£36 million in total) would be supported in the Greater Lincolnshire area.
  - The development would provide an average annual salary for workers on site of around £50,000 per FTE which is very substantially above current wage levels in North Lincolnshire
    around 50% higher than the mean and 75% higher than the median annual wage for jobs based in the North Lincolnshire local area.



<sup>&</sup>lt;sup>51</sup> This would be a 14% increase on the total net business rates collected in 2022/23 by North Lincolnshire, most of which it does not keep but goes into a central pool)

# 7. Conclusions

- 7.1 The principal conclusions from this report are as follows:
  - 1) There is widespread and clear policy support at a national level for ensuring the UK has a high quality and resilient digital infrastructure including data centres. The UK government is supportive of the UK taking a leading role in the new world of AI.
  - 2) The rate of growth of data storage capacity in data centres has been extraordinarily fast and shows no signs of slowing down as changes in technology drive the way society and the economy operates in the UK (and globally).
  - 3) The need for data centres has been further increased by the new development of AI in so called large language models supporting products such a ChatGPT. The development and delivery of these applications requires very large amounts of data processing capacity and associated power.
  - 4) There is an opportunity to attract some of the relatively small number of large scale Al GigaSite data centres that are being development and rolled out very rapidly by major tech companies at present. Al data centres that are designed to train large scale Al applications are more footloose than other forms of data centres (which tend to cluster near major metropolitan centres).
  - 5) As well as an attractive climate for inward investment and business that exists in the UK, such data centres need large sites and a ready supply of power that are not subject to unacceptable fisks (such as flooding).
  - 6) South Killingholme provide an excellent and competitive location for such an investment.
  - 7) The c. £2 billion plus investment would be one of the largest inward investment in the UK. It would support 10,000 to 13,000 person years of employment both on and off site during the construction and fit-out stage and around 2,500 up to 3,700 annual jobs on and off site. This will provide a direct c. £850 to £1,100 million GVA boost in total during the three to four year construction period.
  - 8) When fully operational, the data centre will support around 350 to 370 direct FTE on-site supporting a £19 to £20 million annual wage bill and an estimated £200 million in direct GVA. It would deliver of the order of a 3% increase in the total estimated GVA generated in North Lincolnshire in 2024.
  - 9) Taking account of potential supply chain and other multiplier effects, a further potential 480 FTE jobs (or a total of c. 850 FTE jobs) and £17 million of wages (£36 million in total) would be supported in the wider area.
  - 10) The development would provide an average annual salary for workers on site of around £50,000 per FTE which is very substantially above current wage levels in North Lincolnshire around 50% higher than the mean and 75% higher than the median annual wage for jobs based in the North Lincolnshire local area.
  - 11) The development also provides excellent opportunities for training and skills development and helping growth the digital economy in North Lincolnshire and support the engineering and construction skills base.



# **Appendix A: Data tables**

Table A1: South Humber Bank Scheme								
Time period	IT Load MW Annual build out (illustrative)	Cost assumption	Apply basic T&T	Factoring cheaper UK	Applying quoted r US range***		recent *	
	(mustrative)		(London/ UK)*	location	Low	High	Mid	
		\$ per MW	\$10.2	\$9.2	\$7.0	\$12.0	\$9.5	
		£s per MW	£8.2	£7.4	£5.6	£9.7	£7.7	
			Costs £ms	s, 2023 pr	ices			
Year 1	150		£1,232	£1,109	£847	£1,451	£1,149	
Year 2	150		£1,232	£1,109	£847	£1,451	£1,149	
Year 3	84		£690	£621	£474	£813	£643	
Total	384		£3,155	£2,840	£2,167	£3,716	£2,942	
Elements								
Building shell		14%	£448	£403	£308	£528	£418	
Electrical systems		45%	£1,422	£1,279	£977	£1,674	£1,325	
HVAC / mechanical / cooling	5	21%	£649	£584	£446	£764	£605	
Fire suppression		2%	£77	£69	£53	£90	£71	
Building fit-out		18%	£560	£504	£385	£660	£522	
All elements			£3,155	£2,840	£2,167	£3,716	£2,942	
Rounded		£3,200	£2,800	£2,200	£3,700	£2,900		
Total person years of emplo	yed created	Higher	18,000	16,000	12,000	21,000	16,000	
(on and off site)****		Lower	14,000	13,000	10,000	17,000	13,000	

Note: \* Turner and Townsend, "2023 Data centre cost index" October 2023; \*\* assumed 10% cheaper based on Paris, Amsterdam and Dublin cost rates relative to London; \*\*\* sourced from <u>DatlInfra.COM</u> All figures exclude costs for: utility works, groundworks, site works, fibre cabling to support office fit-outs, professional services fees and active IT equipment; \*\*\*\* based on £178,000 of spend per jobs (higher jobs) and then with an assumed 20% efficiency to £223,000 per job (lower).



Table A2: Employee Jobs By Ir	ndustry, 2022				
Sector (ranked by jobs)	North	North	Yorkshire	Great	LQ vs Y&H
	Lincolnshire,	Lincolnshire	and the	Britain %	
	jobs	%	Humber %		
C : Manufacturing	19,000	26.0	11.4	7.6	2.28
G : Wholesale and Retail Trade	11,000	15.1	15.2	14.0	0.99
Q : Human Health And Social	8,000	11.0	14.9	13.5	0.74
Work Activities					
H : Transportation And Storage	6,000	8.2	5.4	5.0	1.52
F : Construction	5,000	6.8	4.6	4.9	1.48
P : Education	5,000	6.8	9.1	8.6	0.75
I : Accommodation And Food	4,000	5.5	7.3	8.0	0.75
Service Activities					
N : Administrative And Support	4,000	5.5	8.8	9.0	0.63
Service Activities					
O : Public Administration	3,000	4.1	4.7	4.7	0.87
M : Professional, Scientific And	2,000	2.7	6.5	9.1	0.42
Technical Activities					
R : Arts, Entertainment And	1,500	2.1	2.1	2.4	1.00
Recreation					
S : Other Service Activities	1,000	1.4	1.5	2.0	0.93
L : Real Estate Activities	700	1.0	1.3	1.9	0.77
J : Information And	600	0.8	2.7	4.6	0.30
Communication					
K : Financial And Insurance	600	0.8	3.0	3.3	0.27
E : Water Supply;	500	0.7	0.8	0.7	0.88
D : Electricity, Gas, Steam And	350	0.5	0.3	0.4	1.67
Air Conditioning Supply					
B : Mining And Quarrying	100	0.1	0.1	0.2	1.00
Total	72,350	100			

Source: ONS Business Register and Employment Survey : open access sourced via Nomis. LQ of location quotient is a measure of the degree of relative representation of sector or industry in an area compared to another areas, above 1 is relatively over-representation and below 1 relatively under-representation



#### Humber Tech Park: Economics Need and Benefits

Table A3: Qualifications levels of the working age population (January 2022-December 2022)										
Level	North Lir	ncolnshire	North East		Greater	Yorkshire &	Great			
			LINCOIN	snire	Lincoinsnire	нипрег	Britain			
	(Level)	(%)	(Level)	(%)	(%)	(%)	(%)			
RQF4 and Above	35,500	36	23,300	27	32	39	46			
RQF3 and Above	61,000	61	44,200	51	55	63	67			
RQF2 and Above	85,500	86	70,100	80	81	85	86			
RQF1 and Above	88,900	89	73,700	84	85	88	89			
Other qualifications	5,500	6	5,800	7	7	5	5			
No Qualifications	5,500	6	7,700	9	8	8	7			

Source: ONS APS accessed via NOMIS; Notes: levels and %s are for those aged 16 to 64

*Other Qualifications = includes foreign qualifications and some professional qualifications.* 

RQF/NVQ 1 Equivalent = fewer than 5 GCSEs at grades A-C, foundation GNVQ, NVQ 1,

RQF/NVQ 2 Equivalent =5 or more GCSEs at grades A-C, intermediate GNVQ, NVQ 2,

RQF/NVQ 3 Equivalent = 2 or more A levels, advanced GNVQ, NVQ 3

*RQF/NVQ 4 Equivalent and Above = HND, Degree and Higher Degree level qualifications or equivalent* 



Table A4: Occupations held by residents in work (all usual residents aged 16 years and over in employment the week before the Census 2021)							
Occupation (current)	North Lincolnshire North East Lincolnshire		Greater	Yorkshire	Great		
				Lincolnshire	& Humber	Britain	
	Nos.	%	Nos.	%	%	%	%
All usual residents aged 16 years and over in employment	76,219	100.0	68,849	100.0	100.0	100.0	100.0
212 Engineering Professionals	1,178	1.5	897	1.3	1.3	1.3	1.4
213 Information Technology Professionals	814	1.1	529	0.8	1.2	1.9	2.5
214 Web and Multimedia Design Professionals	111	0.1	83	0.1	0.2	0.3	0.4
311 Science, Engineering and Production Technicians	921	1.2	1,123	1.6	1.2	0.9	0.9
313 Information Technology Technicians	353	0.5	295	0.4	0.6	0.7	0.8
524 Electrical and Electronic Trades	1,012	1.3	971	1.4	1.3	1.3	1.3
525 Skilled Metal, Electrical and Electronic Trades Supervisors	300	0.4	190	0.3	0.2	0.2	0.1
All IT related (213, 214 & 313)	1,278	1.7	907	1.3	2.0	2.9	3.7
All engineering and allied (212, 311, 524 and 525)	3,411	4.4	3,181	4.6	4.0	3.7	3.7
Source: TS064 - Occupation - minor groups, 2021 Census of Population							

Table A5: Industry of work of residents, 2021 (all usual residents aged 16 years and over in employment the week before the Census							
Industry (current)	North Lincolnshire North East Lincolnshire		Greater	Yorkshire &	Great Britain		
					Lincolnshire	Humber	
	Nos.	%	Nos.	%	%	%	%
Total in work	76,217	100.0	68,851	100.0	100.0	100.0	100.0
C: Manufacturing	13,248	17.4	9,540	13.9	11.7	7.3	9.4
26 Manufacture of computer, electrical and optical	126	0.2	95	0.1	0.2	0.3	0.2
products							
27 Manufacture of electrical equipment	71	0.1	38	0.1	0.1	0.2	0.2
33 Repair and installation of machinery and	157	0.2	99	0.1	0.2	0.2	0.2
equipment							
41 Construction of buildings; 42 Civil engineering; 43	6,345	8.3	5,790	8.4	8.6	8.7	8.6
Specialised construction activities							
J: Information and communication	1,215	1.6	909	1.3	2.2	4.7	3.1
61 Telecommunications	312	0.4	207	0.3	0.4	0.7	0.7
62 Computer programming, consultancy and related	688	0.9	487	0.7	1.3	2.9	1.9
activities							
63 Information service activities	41	0.1	18	0.0	0.0	0.1	0.1
71 Architectural and engineering activities; technical	711	0.9	827	1.2	1.0	1.4	1.2
testing and analysis							
All IT (61 to 63)	1,041	1.4	712	1.0	1.7	3.7	2.7
All manufacturing and construction related to	7,410	9.7	6,849	9.9	10.1	10.8	10.4
project (26, 27, 33 and 41, 42 and 43, and 71)							<u> </u>
Source: TS060 – Industry, 2021 Census							

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Nicol Economics Bushby House Greystoke Penrith CA11 0TF www.nicol-economics.co.uk info@nicol-economics.co.uk

