Appendix 1

Warehousing and Logistics in the South East Midlands

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Warehousing and Logistics in the South East Midlands

Final Report

ICENI PROJECTS LIMITED ON BEHALF OF SOUTH EAST MIDLANDS LOCAL ECONOMIC PARTNERSHIP

Iceni Projects Limited on behalf of

South East Midlands Local

Economic Partnership

September 2022

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FINAL REPORT

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1. INTRODUCTION

1.1 This study has been commissioned by the South East Midland Local Economic Partnership (SEMLEP) on behalf of its constituent local authority partners (Bedford, Central Bedfordshire, Luton[1], Milton Keynes, North Northamptonshire and West Northamptonshire) to consider future demand scenarios for logistics premises and its potential implications for the local economy. This is consistent with government's 2022 published 'Future of Freight: a long-term plan' report, through enhancing local understanding of the long-term opportunities and challenges faced by the logistics sector, across themes including innovation, achieving net zero, strategic planning and skills.

1.2 In recognising the role and impact of logistics The South East Midlands Local Industrial Strategy[2] includes a number of key references and commitments:

- 'work with partners to support an extensive and balanced pipeline of employment land and premises in the area, which takes account of market intelligence and strategic infrastructure and seeks to underpin wider aims such as the regeneration of local cultural heritage and the furthering of the 'Settlements of the Future' agenda.' p10
- 'SEMLEP and its stakeholders want to support an extensive and balanced pipeline of employment land and premises in the area, to ensure that local growth is not held back due to a lack of suitable premises, nor skewed in favour

[1] Luton falls under the SEMLEP area however declined to participate directly in the study. Proxy demand, supply and delivery statistics have therefore been derived from non LPA sources such as CoStar and VOA. forecasts for future demand include Luton.

[2] South East Midlands Local Industrial Strategy, 2019, produced by SEMLEP

of large warehouses at the expense of the opportunity to plan strategically for the use of key sites.' p77

- 'Where warehouses are developed – and a 2017 report by CBRE and SQW suggests continued strong demand for both industrial and logistics floorspace along the M1 corridor and at J10a – this should be undertaken in a manner that is sensitive to the local environment and compatible with LIS goals to increase innovation.' p77

1.3 This report has been prepared objectively and transparently drawing on well recognised techniques in modelling the future requirements of the sector and is in line with the National Planning Policy Framework and Planning Practice Guidance, as it reflects engagement in the sector, analysis of market signals, demand forecasts and engagement with the Local Economic Partnership[3].

1.4 The objectives as established in the study brief are:

- Establish the baseline warehouse stock position and current role of logistics floorspace in the South East Midlands
- Establish the logistics historic floorspace construction timeline and future supply of land.
- Forecast scenarios for future demand and growth in the logistics sector in the South East Midlands, to 2030, 2040 and 2050, and identify if/how the role of the area for the sector might change.
- Set forecasts against projections for land supply, to understand the likely extent of any surplus/shortfall. Locational factors that drive demand, and resulting areas of particular pressure, should be identified.

[3] Planning Practice Guidance Paragraph: 031 Reference ID: 2a-031-20190722

- Examine the extent to which warehousing growth might impact upon the availability of other forms of industrial premises and think how this can best be managed to allow for balanced employment growth.
- Recommend a sound approach to sustainably plan for and manage logistics growth to 2050 (specific sites for warehousing should not be identified, but optimal conditions for sites should be).
- Identify barriers to and opportunities for growth and innovation, particularly with regards to more sustainable freight solutions, congestion management and positive environmental impacts.
- Set out the employment implications of future strategic warehousing needs, alongside an assessment of current and future labour and skills in the sector. This should include projected numbers and skill levels and types, and explicitly analyse the projected impact of automation.
- Review best practice and recommend how the warehousing and logistics sector in the SEMLEP area can be effectively and consistently monitored to provide robust evidence to inform future policy formation and review.

1.5 The study is made up of the following sections:

- 3. Future Logistics: E-Commerce, Automation, Sustainability
- 4. Logistics Skills & Employment
- 5. Relevant Evidence and Literature
- 6. Property Market Review
- 7. Future Land Supply
- 8. Estimates for Future Strategic Warehousing – Replacement and Traffic Growth
- 9. Estimates for Future Strategic Warehousing – Completions

- 10. Estimates for Future Strategic Warehousing – Market Signals
- 11. Future Warehouse Floorspace Growth Scenarios: Summary and Supply Balance
- 12. Implications for Other Industrial Uses
- 13.Locations for Future Development
- 14. Managing Logistics
- 15. Future Employment
- 16. Summary and Conclusions

1.6 The South East Midland's constituent authorities potentially have logistics capability and opportunities in one of the fastest growing sector in UK, and an ecosystem that includes highly regarded universities and colleges. It is home to head offices for key logistics companies DHL, XPO and innovative support companies such as ABB automation at Milton Keynes, Head Offices for Mercedes, Scania trucks and Jungheinrich forklifts.

1.7 Warehousing employment is an important component of the SEMLEP area's economy. In 2020 warehouse specific employment[4] accounted for around 49,000 jobs and 6% of all employment (and the actual number engaged in warehousing and logistics could be much higher). From 2015 to 2020 the total employment count in this sector increased by over 50% from 31,750 to 48,500.

1.8 It is acknowledged that this presents both opportunities and challenges for the authorities in managing the growth of the sector, as reflected below. The demands of the logistics sector need to be considered in the round as part of a balanced

[4] Business Register and Employment Survey (BRES) reporting for Warehousing and support activities: SIC52

Local Plan making process, and in broader policy and strategy, to ensure good growth and sustainable places.

Table 1.1 Logistics Sector SWOT for SEMLEP area

Strengths	Weaknesses
• Existing cluster of logistics firms, head offices and learning institutions with dedicated sector teaching. • Host to firms / developments with leading technologies and sustainability advances. • Central road / rail network location therefore well positioned in national competitiveness terms. • Existing and growing labour pool with sector specific skills. • Good certainty of demand based on recent / long term historic trends and current market indicators including e-commerce growth, and the relationship between economic growth and demand for supply chain services.	• Sector which is land hungry and relatively low density in employment terms. • Large volume tall buildings with potential for visual impact unless mitigated. • Emissions in construction / operational phases of buildings unless sustainably developed. • Includes a proportion of low skills roles notably warehouse operatives and delivery drivers. • Generates traffic, contributing to congestion and emissions.
Opportunities	**Threats**
• Anticipated ongoing levels of demand will generate further job creation in construction and operational sectors. • Outlook is for significant increases in GVA and GVA per head growth in the future. The South East Midlands Local Industrial Strategy also commits to supporting productivity growth in the sector, and can be at the forefront of this. • Structural change in the sector continue to see technology advances in delivery mechanisms and automation of warehouses, reducing reliance on labour (in lower value activities) and increasing demand for higher value roles. • Increased moves in the sector to sustainability measures in construction, building operation and delivery vehicles.	• Labour shortage for a range of roles will restrict growth and increase wage inflation, impacting consumer costs. • Consumer recession threatens demand. • Failure of the sector to sufficiently respond to the climate change agenda, increasing emissions in the construction / operation of buildings and on road network. • High warehouse land values and demand challenging for Local Plan making e.g. threaten land planned for other types of development (notably other commercial such as office, small industrial, R&D). • Industry unable to meet occupier demand without sufficient land allocated in Local Plans, leading to unplanned or displaced sub optimal development locations.

2. FUTURE LOGISTICS: E-COMMERCE, AUTOMATION, SUSTAINABILITY

2.1 This section reports on the transformation of the logistics sector in terms of its technology and sustainability performance.

2.2 Typically, in comparable reports to this study, the industry changes are discussed at the end. However, the importance of communicating these aspects for context is considered such that this section forms an early part of the study. The key topics considered are:

- Growth of E-Commerce
- Warehouse Automation
- De-carbonisation
- Urban Logistics
- Power and sustainability

2.3 The SEMLEP area has significant strengths in the logistics market including: in in-bound goods due to the intersect of Southampton, Thames Gateway and Felixstowe Ports; Out-bound goods given to access to 90% of England within 4.5hrs allowing fleet utilisation to be maximised; Outbound e-commerce capabilities between Birmingham and London and a considerable strength in infrastructure due to organisations such as Amazon, Ocado and entrepreneurs/ disrupters.

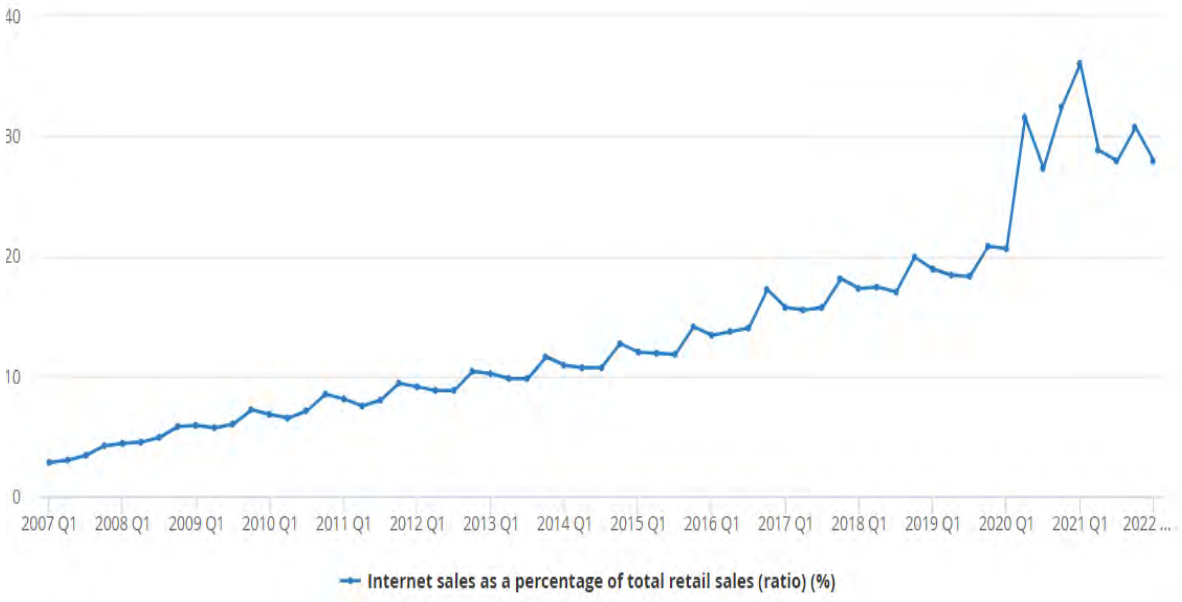
2.4 As a result, it is both a heartland to logistics, with other parts of the East Midlands, and is central to the transformation of the logistics sector as it responds to changes and challenges in society as set out below.

Growth of E-Commerce

2.5 The rapid growth in e-commerce retail sales, at the expense of goods sold via traditional ‘bricks and mortar’ outlets, is now widely appreciated. Direct consumer

deliveries have become a central component in the modern lifestyle and are the single most significant component generating change in the logistics sector. The graph below shows the value of e-commerce sales as a percentage of total retail sales since 2007.

Figure 2.1 E-Commerce Sales as Percentage of Total Retail Sales



Source: ONS see live time series at: https://www.ons.gov.uk/businessindustryandtrade/retailindustry/timeseries/j4mc/drsi

2.6 Just under 30% of retail sales (by value) are now undertaken via e-commerce platforms; they were below 4% in 2007. The graph shows that the Covid-19 pandemic caused a significant step-change in e-commerce sales (market share increasing by 10 percentage points in one year), though it would appear that the previous (pre-Covid) growth trend has since resumed. E-commerce sales reached nearly 35% when non-essential outlets were closed during the height of the pandemic (falling back slightly since).

2.7 The growth trend in the graphs can be explained by a combination of factors, including:

- Technological developments – the development, and widespread ownership of, smart phones and tablets alongside fast broadband and data provision

services means many consumer products can be purchased within a few ‘clicks’ and ‘on the move’;

- The liberalisation of parcel and courier services in the EU – new entrants and the competition subsequently generated have enabled e-commerce retailers to access quick, efficient and cheap delivery services;

- The ability of the e-commerce retailers to competitively price goods, undercutting traditional ‘bricks and mortar’ retailers. This has arisen through a combination of bulk buying (from China/Far East), efficient storage and relatively cheap delivery services (see above) and no requirement to operate a labour intensive outlet network in city/town centres which attract high rents and business rates;

- Convenience – avoiding the need to travel into congested urban centres or retail parks (not everybody subscribes to the ‘retail therapy’ concept)

2.8 These trends are likely to continue. The National Infrastructure Commission (NIC) noted in its 2019 report, *Better Delivery: The Challenge for Freight*, that e-commerce could reach 65% of all retail sales by 2050. E-commerce *order fulfilment*[5] can be undertaken in three ways:

- Digital – tickets, films and music can be downloaded digitally rather than a physical object being posted to the consumer;

- ‘Click and collect’ – goods are reserved/purchased online but are collected by the consumer from a retailer’s physical outlet; and

[5] In e-commerce, the process of picking, packing and delivering the product ordered is often called ‘order fulfilment’ and distribution centres are sometimes called order fulfilment centres.

- Direct deliveries to residential and commercial properties or to a designated drop-off point, either via the retailer's own transport operation or through one of the parcel/courier networks

2.9 The rapid growth in direct delivery e-commerce is having a significant impact with respect to the need for, size and location of distribution centres. Many older warehouse units cannot accommodate the equipment and facilities required for on-line sales, or the ability to handle distribution to retail outlets alongside direct to home e-commerce deliveries under the same roof. Emerging e-commerce only retailers, such as Amazon or ASOS, had to commission new purpose-built facilities from scratch or seek new facilities to accommodate the growing demand volumes (as evidenced by figure 2.1). The combined result of this structural change is a growing need for new warehouse units purposely designed for e-commerce (as opposed to traditional retailing), albeit a proportion of the floor space generated is replacing existing life-expired capacity.

2.10 The returns process also places a major increased activity burden on the logistics sector. For all sales the average return is 10.6% whereas for online sales this rises to 18.6%[6]. In store returns can be assessed at the point of return, whereas online returns are posted and assessed in warehouses creating a considerable space requirement for retailers.

2.11 While some of the larger e-commerce retailers (particularly Amazon) have developed a network of Regional Distribution Centres (RDCs) (in much the same manner as the large grocery retailers), many e-commerce retailers have developed a single or series of customer fulfilment centres (CFCs) which receive and then store cargo from suppliers. The CFC will either serve the whole country (effectively a National Distribution Centres or NDC) or multiple regions (i.e. larger hinterland than a traditional RDC). Examples of these facilities in the study area include Homebase's RDC in Wellingborough on Sywell Road (300,000 sq. ft) and

[6] 2020 Data for the US, Consumer Returns in the Retail Industry 2020, National Retail Federation

NDCs for Waitrose at Milton Keynes Magna Park (900,000 sq. ft) and Royal Mail at DIRFT (240,000 sq. ft).

2.12 Order fulfilment initially begins at the CFC, where on-line orders are picked, appropriately packed, and labelled before being loaded onto freight vehicles for trunking to a series of regional cross-dock facilities located close to major conurbations. A cross-docking facility is superficially similar to a warehouse, albeit is smaller is scale and designed primarily for transferring cargo directly between freight vehicles with no storage function. From the cross-docking facility, consignments are re-loaded onto final delivery vehicles, normally vans (LGVs), for transport to residential/commercial properties. The cross-dock facilities are often operated by the main parcel couriers, meaning they receive cargo from multiple CFCs. The spatial and land use planning implications of this are two-fold:

- CFCs are very large in scale (large plots required) and given their function they should ideally be located centrally to the major urban conurbations across the country.
- Cross-docking facilities are smaller in scale but require locations on the edge of the major urban conurbations.

Warehouse Automation

2.13 Warehouse operations have historically been labour intensive. Pallets requiring transfer between transport vehicles and storage racking have been undertaken using operatives driving fork-lift truck equipment. Grocery retail has traditionally relied upon warehouse labour to pick products at below pallet level quantities for individual stores.

2.14 More recently, e-commerce initially used manual labour to pick and pack parcel consignments. Employment densities typically range from 80 square metres per full-time equivalent (FTE) at RDCs through to 140 square metres per FTE at NDCs. Other than some specialist commodities, occupiers have not sought to invest in the significant automation of many warehouse operations (the exception being ICT systems to manage inventory levels etc.). The availability to date of

relatively cheap labour has potentially held back investment in large scale automation.

2.15 This situation is now changing rapidly, principally driven by a combination of two factors:

- The growth in e-commerce (as described above), with the consequent need to pick, pack and label ever increasing volumes of goods at individual consignment level (for overnight despatch). Automation is required to run the operation speedily and efficiently, and the nature of the operation also better lends itself to automation (at least partially) when compared to traditional NDC and RDC functions; and

- Increasing difficulty in recruiting labour at competitive rates of pay post Brexit. EU nationals have been returning back to their homelands (or other EU countries), whilst the new work-visa immigration system does not classify warehouse jobs as 'skilled'. Occupiers have therefore been unable to backfill vacancies with replacement inward migration, and neither have they been able to recruit from local labour markets[7]. At June 2022, the labour market notably in the East Midlands and South East is very tight with the unemployment rate around 3%[8] (see further discussion in following chapter).

2.16 Many new warehouse developments are therefore being designed and built with increasing levels of automation from the start. In many cases these new developments are replacing existing physically sound capacity that cannot accommodate automation. Automation equipment typically incurs significantly higher capital costs than the warehouse building itself.

2.17 The automation equipment requires significant levels of electrical power. It will therefore be essential that existing industrial areas and, importantly, new

[7] Discussion with HR managers at Magna Park, Leicestershire

[8] ONS: Labour Market in the Regions of the UK: June 2022

developments, are located where existing grid capacity is sufficient or network reinforcement can be delivered relatively easily and at a reasonable cost. This demand for power is combined with the need for power to charge electric vehicles (see below). Electric grid capacity is therefore a key issue determining the suitability or otherwise of sites for large scale warehouses. However this factor should not be at the cost of delivering developments of the highest quality in terms of their sustainability credentials given the clear potential of the sector to deliver zero carbon development (as highlighted below).

2.18 Automation is also transforming the skills outlook for the sector, increasing the need for technicians and engineers to manage, monitor and repair equipment (see further discussion in following chapter).

2.19 Automation typically aims to address one or two of the six core warehousing functions: unloading/receiving; put-away; storage; picking; packing; and loading/shipping. Each can entail very different actions, movements, variability and levels of complexity, whilst each also requires very specialised equipment. However, at its core, automation in the logistics industry has the potential to revolutionise operations by reducing costs, expanding capabilities and boosting productivity.

Case Study: Wincanton, Rockingham, Corby, Northamptonshire

2.20 Wincanton's state of the art automated eFulfilment warehouse in Rockingham, Corby is a shared warehouse enabling clients to flex their space needs to meet changing customer and consumer requirements. The company has chosen to locate a new Innovation Centre on this site, providing a showcase of the cutting-edge design and technologies that benefit Britain's supply chains, as well as being an education tool for local schools to develop talent for the sector. Wincanton also in 2021 acquired Cygnia, a specialist mid-market eCommerce and multichannel eFulfilment provider with multiple fulfilment centres in Northampton.

2.21 In June 2022 Wincanton announced a that it has made a multimillion-pound investment in autonomous mobile robot (AMR) technology to accelerate its eCommerce capabilities. A fleet of 48 collaborative robots provides Wincanton

with greater flexibility in its operations for customers, enabling it to better manage the fluctuating product volumes associated with high volume eFulfilment work.

2.22 The fleet will be deployed in the summer of 2022 at Wincanton's Cygnia distribution centre "DC7" in Northampton. The implementation of new technology at Cygnia's site in Northampton means that over a quarter of all of Wincanton's warehouse stock contains automation and robotics. The Group employs a skilled team of over 60 engineering colleagues to manage and maintain its use across the portfolio.

Figure 2.2 Wincanton autonomous mobile robots

Source: wincanton.co.uk

De-carbonisation

2.23 De-carbonisation in the supply chain normally refers to the need to switch to net-zero emission freight transport, given that warehouses can and are powered by net-zero emission electricity. Currently, domestic transport accounts for around 27% of the UK's total greenhouse gas (GHG) emissions (and having only decreased by 2% since 1990), with vans and HGVs combined being responsible

for 9% of total UK GHG emissions[9]. Decarbonisation of the sector is therefore an imperative.

2.24 Modal shift to rail, particularly for medium to long distance flows, is likely to form an important component in de-carbonising the supply chain. However, not all road freight journeys can be replaced by rail, and there will be a need to develop road-based solutions that are also net-zero. Both modal shift and net-zero road solutions will have spatial implications with respect to warehousing.

2.25 For smaller road freight vehicles (i.e. LGVs), battery-electric vehicles (BEVs) are now emerging as the viable zero emission alternative to petrol- or diesel-powered vans. While uptake is currently slow, a greater choice of BEVs is now available (between 2.5 and 4.25 gross vehicle weight). While purchase costs are currently higher than petrol/diesel vans, these should be outweighed by lower operating costs (fuel and maintenance), and purchase costs are likely to fall in relative terms going forward as the manufacture of BEVs is scaled-up. BEV range is also improving as battery technology develops. This is particularly important for e-commerce trade, as LGVs are the principal means of delivering directly to residential and commercial properties.

2.26 The resultant impact of this trend will be a future requirement to recharge large fleets of LGVs simultaneously (probably overnight) at a single depot location and from the same local grid connection. It will therefore be essential that local grid capacity has the requisite capacity.

2.27 A number of retailers and third party logistics (3PLs) operators are making advances and commitments to BEVs.

[9] DfT Transport and Environment Statistics 2021 Annual report

Case Study: DHL and DPD

2.28 **DPD** is a leading 3PL in the introduction of BEVs. By end of 2020 10% of its van fleet were zero emission, over 700 electric vehicles. DPD has a UK 25-25-25 Green Vision to deliver 'green' to 25 major UK towns and cities, covering 25% of the UK population by 2025. The first all-electric delivery service was live in the City of Oxford in 2021. The brand-new Bicester Distribution Centre (DC) opened in June 2021 and is DPD's inaugural building that was constructed according to net zero.

2.29 For the **DHL Group**, plans have been announced to have more than 80,000 e-vehicles on the road and 60% of last mile delivery electrified by 2030. DHL is working towards this goal in the UK with the intention that every new courier vehicle purchased will be electric, resulting in 100% of the UK-wide courier fleet being electric by 2030. DHL at end 2021 had 129 fully electric vehicles in operation including the UK's first fully-electric 16 tonne truck. At March 2022 a further 270 new vans were announced to enter operation across 30 urban locations across the UK.

2.30 The zero emissions Ford E Transits have a range of 140 miles and a payload of approximately 1000kg, similar to the diesel vans they are replacing. Drivers are provided with industry leading training to ensure they are familiar with the new vehicles and confident in their capabilities[10].

10 Https://Www.Dhl.Com/Gb-En/Home/Press/Press-Archive/2022/Dhl-Express-Announces-Next-Milestone-In-Electric-Van-Roll-Out.Html

Figure 2.3 DHL Ford E Transits

Source: www.commercialfleet.org

2.31 Decarbonising HGVs is going to be significantly more challenging. Options are emerging for alternatives; all involve propulsion by means of electric motors, albeit being supplied by electric current from different sources. The three options are:

- E-highways – similar to electrified railways, overhead live contact wires supported by catenary and masts provide power to the HGV (via a pantograph on the roof). They are being developed in a number of countries, including Sweden and Germany, while a trial on a 20km section of the M180 in Lincolnshire has received UK Government funding. For cost reasons, it is likely that only the strategic highway network could ever be wired in this manner, meaning some form of secondary power source will be required for 'final mile' trips away from the wires (possibly using small batteries which are subsequently recharged from the overhead wires).

- Battery electric – as the energy density of batteries increases and their costs fall due to mass production, it may be that battery electric HGVs are the most promising option. Range will not be as long when compared with diesel powered HGVs, however opportunities are likely to exist for rapid recharging as cargo is loaded/discharged or drivers undertake statutory breaks. Tesco have

recently begun a trial of battery-electric HGVs for moving containers the short distance between Wentloog (Cardiff) rail terminal and their RDC at Magor.

- Hydrogen fuel cells – combining hydrogen and oxygen (from air) to generate an electric current, with water produced as the by-product. Like diesel HGVs, they would have an extended range (when compared with battery electric HGVs) and rapid refuelling. However, they will only be truly net-zero if the hydrogen is produced from electricity generated from renewable sources ('green hydrogen'). Further, fuel cell vehicles are currently estimated to have an efficiency of around 22% (it is around 33% for diesel vehicles and 70% for battery electric vehicles). The UK Government is currently funding trials.

- Biomethane and can deliver carbon negative savings, depending on the organic feedstocks used. Biomethane derived from agricultural manures will be recognised in the EU's upcoming Renewable Energy Directive II (REDII), where further carbon savings may be delivered through the integration of Carbon Capture Utilisation and Storage (CCUS) technology[11]. CNG Fuels opened one of the world's largest public access biomethane refuelling station in Avonmouth, near Bristol in 2022.

2.32 Assuming battery-electric emerges as part of the preferred solution, the main resultant impact will come from the need to rapidly recharge large fleets of HGVs simultaneously at a single NDC/RDC (during loading/discharge) and from the same local grid connection. As per BEVs, the implication in land-use planning terms is that existing industrial areas and new developments will need to be located where existing grid capacity is sufficient or network reinforcement can be delivered relatively easily and at a reasonable cost, or where deployment of a smart grid solution is feasible to free up capacity at key points during the day. It will also be important that new distribution centres are designed so that loading docks can be equipped with fast charging points (either from new or retro-fitted at

11 Https://Www.Circularonline.Co.Uk/Opinions/Biomethane-For-Hgvs-Why-We-Cant-Afford-To-Wait-For-Hydrogen/

a later date), thereby enabling HGVs to recharge while cargo is loaded and discharged. Parking areas (within distribution centres and at lorry parks) will also need to be equipped with fast charging points (or capable of being retro fitted).

Case Studies: DIRFT John Lewis Biomethane HGVs

2.33 In 2020 Gasrec completed a £1 million upgrade to its flagship refuelling facility at the Daventry International Rail Freight Terminal (DIRFT) in West Northamptonshire, to meet the growing demand of transport operators making the transition to Bio-LNG (liquified natural gas) and Bio-CNG (compressed natural gas). A team of engineers installed new fuel dispensers, new supply lines and a new fuel management system, along with greater remote operability for the site – which has the capacity to refuel up to 700 trucks per day.

2.34 John Lewis is committed to their own fleet being sustainable by 2030 including moving 600 heavy goods vehicles (HGVs) to biomethane by 2028. At John Lewis Bracknell head office, about 120 Waitrose heavy goods trucks will be able to run on biomethane made from food waste and food processing waste materials which will reduce CO2 emissions by 80%. Over the next seven years, John Lewis says, the Bracknell site alone will save more than 70,000 tonnes of CO2 – or the carbon footprint of more than 13,000 UK households. The retailer also uses existing off-site gas filling stations close to its Lancashire and Northampton regional distribution centres[12].

[12] Https://Www.Johnlewispartnership.Co.Uk/Media/Press/Y2020/Jlp-Steps-Up-Net-Zero-Carbon-Commitment.Html

Figure 2.4 Waitrose Biomethane HGV

Source: John Lewis Partnership

2.35 The main method that has been adopted to date in order to reduce GHG emissions (per tonne-km) has been modal shift to rail. With decarbonising HGVs appearing to be problematic (and future non-diesel HGVs likely to have significantly less range), modal shift is likely to form an important component in de-carbonising the supply chain, as logistics operators seek to move more of their medium to long-distance flows to rail freight. The rail network already has a proven method of moving goods in a sustainable manner, namely electrical traction (from overhead wires or third rail). In land use planning terms, the key implication is that future large scale logistics facilities should be located on a rail-served site (such as DIRFT) or be located in close proximity to such sites, to allow transfer using battery-electric HGVs such as those operated by Tesco.

2.36 However, despite the fact that the rail freight industry already generates significantly fewer GHG emissions (on a per tonne-km basis) when compared with road transport, the majority of current rail freight services are still hauled by diesel traction and railway traction accounts for the greatest proportion of emissions within rail. The Government having already set 2040 as the date to remove all diesel-only trains from the network[13].

[13] Network Rail: Traction Decarbonisation Network Strategy Interim Programme Business Case July 2020

2.37 Network Rail produced its *Traction Decarbonisation Network Strategy (TDNS)* in September 2020, which aimed to provide the DfT and other public sector bodies with recommendations to inform the decisions required to remove diesel trains from the railway network. It notes that currently around 15,400 single-track km (stkm) is not electrified, representing around 62% of the national network (when defined as stkm). The TDNS process has investigated the most realistic and feasible alternatives to diesel traction (for both passenger and freight trains) and concluded that there are essentially three long-term options, namely electrification (by overhead wires), battery-electric trains and hydrogen fuel cell trains. The report concludes that electrification is the best whole life cost solution for more intensively used areas of the network. For freight, the report concludes that electrification is the only feasible option available, albeit battery-electric operations will be required in some terminals, sidings and short branch lines. Overall, the report recommends:

- An additional 13,000stkm of infrastructure will need to be electrified for passenger and freight services;
- Hydrogen fuel-cell deployment over 1,300stkm of infrastructure;
- Battery train deployment over 800stkm of infrastructure; and
- 260stkm where a technology choice is yet to be made.

2.38 These recommendations would result in around 90% of freight train kilometres being operated electrically with the remaining 10% requiring either diesel or alternative traction locomotives. From a land-use planning and infrastructure perspective, this suggests that new rail-served logistics sites (such as DIRFT) would need to be located on or in close proximity to main lines which are likely to be electrified over the next 10-20 years.

2.39 It is of note that moving freight from road to rail is a key ambition for England's Economic Heartland (EEH) - which covers the SEMLEP area. Initiatives are being

explored including reopening of railway lines to increase rail freight and exploring locations for new rail freight hubs.[14]

Urban Logistics

2.40 Urban logistics (generally recognised to be the delivery of goods/consignments to both businesses and residential properties in town/city centres and sub-urban districts) is rising up the public policy agenda. Increasing levels of LGVs engaged in e-commerce deliveries and their associated environmental impact is one of the reasons behind this increasing awareness.

2.41 In order to overcome the increasing impact of urban logistics and enhance the wider environment in town/city centres, a number of potential solutions for freight deliveries in urban areas have been mooted. These include:

- The development of urban consolidation centres;
- Retiming urban freight deliveries; and
- New delivery methods for the 'last mile'.

2.42 Urban consolidation centres are where multiple freight operators (3PLs, parcel couriers and own account operators) initially deliver goods into a warehouse type facility located on the urban fringe rather than direct to the end-user. The goods are consolidated and then reloaded onto freight vehicles for the final delivery into the urban area. In theory, multiple partially laden freight vehicle trips into the urban centre can be replaced with fewer but fuller vehicles (and given the short distances involved this part of the delivery process could also be undertaken by battery electric vehicles).

[14] Connecting People, Transforming Journeys: Regional Transport Strategy, England's Economic Heartland

2.43 However, take-up to date has been limited and mainly where special/specific circumstances have necessitated consolidation (e.g. Heathrow Airport). The additional handling and transport leg add further costs into the end-end supply chain (compared with direct deliveries); the NIC[15] casts doubt on whether they can operate competitively without public sector financial support. With respect to land-use planning, it also notes that suitable land at the urban fringe is often in short supply. Further, the NIC report notes that 3PLs/parcel couriers are already consolidating cargoes from multiple shippers, meaning vehicles are already loaded efficiently and trips minimised.

2.44 Retiming urban freight deliveries to retail outlets so that they take place at night-time can reduce daytime freight vehicle trips into city/urban centres. Dedicated unloading areas located away from residential dwellings and low-noise equipment is often required. This should not have any land-use implications with respect to new large scale warehouse developments as suitable sites would permit 24/7 operations.

2.45 Some operators are now trialling or introducing new methods for 'last mile' deliveries for smaller sized/e-commerce type cargoes. This includes the concept of 'portering', whereby a freight vehicle (such as a LGV or small HGV) would hand over multiple consignments (pre-sorted) to delivery staff at designated drop-off points in urban areas. Deliveries are them completed either on foot (perhaps supported by some form of wheeled carry equipment) or using e-cargo bikes. The concept is meant to eliminate multiple start-stop vehicle movements associated with parcel type operations. There should not be any land-use implications from this concept with respect to new warehouse developments.

Case Study: Autonomous robots Milton Keynes

2.46 **DPD** at July 2022 are commencing autonomous robot deliveries in two Milton Keynes neighbourhoods, as part of a trial with AI-powered robotics and last mile delivery company, Cartken. The DPD branded robots, which will operate out of the

[15] National Infrastructure Commission (Nic) 2019 Better Delivery: The Challenge for Freight

firm's Knowlhill depot, will navigate the city's traffic-free Redway network to access the residential neighbourhoods of Shenley Church End and Shenley Lodge.

2.47 DPD joined Starship robots, who launched in 2018 in Milton Keynes, have boomed in popularity ever since - notably during the first lockdown of the coronavirus pandemic. Starship now operate in Northampton and Cambourne.

2.48 Powered by AI technology, the robots are currently 'learning' the routes and will then be able to find their way to delivery addresses, fully autonomously. Cartken's level 4 autonomy and leading navigation tech is regarded as one of the safest last mile delivery solutions on the market and is currently being used by automotive tech giant Mitsubishi Electric in Japan, and leading food delivery company Grubhub in the United States. If the trial is successful, DPD intends to extend the sustainable, autonomous final mile solution across the city, which could enable it to start removing traditional delivery vans from the road network[16].

Figure 2.5 DPD autonomous robot

Source: dpd.co.uk

16 Https://Www.Dpd.Co.Uk/Content/About_Dpd/Press_Centre/Dpd-To-Launch-Autonomous-Delivery-Robots-In-Milton-Keynes.Jsp

Power and sustainability

2.49 As outlined above, the demands for electricity driven by automation and BEV charging are significantly increasing the power requirements for logistics units. The sector response is at the vanguard of sustainable development, reflecting both the ESG (environmental, social, and governance) agenda of businesses and shareholders to move to zero carbon, as well as the difficulties in accessing sufficient power from the national grid.

2.50 The major logistics developers are delivering innovation that enables carbon neutral or carbon positive buildings. This includes a range of measures including in the construction and operational processes but most notably the inclusion of photovoltaic panels on the large areas of roofing that generates significant power and power surpluses for operators.

Case Study: Apex Park, Daventry (Prologis)

2.51 At Apex Park in 2022 Prologis has delivered a brand new 'net zero carbon' 435,000 sq. ft unit, which includes a range of energy saving technologies. In addition to Prologis standard sustainability measures such as rainwater harvesting and electric vehicle charging infrastructure, a 1.4MW rooftop solar system has also been installed, resulting in a building that will return more energy to the grid than it uses. The unit has achieved a BREEAM 'Outstanding' rating placing it in the top 1% of UK non-domestic buildings. The new unit is also the first development of its type to achieve a 'net zero' EPC rating of A+ and to align with the UK Green Building Council (UKGBC) Framework Definition for Net Zero Carbon Buildings in terms of both embodied & operational carbon. As part of a long-term de-carbonisation programme Prologis chose to mitigate unavoidable embodied carbon emissions through a donation to Cool Earth, a deforestation charity that protects at-risk rainforest around the world.

Figure 2.6 Prologis, Apex Park, Daventry

Source: prologis.co.uk

Case Study: Symmetry Park, Biggleswade (Tritax Symmetry)

2.52 Symmetry Park, Biggleswade extends to a total of 95 acres. Phase 1 consists of a pre-let to The Co-operative Group Limited for a new BREEAM Excellent 661,000 sq. ft Regional Distribution Centre ("RDC").

2.53 The distribution centre will use energy from Co-op's energy buying co-operative, Co-op Power. By using Co-op Power, the centre will share energy from 100 percent renewable sources. As a result, the centre is projected to make a saving of £3 million over 20 years. Co-op Power's plans for the centre include installing 3.5 MW of solar PV in roof and supplying the balance from Biggleswade wind farm.

Figure 2.7 Symmetry Park, Biggleswade

Source: https://tritaxsymmetry.com/

2.54 Logistics parks can provide opportunities to deliver substantial Green Infrastructure often as part of the planning permission and conditions.

2.55 Changes in biodiversity net gain (BNG) requirements are likely to further progress this opportunity. The Environment Act includes mandatory BNG provisions as part of the planning application for developments in England. What this means for new projects is that they must measurably increase biodiversity; either as part of the development, or within the local area. The government intends biodiversity net gain to be included in all planning applications made after November 2023 and all DCOs accepted by November 2025.

Case Study: Linear Park, Kettering (Prologis)

2.56 For example, at Prologis Park Kettering, the creation of a 36 ha Linear Park has enhanced the biodiversity of the area and provides year-round access for local people. Prologis have built a network of paths for walking and cycling across the Linear Park. Benches, litter bins and sign posts have been installed and a security guard patrols the park in an all-terrain vehicle.

2.57 A timber trim trail has been constructed with two sports pitches and a high specification changing room for the Northamptonshire County Scouts. The sports pitches are also used by both the girls' and boys' teams at Kettering Football Club.

Figure 2.8 Linear Park, Kettering

Source: prologis.co.uk

Summary

2.58 The key implications of this section are:

- Rising e-commerce demand is changing the structure of the logistics sector and the nature of the warehouses premises. These are moving towards increased levels of automation, larger sizes (both footprint and height) and with higher power requirements.

- HGVS and vans (including logistics and other activities) account for around 9% of UK GHG emissions. Decarbonisation is therefore essential, with electric vehicles playing a key component, although further increasing power demands.

- The newest warehouses demonstrate net zero or carbon negative construction and operational capabilities. This should be expected as the rule rather than the exception for future development, as should positive contributions to local landscape and biodiversity initiatives.

3. LOGISTICS SKILLS & EMPLOYMENT

3.1 This section considers the composition of the current and future labour force within the warehousing and logistics sector – covering key characteristics, gaps, trends and the future outlook.

Current employment profile

3.2 Warehousing employment is an important component of the economy of the SEMLEP area. According to BRES, in 2020 warehouse specific employment accounted for 49,000 jobs and 6% of all employment. Across the sectors typically or partly involved in warehouse activities including wholesale and postal there are 107,000 jobs or 13% of all employment (research in Leicestershire[17] suggests that warehouse activities and wholesale are the most prevalent employment types in large industrial logistics parks).

Table 3.1 Logistics employment across SEMLEP 2020

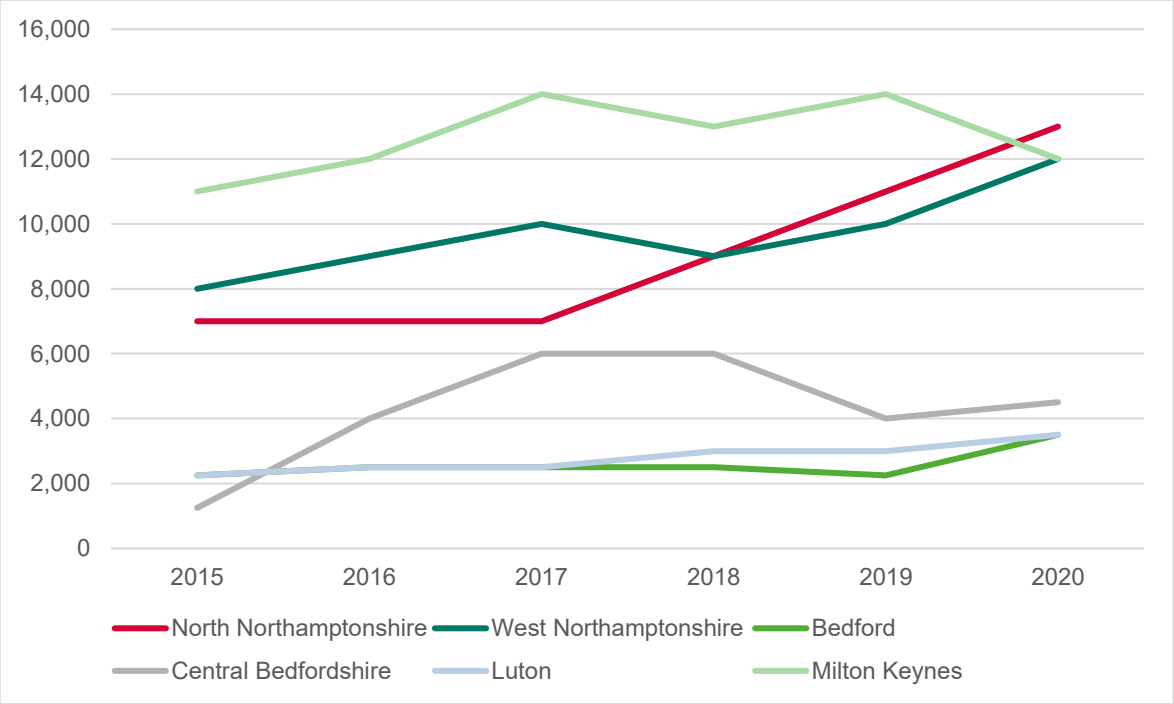
	Wholesale trade: SIC46		**Warehousing and support activities: SIC52**		**Postal and courier activities: SIC53**		**Total of three sectors**	
	No.	% all jobs	No.	% all jobs	No.	% all jobs	No.	% all jobs
North Northamptonshire	14,000	9%	13,000	8%	1,500	1%	28,500	18%
West Northamptonshire	13,000	6%	12,000	6%	4,000	2%	29,000	13%
Milton Keynes	9,000	5%	12,000	7%	1,250	1%	22,250	13%
Bedford	3,500	4%	3,500	4%	700	1%	7,700	10%
Central Bedfordshire	5,000	5%	4,500	4%	900	1%	10,400	10%
Luton	3,500	4%	3,500	4%	900	1%	7,900	8%
Total	**49,000**	**6%**	**49,000**	**6%**	**9,000**	**1%**	**107,000**	**13%**

Source: BRES

[17] Warehousing and Logistics in Leicester and Leicestershire: Managing Growth and Change 2021 P168

3.3 Isolating the warehousing sector (Warehousing and support activities: SIC52) specifically as per the figure below, from 2015 to 2020 the total employment count has risen by over 50% being from 31,750 to 48,500. This is at a time when total employment in the area has grown at 7%, of which nearly one third is from the warehousing sector. North Northamptonshire has seen the greatest rise nearly doubling from 7,000 to 13,000. Central Bedfordshire has grown rapidly from 1,250 jobs to 4,500 jobs. West Northants has also seen strong growth from 8,000 to 12,000 jobs.

Figure 3.1 Warehousing employment across SEMLEP 2015-2020



Source: BRES

Sector composition and change

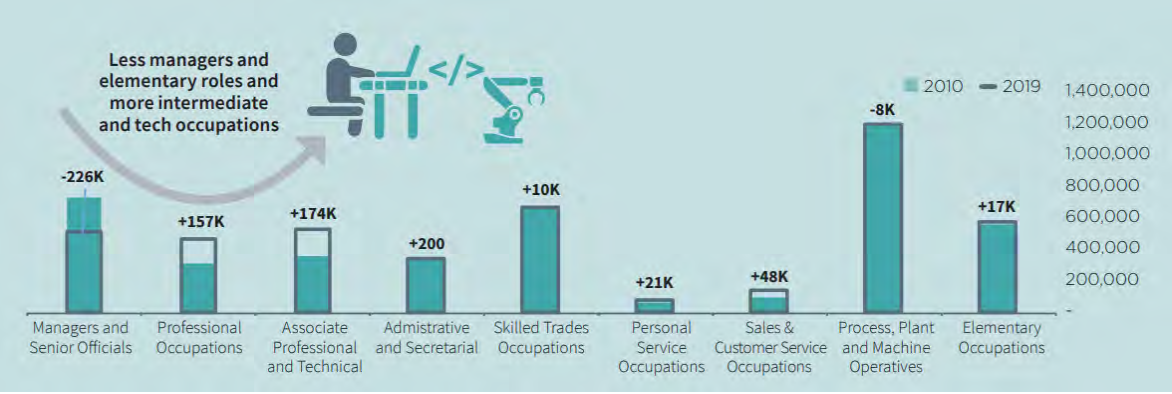
3.4 The BPF's *Levelling up - The Logic of Logistics* published in 2022 argues that the sector 'is subject to continuing misconceptions about average pay and skill levels'. It states that there has been a refocus over the last decade from a '*polarised distribution, with a higher share of managers at one end of the spectrum and more plant and machinery operatives and elementary occupations at the other end'…* towards the current trend of a '*higher share of Professional and Associate Professional and Technical roles, typically associated with higher-skilled engineering and technological professions'.* The report identifies that '*This is in*

response to increased automation and robotics in the sector and more advanced supply chain processes.'

3.5 The BPF chart as reproduced below reports substantial growth in technical and professional (+331,000) as well as customer services (+48,000). Managers / senior officials have declined, with otherwise relatively stable employment in most occupations, although personal service and elementary has also seen growth. Process, plant and machine operatives remain the largest employment sector but in total (including elementary activities) are less than other senior, skilled and admin roles.

3.6 This is a snapshot of the last ten years, whereas looking forward the trend is expected to focus increasingly on the technical occupations required to support automated processes.

Figure 3.2 Occupational split in the industrial & logistics sectors, 2010 vs. 2019, UK total



Source: BPF 2022 c/o ONS / APS

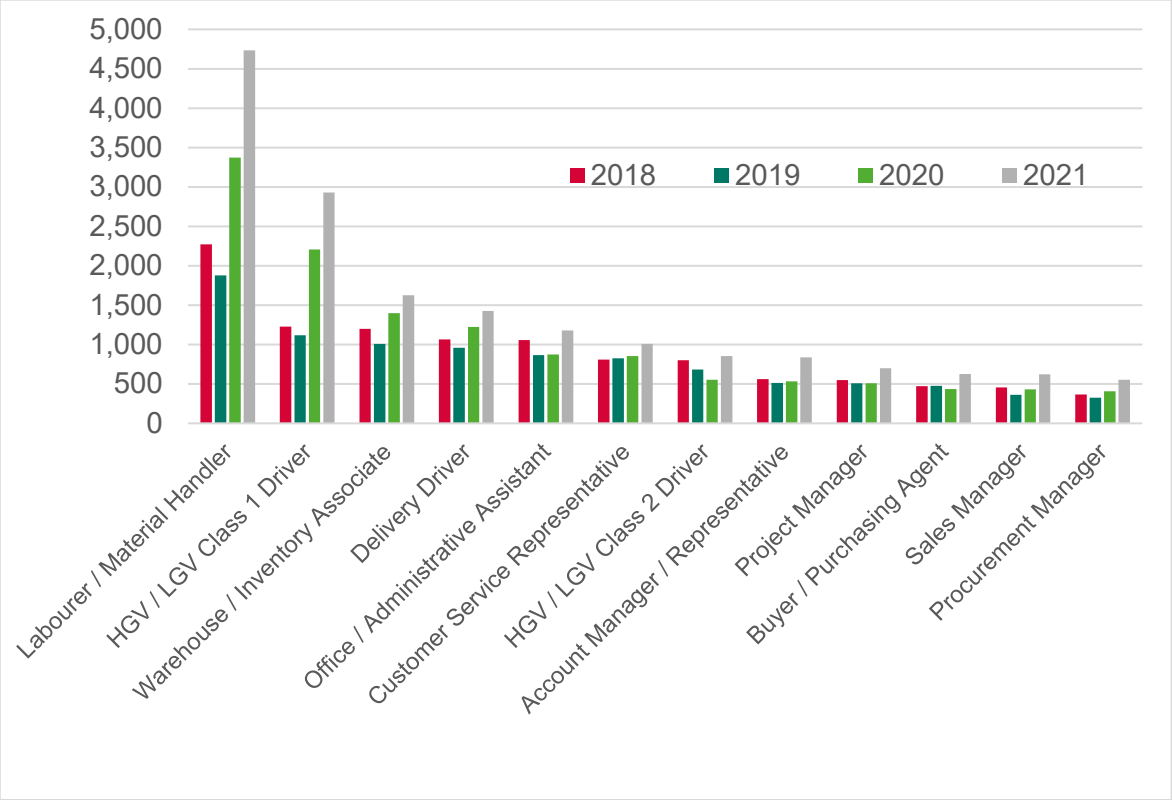
3.7 SEMLEP has provided a list of job postings in the logistics sector via Labour Insight (Burning Glass Technologies) for a 3 year period, as charted below.

3.8 All top 12 categories see a rise in 2021 compared to previous years. This mostly notably applies to handlers, warehouse associates and drivers (typically elementary occupations) but also sees requirements in the more technical areas in customer service, and managers.

3.9 Whilst elementary occupations appear to dominate the requirements, this is due to the way the data is collated. Data examination reports that in 2021 65% of job postings accounted for non drivers and handlers / warehouse associates.

3.10 This includes over 700 project managers, over 600 sales managers, over 500 supply chain analysts, over 500 software developer / engineers and over 200 jobs in computer support in 2021. This reinforces the substantial diversity in employment in the sector.

Figure 3.3 SEMLEP area top logistics job postings 2018-21



Source: SEMLEP / via Labour Insight (Burning Glass Technologies)

3.11 The Freight Transport Association's *Logistics Skills Report*[18] 2019 analyses the sector's skills profile and a list of main occupations held by workers in the logistics sector. The figure below shows that a large variety of occupations exist in the sector, ranging from high-pay, high-skill managers and directors to drivers and elementary storage occupations. Key findings are:

- Top occupations represent 9.9% of employment in the sector
- Off site HGV / LGV drivers represent 22.7% of employment
- Elementary occupations account for 17.5%

[18] FTA Logistics Skills Report, 2019. Available at:

Https://Logistics.Org.Uk/Cmspages/Getfile.Aspx?Guid=8afc692b-A971-4357-Be45-40281ab02c30&Lang=En-Gb

Figure 3.4 Detailed list of occupations in the logistics sector

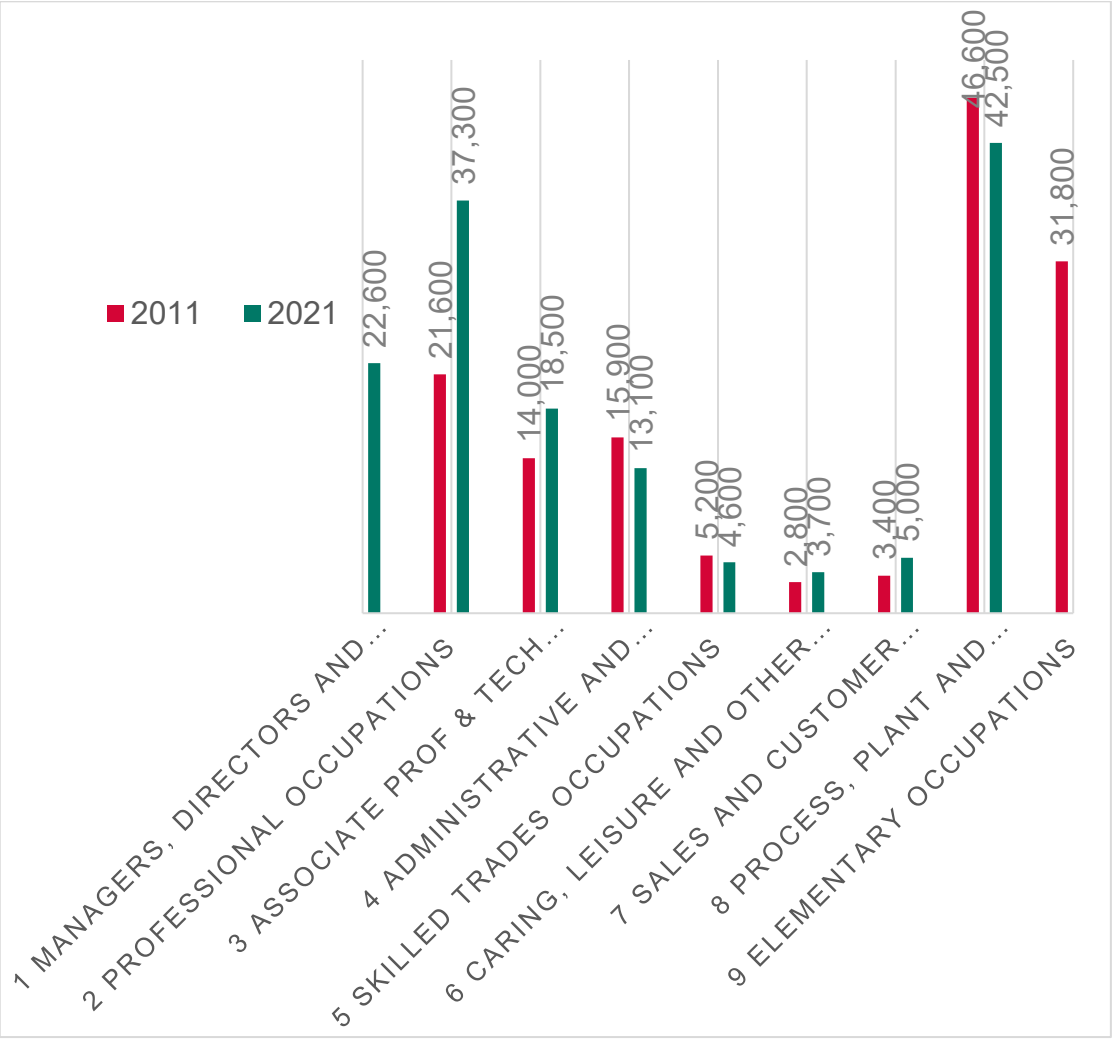
Logistics occupations	Employment (thousands)			
	Logistics sector	All other sectors	Total	%
Purchasing managers and directors	14,235	46,888	61,123	2.4%
Managers and directors in transport and distribution	33,400	52,982	86,382	3.3%
Managers and directors in storage and warehousing	27,968	81,914	109,882	4.2%
Importers and exporters	2,370	3,821	6,191	0.2%
Transport and distribution clerks and assistants	19,993	44,323	64,316	2.5%
Heavy goods vehicle drivers	171,364	130,281	301,645	11.6%
Van drivers	106,215	183,347	289,562	11.1%
Forklift truck drivers	36,995	54,442	91,437	3.5%
Postal workers, mail sorters, messengers and couriers	124,640	29,152	153,792	5.9%
Elementary storage occupations	191,729	264,054	455,783	17.5%
Other occupations within the logistics sector	978,584	N/A	978,584	37.8%
Total	1,707,493	891,204	2,598,697	100.00%

Source: FTA's Logistics Report, 2019

3.12 We have also considered East Midlands specific data pertaining to the logistics sector. The chart below reports on occupation change for the employment sectors of H (Transportation & storage) and J (Information & communication) between 2011 and 2021. Data is not available for Transportation & storage alone and therefore there is some distortion in the figures as Information & communication is a sector that clearly produces a high proportion of high-skilled, high-pay jobs.

3.13 The chart reports that elementary occupations have grown significantly, but in parallel, the top three occupational groups (broadly speaking director, professional and associate professionals) have also grown significantly. This correlates with the data presented in the BPF report as noted above.

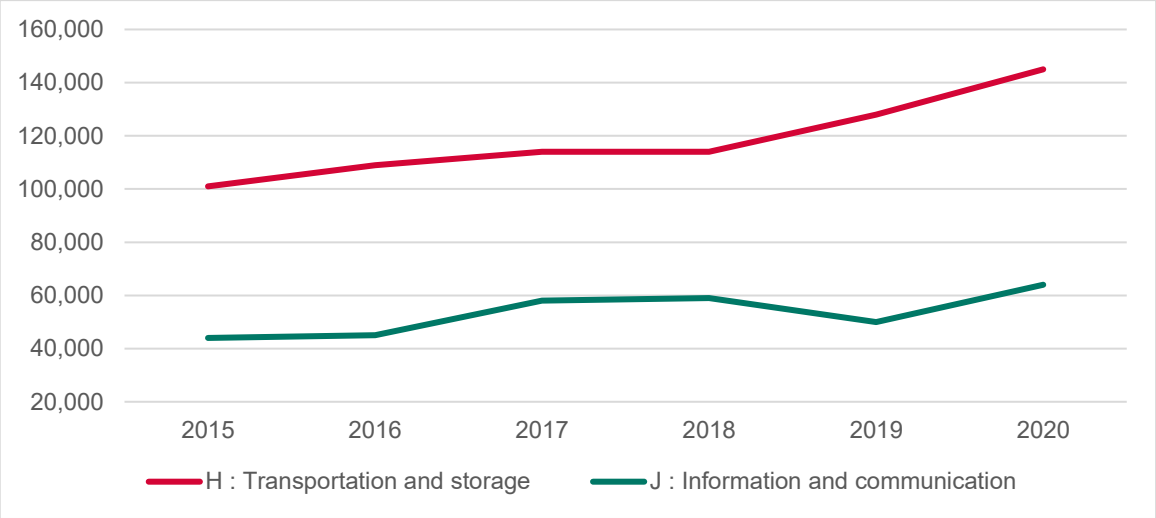
Figure 3.5 Growth in employment by occupation (Sector H + J) 2011 vs. 2021 (East Midlands total)



Source: ONS, APS, 2022

3.14 The creation of jobs in the top three occupational groups must, to some extent, be attributed to the Transportation and storage sector. This is in light of the overall proportion of jobs and growth in the Transportation and storage sector compared to the Information and communication sector, as seen in the chart below.

Figure 3.6 Total employment change by sector 2015-2020 (East Midlands)



Source: ONS, BRES, 2022

Logistics sector skill gaps

3.15 SEMLEP's[19] logistics and supply chain sector group members were surveyed in 2022 and found that over 60% respondents had labour shortages and skills challenges. Key points raised include:

- Electrical/mechanical and software engineering skills are urgently required for transport and warehousing as the world of logistics is changing rapidly, especially the 24/7 capacity/ requirement.
- Market surveys indicate there is a shortage of engineers with the required skills across the whole sector.
- Shortages of equipment meant existing equipment had to be maintained for longer and required more intervention – requiring mechanical engineers.
- The necessary skill set and knowledge set is changing from mechanical to software-controlled automation. This includes vehicles which are dependent on computer technology.

[19] Northampton Logistics Forum Survey, April 2022

- As power trains evolve to hydrogen or battery power then the skill set will change requiring even higher number of engineers. This means recruiting a new cohort and training upskilling current mechanical maintenance engineers.

- Data Analysts, supply chain analysts, software engineers: there is huge amount of data available and many companies not able to maximise the use of equipment / data due to a lack of skills. For example: Optimisation of transport fleets, route planning, planned maintenance, driver performance. Data can be used in a better way to improve productivity issues within logistics. As the driver role becomes automated (management systems, communication to depot, autonomous vehicles etc), the driver and support teams need upskilling.

Tackling skills and recruitment gaps

3.16 A number of higher, further and alternative education centres are focused on developing the next generation of logistics workers.

3.17 **Cranfield University** is ranked as one of the top logistics departments globally. The university focuses on postgraduate degrees (MSc and PHD) in logistics, supply chain and procurement. They enrol 190 students p.a., developing a highly technically-skilled workforce for research and development and future logistics leaders. Cranfield University's Logistics and Supply Chain Management MSc is ranked 2nd in the UK and 11th in the world by QS World University Rankings: Masters in Supply Chain Management Rankings 2021.

3.18 The **University of Northampton** research strengths are in circular economy, decarbonisation, intermodal activities and infrastructure planning. Their courses include MSc Logistics and Supply Chain Management, MSc International Business Management, MSc Business Analytics and BA International Logistics and Trade Finance. The University hosts the Northamptonshire Logistics Forum, an industry led collaboration group which supports the sector.

3.19 **Goodwill Supply Chain Academy** based in Northampton is an agile logistics and supply chain sector-specific training provider. Provision is designed to take care of candidates mental health, well-being, resilience and vocational training with routeways into employment. This Academy has formed a partnership to deliver the

Prologis Warehouse and Logistics Training Programme (PWLTP). This aims to create sustainable career opportunities for a diverse range of job seekers, by providing accredited training, personal development, and new insights to the dynamic and exciting supply chain sector. The programme will be delivered out of the Prologis Hub located at DIRFT.

3.20 **The Hub** (opened 2021) at DIRFT is a centre for logistics training and education. This is a free digital learning and development programme aimed at training those leaving education and re-skilling the unemployed by equipping them with the knowledge needed to pursue a career in logistics. In the first year alone, we aim to put over 700 local people through the PWLTP.

3.21 **Think Logistics** is an award-winning programme that works to make the logistics, transport and supply chain profession an attractive career of choice. In partnership with CILT (Chartered Institute of Logistics and Transport) and logistics companies, Think Logistics host workshops, mentoring, internships and work placements, meaning secondary school, college and university students can get immersed in the world of logistics and understand potential careers.

Future skills

3.22 The Freight Transport Association's report reflects on the future of work in the logistics sector, identifying that new digital technologies, such as information and communication technologies (ICT), artificial intelligence and robotics, are reshaping the way people work and learn. Key points include:

- Automation is emerging to varying degrees across the global logistics chain, with warehousing having the highest extent of automation. McKinsey Global Institute estimates that the transportation and warehousing industry has the third-highest automation potential of any sector[20].

[20] Automation In Logistics: Big Opportunity, Bigger Uncertainty, Mckinsey, April 2019

- Currently, 80% of warehouses are manually operated without automation support. However, many logistics companies are rapidly looking to turn to robotics for efficiency, accuracy and long-term cost savings with 2022 a pivotal year in the move to automation.

- FTA members were asked a series of questions on skills and automation. Around 38% of respondents expected some logistics roles to be fully or semi-automated in the coming years and 36% stated that automation would have a positive impact on the role and responsibilities of transport managers.

- Van drivers, forklift drivers and HGV drivers are considered most likely to be affected by automation.

3.23 The FTA report concludes p37 that (similarly to the BPF report) 'The sector has a negative image; government needs to do more to help improve the public perception. Technology has changed the sector significantly and career opportunities are diverse. We will need to attract the younger generation to fulfil future growth, and FTA believes government must do more to help promote this within schools and colleges and put greater emphasis on the value of vocational training.'

Summary

3.24 The key implications of this section are:

- Warehousing and logistics is an important employment sector in the SEMLEP area, growing significantly in recent years.

- New labour to fill posts is in high demand, and whilst handlers and drivers are the most sought after, across all disciplines over 65% are made up from other more technical roles, indicating increased diversity and more productivity in the sector.

- More training and upskilling is required to fill future roles and continued partnership working between authorities, education providers and the private sector should be encouraged to deliver this.

4. RELEVANT EVIDENCE AND LITERATURE

4.1 A focused review of evidence and literature is considered below. This is focused on the most recent studies and market literature in relation to the logistics sector. It summarises the key present matters in terms of industry, economics and planning related evidence. Throughout this section, italics indicate direct quotes.
Documents covered are:

- Future of Freight: a long-term plan 2022 (DfT)
- UK Logistics Market Trends Update – CBRE 2022
- The Impact of Logistics Sites in The UK – A report prepared for Amazon and supported by Logistics UK 2022 (Frontier Economics)
- Levelling Up - The Logic of Logistics 2022 (BPF / Savills)
- Warehousing and Logistics in Leicester and Leicestershire: Managing growth and change 2021
- BPF Delivering the Goods 2020

Future of Freight: a long-term plan 2022 (DfT)

4.2 This Future of Freight Plan is government and the sector's joint response to the challenges facing the freight and logistics sector. The priority areas and actions include, quote:

- ***A National Freight Network*** *Challenge: Lack of visibility and understanding of the freight network as a cross-modal system...* ***Goal****: Government and industry collaboration securing a system-level approach to the freight network supporting end-to-end freight journeys that are more efficient, reliable and resilient. Full consideration of the role of freight in strategic infrastructure investment and planning.*
- ***Transition to Net Zero*** *Challenge: A cleaner, greener freight system will deliver opportunities, including cutting emissions and supporting high quality*

green jobs. The freight and logistics sector has opportunities to lead the world in developing and rolling out zero emission solutions for freight, gaining global first mover advantages in some of the most challenging areas

- ***Planning*** *Challenge: A disconnect exists between industry, that is not equipped to properly engage with planning processes, and local planning authorities, that are unable to understand the needs of a changing an innovative freight and logistics sector. This leads to increased complexity, cost and time for promoters bringing forward schemes that are in the national interest.* ***Goal****: A planning system which fully recognises the needs of the freight and logistics sector now and in the future and empowers the relevant planning authority to plan for those needs.* ***Actions****: Government and industry will deliver this by: Collaborating to support a programme of engagement with local planning authorities; Reviewing and amending Planning Practice Guidance; Publishing a freight specific call for evidence to understand what is working well and what requires improvement in planning; Engaging with a consultation on updated guidance for Local Transport Plans; Engaging with the review of National Networks National Policy Statement; and Engaging with the Department for Levelling Up, Housing and Communities programme on changes to the planning system.*

- ***People & Skills*** *Challenge: Immediate and future skills shortages across the sector could undermine resilience of UK supply chains. There is a need to: Produce a pipeline of talent across the freight sector by improving the training and employment options; addressing awareness and negative perceptions of the industry; and promote the availability of attractive, fulfilling jobs at all levels of the industry.* ***Goal****: The freight and logistics sector is seen as an industry of choice for talented, diverse, and skilled people at all stages of their career, so that the sector can meet the demand for the distribution of goods to, from and in the UK.* ***Actions****: Collaborating to deliver a programme of employer engagement and reforming the Freight and Logistics training offers to encourage transferable qualifications.*

- ***Data & Technology*** *Challenge: There is limited awareness in the sector of innovative solutions coming to market, and of the sector's needs amongst*

innovators. Goal: Greater awareness of the sector amongst innovators and greater sector awareness of ***innovations****. Accelerating the adoption of currently available solutions within the sector and developing the future pipeline in line with real-world needs.*

UK Logistics Market Trends Update – CBRE

4.3 The report focuses on the major market trends across demand and supply:

- *Economic overview: following a strong recovery after the pandemic, high inflation and withdrawal of government support present key challenges. Commodity price rises will continue as well as supply chain disruption.*
- *Demand for big box logistics remained very strong in 2021 dominated by online retail and third party logistics. Online retail increases have led to a surge in demand and competition including renal increases*
- *Supply constraints: the demand supply imbalance has led to record breaking low vacancy. Land is scarce whilst land prices, construction costs, labour shortage and planning delays all feed into inadequate supply.*
- *Automation and power: automation is growing although levels vary. With automation, robotics and electric vehicle charging, power is a critical building requirement.*
- *Investment: resilient occupier demand is attracting investment and additional capital is expected in 2022.*

The Impact of Logistics Sites in The UK – A report prepared for Amazon and supported by Logistics UK 2022 (Frontier Economics)

4.4 The aim of this Amazon report is to evidence the role of the industry in ensuring that goods are available to consumers through brick-and-mortar stores and online delivery, and supporting the continuity of supply chains – including assess its influence on the economic and social outcomes of local areas of the UK, and its contribution to the UK Government's ambitions to deliver growth that creates high-quality jobs across the UK ("levelling up") and support the economy's transition to net zero.

4.5 Key findings from the report are:

- *Logistics is one of the largest **industries in the UK, employing 1.25m people**, 4.1% of all UK jobs. This includes around 690,000 people employed in the "core" industry (e.g. third-party logistics companies), and a further 550,000 employed by other companies (e.g. retailers or manufacturing companies with their own distribution operations). To put this into context, employment in the logistics industry is likely to surpass the English NHS (which currently employs around 1.4m people) by 2023.*

- ***Employment in logistics has nearly doubled since 2012**, outpacing the rest of the UK economy. Logistics has added the most jobs in the UK among industries of comparable size between 2012 and 2021… the last two years have seen a particular acceleration in logistics employment: latest figures show that between 2019 and 2021, the number of people employed in logistics has grown by 190,000, an 18% increase.*

- *Three in four local authorities in Great Britain host at least 1,000 logistics jobs. Although there is a high density of logistics jobs in the Midlands, this region accounts for only 21% of all logistics jobs in the UK. The North West of England, Yorkshire and the Humber, the East of England and the South East of England each account for around 10% of logistics employment in the UK.*

- *Logistics provides **opportunities for people who may not otherwise be in work**. Our [Amazon's] independent survey undertaken by YouGov indicates that 20% of people currently in logistics were previously unemployed.*

- *We estimate that around 35,000 people in 2021 **progressed to a managerial role** in logistics (from a previous non-managerial role in the industry); and almost two-thirds (63%) of logistics managers do not have a university degree. Skills provision often takes place through apprenticeships, an important pathway for both upskilling workers and providing job opportunities in the logistics industry.*

- *The logistics industry is rising to the challenge of getting to **net zero**, with multiple operators committing to do so by 2040, earlier than the nationwide*

2050 target set by the UK government. From the public commitments of three major operators alone, 20,000 electric LCVs would be operational in the UK by 2030; and the public pledges of logistics companies suggest that it may be possible for all LCVs used by major logistics operators to be electric LCVs by 2040.

- *Around **80% of vehicle emissions in logistics originate from HGVs**. Decarbonisation of HGVs is more challenging than for LCVs, as the supply of zero-emission HGVs is relatively limited. Current actions to reduce reliance on petrol and diesel HGVs include: Two major logistics operators piloting electric HGVs, and Amazon using five electric HGVs to directly replace diesel lorries in their UK operations; and commitments made by eight of the top 12 logistics operators to increase the proportion of their fuel that comes from alternative sources such as bio-Compressed Natural Gas (bio-CNG).*

Levelling Up - The Logic of Logistics 2022 (BPF / Savills)

4.6 *The aim of the report is to evidence the importance of the industrial and logistics (I&L) sector to the UK in terms of it being an 'Economic Powerhouse' but also in terms of its 'Growing Social Value Credentials' and contribution to 'A Green Recovery…'.*

4.7 Key messages from this industry report include:

- *Industrial & Logistics facilities are Critical National Infrastructure. The sector is subject to continuing misconceptions about average pay and skill levels*

- *The sector is a significant employer of at least 3.8 million people. The true number of jobs is likely much higher as this only relates to 'manufacturing, transportation and storage' activities. An example of the wider economic impacts of I&L supply chains is Amazon. In addition to the 55,000 staff it employs directly in the UK, the company is reported to have created 175,000 jobs via the 65,000 plus small and medium-sized enterprises (SMEs) who are selling professionally through Amazon*

- *The BPF report the sector is highly productive with Gross Value Added (GVA) per job currently at £58,000, some 12% higher than the average of all sectors. Its productivity is also predicted to grow at a faster pace, increasing by 29% between 2025 to 2039 compared to 18% across the UK economy as a whole. Average pay is higher than the UK average (*NB these figures differ and are more positive than Iceni's analysis of Oxford Economics data for the Transport and Storage sector in the study area as per para 14.12 in this report, which may be due to a range of factors including sector definitions and study areas*).*

- *Data from the Office for National Statistics (ONS) show annual wages above average at +£4,900 for Logistics (as reported by BPF).*

- *While other sectors have contracted during the Covid pandemic the I&L sector has continued to expand.*

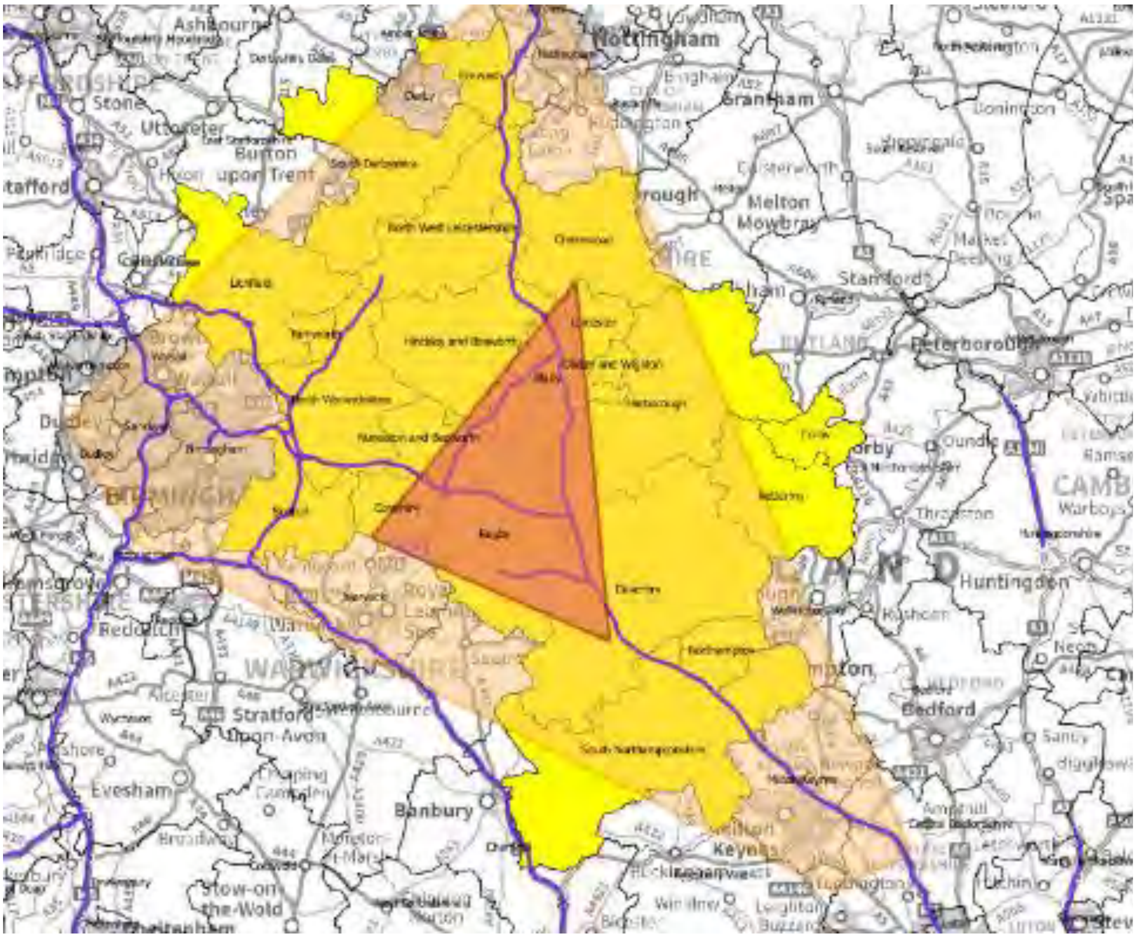
- *The report asserts that the UK planning system is restricting growth in the I&L sector by not allocating enough land in the right locations …the historic lack of supply has restricted ('suppressed') demand by 29% nationally which should be provided for in the future. Future demand estimates should also consider housing, e-commerce and freight growth*

- *The report also considers the contribution of I&L to carbon emissions in operational and construction / embodied terms.*

Warehousing and Logistics in Leicester and Leicestershire: Managing growth and change 2021

4.8 This study looks at the 2020-41 need for largescale logistics across Leicester and Leicestershire. The study builds on previous iterations of the work dating back to 2014. The assertion is that Leicestershire is the core the logistics market 'Golden Triangle' the area for which is replicated and depicted below. Large logistics parks such as Magna Park, Lutterworth and DIRFT, Rugby lie in the inner triangle (orange). The wider triangle covers much of the SEMLEP area as it follows the M1 corridor south through Northamptonshire into Milton Keynes.

Figure 4.1 Wider 'Golden Triangle'



Source: Warehousing and Logistics in Leicester and Leicestershire: Managing growth and change 2021 (derived from Leicester and Leicestershire Logistics and Distribution Study 2017)

4.9 The principal modelling techniques in the 2021 report used to forecast space for large scale logistics to 2041 are past completions trends (2011-2020) and a traffic growth with replacement demand model, alongside a margin of 5yrs completions. North West Leicestershire notably drives the completions trend reflecting units at East Midlands Gateway and Distribution Centre. These models demonstrate a good level of alignment in terms of providing recommendations for long term needs which amount to 2.6m sqm, derived of 1.1m sqm of rail served sites and 1.5m sqm of road served sites. A map of Key Areas of Opportunity is provided indicating general areas of development potential.

4.10 The report identifies the most central drivers for change in the sector as decarbonisation and e-commerce. In terms of labour and skills, the study indicates

there is likely to be a shift away from the focus on warehouse floor staff (50% of sector employment) to around 30% in the future. This is expected to be paralleled by a rise in office and technical skills, able to manage and service robotics and support back office e-commerce functions.

The Increased Importance of Logistics During Covid-19 and Beyond (2020)

4.11 Tritax Symmetry and Turley prepared this report which highlights how Covid has changed the role of logistics. The report notes that the year 2020 has seen logistics operations move into the spotlight, driven by Covid-19 and the national lockdown which necessitated a shift in the way goods are stored and moved around the country, particularly in reaching their final destination – the consumer.

4.12 Ten years of forecast e-commerce growth occurred in the first month of the national lockdown in 2020, reflecting the pace of change in consumer spending patterns, which in turn influence warehouse floorspace demand.

4.13 Between February 2020 (pre-pandemic) and October 2020, on-line sales values grew from 19.6% of retail sales value to 28.5%. The logistics sector was quick to respond, with national take up of warehouse space over Q1 – Q3 of 2020 at a record high of 38.6 million sq. ft. This exceeds average annual take-up of new space of 31.9 million sq. ft over the last five years.

4.14 Retail in this period was driving take up, accounting for a third of transactions due to strong e-commerce growth, with other occupier sectors that have experienced increased demand during the pandemic (such as 3PLs, parcel carriers and food producers) also contributing significantly to leasing activity.

4.15 The report argues "that the planning system needs to support the continued delivery of space to enable logistics to effectively function as demand for space continues to grow."

Freight Study – England's Economic Heartland, 2019

4.16 While published in 2019, ahead of the significant changes in the logistics and warehousing sector due to the pandemic and the UK's departure from the European

Union, this study provides a wealth of intelligence and recommendations for the logistics sector in the EEH region, which covers the SEMLEP area. It is useful further reading to accompany this report. However, note that the report also covers a broader definition of warehousing than this study, including smaller B8 units. Therefore, not all of the recommendations in the report will also apply to large B8 units.

4.17 Specifically, the report aims '…to plan for the most efficient way of providing access to goods that unlocks economic potential, protects the environment and communities, and future-proofs networks to accommodate growth and improve efficiency. … The purpose of this report is to define a clear starting point for freight sub nationally, analyse the implications of future scenario changes, identify how EEH can capitalise on opportunities and mitigate risk – and plan for this by drawing on technical conclusions.'

4.18 The report includes a comprehensive pre-COVID picture of freight movements, transport corridors, locations, and the importance of logistics to the construction sector. It also includes a long-list of recommended solutions, including lorry parking, alternative fuels, development of SFRIs, urban logistics, and for a Construction Logistics plan.

Summary

4.19 The key implications of this section are:

- The DfT's Future of Freight: a long-term plan 2022 recognises key issues for the sector as net zero, planning, technology and people / skills. This study helps the constituent authorities to some of the challenges set out in the DfT report.
- Industry reports highlight the benefits of the sector, including the scale and growth of employment, its ability to support those otherwise not readily employable, improving higher value employment types and career development for those without qualifications and progress in net zero goals.

In the round the social benefits of the sector therefore should be recognised in tackling employment and employing those less readily able to access work.

- Studies in other areas regarding future logistics needs have established methods and processes for identifying and managing the sector's demands and can bear useful lessons for the South East Midlands authorities.

5. PROPERTY MARKET REVIEW

5.1 This chapter provides an assessment of the logistics & warehousing market in the South East Midlands. It has been undertaken using a variety of sources including take up and availability data from the CoStar commercial property database, alongside assessment of Valuation Office Agency (VOA) data and a review of the latest local commercial property market literature and stakeholder/property agent consultation.

National

5.2 According to CoStar, as of spring / summer 2022 national industrial demand conditions have never been stronger. *The accelerated shift to e-commerce brought about by the pandemic has fuelled the expansion of retailers and third-party logistics firms, while the UK's exit from the EU single market and customs union is leading to increased inventory holding, resulting in the need for additional warehousing. At the same time, a diverse mix of other industrial-using businesses including modular housebuilders, lithium-ion battery makers, data centre operators and film production companies are competing for a relatively limited supply of stock.*

5.3 Developers are responding with record amounts of new construction, though there is virtually no risk of overbuilding as occupier requirements stand above 100 million sq. ft and around two-thirds of the 85.2 million sq. ft pipeline has been pre-let or built-to-suit. Current market dynamics have encouraged developers to increase the size of speculative projects, with M&G recently announcing its intention to develop 820,000 sq. ft across three buildings at Brackmills Industrial Estate in Northampton and Verdion and HOOPP adding a further 700,000 SF at iPort in Doncaster.

5.4 Fuelled by a historically low vacancy rate of 3.1%, the pace of rent growth has accelerated in recent months, registering 8.7% year-over-year as strong occupier demand continues to feed the confidence of landlords. Meanwhile, the sector

remains well-placed to outperform against other major property types such as offices and retail, which have seen rents fall in recent times.

5.5 *Industrial's positive supply-demand story and rent outperformance means investor appetite for exposure to the dynamic and defensive sector is at an all-time high. Distribution warehouses let to online retailers and lastmile hubs in supply-starved London are particularly high on the agenda for investors looking to bolster or diversify portfolios. And in contrast to the office and retail sectors, there are plenty of buyers willing to take on risk in the hope of generating outsized returns. Investment volumes have soared to £15.2 billion in the past 12 months (the three-year rolling annual average is £11.5 billion).*

Composition of the warehousing sector (national)

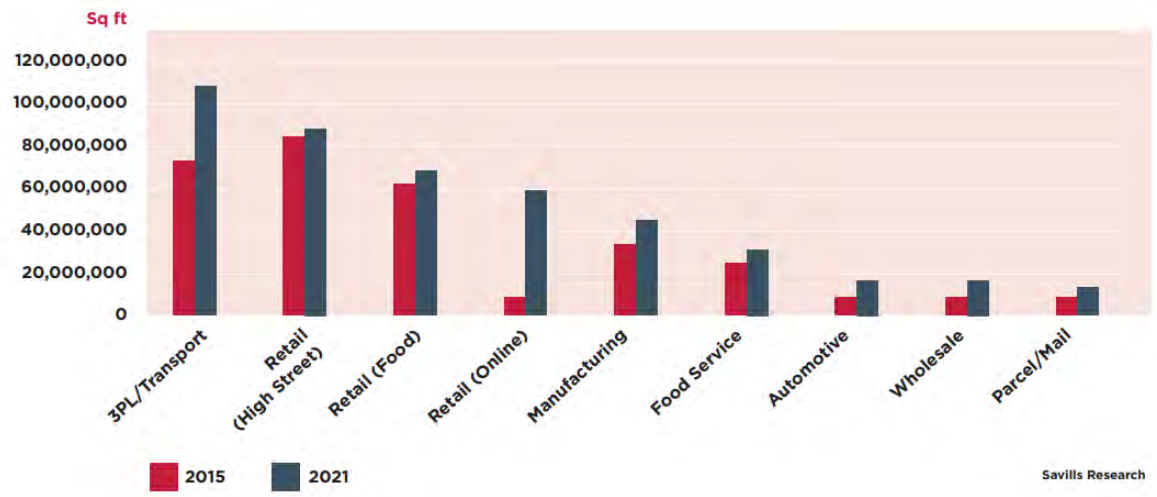
5.6 In 2021, Savills produced a report on behalf of the UK Warehousing Association which sets out the size and make up of the UK warehousing sector[21]. The first key point made by the report is that third party logistics (3PL) businesses now occupy the most floorspace of any sector, as can be seen in the figure below.

5.7 It can also be seen that the largest growth in warehouse occupation came from the online retail sector (a 614% growth from less than 10m to 60m sq. ft). Savills expect that online retail growth will continue, reaching 35% of all retail by 2025 'which means that [nationally] at least 64m sq. ft of additional warehouse space will be needed for that sector alone'.

5.8 Warehouse growth is also reportedly closely linked to manufacturing growth – 'for every additional £1bn invested in manufacturing processes, an additional 175,000 sq. ft of warehouse space is needed in the wider supply chain'.

[21] Https://Www.Ukwa.Org.Uk/Wp-Content/Uploads/2021/05/Savills-Ukwa-A4-8pp-Report-Interactive3.Pdf

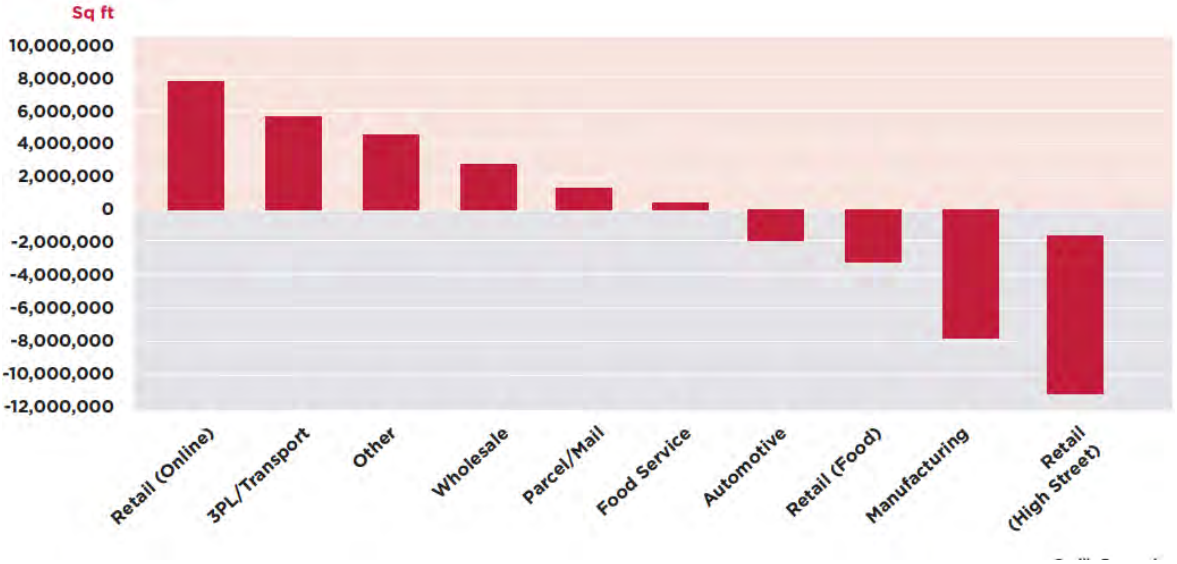
Figure 5.1 Breakdown of warehouse occupiers by sector (2015 vs 2021)



Source: UKWA/Savills

5.9 Another interesting element of the report is the focus on second-hand units. As can be seen in the figure below, online retailers and 3PLs have taken up a considerable amount of floorspace in second hand units, driven by the lack of Grade A new units available.

Figure 5.2 Change in occupation of second hand units by sector (2015 – 2021)



Source: UKWA/Savills

5.10 A key finding of the report was regarding the increased average size of warehouses – from 217,000 sq. ft in 2015 to 340,000 sq. ft in 2021. This has been driven by a dramatic (242%) increase in units over 1 million sq. ft.

5.11 The UKWA report concludes that this trend 'is likely to continue and will mean proposed sites for warehouse development will be built out at a faster rate than their predecessors'. The faster build out of sites will also be driven by continued increases in demand for space. The report concludes that the UKWA perspective is that 'it is therefore crucial that policy makers appreciate the size and scale of the industry in its present form, but also understand that all forecasts point to continued and amplified growth, which will require more land to be allocated for this critical use'.

East Midlands

5.12 According to a Knight Frank report[22], occupier appetite for space in the Midlands market remains extremely robust [in 2021] (with take up almost 75% higher than the same period in 2020). The effects of the pandemic on consumer habits have propelled the Midlands logistics & industrial market toward new heights with a record-breaking year.

5.13 Availability is reaching critical levels of shortage, and the current pipeline of speculative development only goes some way in plugging the gap. Occupier demand is intense with fierce competition to secure buildings leading to informal tender bidding on leasehold opportunities. It's no exaggeration to say that almost every 'big box' in the market whether existing or under construction has several parties seriously interested.

5.14 Rents are continuing on an upward trajectory, and yields are hardening further. As a direct result land pricing is hitting record levels, significantly in excess of

[22] Midlands Logistics & Industrial Insight Report. Available at: Https://Content.Knightfrank.Com/Research/489/Documents/En/Logic-Midlands-2021-Mid-Year-Review-8296.Pdf

previous highs at the top of the last cycle, with gross pricing in the best locations of circa £1.5m per acre plus.

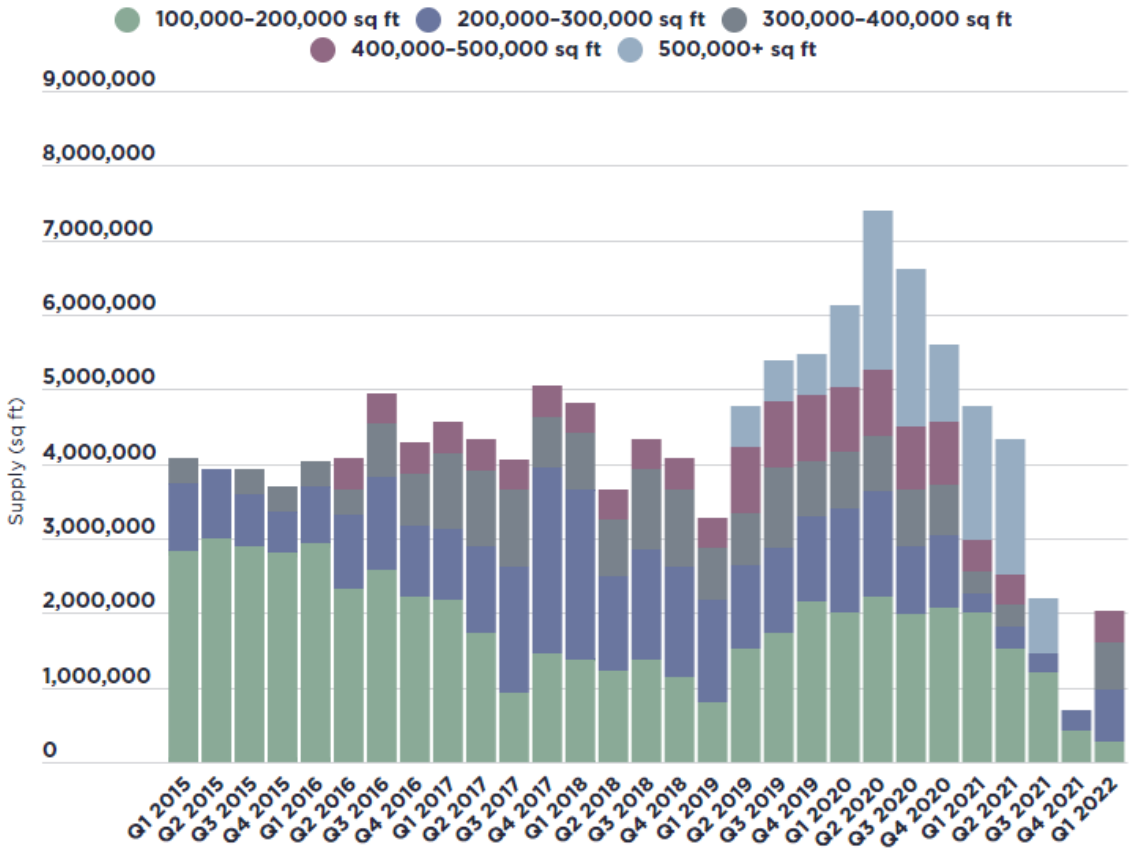
5.15 In addition, Savills report[23] that, at January 2022, there are just eight units over 100,000 sq. ft in the East Midlands totalling 2.m sq. ft which equates to a vacancy rate of just 1.69% or 0.19 years' worth of supply. Savills is aware at least two of the eight units are currently under offer which is set to reduce the available supply even further.

5.16 Due to the strong occupier demand for units in the area, along with rising rents for Grade A stock; the majority of lower quality second-hand space has now been let. Pairing this with multiple speculative developments reaching practical completion, 100% of the available space is now Grade A. This is set to push rents higher and higher as each lease is setting market records.

[23] The Logistics Market in the East Midlands. Available At:

Https://Www.Savills.Co.Uk/Research_Articles/229130/323892-0

Figure 5.3 East Midlands supply for units 100,000+ sq. ft, 2015-2022



Source: Savills Research[24]

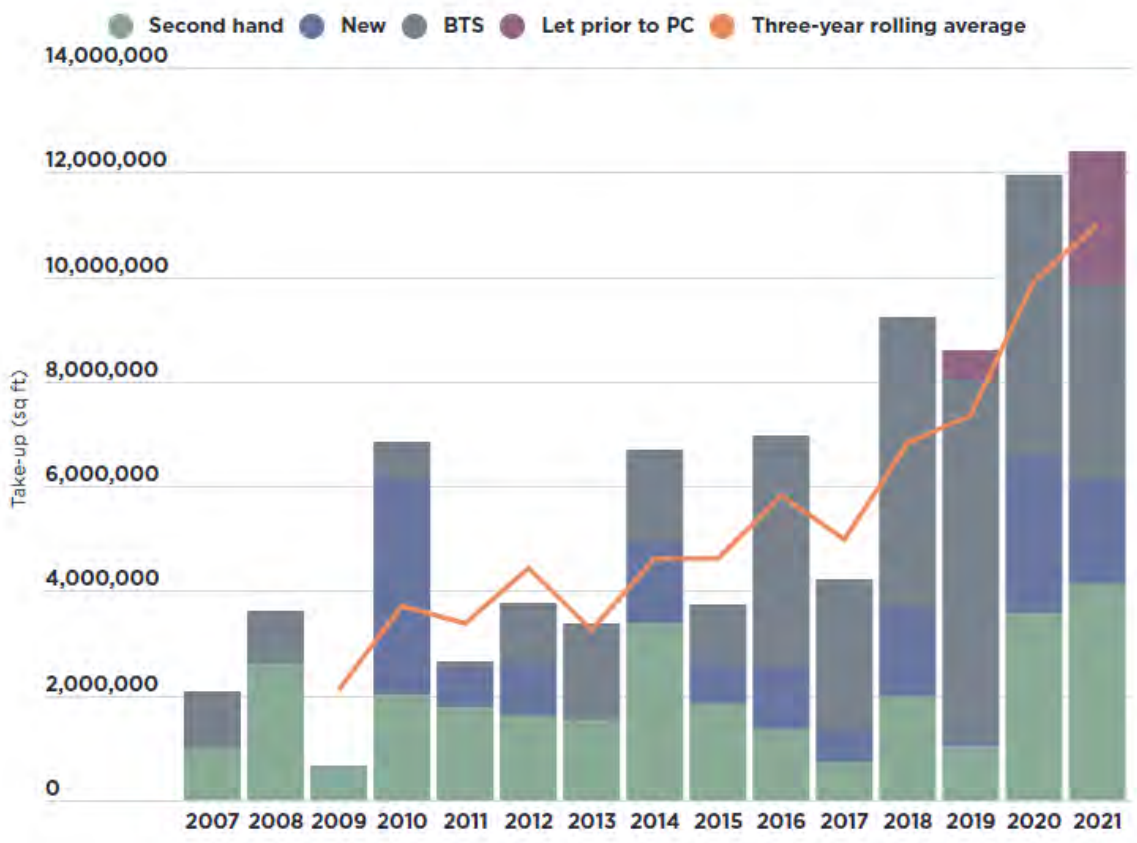
5.17 *Occupier preference continues to revolve around better quality units. In 2021, 87% of space transacted has been Grade A, 11% has been Grade B, and 2% has been Grade C. In terms of specification, 33% of space has been second-hand space, 30% has been built-to-suit space, and 37% has been speculatively developed space.*

5.18 *In terms of deal count, 41% have been within the 100,000–200,000 sq. ft size band, 30% within the 200,000–300,000 sq. ft size band, 9% in the 300,000–400,000 sq. ft size band and the 400,000–500,000 sq. ft size band and 11% over 500,000 sq. ft.*

[24] Ibid

5.19 *Transactional activity has stemmed from a diverse range of occupiers in 2021; 3PLs (third party logistics providers) have accounted for 39% of take-up, online retailers accounted for 30%, with the remaining spread across a diverse range of occupiers.*

Figure 5.4 East Midlands take-up, 2007-2021



Source: Savills Research

SEMLEP Study Area

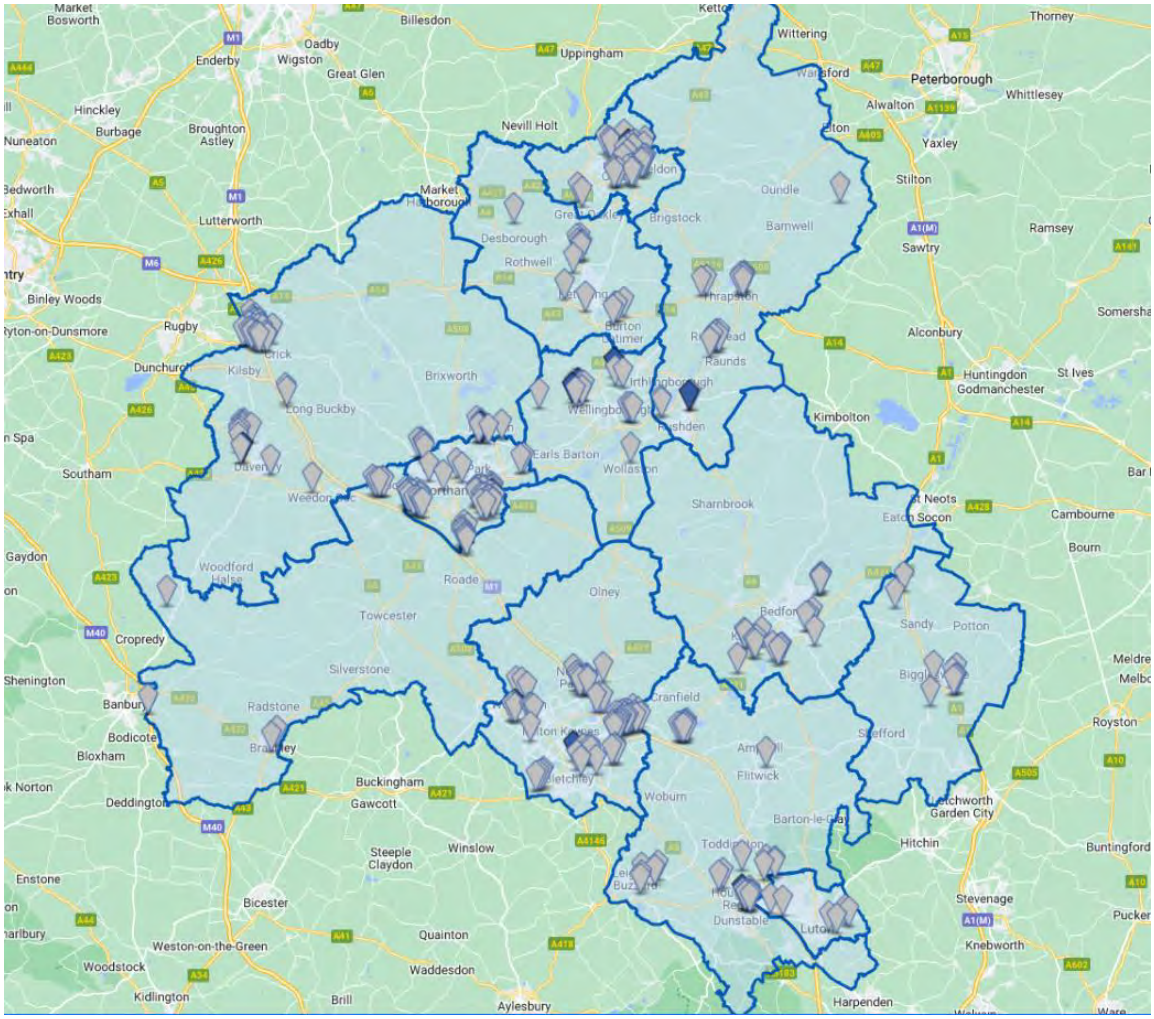
5.20 This section focuses on the study area specifically and primarily utilises CoStar data. It covers the period from 2012 to 2022 (2012 to 2021 for transactions). It focuses on transactions over 100,000 sq. ft in size (i.e. excludes smaller transactions) and filters to warehousing and distribution. The section first looks at key performance indicators (total floorspace, vacancy, rental prices, absorption and delivery) before turning to an analysis of transactions in the last 10 years.

5.21 The SEMLEP study area covers Bedford, Central Bedfordshire, Luton, Milton Keynes, North Northamptonshire and West Northamptonshire.The map below sets

out the study area and includes the CoStar market / sub market area boundaries and B8 units of 100,000 sq. ft and above.

5.22 Note that CoStar definitions differ from VOA definitions in terms of the defined space function and useable space area, so total unit counts and floorspace vary.

Figure 5.5 SEMLEP study area (markers depict B8 units 100,000 sq. ft+)



Source: CoStar (markers depict B8 units 100,000 sq. ft+, blue markers are 'available')

NB: Blue lines delineate CoStar's sub market areas not local authority boundaries

5.23 The key logistics parks in the study area include:

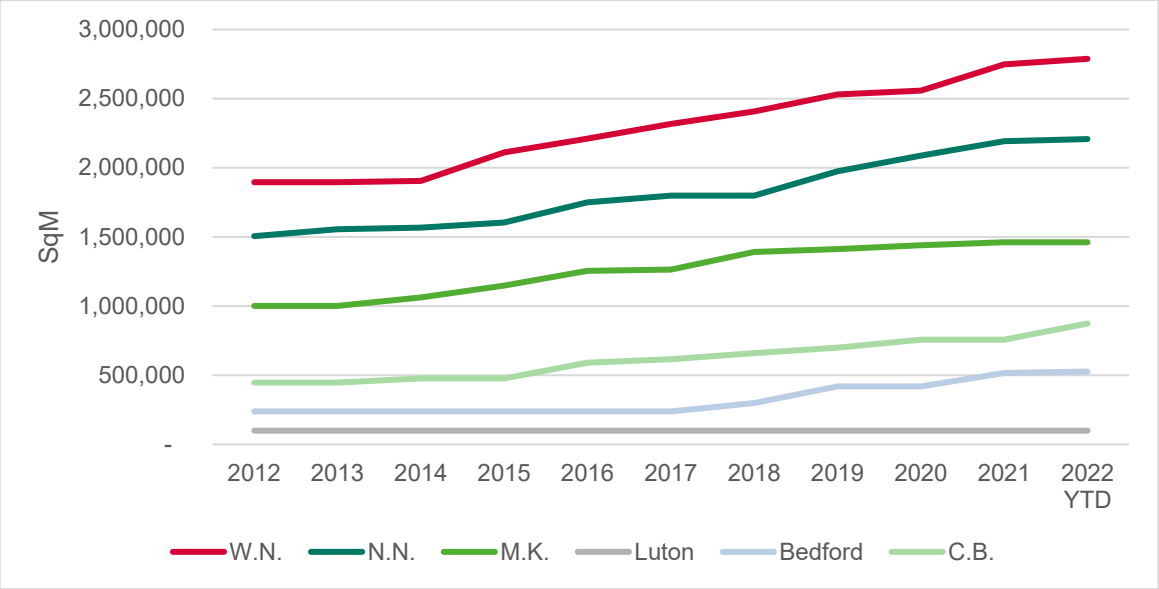
- Dunstable – Prologis Park, Baytree Dunstable;
- MK – Magna Park;

- Biggleswade – Stratton Business Park;
- Central Bedfordshire - Prologis Park Marston Gate;
- Bedford – G-Park Wixams, Branston Way, Marsh Leas, Bedford Commercial Park;
- Northampton - Brackmills, Prologis Grange Park, Panattoni Park;
- Daventry - Prologis Apex Park, DIRFT;
- Wellingborough – Claudius Way / Prologis Vic. Park;
- East Northants: Warth Park
- Kettering – Prologis Park;
- Corby – Midlands Logistics Park.
- Corby – Magna Park

Study area market key performance indicators

5.24 As can be seen below, the amount of floorspace in strategic logistics units has grown across all local authorities since 2012 aside from Luton which has remained stable.

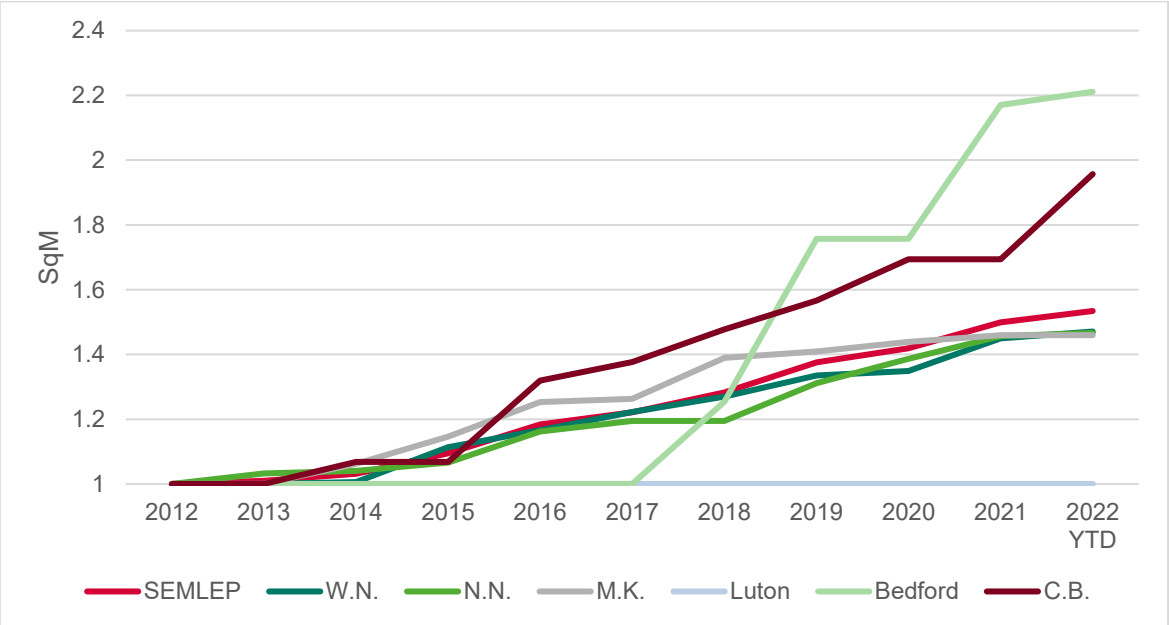
Figure 5.6 Total floorspace (Sq M), for B8 units above 100,000 sq. ft (2012-21)



Source: Iceni analysis of CoStar data

5.25 The graph below shows that the highest rates of growth can be seen in Bedford (all of which occurred in the last 5 years) and Central Bedfordshire. Growth rates in West Northants, North Northants and Milton Keynes are roughly in line with those for the whole of SEMLEP.

Figure 5.7 Indexed strategic warehousing growth, study area authorities (1 = 2012)



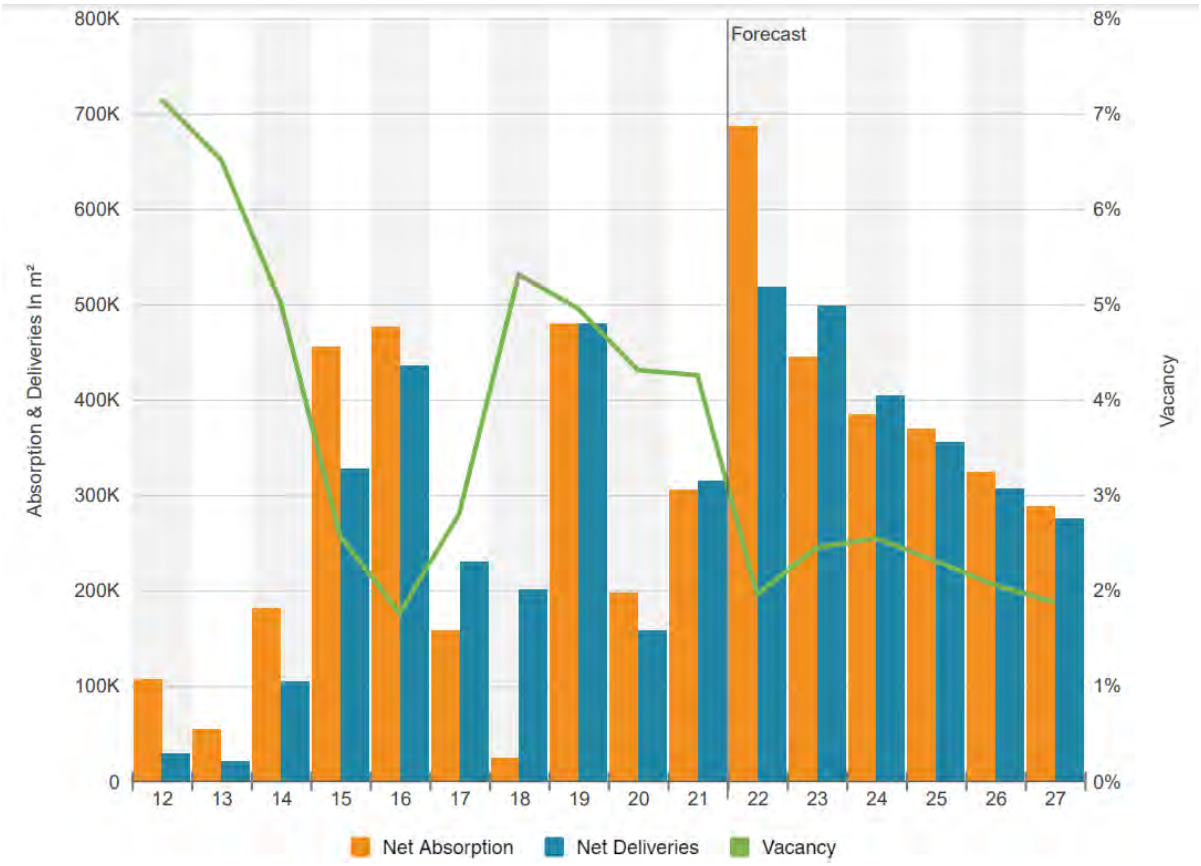
Source: Iceni analysis of CoStar data

5.26 The current vacancy rate for strategic logistics floorspace in the study area is 1.3%. This is extremely low in the context of a 10-year UK average of 5.3% and a current rate of 3%. The ten year average for the SEMLEP area is 4.4% - again highlighting the extremely low current vacancy rate.

5.27 The figure below shows that vacancy rates fell from a high of 7% in 2012 to a low of under 2% in 2016. Since then, the vacancy rate rose to over 5% in 2018 before falling slightly to just over 4% in 2021.

5.28 CoStar forecast vacancy rates based on known pipeline supply, modelled further supply, and modelled demand (which is based on employment forecasts). The vacancy rate at the end of 2022 is forecast to be around 2% - still extremely low when compared to the UK and historic averages presented above. Vacancy rates are then forecast to remain very low (significantly below 3% up to 2027).

Figure 5.8 2012 – 2027 Vacancy, net absorption and delivery rates (logistics units over 100,000 Sq. ft)



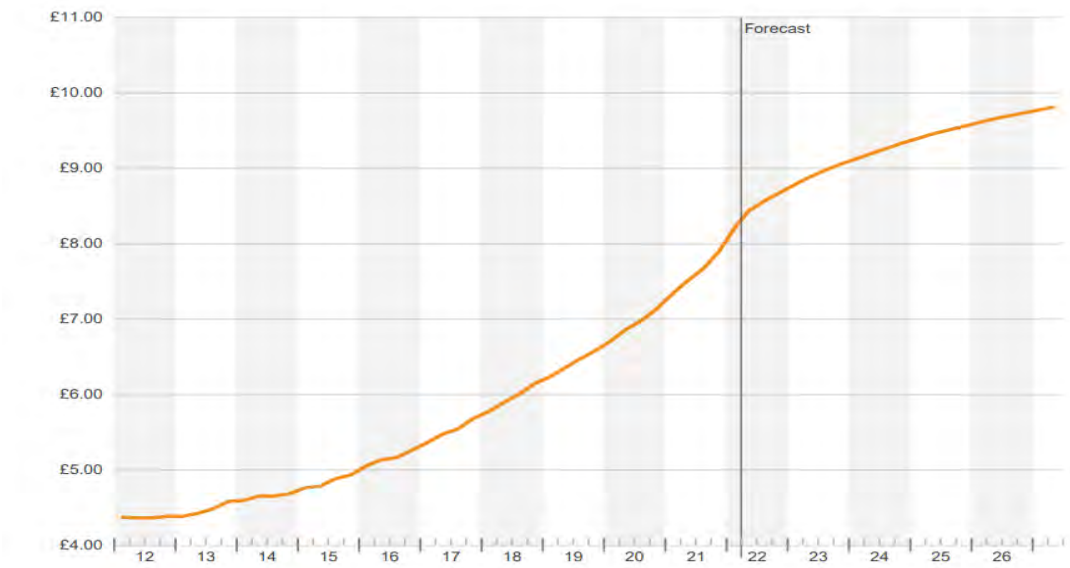
Source: CoStar

5.29 Low vacancy rates in the study area have been driven by a combination of all-time high levels of net absorption[25] in Q1 of 2022 and low levels of new floorspace delivery in Q2. Overall, referring back to the figure above, 2022 is forecast to see the highest level of net absorption ever, as well as the highest level of net deliveries.

5.30 The current average rental price for strategic logistics floorspace in the study area is £8.44 per Sq. ft. This is an all-time high, even after adjusting for inflation - inflation adjusted rents over the last 10 years average £6.46 per Sq. ft. SEMLEP area rents are also considerably higher than the East Midlands and UK averages of £7.13 and £7.35 per Sq. ft respectively.

5.31 As can be seen in the figure below, average rents are expected to grow, albeit at a lower rate than seen over the last 10 years. The rental outlook is similar for all industrial properties, whereas for offices it is essentially flat.

Figure 5.9 Rental price (£/Sq. ft) (logistics units over 100,000 Sq. ft)



Source: CoStar

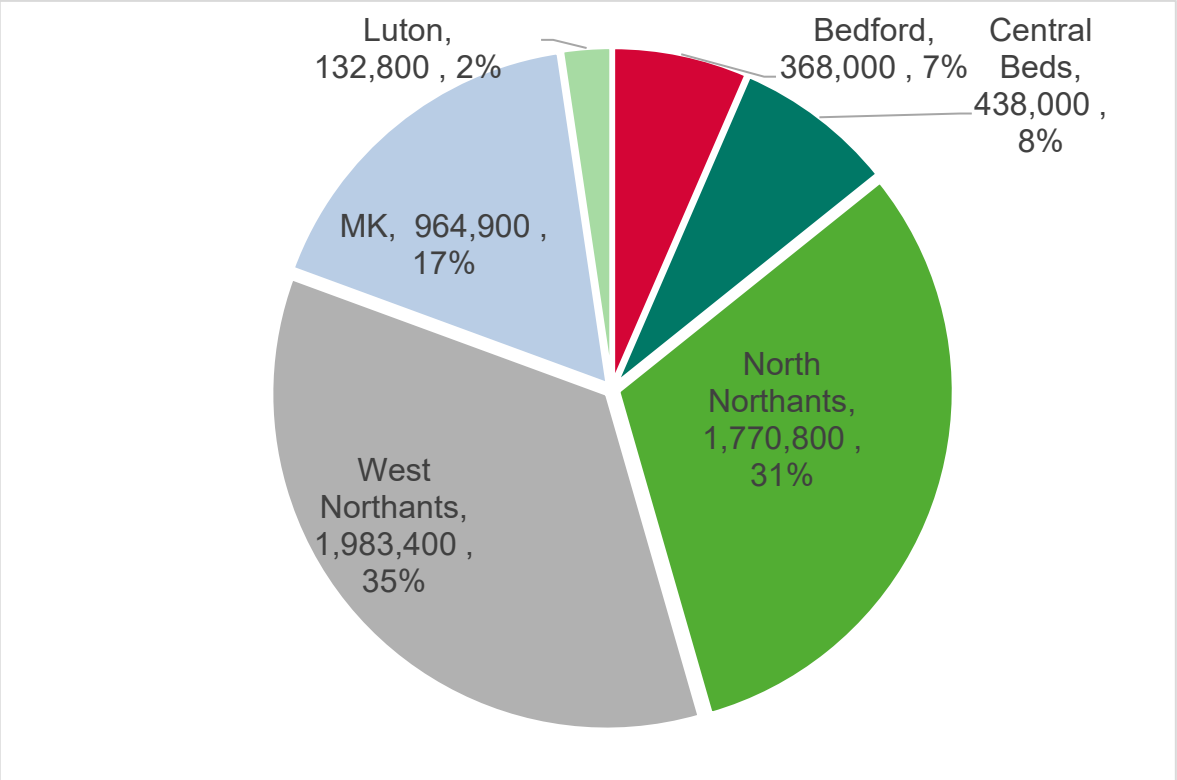
[25] Net Absorption = Move Ins – Move Outs. Indicates levels of demand when not constrained by low vacancy rates.

5.32 The extremely low vacancy rates, high levels of net absorption and high rents observed across the study are indicate high levels of demand for strategic industrial floorspace.

Transactions

5.33 The figure below shows the shows the split of take-up of logistics floorspace between 2012 and 2022 by Local Authority. It can be seen that around two thirds of take-up was in West Northants and North Northants (around a third each).

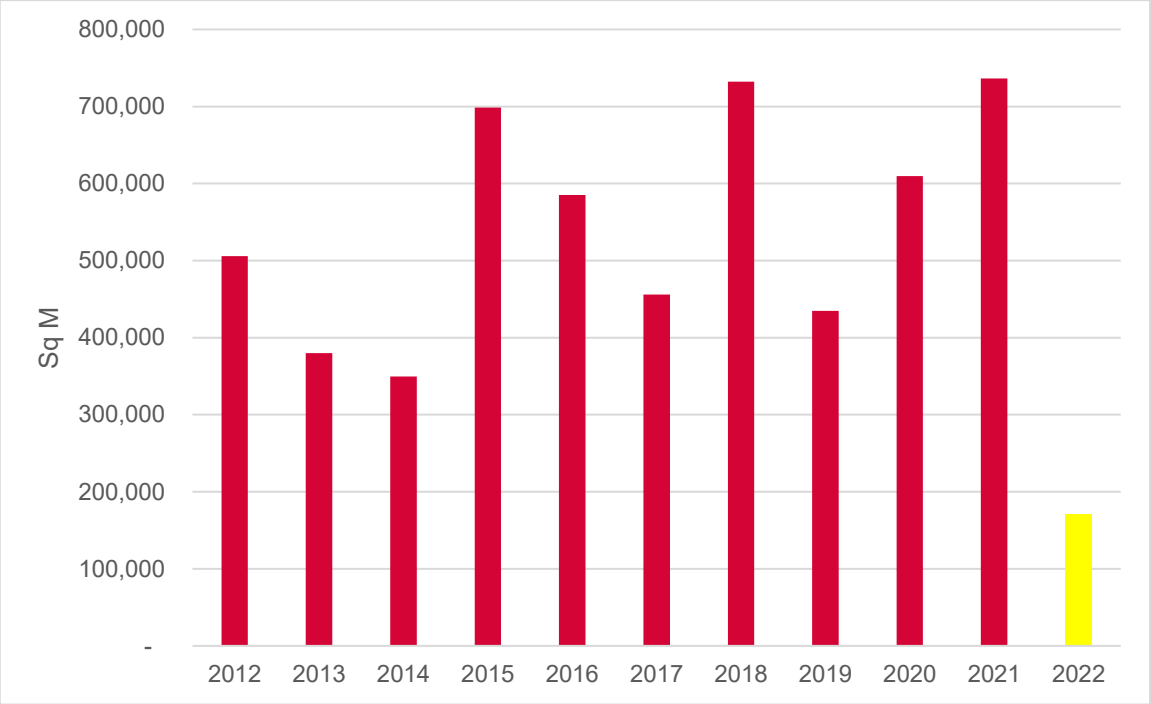
Figure 5.10 Large logistics warehousing deals Local Authority: 2012 to 2022 (SqM)



Source: Iceni analysis of CoStar data

5.34 The figure below shows the pattern of take-up across the study area over the last 10 years. It can be seen that take-up peaked in 2015 and 2018 but that 2021 take-up was the highest seen over the last 10 years. This indicates strong demand for space.

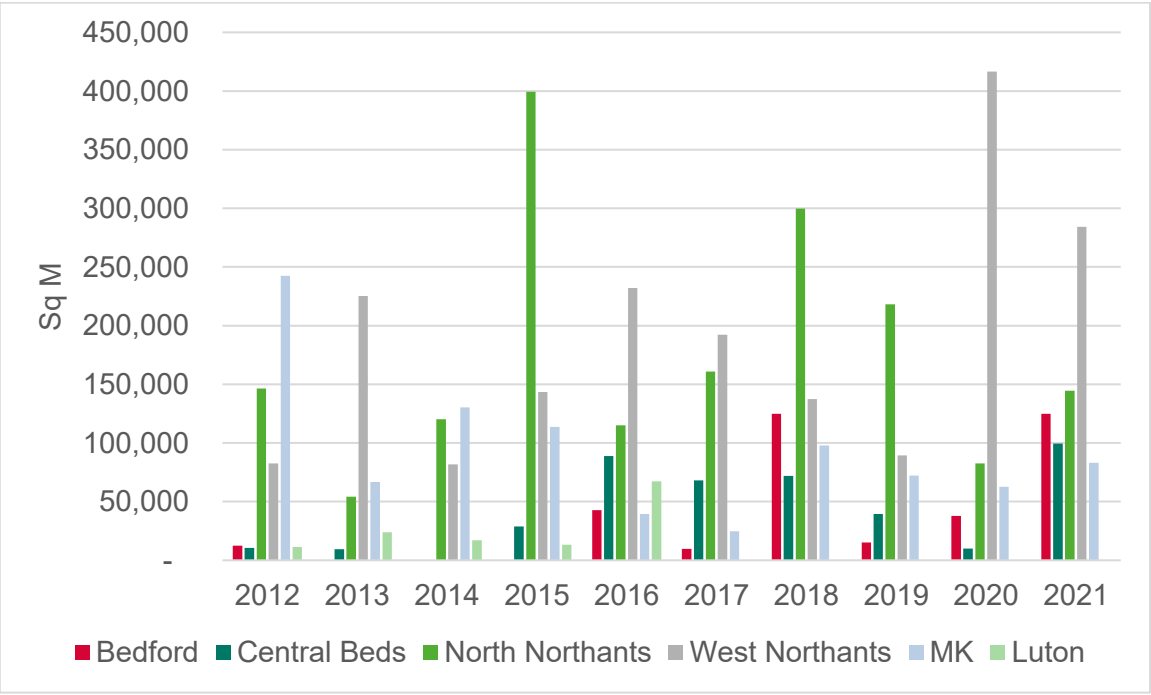
Figure 5.11 Large logistics warehousing deals by Year: 2012 to 2022 (SqM)



Source: Iceni analysis of CoStar data. 2022 data is year to date (June 2022).

5.35 The figure below presents a detailed take-up by year by local authority.

Figure 5.12 Large logistics warehousing deals by Year and Local Authority: 2012 to 2022 (SqM)



Source: Iceni analysis of CoStar data

5.36 Selected large B8 deals

- 2022: South Northants, 430,000 sq. ft, Hotel Chocolat (Panattoni Park)
- 2022: South Northants, 370,000 sq. ft, iForce (Panattoni Park)
- 2021: South Northants, 250,000 sq. ft, 4PX Express (Panattoni Park)
- 2021: Milton Keynes, 620,000 sq. ft, John Lewis (Blakelands)
- 2021: Daventry, 540,000 sq. ft, Stobart Group (DIRFT)
- 2021: Corby, 530,000 sq. ft, Wincanton
- 2020: Daventry, 840,000 sq. ft, Royal Mail (DIRFT)
- 2020: Daventry, 950,000 sq. ft, XPO (renewal) (DIRFT)
- 2018: Bedford, 1,100,000 sq. ft, B&M (Wixams)

Availability

5.37 Availability is currently 4.7%, the lowest in the last 5 years. This includes vacant units either in the planning pipeline under construction or forth coming lease exits. In reality only 5 units are vacant (with contiguous space over 100,000 sq. ft) at July 2022 and only 2 of these are modern units, the full list being 150,000 sqm in total:

- Zone B - Prologis Park - Wellingborough West, Sywell Rd, Wellingborough · Zone B · Warehouse · Built 2021
- Unit 3 - Mustang Park, Leamington Way, Daventry, West Northants, 173,509 SF · Warehouse · Built 2020 (NB this is understood to be let at time of report publication)
- UNIT 3 - John Clark Way, Rushden, North Northants, 141,480 SF · Warehouse · Built 2008
- Spectrum For Arcadia, Merton Dr, Milton Keynes, MK6 4AG · Built 1997
- Wellingborough 170 - Park Farm Industrial Estate, Davy Close, Wellingborough· Warehouse

5.38 There is a substantial pipeline of units and logistics parks with planning permission or under construction the study area. These account for 2.2m sqm (24m sq. ft)

however analysis of local planning authority data indicates the potential figure is much higher (see section 7). Forthcoming parks or extensions to existing parks include:

- **Milton Keynes** – PLP Milton Keynes,
- **Kettering** – Symmetry Park
- **Biggleswade** – Symmetry Park
- **Northampton** – SEGRO Northampton Gateway
- **Daventry** - DIRFT
- **Wellingborough** – Park Farm / Prologis West
- **Corby** – Mulberry Logistics Park, Centrix Business Park

Stakeholder engagement

5.39 A number of stakeholders have been engaged with during this process through one to one discussions and the authors and commissioners are grateful to the participants. These include:

- Savills
- Tritax Symmetry
- SEGRO
- Prologis
- UK Warehousing Association
- SEMLEP Logistics and Supply Chain Sector
- SEMLEP Property Development Infrastructure Implementation & Delivery group
- Property Development Quarterly
- Prop-Search

- Wincanton
- DHL
- John Lewis

5.40 The views of stakeholders have been merged throughout this study, but main messages and themes are as follows. Stakeholder engagement has been focused on the development industry with occupier input. Whilst themes and content have been discussed with stakeholders, any quantitative findings of this report were not shared with stakeholders prior to publication.

Demand

- E-commerce / 3PL businesses are reporting 20% year on year growth 2020-21. Expectation of nearer 10% for 2021-22.
- A lot more focus on supply chain resilience and contingency in the sector. This means sourcing near not far and holding more stock and products which increases space demand.
- Property wise, build to suit and spec build in the market – suggesting that the current demand is peak / cycle high.

Supply position

- Lack of land is a major issue. General availability of land (along major motorway and A roads with good access including Bedford and Milton Keynes). Land is scarce and expensive in traditional areas pushing search to more peripheral A roads. In urban areas a lack of nearby consolidation centres means longer HGV and LGV trips.

Power and sustainability

- Demand has increased substantially due to automation and electric vehicle charging. Price of batteries and supply chain issues are so complex that storage is not possible from PV for overnight charging. Solar and wind farms and now a viable form of generation subject to land availability.

- Challenges with power – there are constraints around renewables / solar panels and turbines - all quite ‘lumpy’ power which needs a battery or to sell to grid which the grid is not designed for.

- There is potential for solar panel retrofit on a number of buildings although this has challenges in terms of fitting and management (owner / occupier).

Automation

- Some operators are well progressed, others in the process and some not envisaging it as appropriate. The lack of labour is a key driver for automation however costs remain prohibitively high for a number of businesses.

- Experience across automation projects is that none have involved people being made redundant, but it does drive productivity which means less recruitment and particularly fewer agency workers. Picking is not exciting but working with a co-bot is. Businesses can hire in robots and test their suitability.

- Robots tend to make better use of space and can undertake faster processing which means better space utilisation leading to lower density on the floor but more in the office.

Skills

- Many operators offer in house apprenticeships and training programmes taking them on a career path.

Labour

- Lack of available labour is the biggest problem for many operators alongside costs of recruitment and retention. As a result, operators are doing more with less people and are seeing a rapid increase in automation, despite almost prohibitive initial costs in investment. Some jobs are more readily automated than others.

- Reduction in the (need for workers with the) most basic skills in logistics over a decade might reduce 20% and further in the future.

- Labour availability is also a challenge for the construction of warehouses as well as operation, including specialisms in steel erectors and cladders. Industry specific training programmes are needed to support career development in the sector.

Infrastructure

- There is a lack of any kind of lorry parking with facilities in many locations – local, national, international lorry drivers have nowhere to go and parking is on roadside. These need to be considered as part of the Local Plan process.
- Suggestion of identifying underutilised motorway junctions, alongside considering other key constraints around landscape and environmental designations, to help establish the most suitable locations for logistics development.

6. FUTURE LAND SUPPLY

6.1 This section considers the pipeline supply (i.e. future supply in excess of existing stock) for logistics across the study area

Study area supply

6.2 The constituent client authorities have provided their current and future supply position for strategic warehousing & logistics of 9,000 sqm and above. Data reflects the latest available supply position to date up to end of 2020/21 monitoring year.

6.3 The table on the next page provides a summary of the supply position across the study area and includes allocations and unimplemented permissions. A site by site list of supply can be found in the appendices.

6.4 It must be noted that some assumptions have been taken. These are as follows:

- Unimplemented permissions:
    - Assumed to be measured in terms of Gross Internal Area (GIA) unless stated otherwise.
    - If at outline stage and unit numbers and sizes are not defined it is assumed that all floorspace is strategic logistics.
    - If the number of units are defined but not sizes then the floorspace is assumed to be strategic logistics unless the average unit size is under 9,000 sqm.
    - Where the exact use class is yet to be determined professional judgement has been applied or the following assumptions have been made:
        - A 75:25 large B8 to B2 / small B8 ratio;
        - A 50:50 large B8 to B2 / Class E / small B8 ratio.

- Allocations:
    - In the case where land allocations were only expressed in hectares a plot ratio of 0.4 has been applied (therefore sites/plots of under 2.25 ha have been excluded as they could not support strategic logistics).
    - Again, Where the exact use class is yet to be determined professional judgement has been applied or the following assumptions have been made:
        - A 75:25 large B8 to B2 / small B8 ratio;
        - A 50:50 large B8 to B2 / Class E / small B8 ratio.

6.5 Overall, there is estimated to be 4,008,500 SqM of pipeline strategic logistics space in the study area.

Table 6.1 Supply position summary table, for units above 9,000 (SqM) (April 2021)

	Unimplemented permissions	Allocations	Total
Bedford	209,599	0	**209,599**
Central Bedfordshire	201,835	372,000	**573,835**
Milton Keynes*	333,590	124929	**458,519**
North Northants	786,834	182,800	**969,634**
West Northants	1,404,640	392,265	**1,796,906**
Total	**2,926,744**	**1,081,749**	**4,008,494**

Source: Local Authority data & Iceni analysis

* April 2022 data but difference with 2021 understood to change balance of permissions / allocations rather than total

Supply outside of the study area

6.6 Leicestershire, which lies immediately to the north-west of the study area is a nationally significant area for strategic logistics.

6.7 In 2020, Leicestershire had around 1,411,000 sqm of pipeline supply[26] including substantial proposals at Magna Park, Lutterworth. This was not sufficient to meet the area's forecast needs of needs of 2,571,000. The Leicestershire authorities are working together to identify future sites that can appropriately meet the identified need.

26 Https://Www.Nwleics.Gov.Uk/Files/Documents/Warehousing_And_Logistics_In_Leicester_And_Leicestershire_Managing_Growth_And_Change_April_20211/Warehousing%20report%20leics%20final%2021%2002%2022%20v4.Pdf

7. SCENARIOS FOR FUTURE STRATEGIC WAREHOUSING DEMAND – REPLACEMENT AND TRAFFIC GROWTH

Methodology – Background

7.1 Land-use forecasting for other commercial sectors, such as offices or retail, often seeks to relate employment growth to the need for additional floor space, using consistent and robust employment densities. This methodology is potentially unsuitable for the logistics sector for three reasons:

- Warehousing units have a much shorter functional or economic life than other types of commercial property (developers/investors will often write-down their assets over a 25-30 year timeframe). There is a consequent need to develop new units, much of which are needed to replace existing life-expired capacity (due to functional or physical obsolescence);
- There is no consistent or robust employment density ratio that can be applied to the B8 sector. The primary function of warehousing is to handle cargo, with floor space requirements driven by factors such as cargo type/commodity, volumes and dwell times. This in turn dictates the employment need (numbers, skills etc..). Cargo with high throughput rates and picked at less than pallet-load quantities (such as grocery) requires higher employment levels when compared with slower moving lines re-distributed at pallet-level. Consequently, warehouses with broadly the same quantum of floor space can have significantly different employment levels; and
- Increasing automation within warehouses, particularly for e-commerce, suggests future employment densities will be lower than today.

7.2 In order to overcome these matters, this land-use forecast methodology is derived from the following key factors relating to new logistics warehouse facilities:

- The continual need to build new large-scale warehousing as a replacement for existing capacity which, over time, becomes life-expired due to functional or physical obsolescence (replacement build); and

- Long-term growth in the demand for goods in the wider economy and the subsequent need for additional floor space in order to handle that growth (growth build).

7.3 Existing warehouse capacity can be quantified from available data sources, with a view then reached as to the likely replacement ('churn') rate based on experience of the logistics sector. Freight traffic growth (a proxy for growth in the demand for goods) can be forecast using economic or traffic models, in this case the MDST GB Freight Model (used to produce forecasts for Network Rail and Midlands Connect among other bodies). The growth is then related to floor space using cargo storage density and throughput rates expected at a modern distribution centre. Adding the replacement and growth build elements together generates the forecast of future new-build rates.

7.4 The base line forecast year adopted for this forecast exercise is 2021. The key primary output is total new-build rates over a future time period (i.e. future demand for new-build units), measured as square metres of warehouse floor space. In this case, new-build rates up to 2030, 2040 and 2050 have been forecast. The forecasts are for the South East Midlands study area[27]. The forecasts are not supply constrained in any way.

Existing Warehouse Capacity

7.5 Given the above, the starting point of the land-use forecasting process is therefore to quantify the existing supply of large-scale logistics and distribution floor space capacity within the South East Midlands study area. The data has been derived from MDST's warehouse database, which has been compiled from the Valuation

[27] Daventry, Northampton, South Northamptonshire (West Northamptonshire Combined) Corby, East Northamptonshire, Kettering, Wellingborough (North Northamptonshire Combined), Central Bedfordshire Council, Bedford, Luton and Milton Keynes.

Office Agency (VOA) non-domestic Rating List records, a record of all commercial property in England and Wales by floor space function and location, collated for Business Rates purposes. We have interrogated the raw database and extracted floor space data within commercial buildings with a designation 'warehouse' or a similar classification. For clarification, this includes:

- Floor space designated as 'warehouse' or similar within a building whose primary classification is 'Warehouse and Premises' i.e. a building purposely built to receive, store and distribute cargo (the classic distribution centre); and
- Floor space designated as 'warehouse' or similar within a building that has some other primary classification e.g. a 'Factory and Premises' which contains floor space used to store and distribute goods manufactured at that site.

7.6 Property where the warehouse floor space (as defined) is greater than 9,000 square metres in total has been included, this broadly equating to buildings around 100,000 sq. ft or larger, the logistics industry's recognised definition of a large-scale distribution centre (aka large-shed or 'big-box').

7.7 While the VOA rating list provides a reasonably robust source of data quantifying warehouse floor space, a number of caveats need to be attached, namely:

- The VOA is recording floor space by function for business rates purposes. For the purposes of this analysis, other ancillary floor space designations (e.g. offices) within the same building or plot have been excluded, meaning the total 'headline' size of a commercial property will be greater once these other floor space functions are included. Other data sources which includes this floor space (e.g. Costar) will therefore record the same unit as being larger. Also, these other sources may also pick up units which, at face value, exceed the 9,000sqm baseline, but are in fact smaller when only the warehouse element is only counted;
- Units which are currently not subject to business rates will not be included in the data (e.g. units under refurbishment); and

- New or recently refurbished units will have yet to be recorded by the VOA on the rating list.

7.8 Different data sources (e.g. Costar or planning application records) will therefore not directly correspond in terms of total quantum and the number of units. However, as explained the forecasting methodology is based on the replacement of obsolete warehouse floor space over time, and including any ancillary floor space would over-inflate the quantum that needs replacing. Also note that while the total quantum of 'warehouse' or similar floor space within an individual property is greater than 9,000 square metres, the actual floor space may be distributed over two or more different areas (zones) within the individual commercial property.

England and Wales

7.9 With these caveats in mind, across, across England and Wales a total of 2,438 buildings covering 51 million square metres of floor space can be identified from the VOA Rating List data (as at mid-2021). A breakdown of these figures by Government Office Region are presented in the table below. The equivalent commercial property data in Scotland is collated by the *Scottish Assessors Association (SAA).* For reference, Scotland currently accommodates around 1.4 million square metres of large-scale warehouse floor space, of which around 1.1 million square metres is located in the 'Central Belt'.

Table 7.1 Current (2021) Large Scale Warehouse Capacity England and Wales, by Region

Region	000s sqm	Number Units	sqm per unit
East Midlands	*10,142*	*402*	*25,228*
North West	8,328	419	19,876
West Midlands	7,559	385	19,634
Yorkshire/Humber	7,064	336	21,023
East England	5,576	270	20,651
South East	4,021	204	19,710
South West	2,903	132	21,994
North East	1,947	90	21,637
London	1,870	121	15,454
Wales	1,588	79	20,102
Total	**50,998**	**2,438**	**20,918**

	Market Share (%)	
	Floor Space	Number Units
East Midlands	*20%*	*16%*
North West	16%	17%
West Midlands	15%	16%
Yorkshire/Humber	14%	14%
East England	11%	11%
South East	8%	8%
South West	6%	5%
North East	4%	4%
London	4%	5%
Wales	3%	3%

Source: MDS Transmodal warehouse database (VOA Rating List)

7.10 The table shows that the East Midlands region hosts just over 10.1 million square metres of floor space across 402 commercial properties. It is the largest region in terms of total floor space (20% market share), though the North West has a greater number of units. The West Midlands region has the third largest concentration of large-scale warehousing in England and Wales, with just under 7.6 million square metres (15% market share when measured by floor space). The average floor space per commercial property in the East Midlands is around 25,200 square metres, significantly above the national average of 20,900 square metres per unit.

7.11 The East Midlands region accommodates around 8% of the population of England and Wales, yet the data above shows that it currently accommodates 20% of total English and Welsh warehouse capacity. The mean size per unit is also significantly above the national figure. The East Midlands region has therefore attracted a quantum of warehouse floor space significantly above that which its population and wider economy would suggest; it is significantly more than is required to handle the volume of cargo distributed into the East Midlands regional economy. This suggests that the region's floor space is predominantly playing a national rather than regional role in this sector. Warehousing serving a national market also tends to be larger than those with a regional hinterland. Dwell times are longer (performing a stock holding role) and therefore more space is required compared with regional facilities where stock turns-over more quickly.

South East Midlands

7.12 Table 7.2 in the report presents a breakdown of large-scale warehouse floor space within the South East Midlands region by Billing Authority (i.e. planning authority level). Daventry has the largest concentration of warehousing in the region with just over 1 million square metres of floor space across 33 properties. Much of this floor space is located at the rail-served DIRFT Strategic Rail Freight Interchange (SRFI). There are also further significant concentrations of floor space in Northampton, Corby and East Northamptonshire.

7.13 The table below presents a breakdown of large-scale warehouse floor space within the South East Midlands study by Billing Authority[28] (i.e. planning authority level). The area currently records 6.2 million square metres of floor space across 222 properties. Daventry has the largest concentration of warehousing in the region with just over 1 million square metres of floor space across 33 properties. Much of this floor space is located at the rail-served DIRFT Strategic Rail Freight Interchange (SRFI) at around 0.6 million square metres. There are also further significant concentrations of floor space in Northampton, Corby, East Northants and Central Bedfordshire. Note that around 10% of the area's current floor space is located at a rail-served site (in this case DIRFT). Across the East Midlands as a whole, around 12% of the floor space is located at a rail-served site (East Midlands Gateway and East Midlands Distribution Centre in addition to DIRFT).

Table 7.2 Current (2021) Large-Scale Warehouse Floor Space - Study Area by billing Authority

Local Authority	000s sqm	Number Units
Daventry	1,090	33
Northampton	892	39
South Northamptonshire	171	7
West Northamptonshire	*2,153*	*79*
Corby	728	26

[28] Note that the data for Northamptonshire is recorded currently by the VOA at the former district council level

East Northamptonshire	636	22
Kettering	354	12
Wellingborough	332	14
North Northamptonshire	*2,05*0	*74*
Central Bedfordshire Council	537	20
Bedford	341	9
Luton	50	4
Milton Keynes	1,063	36
Total	**6,194**	**222**
DIRFT	*597*	
DIRFT % Study area floor space	*10%*	

Source: MDS Transmodal warehouse database (VOA Rating List)

Replacement Build

7.14 Most newly built floor space is a replacement for existing warehouse stock which is "life expired". Becoming 'life expired' results from:

- Physical obsolescence, whereby an older building has become structurally unsound and requires demolition; and/or
- Functional obsolescence, where the building is no longer able to perform the operational functions in an efficient manner that it was originally designed to undertake.

7.15 While many warehouse buildings in the 20-30 year age-range are still physically sound, many have become functionally obsolete. This is particularly the case concerning the growth of e-commerce, where many buildings cannot accommodate the equipment and facilities required for on-line sales, or the ability to handle distribution to retail outlets alongside direct to home e-commerce deliveries under the same roof. Many existing retailers have therefore commissioned more modern facilities (to service their e-commerce platforms) which have directly replaced older distribution buildings (e.g. Marks & Spencer at East Midlands Distribution Centre). Also, new floor space has been built for emerging e-commerce only retailers, such as Amazon or ASOS, much of which has effectively replaced floor space previously operated by 'bricks and mortar' retailers which have either ceased trading or have radically downsized to address the fall in high street sales.

7.16 A second factor is the ability, when compared with 20-30 years ago, to operate much larger distribution buildings. This has been facilitated by advances in modern ICT inventory management systems which have permitted much larger warehouses to be operated more efficiently than was previously the case. As a result, many operators have sought economies of scale by merging operations based at multiple sites to one new location. Finally, changing market conditions, both within specific companies/sectors and in the wider economy, means that warehouse operations might need to relocate in order to remain competitive. Occupiers who previously sourced goods from domestic suppliers but now predominantly import from deep-sea markets may seek a new location at a rail-linked site in order to remain competitive.

7.17 A suitable example of these three issues is the online retailer *very.co.uk* (formerly *Littlewoods* and the *Shop Direct Group*). They have recently closed three older (functionally obsolete) warehouse units in the Manchester area. The combined operations have been replaced by a modern purpose-built warehouse at the new East Midlands Gateway SRFI which can accommodate mezzanine levels and significant levels of automation. Economies of scale will be gained by merging three facilities into a single operation under one roof, and the East Midlands Gateway location was selected as it gave them direct access to an intermodal rail terminal, both as a means to reduce transport costs from the deep-sea container ports and ‘future proofing’ with regards to de-carbonisation.

7.18 Essentially, buildings reach the end of their useful economic life and are no longer suitable for their original designed use; a more modern replacement facility is therefore required. Older buildings can either be substantially refurbished for new occupiers or for a different use, or demolished and the plot ‘recycled’ for new buildings (which may or may not be warehousing). However, a consequence of this process is that new sites need to be brought forward (or new plots at existing sites) in order to allow occupiers to re-locate to new buildings, thereby releasing the existing facility for refurbishment or demolition.

7.19 In order to estimate the ‘replacement build’ element up to 2050 (i.e. floor space which will become functionally obsolete or in some cases physically obsolete), the

existing stock of large-scale warehousing in the South East Midlands study area needs to be considered. This has been undertaken and is detailed above.

7.20 On the basis that the average useful economic life of a modern warehouse building is 30 years, up to 2040 we could expect around 63% of the existing warehouse stock in the areas being considered to require replacement (i.e. 19 years/30 years = 63%). Likewise, up to 2050 we could therefore expect around 97% of the existing warehouse stock to require replacement. This can be considered the 'central replacement build' scenario as we have also considered two further positions where the rate of replacement is either slower or faster when compared with historical trends.

7.21 In the latter case, we have considered a position where the useful life falls to around 20 years (the 'high replacement' scenario), meaning that by 2040 around 95% of the existing warehouse stock in the areas being considered are likely to require replacement (i.e. 19 years/20 years = 95%). Alternatively, the 'low replacement' scenario extends the replacement rate to 40 years, meaning that only 48% of the existing warehouse stock in the areas being considered will require replacement (i.e. 19 years/40 years = 48%).

7.22 The table below shows the estimated 'replacement build' rates to 2050 for all three scenarios for the South East Midlands study area.

7.23 No factors are considered here for the refurbishment or replacement of stock on existing sites. However it is recognised that this will significantly affect the final requirement for floorspace. Furthermore it is also likely that the longevity of units will increase to more than 30 years, compared to those built in 2010, so the post 2040s (i.e. up to 2050 period) could see a slowdown in the replacement rate. More detailed discussion on sensitivity assumptions and adjustments related to these matters is included in section 11.

Table 7.3 Replacement Build Rates to 2030, 2040 and 2050

Existing floor space - Study Area	*6,194*	*000s sqm*	
	000s sqm		
	2030	**2040**	**2050**
High Replacement Scenario	2,787	5,885	8,982
Low Replacement Scenario	1,394	2,942	4,491
Central Replacement Scenario	1,858	3,923	5,988
High			
% replacement assuming	*45%*	*to 2030*	
20 years economic life	*95%*	*to 2040*	
	145%	*to 2050*	
Low			
% replacement assuming	*23%*	*to 2030*	
40 years economic life	*48%*	*to 2040*	
	73%	*to 2050*	
Central			
% replacement assuming	*30%*	*to 2030*	
30 years economic life	*63%*	*to 2040*	
	97%	*to 2050*	

Source: MDST Warehouse Database and estimated replacement rates

Growth Build

7.24 The requirement for warehouse floor space results from an operational need to handle, store and re-distribute cargo. Therefore, as the volume of goods consumed increases over time, due to economic growth and population increases, this will subsequently generate an increasing requirement for additional warehouse floor space. Consequently, new warehouses are constructed partly to accommodate growing traffic volumes over the long term (the 'growth build' element).

7.25 In order to estimate the growth build element two factors need to be considered, namely:

- The current (2021) volume of goods which are delivered directly to large-scale distribution centres in the South East Midlands study area (i.e. only including

those commodities which pass through large-scale distribution centres, so excluding bulk and semi-bulk cargoes such as aggregates and forest products); and

- Likewise, the volumes of goods that can be expected to be delivered directly to large-scale distribution centres in the South East Midlands study area in 2030, 2040 and 2050.

7.26 Both current and forecast volumes (as described) have been produced using the MDS Transmodal GB Freight Model. This is an economic freight demand model which can estimate existing freight flows (by origin-destination, mode, commodity and port of entry/departure for international traffics) and generate forecasts for future years (on the same basis) under different policy and economic scenarios. It has recently been used to generate forecasts for the Network Rail, National Highways and Midlands Connect.

7.27 In 2020, MDS Transmodal produced an updated set of rail freight demand forecasts for Network Rail for the years 2023, 2033 and 2043 (to inform their long term planning process). We have therefore extracted the relevant rail and road forecast traffic volumes from the 'central' scenario (Scenario E) Network Rail forecasts[29]. Values for 2030, 2040 and 2050 were interpolated from the 2033 and 2043 outputs.

7.28 The table below shows the total volume of cargo currently destined for the South East Midlands study area (for commodities which pass through large-scale warehouses) alongside the proportion estimated to be delivered directly to large scale distribution centres. Based on previous projects, we estimate this to be 45% of total tonnage delivered for road freight and all inbound containerised rail traffic.

[29] While the Network Rail forecasts were for future Rail Freight Demand, in parallel the GB freight model also undertakes road freight forecasts as part of the same process (albeit not published by Network Rail).

On the same basis, projected volumes for the forecast years up to 2050 are presented.

Table 7.4 Existing and Forecast Freight Traffic Destined for Study Area

		000s tonnes-lifted		
	2021	2030	2040	2050
Road				
Total	49,311	54,624	61,589	69,010
To warehouse	22,190	24,581	27,715	31,055
Rail				
Total	1,419	2,144	3,030	3,950
To warehouse	1,419	2,144	3,030	3,950
Total to warehouse	23,608	26,725	30,745	35,004
Growth v 2021	-	3,117	7,137	11,396

Source: MDS Transmodal GB Freight Model

7.29 The forecasts, as described, indicate that for the South East Midlands study area an additional 7.1 million tonnes can be expected to pass through large scale distribution centres in 2040 compared with 2021. By 2050, an additional 11.4 million tonnes of cargo is forecast to pass through large scale distribution centres.

7.30 The growth in annual traffic for each forecast year (when compared with 2021 levels) have subsequently been converted into the demand for additional floor space i.e. the growth build element, using generally accepted 'conversion factors' which relates annual tonnage throughput and floor space at large scale 'high bay' type warehouses. The tables below show the forecast traffic growth alongside the additional (growth build) floor space required to handle that growth.

Table 7.5 Forecast Traffic Growth and Additional Floor Space Required

	2030	2040	2050
Traffic growth v 2021 (000s tonnes)	3,117	7,137	11,396
Additional (growth build) floor space (000s sqm)	123	281	448

Source: MDS Transmodal GB Freight Model and Consultant estimations as described. NB: The East Midlands total includes the traffic and new-build rate for Nottinghamshire study area.

Total New-Build and Land Requirements

7.31 By combining the 'replacement build' and 'growth build' elements, the total warehouse new-build which can be expected for each forecast year can be calculated. This is shown in the tables below for the various scenarios.

Table 7.6 Forecast New-Build to 2050 – Study Area

	000s sqm		
Study Area	**2030**	**2040**	**2050**
High Replacement Scenario			
Replacement build	2,787	5,885	8,982
Growth build	123	281	448
Total	**2,910**	**6,165**	**9,430**
Low Replacement Scenario			
Replacement build	1,394	2,942	4,491
Growth build	123	281	448
Total	**1,516**	**3,223**	**4,939**
Central Replacement Scenario			
Replacement build	1,858	3,923	5,988
Growth build	123	281	448
Total	**1,981**	**4,204**	**6,436**

Source: MDS Transmodal GB Freight Model and Consultant estimations as described

7.32 For the Central Replacement scenario within the study area, around 6.4 million square metres of new large-scale warehouse floor space is forecast to be built by 2050. The high and low scenario forecasts are 9.4 and 4.9 million square metres of new floor space respectively by 2050.

7.33 As is normally the case in land-use planning, a margin for flexibility has been added to the above forecast new-build rates. This is for three principal reasons:

- To ensure a 'safety margin' to account for potential delays in sites or plots being coming forward for development;
- To provide an additional buffer to ensure that supply is not too tightly matched to forecast demand; and

- To provide an effective vacancy rate within the property market, which generally works on between 5% and 10% or property being vacant at any one time.

7.34 In this case, a margin of just under 1.4 million square metres has been added, equating to total completions in the study area over the past 5 years. The table below therefore incorporates this margin into the forecast figures presented above.

Table 7.7 Table: Forecast New-Build Rates to 2050 plus Margin – Study Area

Margin – 5yrs completions	*1,394*	*000s sqm*	
Total New Build including 5 years Margin	*000s sqm*		
	2030	2040	2050
High	4,304	7,559	10,824
Low	2,910	4,617	6,333
Central	3,375	5,598	7,830
Land Required	*Ha*		
	2030	2040	2050
High	1,230	2,160	3,093
Low	832	1,319	1,809
Central	964	1,599	2,237

Source: MDS Transmodal GB Freight Model and Consultant estimations as described

7.35 Note the 'land required' figure in the tables above is simply the gross area of land required to accommodate the new-build forecast assuming a 35% floor space to plot footprint ratio; it is not the amount of new land that will need to be brought forward in plans, as no account has been made at this stage of existing consents or local plan allocations.

Rail-Served Floor Space Demand and Supply

7.36 As presented in the analysis of existing capacity, around 10% of the study area's current floor space is located at a rail-served[30] site (in this case DIRFT). Across the East Midlands region, around 12% of the floor space is located at a rail-served site (East Midlands Gateway and East Midlands Distribution Centre in addition to DIRFT). Nationally, around 8% of large-scale floor space is located at a rail-served site. The study area and wider East Midlands region are therefore marginally ahead of the national level of rail connectivity. The delivery of Northampton Gateway will move to increase this percentage.

7.37 The most recent national rail freight demand forecasts undertaken for Network Rail (produced by MDST and published in August 2020) assumed a much higher rate of new-build development at rail-served sites (at Strategic Rail Freight Interchanges or SRFIs) as does the DfT (Future of Freight 2022) which in particular has the positive potential of reducing carbon emissions and working towards net zero. The central scenario was produced on the basis that around 26% of future new-build would locate at a SRFI. This was understood to be broadly in-line with recent planning consents in England and Wales for large scale warehousing at the time the forecasts were produced.

7.38 It is expected that a much greater proportion of future large-scale (over 9,000 sqm but often much larger) new-build to locate at rail-served sites nationally over the medium-long term when compared with current capacity. This is due to the following reasons:

[30] Defined as having access to an intermodal terminal within the same development or in very close proximity that allows container units to be transferred to/from the warehouse using 'works truck' type equipment, or warehouses with a railway siding alongside.

1. National planning policy, principally the National Planning Policy Framework (NPPF) and the National Network National Policy Statement (NPS), clearly expects large scale freight developments to be built at locations which have access to the railway network (or ports/inland waterways). The National Networks NPS, for example, concludes that there is 'a compelling need for an expanded network of SRFIs'

2. The large growth rates over the past decade in intermodal rail freight, particularly on flows from the deep-sea ports to the English Midlands and north of England. The national rail freight demand forecasts (alluded to above) suggest this growth will continue to 2043. It is worth noting that these forecasts have 'buy-in' from the wider freight industry and key stakeholders and can be considered the freight/logistics industry's long term demand forecasts.

3. HS2 is expected to free up space on the West Coast line, facilitating more freight transport flows. The East West Main Line Strategic Statement (March 2022[31]) states (para 4.6) "The East West Rail connection on to the West Coast Main Line at Bletchley could accommodate an uplift in freight moving by rail from Southampton, Bristol and South Wales to key strategic freight sites in the 'Golden Triangle' of logistics (Northampton, the West Midlands and East Midlands), sites further North, and the rerouting of existing flows that currently run via London. Within the East West Rail base specification, there is assumed to be a path for one freight train per hour in each direction over the East West Rail infrastructure. Additional freight capacity will be limited given the lack of a direct connection on to the West Coast Main Line northbound for services approaching from the east within the East West Rail base specification. This means that freight originating from locations in the east, notably the port of Felixstowe, will need to use existing routes to reach destinations in the

[31] Https://Sacuksprodnrdigital0001.Blob.Core.Windows.Net/Regional-Long-Term-Planning/North,%20west%20and%20central/East%20west%20main%20line%20strategic%20statement%202022.Pdf

Midlands and the North. A lack of any connections with the East Coast Main Line will provide similar challenges for freight from the south and south-west to reach the north-east. Accommodation of forecasted freight growth is likely to require additional use of London's orbital routes which presently have capacity issues, or the realisation of the Felixstowe to Midlands and the North programme of planned interventions which will offer an additional route to freight sites in the East Midlands and North East. The limited connections available between East West Rail infrastructure and existing main lines for freight risks missing an opportunity to relieve pressure on existing routes, and create additional capability and capacity available to accommodate forecasted demand."

4. The ability to access cost competitive rail freight services is becoming a key commercial requirement of the logistics industry, particularly for medium-longer distance trunk hauls between ports, NDCs and RDCs. The principal reasons are cost (full-length trains should offer a cheaper option between two rail-linked sites, even over relatively short distances) and HGV driver shortages. Examples of this trend include:

    - Teesport and the Port of Liverpool have begun to contract their own train services to distribute maritime containers from their respective ports;

    - Container road haulier Maritime Transport now directly contract train services as the primary means of moving containers from deep-sea ports to inland destinations (principally to mitigate shortages of HGV drivers). Maritime are also the terminal operator at Birch Coppice and East Midlands Gateway SRFIs, and they have recently concluded deals to the operator at the existing Hams Hall SRFI and the new Northampton Gateway development;

    - Both Tesco and Sainsburys have established rail operations at DIRFT. Tesco operate three trains per day to Scotland, Dagenham and Magor (South Wales); and

- As alluded to above, Very.co.uk selected East Midlands Gateway for their new NDC as it gave them direct access to an intermodal rail terminal, initially to reduce transport costs from the deep-sea container ports. The development of rail-linked strategic distribution sites is a crucial component in delivering the ability to access cost competitive rail freight services.

5. Perhaps most importantly, the de-carbonising agenda and the long-term need to de-carbonise road and rail freight is becoming a key issue for the sector. While the increasing use of rail freight has to date been driven by cost, de-carbonisation is likely to become a key driving factor going forward. It is recognised that de-carbonising HGVs will be challenging; battery-electric HGVs are unlikely to provide the distance range currently provided by diesel powered freight vehicles, E-highways will require a significant investment, meaning they would only cover the strategic network, while there are significant issues concerning the production and distribution of hydrogen (for fuel cells).

7.39 Electrically hauled rail freight is currently the only proven technology than can transport freight over long distances with zero greenhouse gas emissions (assuming the electricity is generated by zero-carbon means). The ability to haul freight over long distances by rail to large-scale warehouses, where it can then be transferred to battery-electric powered HGVs/LGVs for shorter distance final deliveries is therefore likely to become a key requirement for the logistics sector. The development of competitive rail-linked strategic distribution sites is a crucial component in meeting this requirement.

7.40 Taking this into account, we have therefore considered three scenarios with respect to future warehouse new-build in the study area at rail-served sites. The first scenario considers new-build rates at rail-served sites in-line with the current East Midlands regional capacity i.e. 12% of future floor space development. Clearly, this does not ‘raise the bar’, so the remaining scenarios consider a much greater proportion of future large-scale new-build locating at rail-served sites, when compared with the current capacity, to satisfy these policy, commercial and de-carbonising requirements.

7.41 The second scenario has considered the size of warehouse unit that has to date been developed at the existing SRFIs across the Midlands[32] (namely DIRFT, Hams Hall, Birch Coppice and East Midlands Gateway) and those consented for Northampton Gateway (derived from the DCO masterplan). In this case, the average (mean) size of unit is just over 34,000 square metres, and it is units this size and above that are considered to be attracted to the rail facilities available at a SRFI (the volume and nature of the cargo handled having a propensity to move by rail). Currently, 52% of large-scale warehouse floor space across the East Midlands region is accommodated in units greater than 34,000 square metres. On the basis that this level continues going forward, the second scenario therefore assumes that 52% of future new-build in the study area will be attracted to a SRFI location. The third scenario consequently considers a mid-point position between these two 'bookends', namely 32% of future new-build in the study area will be attracted to a SRFI location.

7.42 The table below quantifies the three scenarios described, based on the Central Scenario plus margin outputs. Again, the 'land required' figure is simply the gross area of land required to accommodate the new-build forecast (35% floor space to plot footprint ratio) and takes no account of existing consents or local plan allocations.

Table 7.8 Forecast New-build and at Rail-Served Sites (SRFIs) to 2050

Floorspace	*000s sqm*		
% Rail-served - Central Scenario	2030	2040	2050
Existing East Mids - 12%	405	672	940
> 34,000sqm - 52%	1,755	2,911	4,072
Mid-point - 32%	1,080	1,791	2,506
Land	Ha		
% Rail-served - Central Scenario	2030	2040	2050
Existing - 12%	116	192	268
> 34,000sqm - 52%	501	832	1,163
Mid-point - 32%	309	512	716

[32] Source: MDST warehouse database (VOA Rating List)

Source: VOA, GB Freight Model and Consultant estimations as described

7.43 Considering the quantum of floor space which will potentially be brought forward at SRFIs up to 2050 (supply), the table below shows the current position with respect to floor space development potential at:

- Existing rail-served sites with B8 consents where there are vacant plots or completed units that have yet to be let; and
- Sites where consent has recently been awarded but development/occupation has yet to commence.

7.44 The total for DIRFT III reflects the current position (July 2022) with respect to vacant plots and speculatively built units that have yet to be let (sourced from the developer's website). The Phase III the DCO consented the development of 731,000 square metres; some units have subsequently been completed and occupied, with various pre-let units currently being constructed (including a new hub for Royal Mail).

7.45 *Northampton Gateway* (promoted by Roxhill) was granted its DCO in October 2019. The scheme provides for 444,000 square metres of warehouse floor space (468,000 square metres once ancillary activities are accounted for) alongside a new intermodal terminal connected to the West Coast Main Line (Northampton branch). Infrastructure is currently being installed with an expected opening date of 2024.

Table 7.9 Rail-Served Site Supply with Consents

	000s sqm	Ha
DIRFT III	350	100
Northampton Gateway	444	127
Total	**794**	**227**

Source: ProLogis and Northampton Gateway DCO Masterplan

8. SCENARIOS FOR FUTURE STRATEGIC WAREHOUSING DEMAND – COMPLETIONS

8.1 This section considers a past completions trends model for forecasting future floorspace demand for strategic warehousing.

8.2 The constituent SEMLEP authorities have provided completions data for schemes above 100,000 sq. ft (or 9,000 sqm) where available. However, only Central Bedfordshire and Milton Keynes were able to provide complete data. The average annual delivery rate of strategic warehousing floorspace for these authorities can be seen in the table below.

Table 8.1 Average annual strategic warehousing delivery rates based on Local Authority data (floorspace, sqm)

	Average Annual Delivery	Time period
Central Beds	37,537	FY2015-2022
Milton Keynes	47,591	FY2012-2022

Source: Local Authority data

8.3 In the absence of local authority data for Bedford, North Northants, West Northants and Luton, completions data for 2012 to 2021 has been taken from the CoStar commercial property database. CoStar data is provided in terms of Net Internal Area (NIA). This has been converted to Net Internal Area (NIA) to GIA by dividing by 0.95 in order to align with local authority data which is assumed to be in terms of GIA. It is of note that CoStar results for Central Beds and Milton Keynes are comparable to authority monitoring.

Table 8.2 Average annual strategic warehousing delivery rates based on 2012 to 2021 CoStar data (floorspace, sqm)

	Average Annual Delivery
Bedford	29,323
West Northants	91,621
North Northants	72,718
Luton	-

Source: Iceni analysis of CoStar data (calendar years)

8.4 The delivery rates presented above can be extrapolated into the future in order to model a future trend. The model also allows for a completions-based margin to be included, in line with good practice in similar studies this is applied as 5 years of average completions.

8.5 It should be noted that this forecasting method is sensitive to historic land supply constraints in the study area, so if insufficient land has been available to deliver completions then they will under represent the market requirement. In the study area, availability and vacancy have generally held at around 5% until 2021 / 2022 suggesting a highly performing but not significantly undersupplied market and that completions trends have met demand, albeit not at a rate to stave off significant rent rises. It also assumes a future trend reflecting the past ten years.

8.6 The completions trend model results are presented in the table below. The scenario suggests that around 6,690,900 sqm of space would be sought by industry.

Table 8.3 Completions trend forecast strategic warehousing demand, 2021-50

		Floorspace (Sq M)
Overall annual delivery rate (Sum of local authority annual delivery rates)		*278,800*
Forecast demand - 2021 to…	2030	2,509,100
	2040	5,297,000
	2050	8,084,900
Buffer (5 years at annual delivery rate)		*1,393,900*
Forecast demand with buffer	2030	3,903,100
	2040	6,690,900
	2050	9,478,800

Source: Iceni analysis of Local Authority and CoStar data

8.7 This scenario assumes the last ten year trend continues into the future (plus a margin). This includes a slower period of delivery around 2011-12 and faster delivery up to 2021, with higher demand likely to continue in the near term at least 5 years. There is less certainty when considering the longer term post 2030 and far less certainty post 2040. These issues are considered in more detailed in sections 10 and 11 that follow.

9. SCENARIOS FOR FUTURE STRATEGIC WAREHOUSING DEMAND – MARKET SIGNALS

9.1 This section considers a scenario for warehouse floorspace demand based on market signals and take up trends.

Study area take up trends

9.2 Take up (net absorption) trends are considered to be a useful indicator in forecasting future business floorspace demand. This reflects the Planning Practice Guidance and more recently the British Property Federation's (BPF) January 2022 report on 'Levelling Up – The Logic of Logistics' p20 which suggests that net absorption (along with adjustments for historic supply constrained suppressed absorption) is one of the most effective ways of reporting future logistics demand.

9.3 Section 6 of this study reports the net absorption volumes and rates for the study area, filtered to warehousing, distribution and storage (using CoStar).

9.4 In the table below the annual net absorption is modelled forwards. A longer and shorter run period of absorption is considered reflecting the post-recession 2011 onwards as well as last 5 years when demand has been accelerating.

9.5 A compensation is included in the model to reflect an uplift for lack of recent historic supply, being when availability rates have historically fallen below 7.5%, adding the amount of absorption that would have been needed to achieve this rate of availability as a percentage of existing stock. This essentially follows the method as per the BPF report [33] and is a mechanism for providing a one off top-up for exceptional levels of demand / low supply and equates to around one further additional year of demand (2017-2021 top up equates to 297,000 sqm). A number

[33] Levelling Up – The Logic of Logistics' British Property Federation, January 2022 P21

of employment land studies follow a similar mechanism, albeit in some instances seeking to top-up supply to achieve 5%-7.5% vacancy at the point of assessment (in this instance a top up to 5% vacancy would be 297,000 sqm and to 7.5% be 502,700 sqm). Overall the top up is not a significant factor in this model (around 1 year of take up) as availability has stayed relatively healthy over the period, reflecting the continued supply and deliveries.

9.6 2022 vacancy data (as of June) is at 1.0%, an all time low, and availability 4.7% so the 'compensation' could be higher at around one further year of average take up. However, 2022 is not factored into the top up compensation in the table due to incomplete years (and therefore potential for 'move outs' that could release units for vacancy, or additional incoming supply). Furthermore the 5 year completions margin which is added as per the previous sections already makes a substantial flexibility in supply.

9.7 Net absorption has averaged around 235,000 sqm over the last decade. Strong deliveries have held up the vacancy and availability rates however these are now (2022) collapsing due to unprecedent levels of demand, of which e-commerce is the most critical aspect. CoStar expects 2022 take up to reach nearly 3 times the historic average.

9.8 To consider the impact of the exceptionally high levels of e-commerce driven demand, we consider Savills[34] data which reports that around 13% of national warehouse space is online retail at 2021 from less than 1% in 2015, rising from around 10m sq. ft to 60m sq. ft; whilst third party logistics have rising from 75m to 105m sq. ft. Discussions with operators reinforce e-commerce as the critical driver, requiring a restricting of their previous networks and the need to manage aspects such as returns.

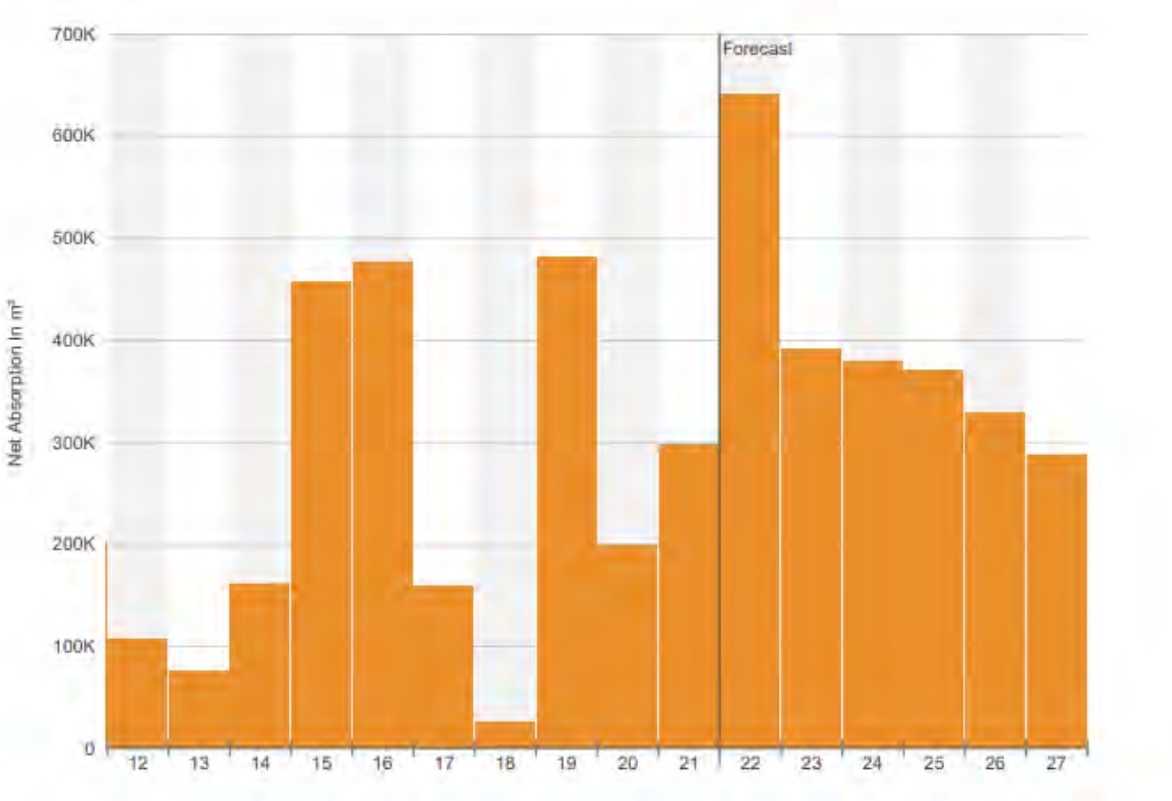
9.9 The data suggests that the current demand is driving an above average rate of take up, which is likely to continue, at least in the short term, as the market adjusts

[34] Https://Www.Savills.Co.Uk/Research_Articles/229130/315446-0

to greater emphasis on the e-commerce platform. Whilst the forecasting model already includes a substantial margin of 5 years or 1.2m sqm (around 25% of the 2040 absorption model total), it is appropriate to consider whether an additional uplift is warranted to respond to the e-commerce structural change, which is already built into the historical trend in the round.

9.10 One approach to take account of this demand is to consider CoStar's next 5 year net absorption forecasts which average 420,000 sqm, nearly double the past 5 years. By 2027 they have fallen to around the historic mean but the immediate outlook is much higher, as set out below.

Figure 9.1 CoStar forecast for large B8 net absorption to 2027



Source: CoStar June 2022

9.11 If this CoStar short term forecast is included we see the next 5 year demand as 2,100,000 which is around double the historic take up of 1,100,000. This suggests that an additional buffer of around 1m sqm is appropriate to account for the rise in e-commerce before returning to the historic trend. It therefore seems reasonable to reflect this position as an allowance for the current trends above the average,

which is captured in row (f) in the table below. There is however inevitably uncertainty in this future model which is developed from Costar's Quantitative Analytics Group and subject to change as national and global markets respond to changing economic conditions.

9.12 Overall the absorption model assumes that the last ten year average take up of units continues into the future, other than the immediate near term where an above average allowance is made. Given ongoing population and housing growth and increase in e-commerce, it is considered reasonable to assume that later in the 2020s and into the 2030s, the level of take up falls back in line with the long term average. There is much less certainty for demand later in the 2030s and into the 2040s. It is conceivable that demand slows down post 2040 below the historic rate because the level of advanced logistics infrastructure means a system that is able to better meet demand increases. To reflect this, a downward 25% is applied to the 2040-50 period.

Table 9.1 Take up projections, study area large B8 (high scenario)

	Study Area (B8) 2012-21	Study Area (B8) 2016-21
Net absorption av.	235,500	225,400
(a) Net 2021-30 projection	2,119,900	2,028,600
(b) Net 2021-40 projection	4,475,300	4,282,600
(c) Net 2021-50 projection	6,049,200	5,973,100
(d) Compensation for sub 7.5%	295,500	295,500
(e) 5yr completions margin	1,393,900	1,393,900
(f) e-commerce uplift + 1,015,000 sqm	1,015,000	1,015,000
(a+d+e+f) 2030 demand	4,824,300	4,733,000
(b+d+e+f) 2040 demand	7,179,700	6,987,000
(d+d+e+f) 2050 demand	8,753,600	8,677,500

Source: CoStar, Iceni analysis

9.13 There is very relatively difference between the 5 yr and 10 yr look back period of assessment. Whilst recent (last 5) years have seen very high take up, 2015 and

[35] Results for 2019, 2018, 2017 recorded as Sub 7.5%, the difference multiplied by the total stock at that year

2016 were also very substantial. Data only does back to 2009 and this 13 year average would fall to 205,100 sqm.

9.14 The above scenario is considered to most closely reflect the market conditions and outlook as of spring / summary 2022. However a second scenario has been developed which takes into account the significant economic headwinds faced at summer 2022, notably the high levels of inflation (including construction costs), anticipated UK recession affecting consumer spending and other factors such as high energy prices, triggered particularly by the ongoing war in Ukraine. This scenario also sees a slow down in demand in the second half of the 2030s at a 25% rate, working on the assumption that a level of saturation in the large scale logistics market through the development of more wide spread automation and technologies (as per the 2040s above). The key differences in this 'low' scenario are therefore:

- A lower level of uplift being applied to the near term allowance for e-commerce and other drivers of demand that are creating conditions above historic average levels – noting for example that the rate of online sales appears to be falling in line with the long term trend (rise), back from its peak during the pandemic.
- 25% reduction in historic demand in the 2035-40 period reflecting greater efficiencies in the sector.
- Exclusion of the compensation for historic low levels of availability, assuming that the completions margin sufficiently covers this aspect.

Table 9.2 Take up projections, study area large B8 (low scenario)

	Study Area (B8) 2012-21	Study Area (B8) 2016-21
Net absorption av.	235,500	225,400
(a) Net 2021-30 projection	2,119,900	2,028,600
(b) Net 2021-40 projection	4,475,300	4,282,600
(c) Net 2021-50 projection	5,847,000	5,827,400
(d) Compensation for sub 7.5% availability	-	-
(e) 5yr completions margin	1,393,900	1,393,900
(f) e-commerce uplift + 500,000 sqm	500,000	500,000
(a+d+e+f) 2030 demand	4,013,800	3,922,500
(b+d+e+f) 2040 demand	5,983,500	5,894,800
(d+d+e+f) 2050 demand	7,547,900	7,439,500

Source: CoStar, Iceni analysis

9.15 The results of this 'low' market based projection are around 1.2m sqm lower by 2040 and 2050 compared with the 'high' scenario. Again there is little difference between the 5 yr and 10 yr look back period of assessment.

10. FUTURE WAREHOUSE FLOORSPACE GROWTH SCENARIOS: SUMMARY AND SUPPLY BALANCE

10.1 This section considers the range of modelled scenarios for future large scale warehousing in the preceding chapters and sets out how this relates to the supply position.

10.2 The table below summarises the outcomes of the models for future large scale logistics demand. This takes into account a margin of 5 years historic completions.

Table 10.1 Range of modelled large scale logistics units inc. margin (sqm)

	2021-30	2021-40	2021-50
Market signals High (Net absorption*)	4,779,000	7,083,000	8,716,000
Market signals Low (Net absorption*)	3,968,000	5,939,000	7,494,000
Completions	3,903,000	6,691,000	9,479,000
TGRD** Low	2,910,000	4,617,000	6,333,000
TGRD** Central	3,375,000	5,598,000	7,830,000
TGRD** High	4,304,000	7,559,000	10,824,000

* mid point of 2016-21 and 2012-21 models

** TGRD Traffic Growth with Replacement Demand model developed in section 7

Source: Various, see previous sections

10.3 The above models are summarised as follows.

10.4 **Completions trend**: this rolls forward deliveries from 2011-2021 consistently in the future. The evidence, based on vacancy and availability data, suggests that for the most part deliveries have been sufficient to keep the market stable, although rents have risen significantly. However the most recent levels of demand have outstripped supply which indicates a boost is needed to the trend to achieve some equilibrium.

10.5 The **traffic growth with replacement demand** models use a combination of forecasts in traffic growth combined with the need to replace existing older warehouse units. The latter component is derived from the proportion of existing

stock needing to be replaced in any given period. The central scenario assumes a 30 yr shelf life and that 63% of stock needs replacing by 2040 (vs 23% under the low scenario 95% under high). In reality it is estimated that in the SEMLEP area 56% of stock is pre 2000 and 72% pre 2010, and that although stock life is likely to increase from post 2010 builds, by 2040 it is conceivable that at a 30 yr shelf life on current stock, around 70% does need replacing, indicating that the central scenario assumption is appropriate as a minimum. However for the 2050 outlook units built post 2010 are likely to have a shelf life over 30 years which would reasonably see a slow down in the replacement demand element. Within this model is an expectation that around 1,791,000 sqm of demand could be rail served locations.

10.6 **Market signals** (net absorption with compensation) roles forward the net absorption of space as an average over the last 5-10 years (with little difference in the lookback periods) although assumes a slow down after 2040 as the market stabilises. The ‘high’ model adds an adjustment for recent periods of sub 7.5% availability, as well as a top up to reflect the exceptional levels of high demand driven by e-commerce in the near term. The e-commerce adjustment of c1m sqm makes a notably difference, and effects the near term demand most notably. The ‘low’ model assumes that economic headwinds lead to a slow down in occupier demand due to a number of factors including reduced consumer spending and increased construction costs; and that market stabilisation occurs by mid 2030s.

Discussion

10.7 Modelling future scenarios for commercial property is inevitably fraught with uncertainty. In real world terms it is clear that demand in 2022 is at an all time high. At the time of writing (summer 2022) inflation is also high and likely to put downward pressure on consumer spending, however no stakeholders were of the view that the large logistics requirements would fall in the foreseeable future. There is a major restructuring underway as operators respond to the drivers for change around e-commerce, automation and decarbonisation. This, in the round in the 2020s, realistically expects a level of demand above the last decade’s average delivery.

10.8 Into the late 2020s and 2030s the level of demand is expected to fall back to that of the recent historic period. It is also possible that rates of demand for the delivery of new industrial units slow in the 2030s as the market sees efficiencies in handling goods reach a level of saturation occur – although there is no certainty in this regard at present and the market needs to respond to planned population growth and housebuilding, which may act as a limiter or driver of additional demand.

10.9 Beyond 2040 there is much less certainty in the level of demand but it seems reasonable to expect that requirements for new units are reduced as the 'replacement demand' component is lower, since the units built since 2010 will have a shelf life of beyond 30 years, although growing populations and households will still increase demand in the round. Future updates will be required to provide certainty in relation to the 2050 position and potentially update the 2040 position given the rate of change in the current market.

10.10 Taking the narrative above into account, this study considers the most likely scenario based on current data would be 'Market signals High'. Notwithstanding, the most likely 'core' scenarios, which all show a reasonable level of alignment, are set out below.

10.11 This includes a recommended rail site based component of 1,791,000 sqm.

Table 10.2 **Core scenarios for large scale logistics units inc. margin (sqm)**

Scenario	2021-30	2021-40	2021-50
Market signals High	4,779,000	7,083,000	8,716,000
Market signals Low	3,968,000	5,939,000	7,494,000
TGRD Central	3,375,000	5,598,000	7,830,000
Completions	3,903,000	6,691,000	9,479,000

Factoring replacement sites

10.12 The replacement demand component of the modelling above assumes that a considerable proportion of future needs arise from existing units being unsuitable for modern businesses in terms of size, height, power, accessibility and being

automation ready etc. Whilst this (replacement demand) model is unlikely to be a precise representation of the real world activity, hence the need to triangulate with other methods, it does suggest that, realistically, a proportion of existing units will no longer be fit for primary purpose by 2040. Under the present market conditions at spring / summer 2022 the levels of demand are such that secondary stock is seeing very high levels of utilisation, primarily due to a lack of prime units. However with increased supply in due course it is likely that some secondary stock will be rejected from primary active use. In this situation there are a number of potential outcomes for existing units that are no longer fit for purpose:

- Units are refurbished – CoStar report that around 7% of current stock has been refurbished – although this will not be suitable for all stock nor as an infinite solution if for example eaves / door heights are insufficient or scale is inadequate;
- Units are sub-let to other non-strategic logistics commercial users, utilising smaller footprints in the large units. This is common as they retain the capital value;
- Units or industrial areas are redeveloped for non-commercial uses including residential (subject to other factors including remediation, location, infrastructure, and adjacent uses); and
- Units are redeveloped for new larger scale logistics units, potentially through amalgamating adjacent plots, particularly where they have good access to the strategic road network.

10.13 In order to understand the most likely outcome for any particular unit or collection of units would require analysis and assessment of their individual site circumstances which is beyond the scope of this study. However considering the above potential outcomes for units, only the last bullet point above enables the direct recycling of existing sites to meet future demand. To enable some broad estimates to be used for the recycling of existing sites a provisional figure of 20% of the demand is assumed to be available through the recycling of existing B8 units (including refurbishment). This is not to say that all sites are greenfield, as

other brownfield sites will form part of supply – for example the Vauxhall site in Luton has been acquired by Prologis for logistics (not yet permitted so not forming the future supply).

10.14 A 20% discount can therefore be applied to the future demand models however this is only considered appropriate for the road (non rail) element since it does not seem realistic the rail based requirements can be derived from existing stock requirements but rather require dedicated facilities at rail heads.

Table 10.3 Core scenarios for large scale logistics units inc. margin (sqm) factoring on-site replacement @20%

Scenario	2021-40	2021-50
Market signals High	6,024,600	7,331,000
Market signals Low	5,109,400	6,353,400
TGRD Central	4,836,600	6,622,200
Completions	5,711,000	7,941,400

Demand supply balance

10.15 The table below summarises the demand / supply (April 2021) balance position looking at the present to 2040 period. This takes into account unimplemented permissions and allocations in the study area. It of note that completions form April 2021 can be deducted from the residual demand and that there have been substantial completions during this period notably in Bedford amongst others. The residual demand can therefore be updated subject to authority monitoring.

10.16 The range of shortfall under the various scenarios is therefore 237 to 576 ha.

Table 10.4 Demand supply balance to 2040 inc. margin & replacement factor

	2021-40 demand	Supply at April 2021	Balance (sqm)	Balance (Ha) @0.35
Market signals High	6,024,600	4,008,500	-2,016,100	-576
Market signals Low	5,109,400	4,008,500	-1,100,900	-315
TGRD Central	4,836,600	4,008,500	-828,100	-237
Completions	5,711,000	4,008,500	-1,702,500	-486

10.17 The supply and demand by road and rail components are provided below. It is of note that the rail element is 'aspirational' as it sees an increase from the current 12% rail based up to 32% by 2040 and therefore should be treated with caution. This is particularly evident with the lower scenarios which would suggest an element entirely residual demand for rail, which does not reflect the market.

Table 10.5 Study area demand and supply balance (2021-2040) by type

		Market signals High	Market signals Low	TGRD Central	Completions
Demand 2021-40	Road	4,234,000	3,318,000	3,046,000	3,920,000
	Rail	1,791,000	1,791,000	1,791,000	1,791,000
Supply at April 2021	Road	3,214,000	3,214,000	3,214,000	3,214,000
	Rail	794,000	794,000	794,000	794,000
Balance (sqm)	Road	-1,020,000	-104,000	168,000	-706,000
	Rail	-997,000	-997,000	-997,000	-997,000
Balance (Ha@0.35)	Road	-291	-30	48	-202
	Rail	-285	-285	-285	-285

Summary

10.18 The key output from this section is a summary of future scenarios for large logistics demand and the balance of these against current supply. Considering the core scenarios, the range of the balance is from 237 to 576 ha.

11. IMPLICATIONS FOR OTHER INDUSTRIAL USES

11.1 Consideration has been given to the implications of high levels of demand for logistics units on the supply for other use types of commercial development, including smaller industrial uses, offices and laboratories. This has been done at the study area and not individual area level. The approach taken has been to compare the ratio of supply with that of demand for different commercial uses.

11.2 The total land available for employment development across the study area is estimated as 5.45m sqm (based on data supplied to Iceni which may not be fully representative) - of which the majority is made up of large sites that could theoretically contain logistics units. This includes the remainder of large sites where not all has been assumed for large B8 (see appendix, Table 17.2) as well as other large sites such as SUEs where large B8 is not expected or considered appropriate.

11.3 Indicatively the potential logistics pipeline of 4.0m (see previous section) makes up around 73% of the total pipeline (5.45m), with 1.45m sqm remaining (27%) for small B8 and other industrial uses as well as offices and labs. Whilst the proportion dedicated to large B8 is significant, it is in the context of logistics being a particularly land intensive activity and the SEMLEP area being a desirable location for these units. It is of note that the large B8 pipeline is also based on consultant / officer estimations about the spilt of uses on a number of sites, often large B8 / other uses at 75:25 (which appears reasonable taking account of the following but could be subject to change).

11.4 The net absorption (lease deals) modelled in section 10 indicate a trend over the last 5 years of 225,400 sqm per annum for large B8 units. This compares with a neutral net absorption trend for large scale non-B8 units and a trend of 86,000 sqm for leases of smaller units (all types). Offices deals make up a further 15,700 sqm (including a negative value in 2021, which is included given uncertainty in the future of this market and significant impacts of the COVID-19 pandemic). Taking these as percentages, as set out in table 11.1, we can conclude that large scale

B8 represents around 69% of all transactions. This aligns approximately with the percentage of employment space (73%) allocated for large scale B8 of the total.

Table 11.1 Net absorption trends (2017-21) by commercial sector

	Average net absorption 2017-21 (sqm)	% of total
Large B8	225,400	69%
Large non B8 industrial	-	0%
Small industrial	86,000	26%
Office[36]	15,700	5%
Total	327,200	100%

Source: CoStar

11.5 This would indicate that the balance is currently appropriate – as the apportionment of land supply approximates the market demand trend – with a limited amount of flexibility particularly given the estimations involved in the apportionment of supply assessment. However, recently the rate of demand for B8 has been accelerating and is expected to continue, putting pressure on other uses notably for other commercial space which is likely to be less viable. Given that to date the authorities have not acted in conjunction on managing logistics, some are likely to be experiencing greater levels of pressure on their supply than others. Sites where assumptions are made around the mix of large B8 vs small B8 / other industrial / commercial are likely to be particularly vulnerable (see appendices).

11.6 The market demand and land supply balance here highlights the importance of maintaining a healthy supply of sites for both large B8 and other commercial units, which is essential for the development of balanced local economies. It also reinforces the importance of authorities working collectively to manage demand (see following section).

[36] 2016-20 Data used to avoid a potentially anomalous large negative In 2021

11.7 Planning authorities should therefore maintain up to date evidence on non-large B8 requirements in order to ensure a balanced approach to economic growth. Separate allocations for larger and smaller industrial may be appropriate.

11.8 Iceni suggests that labour demand models may have weaknesses in forecasting future general industrial floorspace requirements given the role of productivity, capital and premises investments in industry, and therefore the need to test against other market indicators and consider the issue around replacement demand when forecasting future demand.

11.9 The current vacancy rate for smaller industrial units is 4.0% and availability 4.9% and falling. Rents have risen significantly in the last 5 years, up 50% from £6psf to £9psf. This indicates significant demand in the smaller industrial sector and one where viability is often weaker than for large units (particularly for the smallest units), meaning a greater reliance on often outdated stock.

11.10 Consultation with agents has indicated that demand for large B2 or mixed B type units has grown in recent years (despite limited deals reported). While the pipeline and availability of all units (large B8 / other) has remained positive there are no issues with crowding out for non B8 occupiers, which has largely been the case pre-pandemic.

11.11 As above, at 2022 the availability of logistics units is now dipping. Logistics occupiers at present are the best funded and able to achieve the highest rents on the market, so do have the potential to crowd out other uses if planning policy measures are not in place.

11.12 On the other hand, logistics requirements also tend to be focused on the strategic highway network, whereas manufacturing, smaller industrial units or other commercial activities are likely to prefer proximity to the urban centres rather than strategic network connections (although this can still be desirable). The current supply of all sites is across a range of locations suggesting a reasonable spread of opportunities.

11.13 Overall, the evidence suggests limited crowding out of non logistics units in the market until recently, but that this is now likely to occur due to the high rate of demand. Across the whole SEMLEP area the immediate pipeline is reasonably strong but a ‘next wave’ of land and allocations is being sought to meet demand. This also reflects the differences in occupier needs (immediate) against the delivery of new sites (allocations, planning, construction).

11.14 There is a clear need to ensure a strong pipeline of sites for non large B8 type commercial activities as well to meet current and future demand. Planning authorities should seek to achieve this through planning decisions and Local Plan development as well as working with partners to support delivery of such sites.

12. MANAGING LOGISTICS DEMAND

12.1 It is recommended that the SEMLEP authorities work together to consider the implications of this study's findings and how to manage future demand for large scale logistics which is likely to remain high in the coming years.

12.2 The approach undertaken below has been recommended and taken forward by the Leicestershire authorities and enables them to monitor and manage strategic logistics requirements.

12.3 Overall, this report recommends that the focus should be on ensuring an area wide consistent monitoring of supply and demand; and establishing a process for a further pipeline of sites as appropriate. This could involve a sift by the authorities using data on landscape / environment, junction capacity / access, site availability by size and labour market proximity. The criteria set out in the next section provide a further level of detail on site requirements and infrastructure suitability.

12.4 In order to effectively and consistently monitor warehousing and logistics sector development, it is recommended that data monitoring and collection are actively pursued beyond the individual authority level.

12.5 Of particular note is the benefit of working collaboratively and being able to demonstrate collective working to ensure that no individual authorities or local plans are subverted through high levels of pressure for development, particularly given the often sub regional areas of search for these occupiers.

12.6 The most useful collective area to be considered would be through the South East Midlands local authorities, given the existing working relationships between authorities, and the nature of the requirements of this study. Consideration could be given to engaging with adjacent areas most notably in Leicestershire and Warwickshire given the large stock and proposals in those locations.

12.7 In the first instance the roles and responsibilities for this need to be defined with a particular organisation and/or individual collecting and managing data. The

individual planning authorities will need to feed in data to the appointed managing organisation.

12.8 The following data sets are recommended for collation, the majority of which should be obtainable through the development control officers or planning policy teams:

- Collate existing supply data in terms of allocations and permissions (information in appended to this report provides a starting point being March 31st 2021 monitoring)
- Identify new applications for sites with units over 9,000 sqm + of B2/B8 noting:
    - Validation date;
    - Permitted date;
    - Completed date;
    - Whether allocated / unallocated site;
    - Whether rail / non rail;
    - Whether Greenfield / brownfield type and if brownfield the nature of previous use;
    - Any known employment data provided with applications;
    - Building heights;
    - Ancillary floorspace; and
    - Any information available regarding size and type (speculative, pre-let) of units
- Any applications involving losses of existing floorspace of at least 9,000 sqm+ B2/B8 use
- Record completed SQM floorspace (including mezzanine) and size of plots

12.9 If an online system is developed for collecting information it may be possible for officers to enter the data at the point of receipt, for example, at the same time they upload to the local planning portal. Otherwise, it is recommended that the data is collected quarterly to provide a useful tool for considering large scale applications across the county and informing policy review on an ongoing basis.

12.10 Given the importance of replacement demand unit requirements in assessing future demand the monitoring of any losses should be reported. However, there may be instances where losses are not readily monitored through the planning system depending on the original permission and what works might be needed to change the unit's operation. The authorities may benefit from site surveys of major parks on annual or alternate years to maintain a register of site activity. It may also be possible to pursue this monitoring through VOA data records.

12.11 It would also be useful for officers to understand the marketplace in terms of take-up of units and vacancy / availability. This data is normally accessed via paid for systems such as CoStar or EGi Radius. A number of large agents also produce regular reports on the state of the regional industrial / warehouse markets which are published free of charge. Otherwise consultants could provide this for a limited fee on a quarterly or less regular basis.

12.12 In addition, it may be useful to have a continued engagement with the private sector – which is already undertaken through SEMLEP Logistics and Supply Chain Sector meetings - to discuss the state of the warehousing market.

13. LOCATIONS FOR FUTURE DEVELOPMENT

13.1 Given the estimated land short-falls identified in the various scenarios considered, planning authorities may wish to consider new appropriate locations for large scale logistics development, alongside other uses as part of balanced Local Plans for economic development.

13.2 In order to maintain and enhance the study area's current competitive position, it is recommended that the market, is offered a geographical spread of commercially attractive sites available to satisfy individual operator locational requirements. It will therefore be important that future provision is not concentrated or focused on one particular area. Those areas where recent planning consents have or will enable significant provision should therefore not be included, with priority given to other areas where there is a known under-provision of strategic sites. The mapping undertaken within this report would be a start point for the concentration of recent and proposed development. Future 'areas of opportunity' could then be established through a process based on the mapping of criteria set out below.

13.3 When new local plan allocations are being considered, a criteria-based approach can be adopted when identifying and assessing potential new sites for large warehouses. Sites considered to be appropriate for hosting strategic distribution are those which meet the following criteria, subject to other planning policy considerations, landscape and environmental designations:

- Good connections with the strategic highway network – close to a junction with the motorway network (ideally within 3km and up to 5km) or long-distance dual carriageway suitable for HGVs (reflecting the success of parks on the A1, A14 and other linking A-roads). Areas should also meet this criteria if they are likely to be served by such routes when taking into account known highway infrastructure upgrades. Motorway/dual carriageway junctions and the approach routes should have sufficient network capacity and the cumulative impacts of other proposals will need to be considered;

- Is sufficiently large and flexible in its configuration so that it can accommodate the range of sizes of distribution centre warehouse units now required by the market. Preferred plot ratios being a minimum of 0.35 and building sizes of over 9,000 sqm which means a minimum of 2.5 ha, however ideally sites would be a minimum of 25ha and readily over 50ha[37] which takes into account the landscaping and infrastructure involved in delivering sites of this scale as well as inclusion of smaller employment units where appropriate;

- Is served from an electricity supply grid with sufficient capacity to permit the charging of large fleets of battery-electric freight vehicles simultaneously, or part of the electricity supply grid which can be upgraded (network reinforcement) relatively easily and at a reasonable cost. It is recognised that this is becoming increasingly challenging and that alternative proposals around sustainable energy generation should be sought from industrial and logistics developments, particularly given the capability of renewal energy generation reported by schemes elsewhere in this document;

- Is sufficiently large and flexible in its configuration so that it can accommodate an intermodal terminal and internal reception sidings (for rail);

- Is accessible to labour , including the ability to be served by sustainable and/or active transport, and where appropriate being located close to areas of employment need; and

- Is located away from incompatible land-uses (including residential) and has the ability to undertake 24/7 unrestricted operating hours and manage noise/lighting expectations;

[37] For example, the total application 'order limits' site area for Northampton Gateway is 290 hectares delivering 486,000 sqm at a ratio of less than 0.2, whereas Mulberry Logistics Park Corby delivers 400,000 sqm over 160 ha at a ratio of 0.25

- Is located such that the development does not significantly crowd-out alternative land uses, such as office and lab space, and ensures a balanced supply of commercial premises and strategic employment opportunities in the local area;

- The ability to deliver high-bay warehousing at least 20m height (recognising the landscape impacts and need for appropriate locations and / or mitigation);

- Recognising the potential phasing of infrastructure and periphery landscaping requirements;

- Has access to or potential for broadband capabilities and infrastructure.

13.4 Proposals should include green and active transport initiatives and meet public transport expectations as well as support the delivery of green infrastructure, noting any Biodiversity Net Gain requirements.

13.5 Good connections to the railway network are defined as being:

- Served by a railway line offering a generous loading gauge (minimum W8) or those routes which are likely to be upgraded in the future;

- Served by an electrified railway line or within a short distance of an electrified railway line, or served by a route which is likely to be electrified over the long term; and

- Served by a railway line providing connections to major ports of entry (e.g. Felixstowe, Southampton, Folkstone/Channel Tunnel etc.) and key domestic destinations (e.g. Scotland) which are reasonably direct or avoids the need to use circuitous routes.

13.6 In terms of being appropriately located relative to the markets to be served, this criteria is essentially self-explanatory in so far as individual operators have specific requirements but on average tend to provide for a regional / sub regional level consumer market. Being well located enables the efficient and sustainable operation of inbound and outbound transport services.

13.7 In order to ensure that there is a sufficient pipeline of sites, new land meeting the criteria outlined above should be identified and allocated where appropriate in the following sequential order (subject to other Local Plan processes and strategies), namely:

- The extension of existing industrial / distribution sites. Site extensions should only be permitted where there is adequate road capacity serving the site and at adjacent motorway/dual carriageway junctions or capacity can be enhanced as part of any extension;
- Identifying suitable new strategic distribution sites on previously developed land which meet the site selection criteria; and
- Identifying suitable new strategic distribution sites on greenfield land which meet the site selection criteria.

13.8 One of the functions of strategic logistics sites will be the ability to offer larger plot sizes to be able to accommodate the large footprint buildings increasingly required by the market. It would therefore conflict with their wider objectives if smaller units were developed which compromised the size of available plots. Unless this conflicts with demand for last-mile distribution, detailed in the following section.

Last Mile Distribution

13.9 For the purposes of this report, the floorspace scenarios are all targeted at strategic warehouses of 9,000 sqm and above. However, it is recognised that there is an increasing need to provide last mile distribution facilities for sub-regional and local distribution.

13.10 These facilities typically range from 25,000 to 50,000 sq. ft (2,300 to 4,600 sqm) or where larger would not normally exceed 100,000 sq. ft (9,000 sqm). They can also be much smaller when fitting into the tighter grain of urban areas. The requirement for such facilities is likely to increase going forwards with a greater emphasis on online retailing. The role of these facilities is typically to receive HGV shipments for cross docking into delivery LGVs which serve a distribution area.

13.11 Last mile facilities typically seek to locate on the edge of urban areas where access to both the SRN and local road network is good and journey distances are suitable for electric vehicles. In some instances it will be possible and feasible for last mile facilities to be located on strategic logistics sites where these are at the edge of urban areas. The increased demand for more specific time slots and electric vehicles in dense urban areas promotes smaller facilities with all electric or bicycle delivery.

13.12 Research by Knight Frank[38] indicates that typically final mile units make up c24% of the portfolio of e-commerce operators. Applying this approximation to the Central traffic growth and replacement demand scenario, for illustrative purposes, would result in some 1,343,500 sqm or 292 units at 4,600 sqm (but a much higher number of smaller units). This is likely to substantially overestimate the requirements particularly as the study area and M1 in particular have a role in the national logistics infrastructure; and since not all occupiers will be e-commerce. Savills estimate that around 13% of warehouse space was for online retail in 2021 and 3PLs with food retailers make up a further c40%, all of whom are likely to require last mile delivery at some stage, representing half of occupiers. This will still over estimate the final mile requirement given the area's focus on NDCs and RDCs, so assuming that half of these occupier types need local facilities then in the order of 75 units could be required, or a greater number of smaller facilities. These should be identified in studies considering more local requirements for individual authorities.

38 https://www.knightfrank.com/research/article/2021-10-21-how-much-space-is-needed-to-service-the-lastmile-and-where-is-consumer-demand-greatest

14. FUTURE EMPLOYMENT

Future employment implications

14.1 Development and expansion is expected at a number of the logistics parks as already set out in the known current pipeline of allocations and permission estimated at some 3.6m sqm. Potentially further development may be allocated through Local Plan processes. This section of the report considers the potential quantitative and qualitative employment implications of floorspace growth.

14.2 It is important to note a significant level of uncertainty in the future level of job generation for logistics, due to automation, changes in productivity and reduced labour availability affecting working practices.

14.3 The key factors in the jobs outlook growth are considered as:

- **Replacement demand** – whether new units are simply moving jobs about from older stock; and if they are then whether the historic units are creating new jobs of a different kind.
- **Automation** – whether automating processes are reducing the requirement for labour and decreasing densities; and whether the nature of employment is changing as a result.

14.4 The Warehousing and Logistics in Leicester and Leicestershire 2021 report (p147) considered in some detail the relationship between forecast growth and job creation, taking into account a range of factors relating to the above. The key elements are as follows.

14.5 For large scale warehousing employment, the density of 95 sqm per FTE employee is assumed as a starting position. This aligns with the 2015 HCA Density Guide for NDCs. It also aligns with the 2019 Prologis study of their

occupiers[39]. It is of note that in the Prologis study for occupiers over 9,000 sqm the density decreases to 100 sqm per employee and for units of over 20,000 sqm the density decreases to 110 sqm per employee.

14.6 It seems reasonable to expect that automation can yield some decrease in employment density and the Leicestershire 2021 report indicates an average of 119 sqm going forwards. However, there is considerable uncertainty and engagement with Prologis in 2022 suggests that *automation is most common in e-commerce however these operations will routinely employ more than three employees per 95 sqm, much higher than average, and they represent around 15% of logistics space… whilst adoption of one or more types of automation technologies is between 20-25% across logistics real estate facilities.* However, engagement with operators also reports that lack of available labour is a key driver for automation, which indicates that there must be efficient savings in terms either of overall space required or persons working in that space. Therefore, it is quite possible that automation will reduce the employment density of units in the future.

14.7 A key factor in future demand scenarios is the replacement of historic stock. With the traffic growth and replacement demand model, the vast majority of future demand is replacement. This implies lower levels of employment as staff are simply moved around. There are some known instances of this occurring. However, in the most part the current trend is new market entrants. This suggests a front loading of demand which is likely to taper off later in the period, releasing some secondary stock for alternate uses. A portion of these alternate uses will also support employment, so there is an indirect employment gain, although this will also involve displacement. This often relates to the segmentation of large units for a range of commercial activities including smaller scale storage, logistics and distribution as well as car repairs etc.

14.8 The suitability of units for recycling, redevelopment for logistics, or other uses such including residential, depends on a range of factors including their location and

[39] Https://Prologis.Co.Uk/Wp-Content/Uploads/2021/01/Tech-Insight.Pdf

adjacencies. Broadly, it is estimated that some 50% of the stock could be retained for some non-strategic B8 or other commercial uses and 20% is recycled for strategic B8. This would imply that the total stock growth is less than the forecasts in the scenarios suggest. The rest could be redeveloped in due course.

14.9 Using approximations, the following outlook is developed for illustrative purposes, drawing on the Central traffic growth and replacement demand model.

Table 14.1 Indicative employment outlook related to large scale logistics to 2040 (derived from Central traffic growth with replacement demand model)

	Replacement demand	Traffic growth	Margin	Total
Sqm	3,923,000	281,000	1,394, 000	5,598,000
Density	95 sqm per employee			
Direct employment	41,295	2,958	14,674	
Utilisation	50%	100%	75% (assume not all built out)	
Displacement	50%	0%	0%	
Net additional	**10,324** jobs in a range of commercial activities including warehousing	**13,963** involved in strategic warehousing		**24,287**
Density	Scenario at 119 sqm per employee (+25%)			
Net additional	**8,242** jobs in a range of commercial activities including warehousing	**11,147** involved in strategic warehousing		**19,389**

Source: Iceni Projects modelling

14.10 This model suggests 11,000 to 14,000 jobs in large scale warehousing and 8,000 to 10,000 jobs in a range of related sectors including warehousing, wholesaling and related. Indicatively around half of these further replacement demand jobs could be directly in the logistics sector, which would bring the total range to 15,000 to 19,000 jobs. This is substantial but is in the context that in the last 5 years there

has been growth of 16,750 jobs in the warehousing specific sector in the study area.

14.11 Of the ‘core’ scenarios modelled in this report, the central traffic growth and replacement demand model is the lowest. If the increased floorspace of other scenarios is taken into account with a displacement rate of 50%, then up to 6,000 to 8,000 additional jobs could be created.

14.12 Continuation of the recent 5-year trajectory which would create over 60,000 jobs to 2040, which is not considered realistic. Alternatively the baseline 2022 Oxford Economics Local Authority Districts forecast for the Transport and storage sector (which will not be fully representative of the logistics sector) across SEMLEP area sees very limited change to 2040 compared to total employment growth of 8%, although the sector outlook is hard to consider accurate in light of the scale of growth in recent years and current demand indicators. Conversely Oxford Economics forecast a 26% increase in GVA in the sector to 2040 (compared with 30% for the whole economy in the South East Midlands) with increase of £35,000 GVA per job to £51,000 GVA per job for the wider Transport and storage sector). The South East Midlands Local Industrial Strategy also commits SEMLEP to ‘work with local partners to expand the innovation capabilities and productivity of the local logistics sector.’ (see p30 of the LIS for more details).

14.13 It is of note that labour supply constraints are at present a significant issue for the sector and for other sectors in the UK. These may be a factor in the ability of the sector to grow at the preferred business recruitment rate and are playing a part in accelerating automation to reduce labour reliance.

14.14 Finally, we consider the nature of jobs. The changing nature of employment is discussed at length in section 3, emphasising increasing technical roles. One phenomenon with the rise of the largest scale units is the substantial office component. Typically, 5% of a warehouse is office, so a 500,000 sq. ft units would have a 25,000 sq. ft office, larger than many new units being considered in town and city centres. These can host a range of back-office functions including managers, customer service operations and data analysts.

15. SUMMARY AND CONCLUSIONS

15.1 The report main findings are messages are captured below.

15.2 The SEMLEP area has considerable strengths in the logistics sector, however this comes with both opportunities and challenges. Based on growth estimates in this study, employment is likely to grow and the sector will move towards increased automation, with more diverse jobs and more sustainable ways of working. However, it remains a land hungry and relatively low value sector that puts pressure on the development of land that could be sought for alternative uses. Local Plan making therefore needs to balance the demands and growth of the sector with overall sustainable economic growth ambitions.

15.3 The logistics sector is changing rapidly. **Key drivers of change** include:

15.4 **Growth of E-Commerce**: Just under 30% of retail sales (by value) are now undertaken via e-commerce platforms; they were below 4% in 2007. These trends are likely to continue. The National Infrastructure Commission (NIC) noted in its 2019 report, *Better Delivery: The Challenge for Freight*, that e-commerce could reach 65% of all retail sales by 2050. The rapid growth in direct delivery e-commerce is having a significant impact with respect to the need for, size and location of distribution centres. Many older warehouse units cannot accommodate the equipment and facilities required for on-line sales, or the ability to handle distribution to retail outlets alongside direct to home e-commerce deliveries under the same roof.

Warehouse Automation

15.5 Automation is being driven by the growth in e-commerce, with the consequent need to pick, pack and label ever increasing volumes of goods. Automation is required to run the operation speedily and efficiently. A second driver is the increasing difficulty in recruiting labour at competitive rates of pay. Many new warehouse developments are therefore being designed and built with increasing levels of automation from the start - in some cases these new developments are replacing existing physically sound capacity that cannot accommodate automation.

De-carbonisation

15.6 The movement of HGVs and vans accounts for around 9% of UK GHG emissions. De-carbonisation is therefore essential and is occurring rapidly in parts of the logistics sector. Modal shift to rail, particularly for medium to long distance flows, is likely to form an important component in de-carbonising the supply chain. For smaller road freight vehicles (i.e. LGVs), battery-electric vehicles (BEVs) are now emerging as the viable zero emission alternative to petrol- or diesel-powered vans. The resultant impact of this trend will be a future requirement to recharge large fleets of LGVs simultaneously. Innovation in HGVs is also occurring across hydrogen, biomethane and battery power.

Power and sustainability

15.7 The demands for electricity driven by automation and BEV charging are significantly increasing the power requirements for logistics units. The sector response is at the vanguard of sustainable development, reflecting both the ESG (environmental, social, and governance) agenda of businesses and shareholders to move to zero carbon, as well as the difficulties in accessing sufficient power from the national grid. Solar power is a particular opportunity given the scale of roof space and new developments can generate power in excess of their own needs. However, these practices are the exception not the rule and increased prevalence is required despite the (rising) costs of delivering these measures.

Logistics skills & employment

15.8 Warehousing employment is an important component of the economy of the SEMLEP area. According to BRES, in 2020 warehouse specific employment accounted for 49,000 jobs and 6% of all employment. From 2015 to 2020 the total employment count in this sector has risen by over 50% being from 31,750 to 48,500. This is at a time when total employment has grown at 7% of which nearly one third is from the warehousing sector.

15.9 Logistics sector businesses report significant needs for electrical/mechanical and software engineering skills as the world of logistics is changing rapidly. In the SEMLEP area job postings in the logistics sector over the last 3 year period report

a rise in all logistics occupations. In 2021 65% of job postings accounted for technical roles (i.e. non drivers, handlers / warehouse associates). This includes over 700 project managers, over 600 sales managers, over 500 supply chain analysts, over 500 software developer / engineers and over 200 jobs in computer support. This demonstrates the increasing demand for skilled employment in the sector alongside elementary and driver roles.

Tackling skills and recruitment gaps

15.10 A number of higher, further and alternative education centres are focused on developing the next generation of logistics workers including Cranfield University, the University of Northampton, Goodwill Supply Chain Academy based in Northampton and the Hub (opened 2021) at DIRFT (Daventry), a centre for logistics training and education.

Property market

15.11 According to CoStar, as of spring / summer 2022 national industrial demand conditions have never been stronger. *The accelerated shift to e-commerce brought about by the pandemic has fuelled the expansion of retailers and third-party logistics firms, while the UK's exit from the EU single market and customs union is leading to increased inventory holding, resulting in the need for additional warehousing. At the same time, a diverse mix of other industrial-using businesses including modular housebuilders, lithium-ion battery makers, data centre operators and film production companies are competing for a relatively limited supply of stock.*

15.12 The September 2022 report notes that *although industrial market conditions remain strong, demand faces headwinds from rising operating costs and a pullback in consumer spending, which could dampen logistics occupiers' appetite for expansion.*

SEMLEP Study Area

15.13 The SEMLEP area holds a significant number of key logistics parks. The amount of floorspace in strategic logistics units has grown across all local authorities since 2012 aside from Luton which has remained stable. The current vacancy rate for

strategic logistics floorspace in the study area is 1.3%. This is extremely low in the context of a 10-year UK average of 5.3% and a current rate of 3%. The ten year average for the SEMLEP area is 4.4% - again highlighting the extremely low current vacancy rate. The forecast from CoStar is for an above trend level of demand for the next 5 years.

15.14 There is a substantial pipeline of units and logistics parks with planning permission or under construction the study area. Thee account for 2.2m sqm (24m sq. ft) however analysis of local planning authority data indicates the potential figure is much higher. Forthcoming parks include Milton Keynes – PLP Milton Keynes, Biggleswade – Symmetry Park, Northampton – SEGRO Northampton Gateway, Daventry – DIRFT, Wellingborough – Park Farm / Prologis West and Corby – Mulberry Logistics Park (Cowthick Plantation), Midlands Logistics Park and Centrix Business Park.

Future land supply

15.15 The constituent client authorities have provided their current and future supply position for strategic warehousing & logistics of 9,000 sqm and above. Overall, there is around 4,000,000 sqm of pipeline strategic logistics space in the study area.

Estimates for Future Strategic Warehousing Demand

15.16 Three estimate models are used for future warehousing demand:

- **Traffic growth with replacement demand**: This land-use forecast methodology is derived from: the continual need to build new large-scale warehousing as a replacement for existing capacity which, over time, becomes life-expired due to functional or physical obsolescence (replacement build); and long-term growth in the demand for goods in the wider economy and the subsequent need for additional floor space in order to handle that growth (growth build).

- **Completions:** historic delivery rates are extrapolated into the future in order to model future demand.

- **Market Signals:** take up (net absorption) trends are considered to be a useful indicator of market requirements in forecasting future business demand. In the table below the annual net absorption is modelled forwards. Research suggests that current demand is driving an above average rate of take up which is likely to continue, at least in the short term, as the market adjusts to greater emphasis on the e-commerce platform. This suggests that an additional buffer is needed to account for the rise in e-commerce before returning to the historic trend.

Future Warehouse Floorspace Growth Scenarios: Summary and Supply Balance

15.17 The following table indicates the summary of the forecasts, focusing on the core scenarios. To enable some broad estimates to be used for the recycling of existing sites a provisional figure of 20% of the residual need is assumed to be available through the recycling of existing B8 units (including refurbishment). This is only considered appropriate for the road (non rail) element as these require dedicated facilities at rail heads. The rail forecast which is included below is for 1,791,000 sqm which assumes 32% of the gross demand, a considerable uplift from the current 12%.

Table 15.1 Core scenarios for large scale logistics demand inc. margin factoring on-site replacement @20% for road element (sqm)

Scenario	2021-40	2021-50
Market signals High	6,024,600	7,331,000
Market signals Low	5,109,400	6,353,400
TGRD Central	4,836,600	6,622,200
Completions	5,711,000	7,941,400

15.18 The table below summarises the demand / supply (April 2021) balance position looking at the present to 2040 period. This takes into account unimplemented permissions and allocations in the study area. It of note that completions from April 2021 can be deducted from the residual demand. The range of shortfall under the core scenarios is 237 to 576 ha.

Table 15.2 Demand supply balance inc. margin & replacement factor)

	2021-40 demand	Supply at April 2021	Balance (sqm)	Balance (Ha) @0.35
Market signals High	6,024,600	4,008,500	-2,016,100	-576
Market signals Low	5,109,400	4,008,500	-1,100,900	-315
TGRD Central	4,836,600	4,008,500	-828,100	-237
Completions	5,711,000	4,008,500	-1,702,500	-486

15.19 The supply and demand by road and rail components are provided below. It is of note that the rail element is 'aspirational' as it sees an increase from the current 12% rail based up to 32% by 2040 and therefore should be treated with caution. This is particularly evident with the lower scenarios which would suggest an element entirely residual demand for rail, which does not reflect the market.

Table 15.3 Study area demand and supply balance (2021-2040)

		Market signals High	Market signals Low	TGRD Central	Completions
Demand 2021-40	Road	4,234,000	3,318,000	3,046,000	3,920,000
	Rail	1,791,000	1,791,000	1,791,000	1,791,000
Supply at April 2021	Road	3,214,000	3,214,000	3,214,000	3,214,000
	Rail	794,000	794,000	794,000	794,000
Balance (sqm)	Road	-1,020,000	-104,000	168,000	-706,000
	Rail	-997,000	-997,000	-997,000	-997,000
Balance (Ha@0.35)	Road	-291	-30	48	-202
	Rail	-285	-285	-285	-285

Implications for other land uses

15.20 The total land available for employment development across the study area is estimated as 5.45m sqm. Indicatively the potential logistics pipeline of 4.0m sqm makes up around 73% of the total pipeline, with 1.45m sqm remaining (27%) for small B8 and other industrial and non-industrial uses, such as offices.

15.21 Taking absorption trends from the last 5 years for all commercial uses (i.e. office, B2, B8 all sizes), we can conclude that large scale B8 represents around 69% of all transactions – which aligns approximately with the 73% of employment space allocated for large scale B8 of the total. This would indicate that the balance of supply between uses is currently appropriate from a market perspective – as the

apportionment of land supply approximates the market trend – with a limited amount of flexibility and taking into account judgement in future supply apportionment. However, the rate of demand for B8 has been increasing and is likely to increase further which will put pressure on other uses, notably for other commercial space including smaller B8, general industrial, offices etc which will typically be less viable.

15.22 Planning authorities should therefore maintain up to date evidence on non-large B8 requirements in order to ensure a balanced and long-term approach to economic growth, rather than being reactive to short term volatility. This will support differentiation of sites both in policy terms and spatially. Working collaboratively and maintaining a healthy and evidenced supply of large B8 sites across the whole study area (rather than in individual authorities) will also help to manage local development pressures.

Locations for future development

15.23 Detailed criteria regarding locations considered to be appropriate for hosting strategic distribution is set out in the report and summarised here. Note that these are subject to broader planning and environmental constraints:

- Good connections with the strategic highway network – close to a junction with the motorway network (ideally within 3km and up to 5km) or long-distance dual carriageway suitable for HGVs (reflecting the success of parks on the A1, A14 and other linking A-roads). Areas should also meet this criterion if they are likely to be served by such routes when taking into account known highway infrastructure upgrades. Motorway/dual carriageway junctions and the approach routes should have sufficient network capacity and the cumulative impacts of other proposals will need to be considered;

- Is sufficiently large and flexible in its configuration so that it can accommodate the range of sizes of distribution centre warehouse units now required by the market. Preferred plot ratios being a minimum of 0.35 and building sizes of over 9,000 sqm which means a minimum of 2.5 ha, however ideally sites would be a

minimum of 25ha and readily over 50ha[40] which takes into account the landscaping and infrastructure involved in delivering sites of this scale as well as inclusion of smaller employment units where appropriate;

- Is served from an electricity supply grid with sufficient capacity to permit the charging of large fleets of battery-electric freight vehicles simultaneously, or part of the electricity supply grid which can be upgraded (network reinforcement) relatively easily and at a reasonable cost. It is recognised that this is becoming increasingly challenging and that alternative proposals around sustainable energy generation should be sought from industrial and logistics developments, particularly given the capability of renewal energy generation reported by schemes elsewhere in this document;

- Is sufficiently large and flexible in its configuration so that it can accommodate an intermodal terminal and internal reception sidings (for rail);

- Is accessible to labour (with a maximum drive time of 30 minutes), including the ability to be served by sustainable and/or active transport, and where appropriate being located close to areas of employment need; and

- Is located away from incompatible land-uses (including residential) and has the ability to undertake 24/7 unrestricted operating hours and manage noise/lighting expectations;

- Is located such that the development does not significantly crowd-out alternative land uses, such as office and lab space, and ensures a balanced supply of commercial premises and strategic employment opportunities in the local area;

[40] For example, the total application 'order limits' site area for Northampton Gateway is 290 hectares delivering 486,000 sqm at a ratio of less than 0.2, whereas Mulberry Logistics Park Corby delivers 400,000 sqm over 160 ha at a ratio of 0.25

- The ability to deliver high-bay warehousing at least 20m height (recognising the landscape impacts and need for appropriate locations and / or mitigation);
- Recognising the potential phasing of infrastructure and periphery landscaping requirements;
- Has access to or potential for broadband capabilities and infrastructure.

Managing logistics

15.24 It is recommended that the SEMLEP authorities work together to consider how future demand in the logistics sector can best be accommodated across the area as part of the Local Plan making process.

15.25 Overall the focus should be on ensuring an area wide consistent monitoring of supply and demand; and establishing a process for a further pipeline of sites as appropriate. This could involve a call identifying future suitable areas of opportunity using data on landscape / environment, junction capacity / access, site availability by size and labour market proximity.

15.26 To effectively and consistently monitor warehousing and logistics sector development, it is recommended that data monitoring and collection are actively pursued beyond the individual authority level. Of particular note is the benefit of working collaboratively and being able to demonstrate collective working to ensure that no individual authorities or Local Plans are subverted through high levels of pressure for development, particularly given the often sub regional areas of search for these occupiers.

Future employment implications

15.27 The key factors in the jobs outlook growth are considered as:

- **Replacement demand** – whether new units are simply moving jobs about from older stock, and if they are, then whether the historic units are creating new jobs of a different kind.

- **Automation** – whether automating processes are reducing the requirement for labour and decreasing densities; and whether the nature of employment is changing as a result.

15.28 Modelling suggests that at the conservative end of the demand scenarios across the SEMLEP area by 2040 some 15,000 to 19,000 additional jobs (depending on future densities) could be created of which 11,000 to 14,000 jobs in large scale warehousing. At the higher end of the scenarios this could potentially increase by a further 6,000 to 8,000 additional jobs. This is substantial but is in the context that in the last 5 years alone there has been growth of 16,750 jobs in the warehousing specific sector in the study area. These figures should be treated with caution due to the range of uncertainties in the modelling, notably around the replacement demand for older stock.

15.29 In terms of employment types, the outlook for is for an increased balance between high and lower skilled roles in the sector, due to increased technical demands related to automation and ICT.

Conclusions

15.30 Logistics has generally suffered a poor reputation due to lower than average productivity, high visual impact and land hungry demand with low employment density. However it is a dynamic and rapidly changing sector that is integral to everyday life and national infrastructure, one that is responding to the challenges of climate change, national emergencies, and is recognised as a critical sector in the government's 'Future of Freight' plan, published in 2022. Despite the existing prevalence of large scale units, future population growth alongside increases in e-commerce and the need to replace older stock mean that there is expected to be a substantial demand for new stock above the current pipeline in the future.

15.31 Whilst the most reliable modelling techniques available have been used in this study, the considerable dynamics involved including technology, population and economics inevitably mean there is uncertainty in the long term outlook and future focused updates may be warranted to assist Local Plan making.

15.32 It is recognised that current and future high demand presents a significant challenge to planning authorities and local communities in terms of managing the growth of these large buildings. Authorities need to ensure balanced Local Plan making and economic growth strategies taking into account a wider range of matters to ensure the delivery of sustainable places.

15.33 A collective approach to manging demand for strategic warehousing is highly recommended in ensuring defensible plan making and land management at the individual authority level. Demonstrable joint monitoring and potentially a joint assessment strategy for future locations will be an advantage when dealing with ad hoc individual applications and facilitating a planned approach to delivery.

15.34 There is an opportunity for substantial jobs growth in the sector including a range of technical and professional roles. Many local colleges and universities in the South East Midlands are already responding to provide more advanced learning in logistics and a further expansion of this will be beneficial in terms of economic growth, upskilling and productivity.

16. GLOSSARY AND ABBREVIATIONS

Stock and space definitions from VOA / CoStar: records differ between these two databases.

The VOA records business activity for the purposes of calculating a property's business rates. Vacant properties may therefore be omitted. The gross internal area (GIA) method of measurement is generally applied to industrial property such as warehouses or manufacturing units. Gross internal floor area includes mezzanines where they intended for permanent use. The VOA database it typically accurate for the purposes of its own uses, although category definitions of use (warehouse, factory space, workshop) are prone to error.

The CoStar property database has been developed over time through knowledge gain through interactions between CoStar researchers and local / national agents as well as online searches. The database is not audited and all content is therefore prone to error. Records of physical space should not be relied on in whole as will have been collected from marketing or deal records rather than planning, construction or valuation data. There may be inconsistency in terms of the GIA measurements in terms of inclusion of mezzanine space.

Glossary

- Availability: vacant stock and stock known to be coming to market in the near term through build or lease exit.
- CoStar: national commercial property database.
- Grade A stock: state-of-the-art properties built specifically for warehousing and logistics. They have not been converted or renovated for this purpose. Tenants competing for a Grade A building are typically well-established industry leaders and looking for the best that commercial real estate has to offer.
- Grade B may be a little older than Grade A but typically renovated to have the latest technology. It will typically have lower ceilings than a Grade A building. May be located in the periphery rather than primary market location.

- Grade C buildings are typically older buildings converted from their original purposes, such as former hangars and manufacturing facilities. They often lack modern amenities and require upgrade. May be in a low desirable area.
- E-commerce: online retail
- Golden Triangle: national centre of the UK logistics market whereby main other parts of the UK can be reached in a 4hr drive time.
- Gross absorption: total lease deals.
- Growth build: demand for warehouse floor space driven by growth in the wider economy along with forecast population increases leading to a growth in the volume of consumer goods handled leading to increasing demand for additional warehouse floor space.
- Net absorption: move in leases minus lease breaks.
- Net delivery: total of all new floorspace delivered after any demolitions.
- Replacement build: requirement to replace outdated warehouse stock
- Vacancy: physically vacant stock.

Abbreviations

- BEVs (Battery-electric vehicles)
- BPF (British Property Federation)
- CFCs (Customer fulfilment centres)
- DCO (Development Consent Order)
- EMG (East Midlands Gateway)
- FTAs (Free Trade Agreements)
- FTA (Freight Transport Association)

- FTE (Full-time equivalent)
- GHG (Greenhouse gas)
- GVA (Gross Value Added)
- HGVs (Heavy Goods Vehicles)
- I&L (Industrial and logistics)
- L&L (Leicester & Leicestershire ()
- LGVs (Light Goods Vehicles / vans)
- LDOs (Local Developments Orders)
- NDCs (National Distribution Centres)
- NIC (National Infrastructure Commission)
- RDCs (Regional Distribution Centres)
- SMEs (Small and medium-sized enterprises)
- SRFI (Strategic Rail Freight Interchange)
- 3PLs (Third-party logistics)
- TGRD (Traffic growth and replacement demand)
- TTWAs (Travel to Work Areas)
- VOA (Valuation Office Agency)

17. APPENDICES

Table 17.1 List of strategic logistics pipeline sites (up to April 2021)

Local Authority	Planning Status	Site Name	Build Status	Floorspace (Sq M)	Comment
Bedford	Permission	Wixams Logistics Park	Not started	74,322	Aldi to occupy. Delivery estimated 2024/25.
		Wixams Business Park	Under Construction	11,698	MH Star to occupy. Delivered 2021/22.
		Bedford Commercial Park	Under Construction	12,077	Delivered 2021/22.
		Wixams Business Park	Under Construction	14,972	MH Star to occupy. Delivered 2021/22.
		Manton Lane Industrial Estate	Under Construction	15,315	AF Blakemore to occupy. Delivered 2021/22.
		Bedford Link	Under Construction	15,997	Carlton Packaging to occupy. Delivered 2021/22.
		Wixams Business Park	Under Construction	23,133	MH Star to occupy. Delivered 2021/22.
		Bedford Link	Under Construction	32,330	Movianto to occupy. Delivered 2021/22.
		Total Industrial Estate	Under construction	9,755	In Farm to occupy. Delivered 2021/22.
Central Bedfordshire	Permission	Aco Technologies PLC Hitchin Rd	Not started	12,429	Part of extension, presumably for Aco Technologies. Further space is factory and office.
		Phase 6B, Stratton Business Park	Not started	53,605	4 units
		East of woodside link road, HRN1	Under construction	124,497	Lidl to occupy.
		Plot 5C, Stratton Business Park	Under construction	11,304	Liebherr to occupy. Total new floorspace of 20,433 Sq M which includes 2,227 of reception and customer care centre (i.e. office), 6,751 sqm of pre delivery inspection building (workshop)

					and 151 sqm of other which has been discounted.
	Allocation (No permission)	Sundon Rail Freight Interchange	Unknown	160,000	45 ha with 5 ha for Rail Freight Interchange leaving 40 ha at plot ratio of 0.4. Defined as a 'national strategic asset'.
		Marston Gate	Unknown	60,000	30 ha with 50% assumed B8 (allocated for mix of B2, B8, Class E, ancillary uses and a lorry park). Plot ratio of 0.4 applied.
		Holme Farm, Biggleswade	Unknown	152,000	63 ha of land with 38 ha allocated specifically for strategic warehousing. Plot ratio of 0.4 applied.
Milton Keynes	Permission	Land at Brickhill Street	Under construction	60,000	10 units B2 or B8 totalling 90,000 Sq M. Therefore all B8 units assumed to be to be above 9,000 sqm.
		Land East of M1	Not started	273,590	Two B8 unit layouts are presented in outline permission. Averages sizes for large unit layout are 21,045 SqM and small unit layout are 10,523 Sq M suggesting most, if not all, units will be strategic warehousing.
	Allocation (No permission)	Land at Caldecotte Farm (Newlands)	Not started	78,429	Part of Strategic site allocation in Milton Keynes Local Plan (Plan:MK) adopted in March 2019, Policy SD 12 refers. Subject to a planning application for 78,429 sqm of B8 floorspace across two units. Therefore classed as strategic warehousing.
		Pineham	Not started	32,700	10.9 ha allocation for B2/B8. Assumed 75:25 B8 to B2 ratio. Assumed all B8 strategic logistics given proximity to Junction 14 of the M1. Plot ratio of 0.4 applied.

		Shenley Wood	Not started	13,800	10.8 ha allocation for B1/B2/B8 which consists of four sites of around 3.5ha, 3.4 ha 2.8 ha and 1.1 ha. 2.8 ha site excluded as development brief suggests use for B1, C2 and D1 uses. 1.1 ha site is not large enough to support strategic logistics. Excluding 1.1 and 2.8 ha sites there is potential for 6.9 ha. Assumed a 50:50 B8 to B2/B1 ratio. Plot ratio of 0.4 applied.
North Northants	Permission	Centrix Park - Part of Rockingham Enterprise Area. Bakeaway Plot B1 Centrix business park - ELR11a	Under construction	14,636	14,636 Sq M of B8 floorspace across one unit hence strategic logistics.
		Midlands Logistics Park (formerly Stanion Lane Plantation) ELR31	Unknown	36,400	Determined to be all for strategic logistics use a a 9.1 ha site for one unit only. Plot ratio of 0.4 applied.
		Land off Curver Way ELR28	Under construction	56,664	56664 Sq M of B8 floorspace across one unit hence strategic logistics.
		Cowthick Plantation, Stanion ELR03	Not started	163,600	81.8 ha area for B1/B2/B8 uses. Assumed 50:50 B8 to B1/B2. Plot ratio of 0.4 applied.
		Roxhill (A14 Junction 10 - land adj A6)/Segro Park	Unknown	81,750	109,000 Sq M of total floorspace across B8, B2 and B1. Assumed 75:25 B8:B2/B1.
		Kettering South (land at), Off A509 North of Isham	Under construction	203,876	214,606 Sq M GEA converted to GIA at a ratio of 0.95. Minimum unit size stated in parameter plan is 9,290 sqm (GEA) / 8825.5 sqm (GIA). Will be

					3-10 units and hence likely that all units will be above 9,000 sqm.
		Cransley Park - Old Cransley Iron Works (and surrounding land), Northampton Road	Unknown	9,227	Part of larger mixed B and C class application. Contains one plot which is large enough (6 ha) to support strategic logistics and is assumed to do so.
		Warth Park Phase 2	Under construction	95,689	Three strategic logistics units of around 30,000 Sq M which form part of a wider 160 acre logistics and business development.
		Land Area 3 Stanton X (Btwn Meadow Close & 202 Sidegate Works), Wellingborough Road, Finedon, Wellingborough	Not started	15,182	One unit greater than 9,000 Sq M - 15,981.3 sqm GEA. Coverted to GIA at a ratio of 0.95.
		140-160 Appleby Lodge, Sywell Road, Wellingborough, NN8 6BS	Under construction	109,810	Mixed B Class development (B1, B2 and B8). Discussions with council officers suggest that there is approximately 109,810 Sq M of unbuilt space which is for strategic logistics based on site plan.
	Allocation (No permission)	Land at Steel Road - ELR11g inc east of Shelton Road	Not started	30,800	Strategic allocation (Policy 27 of JCS). 15.4 ha site. Assumed half strategic B8. Plot ratio of 0.4 applied.

		Land off Phoenix Parkway ELR11h (crosses the boundary into East Northhants)	Not started	60,600	Strategic allocation (Policy 27 of JCS). 30.3 ha site. Assumed half strategic B8. Plot ratio of 0.4 applied.
		North of Birchington Road (Bela and Morrison's Land), Halley Road - ELR11c ELR11d	Not started	49,800	Strategic allocation for B1/B2 and B8 uses. 24.9 ha. Assumed 50:50 B8 to B1/B2 ratio. Plot ratio of 0.4 applied.
		Pharma Factory site - Oakley Hay/Southern Gateway -ELR15b	Not started	11,600	Strategic allocation. 5.8 ha. Assumed 75:25 B8:B2. Plot ratio of 0.4 applied.
		Rushden East SUE	No started	30,000	Indicative figure, allocation requires a mix of employment opportunities. c.100,000sqm total over 25 ha.
West Northants	Permission	DIRFT III DCO, Watling Street, Crick	Under construction	713,000	Expansion of Daventry Rail Freight Terminal. All B8. Assumed strategic logistics.
		Zone B, Plot 1 Apex Park, Parsons Road, Daventry, NN11 8RA	Under construction	38,686	Single B8 unit. Reconstruction due to fire but still contributes to pipeline supply as occupying businesses would have had to use space elsewhere.
		Land off Nasmyth Road	Under construction	40,263	One strategic logistics unit of 40,263 SqM. Three further units which are under 9,000 sqm.
		Zone B parsons Road Drayton Fields, NN11 8RA	Not started	35,117	Outline permission. Floorspace is a maximum assuming a 1, 2 or 3 unit scheme
		Milton Ham	Under Construction	20,409	Single strategic warehousing unit

		Land adjacent to Tithe Barn Way, NN4 9QY	Not started	12,660	Single strategic warehousing unit
		Howden's Joinery, Liliput Road, NN4 7EY	Not yet monitored	76,505	Application unavailable. All B8 across three phases. Assumed all strategic logistics.
		Northampton Gateway Rail Freight Interchange	Under construction	468,000	SEGRO strategic logistics park with a minimum unit size of 49,238 Sq M.
	Allocation (No permission)	Daventry South East Gateway	Not started	10,000	19.7 ha site which is allocated for a mix of employment uses including B8. Max unit size in allocation policy (Policy EC9) is 10,000 sqm. Promotional material for the site states there is a known requirement for a 100,000 Sq. ft unit in the area. Therefore it is assumed that there is a 10,000 sqm unit provided.
		Land at Bell Plantation, Towcester	Unknown	111,709	Site subject to 2 applications (on different parts of the site but covering the whole site). Application WNS/2021/1819/EIA includes 111,709 sqm of strategic warehousing space. The other application (WNS/2021/2168/MAO) includes a indicative masterplan which suggests that the development will be for 31,800 sqm of floorspace but over around 20 small units and hence will not provide strategic warehousing.
		Land at Former Furtho Pit, Old Stratford/Cosgrove	Unknown	32,000	16 ha site allocation for mixed employment generating development including B1, B2 and B8. Assumed 50:50 B8 to B1/B2. Assumed B8 is strategic. Plot ratio of 0.4 applied.

		Land at Tiffield Lane, Towcester	Unknown	70,556	Planning application (S/2020/1644/EIA) approved - Includes 70,556 sqm of strategic warehousing floorspace.
		Northampton Junction 16 Strategic Employment Site (E8)	Unknown	168,000	42 ha site allocation for mixed employment generating development including B1, B2 and B8. However, based on consultation with council officers this site is assumed to be all for strategic logistics use. Plot ratio of 0.4 applied.

Source: Iceni analysis of local authority data

Table 17.2 List of available strategic logistics floorspace

Address	Building Name	Status	NIA	m² Avail	Submarket	Landlord Representative	Postcode	Sales Company	Sale Status
Finedon Rd	W172 St. Modwen Park	Proposed	15,989	15,989	Wellingborough	Drake & Partners	NN8 4BW		
Nasmyth Rd		Proposed	38,686	38,686	Daventry	Colliers	NN11 8NF		
Symmetry Park		Proposed	27,871	27,871	Kettering	BNP Paribas Real Estate UK	NN15 5JR	BNP Paribas Real Estate UK	Available
Symmetry Park	Design & Build	Under Construction	120,774	120,774	Kettering	BNP Paribas Real Estate UK	NN15 5JR	BNP Paribas Real Estate UK	Available

3 Brickhill Rd		Proposed	28,662	28,662	Milton Keynes	Burbage Realty Partners Ltd	MK17 9FE		
Kettering Gateway	Plot 2 Segro Park	Under Construction	9,523	9,523	Kettering	Prop-Search.Com	NN15 5LW		
Sywell Rd	Zone C - DC154	Proposed	14,342	14,342	Wellingborough	Burbage Realty Partners Ltd	NN8 6BS	Burbage Realty Partners Ltd	Available
Sywell Rd	Zone C Plot 1	Proposed	35,217	35,217	Wellingborough	Burbage Realty Partners Ltd	NN8 6BS		
Sywell Rd	Zone D (South)	Proposed	27,813	27,813	Wellingborough	Burbage Realty Partners Ltd	NN8 6BS	Burbage Realty Partners Ltd	Available
Sywell Rd	Zone B	Existing	59,000	57,179	Wellingborough	Burbage Realty Partners Ltd	NN8 6BS	Burbage Realty Partners Ltd	Available

Third Ave	Code	Under Construction	13,059	13,059	Milton Keynes	Knight Frank LLP	MK1 1DR		
1 Brickhill Rd	PLP Logistics Business Park	Final Planning	20,285	20,285	Milton Keynes	Burbage Realty Partners Ltd	MK17 9FE		
2 Brickhill Rd		Proposed	15,491	15,491	Milton Keynes	Burbage Realty Partners Ltd	MK17 9FE		
4 Brickhill Rd		Proposed	13,471	13,471	Milton Keynes	Kirkby Diamond LLP	MK17 9FE		
11 Brickhill Rd		Proposed	106,838	106,838	Milton Keynes	Kirkby Diamond LLP	MK17 9FE		
Danes Way	Design & Build	Proposed	148,645	148,645	Daventry	Savills	NN6 7GX		
Davy Close	Wellingborough 170	Existing	15,835	15,835	Wellingborough	Dowley Turner Real Estate	NN8 6XX		

John Clark Way		Existing	13,144	13,144	East Northamptonshire	Savills	NN10 0FN		
Leamington Way	Unit 3	Existing	16,120	16,120	Daventry		NN11 8NU		
Liliput Rd	BG-180	Under Construction	16,723	16,723	Northampton Core	Burbage Realty Partners Ltd	NN4 7DT		
Liliput Rd	BG-387	Under Construction	36,000	36,000	Northampton Core	Burbage Realty Partners Ltd	NN4 7DT		
London Rd	Symmetry Park Biggleswade	Proposed	21,368	21,368	East Bedfordshire	Colliers	SG18 9TE		
Market Garden Rd	Symmetry Park Biggleswade	Proposed	10,405	10,405	East Bedfordshire	Colliers	SG18 9SX		
Market Garden Rd	Symmetry Park Biggleswade	Proposed	14,864	14,864	East Bedfordshire	Colliers	SG18 8QA		

Merton Dr	Former Arcadia Distribution Centre	Proposed	31,399	20,532	Milton Keynes	Dowley Turner Real Estate	MK6 4AG		
Merton Dr	Spectrum For Arcadia	Existing	52,861	31,399	Milton Keynes	Dowley Turner Real Estate	MK6 4AG		
Phoenix Pky		Under Construction	9,453	9,453	Corby	TDB Real Estate Ltd	NN17 5AF	TDB Real Estate Ltd	Available

Source: CoStar

Appendix 2

Narborough Level Crossing Downtime Impact Report (ARUP)

ARUP

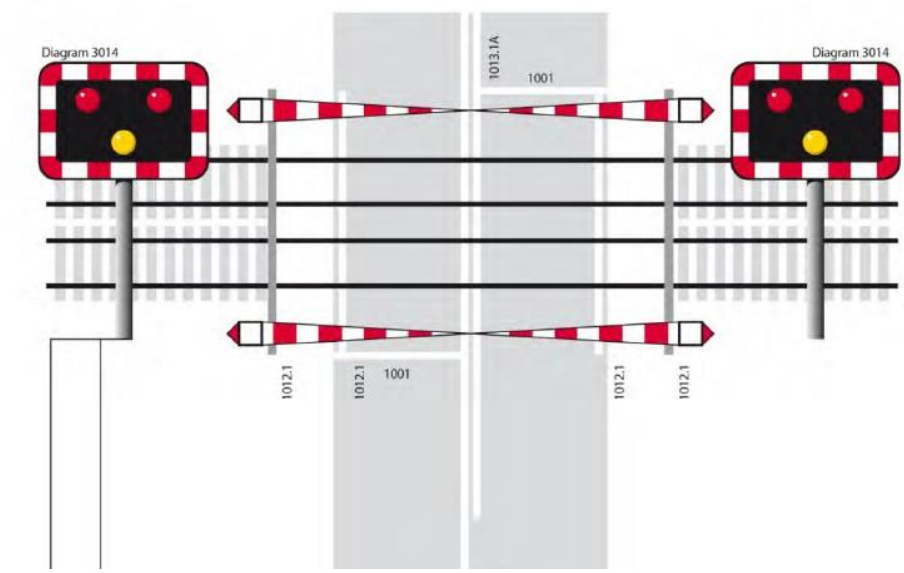
Blaby District Council

Hinckley National Rail Freight Interchange

Narborough Level Crossing Downtime

Reference: 01

| 12 July 2023



Job number 296177-00

Ove Arup & Partners Limited
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United Kingdom
arup.com

ARUP

Document Verification

Project title	Hinckley National Rail Freight Interchange
Document title	Narborough Level Crossing Downtime
Job number	296177-00
Document ref	01
File reference	

Revision	**Date**	**Filename**	Narborough Report 2023 07 12		
01	12 July 2023	**Description**			
			Prepared by	**Checked by**	**Approved by**
		Name	Hal Bransby / Toby Hetherington	Chris Skilton	
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	**Checked by**	**Approved by**
		Name			
		Signature			

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Contents

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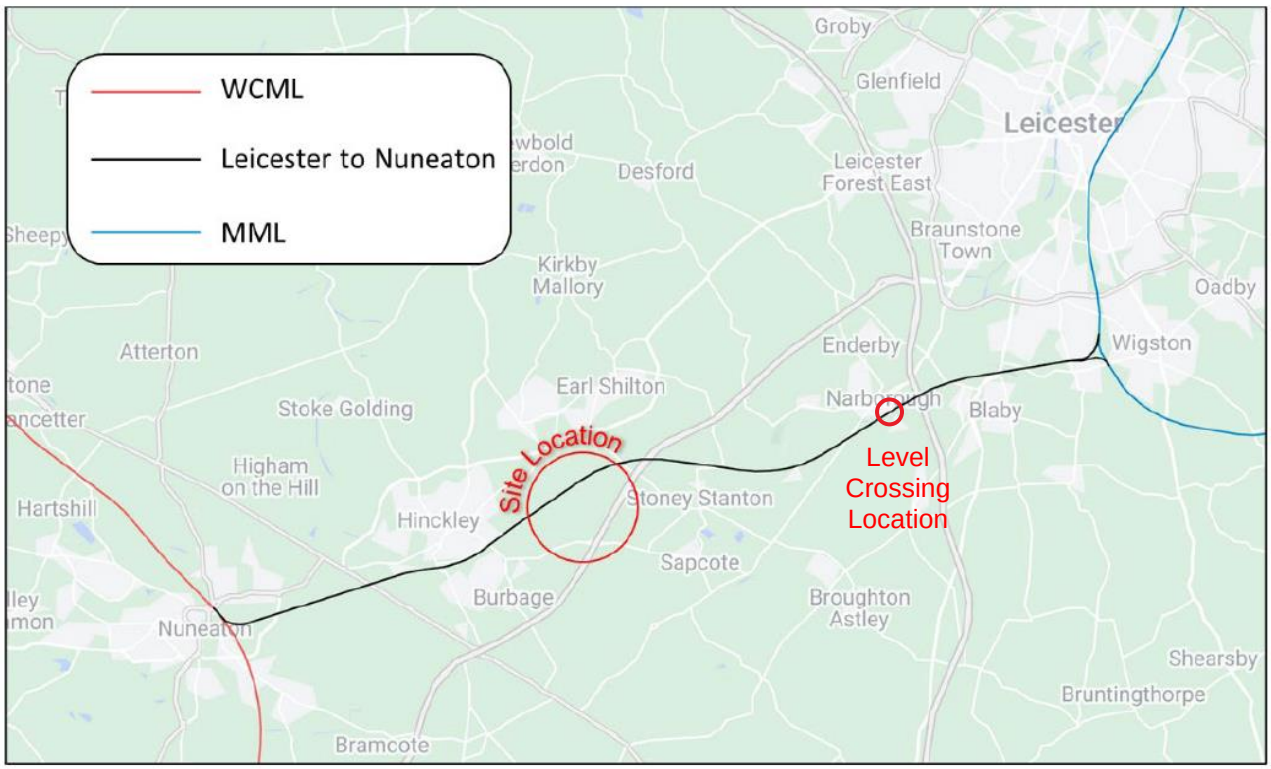
Appendices

1. Background

The Hinckley National Rail Freight Interchange (HNRFI) is an intermodal freight terminal 'railport' capable of accommodating container trains upto 775m in length that is planned to be located within Blaby District Council. The site is on the Railway line between Nuneaton on the West Coast Main Line (WCML) and Leicester on the Midland Main Line (MML). The proposal is for the HNRFI site to accept up to 16 rail freight services per day, which will be made up of 16 inbound and 16 outbound trains per day. It is expected that of the new freight services 6 (6in + 6out) will approach from the west (Nuneaton) and not pass through Narborough, and 10 (10in + 10out) will approach from the east (Wigston) and must pass through Narborough level crossing. The crossing provides an important link between the communities of Narborough and Littlethorpe, a pedestrian footbridge exists at the station for public use.

The crossing downtime, the length of time that the road crossing is closed, is expected to be impacted by the proposed development of the HNRFI as its development leads to changes to train service frequency and therefore level crossing downtime is expected to change. Reports have been produced by the scheme supporter as part of planning submissions to explain the impact of changes to rail services on the level crossing downtime.

Figure 2.1 - Location Hinckley NRFI



The site proposed to be open in 2026 and fully operational in 2036, this exercise will be looking into the impact of when the site is fully operational and up to 16 trains per day may be additionally traversing the route.

This report has the following sections:

- Document Review - review of the reports produced as part of the planning inspectorate submission
- Suitability of findings for submission – summary of the findings and any elements that may require more detail.
- High Level Assessment – Summary of the expected changes and impacts to level crossing downtime
- Next Steps – Summary of findings and any addition recommendations

2. Summary

As part of the planning submission analysis has been undertaken to review the impacts on traffic and transport flows. The railway elements are limited and non-conclusive about impact of issues relating to the level crossing downtime. The methodology is sensible but not sufficient for the development given there are current risks associated with the crossing and it has a high risk assessment value. Increased freight services throughout the day are will increase the likelihood of risks and therefore the requirement for mitigation measures.

In due course Network Rail will need undertake a formal consultation process and risk assessment.

2.1 Document Review Summary and Recommendations

This section summarises the document review and provides recommendations for provision of additional information. The following elements have been identified:

The impact of variation of closure downtime depending on train type and stopping pattern and time of day, possible use of optimistic values. – **Recommendation** - use a larger sample of level crossing downtime data from datalogger or similar sources that can provide a spread of data covering peak and off-peak periods for different days of the week. At least 1 month would be suggested.

Number of freight trains that run is very variable and could be higher than those observed on the sample day. – **Recommendation** - use a larger sample of freight running data to understand the variability of the existing WTT timetable paths and understand what the upper level of freight operation may be. At least 1 month would be suggested.

No technical operational rail study of the crossing has been undertaken, no clear understanding of operational factors and risks. – **Recommendation** - document the process for level crossing activation and downtime detailing timings and potential for variability in the technical and human processes.

Assumption that new services may pass the crossing at the same time as existing services, leading to optimistic values. – **Recommendation** - make a worst case assumption that the timing of new (and existing) services may not arrive eastbound and westbound at the same time and therefore may not benefit from two trains passing the crossing at during a single downtime closure. This will allow for different timetable plans or services running late on the day of operation. There also need to be an minimum cycle time defined for the shortest period of time the crossing will open between two trains.

The current crossing status risk is high, any additional trains would have a detrimental impact on this. – **Recommendation** - review all the data and human factor requirements for crossing risk assessment. This may include elements such as a review of signaller workload as crossing is manually checked by signaller and CCTV prior to train passage.

2.2 High Level Assessment Conclusions

This section summarises the high level assessment and provides recommendations for provision of additional information. The following elements partially overlapping with the above have been identified:

The aim of the assessment is to provide a guide as to the potential impact on crossing downtime by reviewing the number of trains that pass the level crossing at Narborough.

The assessment shows that there is potential for the length of downtime in each hour of the day to become greater than the nominal 20 minute value assigned. It can be observed that there are two hours in the current operation and six hours in the future operation. It also shows that as the new freight services are introduced there will be longer crossing downtimes throughout the day. This is going to impact on the community and the flows of road vehicles, pedestrians and others when traveling between Narborough and Littlethorpe. The analysis shows the importance of traffic during the off peak and the impact of increasing rail usage outside of the AM and PM peak when road crossing flows may continue to be high.

There is a variation between the WTT freight operation and the observed operation for the 3rd November 2021. **Recommendation -** use a larger sample of freight running data to understand the variability of the existing WTT timetable paths and understand what the upper level of freight operation may be. At least 1 month would be suggested.

The variations between closure times for the 3rd November 2021 and the generic assessment highlight the need for updated downtime assumptions. **Recommendation -** review crossing closure data to draw a correlation between downtime and stopping pattern, service type, direction, overlapping east and westbound services and crossing cycle time to calculate expected impacts in more detail.

Other local issues, there is a footbridge at the site available to the public but no lifts making access for all limited, the pavements are also narrow in width making waiting and crossing at grade unpleasant if there is a large number of cars waiting to cross at the same time. **Recommendation** - considering mitigation measures for community.

3. Document Review

The following documents have been reviewed. For each report a summary of the key elements has been included in this section.

Reports

Title	Document Link	Notes
ES Chapter 8 Transport and Traffic	TR050007-000723-6.1.8 Hinckley NRFI ES Chapter 8 Transport and Traffic.pdf (planninginspectorate.gov.uk)	The purpose of the transport and traffic chapter is to describe and, where possible, quantify the likely significant effects that the Proposed Development will have on the surrounding transport network and traffic and transport impacts on the environment.
ES Appendix 8.1 Transport Assessment [part 8 of 20]	TR050007-000753-6.2.8.1 Hinckley NRFI ES Appendix 8.1 Transport Assessment [part 8 of 20] PRTM 2.2 Forecast Modelling Brief.pdf (planninginspectorate.gov.uk)	This report provides Transport and Highways input and advice for the DCO submission.
ES Appendix 8.1 Transport Assessment [part 11 of 20]	TR050007-000756-6.2.8.1 Hinckley NRFI ES Appendix 8.1 Transport Assessment [part 11 of 20] PRTM 2.2 Forecast Modelling.pdf (planninginspectorate.gov.uk)	This reports updates the strategic assessment of the HNRFI development using the latest production version of the Pan-Regional Transport Model (PRTM v2.2) for the AM Peak and PM Peak hours.
ES Appendix 3.1 Rail Operations Report	TR050007-000782-6.2.3.1 Hinckley NRFI ES Appendix 3.1 Rail Operations Report.pdf (planninginspectorate.gov.uk)	This report explains the available freight capacity along corridors between Hinckley NRFI and key ports and examines availability for additional paths for the Railport agreed with Network Rail.
ES Chapter 19 Accidents and disasters	TR050007-000712-6.1.19 Hinckley NRFI ES Chapter 19 Accidents and disasters.pdf (planninginspectorate.gov.uk)	This chapter sets out the approach that TSH has adopted to assess the potential effects deriving from the vulnerability of the Proposed Development to relevant major accidents and disasters

Title	File name	Notes
Documentation from Balby Council (Edward Stacy, 30th June 2023)	Narborough Level Crossing - 10.05.2022[21].pdf	NR response to questions highway and traffic management issues that had been identified at Narborough
	Narborough Peak Hour Barrier Down Times - Morning Peak.inc addn freight.pdf	AM Peak timings (3/11/2021) used for development of Rail Operation Report

	Narborough Peak Hour Barrier Down Times - Evening Peak.inc addn freight.pdf	PM Peak timings (3/11/2021) used for development of Rail Operation Report
	Hinckley SRFI Letter to Tritax LCC Queries 24.11.2021.pdf	NR perspective of current crossing requirements

Other Information Sources

A range of other sources of information have also been reviewed or referenced as part of this study

Title	Document Link	Description
Project background	https://tritaxsymmetry.com/projects/hinckley/	Details of the HNRFI proposals
Timetable information	Realtime Trains | Departures from Narborough all day on 28/06/2023	Source of timetable information and services operated
ORR Crossing Guidance	Principles for managing level crossing safety - June 2021 (orr.gov.uk)	Documentation on operating and planning level crossings
ORR Crossing Guidance	Level crossings: A guide for managers, designers and operators - Railway Safety Publication 7 | Office of Rail and Road (orr.gov.uk)	Documentation on operating and planning level crossings
Network Rail NR/L2/SIG/11201/Mod X22 Signalling Design: Manually Controlled Barriers	https://global.ihs.com/doc_detail.cfm?&item_s_key=00816394&item_key_date=870629&input_doc_number=NR%2FL2%2FSIG%2F11201%2FMOD%20X&input_doc_title=	Signalling system design standard that stipulates the requirements for achieving the ORR crossing guidance in the signalling system.
Level Crossing Data	https://www.networkrail.co.uk/communities/safety-in-the-community/level-crossing-safety/active-level-crossings/	Network Rail level crossing information
	Level-Crossings-data-April-2021.xlsx (live.com)	Full list of all UK level crossings and details
	The Railway Data Centre | Level Crossing Data - WNS 11m 63ch	Summarised data for Narborough level crossing
	Narborough Level Crossing - The ABC Railway Guide	Summarised data for Narborough level crossing
Sectional App	sacuksprodnrdigital0001.blob.core.windows.net/sectional-appendix/Sectional Appendix full PDFs June 23/London North Eastern Sectional Appendix June 2023.pdf	Information on track schematic and line speeds

3.1 Review

Within the documents it is typically expected to see an understanding of the current timetable and the current level crossing downtimes during normal operations. It is expected from this information a modelled or

experience-based approach can be used to assess future timetable operation on downtimes. The following items are expected:

- An understanding of the process for closing the crossing when trains are approaching. This should include a review of the auto lower control logic and any stopping/non-stopping station controls.
- An understanding of the process for opening the crossing when trains have passed. This should include 'another train coming' and minimum road open time (MROT).
- The impact of trains which stop at Narborough station on crossing closure time. This should also include the any controls and logic for stopping/non-stopping controls.
- The signalling system auto lower controls should be designed to provide an unrestricted aspect sequence on the approach to the crossing.
- The current train services operating through the crossing and crossing downtimes.
- The future train services operating through the crossing and crossing downtimes.
- An estimation of the change in level crossing closure time and the possible impact on traffic flows on Station Road.
- Elements that may alter the current risk status of the crossing.
- Evaluation to assess if the assumptions made in the work are robust.

The following outlines the relevant sections of each report reviewed and our summary and findings of the review.

3.2 ES Chapter 8 Transport and Traffic

The Hinckley National Rail Freight Interchange
Development Consent Order
Project reference TR050007 - 000723
Environmental Statement
Volume 1: Main Statement
Chapter 8: Transport and Traffic
Document reference: 6.1.8
Revision: 03
November 2022

This Report summarises the road and other transport impacts associated with the freight interchange. The following relevant sections have been identified.

8.1 – The purpose of the transport and traffic chapter of the Environmental Statement (ES) is to describe and, where possible, quantify the likely significant effects that the Proposed Development will have on the surrounding transport network and traffic and transport impacts on the environment.

Table 8.1 PINS (planning inspectorate comments) ID 4.2.4 Rail Freight

NR has confirmed that for the Highway AM and PM Peak Hours including shoulder periods before and after the peaks 7-10am and 4-7pm, there is only one additional train path available in the PM peak which would cause a maximum barrier downtime of 2.5mins. NR confirmed that barrier downtimes would be approximately 20 mins within the hour which is well within their desirable thresholds. This train path would be open to all operators to bid for and not safeguarded for the HNRFI. Barrier downtimes have also been added into the PRTM 2.2 base and forecast runs.

Consideration given to - A Rail Strategy for the Midlands 2017 (Network Rail and Midlands Connect)

8.99 – Network Rail and Midlands Connect set out the A Rail Strategy for the Midlands in this document:

'The railways across the Midlands are vital to the region, connecting people to jobs, leisure and goods. This network brings together key locations across the nation for passengers, whilst enabling freight to travel to and from all corners of the country.'

'By bringing people to jobs and businesses to markets, the Midlands' railways play a key role in supporting economic growth. This document outlines an industry developed strategy to both facilitate and accommodate growth for the next 10 to 30 years, which has been supported and endorsed by Midlands Connect.'

'More Freight: Key flows for the Midlands include intermodal container traffic from Felixstowe ports to the West Midlands and transfer of construction materials from Peak District quarries to London. This positive demand is projected to continue in the future' and then states that 'The Midlands forms a critical hub for the national freight network'

Rail

8.173 – The baseline operations on the rail network have been reviewed for the HNRFI operations and data has been taken from the real time train website to provide a baseline condition for the purposes of this ES Chapter. The average number of two-way daily trains through Hinckley Rail Station as a proxy for the HNRFI site:

• 41 Freight Trains during the day and 21 at night; and

• 64 timetabled day-time passenger trains and 5 night-time passenger trains.

Pedestrian Access - not considered for this analysis

8.183 – The existing railway in the vicinity of the site features a series of uncontrolled gated pedestrian level crossings serving local PROW routes. These include level crossings at the following locations, shown in Figure 3.1 of the Site Description and listed below.

• Thorney Fields Farm No 2 Footpath No. U17/2, 1 km NW of Sapcote

• Elmesthorpe: Footpath No. T89/1 between Bostock Close and the B581 Station Road, opposite the Wentworth Arms public house

• Earl Shilton: Footpath No: U50/3 connecting Elmesthorpe to the north with Burbage Common Road

• Barwell: Footpath No. V23/1, connecting the Elmesthorpe-Burbage Common Bridleway (U52/9) with Burbage Common Road to the east of the railway.

• The Outwoods: Footpath no. U8/1 - U52/3, connecting Burbage and the Hinckley Academy and John Cleveland Sixth Form Centre in Hinckley.

8.202 – The HNRFI has been designed such that when fully developed out, the terminal will be able to accommodate up to 16 trains per day. It is proposed to have the ability to deliver mainline access at both the eastern and western end of the HNRFI Site, with crossovers, allowing rail services to enter and depart from the HNRFI Site in either direction.

8.203 – The total HGV movements off-site have been calculated based on the container numbers and the maximum 32 train paths per weekday and 8 train paths per weekend day. A train path is the infrastructure capacity needed to run a train between two places over a given time-period.

8.204 – This level of service is already contained within Network Rail's rail freight growth forecast through this route. As such HNRFI is designed to provide the terminal capacity needed to help achieve this anticipated growth.

Summary

This document details:

- The overall number of trains per day on the network for a May 2020 timetable.
- The need for additional train paths to fit around existing services in the working timetable, paths for the proposed development are demonstrated but are not guaranteed.
- The number of new freight services in the peak periods but not their timings.
- The assumed crossing downtime of 2.5minutes for a single service. This is a generic assumption applied to any single train movement regardless of train type or stopping pattern for the purpose of traffic modelling.
- NR confirmed that barrier downtimes would be approximately 20 mins within the hour which is well within their desirable thresholds.
- The current road traffic levels with Annual Average Daily Traffic (AADT) of 3093 vehicles, with a flow of 153 vehicles per lane during peak hours.

It does not detail:

- The number and timings of all the new freight trains that will additionally use the Narborough Level Crossing once the HNRFI is fully operational.
- The impacts on signaller workload due to additional freight services.
- Where the 20minutes per hour value is obtained from.

3.3 ES Appendix 8.1 Transport Assessment [part 8 of 20]

The Hinckley National Rail Freight Interchange
Development Consent Order
Project reference TR050007-000753
Environmental Statement
Volume 2: Appendices
Appendix 8.1: Transport Assessment [part 8 of 20] PRTM 2.2 Forecast Modelling Brief
Document reference: 6.2.8.1
Revision: 05
November 2022

This report summarises the road transport impacts associated with the freight interchange. The following relevant sections have been identified.

5.4 The Narborough Level Crossing is also modelled within PRTM 2.2. Amendments to the network coding has been carried out to reflect the delay experienced. Further journey time analysis has been input to the base model reporting to review the speeds through this part of the network.

5.5 Network Rail (NR) has confirmed that no additional train paths will be available in the AM peak period, one additional path is available in the PM peak heading eastwards, which is open to any train operator to utilise. NR has recently updated the barrier timings and monitoring procedures. Suitable journey time adjustments and coding will be made within the PRTM model to approximate delays here in the forecast modelling. For HNRFI this could 2.5mins for a freight train in the PM peak.

Summary

This document details:

- The impacts on road transport.
- The assumed crossing downtime of 2.5minutes for a single service.

It does not detail:

- The number and timings of all the new freight trains that will additionally use the Narborough Level Crossing once the HNRFI is fully operational.
- The impacts on signaller workload due to additional freight services.

3.4 ES Appendix 8.1 Transport Assessment [part 11 of 20]

The Hinckley National Rail Freight Interchange
Development Consent Order
Project reference TR050007-000756
Environmental Statement
Volume 2: Appendices
Appendix 8.1: Transport Assessment [part 11 of 20] PRTM 2.2 Forecast Modelling
Document reference: 6.2.8.1
Revision: 05
November 2022

This report summarises the road transport impacts associated with the freight interchange. The following relevant sections have been identified.

2.3 'Without Development' Assumptions

2.3.1 As discussed above, the 'Without Development' scenarios for 2026 and 2036 were produced based on the Hinckley NRFI uncertainty log, which included assumptions regarding forecast year developments and infrastructure. The 'Without Development' scenario excludes the proposed development and associated infrastructure for the proposed Hinckley NRFI development. It should also be noted the level crossing barrier downtimes for Narborough level crossing have been adjusted for the 2026 and 2036 'Without Development' scenarios (see Table 2.2).

2.4.4 No other network adjustments have been made except the signal timings representing the Narborough level crossing which is summarised in Table 2.2.

Table 2.2: Narborough Level Crossing Barrier Downtimes *
* Narborough level crossing barrier downtime assumptions for forecast model scenarios provided by BWB (via email, 07/01/2022 & 11/01/2022)

			Barrier Downtime (mm:ss)	
Scenario	**Year**	**AM Peak**	**Interpeak**	**PM Peak**
Base	2014	22:59	09:00	17:50
Without Development	2026 & 2036	22:59	15:00	17:50

Without Development With Infrastructure	2026 & 2036	22:59	15:00	17:50
With Development	2026 & 2036	22:59	17:00	20:21
With Development (Sensitivity Test)	2036	22:59	17:00	20:21

Summary

This document details:

- The impacts on road transport.
- The expected barrier downtime for future year scenarios.

It does not detail:

- The number and timings of all the new freight trains that will additionally use the Narborough Level Crossing once the HNRFI is fully operational.
- The impacts on signaller workload due to additional freight services.
- The details of the downtime values presented.

3.5 ES Appendix 3.1 Rail Operations Report

The Hinckley National Rail Freight Interchange
Development Consent Order
Project reference TR050007-000782
Environmental Statement
Volume 2: Appendices
ES Appendix 3.1: Rail Operations Report
Document reference: 6.2.3.1
Revision: 01

This report summarises the rail operational aspects of accessing the freight interchange. The following relevant sections have been identified.

1.1 NPS 4.85 ….. HNRFI adjoins Network Rail's Strategic Freight Network. The capacity has been checked by NR and it has capacity for the 16 intermodal trains per day (32 movements); and is gauged clear to W10. …..

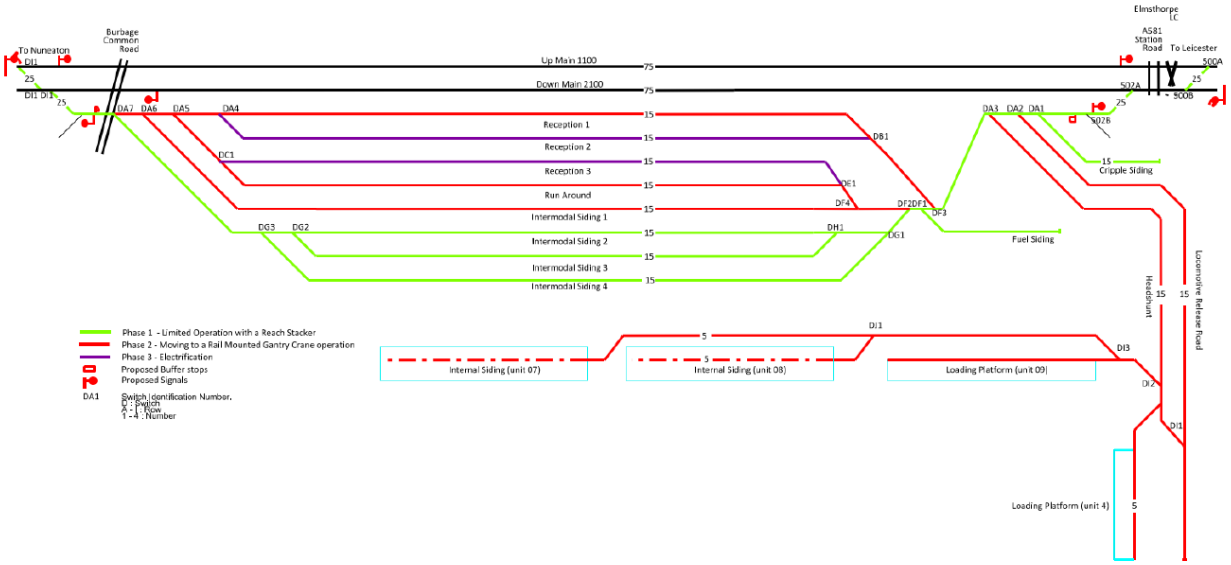
1.5 The detailed timetabling exercise that has been carried out by a specialist designer on behalf of Tritax Symmetry and verified by Network Rail has determined that there is capacity in the existing timetable to accommodate up to 16 intermodal freight trains per day, as derived from the handling capacity of the terminal, at the HNRFI Railport as part of the Proposed Development.

2.3 An intermodal freight terminal or 'Railport' capable of accommodating up to 16 trains up to 775m in length per day

2.7 Provision is made for two connections to the main line, allowing access for trains arriving and leaving from either direction with crossovers on the main line itself to allow freight trains to move from one track to another. As such, a train from the west would cross to the eastbound line before entering the HNRFI Railport and a train from the east would be able to enter the HNRFI Railport directly from the westbound line. Trains departing the railport follow the reverse operation with trains departing westbound directly, and those heading eastbound utilising the crossover.

2.8 Connections into the HNRFI from the main line have been designed so that trains can enter the terminal at a safe and appropriate speed, minimising the time that an arriving train takes to vacate the main line. The design speed of the turnouts has been agreed with Network Rail. This is to avoid causing delays to other rail services. 'Intermodal' trains carrying containers would enter the site from either direction and would run directly to sidings served by reach stackers and or gantry cranes, for unloading and loading.

Figure 2.3 - Schematic Indicative Layout of the full scheme for Hinckley Railport



Figures for the respective phases are provided on the Illustrative Railport Line Diagram 2.22 (70080518-WSP-DRG-ETR-000200).

Objective of Timetable

3.2 This timetable study takes the assumed May 2020 timetable (as agreed with Network Rail) for passenger and freight (pre COVID service alterations) on the route as a starting position. This approach includes two CrossCountry services an hour (and additional peak time services), together with a nominal path for this third passenger train as a sensitivity. It is assumed this service would call at Hinckley and Narborough. Weekdays only were considered as this is a worst case.

3.3 The objective of the timetable study is to confirm there is sufficient capacity available to support the proposed maximum capacity of 16 intermodal trains per day. For the purposes of this study the window between 0600 and 2300 has been conservatively taken to ensure no impact by overnight possessions. Based upon existing levels of operational infrastructure and assumed flows, 10 of these trains would arrive from the east and 6 from the west.

Timetable Assumptions

3.5 Passenger and Freight services are based on the May 2020 timetable pre COVID services for the CrossCountry trains between Birmingham and Leicester. An additional passenger service has been assumed to run between Leicester and Nuneaton, calling at Hinckley and Narborough, as a sensitivity to cover future aspirations.

3.7 Additional paths have been timed based upon a 775m container train hauled by a class 66 loco, 1800T at a maximum speed of 75 mph, which is a realistic typical worst case.

Study Findings – Leicester – Wigston North – Hinckley Rail Station

3.11 – The Line between Wigston North and Nuneaton has sufficient spare capacity to be able to accommodate 16 trains per day. This provides freedom for services to be timed to depart Hinckley Rail Station around slots into Leicester and reduces the risk of incoming and departing services being timed close to each other and therefore avoids creating the risk of trains being held on the mainline awaiting access into the Railport, delaying other passenger services.

3.12 – The study suggests there are up to 10 incoming paths and 10 departing paths a day (0600 to 2359) in this direction.

Study Findings – Stafford – Hinckley Rail Station

3.13 The study concludes that the route between Stafford and Hinckley NRFI is constrained today, particularly with conflicts in the Stafford area, but there would be sufficient capacity for paths to be routed this way to and from Hinckley NRFI. It is noted that following opening of HS2 Phase 2a, there is likely to be more capacity available for freight traffic through Stafford and therefore offer opportunities for future growth on this corridor; however, this capacity release is not required to run 6 trains per day to and from the north west.

Study Findings – Water Orton – Hinckley Rail Station

3.14 With CrossCountry services running at roughly half hourly intervals, and typically one through freight train an hour in the study area in each direction, there are a number of gaps between through trains for trains to arrive / depart the HNRFI Railport.

3.15 With departures the limiting factor it is concluded that there are opportunities for 9 incoming trains and 6 departures between Hinckley and Water Orton between 0530 and 2300. In practice this equates to six trains arriving and six trains departing per day with an opportunity to stable a further three at the depot.

Signalling Requirements and Operational Interface

3.18 Signalling and the Operational Interface have been considered in detail with Network Rail. The Engineers Line Reference at this location is WNS and control of the signalling is via the Kettering workstation located in the East Midlands Control Centre at Derby. The signalling system in this area is predominately 2 aspect.

7.3 The rail network capacity has been validated with Network Rail and there is confirmed capacity for 16 trains per day (32 movements) between 06:00 and 23:00, even without taking into consideration any movements between 23:00 and 6:00. The design of the mainline connections to the east and west end of the scheme and associated signalling has been considered with Network Rail. The signalling and operational interface arrangements have been validated by Network Rail's signalling Review Panel in support of the DCO application.

Summary

This document details:

- The base timetable is for a May 2020 timetable.
- The number of new freight services, 16 in each direction of which 10 would arrive from the east and 6 from the west.
- Hours of operation for new services between 06:00 and 23:00.
- The rolling stock used for new services will be W10 gauge cleared 775m container train hauled by a class 66 loco, 1800T at a maximum speed of 75 mph.
- The signalling and operational interface arrangements.

It does not detail:

- The number and timings of all the new freight trains that will additionally use the Narborough Level Crossing once the HNRIF is fully operational.
- The impacts on signaller workload due to additional freight services.

3.6 ES Chapter 19 Accidents and disasters

The Hinckley National Rail Freight Interchange
Development Consent Order
Project reference TR050007-000712
Environmental Statement
Volume 1: Main Statement
Chapter 19: Accidents and disasters
Document reference: 6.1.19
Revision: 03

This report summarises the safety aspects rail operation of accessing the freight interchange. The following relevant sections have been identified.

19.11 Risks and dangers associated with freight and concerns regarding Narborough train crossing - risks associated with increased rail freight movements and level crossings are assessed in the operational hazards section.

19.56 Following discussion with Network Rail, the application incorporates the measures in Table 19. 2 to maintain public safety and mitigate key risks at level crossings. In addition, the Rail Operations Report (Appendix 3.1 - document reference 6.2.3.1) reviewed potential hazards to rail operations at the level crossing in central Narborough and confirms risks are ALARP.

Summary

This document details:

- Very high level details about risks associated with increased freight movements.

It does not detail:

- The specific elements that impact on the level crossing risk assessment

3.7 Narborough Level Crossing - 10.05.2022

Network Rail has commented on the level crossing and recommendations have already made by for the crossing. This is useful information as it shows that the crossing has some known safety issues which can be addressed.

The principal issues are as follows, and take into account the knowledge and input of the Level Crossing Manager for the Leicester to Nuneaton line who regularly visits the site to carry out Asset Inspections and Risk Assessments:

i. Poor highway configuration (mini roundabout junction, bus stops sub-optimally placed and entrances to commercial premises) north of the crossing on Station Road.

ii. Significant increases in traffic volumes through local residential developments that have failed to recognise the impact of the traffic arising on the crossing.

iii. Poor driver discipline in terms of blocking back onto the railway, i.e. becoming stationary on the crossing for a period of no less than five seconds owing to road traffic preventing egress from the crossing area, and Red Light infringements.

From a Network Rail perspective, we will be examining two proposals, namely the provision of yellow box markings between the vehicular Stop lines on both sides of the crossing and re-activation of the Red-Light Violation Camera to discourage deliberate contravention of the Road Traffic Light Signals.

4. Suitability of Findings for Submission

In this section the findings from the document review are summarised and reviewed for their suitability for assessing level crossing downtime impacts given the increased train service level.

Considering the points outlined in Section 3.1 we can assess which have been met by the reviewed documents.

- An understanding of the process for closing the crossing when trains are approaching. Not explained.
- An understanding of the process for opening the crossing when trains have passed. Not explained.
- The impact of trains which stop at Narborough station on crossing closure time. Not explained.
- The impact of trains which may be required to stop at a signal impacted by the closure process for the level crossing. Not explained.

The documents do not include discussion of the details of the railway operational aspects of the level crossing. The downtime is impacted by the signalling system and the procedure for ensuring that the crossing gates are down and that the roadway is clear of obstructions. The route in this location has three aspect colour light signalling, 90mph running and the crossing is Manually Controlled Barrier with Closed Circuit Television MCB (CCTV), see appendix A.1.1 and A.1.3 . This means that before the signalled route can be set for trains the signaller based in the Derby Route Operating Center (ROC) must instigate the gate crossing procedure and ensure that the route is clear of obstructions, using the CCTV and then set the route for the train. If there are two trains arriving within a short period of each other then the signaller will need to decide whether to hold the barriers down or to open and close for a short time, no details or guidance of timings are given. Given the manual activities involved in this activity there is going to be a variation in crossing downtime depending on the conditions and staff each day. This process will alter depending on if the train stops at the station or the type of train and speed that it is traveling. These elements are not explained in the reports and a standard 2min 30s downtime for road closure is assumed for the road traffic modelling. From the observed data on the 3rd November 2021 provided in appendix A.1.4 there is a range of closure time from between 2min 5s and 5mins 20s. There is only limited evidence that the 2min 30s allowance is robust, particularly for westbound services stopping at the station where the crossing is closed before a train arrival, for the duration of the station dwell and until after departure and clearance of the crossing.

It is stated that as the downtime is around 20mins per hour then this is acceptable however, there is no source for this assumption or evidence related to the site specific conditions. For the data provided in the AM and PM peak there are times when downtime of more than 20mins per hour is observed.

- The current train services operating through the crossing and crossing downtimes. Partially provided.
- The future train services operating through the crossing and crossing downtimes. Partially provided.

The documents review the crossing downtimes for the current trains in the timetable for the AM and PM peak for a single day of operation. They do not include any off-peak downtime information or any allowance for the variation in train service or downtimes across different days of operation. Freight services that are planned in the Working Timetable (WTT) are not all operated on any specific day so there can be quite substantial differences for different days. Buy only reviewing a single day it is likely to create an optimistic view of the level of services with the risk that on other days more freight are likely to operate and increase crossing downtimes further.

The assessment of future trains services is based on a timetable study to verify that paths to strategic destinations exist. The documents identify specific timed paths in the peak with an assumed 2min 30s downtime. An hourly path off-peak is identified but no timings are given related to the downtime. During the off-peak freight usage is typically higher so downtimes may be more greatly impacted by the additional services.

- An estimation of the change in level crossing closure time and the possible impact on traffic flows on Station Road. Partially provided.

The documents detail the impact on the highway for the identified potential train paths. This assessment uses the 2min 30s downtime assumption and train paths identified in the peak. The assessment is likely to be optimistic for the off-peak given variability in downtime and number of freight paths operated on a busy day.

- Elements that may alter the current risk status of the crossing. Not explained.

The documents do not include discussion about the formal process for level crossing risk assessments. There are many different and localised factors that will be included in a level crossing risk assessment. The current status of the collective risk is high rated 4 (1 is highest 13 is lowest risk). See Appendix A.1.2 . Typical details that ought to be considered as a whole Risk assessments are required when level crossings may be affected by renewal due to condition of the equipment, or changes to signalling, track, line speed and rolling stock, and non-railway schemes such as local residential or business developments and road schemes. The impact of those changes must be assessed to ensure the most safe and suitable type of protection is provided at each level crossing, and any potential risks are mitigated 'So Far As Is Reasonably Practicable' (SFAIRP).

The risk assessment will typically require a usage Census that will determine the types of road/rail traffic and pedestrians that use level crossings are a key consideration in providing the most safe and suitable type of protection. This together with user operation and facilities, road visibility, vehicle types, business premises in the vicinity, signalling arrangements, line speed, rolling stock type and train lengths, changes in train volume and environmental conditions.

- Evaluation to assess if the assumptions made in the work are robust. Partially provided.

The document outlines the basic assumptions for the work undertaken although the focus of this analysis has been for the traffic and highways impacts using the basic railway assumption of 2min 30s and 16 new freight services per day, inbound and outbound with 10 from the east (via Narborough) and 6 from the west. The assumption of the number of current WTT freight services operated on a normal/nominal or worst case day is not considered in this analysis.

5. High Level Assessment

This section undertakes a review of the high level assessment for the level crossing using the data contained in the documents or data from industry sources such as Network Rail and the Office for Rail and Road. The aim of the assessment is to provide a guide as to the potential impact on crossing downtime by reviewing the number of trains that pass the level crossing at Narborough.

5.1 Assumptions

The following assumptions have been applied:

- Type of trains – Current services as per today. New services 775m container train hauled by a class 66 loco, 1800T at a maximum speed of 75 mph, W10 gauge cleared.
- Number of trains – 16 new freight services per day, (16 inbound and 16 outbound) with 10 (10in + 10out) from the east (via Narborough) and 6 (6in + 6out) from the west.
- Base timetable – May 2022 WTT for this exercise (2020 used previously but no major changes)
- Assumed downtime – 2mins 30s per train – no overlap between eastbound and westbound services passing within the same crossing closure time and no holding barriers down when there is a short time between services.
- Study time – 06:00 to 23:00

5.2 Calculation

A summary of the trains in the working timetable and the above assumptions have been used to calculate for each hour of the day the number of trains and estimated length of downtime. Trains have been selected for a Wednesday operation and duplicate services to different destinations have been removed.

Description of column headings

Column	Description
WTT Passenger trains	number of passenger trains in the working timetable
WTT Freight trains	number of freight trains in the working timetable
Total WTT trains	total number of trains in the working timetable
Actual freight service observed	Number of freight trains observed on the 3rd November 2021 during the peaks
Downtime observed (mm:ss)	Downtime observed on the 3rd November 2021 during the peaks
Downtime per hour (mm:ss)	Calculated downtime using 2min 30s per train per direction and above assumptions
New trains proposed	Number of proposed new trains operating over the crossing trains 10 inbound plus 10 outbound (from the east via Narborough)
New downtime per hour (mm:ss)	Calculated downtime using 2min 30s per train per direction and above assumptions

The table below shows the number of trains per hour in the May 2022 working timetable and calculated downtime impacts of new services.

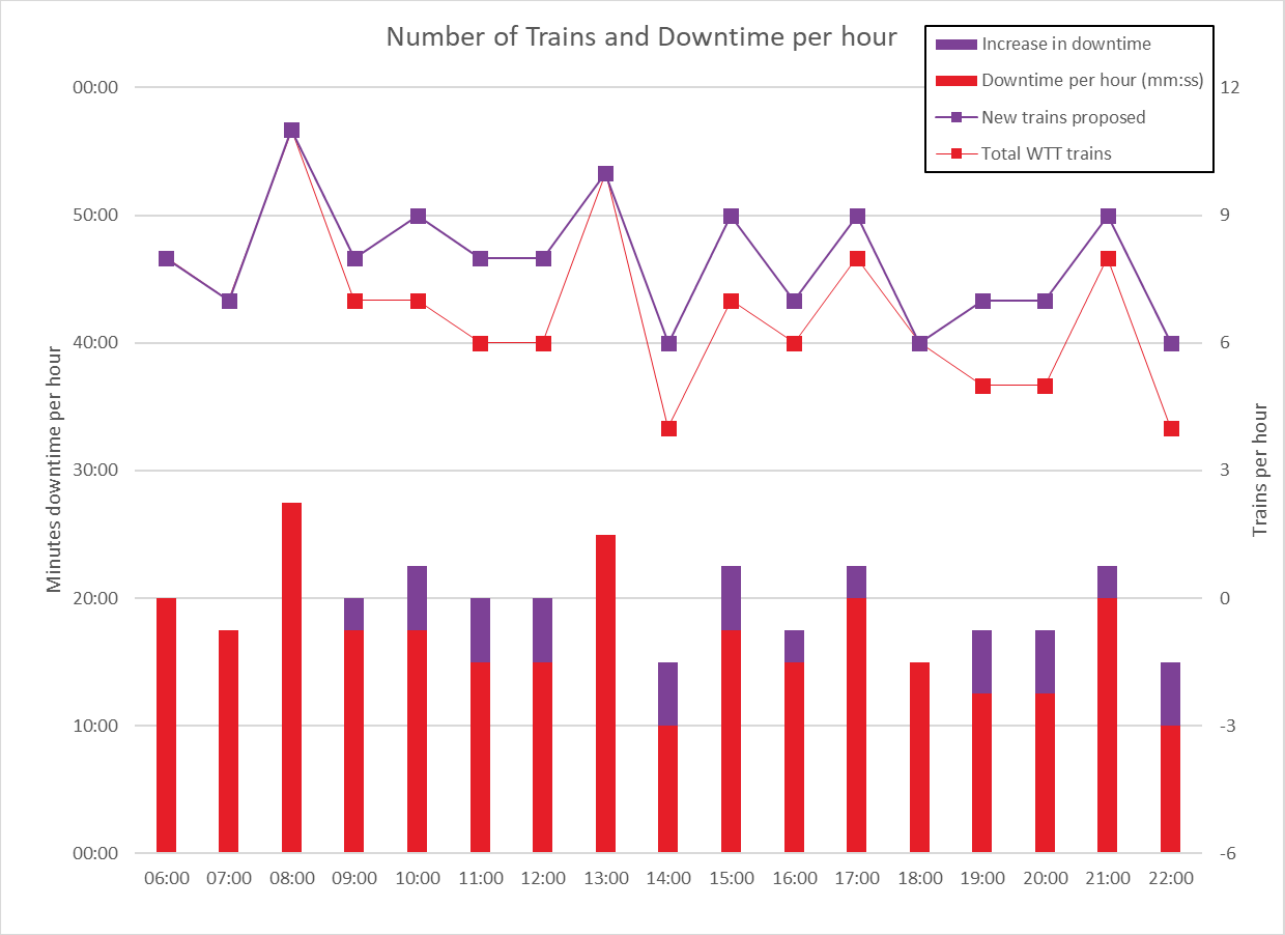
Start	Finish	WTT Passenger trains	WTT Freight trains	Total WTT trains	Actual freight	Downtime	Downtime per hour (mm:ss)	New trains	New downtime

					service observed	observed (mm:ss)		propose d	per hour (mm:ss)
06:00	06:59	4	4	8			20:00		20:00
07:00	07:59	4	3	7	2	21:37	17:30		17:30
08:00	08:59	5	6	11	4	22:59	27:30		27:30
09:00	09:59	4	3	7	1	16:04	17:30	1	20:00
10:00	10:59	4	3	7			17:30	2	22:30
11:00	11:59	4	2	6			15:00	2	20:00
12:00	12:59	4	2	6			15:00	2	20:00
13:00	13:59	4	6	10			25:00		25:00
14:00	14:59	4	0	4			10:00	2	15:00
15:00	15:59	4	3	7			17:30	2	22:30
16:00	16:59	5	1	6	1	20:05	15:00	1	17:30
17:00	17:59	4	4	8	0	20:21	20:00	1	22:30
18:00	18:59	5	1	6	0	15:16	15:00		15:00
19:00	19:59	4	1	5			12:30	2	17:30
20:00	20:59	4	1	5			12:30	2	17:30
21:00	21:59	4	4	8			20:00	1	22:30
22:00	22:59	1	3	4			10:00	2	15:00

The timing of proposed new services has not been undertaken here but they have been allocated to hours where the timetable study has identified available paths or where there are fewer trains in the timetable.

Using the nominal 20 minute rule it can be observed that there are a number of hours during the day when this time is exceeded, two in the current operation and six in the future operation. If fewer existing WTT freight services operate this will be reduced. If the down time assumption is greater than 2mins 30 then this will be increased.

The graph below shows the distribution of downtime and number of trains for each hour of the day.



The table below give a sample of the trains that have been used for 07:00 to 08:00 to undertake the analysis of the May 2022 WTT.

Time	Direction	Origin	Destination	Operator	stop/ pass	Days	Train ID	Closure	Opening
07:02:30	Eastbound	BHAMNWS	STANAIR	XC	pass	SX	1L28HX	07:00:30	07:03:00
07:03:00	Westbound	FLXSSGB	KNGSBCG	ZZ	pass	MSX	4M04EG	07:01:00	07:03:30
07:13:30	Westbound	CAMBDGE	BHAMNWS	XC	pass	SX	1N40EV	07:11:30	07:14:00
07:17:30	Eastbound	KGMRVQ	LESTHR5	ZZ	pass	FSX	6M21AS	07:15:30	07:18:00
07:32:30	Westbound	LESTER	BHAMNWS	XC	stop	SX	1P04EX	07:30:30	07:33:00
07:38:00	Eastbound	BHAMNWS	LESTER	XC	stop	SX	1K03EV	07:36:00	07:38:30
07:44:30	Westbound	FLXSNGB	TRFDEUG	ZZ	pass	MSX	4M18FB	07:42:30	07:45:00
08:00:00	Westbound	STANAIR	BHAMNWS	XC	stop	SX	1N41EV	07:00:30	07:03:00

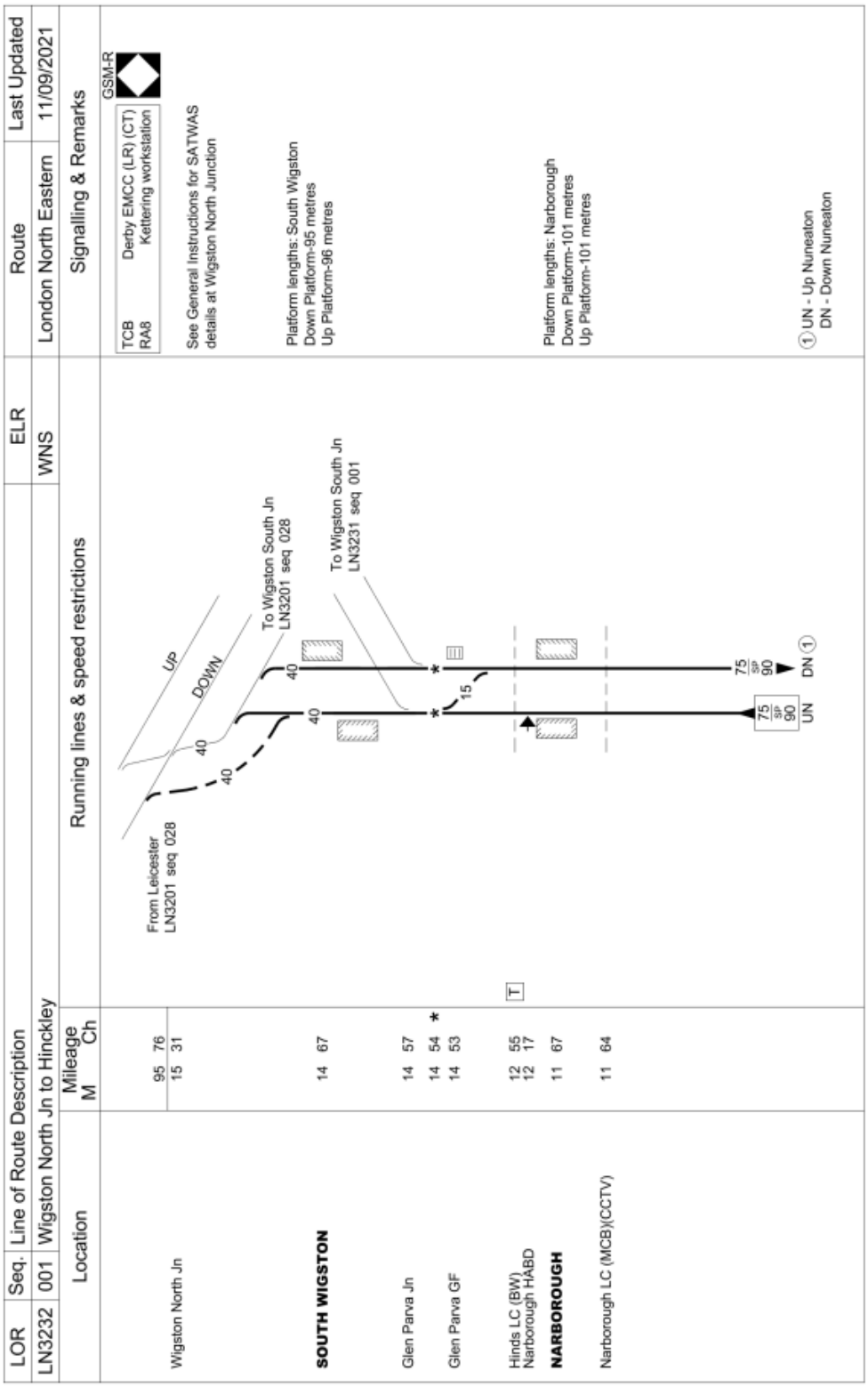
5.3 Summary

The difference between the WTT freight numbers and the trains observed on the 3rd November 2021 is quite significant and reflects the variance between. It is also worth noting that the observed downtime and the calculated downtime vary both higher and lower showing the need for a more detailed analysis for the variability of downtimes and impacts of multiple trains in a single closure.

This is a basic assessment making the simple assumption of 2.5 minutes per train, whilst it can be seen from observed its more nuanced than that. This highlights the need for the assessment to be completed with more detail to understand the future impact and also shows than in some hours the observed data is more than the "20 minutes in the hour" assumption.

A.1 Appendix

A.1.1 Sectional Appendix



A.1.2 Crossing Overview

Location	CRS	NLC	TIPLOC	STANME	STANOX	Line	ELR	Chainage
Narborough	NBR	188100	NARBRO	NARBORO	59301	LN3232	WNS	11m.63ch

Asset Name: Narborough **Asset Type:** Level Crossing
Sub-type: Public Highway Manually Controlled Barriers (locally monitored by CCTV)

Location Details

ELR: WNS
Railway Location: 11m 63ch. / 11m 1394yds.
Railway Location (rounded): 11.79 miles / 18.97Km
Lat & Long Coordinates: 52.57108,-1.203575
Locality: Narborough CP

Inspection Details

Last Inspection: November 2019 **Next Inspection Due:** February 2022
Line Speed: 90 mph **Type of Trains:** Passenger & Freight
Estimated Usage: 5670 Vehicles 567 Pedestrians or Cyclists
Trains Per Day (approx.): 115
Key Risks:

* Crossing is Near a Station
* Large Numbers of Users
* Sun Glare
* Deliberate Misuse or User Error
* Frequent Trains

Protection Arrangements:

* Train signalling protection
* CCTV monitoring by Signaller
* Road traffic light signals
* Full barrier equipment
* Audible alarm
* Signage

Individual Risk: H **Collective Risk:** 4

Individual Risk Rating is the risk to individual users of the crossing. It is presented as a single letter, with A being the highest risk and M being the lowest.

Collective Risk Rating is the overall risk of any incident involving any person or vehicle on the crossing, including train staff and passengers as well as users of the crossing. It is presented as a number, with 1 being the highest risk and 13 being the lowest. This is the most important rating when prioritising safety measures at level crossings.

A.1.3 Level Crossings: A guide for managers, designers and operators (ORR)

Level crossing types – basic protection and warning arrangements

Figure 1

Protection from train movements	Crossing confirmed clear	Warning arrangements	Full barriers/gates	Half barriers	No barriers	Telephone "protection"
Protected	By signaller or crossing keeper		MCG			
			MCB			
			MCB (CCTV)			
	By obstacle detector		CB-OD			
	By driver			ABCL		
					AOCL	
	By train crew/other		TMO			
Unprotected		Approaching Train		AHB		
					UWC (MSL)	
					FP (MSL)	
		Telephone				UWC (T)
		Line of Sight			OC	
					UWC	
					FP/BW	

MCG: manually controlled gated crossing
MCB: manually controlled barrier crossing
MCB (CCTV): manually controlled barrier crossing with closed circuit television
CB-OD: controlled barrier crossing with obstacle detection
ABCL: automatic barrier crossing locally monitored
AOCL: automatic open crossing locally monitored
TMO: train crew (or other peripatetic railway staff) operated crossing
AHB: automatic half barrier crossing
UWC (MSL): user worked crossing with miniature stop lights
FP (MSL): footpath crossing with miniature stop lights
UWC (T): user worked crossing with telephone
OC: open crossing
UWC: user worked crossing
FP/BW: footpath or bridleway crossing

Protection from train movements ensures that trains are not authorised to pass over the crossing until the crossing is closed and the crossing area has been checked to be clear.

Unprotected crossings depend on a warning being given to crossing users of an approaching train so that they can be clear before the train arrives. It is unlikely that the train can be stopped if the crossing is not clear.

Telephones are fitted to several crossing types for a range of purposes. At a UWC (T) the warning of an approaching train is achieved by contacting the signaller. For this to be effective the user must make the call and the signaller must be able to advise how close the nearest train is.

Barrier crossings operated by railway staff

General description

2.42 This type of crossing is protected by road traffic light signals and lifting barriers on both sides of the railway. An audible warning to pedestrians is also provided. The barriers are normally kept in the raised position and, when lowered, extend across the whole width of the carriageway on each approach.

2.43 The crossing is operated by infrastructure manager staff who start the road traffic light signal sequence and then lower the barriers. The lowering and raising cycles may be initiated automatically.

2.44 Road traffic light signals may not be necessary where the barriers are normally in the lowered position and are clearly visible from an appropriate distance to approaching road traffic. Where no road traffic light signals are provided, the number of road vehicles during the peak hour should not exceed 20 and the permissible speed of the railway should not exceed 100 mph.

2.45 Telephones for public use are not normally required.

Method of operation

2.46 This type of crossing may be operated:

(a) by infrastructure manager staff stationed at a control point adjacent to the crossing when the line is open to rail traffic;

(b) by infrastructure manager staff stationed at a control point remote from the crossing using closed-circuit television (CCTV), whenever the line is open to rail traffic;

(c) by infrastructure manager staff at a control point adjacent to the crossing after an approaching train has been stopped short of the crossing.

2.47 For all methods of operation the person operating the crossing equipment should have a clear and full view of the crossing (including the barriers) from the control point, either directly or by CCTV.

2.48 Where the barriers are normally raised, the sequence of events to close the crossing to road traffic, once the lowering cycle has been initiated either manually or automatically, is:

(a) the amber light on each of the road traffic light signals immediately shows and the audible warning begins. The amber lights should show for approximately 3 seconds (up to 5 seconds to suit road conditions);

(b) immediately the amber lights are extinguished, the intermittent red lights should show;

(c) approximately 4 to 6 seconds later the barriers should start to descend. Where pairs of barriers are provided, the *right-hand side* (see Appendix A) barriers should not begin to descend until the *left-hand side* (see Appendix A) barriers are fully down. The time for each barrier to reach the lowered position should normally be 6 to 10 seconds. At skew crossings, where the crossing distance is greater, barrier timings may need to be lengthened accordingly. The closure sequence should be monitored by the operator, particularly if queuing vehicles or heavy usage by pedestrians is likely to increase risk;

(d) the audible warning for pedestrians should stop when all the barriers are fully lowered;

(e) the intermittent red lights should continue to show; and

(f) the crossing should be viewed carefully to ensure that there are no persons or obstructions present, before 'crossing clear' is confirmed and railway signals cleared for the passage of trains

2.49 The sequence of events to open the crossing to road traffic, once the raising cycle has been initiated either manually or automatically, is:

(a) all the barriers begin to rise simultaneously and should normally rise in 4 to 10 seconds; and

(b) the intermittent red lights should be extinguished as the barriers rise.

2.50 Where barriers lower automatically, they should not lower unless at least one red light in all the road traffic light signals is shown in each direction from which users may approach the crossing. If CCTV monitoring is provided, initiation of automatic lowering should switch on the CCTV monitor and give an audible indication at the control point.

2.51 Where automatic lowering is used, provide two barriers on each approach to avoid road users becoming trapped on the crossing.

2.52 Once the barriers have started to descend, the lowering cycle is completed in the normal sequence even if all the red road traffic light signals facing in one direction fail. The barriers may then be raised when it is safe to do so. Where, in these circumstances, the barriers have not started to descend, they should remain in the raised position.

2.53 Barriers should rise as soon as practicable after all trains for which the lower sequence has been initiated or maintained, have passed clear of the crossing.

Railway signalling and control

2.54 Provide railway signals, to fully protect the crossing, on all railway approaches. Interlock these signals with the lifting barriers so that it is not possible to clear the signals unless the road is fully closed by the barriers. It should not be possible to raise the barriers unless the signals are set at Stop and are free of approach locking, or the train has passed the signal and traversed the crossing.

2.55 Where the barriers are power operated, there should be controls at the control point to raise, stop, and lower the barriers. It should not be possible to clear any protecting signals until a further control to confirm 'crossing clear' has been operated with the barriers down.

2.56 If a train passes a protecting signal at Stop, the road traffic light signals should immediately show an intermittent red light (omitting the steady amber phase), and the audible warning should start. The barriers should not be lowered as this may strike or trap crossing users.

2.57 If the crossing is operated by one of the crew of an approaching train (or other peripatetic staff), after the train has been stopped short of the crossing, interlocking between the signalling and barriers is not required. Instead, a warning board is to be provided at full service braking distance from a stop board placed at a suitable point, not normally less than 50 m, before the crossing to remind the train driver to stop short of the crossing. The control point should be placed adjacent to the crossing..

2.58 To ensure that the crossing operates safely when the railway line is open to traffic, indicators at the control point should confirm that the equipment is powered and functioning correctly.

A.1.4 Narborough Peak Hour Barrier Down Times

Narborough LC Barrier Down Times 03.11.21. Morning Peak

Barrier Down Time			07.00 - 08.00 (min:sec)	08.00-09.00 (min:sec)	09.00-09.15 (min:sec)	Total Barrier Down Time per Event (min:sec)	Crossing Open to Highway (OTH) (min:sec)
Event	Yellow Light Activation	Barriers Raised					
07.00 - 08.00							
1	07:00:00*	07:04:19	4:19			4.19	
OTH between Events							8.06
2	07:12:25	07:15:11	2.46			2.46	
OTH between Events							7.47
3	07:22:58	07:28:13	5:15			5.15	
OTH between Events							1.47
4	07:30:00	07:34:38	4.38			4.38	
OTH between Events							2.48
5	07:37:26	07:40:19	2.53			2.53	
OTH between Events							17.55
6	07:58:14 AM	08:02:55 AM	1.46			1.46	
		Total:	**21.37**			**21.37**	**38.23**
08.00 - 09.00							
6 (cont)	07:58:14 AM	08:02:55 AM		2.55		2.55	
OTH between Events							2.48
7	08:05:43 AM	08:08:45 AM		3.02		3.02	
OTH between Events							15.53
8	08:24:38 AM	08:29:29 AM		4.51		4.51	
OTH between Events							4.27
9	08:33:56 AM	08:38:18 AM		4.22		4.22	
OTH between Events							8.39
10	08:46:57 AM	08:52:04 AM		5.07		5.07	
OTH between Events							5.09
11	08:57:13 AM	08:59:55 AM		2.42		2.42	
OTH between Events							0.05
		Total:		**22.59**		**22.59**	**37.01**

09.00-10.00							
OTH between Events							1.27
12	09:01:27 AM	09:03:43 AM			2.16	2.16	
OTH between Events							3.33
13	09:07:16 AM	09:10:17 AM			3.01	3.01	
OTH between Events							0.43
13a	09:11:00	09:13:31			2.31	2.31	
							11.58
14	09:25:29 AM	09:30:15 AM			4.46	4.46	
OTH between Events							4.51
15	09:35:06 AM	09:38:27 AM			3.21	3.21	
OTH between Events							18.26
16	09:56:53 AM	09:59:33 AM			2.40	2.40	
OTH between event 16 and 10.00							0.27
				Total:	**16.04**	**16.04**	**43.56**
Hinckley Impact: - 1 identified additional Hinckley path (13a) timed at 75mph therefore 2.31 to clear the crossing from yellow light activation to barrier raised.					2.31	2.31	-2.31
Worst Case increase in barrier down time*					**18.35**	**18.35**	**41.25**

NOTES:

1. Timings for barrier down/barrier raised in black are actual times recorded by the Network Rail datalogger for Wednesday 3rd November 2021. In practice barrier down times may vary slightly from day to day for operational reasons and (for stopping services) due to variations in station dwell time. As such these times should be regarded as **indicative** rather than **absolute** values.
2. The additional Hinckley service is estimated to pass Narborough at 09.11 therefore it is possible that there will be an overlap with event 13 (east and west bound services on the crossing simultaneously). If so the barrier down time impact will be less than the worst case above.

Narborough LC Barrier Down Times 03.11.21. Evening Peak

Barrier Down Time			16.00-17.00 (min:sec)	17.00-18.00 (min:sec)	18.00-19.00 (min:sec)	Total Barrier Down Time per Event (min:sec)	Crossing Open to Highway (OTH) (min:sec)
Event	Yellow Light Activation	Barriers Raised					
16.00-17.00							
1*	16:00:00	16:02:05	2.05			2.05	
OTH between events							2.06
2	16:04:11	16:06:54	2.43			2.43	
OTH between events							4.06
2a	16:11:00	16:13:31	2.31			2.31	Combined or overlapping
3	16:12:44	16:15:27	2.43			2.43	events.
		Total barrier down time:	4.27			4.27	
OTH between events							10.22
4	16:25:49	16:30:31	4.42			4.42	
OTH between events							8.49
5	16:39:20	16:42:22	3.02			3.02	
OTH between events							9.34
6	16:51:56	16.55.02	3.06			3.06	
OTH Event 6 to 17.00							4.58
		Total:	**18.21**			**18.21**	**41.39**
Hinckley Impact: 1 additional train timed through Narborough around 16.11. Treat as stand alone to events 2 and 3			1.44			1.44	-1.44
			20.05			**20.05**	**39.55**

* Yellow flashing light activation at 15:59:58

17.00 - 18.00							
OTH between 17.00 and event 7							1.31
7	17:01:31	17:05:47		4.16		4.16	
OTH between events							3.18
8	17:09:05	17.11.47		2.42		2.42	
OTH between events							3.13
8a	17:15:00	17:17:31		2.31			2.31
OTH between events							9.2
9	17:26:51	17:32:11		5.20		5.20	
OTH between events							4.18
10	17:36:29	17:39:46		3.17		3.17	
OTH between events							12.46
11	17:52:32	17:54:47		2.15			
OTH post Event 11 to 18.00							5.13
			Total:	**17.50**		**17.50**	**42.10**
Hinckley Impact: 1 additional train timed at Narborough around 17.15. Assume stand alone with no overlap with an existing service therefore +2.31 seconds				2.31		2.31	-2.31
				20.21		**20.21**	**39.39**

18.00-19.00							
OTH 18.00 to Event 12							1.31
12	18.01.31	18.06.31			5.00	5.00	
OTH between events							18.50
13	18:25:21	18:30:07			4.46	4.46	
OTH between events							6.16
14	18:36:23	18:39:19			2.56	2.56	
OTH between events							18.07
18**	18:57:26	19:00:00			2.34	2.34	
				Total:	**15.16**	**15.16**	**44.44**

** Barriers raised at 19:00:15

NOTE: Timings for barrier down/raise in black are actual times recorded by the Network Rail datalogger for Wednesday 3rd November 2021. In practice barrier dow times may vary slightly from day to day for operational reasons and (for stopping services) due to variations in station dwell time. As such these times should be regarded as **indicative** rather than **absolute** values.

Appendix 3

Narborough Traffic Impact Report (M-EC)

MEC
Development Technical Consultants

TRANSPORT

Hinckley National Rail Freight Interchange
Transport Technical Note
August 2023

Report Ref: 27944-TRAN-0801

Hinckley National Rail Freight Interchange
Transport Technical Note
August 2023

REPORT REF: 27944-TRAN-0801

CLIENT: Blaby District Council

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REGISTRATION OF AMENDMENTS

Date	Rev	Comment	Prepared By	Reviewed and Approved By
Aug 2023	-	First issue	**Laura Gregson** **BSc (Hons)** Graduate Transport Planner	**Tim Rose** **BA (Hons), MTPS, MCIHT** Director

CONTENTS

1.0 INTRODUCTION

1.1 Mewies Engineering Consultants Ltd (M-EC), has been commissioned by Blaby District Council (hereafter referred to as 'the Client') to prepare a Technical Note as part of their Local Impact Reporting for the proposed Hinckley National Rail Freight Interchange (hereafter referred to as 'the HNRFI'). An impact review of the HNRFI has been requested in relation to the specific impact of the proposed development on the Narborough Level Crossing situated on Station Road, Narborough and what the highway impact of potential additional barrier time would be.

1.2 A regional site location map can be found below in **Figure 1.1** demonstrating the proposed HNRFI in relation to the site.

Figure 1.1: Regional Map

Source: Google Earth

1.3 This Technical Note has been prepared to assess the impact of the scheme at the level crossing based on concerns raised by BDC in relation to increased barrier down time as a result of the proposed Hinckley National Rail Freight development. This report has been written with reference to ARUPs 'Hinckley National Rail Freight Interchange - Narborough Level Crossing Downtime' report published July, 2023 and all Transportation documents submitted as part of the ES Chapter 8 dated November 2022.

Disclaimer

1.4 M-EC has completed this report for the benefit of the individuals referred to in paragraph 1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from M-EC.

1.5 M-EC accepts no responsibility or liability for:

a) The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;
b) The issue of this document to any third party with whom approval for use has not been agreed.

2.0 NARBOROUGH LEVEL CROSSING DESCRIPTION AND PROPOSED DEVELOPMENT

Existing Site Description

2.1 The Level Crossing is located in south Narborough crossing through Station Road, linking the Leicester Road / Station Road mini-roundabout junction to the north to the Station Road / Riverside Way priority-controlled T-junction to the south. **Figure 2.1** provides a location of the level crossing and surrounding highway network context. All roads in the vicinity of the application site operate under a 30mph speed restriction and is monitored by speed camera infrastructure.

Figure 2.1: Aerial View of Level Crossing and Local Junctions

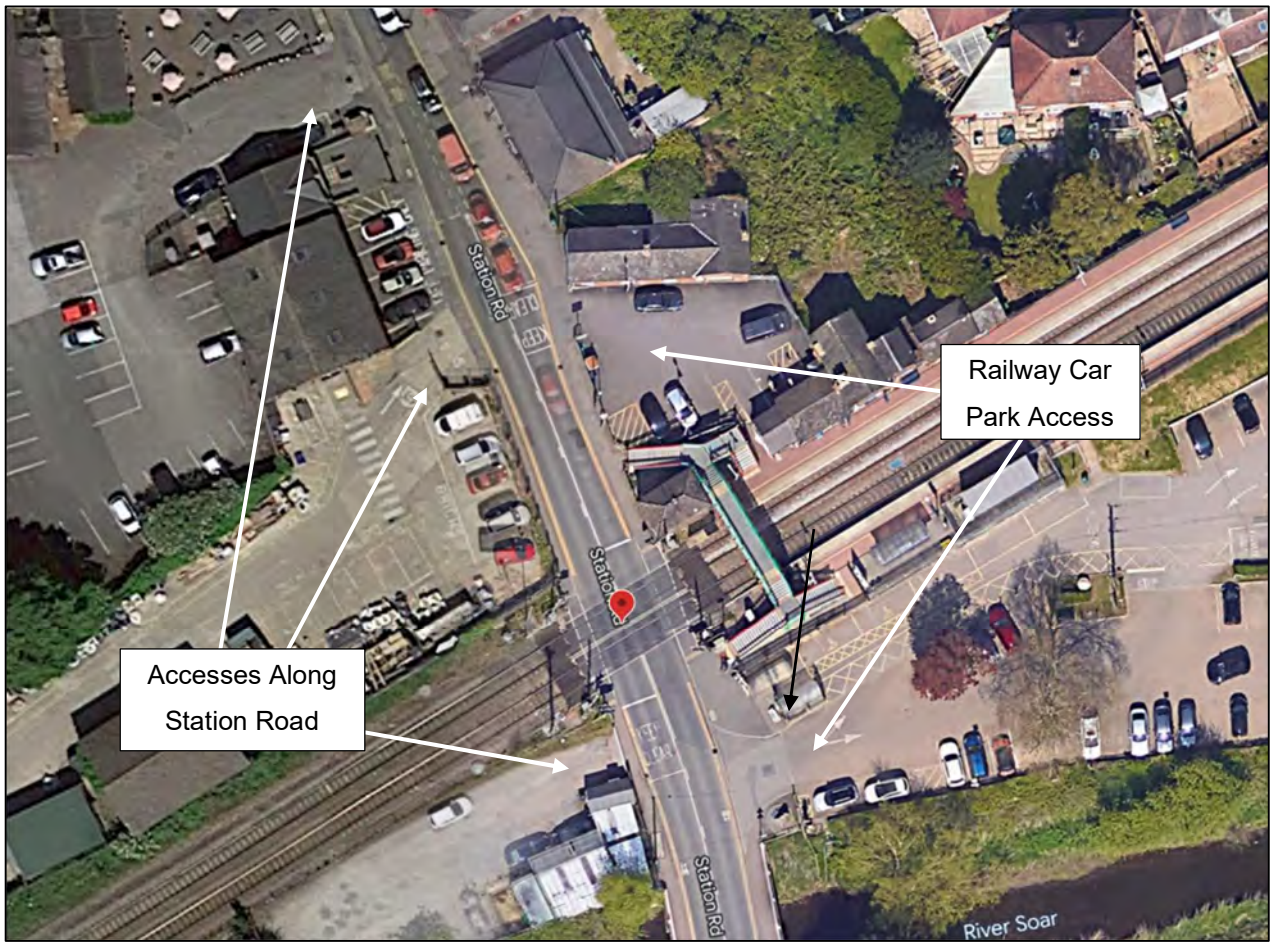
Source: Google Earth

2.2 The Level Crossing is bounded by retail units along Station Road to the north and residential properties on Jubilee Crescent to the northeast. To the south the Level Crossing is bounded by the River Soar; beyond this is Thorpe Meadows woodland to the southwest and private green space to the southeast.

2.3 Vehicular access to the Narborough Railway Station car parks connects to Station Road via two access ways either side of the level crossing site approximately 26m north and 17m south. As per shown by **Figure 2.2,** the west edge of Station Road demonstrates three access ways; the most north serves the Narborough Arms

estimated 55m from site; the second car park access serves the retail unit Skill Stone with an access circa 27m north of site; approximately 10m south is the third gated access serving G & M Fuels Ltd.

Figure 2.2: Aerial View of Exisiting Site Location



Source: Google Earth

2.4 Footways, approximately 2m in width south of site, are provided on both sides of Station Road. The footway on the west edge narrows to circa 1m width just north of site and returns to a regular 2m estimated width once past the Skill Stone access way. The east edge expands to 4m north of site to provide for footfall to retail units.

2.5 The site is street lit sporadically on both sides of the single two-way carriageway and has an approximate carriageway width of 7m – 7.3m at the crossings signalled stop lines, as shown in **Figure 2.3**.

Figure 2.3: View of Existing Site Carriageway

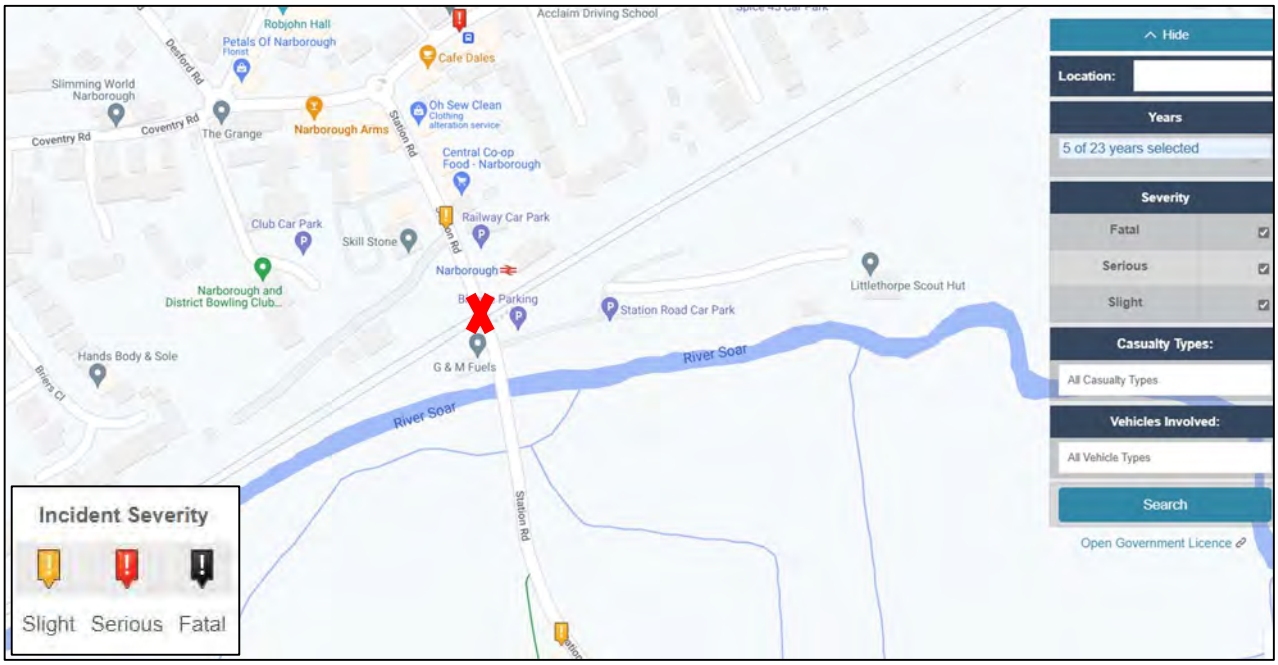
Source: Google Maps

2.6 A footbridge is present on the eastern side of the site aiding pedestrians changing platform while the barriers are down; given the design of the footbridge, where it can be accessed off Station Road either side of the crossing, the footbridge also acts as a bypass for pedestrians walking down Station Road when the barriers are active.

Road Collison Data

2.7 A review of the highway safety record at the level crossing has been reviewed using PIC data from Crash Map (crashmap.co.uk) over the most recent 5-year period between 2017 – 2021. The reviewed data from Crash Map is based on information from the Stats19 database and is summarised in **Figure 2.4**; the red 'X' indicates the site's location.

Figure 2.4: Recorded Personal Injury Incidents 2017-2021 (Crash Map)



Source: Crashmap.co.uk

2.8 As it can be shown, 3 collisions, resulting in 2 slight and 1 serious injury, have been recorded sporadically across the site vicinity.

Proposed Development

2.9 The proposed development for the HNRFI detailed by Tritax Symmetry (Hinckley) Limited (April 2023) publication 'Environmental Statement – Chapter 3' is as follows:

- The demolition of Woodhouse Farm, Hobbs Hayes Farm, Freeholt Lodge and the existing bridge over the Leicester to Hinckley railway on Burbage Common Road;
- new rail infrastructure including points off the existing Leicester to Hinckley railway providing access to a series of parallel sidings at the HNRFI, in which trains would be unloaded, marshalled and loaded;
- an intermodal freight terminal or 'railport' capable of accommodating up to 16 trains up to 775m in length per day, with hard-surfaced areas for container storage and HGV parking and cranes for the loading and unloading of shipping containers from trains and lorries;
- up to 850,000 square metres (gross internal area or GIA) of warehousing and ancillary buildings with a total footprint of up to 650,000 square metres and up to 200,000 square metres of mezzanine floorspace, including the potential for some buildings to be directly rail connected if required by occupiers. These buildings might incorporate ancillary data centres to support the requirements of HNRFI occupiers and operators. They will also incorporate roof-mounted photovoltaic arrays with a generation capacity of up to 42.4 megawatts (MW), providing direct electricity supply to the building or exporting power to battery storage in the energy centre;
- an energy centre incorporating an electricity substation connected to the local electricity distribution network, battery storage (adjacent to each unit and at the energy centre) and a gas-fired combined heat and power plant (designed to be ready for 100% hydrogen in the grid gas supply) with an electrical

generation capacity of up to 5 megawatts (MW). Total electricity generation capacity at the Main HNRFI Site is therefore 47.4 MW;

- a lorry park with welfare facilities for drivers and HGV fuelling facilities;
- a site hub building providing office, meeting space and marketing suite for use in connection with the management of the HNRFI and ancillary car parking;
- terrain remodelling, hard and soft landscape works, watercourse diversion, amenity water features and planting;
- noise attenuation measures, including acoustic barriers up to six metres in height;
- habitat creation and enhancement, and the provision of publicly accessible amenity open space at the south-western extremity of the HNRFI near Burbage Wood and to the south of the proposed A47 Link Road between the railway and the B4668/A47 Leicester Road;
- pedestrian, equestrian and cycle access routes and infrastructure, including a new dedicated route for pedestrians, cyclists and horse riders from a point south of Elmesthorpe to Burbage Common;
- utility compounds, plant and service infrastructure;
- security and safety provisions inside the HNRFI including gatehouses, fencing and lighting, and;
- drainage works including surface water retention ponds, underground attenuation tanks and swales;

2.10 The highway works to be completed as part of the HNRFI proposal are listed below;

- works to M69 Junction 2 comprising the reconfiguration of the existing roundabout and its approach and exit lanes, the addition of a southbound slip road for traffic joining the M69 motorway and the addition of a northbound slip road for traffic leaving the M69 motorway at Junction 2;
- a new road ('the A47 Link Road') from the modified M69 Junction 2 to the B4668 / A47 Leicester Road with a new bridge over the railway, providing vehicular access to the proposed HNRFI from the strategic highway network. The A47 Link Road will be intended for adoption as a public highway;
- modifications to several junctions and amendments to Traffic Regulation Orders on the local road network in response to the different traffic flow pattern resulting partly from the trips generated by the HNRFI development and principally from the change in movements as a result of the M69 Junction 2 upgrade;
- works affecting existing pedestrian level crossings on the Leicester to Hinckley railway at Thorney Fields Farm north-west of Sapcote, at Elmesthorpe and at Outwoods between Burbage and Hinckley. In addition, pedestrian level crossings serving footpaths that connect Burbage Common Road to Earl Shilton and Barwell are proposed for closure with the associated footpaths being diverted, and;
- off-site (outside the Order Limits) railway infrastructure including signals and signage.

2.11 As part of the proposals, no improvements are planned for the Narborough Level Crossing, approaching roads or footways.

3.0 NARBOROUGH LEVEL CROSSING - BARRIER DOWNTIME

3.1 The baseline operations on the rail network have been reviewed for the HNRFI operations and data has been taken from the real time train website to provide a baseline condition. Using Working Time Table and Varied Timetable data accurate to current week of writing, the number of trains passing through the crossing is demonstrated in **Table 3.1** at the site.

Table 3.1: Number of Trains Passing Through Narborough Railway Station

Train Type	Operating Day	Time of Day		No. of Stopping Trains	Total Trains	Daily Averages
		Day (06:00)	Night (21:00)			
Passenger Train	Monday	63	7	41	70	70 – weekdays 56 – weekends 66 – total
	Tuesday	63	7	41	70	
	Wednesday	63	7	41	70	
	Thursday	63	7	41	70	
	Friday	63	7	41	70	
	Saturday	60	6	34	66	
	Sunday	40	5	25	45	
Freight Train	Monday	33	20	0	53	67 – weekdays 19 - weekends 53 - total
	Tuesday	39	35	0	74	
	Wednesday	41	33	0	74	
	Thursday	41	26	0	67	
	Friday	42	24	0	66	
	Saturday	25	10	0	35	
	Sunday	2	0	0	2	

Source: Realtimetrains.co.uk

3.2 Narborough Railway Station experiences an estimate of 66 daily passenger trains and 53 freight trains however there is a clear outlier of 2 freights on Sunday.

3.3 In total there are 109 trains on average daily which equates to a train movement every 13 minutes. On average, 38 trains stop at the station and thus 71 will pass through. An average of just under 5 trains per hour will pass through the station and ratioed would be an approximate 2:3 stopping to passing train split.

3.4 Using comments from 'Consultation Report – Appendix 9.1-9.10', Tritax Symmetry Limited state maximum barrier downtime of 2.5 minutes for passing trains and 4-5 minutes for stopping trains. Thus, on average barriers will be down for approximately 17 minutes within an hour at present.

3.5 It is considered that peak hours will experience more train movements in the station as witnessed in **Table 3.2** displaying data collected upon the week of writing.

Table 3.2: Number of Trains at Peak Hours

Operating Day	Peak AM (8:00 – 9:00)		Peak PM (17:00-18:00)	
	Total	Stopped	Total	Stopped
Monday	7	4	6	2
Tuesday	9	4	6	2
Wednesday	11	4	7	2
Thursday	9	**4**	6	2
Friday	9	4	6	2
Saturday	5	2	7	2
Sunday	0	0	5	2

Source: Realtimetrains.co.uk

3.6 On an average weekday, 9 trains pass through the crossing during the AM peak with of which 4 trains stop at the station. During the PM peak there is an average of 6 trains total with 2 stopping. During the AM peak this would achieve 32.5 mins and 20 mins during the PM. It should be noted that these times are estimates based upon Tritax Symmetry Limited's maximum timings.

3.7 Network Rail averaged an hourly approximate 20mins downtime in 'Consultation Report – Appendix 9.1-9.10'. As shown in Table 3.2 and subsequent evaluation, it is clear each hour may need individual evaluation. It is noted that AM and PM peaks were evaluated by Tritax Symmetry Limited but were again averaged between hours of 7-10 am and 4-7 pm.

3.8 Network Rail used a pre-pandemic timetable for their statement but it should be considered that present timetables, both Working Time Table (WTT) and Varied Timetable (VAR) are to be examined. As stated in the aforementioned report, the running of trains will be managed by third parties, thus timetables may have been added or changed between pre-pandemic and present via third parties calling for an evaluation of present data.

3.9 It should be noted that as per issued publication 'Environment Statement – Appendix 3.1 – Rail Operations Report' new train lengths would be at capacity at 775m in length rather than the prior 600m restriction to provide more capacity and reduce costs as in line with the National Policy Statement for National Networks (2014). It should be considered that train length will be modelled at the new restricted capacity when discussing maximum time to pass the crossing. It is unclear that 2.5 minutes barrier time is attributed to the existing 600m trains or the 775m limit. This may result in additional 45 second downtime.

3.10 Additionally, 'Consultation Report – Appendix 9.1-9.10' suggests trains will be moving at lower speeds, helping noise, to access the HRNFI, so clarification towards the speed and length of the train, and ultimately distance to travel over the site, should be made to inform an accurate barrier downtime.

3.11 To gain an accurate representation of the existing baseline conditioned in regards to barrier down time at Narborough, it is recommended that a larger sample of the WTT is collected for freight running data. A study period of at least one continuous month would be suggested to allow for individual variations in both days

and weeks to be analysed, and subsequently, the maximum barrier down time can be assessed with more confidence.

3.12 The baseline study would provide comprehensive evidence on the following information:

- Average downtime in relation to stopping and passing trains,
- Average length of freight trains,
- Service type ratio,
- Direction of train, and;
- The degree of overlap between eastbound and westbound trains.

3.13 The above can be used to calculate the expected impacts in full, and develop any necessary sensitivity tests such as the worst-case scenario in terms of maximum barrier down time per hour and per day.

3.14 It should be noted the above would need to be supported by traffic flow data.

Barrier Downtime and the Community

3.15 Concerns are made regarding the impact of the (increased) barrier downtime when considering the existing community.

3.16 There are no lifts associated with the footbridge over the rail line and therefore no provision is in place for disabled or elderly site users/pedestrians; moreover, the footways on the approach to the crossing slim to 1.2m - 1.8m, and slope into the carriageway. This overall makes for an uncomfortable waiting experience, specifically if vehicles are waiting for the crossing alongside pedestrians.

3.17 Mitigation measures should be considered at the crossing to enhance the waiting experience of pedestrians unable to traverse the footbridge.

3.18 It should be noted as part of the ARUP report there is reference to Network Rail looking at some mitigation to address existing issues at the Level Crossing, namely those listed below;

- Poor highway configuration (mini roundabout junction, bus stops sub-optimally placed and entrances to commercial premises) north of the crossing on Station Road
- Significant increases in traffic volumes through local residential developments that have failed to recognise the impact of the traffic arising on the crossing
- Poor driver discipline in terms of blocking back onto the railway, i.e. becoming stationary on the crossing for a period of no less than five seconds owing to road traffic preventing egress from the crossing area, and Red Light infringements.

3.19 Network Rail are investigating provision of Yellow Box Markings between the vehicular stop lines on both sides of the crossing and the re-activation of the Red-Light Violation Camera to discourage deliberate contravention of the Road Traffic Light Signals. These measures are useful, however, the fact there are existing concerns from the network operator (Network Rail) that would justify the above mitigation, it is a concern that no further analysis has been undertaken as part of the application submission.

4.0 HNRFI TRAFFIC IMPACT

4.1 It is understood in publication 'Environmental Statement – Chapter 8' a study area of all key junctions and links in the area around the HNRFI encompassing routes into Hinckley, towards Leicester, Nuneaton, Coventry, and Birmingham area from the M69 motorway, M1 motorway and A5 corridor was selected as a spatial scope for traffic impact modelling.

4.2 Prior to the selection of links to be assessed a screening process was undertaken as per recommendation by the Institute of Environmental Management and Assessment's 'Guidelines for Environmental Assessment of Road Traffic' (1993). Links to be assessed in further detail follow two rules:

- Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%)
- Rule 2: Include any other specifically sensitive areas where traffic flows will increase by 10% or more.

4.3 It should be noted that both screening rules in this instance would not capture slight increases in traffic flow impacts that could push a busy junction to capacity; further clarity is needed on barrier times based on present timetables to ensure impacts are accurate.

4.4 No mention of Station Road, Coventry Road, Leicester Road or Riverside Way make an appearance in further traffic flow detailing. These are not be confused with the B4114 Coventry Road, B4669 Leicester Road or the B581 Station Road detailed in the statement.

4.5 Thus, these roads were either excluded via the selection of only larger linking roads near the HNRFI or did not meet the rule criteria. With further concerns regarding this crossing noted in consultation multiple times it could have been considered an exception to also place these roads within the detailed link analysis or junction modelling. Even if only a small link these roads are still the main output for south Narborough into Littlethorpe.

4.6 It should be noted that acknowledgement of the sites history of current issues is known and addressed within 'Consultation Report – Appendix 9.1-9.10' as the site is defined with heavy usage (over 7,000 vehicles per day) and constrained highway features present. Comments made regarding a history of blocking back over the site are noted.

4.7 It is to be mentioned that whilst Narborough has established highways issues of which proposal impacts may only be small; the implication on junctions surrounding the site may already be breaching capacity at present or with additional growth rates factored in. Without sufficient raw traffic flow data this cannot be measured. Potential additional train movement analysed to present timetables may cause capacity to be reached and thus would put analysis of the junctions surrounding the site within the scope of the HNRFI. It is our opinion that this should be considered further by the applicant team.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Mewies Engineering Consultants Ltd, has been commissioned by Blaby District Council to undertake a Technical Note on the impact of a proposed Hinckley National Rail Freight Interchange (HNRFI). Further considerations of the report are as follows:

- An evaluation of present timetabled data, including both WTT and VAR to demonstrate the standard timings. Ensure that actual data times are to be examined rather than planned timetable to account for real life fluctuation.
- Hours may need individual analysis during peak times as to average for specific hour downtimes; evaluation on 8 – 9 am and 5 – 6 pm should be detailed as these are peak traffic count times and thus will be required to fully understand impact.
- Specification on train length for the statement of a 2.5min passing time or supporting documentation that higher capacity train movements will achieve higher speeds if 600m were used as such the times would remain the same.
- A larger sample of the WTT is collected for freight running data is required to provide a representative baseline.
- Mitigation measures at the crossing should be considered and included to enhance the waiting experience of pedestrians unable to traverse the footbridge in lew of the increased downtimes.
- Inclusion of Narborough's Coventry Road, Leicester Road, Station Road and Riverside Way junctions to the study of traffic flow analysis to accurately quantify impact, along with quantifying the existing queue lengths at the Level Crossing and determining what the increase in queue length and vehicle delay would be as a result of increased barrier downtime.
- Traffic count data at the Coventry Road / Leicester Road / Station Road mini-roundabout and Station Road / Riverside Way priority T-junction should be collected to understand current flow and growth flows to be modelled for capacity with the introduction of the development.

5.2 In conclusion, more clarity is required to claim conclusions made regarding barrier downtimes at Narborough Level Crossing. A detailed analysis of traffic flows and capacity modelling is recommended to clear doubt regarding traffic impact on the local junctions and at queues at the level crossing which would then have a detrimental impact on associated Acoustic and Air Quality issues associated with an increase in queuing. The ARUP report suggests a likely increase in barrier down time and therefore the highway impact of such increases needs to be undertaken and understood, as well as resulting Noise and Air Quality impacts from the additional queuing and potential rerouting of vehicles unwilling to wait in a queue at the Level Crossing.