Bedford Economic Growth Ambitions

Supporting Evidence

Final Report

Bedford Borough Council

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Delivering a better world

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Table of Contents

Figures

Tables

1 Introduction

1.1 Introduction

1.1.1 Bedford Borough Council (BBC) commissioned AECOM to provide specialist input and evidence that will inform the delivery and review of the Council's Economic Prosperity Plan.

1.1.2 The Economic Prosperity Plan is currently informed partly by the Bedford Economic Growth Ambitions paper, developed by the Council as part of the evidence base for the Local Plan 2040, which identifies key economic opportunities and challenges for the borough. A main theme of the Economic Growth Ambitions paper is the need to support the growth of high-skilled employment in Bedford, which has more recently been dominated by low-skilled employment in the logistics sector, notably through the allocation of employment land for innovation space.

1.1.3 This report provides a review of the existing evidence base for the need for both strategic warehousing and innovation space in Bedford, taking into consideration the specificities of Bedford as well as the latest trends and forecast in both sectors.

1.1.4 An Economic Demand Needs Assessment, using the latest employment forecasts from Experian, has been prepared by AECOM and is set out within this report. The findings of this assessment are compared with the findings of Bedford's Employment Land Study 2022 to ensure that the Council's future growth ambitions are built on robust evidence.

1.2 Strategic Context

1.2.1 BBC are updating their existing Local Plan 2030 (adopted in January 2020) to respond to longer term growth requirements. The updated Local Plan will cover the period up to 2040. As part of the review process, BBC published their Employment Land Study in May 2022.

1.2.2 The Employment Land Study (May 2022), updated the previous Bedford Economy and Employment Land Study, undertaken by GVA (now part of Avison Young) in 2015 on behalf of the Council and followed the same structure as the previous Employment Land Study.

1.2.3 The study establishes socio-economic and commercial property market conditions. The stock of existing employment sites in the borough is reviewed and updated. The quantitative and qualitative needs for employment land are then assessed using the latest East of England Forecasting Model (EEFM) available (2019) developed by Oxford Economics and includes the sensitivity testing of a number of alternative delivery scenarios. Finally, the demand and supply analyses are drawn together to provide an assessment of the future suitability of existing employment land, both in terms of scale and nature, and the assessment of potential sites to meet the need for additional employment land.

1.2.4 The main findings of the Employment Land Study (May 2022) highlighted that the Bedford economy benefits from a number of strategic assets that should support future economic growth. However, the study concluded that Bedford lacks sufficient sites that could accommodate a landscaped business park environment suitable for advanced technology firms looking for easy access to research and development (R&D) hubs across the Oxford – Cambridge Arc.

1.2.5 Whilst the borough has been successful in retaining and attracting existing and new businesses and sectors, it operates within a highly competitive market area, with neighbouring locations seeking to compete for a similar set of occupier types. The borough's connectivity, infrastructure and labour force does provide a compelling base position to attract occupiers. However, the ability to bring forward modern, well located, and fit for purpose stock will be vital if opportunities are not to be lost to other locations.

1.2.6 The Employment Land Study recommends that the borough needs to ensure it retains a portfolio of land and premises that can accommodate demand from advanced technology firms, as well as deliver new space in the future to meet changing and sector specific requirements. This portfolio will require a mix of existing, redeveloped and new locations across the borough to provide the necessary range and choice to ensure balanced and sustainable growth is achieved, and that maximises all land assets.

1.2.7 Key site specific conclusions and recommendations for future action by the Council are also provided by the Employment Land Study. These provide guidance on the recommended approach to employment land identification and protection.

1.2.8 The Employment Land Study further recommends the identification of between 118 and 142 hectares (ha) of employment land over the Local Plan period. The Bedford Local Plan 2040 proposes the allocation of 10 sites, providing a total of 153 hectares (ha) of employment land. These sites are predominantly located in and near to Bedford, but also along the A421 corridor south and east of Bedford.

Table 1.1 – Bedford Local Plan 2040, Employment Allocations

Site	Policy	Use	Hectare
Land at Bedford Station	EMP1	Mixed use including B1a	0.1
Former playing field, ARA Manton Lane, Bedford	EMP2	Industrial, warehousing and distribution	1.6
Land south west of Interchange Retail Park and north of A421, Kempston	EMP3	Industrial, warehousing and distribution	3.3
Land south of Goldington Road, Bedford	EMP4	Office, industrial, warehousing and distribution	7.2
Kempston Hardwick New Settlement	HOU14	residential and employment (high value business park)	70
Land at Pear Tree Farm, Elstow	EMP5	Science park (primarily research and development with elements of manufacturing, warehousing and related distribution)	20.4
Land at Water End and St Neots Road	EMP6	Campus-style development (primarily research and development with elements of manufacturing, warehousing and distribution)	30
Land at College Farm, Black Cat roundabout	EMP7	Roadside services, industrial, warehousing and distribution	3
Land at Roxton, south west of the Black Cat roundabout	EMP8	Warehousing and distribution	17
Little Barford	HOU 19	Industrial and warehousing	3.6
TOTAL			**153**

Source: Bedford Local Plan 2040

1.2.9 The Local Plan 2040 was approved for consultation (Regulation 19) by the Council's Executive on 27 April 2022. Consultation of the Plan took place between 15 June 2022 and 29 July 2022.

1.2.10 A particular criticism was made in consultation about the provision of land for innovation employment, which was seen as an oversimplification of the land opportunity in Bedford and

too reliant on regional trends. It emphasises a sub-optimal provision of land for logistics and over-provision of land for office space.

1.2.11 In response to criticisms of the Council's growth ambitions, AECOM has undertaken this study with the aim of providing additional evidence to justify the demand for innovation space in Bedford, as set out in both the Council's Economic Growth Ambitions topic paper and the resulting adopted Economic Prosperity Plan. In turn this will support the choice of employment allocations that has been made by BBC in the Local Plan 2040.

1.3 Contents

1.3.1 This study is divided into three sections:

- An analysis of the future demand for additional large-scale warehousing space in Bedford, based on a review of the "Warehousing and Logistics in the South East Midlands" study developed by Iceni on behalf of the South East Midlands Local Economic Partnership (SEMLEP).
- An analysis of the future demand for additional innovation space in Bedford, highlighting the opportunities and challenges.
- The development of an "alternative" economic demand forecast, using the latest Experian forecast for labour demand scenario and reviewing alternative scenarios to support and build on the findings of the Employment Land Study (May 2022).

2 Demand for additional large-scale warehousing space in Bedford

2.1 Introduction

2.1.1 This chapter assesses the demand for additional large-scale warehousing in Bedford and is divided into three sections:

- A review of the Warehousing and Logistics in the South East Midlands (WLSEM) study (for clarity, a summary of the WLSEM study is presented on white background, whilst AECOM's comments and additional analysis is presented on green background);
- A review of threats that could influence the future level of demand for strategic warehousing and logistics space in the UK and in the Bedford area;
- A summary of current supply of storage and warehousing (B8 use) land in Bedford (Local Plan 2040).

2.2 Warehousing and Logistics in the South East Midlands

2.2.1 In September 2022, Iceni Projects Limited, on behalf of the SEMLEP published the WLSEM study exploring the current and future supply and demand for the warehousing and logistics sector in the SEMLEP area.

2.2.2 This section follows the structure of the WLSEM study and discusses the implications of the findings for Bedford. It also highlights the limitations of the study and provides additional analysis to better understand the role of the warehousing and logistics sector in the SEMLEP area, and more particularly in Bedford – with AECOM's comments provided in green boxes.

Introduction

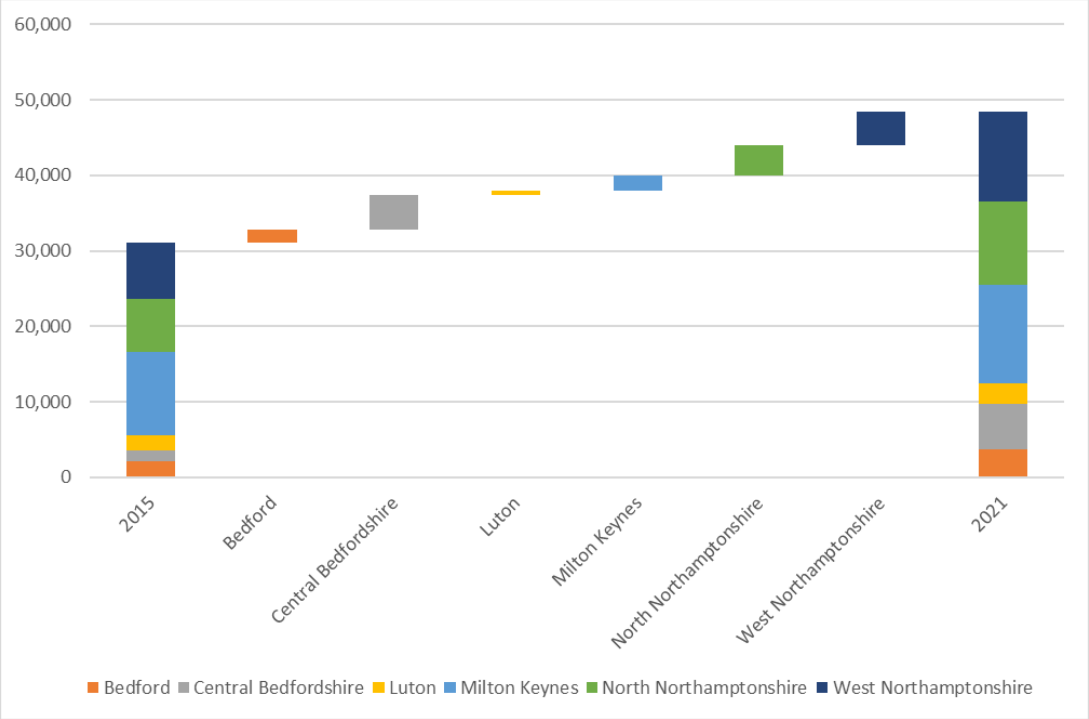
2.2.3 The WLSEM study considers the future demand scenarios for logistics premises in the SEMLEP area, for the local authorities of **Bedford, Central Bedfordshire, Luton, Milton Keynes, North Northamptonshire and West Northamptonshire**.

2.2.4 The WLSEM study outlines the SEMLEP constituent authorities as areas of significant opportunity for the warehousing and logistics sector, which is the fastest growing sector in UK, and an ecosystem that includes highly regarded universities and colleges. It also suggests that warehousing and logistics employment is an important component of the SEMLEP area's economy, with 48,500 jobs in warehousing specific employment[1] or 6% of all employment in the SEMLEP in 2020. It also states that the actual number of employees engaged in warehousing and logistics could be much higher. The sector was marked by fast growth in employment between 2015 and 2020, recording an increase of over 50% from 31,750 jobs to 48,500 jobs.

2.2.5 Replicating this analysis to produce figures at the local authority level shows that the growth is not identical between all the SEMLEP local authorities. The growth in employment in the warehousing sector observed in the SEMLEP between 2015 and 2021 is principally driven by additional employment in three local authorities: **Central Bedfordshire, North Northamptonshire** and **West Northamptonshire**. The three local authorities account for 75% of all the additional 17,375 jobs in the sector in the SEMLEP between 2015 and 2021, with Bedford delivering only 9% of the additional jobs in the area (second lowest after Luton – 4%). This is shown in Figure 2-1.

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

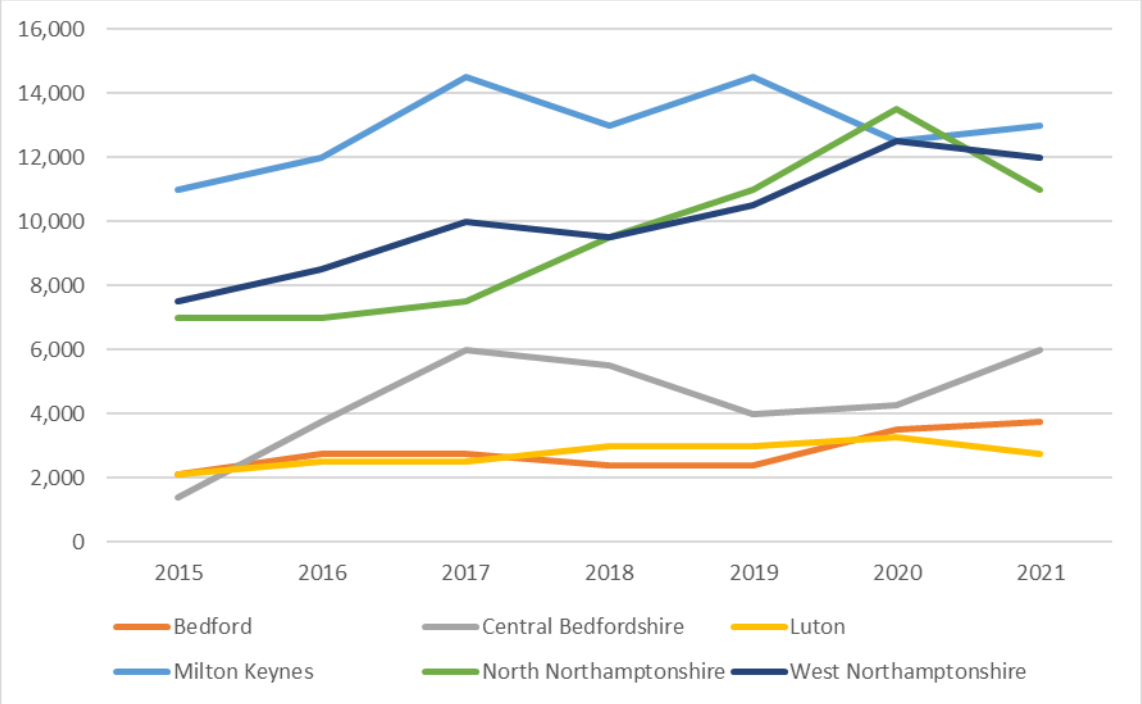
Figure 2-1 – Evolution of employment in warehousing and supporting activities (SIC52) between 2015 and 2021



Source: Business Register and Employment Survey (BRES)

2.2.6 Records of historical employment levels in the warehousing sector show that Bedford has traditionally been a relatively small contributor within the SEMLEP, comparable to Luton, as shown in Figure 2-2.

Figure 2-2 – Employment in warehousing and supporting activities (SIC52) between 2015 and 2021

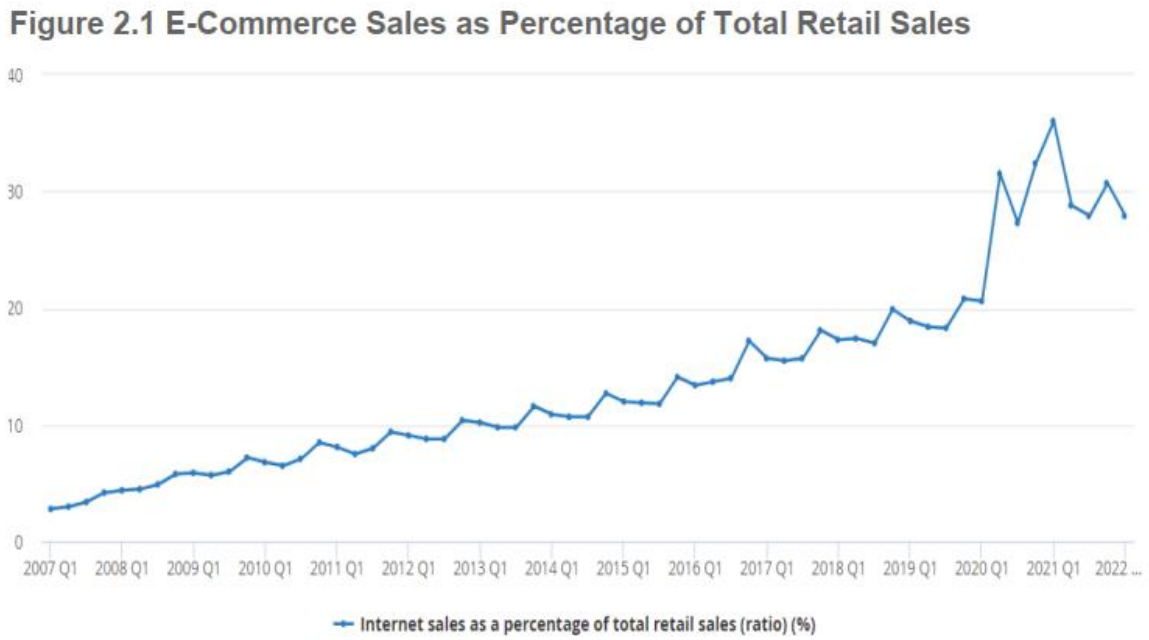


Source: Business Register and Employment Survey (BRES)

Future logistics; e-commerce, automation and sustainability

2.2.7 The WLSEM study highlights that the growth of e-commerce activities is the single most significant component generating change in the logistics sector and driving its growth. The graph presented shows that e-commerce represented 28% of total value retail sales in the UK in Q1 2022 (see Image 2.1). The study also indicates that these trends are "likely to continue".

Image 2.1 – Screenshot WLSEM study

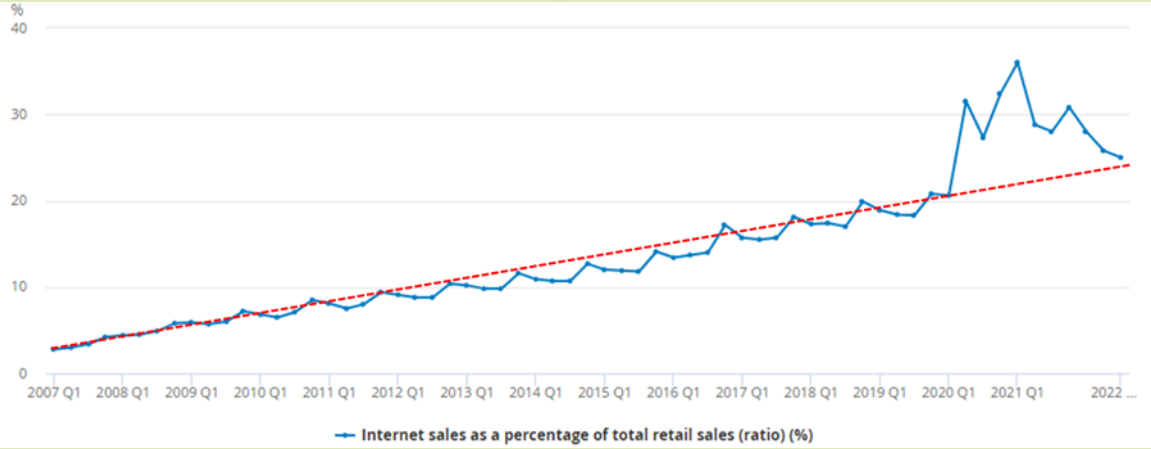


Source: ONS see live time series at:

https://www.ons.gov.uk/businessindustryandtrade/retailindustry/timeseries/j4mc/drsi

2.2.8 Since the WLSEM study was published, the ONS has released updates to the proportion of internet sales in retail, which indicate a contraction in the share of e-commerce activities in the total value of retail sales. By Q3 2022, the share of e-commerce dropped to 25%. Whilst the general trend since 2007 remains upward, the rapid growth observed in 2020 and 2021 has now re-aligned with the long-term trend observed between 2007 and 2020. This is shown in Figure 2-3, with the period 2007-2020 represented by the red dotted line.

Figure 2-3 – Internet sales as a percentage of total retail sales in the UK (ratio) (%)



Source: ONS (trend line added by AECOM)

2.2.9 Whilst it is likely that e-commerce will continue to play a major and increasingly important role, there is no robust evidence to support the assertion that the e-commerce (and associated logistics) will sustain the average level of growth observed between 2007 and 2021. It is also possible that the trend prior to 2020 will reach a saturation point within the next Plan period based on evidence such as that of Amazon – the world's largest e-commerce group and bellwether of market sentiment – issuing the first profit warning in its history in 2022, or the decline in the value of Segro, the UK's largest commercial landlord.

2.2.10 The data presented in the WLSEM study are comparative figures (i.e. e-commerce versus brick and mortar) rather than the actual performance of the e-commerce sector, and more importantly home-delivery e-commerce activities - the aspect directly impacting on the demand for logistics space. Data from the BRC-KPMG Retail Sales Monitor for February 2022 shows that online non-food sales in the UK were 28.4% lower than in February 2021 – when they had grown by 82.2% on the previous year. Whilst online penetration remains considerably higher than pre-Covid-19 crisis, online sales volumes continue to fall across all categories compared to February 2021.

2.2.11 In reference to the automation of warehousing and logistics activities, the WLSEM study sets out that e-commerce initially used manual labour to 'pick and pack' parcel consignments. Employment densities typically ranged from 80 square metres per full-time equivalent (FTE) jobs at Regional Distribution Centres (RDCs) through to 140 square metres per FTE at National Distribution Centres (NDCs).

2.2.12 However, the WLSEM study states that the growth in e-commerce activities combined with the increasing difficulty in recruiting labour at competitive rates of pay post Brexit, means that many new warehouse developments are being designed and built with increased levels of automation from the start.

2.2.13 Whilst automation will contribute to transform the skills outlook for the sector, increasing the need for technicians and engineers to manage, monitor and repair equipment, it will also reduce employment densities (and level of employment) in warehouses, with fewer (better) jobs available.

2.2.14 The retrofitting of existing warehousing space with new technology will also increase their efficiency, therefore reducing the future demand for employment and additional space.

Property market review

2.2.15 This chapter of the WLSEM report provides an assessment of the logistics & warehousing property market in the SEMLEP area. 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.

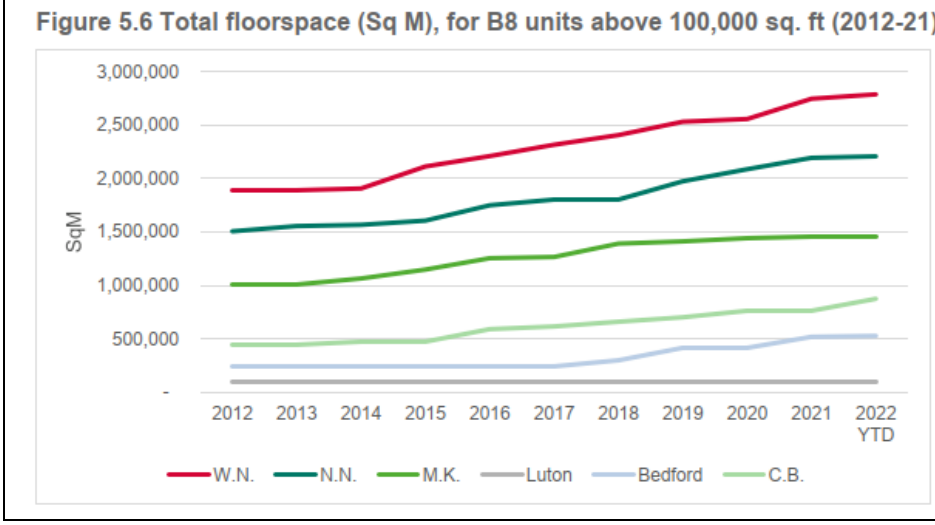
2.2.16 It considers the national property market first, then the East Midlands, before looking at the SEMLEP area. The chapter also provides some of the key indicators at the local authority level within the SEMLEP area. This provides a useful to comparison of Bedford to the rest of the area. The analysis at the SEMLEP level focuses on transactions for logistics and warehousing over 100,000 square feet (sqft) in size i.e. 'big box' units.

2.2.17 The analysis identifies the following as key logistics parks in the SEMLEP area:

- 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

2.2.18 It also analyses growth in the amount of floorspace in strategic logistics units (units over 100,000 sqft in size) across all local authorities since 2012, as shown in Image 2.2. all have shown some level of growth in floorspace aside from Luton which has remained stable.

Image 2.2 – Screenshot WLSEM study



2.2.19 AECOM replicated the WLSEM analysis (although adding light distribution to the selection on top of distribution and warehousing, and making sure only existing properties are selected), and found that in 2022 there were 322 warehousing and logistics properties in the SEMLEP that could be considered big box units. These big box units combined for a total of 87,152,605 sqft. Replicating the analysis allows us to update the findings with the most up-to-date data and identify the role of each Local Authority (including Bedford) within the SEMLEP market.

2.2.20 Bedford only provides a very small share of this space, with 18 units in 2022 (5.6% of SEMLEP total units) covering 5,222,067 sqft (6% of SEMLEP total floorspace).

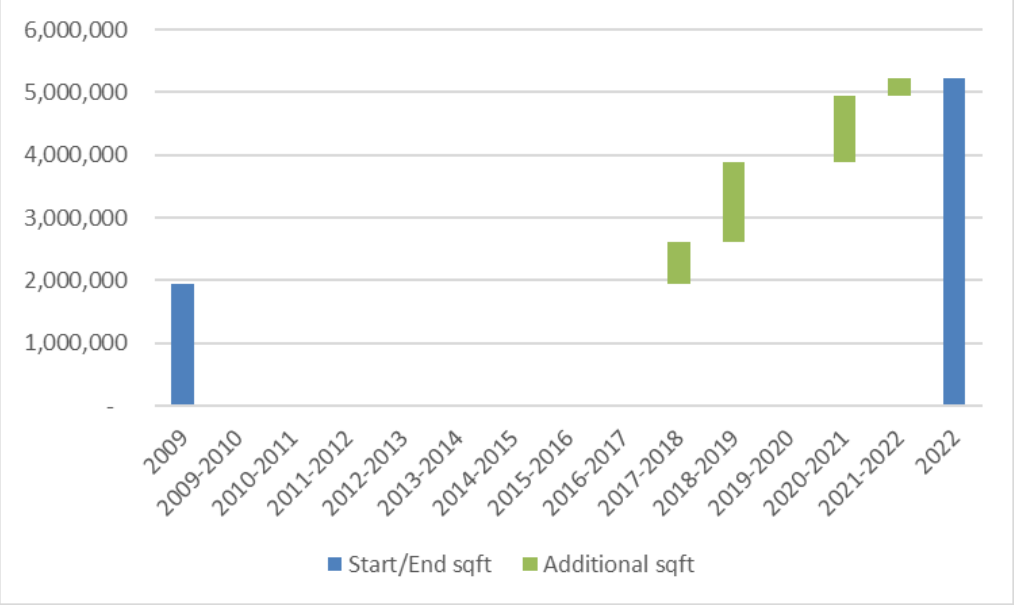
2.2.21 As reported in the WLSEM study, looking at indexed growth of floorspace of big box logistics, Bedford and Central Bedfordshire have had the highest rate since 2012. Growth rates in West Northants, North Northants and Milton Keynes are roughly in line with those for the whole of SEMLEP.

2.2.22 This is not surprising given the size of the Bedford market. With a limited amount of existing floorspace, any additional floorspace will generate a high level of growth proportionally to other areas.

2.2.23 When looking at additional floorspace (rather than percentage growth) Bedford has delivered an additional 3.2 million sqft between 2009 and 2022, or 8% of the SEMLEP total floorspace. Bedford is only the fifth largest contributor of space in the SEMLEP area (out of 6 local authorities) over this period, with only Luton delivering less space (none). When focusing on the period of rapid growth in floorspace in Bedford (2017 to 2022), Bedford remains only the third largest provider (16% of the SEMLEP total floorspace) after North Northamptonshire (19%) and West Northamptonshire (37%) which are both the biggest markets for this type of space in the SEMLEP (providing over 63% of the total space in 2022).

2.2.24 Change in floorspace represented by large warehousing and distribution floorspace is shown in Figure 2-4. This indicates that there has been no growth in the number of units or floorspace in Bedford between 2009 and 2017. Most of the growth took place between 2017 and 2019 (nearly 2 million sqft out of the 3.2 million additional sqft delivered between 2009 and 2022) and during the Covid-19 pandemic (2020-2021). There has been limited additional floorspace delivered in 2022 (circa 270,000 sqft)..

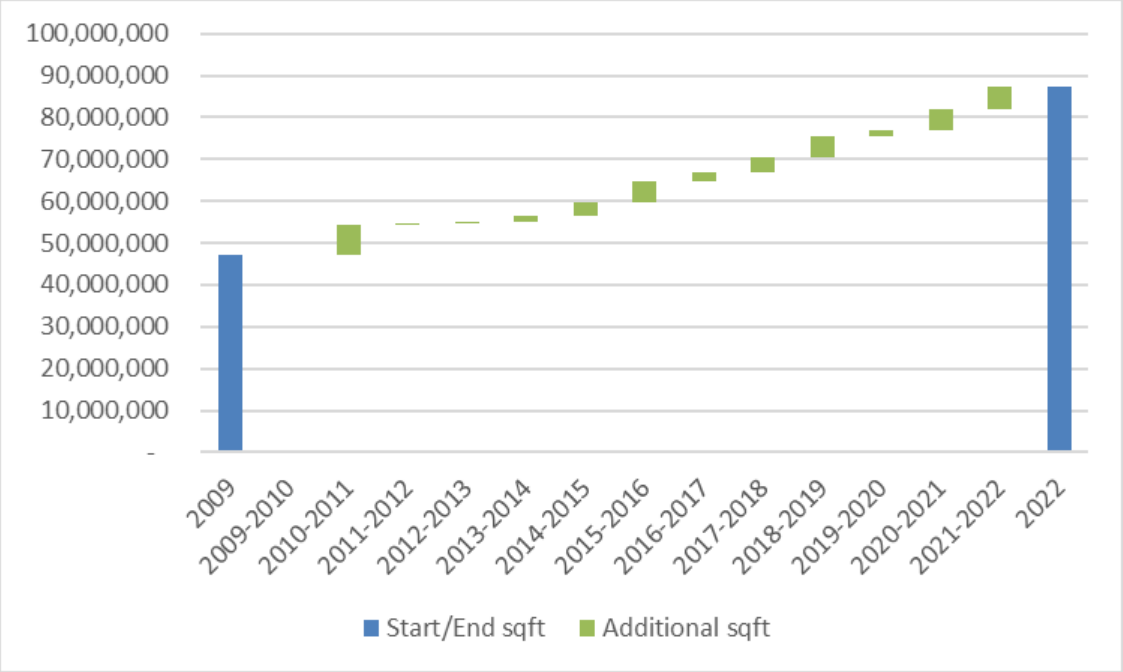
Figure 2-4 – Bedford, Change in Floorspace of Warehousing and Distribution Space (properties over 100k sqft)



Source: AECOM analysis of CoStar data

2.2.25 In comparison, the growth in floorspace has been more constant in the SEMLEP area overall, with no sign of a slow-down in 2022, as seen in Figure 2-5.

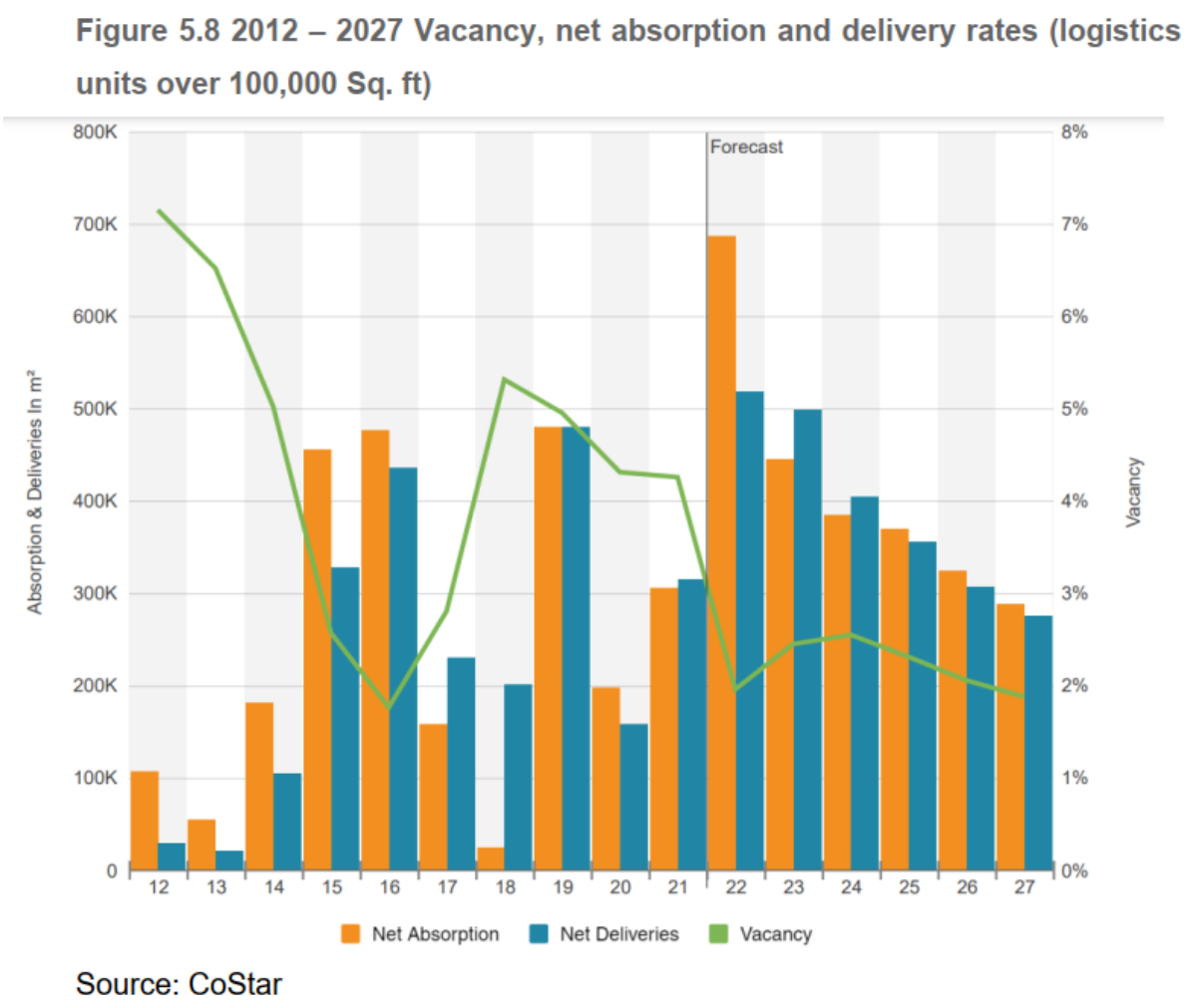
Figure 2-5 – SEMLEP, Change in Floorspace of Warehousing and Distribution Space (properties over 100k sqft)



Source: AECOM analysis of CoStar data

2.2.26 The vacancy rate for strategic logistics floorspace in the study area in 2022 is stated as 1.3%. This is very low in the context of a national (UK) 10-year average of 5.3% and 2021 rate of 3%. The 10-year average for the SEMLEP area is 4.4% - again underlining that the vacancy rate recorded in the study area in 2022 is notably low. This is seen in Image 2.3.

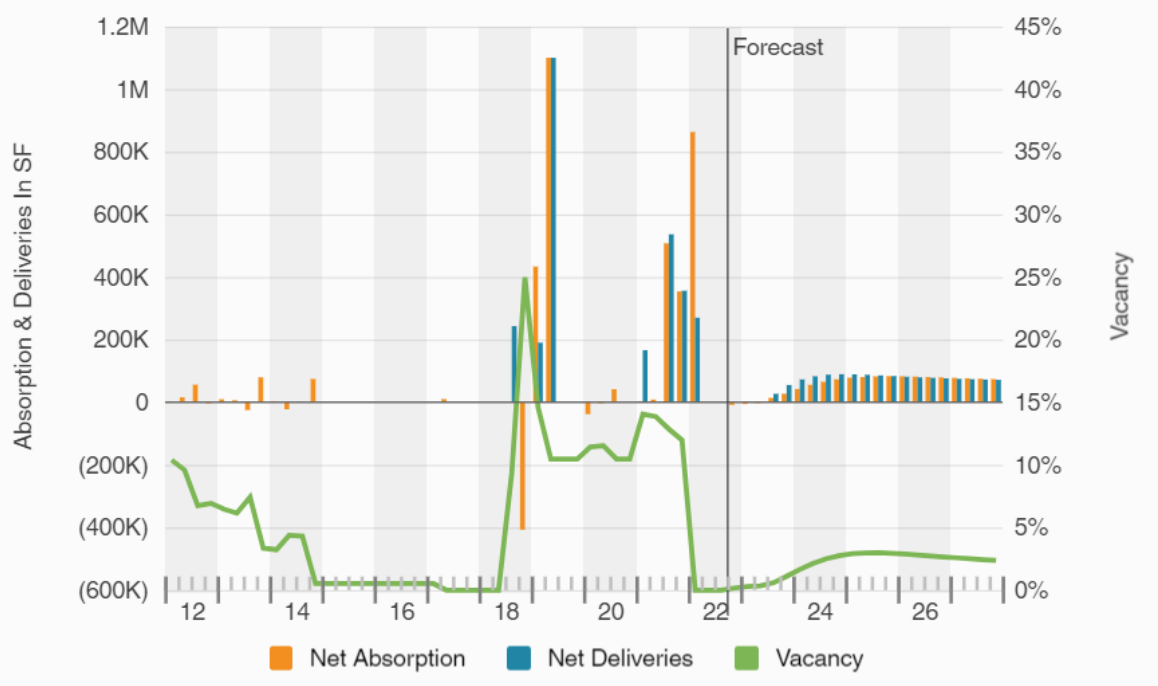
Image 2.3 – Screenshot WLSEM study



2.2.27 It should be noted that a vacancy rate of 4% is generally considered to be the 'healthy' rate when to comes to the vacancy of commercial and industrial space. This minimum rate of vacancy is necessary to allow for efficient churn (new companies taking up space or existing companies moving to new premises to adjust the space they take to their new requirements).

2.2.28 As shown in Figure 2-6, vacancy rate in Bedford for the same properties is currently 0%. However, the vacancy trend (forecast) in Bedford is comparable to the SEMLEP trend, with vacancy forecasted to progressively increase to 3% by 2025 before dropping back to 2.5% by the end of 2027. This projected vacancy rate is based on the assumption that an additional 1,365,602 sqft of space will be delivered (net), or an average of 273,120 sqft per year between 2023 and 2027. By 2027, vacancy is forecasted to be higher in Bedford (2.5%) than in the SEMLEP area (2%).

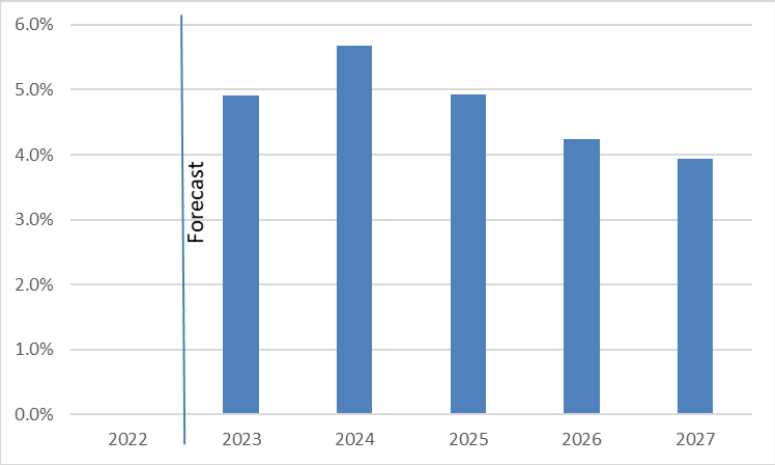
Figure 2-6 – Net Absorption, Net Deliveries & Vacancy (Bedford)



Source: CoStar

2.2.29 To achieve a healthy vacancy rate of 4%, Bedford would need to deliver a further 107,644 sqft (on top of the forecasted net deliveries of 1,327,513 sqft) of space by the end of 2027, or 21,529 sqft per year. Overall, this would be a total of 1,435,157 sqft (net deliveries) required by 2027, or 287,031 sqft (net deliveries) being delivered in Bedford every year.

Figure 2-7 – Projected Vacancy Rate Following Net Delivery of 290,000 sqft Annually (Bedford)



Source: AECOM calculations

2.2.30 The current average rental price for strategic logistics floorspace in the study area, as reported by the WLSEM study, is £8.44 per sqft. SEMLEP area rents are also considerably higher than the East Midlands and UK averages of £7.13 and £7.35 per sqft respectively.

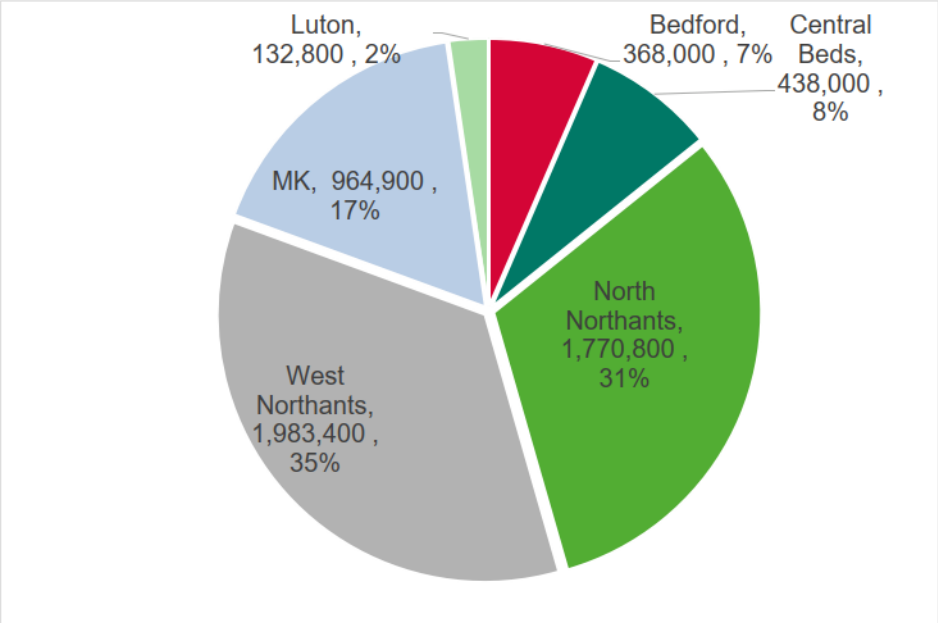
2.2.31 The current average rental price for strategic logistics floorspace in Bedford is £8.36 per sqft. Whilst this is roughly comparable to the SEMLEP average, it remains slightly below average. This is despite the 0% vacancy rate in Bedford (compared to 1.3% vacancy in the SEMLEP area). This could be an indication that the property market in Bedford is not as prime as in other parts of the SEMLEP (where properties will achieve a higher average rental price despite higher level of vacancy – generating more competition between those

properties in these markets to attract occupiers) and would therefore not be as attractive for investors and developers. This would reduce the amount of floorspace delivery that can be achieved and requirement/demand for land.

2.2.32 Looking at transactions of large logistics floorspace, between 2012 and 2022 (Image 2.4), the study states that two thirds of take-up was in West Northamptonshire and North Northamptonshire (around a third each).

Image 2.4 – Screenshot WLSEM study

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



Source: Iceni analysis of CoStar data

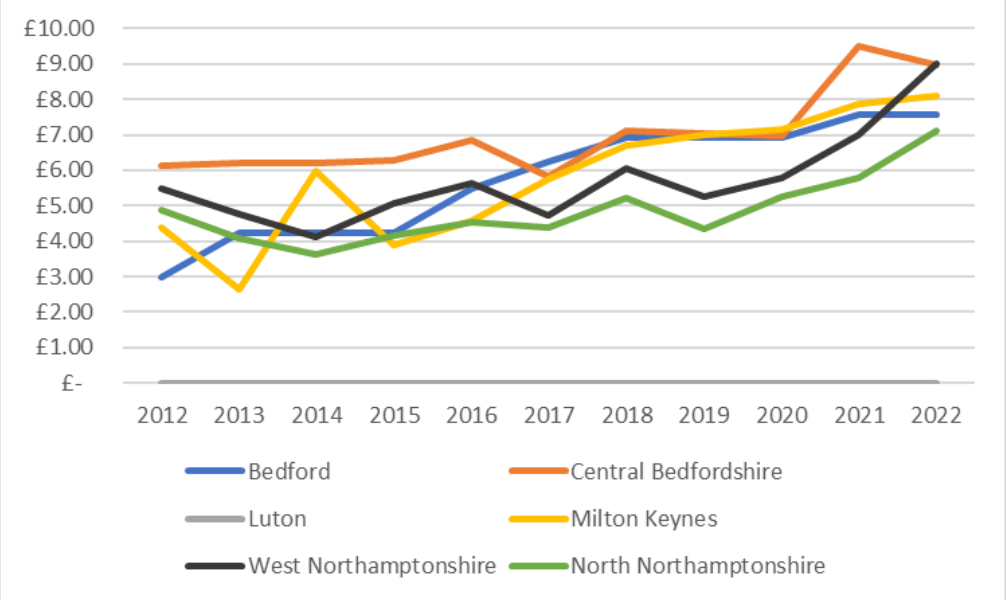
2.2.33 When comparing the share of take-up of storage and warehousing space by local authority in the SEMLEP to the share of existing floorspace, both indicators align. North Northamptonshire which had 26% of the floorspace but generated 31% of the take-up is the exception. This market could therefore be considered as the most active in the SEMLEP area.

2.2.34 In 2022, Bedford provided 6% of the total floorspace and represented 6.5% of the take-up between 2012 and 2022. Bedford is the second smallest contributor to take-up of large logistics space in the SEMLEP area, after Luton which saw no take-up of space. Moreover, looking at detailed lease comparables, this level of take-up is skewed somewhat by a very large transaction of 1,100,000 sqft of space by B&M at Wixams (out of a total of 3.793,899 sqft leased out). The second largest deal recorded in Bedford was for a smaller 465,000 sqft acquisition.

2.2.35 AECOM has carried out an analysis of rental values achieved to evaluate the current potential of logistics floorspace in Bedford. The rental values on transactions between 2012 and 2022 are amongst the lowest in Bedford, as shown in Figure 2-8[2]. This would indicate that the Bedford market is under-performing in terms of return, with other local authorities (Central Bedfordshire, West Northamptonshire and Milton Keynes) providing higher returns and therefore could be more favoured areas for future investments and delivery of space.

[2] When there has been no transaction in a year, the average between the rental values in previous year with transaction and next year with transactions was reported (to improve clarity of the graph).

Figure 2-8 – Average Rent Achieved Based on Transactions (£/sqft/year)



Source: AECOM calculations based on CoStar data

2.2.36 The report notes the existence of a substantial pipeline of units and logistics parks with planning permission or under construction in the study area, accounting for 24 million sqft, and that analysis of local planning authority data indicates that the potential pipeline supply is even much higher (see section on **Future land supply** below). 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

2.2.37 The confirmed pipeline of 24 million sqft. represents a very large amount of logistics floorspace that will be delivered in the SEMLEP area, increasing the existing supply by 28% (from circa 87 million sqft to circa 110 million sqft). Some of the forthcoming parks or extensions to existing parks stated above are major sites located in strategic locations which could drive some of the future demand away from Bedford.

Future land supply

2.2.38 The WLSEM study reports that the constituent client authorities provide their current and future supply position for strategic warehousing & logistics premises of 100,000 sqft and above in the report. The data from the WLSEM study, provided in Image 2.5, reflects the latest available supply position to date, up to end of 2020/21 monitoring year.

2.2.39 The WLSEM study estimated the current supply, from unimplemented supply and allocations (if expressed in hectare a plot ratio of 0.4 has been applied to determine floorspace), at just over 42.8 m million sqft.

Image 2.5 – Screenshot WLSEM study

Table 6.1 Supply position summary table, for units above 9,000 (Sq M) (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	152,800	**939,634**
West Northants	1,404,640	392,265	**1,796,906**
Total	**2,926,744**	**1,051,749**	**3,978,493**

Source: Local Authority data & Iceni analysis

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

2.2.40 Based on unimplemented permissions and allocations alone, future supply amounts to circa 50% of additional floorspace from the current baseline of existing floorspace in the SEMLEP area. This is evidently a very substantial amount of land / floorspace that could be delivered in the SEMLEP area.

Future warehouse floorspace growth scenarios: summary and supply balance

2.2.41 The WLSEM study recognises that modelling future scenarios for commercial property is complex and inevitably fraught with uncertainty in an environment which is constantly evolving.

2.2.42 The study proposes three forecast scenarios (covering the SEMLEP area as a whole), which were reviewed and replicated by AECOM to understand the implication of those scenarios for Bedford:

- **Replacement and traffic flow**: analyse 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); as well as the long-term growth in the demand for goods in the wider economy and the subsequent need for additional floor space to handle that growth (growth build).
- **Completion:** considers a past completions trends model for forecasting future floorspace demand for strategic warehousing.
- **Market signals:** considers a scenario for warehouse floorspace demand based on market signals and take up trends. Take up (net absorption) trends are considered to be a useful indicator in forecasting future business floorspace demand.

2.2.43 The study recognises that in real world terms it is clear that demand in 2022 is at an all-time high and that at the time of writing (summer 2022), inflation is high and likely to put downward pressure on consumer spending.

2.2.44 However, the study argues that there is a major restructuring underway as operators respond to the drivers for change around e-commerce, automation and decarbonisation. This realistically expects a level of demand in the 2020s above the last decade's average delivery.

2.2.45 The study states that into the late 2020s and 2030s the level of demand is expected to fall back to that of the recent historic period. The study recognises that 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.

2.2.46 The study summarises the findings of the demand and supply assessment and concludes that overall and considering core scenarios, the range of the balance is from 245 ha to 585 ha of land requirement in the SEMLEP area (shown in Image 2.6)

Image 2.6 – Screenshot WLSEM study

Table 10.4 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	3,978,000	-2,047,000	-585
Market signals Low	5,109,400	3,978,000	-1,131,000	-323
TGRD Central	4,836,600	3,978,000	-859,000	-245
Completions	5,711,000	3,978,000	-1,733,000	-495

2.2.47 Additionally, the WLSEM study provides a split of the balance between rail-served sites and non-rail-served sites, in Image 2.7, which shows a need for between -39 ha (i.e. 39 ha of land in excess) and +300 ha of non-rail-served land in the SEMLEP.

Image 2.7 – Screenshot WLSEM study

Table 10.5 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	3,184,000	3,184,000	3,184,000	3,184,000
	Rail	794,000	794,000	794,000	794,000
Balance (sqm)	Road	-1,050,000	-134,000	138,000	-736,000
	Rail	-997,000	-997,000	-997,000	-997,000
Balance (Ha@0.35)	Road	-300	-38	39	-210
	Rail	-285	-285	-285	-285

2.2.48 AECOM do not agree with the figures presented in this study and consider that some have been over-estimated. Additionally, the range of land requirements estimated by the WLSEM study is very large and does not provide, at this stage, any indication on a sub-market repartition of this balance. As explained above, it could be reasonable to assume that some strategic locations will deliver most of this balance, attracting most of the investment into the SEMLEP strategic warehousing and logistics market.

2.2.49 However, using The WLSEM study's figures, we could estimate that Bedford's share of the balance ranges between -5 ha (excess land) and 38.5 ha. It should however be noted that this approach to estimating land requirement is not standard and would not be used for the purpose of an Employment Land Review.

Figure 2-9 – Land requirement to 2040 (Bedford)

	SEMLEP Road Balance (Ha@0.35)	Bedford's share - based on Bedford's % of total SEMLEP's …				
		Floorspace	Number of Units	Net absorption rate (past decade)	Net absorption rate (past 5 years)	10-year delivery
Market signals High	**-300**	-18	-17	-20	-38	-28
Market signals Low	**-38**	-2	-2	-3	-5	-4
TGRD Central	**39**	2	2	3	5	4
Completions	**-210**	-13	-12	-14	-27	-20
Bedford's share of total balance		6.0%	5.6%	6.8%	12.8%	9.5%

Source: AECOM calculations

2.3 Threats to the demand for warehousing and logistics space

2.3.1 Following the review of the WLSEM study, this report looks at the potential threats to the future level of demand for (strategic) warehousing and logistics space in the UK and in the SEMLEP area.

2.3.2 The WLSEM study predicts that future demand for strategic warehousing and logistics space will remain high over the foreseeable future. This forecast is based on historical trends, but medium to longer term demand is more unpredictable and will not necessarily follow historical trends.

2.3.3 The main reason for this is that the future demand for space is:

- Correlated to the land use intensity;
- Directly linked to consumers' spending (which is not unconstrained);
- The place of e-commerce.

2.3.4 The demand for strategic warehousing and logistics space in the UK and in England has boomed over the past few years, in response to the rise of e-commerce activities and disruptions of the supply chain due to Brexit, Covid-19 and the war in Ukraine. In October 2021, several industrial property agents warned that the UK could run out of warehouse space within a year[3]. However, this prediction has somewhat failed to materialise. This can be seen in Table 2.1 which shows that whilst net absorption has risen to an all-time high in the past few years, delivery of space has addressed this demand. This has led to an increase in availability of floorspace between 2021 and 2022 (going against the predictions made in 2021 that the UK would run out of warehousing space).

Table 2.1 – Strategic warehousing and logistics property market, England

	Inventory (sqft)	Deliveries (sqft)	Net Absorption (sqft)	Vacant %	Available %
2009	599,481,922	11,331,743	170,637	10.8%	12.7%
2010	606,444,603	7,197,756	7,973,352	10.5%	11.8%
2011	623,065,571	8,126,354	11,002,761	9.4%	11.2%
2012	629,300,849	8,025,800	10,158,639	8.7%	10.9%
2013	629,452,780	3,403,082	6,904,080	7.6%	9.6%
2014	634,258,586	8,636,182	20,446,506	5.1%	6.7%
2015	643,934,541	12,862,797	14,119,159	4.3%	5.9%
2016	665,590,956	23,736,719	19,070,863	4.5%	5.9%
2017	683,298,507	18,931,389	15,952,047	4.6%	6.3%
2018	692,642,637	13,449,905	9,193,240	4.5%	5.9%
2019	719,096,658	28,363,759	26,154,992	4.4%	6.1%
2020	736,517,381	18,977,462	20,685,980	3.8%	6.3%
2021	761,846,086	28,259,975	28,271,154	3.3%	5.2%
2022 YTD	785,150,952	25,614,054	23,579,653	3.2%	5.5%

Source: CoStar data

2.3.5 Based on CoStar data, there were 77.1 million sqft of strategic warehousing and logistics space (premises over 100,000 sqft in size) available in the UK in November 2022.

Land use intensity

2.3.6 Through the introduction of new technologies within logistics activities, the sector has been able to increase the intensity of its land use (i.e. process more products within the same square footage) over recent years. This has been driven by five main trends:

- Maximisation and optimisation of all available space using vertical space and warehouses becoming increasingly taller;
- Lean inventory, made possible through better management systems, ensure that minimum floorspace is used for unnecessarily long period of storage (goods are

[3] See: Britain could run out of warehouse space within a year, Financial Times (ft.com), 21 October 2021

processed and shipped as soon as they arrive, reducing the amount of space necessary for storage);

- Enabling technologies, such as warehouse management systems, have improved the efficiency by suggesting the best routes and methods for picking-up or putting-away. This increases the speed of processing, reducing the amount of space necessary for storage;
- Organised workstation will improve productivity as workers have all the necessary tools in the same place, therefore increasing the speed of processing and reducing the need for storage space;
- Automation and robotisation have contributed to the speed of processing and allowed operational space (i.e. alleys) to be reduced to a minimum.

Consumers spending

2.3.7 The consequences of the war in Ukraine have cast a shadow over prospects for the UK economy and injected considerable uncertainty into the outlook. Although the economy entered the year with some momentum, jumps in energy prices and wider inflation means that pressure on consumers will intensify, despite the fiscal support provided by the government to cushion the blow.

2.3.8 Ernst & Young, in their latest Interim Forecast and Special Report on Consumer Spending[4], indicated that while the outlook for growth in the UK economy has deteriorated, they are not expecting a recession. It should be noted that this was their view in March 2022, and it has likely evolved since given the current economic context in the UK and Europe. A look at the performance of consumer spending in past economic downturns can provide some guidance on what parts of the consumer sector are most sensitive to a slowdown in the wider economy. In one respect, the message from the recessions of the early 1990s and the global financial crisis in 2008-09 (the recession of 2020 is excluded given its very unusual nature) is clear – spending on consumer durables, such as vehicles, furniture and household appliances, looks far more vulnerable to a weaker economic outlook than other areas of consumption.

2.3.9 Consumption of semi-durables (such as clothing and footwear) and non-durables (such as food and drink) is also vulnerable to an economic downturn, although the correlation is not as clear as it is for durables. The three categories are all part of e-commerce offer and therefore a downturn in the economy could negatively impact consumer spending, therefore negatively impacting the performance of e-commerce and their need for additional space.

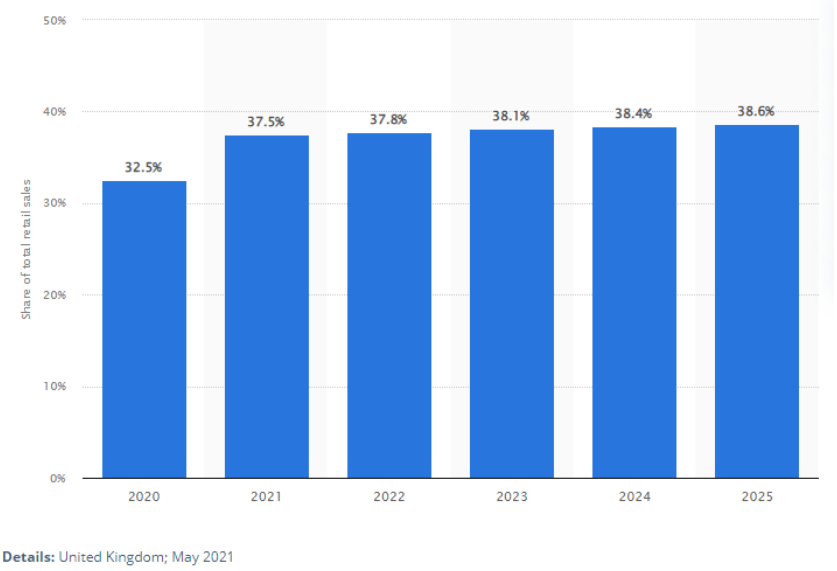
The place of e-commerce

2.3.10 The rise of e-commerce is one of the main contributors driving the demand for strategic warehousing and logistics space in the UK. ONS data shows that internet sales as a percentage of total retail sales in the UK have increased from 3.4% in 2007 to 30.7% in 2021[5], as previously shown in Figure 2-3.

2.3.11 However, forecast data published by Statista shows that this period of rapid growth is ending with growth continuing but at a markedly slower rate - going from 37.5% of share in 2022 to 38.6% in 2025, as shown in Figure 2-10.

[4] ey-item-club-interim-forecast-consumer-spending-special-march-2022.pdf
[5] Internet sales as a percentage of total retail sales (ratio) (%) - Office for National Statistics (ons.gov.uk)

Figure 2-10 - E-commerce share of retail sales revenue in the United Kingdom (UK) from 2020 to 2025



Source: Statista

2.3.12 It should be noted that there is a difference between the figures provided by the ONS and Statista for 2020 and 2021. Applying Statista's forecasted growth to the ONS baseline figures, would suggest that e-commerce's share of retail sales revenue will increase from 30.7% in 2021 to 31.6% by 2025 (see Table 2.2).

Table 2.2 – Internet sales as a percentage of total retail sales (ratio) (%)

	ONS	Statista	Adjusted
2007	3.4%		3.4%
2008	4.9%		4.9%
2009	6.2%		6.2%
2010	7.3%		7.3%
2011	8.3%		8.3%
2012	9.3%		9.3%
2013	10.4%		10.4%
2014	11.3%		11.3%
2015	12.5%		12.5%
2016	14.7%		14.7%
2017	16.3%		16.3%
2018	18.0%		18.0%
2019	19.2%		19.2%
2020	28.1%	32.5%	28.1%
2021	30.7%	37.5%	30.7%
2022		37.8%	30.9%
2023		38.1%	31.2%
2024		38.4%	31.4%
2025		38.6%	31.6%

Source: AECOM Calculations, based on ONS and Statista

2.3.13 When taken together with a potential reduction in consumers' spending, demand for strategic warehousing and logistics space by e-commerce operators could stagnate or decrease over the next few years.

2.3.14 Moreover, several retail trends[6] could further accentuate the reduction in demand for strategic space from e-commerce retailers:

- The rise of the quick commerce model[7]: this will increase the demand for smaller warehousing space in urban centres, to the detriment of strategic warehousing space on the outskirt of urban centres;
- Consumer behaviour: climate change is increasingly becoming a major factor impacting consumer behaviour and consumer choice, with the reduction in the carbon footprint of shopping being at the centre. There is evidence of a progressive return to local shopping habits which could come to the detriment of e-commerce (mainly processing overseas goods);
- Rising cost of transport: the cost of deliveries (and returns) is driving the cost of goods processed by e-commerce operators up. Return costs currently account for 16% of the revenue generated by e-commerce retailers and this rate is increasing year-on-year. This impact is compounded by the environmental cost and the carbon footprint of e-commerce activities.

2.4 Supply of B8 land in Bedford

2.4.1 The Bedford Local Plan 2040 (for submission version) states that "the Employment Land Study topic paper sets out that it is appropriate for the plan to identify between 118 and 142 ha of employment land. Policies HOU 14, HOU 19 and EMP 1 - EMP8, identify sufficient land to meet the upper end of this forecast."

Table 2.3 – Policy DS5(S) Distribution of growth:

Location	Employment Land (ha)
Within the urban area	5[8]
Strategic locations adjacent to the urban area which contribute to delivering the Forest of Marston Vale incorporating the Bedford Milton Keynes Waterway Park and the Bedford River Valley Park	7
Growth locations on the A421 transport corridor and with the potential for rail based growth • South of Bedford including new settlement • Little Barford new settlement • Other employment sites	 70 4 50
Remaining rural area / villages	Completion of sites previously allocated in local plans and neighbourhood plans

Source: Bedford Local Plan 2040

2.4.2 A list of all the sites identified for warehousing and distribution uses in the Local Plan is provided below:

- **Policy EMP2 Former playing field, ARA Manton Lane, Bedford**

  Land at the former playing field, ARA Manton Lane will be developed for industrial, warehousing and distribution uses.

  This site however is small (1.6 ha) and future development heights will be restricted due to the site's location on high ground. This site might therefore not be suitable for strategic warehousing space.

[6] Future of Retail: Insights from retail & CPG experts, SAS (2022)
[7] Such as home deliveries within 10 minutes of ordering
[8] Does not include 20.4 ha at Pear Tree Farm which is land allocated in ADLP Policy AD11 and counted as a commitment

- **Policy EMP3 Land south west of Interchange Retail Park and north of A421, Kempston**

  Land south west of Interchange Retail Park between the A421 and railway. The site is 3.3 ha and is currently occupied by a radio transmission mast which is shortly to become non-operational.

  The site has access to the A421 through the Interchange Retail Park and could accommodate one large warehousing shed. There are no incompatibles land uses around.

- **Policy EMP4 Land south of Goldington Road, Bedford**

  Land south of Goldington Road and adjoining the existing Elms Farm industrial estate, measuring 7.2 ha. The site is located on the A4280, connecting directly to the A421 and has no incompatible land uses around.

- **Policy EMP5 Land at Pear Tree Farm, Elstow**

  Land at Pear Tree Farm will be developed for a science park (primarily research and development with elements of manufacturing, warehousing and related distribution). This is a 20.4 ha employment site.

- **Policy EMP6 Business Park, Land at Water End and St Neots Road**

  Land at Water End and St Neots Road will be developed for a campus-style development (primarily research and development with elements of manufacturing, warehousing and distribution).

  This site provides 30 ha of land but would predominantly delivery a research campus.

- **Policy EMP7 Land at College Farm, Black Cat roundabout**

  Land at College Farm will be accessed from a new Black Cat roundabout at the junction of the A421 and A1. This 3 ha employment site is suitable for strategic warehousing space (one unit) given its excellent links to the strategic road network an absence of incompatible uses around the site.

- **Policy EMP8 Land at Roxton, south west of the Black Cat roundabout**

  To the south-west of the Black Cat roundabout the site of the Roxton Garden Centre is allocated for employment. Its excellent links to the strategic road network make the 17 ha site particularly suited to warehousing and distribution uses.

- **Site Allocation HOU14 Kempston Hardwick New Settlement, South of Bedford**

  Land to the south of Bedford adjacent to the B350 comprising 70 ha has been identified for employment use, including an innovation hub and business campus. The proximity of the site to existing warehousing uses and the strategic road network make it well suited for warehousing and distribution uses as part of the employment mix.

- **Site Allocation HOU19 Little Barford New Settlement, South of St Neots**

  The policy allocates 3.6 ha of industrial and warehousing employment land. Although the site is located close to the A1, the existing road network leading to the site is unlikely to be able to support the large volume of heavy goods vehicles required by the warehousing and distribution sector.

2.4.3 Overall, it is considered that a total of 35.7 ha of employment land could be used to deliver strategic warehousing and distribution space in Bedford[9]. There is also a further 120.4 ha of employment land that could be partially used to deliver warehousing and distribution space relating to the support of innovation and R&D activities although this would mean that other needs may not be fully met.

[9] EMP2 (1.6 ha); EMP3 (3.3 ha); EMP4 (7.2 ha); EMP7 (3 ha); EMP8 (17 ha); HOU19 (3.6 ha)

2.5 Findings

2.5.1 There is a general demand for B8 space (100k sqft+) across the UK which is also seen in the SEMLEP area. Some of this demand should be met in Bedford, however, there is some evidence to suggest that Bedford may not be seen as a prime location by all occupiers, with some favouring locations that are better connected to the strategic road network and provide opportunities for connection to the rail. This consideration may be reinforced over the following years as an increasing number of companies are placing net zero and decarbonisation at the top of their agenda.

2.5.2 AECOM replicated the WLSEM forecasting approaches to understand what share of the land requirement for strategic warehousing and distribution space in the SEMLEP area should come from Bedford:

- Based on AECOM's adjustment of Iceni's traffic flow analysis, it has been estimated that there could be a requirement for between 24 ha to 28 ha of developable land for strategic warehousing and logistics space in Bedford by 2050, or between 17 ha and 20 ha by 2040 (corresponding to the end of the Local Plan period).
- Based on CoStar forecast of net absorption, Bedford would need to provide circa 290,000 sqft of additional large-scale warehousing and distribution space (100,000 sqft+) every year between 2023 and 2027 to have a vacancy rate considered as healthy (around 4%). This would require the equivalent of 6.8 ha of developable land each year, or circa 129 ha by 2040.

2.5.3 From the supply side, there is a total of 35.7 ha of employment land allocated in the Local Plan 2040 that could be used to deliver strategic warehousing and distribution space in Bedford. The Local Plan also identifies a further 120.4 ha primarily for R&D which could accommodate supporting warehousing and distribution space although this would mean that other needs may not be fully met.

2.5.4 AECOM's review of The WLSEM study's analysis (market signals – low scenario), which is the scenario that seems the most likely, indicates that there could be a demand for 93 ha of land for strategic warehousing and logistics space in Bedford by 2040.

2.5.5 Overall, based on current supply (35.7 ha + part of 120.4 ha) and estimates of future demand (between 17 ha and 129 ha – with a central estimate of 93 ha) presented in this report, between 0 ha and 93.3 ha of the 120.4 ha of employment land allocated in the Local Plan for innovation and R&D (and supporting manufacturing and warehousing space) would be required to meet the predicted future demand for B8 space over the Local Plan period. Under the central scenario, 57.3 ha out of the 120.4 ha would be required to meet future demand for B8 space. This is assuming no excess supply gets provided in the wider SEMLEP area. It should be noted that this balance is based on forecasted demand for warehouse space in Bedford, following the methodology established in the WLSEM study, and before any public intervention to support the council's ambition to provide innovation space in the borough.

2.5.6 AECOM has carried out an Economic Demand Needs Assessment, presented in chapter 4 of this report, which makes recommendations on the quantum of additional land required in Bedford to accommodate the demand for warehousing and distribution space (B8 planning use class) based on a range of modelling forecast approaches.

3 Demand for innovation space in Bedford

3.1 Introduction

3.1.1 This chapter looks at the demand for innovation space in Bedford and identifies key strengths and opportunities. This analysis supports the Council's vision to deliver a high-skilled, high-value economy in Bedford through the delivery of space for the innovation sector.

3.2 Opportunities for innovation space in Bedford

3.2.1 The location of Bedford on the edge of the "**Golden Triangle**" (Oxford-Cambridge-London) is a strength that should be highlighted, particularly for the growth of a high-value, highly skilled, economy in Bedford.

3.2.2 The Golden Triangle is a major international hub for research, particularly in the medical and pharmaceutical sectors amongst other specialisms, and is home to some of the UK's top universities (i.e. G5 universities – University of Cambridge, Imperial College London, King's College London, University of Oxford, University College London) which all have among the highest research incomes of all British universities). Cranfield University in Bedfordshire is also a strategic asset for businesses and higher education collaboration.

3.2.3 Distances and commuting times to those locations could also be mentioned to reinforce the proximity, based on rail travel time following the delivery of East-West Rail (EWR).

Table 3.1 – Commuting time

Bedford to ...	Road		Rail
	Distance (miles)	Duration	Duration (post EWR)
Cambridge	30	0h40	0h29
London St Pancras	60	1h20	0h39
Oxford	60	1h20	0h52

Source: AECOM, East-West Rail

3.2.4 It should be noted that the proposed EWR, connecting Oxford to Cambridge, via Bedford, will dramatically reduce the rail journey time between Bedford Oxford/Cambridge. Services are expecting to be introduced in three "connection stages", with the first connection stage expected to start running around 2025.

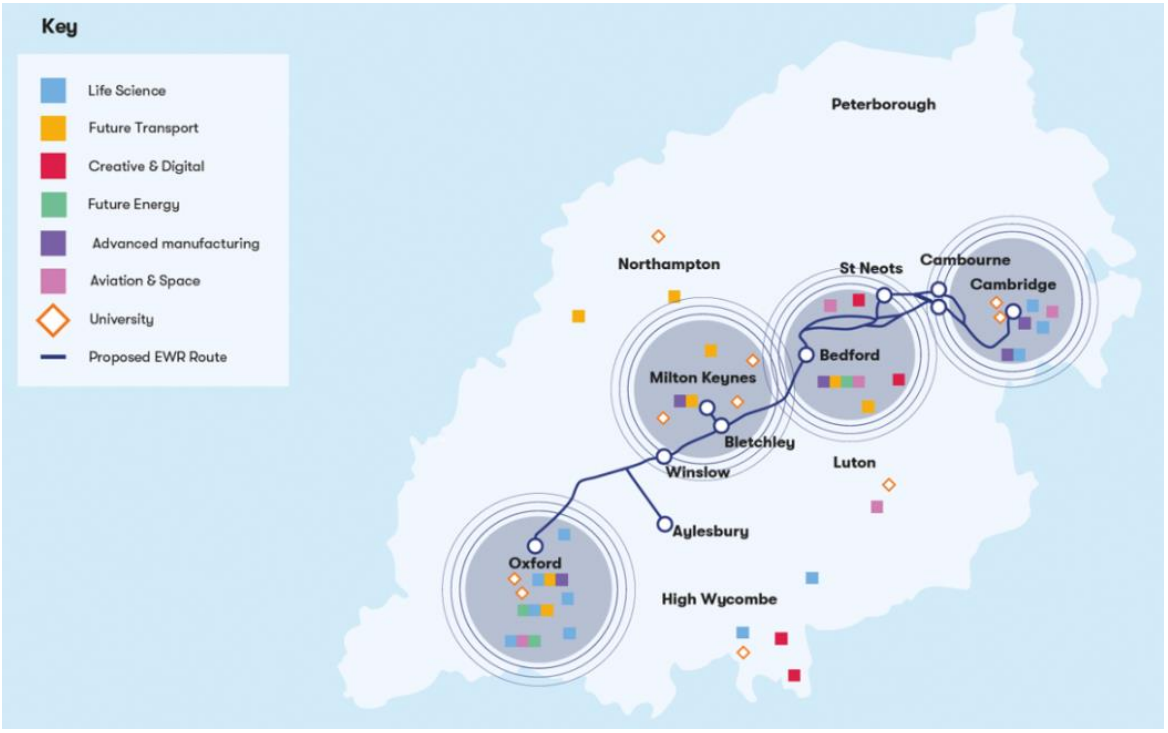
3.2.5 East West Rail is a once in a generation opportunity to connect communities between Oxford and Cambridge with jobs, education and opportunities, as well as making places more appealing for people wanting to start and grow businesses – attracting and retaining the best talent in the region, while encouraging new investment to support the economy.

3.2.6 The EWR is expected to boost activities in Bedford in key sectors such as advanced manufacturing, transport (and future of transport), energy (and future of energy), aviation and space as well as the creative and digital sector, as shown in the following illustration created by East West Railway Company[10].

3.2.7 The implications of the EWR should be considered as part of the evidence base to ensure that the new Local Plan maximises economic growth opportunities for Bedford.

[10] https://eastwestrail.co.uk/benefits-of-ewr

Figure 3-1 – East-West Rail, Strategic Growth Sectors



Source: East West Rail

3.2.8 Bedford also sits at the centre of the **Oxford-Cambridge Arc**, which supports over two million jobs, contributes over £110 billion to the economy every year and houses one of the fastest growing economies in England[11]. The Arc is an opportunity, recognised by government and local partners, to build a better economic, social and environmental future for the area through the delivery of high-quality, well-connected and sustainable communities.

3.2.9 Oxford and Cambridge are amongst the most innovative cities in the country, as measured by the annual number of new patent applications, and Milton Keynes has one of the highest rates of new business start-ups. To maximise the potential of the area, investment in supportive infrastructure was proposed, namely:

- An Oxford - Cambridge Expressway road link
- A Cambridge to Bedford railway that will allow an East-West rail connection

3.2.10 The increase in population in reach of Bedford is likely to have a major impact. Providing that Bedford seize this opportunity and deliver space where people want to work, shop and visit, this will inevitably lead to a greater retention of its local workforce as well as an increase in commuters and shoppers to Bedford.

3.2.11 Experience shows that new businesses, particularly in the high-tech sector, prefer to co-locate with like-minded companies in established clusters and research parks. It is therefore important for Bedford to ensure that sufficient space is available to accommodate potential future demand, building up on its existing clusters of activities. Failure to provide the appropriate space could result in further out-commuting and a loss of highly qualified workforce, benefiting places such as Oxford, Cambridge or Milton Keynes.

3.2.12 Looking at the evolution of employment in the “innovation” sectors in the Oxford-Cambridge Arc, it can be said that Bedford has historically been performing relatively well in creating employment in some of those sectors.

3.2.13 There is no right or wrong way of measuring the potential of strategic opportunity for Bedford. The approach taken in this report is to look at the evolution of employment in “innovation” (also described as science and technology by the ONS) in the Oxford-

[11] https://www.gov.uk/government/publications/oxford-cambridge-arc

Cambridge Arc, at the local authority level to compare the evolution of this employment in Bedford with other local authorities. This analysis can help us understand what Bedford has potentially been missing should the Borough had been able to attract similar employment growth in this sector.

3.2.14 What makes up the "innovation" sector can be defined in different ways, but the most typical definition used in this analysis is the activities comprising the science and technology sector by the ONS[12]. This definition includes a wide range of UK standard industrial classifications (5-digit SIC07 code) and categorises them into five groups:

- Digital technologies;
- Life sciences and healthcare;
- Publishing and broadcasting;
- Technological manufacture; and
- Technological services.

3.2.15 Based on this definition, and an analysis of ONS employment data between 2015 and 2021, we can see in Table 3.2 that Bedford has performed well in terms of employment growth in some particular science and technology categories, compared to the Oxford-Cambridge Arc total. Overall, Bedford delivered 9.6% of the entire Ox-Cam employment growth in the science and technology sector. This compares with growth of 4% in all employment (all sectors), suggesting the importance that Bedford can potentially play in delivering future growth of high-value employment in the area.

3.2.16 The science and technology categories that performed particularly well include technological manufacturing, life sciences and healthcare and digital technologies.

Table 3.2 – Evolution of Employment in Science and Technology, 2015-2021

Science and technology Categories	Bedford	Ox-Cam	Bedford as % of Ox-Cam
Digital Technologies	545	7,205	7.6%
Life Sciences & Healthcare	3,675	32,745	11.2%
Publishing & Broadcasting	-130	-8,820	1.5%
Other scientific/technological manufacture	300	525	57.1%
Other scientific/technological services	360	18,000	2.0%
Total Science and Technology	**4,750**	**49,655**	**9.6%**
Total Employment (all sectors)	5,855	147,840	4.0%

Source: ONS, BRES

3.2.17 Providing appropriate sizes and types of space for such activities could allow Bedford to retain its strong performance in terms of employment growth, whilst seizing an important share of expected future employment to be created in the Oxford-Cambridge Arc. The growth of under-performing categories, such as technological manufacturing activities, could also be buttressed by provision of appropriate floorspace and premises in Bedford.

3.2.18 Table 3.3 shows the average annual growth in employment between 2015 and 2021 in Bedford and in the Ox-Cam Arc, again evidencing the relatively strong performance of Bedford within the Arc.

[12] https://www.ons.gov.uk/businessindustryandtrade/business/businessinnovation/datasets/scienceandtechnologyclassification

Table 3.3 – Average Annual Employment Growth, 2015-2021

Science and technology Categories	Bedford	Ox-Cam
Digital Technologies	4.0%	1.7%
Life Sciences & Healthcare	8.4%	3.8%
Publishing & Broadcasting	-2.1%	-3.2%
Other scientific/technological manufacture	4.3%	0.2%
Other scientific/technological services	1.8%	2.3%

Source: ONS, BRES

3.2.19 A report by Savills[13], published in 2015, indicated that the Ox-Cam area had been delivering an average of 44,000 new jobs per year (over the past 5 years). The analysis of BRES data shows that employment in science and technology represented 23% of total employment in 2015. Therefore, we can assume that the science and technology sector grew by circa 10,100 jobs in average per year. With Bedford representing 9.6% of this growth (see Table 3.2), the number of jobs in the innovation sector in Bedford grew by circa 940 per annum in average.

3.2.20 Furthermore, the same report states that the Arc "needs to deliver an additional 3.9 million sq. ft. of office/R&D floorspace in the next 10 years. Longer-term, by 2050, there will be a need for 9.6 million sq. ft. more floorspace". Based on the same observation that Bedford delivers 9.3% of all employment in the innovation sector, the Borough should deliver at least 362,700 sqft of innovation space over 10 years and 892,800 sqft of innovation space by 2050 to maintain its performance.

3.2.21 Figure 3-1 presented above also provides a useful diagram of the regional opportunities that could be unlocked by East-West Rail and the role of Bedford in the region. The figure suggests that employment opportunities will come from sectors such as advanced manufacturing, future transport, future energy, aviation and space, or creative and digital. This relatively aligns with the analysis of BRES data (Table 3.2 and Table 3.3) presented above. Diversifying Bedford Borough's economy also aligns with national objectives set out by the National Infrastructure Commission and Government, particularly around the need to maximise the potential of new infrastructure to support sustainable growth, devolution and levelling-up.

3.2.22 The National Infrastructure Commission (NIC), in its Baseline Report for Second National Assessment (2021) recognised that:

"Large cities and some towns outside of London are not achieving their productivity potential. The reason for this are varied and many have been entrenched for decades. Sustained local growth needs to be rooted in local strategies, covering a range of coordinated policy areas. While infrastructure is a necessary condition for economic growth, it is rarely sufficient. Instead, infrastructure should form part of wider economic strategies, alongside other areas like skills and inward investment."

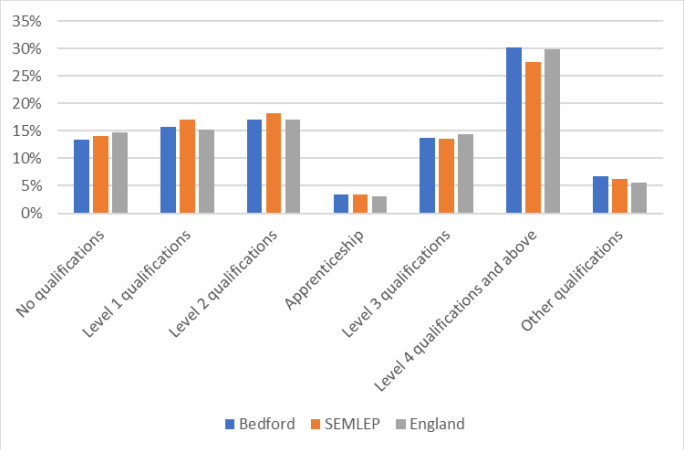
3.2.23 The NIC's Baseline Report supports the idea that BBC should aim to create new areas of innovation for its residents, taking full advantage of the transport infrastructure available, both now and in the future.

3.3 The local labour market

3.3.1 Census data from 2011 shows that the working aged population in Bedford has a high level of qualifications compared to the SEMLEP and national levels, as shown Figure 3-2.

[13] https://pdf.euro.savills.co.uk/uk/residential---other/the-oxford-cambridge-innovation-arc.pdf

Figure 3-2 – Working age population, highest level of qualification (2011)



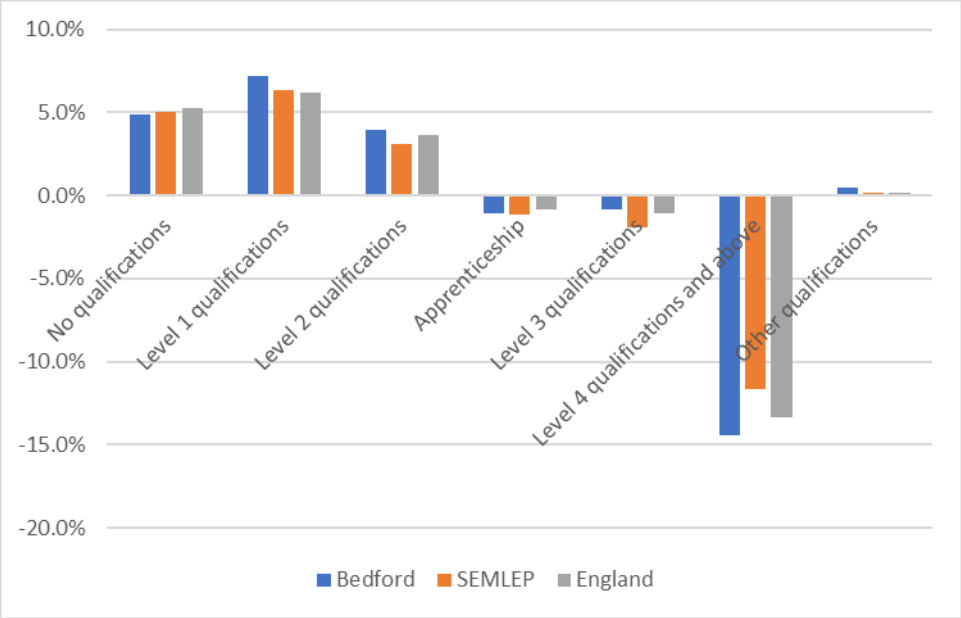
Source: ONS, Census 2011

3.3.2 The following graph, presented in Figure 3-3, shows the difference in percentage between working age population and unemployed working age population by level of qualification. For instance, working age population with no qualifications represented 13.3% of the total working age population in Bedford in 2021, whilst the unemployed working-age population with no qualifications represented 18.2% of the total unemployed working age population. The difference between the two (4.9%) shows the disproportional representation of un-qualified people within the unemployed population.

3.3.3 The graph shows that Bedford has a lower comparative representation of unqualified people in unemployment than observed at the SEMLEP level or national level. Therefore, it can be assumed that there is a sufficient number of jobs for unqualified people in Bedford.

3.3.4 However, Bedford has a higher comparative representation of unemployed people with low and medium levels of qualifications (level 1, level 2, apprenticeship and level 3). Therefore it could reasonably be assumed that Bedford's economy would benefit from the creation of more mid-level jobs, which could contribute to reducing the proportionally higher level of unemployment amongst the population educated to mid-level qualifications.

Figure 3-3 – Difference between share of total working age people and working age population in unemployment by level of qualifications (2011)



Source: ONS, Census 2011

3.3.5 A lack of access to better paid jobs for local people is also a major threat for Bedford. In its Towns Report (2021), the NIC shared the results of some research which showed that

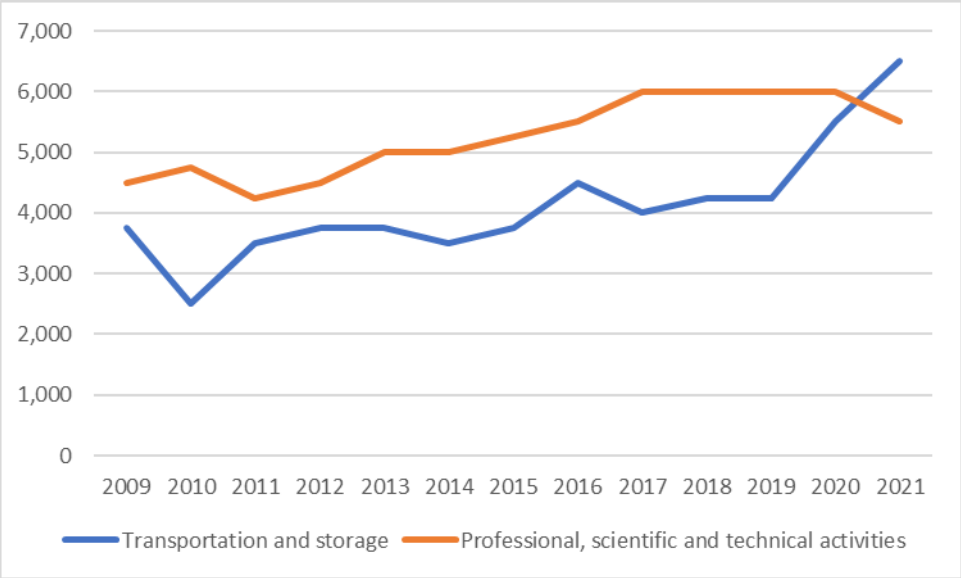
people rank “more jobs” and “higher paid jobs” in their top five priorities[14]. It is therefore important for Bedford to ensure that high-value employment is delivered locally in order to help address its salary gap with both the East of England more widely and South East of England (see Figure 3-6), and retain its qualified workforce.

3.3.6 More could be added to show the evolution of socio-economic factors in Bedford over time and the worsening of conditions, such as figures covering the evolution of employment compared to figures covering earnings and deprivation. Whilst it is not possible to make a direct link between the evolution of the types of jobs available and Bedford and deprivation, it provides a useful picture and show where the different elements correlate to each other. Comparing figures with the wider area, or other Local Authorities, may also be a useful exercise, to potentially evidence what Bedford has not experienced relative to comparable areas.

3.3.7 Unfortunately, employment figures are only available from 2009, and therefore this will show a relatively short-term picture of the evolution of employment and correlation with other socio-economic variables.

3.3.8 Figure 3-4 shows the evolution of employment in the Transportation and storage in Bedford and compares it with the East of England, London and the South East of England. The figure shows that employment in this sector has increased disproportionally in Bedford compared to the growth of the sector in the three regions surrounding Bedford.

Figure 3-4 – Evolution of Employment in Transportation and Storage, 2009-2021

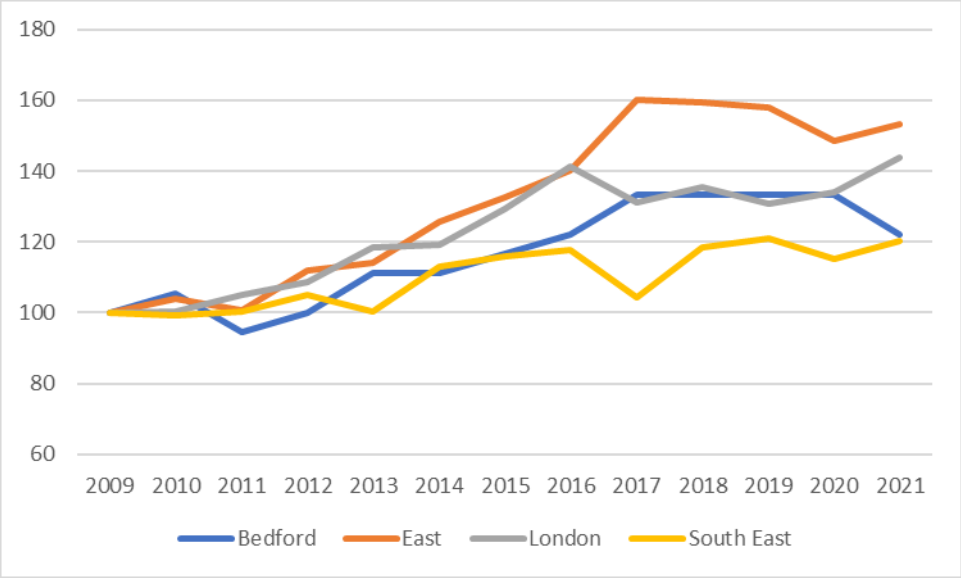


Source: ONS, BRES

3.3.9 Inversely, Figure 3-5 shows that employment in the professional, scientific and technical services sector has increased at a lower rate in Bedford than in the East of England and London. The employment growth in this sector in Bedford is comparable to the growth observed in the South East.

[14] National Infrastructure Commission, Towns Report, p.29, 2021

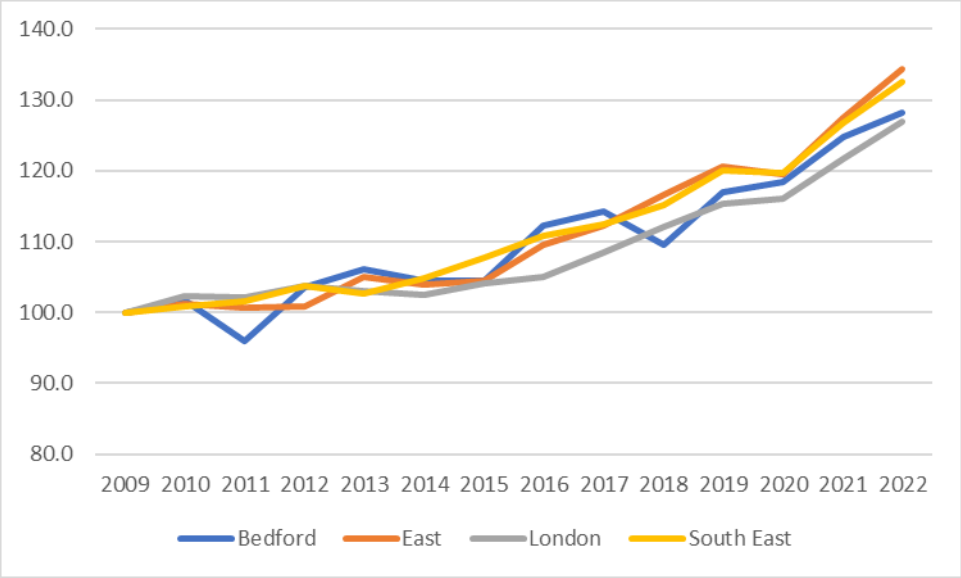
Figure 3-5 – Evolution of Employment in Professional, scientific and technical services, 2009-2021



Source: ONS, BRES

3.3.10 It is also insightful to compare the evolution of employment with the evolution of other socio-economic variables, such as earnings (workplace analysis). Figure 3-6 shows the evolution of median weekly pay (gross) in Bedford, the East of England, London and the South East of England. This shows that median earnings in Bedford have increased at a slower rate than in all these comparator areas, with the exception of London. This again could be seen to be demonstrating a need for high-value employment to be delivered in Bedford to ensure the borough keeps pace with the prosperity of the wider regions.

Figure 3-6 – Median weekly earning (gross)



Source: ONS Annual Survey of Hours and Earnings

3.4 Travel to work

3.4.1 Travel to work data[15] provides an insightful visualisation of inflows and outflows for Bedford (in 2011). This shows that some local authorities are particularly attractive to residents of

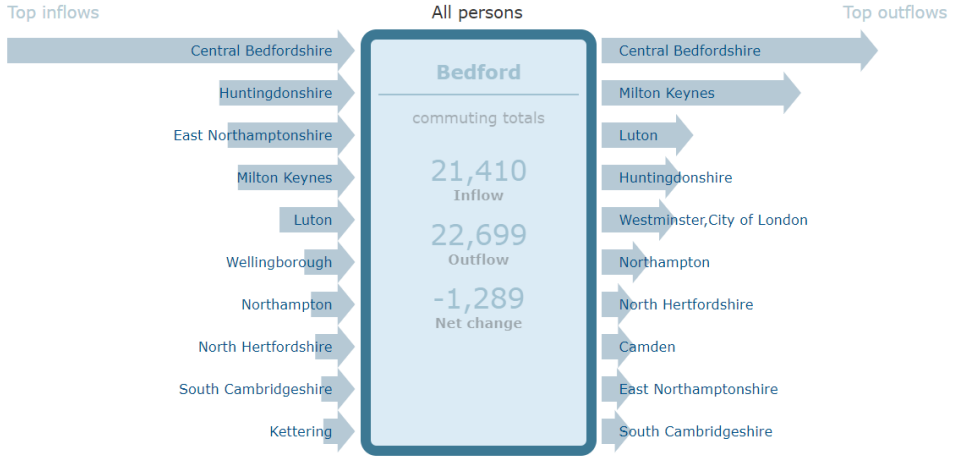
[15] ONS, Census WU01UK - Location of usual residence and place of work

Bedford. Some of those local authorities can be considered as having high-value, highly skilled economies.

3.4.2 The main destinations generating a net outflow of population from Bedford are:

- Milton Keynes (net outflow of 1,780);
- Westminster (1,303);
- Camden (430);
- Luton (430); and
- Northampton (190)

Figure 3-7 – Location of usual residence and place of work (2011)



Source: ONS, Census 2011

3.5 Property market

Baseline analysis of existing stock

3.5.1 This section provides an overview of CoStar data for R&D space and market trends in the SEMLEP area and compares the performance of the market with other areas (such as Cambridge or Oxford) as well as regional and national levels.

3.5.2 It should be noted that innovation space is not only limited to R&D space. However, given the absence of a better filtering system in CoStar, it is not possible to include any other properties into the analysis such as manufacturing space which might have R&D areas, or office space used for desk-based innovation activities.

3.5.3 It should also be noted that R&D as a secondary use in CoStar is a very specific use and that a limited number of properties are referenced in the database. This may not reflect the entire existing stock, with properties categorised under an alternative secondary use (as main use) but providing some innovation space (as explained above).

3.5.4 There are only 6 properties in the SEMLEP area categorised as R&D space providing a total of 268,260 sqft of space, including 1 in Bedford (Twinwoods Wind Tunnel, Thurleigh Road – 51,737 sqft).

3.5.5 This is (unsurprisingly) modest in comparison to other leading innovation markets such as Oxford (Cherwell, Oxford City, South Oxfordshire, Vale of White Horse and West Oxfordshire) or Cambridge (Cambridge City, East Cambridgeshire, South Cambridgeshire).

3.5.6 However, comparing CoStar data for Greater London puts the SEMLEP areas modest numbers into perspective, as the capital has a comparable number of R&D properties and floorspace (8 properties, 241,231 sqft).

3.5.7 Table 3.4 also shows the current level of vacancy and availability of R&D space in Bedford is currently 0%, which is similar to the level observed in Cambridge, whilst vacancy in Oxford and London remains low with 2.5% to 2.8% rates.

3.5.8 Despite a low quantum of stock the level of net absorption in the SEMLEP has been high (comparatively to the size if the stock in the area) which indicates, with the absence of vacancy and availability, that additional space would likely be taken by occupiers.

3.5.9 The SEMLEP area, and Bedford in particular, have a huge advantage over other markets when it comes to rental values which are much lower. This could be a decisive argument to attract occupiers to the area which would favour cost over the direct proximity to other businesses and universities. Those occupiers are likely to be within the supply chain of existing innovation clusters.

Table 3.4 – Existing properties

	Properties	Floorspace (sqft)	Vacancy (%)	Availability (%)	Net absorption (average past decade)	Net absorption (average past 5 years)	Rent (£/sqft/year)
SEMLEP	6	268,260	0.0%	0.0%	6,775	2,010	£7.39
Oxford	20	1,725,109	2.5%	2.6%	136,792	69,963	£38.00
Cambridge	23	1,494,102	0.0%	0.0%	105,140	186,280	£10.90
London	8	241,231	2.8%	6.4%	10,027	1,626	£28.68

Source: CoStar

Existing and proposed developments

3.5.10 As mentioned above, there are a limited number of properties in Bedford which are directly associated with innovation and R&D activities.

3.5.11 Colworth Science Park is the most prominent R&D facility in Bedford. The campus is composed of 12 buildings, located at the north-west of Bedford town centre, and offers a total of 350,000 sqft of innovation space (office and R&D space). The campus is home to one of Unilever's six global R&D facilities.

3.5.12 The site was acquired by Wrenbridge and Palmer Capital in June 2014 for £48.5 million and sold in November 2019 for £62.75 million to Trinity Investment Management / Pioneer Group, achieving a yield of circa 6% which indicates that the site is a valuable asset. Unilever has confirmed they remain committed to the site until at least 2034.

3.5.13 Wrenbridge's Director described the Park as being "*strategically located in the heart of the UK Growth Arc, a knowledge corridor running from Oxford to Cambridge, that will see this area transformed over the coming years. Its position will enable tenants to compete on the global stage, share knowledge and innovate in collaboration with others along the corridor. Tenants at the Park include companies from the professional services, planning and biotech industries*"[16].

[16] https://www.wrenbridge.co.uk/unilevers-bedford-hq-sells-for-over-60m-2/

Figure 3-8 – Colworth Science Park

Source: UKSPA

3.5.14 An important cluster for high-value and innovation activities exists at Priory Business Park (south east of Bedford town centre), with companies in the pharmaceutical and health sector such as SPD and, Lifeplus Europe; in the technology, digital and IT sector such as Capita and, Xigen; in the construction and engineering sector such as Mint Construction; and in the manufacturing sector such as Ceetak, Kemppi and Elma Electronic UK.

3.5.15 Priory Business Park is also home to the Bedford i-Lab, an innovation and business centre which offers fully service office space to companies.

3.5.16 Bedford College is also an important actor for innovation in Bedford and could act as a catalyst to attract businesses and investments to Bedford. The College offers a wide range of facilities located across Bedford.

3.5.17 The Bedford College Advanced Engineering Centre (Buchanan Centre), located at Cauldwell Street, opened in 2018 following an investment of £6 million and offers employers great new space for electrical and engineering training. The new centre houses newer, lighter, analytical equipment, BIM Software and robotics to enable you to move through to the higher level training essential in today's manufacturing and civil engineering markets.

Figure 3-9 – Buchanan Centre

Source: Bedford College

3.5.18 The College also has a Vehicle Technology Centre, located in Kempston, as well as an Advanced Automotive Technology Centre (Brunel Training Centre), preparing students to work in the automotive industry, including with major motor vehicle employers in the region.

3.5.19 The Connolly Centre for Modern Construction is a specialist centre which has been partly funded by SEMLEP. The centre provides students with education on the future of the construction industry such as the modular and pre-fabrication construction techniques, which have been identified as the most efficient and cost-effective way of meeting the huge demand for housing.

3.5.20 Finally, the South Bank Arts Centre is home to Bedford College's Art & Design and Performing Arts, Music & Media students. The building provides graphic design suites, photography suites, art rooms, fashion and textile workshops, music technology and recording studios, video studios, a dance studio and theatre.

3.5.21 In October 2022, Fujifilm UK opened its new strategic headquarters in Bedford, moving from its previous headquarters on St Martins Way to Cardington Road (a short 250 metres distance). This move within Bedford confirms the commitment of the company to the area and could contribute to attracting further investment to Bedford.

3.5.22 Other high-value Bedford Borough based businesses undertaking innovative operations include but not limited to Aircraft Research Association, Leidos, Bluebear Systems Research, Bourns Electronics, Axis Electronics and Global Access Diagnostics X.

3.5.23 Additional opportunities to deliver innovation space in Bedford have been considered, including through the successful pre-application of Bedford to host Investment Zones, proposed by the government to attract development, albeit these were later scrapped. The Council identified two areas for the designation: within Bedford around the Bedford Midland and St John's railway stations; and at Pear Tree Farm at the junction of the A421 and the A6.

3.5.24 The land at Pear Tree Farm is identified in the Bedford Borough Local Plan 2040 Plan for Submission (Policy EMP5) for the development of a science park, primarily for R&D uses with elements of manufacturing, warehousing and related distribution. Other sites are proposed in the Local Plan 2040 for science / R&D uses as listed in Table 1.1 above.

3.6 Findings and recommendations

3.6.1 There is limited stock for pure innovation space in Bedford (B1b) and there has been no delivery of new space since at least 2010. This is despite the strategic location of Bedford, in the Golden Triangle, between Oxford, Cambridge and London, good public transport connectivity. There is also no vacant innovation space in Bedford. There is also a limited stock of properties for uses associated with innovation i.e. office or industrial space related to R&D and high-value manufacturing.

3.6.2 Occupiers of innovation space could be attracted to Bedford by the current market rental values, which are below market rental values observed in Oxford, London and Cambridge.

3.6.3 The presence of a highly educated workforce in Bedford is also a strength for Bedford which should contribute to attract employers to the area.

3.6.4 Bedford is a net contributor of workforce (based on 2011 Census data) to neighbouring local authorities, with particularly noticeable net outflows of workers towards Central Bedfordshire, Milton Keynes, Luton, Westminster or Camden. The opening of the EWR represents a substantial opportunity for investment to be attracted to Bedford. Whilst the potential benefits are considered to be well-founded, a potential adverse impact of the scheme has been identified whereby if the Borough fails to attract investment and deliver high-value employment for its local residents, further out-commuting by the most qualified workforce residing in Bedford towards places were high-value employment is available.

3.6.5 The strategic location of Bedford within the Golden Triangle (Oxford-Cambridge-London) and the Ox-Cam Arc (Oxford-Cambridge corridor) gives the Borough an opportunity to attract investment and contribute to the economic growth of the region. This strategic opportunity will be amplified by the delivery of new transport infrastructure such as EWR, which will reduce travel-time via public transport to Oxford, Milton Keynes and Cambridge.

3.6.6 Historically (i.e. employment analysis between 2015 and 2021), Bedford has been performing well in attracting employment in innovation sectors (science and technology categories). However, a lack of suitable space in the Borough could have a negative impact on this strong performance in the future and Bedford could miss out on the opportunity to attract its share of high-value future employment that will be created in the Oxford-Cambridge Arc and in the Golden Triangle.

3.6.7 Historically, Bedford has had an important role in delivering science and technology employment within this regional area (particularly the Ox-Cam Arc) and the future opportunities available to the Borough. Assuming Bedford continues to perform as well in attracting/creating employment, the Borough could create an additional 940 jobs per annum in average, based on overall employment growth in innovation activities in the Arc. Based on future requirements of office/R&D floorspace, the Borough would need to deliver 362,700 sqft of this type of space over 10 years and 892,800 sqft by 2050 to maintain its performance.

4 Economic Demand Needs Assessment

4.1 Introduction

4.1.1 This chapter of the report provides an Economic Demand Needs Assessment for Bedford. This independent assessment, carried out by AECOM, provides an alternative to the findings of the Employment Land Study (March 2022) by BBC. Given the criticisms submitted to the Council about the Employment Land Study, this 'sense check' is important in order to underpin the Council's overarching Economic Prosperity Plan and ambitions for growth in the innovation, research and development sectors.

4.1.2 The Economic Demand Needs Assessment considers four different approaches:

- Labour demand: using Experian employment forecast, the change in employment in Bedford (by industrial) is translated into the associated change in floorspace and land requirements.
- Labour supply: this scenario uses population forecasts to understand the level of additional workforce that will be available on the labour market. Additional workforce is allocated to industries and translated into associated change in floorspace and land requirements.
- Past take-up: this scenario applies the historical average net take-up of floorspace, by use class, to future years. This scenario assumes a continuity of past trends over the Local Plan period.
- 'Policy On': this scenario considers the impact of economic growth strategies that will apply to the Bedford economy, as well as other external factors and could influence the growth of specific sectors. The variance in employment is translated into associated change in floorspace and land requirements.

4.1.3 Finally, the chapter compares the findings of this Economics Needs Assessment with the findings of Bedford Employment Land Study

4.2 Labour demand scenario (economic base forecast)

4.2.1 The labour demand forecast is drawn from Experian employment by sector forecast at the Bedford borough-specific level. AECOM used the latest available forecast at the time of writing (September 2022), which considers the impact of inflation and potential recession in the UK from 2023. However, this forecast will not take into consideration the implications of the Autumn Budget delivered by Jeremy Hunt.

4.2.2 The baseline position is adjusted and uses the latest Business Register and Employment Survey (BRES) published by the ONS on employment in Bedford, using the safeguarded access data (which provides the highest level of accuracy possible) at the 5-digit 2007 SIC level.

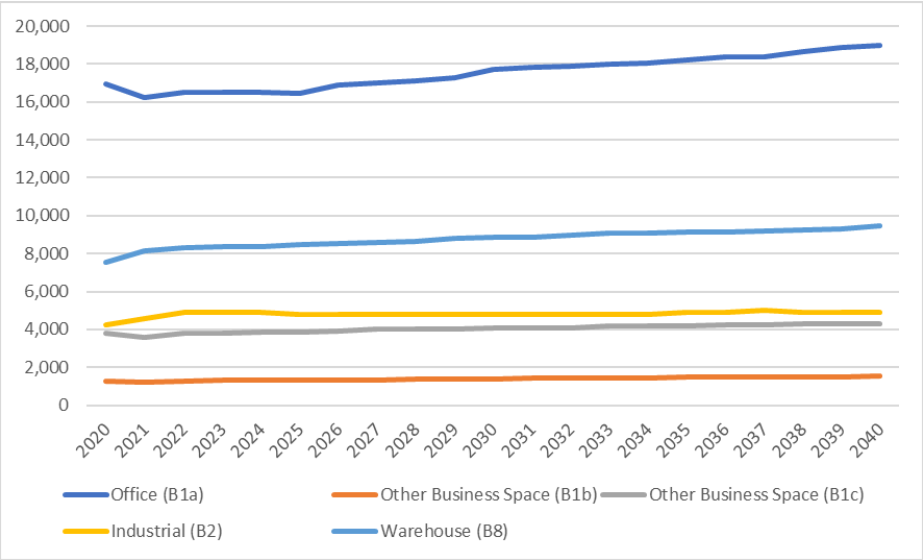
4.2.3 The forecast position is obtained by applying the relevant employment growth (as predicted by Experian) to each of the 729 industrial classifications. AECOM has mapped each industrial classification with the most relevant of the 38 Experian industrial sectors.

4.2.4 Finally, each industrial classification is matched to the most relevant planning use class. It should be noted that, for the purpose of the Economic Needs Assessment, and in order to align and provide ready comparison with Bedford's Employment Land Study approach, the old use class has been used in this study. This can be converted into the new use class system, including the new Class E.

4.2.5 Following this approach, employment between 2020 (baseline) and 2040 (forecast) is allocated to their associated use class. The evolution of employment between these use classes is shown in Figure 4-1. For clarity, only employment in B-class uses is shown on the graph.

4.2.6 This shows that the fastest growth in employment is expected to be in B1a use (office space) with an additional 2,029 jobs expected to be created in Bedford between 2020 and 2040 (+12%). This is closely followed by employment in B8 use (warehousing), with an additional 1,916 jobs (+25%). Growth in employment in B2 use (industrial) and B1c (light industrial) is more limited with an additional 688 jobs (+16%) and 519 jobs (+14%) respectively. Finally, B1b use (R&D) should generate an additional 271 jobs (+21%).

Figure 4-1 – Employment in Bedford – Labour demand scenario, 2020-2040



Source: AECOM

4.2.7 Note that the overall employment growth between 2020 and 2040 is estimated at +15,571 jobs across all employment (included employment in non-B class uses).

4.2.8 Employment by use class is converted into floorspace requirement by applying the relevant employment density (sqm required by job) for each use class.

4.2.9 AECOM used the Employment Density Guidance as reference for employment densities[17]. Employment densities applied in the modelling are summarised in Table 4.1.

Table 4.1 – Employment densities

	Employment density (sqm/job)
Office (B1a)	13
Other Business Space (B1b)	50
Other Business Space (B1c)	47
Industrial B2	36
Warehouse (B8)	95

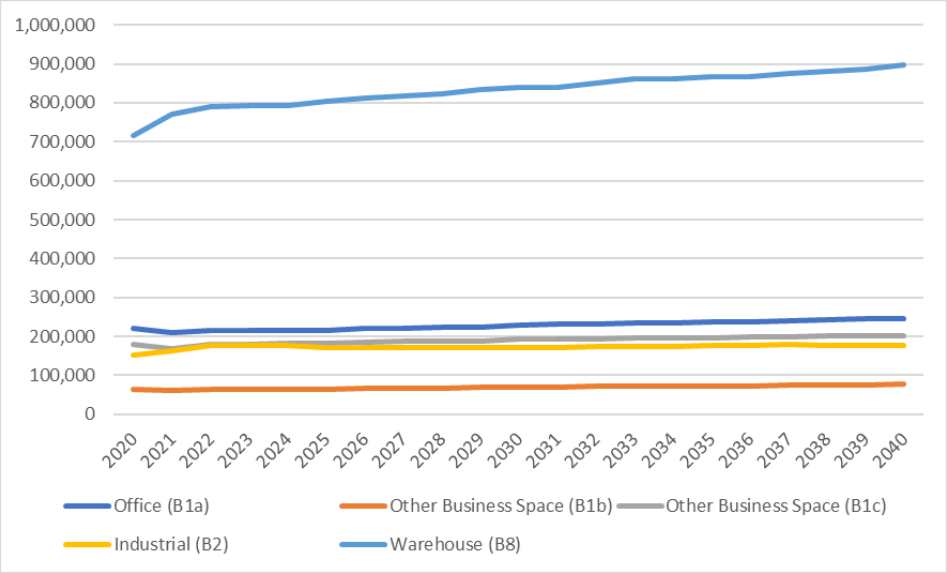
Source: Homes & Communities Agency, Employment Density Guide 3rd Edition 2015

4.2.10 Figure 4-2 shows the evolution of floorspace requirements in Bedford between 2020 and 2040. This shows that based on labour demand, there is, by 2040, a requirement for an additional:

[17] It should be noted that the Employment Density Guidance has been withdrawn by Central Government but has not been replaced by an alternative guidance. It has therefore been decided to keep applying this guidance in the absence of a more suitable alternative.

- 26,371 sqm of B1a space;
- 13,532 sqm of B1b space;
- 24,382 sqm of B1c space;
- 24,752 sqm of B2 space; and
- 253,749 sqm of B8 space.

Figure 4-2 – Floorspace requirement (sqm) in Bedford – Labour demand scenario, 2020-2040



Source: AECOM

4.2.11 Finally, applying relevant plot ratios (presented in Table 4.2), floorspace requirements can be converted into land requirements (presented in hectare).

Table 4.2 – Plot ratios

	Plot ratios
Office (B1a)	1
Other Business Space (B1b)	0.4
Other Business Space (B1c)	0.4
Industrial B2	0.4
Warehouse (B8)	0.45*

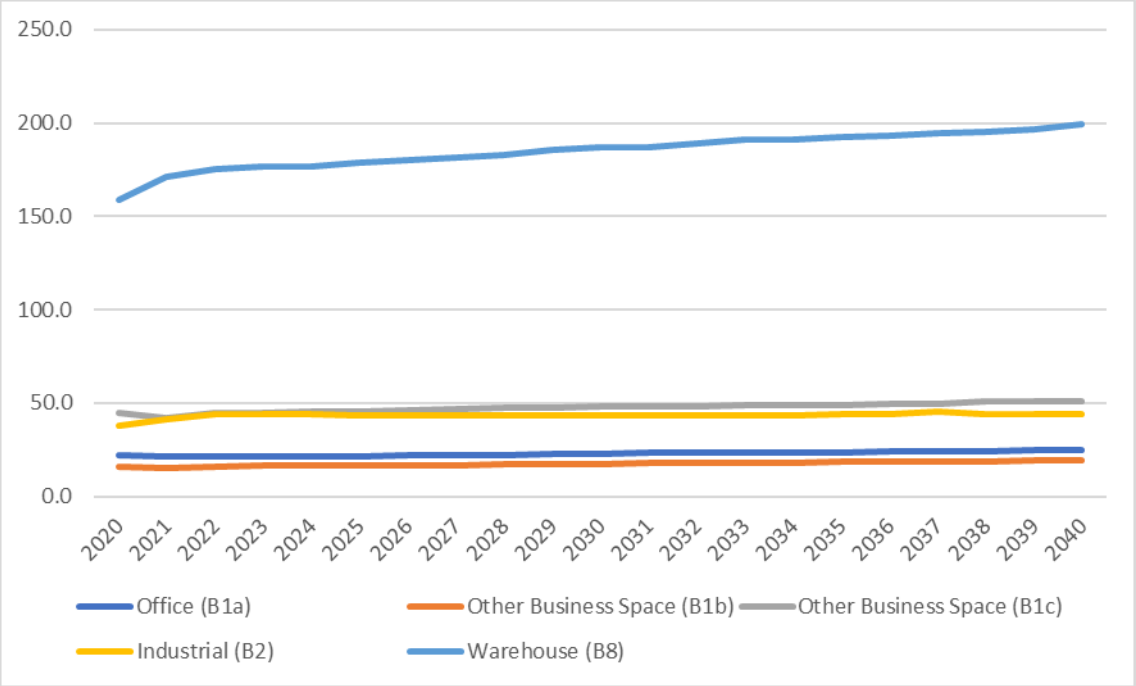
Source: AECOM (industry standards)

** Plot ratio is informed by CoStar analysis of recent B8 developments in Bedford and plot ratio achieved by those developments*

4.2.12 Based on this, the evolution of land requirements in Bedford to 2040, shown in Figure 4-3, indicates a requirement for an additional:

- 2.6 ha of B1a space;
- 3.4 ha of B1b space;
- 6.1 ha of B1c space;
- 6.2 ha of B2 space; and
- 40.4 ha of B8 space.

Figure 4-3 – Land requirement (ha) in Bedford – Labour demand scenario, 2020-2040



Source: AECOM

4.3 Labour supply scenario (population base forecast)

4.3.1 To forecast labour supply, AECOM used the population forecast provided by BBC and produced by Opinion Research Services for the plan period 2020-40[18]. This is consistent with the forecast used for the Housing Needs Assessment.

4.3.2 The population forecast was converted into local labour supply through of process in several stage:

- Conversion of population forecast into working age population applying the share of working age people in Bedford as reported by the ONS for 202019 of 60.90%
- Conversion of working age population into economically active population (working age population in employment and searching for a job), applying the rate of economic activity as reported by the ONS for Bedford for 202020 of 87.60%.
- Conversion of economically active population into local labour supply applying the rate of self-containment for Bedford (% of population living which is also working in Bedford) as reported by the ONS Census 201121 of 63.85%

4.3.3 The conversion from population to local labour supply is presented in Table 4.3 for 2020 and 2040.

[18] Use of "Variant 3" forecast
[19] ONS Population estimates - local authority based
[20] ONS annual population survey
[21] Location of usual residence and place of work

Table 4.3 – Conversion population to local labour

	2020	2040	Change
Population	174,687	224,884	50,197
Working age population	106,392	136,964	30,572
Economically active population	93,199	119,981	26,782
Local labour supply	59,509	76,609	17,100

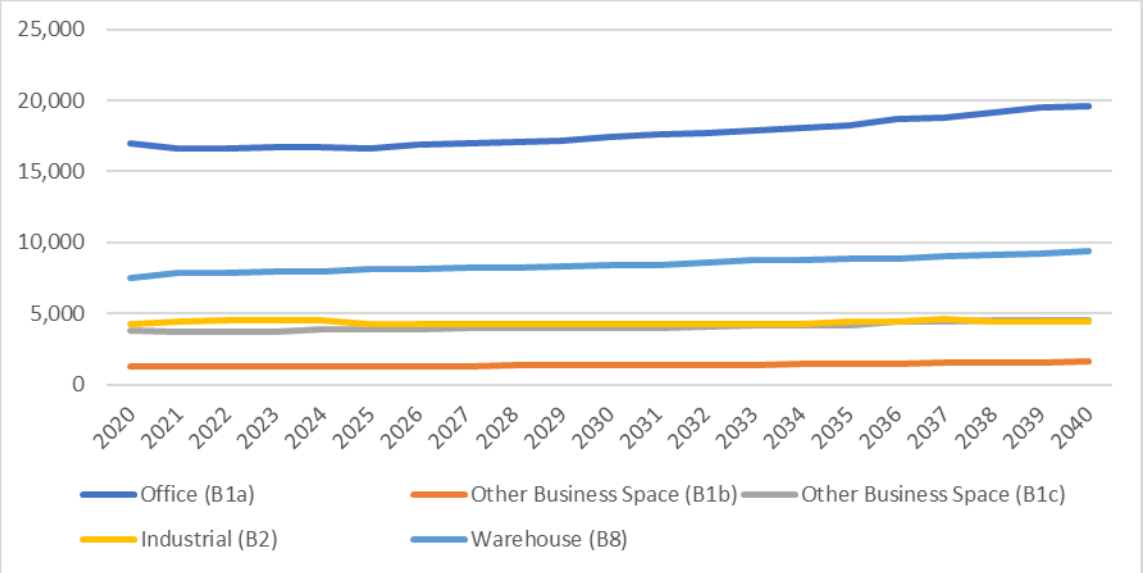
Source: AECOM

4.3.4 The change in local labour supply of 17,100 people is slightly higher than the change in labour demand estimated through the Experian employment forecast (see para 4.2.7) of 15,571 workers.

4.3.5 The increase in labour supply is then allocated between the different planning B-use classes following the growth forecasted by Experian in terms of labour demand.

4.3.6 This shows that the fastest growth in employment is expected to be in B1a use (office space) with an additional 2,688 jobs expected to be created in Bedford between 2020 and 2040 (+16%). This is closely followed by employment in B8 use (warehousing), with an additional 1,828 jobs (+24%). Growth in employment B1c (light industrial) is more limited with an additional 716 jobs (+19%). Finally, B1b use (R&D) and in B2 use (industrial) should generate an additional 327 jobs (+19%) and 240 jobs (6%) respectively.

Figure 4-4 – Employment in Bedford – Labour supply scenario, 2020-2040



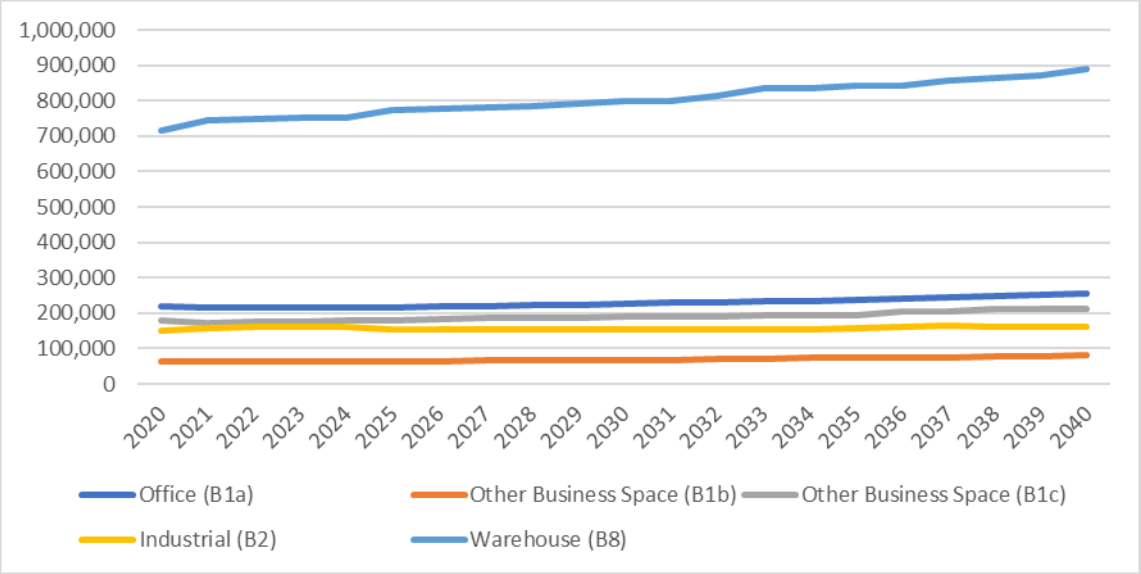
Source: AECOM

4.3.7 Employment by use class is converted into floorspace requirement, applying the same methodology and assumptions as for the Labour Demand scenario (see Table 4.1 for employment densities applied).

4.3.8 Figure 4-5 shows the evolution of floorspace requirements in Bedford between 2020 and 2040. This shows that based on labour supply, there is, by 2040, a requirement for an additional:

- 34,950 sqm of B1a space;
- 16,364 sqm of B1b space;
- 33,667 sqm of B1c space;
- 8,657 sqm of B2 space; and
- 173,702 sqm of B8 space.

Figure 4-5 – Floorspace requirement (sqm) in Bedford – Labour supply scenario, 2020-2040



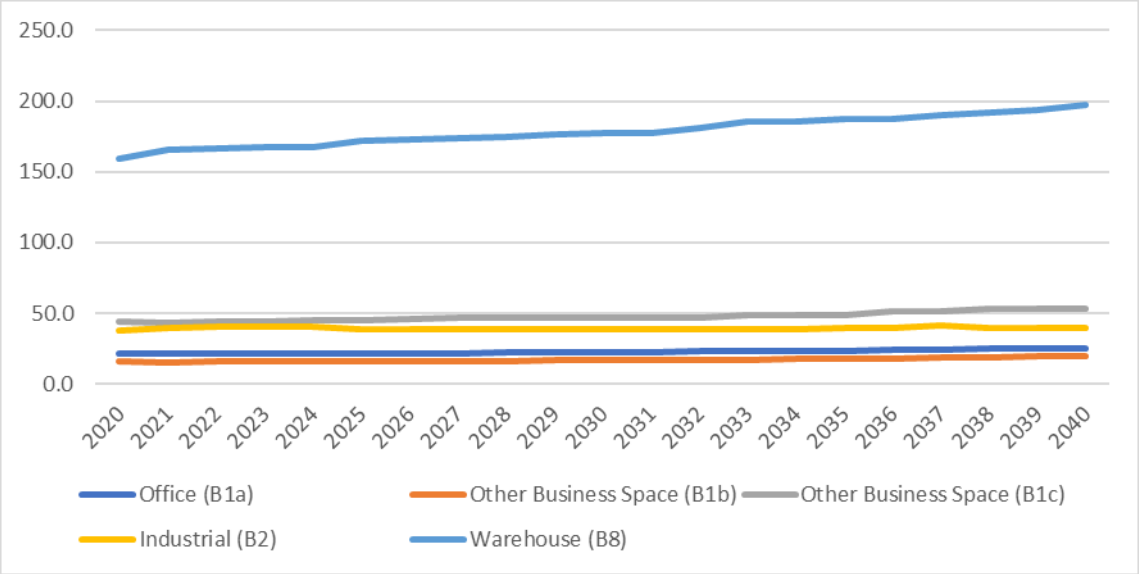
Source: AECOM

4.3.9 Finally, applying relevant plot ratios (presented in Table 4.2), floorspace requirements can be converted into land requirements (presented in hectare).

4.3.10 Based on this, the evolution of land requirements in Bedford to 2040, shown in Figure 4-6, indicates a requirement for an additional:

- 3.5 ha of B1a space;
- 4.1 ha of B1b space;
- 8.4 ha of B1c space;
- 2.2 ha of B2 space; and
- 38.6 ha of B8 space.

Figure 4-6 – Land requirement (ha) in Bedford – Labour supply scenario, 2020-2040



Source: AECOM

4.4 Past take-up scenario

4.4.1 The past take-up scenario uses historical net absorption of space, as reported by CoStar and applied the average annual net take-up to the baseline position of floorspace by use class.

4.4.2 The historical net absorption (in sqm) for different period is presented in Table 4.4. For the purpose of the Labour Supply scenario, the 2009-2022 average was used, which provides an historical average over a 14-year period, therefore covering several economic cycles.

Table 4.4 – Average Net Floorspace Absorption per Annum (sqm), Bedford

	2017-2021	2012-2021	2009-2021	2009-2022 (YTD[22])
Office (B1a)	741	5,113	3,037	3,037
Other Business Space (B1b)	-	55	39	43
Other Business Space (B1c)	-498	-57	-145	-91
Industrial B2	47	776	529	516
Warehouse (B8)	43,487	29,161	24,987	26,988

Source: AECOM

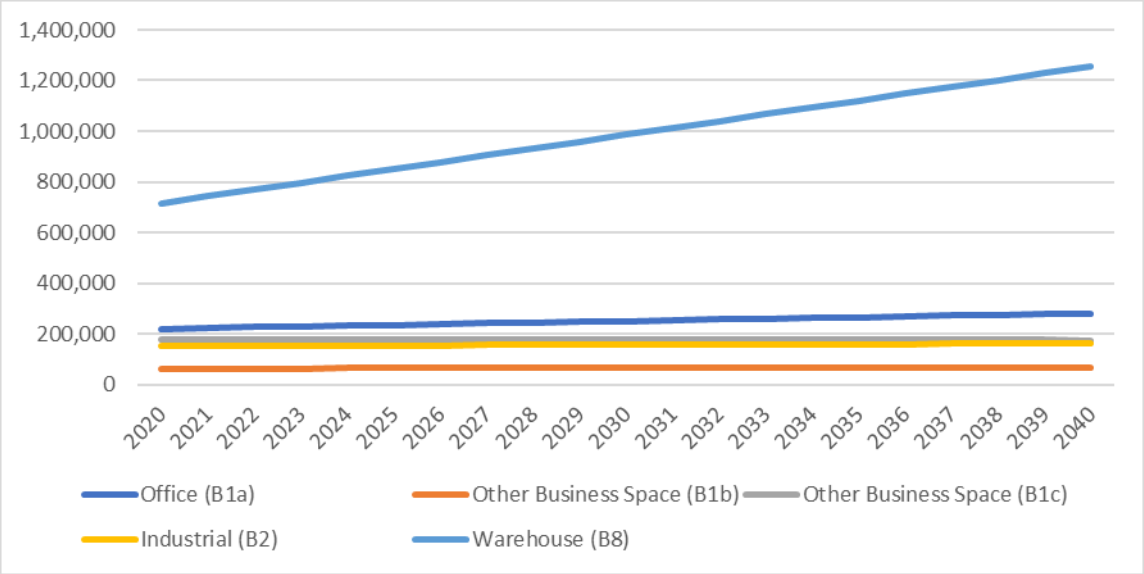
4.4.3 Figure 4-7 shows the evolution of floorspace requirements in Bedford between 2020 and 2040 based on the application of past take-up to forecast future demand of floorspace.

4.4.4 This shows that based on past take-up, there is, by 2040, a requirement for an additional:

- 60,747 sqm of B1a space;
- 855 sqm of B1b space;
- -1,820 sqm of B1c space;
- 10,322 sqm of B2 space; and
- 539,754 sqm of B8 space.

[22] Year to date

Figure 4-7 – Floorspace requirement (sqm) in Bedford – Past take-up scenario, 2020-2040



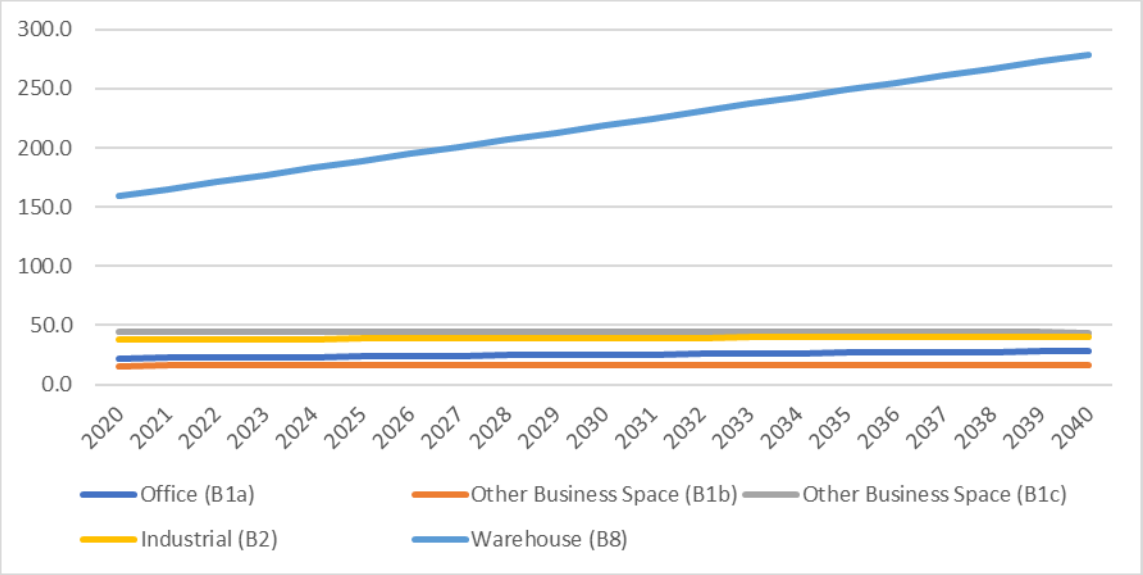
Source: AECOM

4.4.5 Applying relevant plot ratios (presented in Table 4.2), floorspace requirements can be converted into land requirements (presented in hectare).

4.4.6 Based on this, the evolution of land requirements in Bedford to 2040, shown in Figure 4-8, indicates a requirement for an additional:

- 6.1 ha of B1a space;
- 0.2 ha of B1b space;
- -0.5 ha of B1c space;
- 2.6 ha of B2 space; and
- 119.9 ha of B8 space.

Figure 4-8 – Land requirement (ha) in Bedford – Past take-up scenario, 2020-2040



Source: AECOM

4.5 Policy-on scenario

4.5.1 The Policy-on forecast is drawn from Experian's employment by sector forecast at the Bedford borough-specific level which is adjusted to take into consideration the impact of strategic

investments at the regional level as well as the aspirations and ambitions of the BBC in terms of the future of its economy.

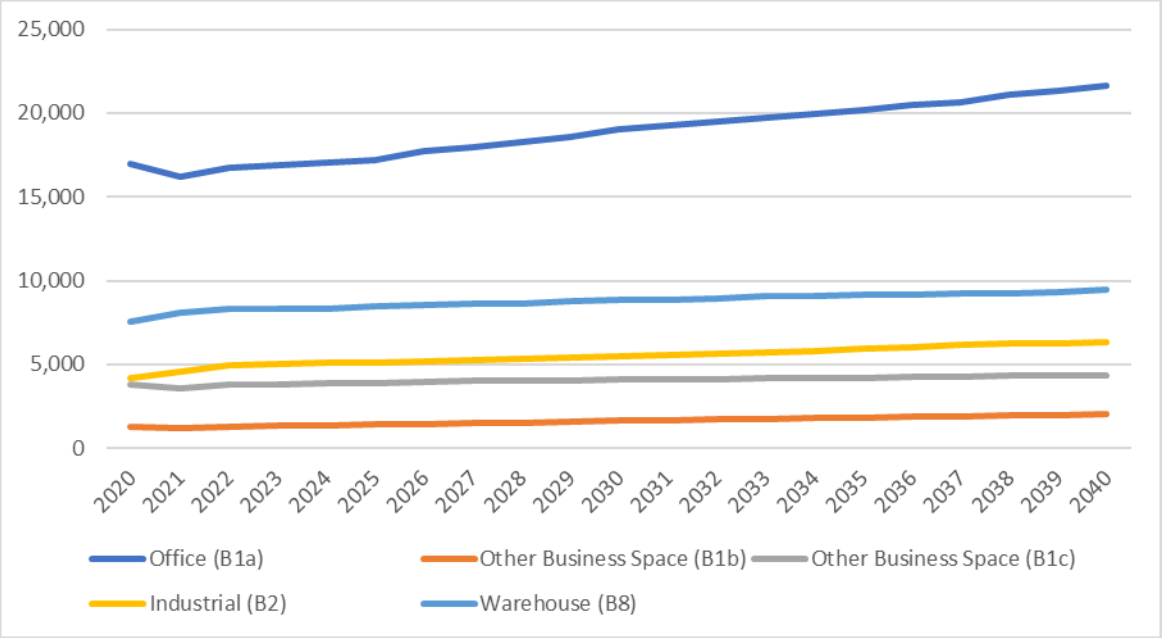
4.5.2 Under this scenario, it is assumed that employment in innovation activities in Bedford will grow by 620 jobs per annum, capturing its share of employment to be created in the Ox-Cam Arc[23].

4.5.3 To avoid double counting, it was assumed that employment growth in innovation activities will be equal to either the Experian figure or the adjusted figure (total of 620 jobs per annum between all innovation activities), whichever is the greater (as opposed to 620 jobs on top of the growth already forecasted by Experian).

4.5.4 Assuming the continuation of past trends in its share of employment provision in the innovation sector, employment can be expected to grow at a much faster rate than forecasted in the traditional labour demand scenario.

4.5.5 Figure 4-9 shows the evolution of employment in Bedford between 2020 and 2040, with the fastest growth in employment is expected to be in B1a use (office space) with an additional 4,664 jobs expected to be created between 2020 and 2040 (+28%). This is followed by employment in B2 use (industrial), with an additional 2,139 jobs (+51%), followed by growth in employment B8 (warehousing), with an additional 1,919 jobs (+25%) and B1b use (R&D), with an additional 755 (+59%). The growth in B1c (light industrial) is more limited with an additional 553 jobs (+15%).

Figure 4-9 – Employment in Bedford – Policy-On scenario, 2020-2040



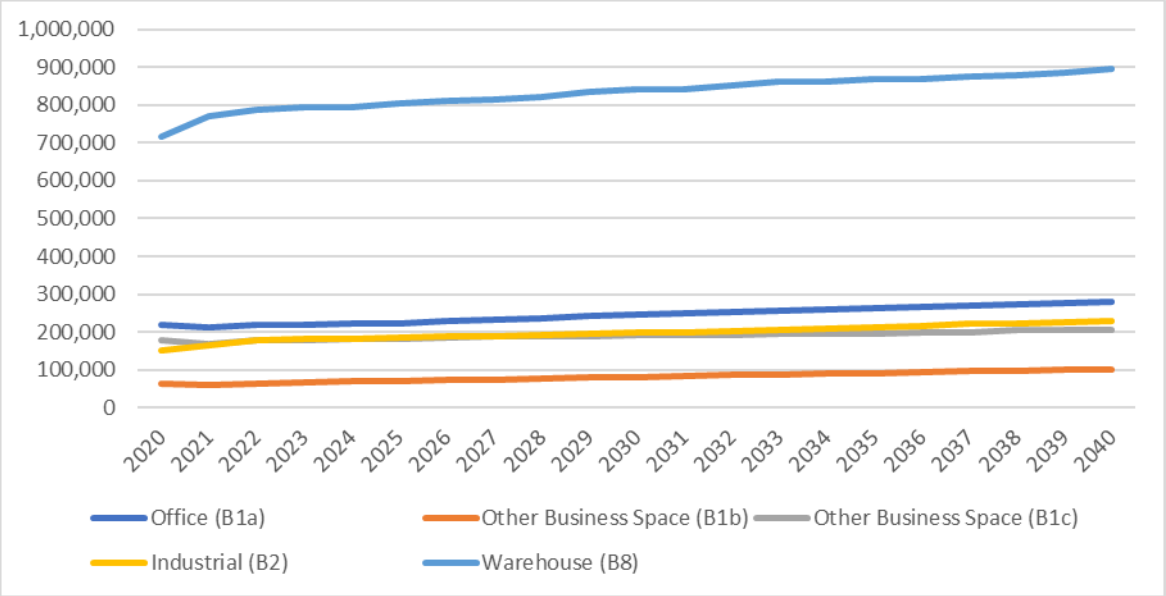
Source: AECOM

4.5.6 Employment by use class is converted into floorspace requirements, applying the same methodology and assumptions as for the Labour Demand scenario (see Table 4.1 for employment densities applied). Derived from this Figure 4-10 shows the evolution of floorspace requirements in Bedford between 2020 and 2040. This shows that based on labour supply, there is, by 2040, a requirement for an additional:

- 60,636 sqm of B1a space;
- 37,775 sqm of B1b space;
- 25,969 sqm of B1c space;
- 76,991 sqm of B2 space; and
- 181,989 sqm of B8 space.

[23] see para 3.6.7 – as a conservative assumption, it was assumed that Bedford will deliver two-third of its historical share of employment in innovation activities (940 jobs per annum).

Figure 4-10 – Floorspace requirement (sqm) in Bedford – Policy-On scenario, 2020-2040



Source: AECOM

4.5.7 Finally, through applying relevant plot ratios (presented in Table 4.2), floorspace requirements are converted into land requirements (presented in hectare).

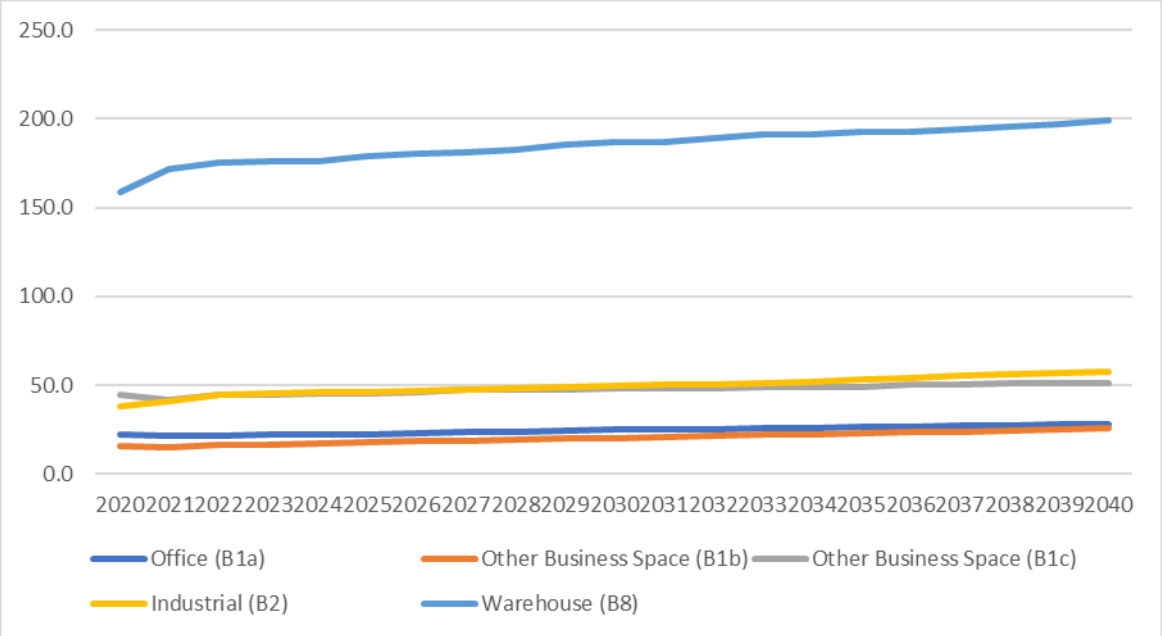
4.5.8 Based on this, the evolution of land requirements in Bedford to 2040 shown in Figure 4-11, indicates a requirement for an additional:

- 6.1 ha of B1a space;
- 9.4 ha of B1b space;
- 6.5 ha of B1c space;
- 19.2 ha of B2 space; and
- 40.4 ha of B8 space.

4.5.9 It can be noted that the results of this scenario are roughly consistent with the conclusions of the Savills report[24] which estimated that the Ox-Cam Arc will need to deliver 9,600,000 sqft of space for innovation by 2050, or 320,000 sqft per year from 2020. Assuming that Bedford keeps delivering 9.6% of all employment in innovation in the Ox-Cam area[25], it can be derived that Bedford should deliver 30,700 sqft of space for innovation per year (or 2,850 sqm). The Policy-On scenario findings are that the Borough will require to deliver 2,925 sqm of space for innovation activities to respond to the demand from the Ox-Cam Arc growth, on top of space to respond to standard demand (Labour Demand scenario).

[24] see para 3.6.7
[25] see para 3.2.19

Figure 4-11 – Land requirement (ha) in Bedford – Policy-On scenario, 2020-2040



Source: AECOM

4.6 Allowance for churn

4.6.1 For future employment forecasts to be based on more than economic growth 'predictions' and to better reflect the fluid nature of land allocations, the forecasting model makes an allowance for churn.

4.6.2 An allowance for churn is to be made to ensure that a certain level of vacancy in stock will exist in the future, to enable movement of businesses between stock.

4.6.3 The allowance for 'churn' is calculated from the average net take-up in employment floorspace within the Borough as recorded by CoStar. This is shown in Table 4.5.

Table 4.5 – Net absorption (sqm)

	B1a	B1b	B1c	B2	B8
2009	-4,852	-93	37	855	-5,087
2010	7,697	74	502	376	48,993
2011	-14,487	-84	-1,028	-1,946	-16,746
2012	6,582	-46	-896	2,614	25,684
2013	-126	232	1,699	-948	-56
2014	2,664	111	813	1,494	18,968
2015	3,007	46	138	3,230	6,600
2016	35,295	93	169	1,135	22,975
2017	-1,008	-46	118	387	11,346
2018	1,516	-9	135	43	-35,844
2019	1,776	56	-19	-201	145,552
2020	-505	-	19	-23	6,948
2021	1,925	-	-2,741	32	89,435
Annual Average	**3,037**	**26**	**-81**	**542**	**24,520**

Source: CoStar

4.6.4 It typically takes two years to achieve a planning consent, site preparation and construction after a site has changed hands. For these reasons the annual net take-up of employment floorspace is multiplied by two to estimate the churn demand, reflected as 'allowance for

churn'. This is, in effect, an allowance for the necessary frictional vacancy to allow the market and relocation chains to operate, considering commercial property market realities.

4.6.5 No churn is assumed for B1c (due to the negative net absorption).

4.6.6 The allowance for churn is converted from floorspace (sqm) to land (ha) using the same plot ratios as before (see Table 4.2) and applied to all scenarios.

4.7 Allowance for windfall

4.7.1 A significant part of the projected employment growth also arises from sectors which have traditionally not been located on B Class employment land such as healthcare, education, hotels and leisure.

4.7.2 Under specific circumstances and where appropriate, employment land might also be used as part of a more mixed-use scheme which would enable employment development to come forward on a proportion of it.

4.7.3 Further, with Permitted Development Rights making the conversion of office and some light industrial premises to residential use more straightforward, there is the potential for unexpected loss of employment floorspace.

4.7.4 To estimate the amount of land that may be used for non-B class activities, historic losses of employment land to other uses such as housing and leisure as reported in the Council's Annual Monitoring Report have been collated and used, as shown in Table 4.6.

Table 4.6 – Allowance for Windfall Losses (sqm)

	B1a	B1b	B1c	B2	B8
2016/17	2,628	764	2,129	7,396	0
2017/18	9,918	2,882	8,033	8,480	0
2018/19	914	266	740	1,543	0
Annual Average	**4,487**	**1,304**	**3,634**	**5,806**	**0**

Source: BBC, Annual Monitoring Reports

4.7.5 The windfall losses are converted from floorspace (sqm) to land (ha) using the same plot ratios as before (see Table 4.2) and applied to all scenarios.

4.8 Land requirement – including allowance for churn and windfall

4.8.1 Table 4.7 summarises the findings of the Economic Demand Needs Assessment, and shows the employment land requirement for Bedford between 2020 and 2040 for all three scenarios.

4.8.2 The results include the allowance for churn and windfall. This table shows that there is a requirement to identify between 131 ha and 192 ha of land, of which between 49 ha and 120 ha for B8 space.

Table 4.7 – Forecasts requirements

Change 2020-2040 (B Class Only)	Labour Demand	Labour Supply	Past take-up (2009-2021)	Policy On
Employment	**5,421**	**5,801**	**10,112**	**10,027**
Office (B1a)	2,029	2,688	4,673	4,664
Other Business Space (B1b)	271	327	10	755
Other Business Space (B1c)	519	716	-35	553
Industrial B2	688	240	301	2,139
Warehouse (B8)	1,916	1,828	5,162	1,916
Floorspace (sqm)	**631,903**	**628,218**	**921,768**	**744,237**
Office (B1a)	122,182	130,762	156,559	156,448
Other Business Space (B1b)	39,663	42,494	26,645	63,905
Other Business Space (B1c)	97,063	106,349	71,059	98,651
Industrial B2	141,965	125,870	128,056	194,204
Warehouse (B8)	231,029	222,743	539,450	231,029
Land (Ha)	**133.2**	**131.3**	**192.0**	**156.2**
Office (B1a)	12.2	13.1	15.7	15.6
Other Business Space (B1b)	9.9	10.6	6.7	16.0
Other Business Space (B1c)	24.3	26.6	17.8	24.7
Industrial B2	35.5	31.5	32.0	48.6
Warehouse (B8)	51.3	49.5	119.9	51.3

Source: AECOM

4.9 Comparison with Bedford's Employment Land Study 2022

4.9.1 Table 4.8 provides a summary of land requirement as estimated by BBC (ELS 2022) and AECOM.

Table 4.8 – Comparison of land requirement (2020-2040), including windfall and churn (ha)

	B1a	B1b	B1c	B2	B8	Total
Bedford ELS 2022 (low)	53		43		46	**142**
Bedford ELS 2022 (high)	73		57		36	**166**
Labour demand	12.2	9.9	24.3	35.5	51.5	**133.4**
Labour supply	13.1	10.6	26.6	31.5	49.7	**131.5**
Past take-up	15.7	6.7	17.8	32.0	119.9	**192.0**
Policy On	15.6	16.0	24.7	48.6	51.3	**156.2**

Source: AECOM

4.10 Findings

4.10.1 Some key comments can be made about the approach applied in the Bedford Employment Land Study (2022), which partly explain the difference in land requirement:

- The EEFM data used by BBC for the Bedford ELS 2022 is outdated. It is recognised in the study that this is the latest available forecast and that, in the absence of an update, this forecast was used. AECOM used the latest Experian employment forecast (September 2022).
- The land requirement for B1a as estimated in the Bedford ELS 2022 is skewed by the plot ratio of 0.4 applied. This plot ratio is very low for office space, particularly in urban centres and business parks (where most of this future space is expected to be

accommodated). Therefore, AECOM believe that the requirement for 53 ha to 73 ha of B1a land is over-estimated unless development is to be in low density, landscaped settings.

- Employment density used in the Bedford ELS 2022 are also likely to be above what is recommended by the guidance for office space (with a density of 14.75 sqm/job applied). AECOM applied a density of 13 sqm/job. This would also contribute to over-estimating the requirement for B1a land over the Plan period.
- Employment densities for B1b/c, B2 and B8 space used in the Bedford ELS 2022 (38.4 for industrial and 60 for warehouse) are below densities suggested in the guidance. This is particularly true for warehouse space. AECOM applied a density of 90 (regional distribution) for warehouse. This is likely to generate an under-estimation of land requirement in the Bedford ELS 2022.

4.10.2 Based on the Economic Demand Needs Assessment made by AECOM, the following allocations of land would be recommended:

- 32 ha of land for B1a/B1b uses (based on the policy-on scenario), which is less than the 53 to 73 ha assumed in Bedford ELS 2022. The main explanatory factor for this difference is the plot ratio assumed for the calculation of future office land demand (plot ratio of 0.4[26]) representing the desire for development to be in low density, landscaped settings, whilst AECOM assumed a higher plot ratio (plot ratio of 1). The Bedford ELS also conflates some industrial uses (high value industrial activities) within what they call 'office' (B1a use).
- 60 ha of land for B1c/B2 uses (based on the labour demand and labour supply scenarios – given the current economic context, the Policy On scenario may over-estimate future employment growth in B2 activities). This roughly aligns with the findings of Beford ELS 2022 of 43 to 57 ha.
- 51 ha of land for B8 use (based on the labour supply, labour demand and policy on scenario – the past take-up scenario does not reflect future demand and future ambitions in Bedford). This roughly aligns with the findings of Bedford ELS 2022 of 36 to 46 ha.

4.10.3 It can be noted that, under the new planning use class system, the change use between B1a (now E(g)(i)), B1b (now E(g)(ii)) and B1c (now E(g)(iii)) is allowed without planning permission/approval. Therefore, the Bedford ELS 2022 which identified a need for 53 to 73 ha of B1a and B1b land, as well as part of 43 to 57 ha of B1c land is appropriate.

4.10.4 The identification of part of 43 to 57 ha of land for B2 activities is also appropriate and aligns with the findings of AECOM.

4.10.5 The identification of up to 46 ha of land for B8 activities in the Bedford ELS 2022 is also appropriate. As noted above, as part of the Council's ambitions to deliver innovation space, B8 activities will be delivered alongside office and innovation space on some employment sites.

[26] Meaning that one hectare (10,000 sqm) of land would deliver 4,000 sqm of office space

Appendix I: Science and Technology Classification

SIC07 code	SIC07 heading	Science and Technology category
26100	Manufacture of electronic components and boards	Digital Technologies
26110	Manufacture of electronic components	Digital Technologies
26120	Manufacture of loaded electronic boards	Digital Technologies
26200	Manufacture of computers and peripheral equipment	Digital Technologies
26400	Manufacture of consumer electronics	Digital Technologies
26511	Manufacture of electronic instruments and appliances for measuring, testing, and navigation, except industrial process control equipment	Digital Technologies
26512	Manufacture of electronic industrial process control equipment	Digital Technologies
26800	Manufacture of magnetic and optical media	Digital Technologies
33130	Repair of electronic and optical equipment	Digital Technologies
58200	Software publishing	Digital Technologies
58210	Publishing of computer games	Digital Technologies
58290	Other software publishing	Digital Technologies
62000	Computer programming, consultancy and related activities	Digital Technologies
62010	Computer programming activities	Digital Technologies
62011	Ready-made interactive leisure and entertainment software development	Digital Technologies
62012	Business and domestic software development	Digital Technologies
62020	Computer consultancy activities	Digital Technologies
62030	Computer facilities management activities	Digital Technologies
62090	Other information technology and computed service activities	Digital Technologies
63100	Data processing, hosting and related activities; web portals	Digital Technologies
63110	Data processing, hosting and related activities	Digital Technologies
63120	Web portals	Digital Technologies
95110	Repair of computers and peripheral equipment	Digital Technologies
21000	Manufacture of basic pharmaceutical products and pharmaceutical preparations	Life Sciences & Healthcare
21100	Manufacture of basic pharmaceutical products	Life Sciences & Healthcare
21200	Manufacture of pharmaceutical preparations	Life Sciences & Healthcare
26600	Manufacture of irradiation, electromedical and electrotherapeutic equipment	Life Sciences & Healthcare
26701	Manufacture of optical precision instruments	Life Sciences & Healthcare
32500	Manufacture of medical and dental instruments and supplies	Life Sciences & Healthcare
72110	Research and experimental development on biotechnology	Life Sciences & Healthcare
75000	Veterinary activities	Life Sciences & Healthcare
86000	Human health activities	Life Sciences & Healthcare
86100	Hospital activities	Life Sciences & Healthcare
86101	Hospital activities	Life Sciences & Healthcare
86102	Medical nursing home activities	Life Sciences & Healthcare
86200	Medical and dental practice activities	Life Sciences & Healthcare
86210	General medical practice activities	Life Sciences & Healthcare
86220	Specialist medical practice activities	Life Sciences & Healthcare
86230	Dental practice activities	Life Sciences & Healthcare
86900	Other human health activities	Life Sciences & Healthcare
19200	Manufacture of refined petroleum products	Other scientific/technological manufacture
19201	Mineral oil refining	Other scientific/technological manufacture

19209	Other treatment of petroleum products (excluding mineral oil refining/petrochemicals manufacture)	Other scientific/technological manufacture
20000	Manufacture of chemicals and chemical products	Other scientific/technological manufacture
20100	Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	Other scientific/technological manufacture
20110	Manufacture of industrial gases	Other scientific/technological manufacture
20120	Manufacture of dyes and pigments	Other scientific/technological manufacture
20130	Manufacture of other inorganic basic chemicals	Other scientific/technological manufacture
20140	Manufacture of other organic basic chemicals	Other scientific/technological manufacture
20150	Manufacture of fertilisers and nitrogen compounds	Other scientific/technological manufacture
20160	Manufacture of plastics in primary forms	Other scientific/technological manufacture
20170	Manufacture of synthetic rubber in primary forms	Other scientific/technological manufacture
20200	Manufacture of pesticides and other agrochemical products	Other scientific/technological manufacture
20300	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	Other scientific/technological manufacture
20301	Manufacture of paints, varnishes and similar coatings, mastics and sealants	Other scientific/technological manufacture
20302	Manufacture of printing ink	Other scientific/technological manufacture
20400	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	Other scientific/technological manufacture
20410	Manufacture of soap and detergents, cleaning and polishing preparations	Other scientific/technological manufacture
20411	Manufacture of soap and detergents	Other scientific/technological manufacture
20412	Manufacture of cleaning and polishing preparations	Other scientific/technological manufacture
20420	Manufacture of perfumes and toilet preparations	Other scientific/technological manufacture
20500	Manufacture of other chemical products	Other scientific/technological manufacture
20510	Manufacture of explosives	Other scientific/technological manufacture
20520	Manufacture of glues	Other scientific/technological manufacture
20530	Manufacture of essential oils	Other scientific/technological manufacture
20590	Manufacture of other chemical products n.e.c.	Other scientific/technological manufacture
20600	Manufacture of man-made fibres	Other scientific/technological manufacture
25210	Manufacture of central heating radiators and boilers	Other scientific/technological manufacture
25300	Manufacture of steam generators, except central heating hot water boilers	Other scientific/technological manufacture
25400	Manufacture of weapons and ammunition	Other scientific/technological manufacture
26513	Manufacture of non-electronic instruments and appliances for measuring, testing and navigation, except industrial process control equipment	Other scientific/technological manufacture
26514	Manufacture of non-electronic industrial process control equipment	Other scientific/technological manufacture
26520	Manufacture of watches and clocks	Other scientific/technological manufacture
27000	Manufacture of electrical equipment	Other scientific/technological manufacture
27100	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	Other scientific/technological manufacture
27110	Manufacture of electric motors, generators and transformers	Other scientific/technological manufacture
27120	Manufacture of electricity distribution and control apparatus	Other scientific/technological manufacture
27200	Manufacture of batteries and accumulators	Other scientific/technological manufacture
27300	Manufacture of wiring and wiring devices	Other scientific/technological manufacture
27310	Manufacture of fibre optic cables	Other scientific/technological manufacture
27320	Manufacture of other electronic and electric wires and cables	Other scientific/technological manufacture
27330	Manufacture of wiring devices	Other scientific/technological manufacture
27400	Manufacture of electric lighting equipment	Other scientific/technological manufacture
27500	Manufacture of domestic appliances	Other scientific/technological manufacture
27510	Manufacture of electric domestic appliances	Other scientific/technological manufacture
27520	Manufacture of non-electric domestic appliances	Other scientific/technological manufacture
27900	Manufacture of other electrical equipment	Other scientific/technological manufacture

28100	Manufacture of general purpose machinery	Other scientific/technological manufacture
28110	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	Other scientific/technological manufacture
28120	Manufacture of fluid power equipment	Other scientific/technological manufacture
28130	Manufacture of other pumps and compressors	Other scientific/technological manufacture
28131	Manufacture of pumps	Other scientific/technological manufacture
28132	Manufacture of compressors	Other scientific/technological manufacture
28140	Manufacture of other taps and valves	Other scientific/technological manufacture
28150	Manufacture of bearings, gears, gearing and driving elements	Other scientific/technological manufacture
28210	Manufacture of ovens, furnaces and furnace burners	Other scientific/technological manufacture
28220	Manufacture of lifting and handling equipment	Other scientific/technological manufacture
28230	Manufacture of office machinery and equipment (except computers and peripheral equipment)	Other scientific/technological manufacture
28240	Manufacture of power-driven hand tools	Other scientific/technological manufacture
28250	Manufacture of non-domestic cooling and ventilation equipment	Other scientific/technological manufacture
28290	Manufacture of other general-purpose machinery n.e.c.	Other scientific/technological manufacture
28300	Manufacture of agricultural and forestry machinery	Other scientific/technological manufacture
28301	Manufacture of agricultural tractors	Other scientific/technological manufacture
28302	Manufacture of agricultural and forestry machinery (other than agricultural tractors)	Other scientific/technological manufacture
28400	Manufacture of metal forming machinery and machine tools	Other scientific/technological manufacture
28410	Manufacture of metal forming machinery	Other scientific/technological manufacture
28490	Manufacture of other machine tools	Other scientific/technological manufacture
28900	Manufacture of other special-purpose machinery	Other scientific/technological manufacture
28910	Manufacture of machinery for metallurgy	Other scientific/technological manufacture
28920	Manufacture of machinery for mining, quarrying and construction	Other scientific/technological manufacture
28921	Manufacture of machinery for mining	Other scientific/technological manufacture
28922	Manufacture of earthmoving equipment	Other scientific/technological manufacture
28923	Manufacture of equipment for concrete crushing and screening roadworks	Other scientific/technological manufacture
28930	Manufacture of machinery for food, beverage and tobacco processing	Other scientific/technological manufacture
28940	Manufacture of machinery for textile, apparel and leather production	Other scientific/technological manufacture
28950	Manufacture of machinery for paper and paperboard production	Other scientific/technological manufacture
28960	Manufacture of plastics and rubber machinery	Other scientific/technological manufacture
28990	Manufacture of other special-purpose machinery n.e.c.	Other scientific/technological manufacture
29000	Manufacture of motor vehicles, trailers and semi-trailers	Other scientific/technological manufacture
29100	Manufacture of motor vehicles	Other scientific/technological manufacture
29200	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	Other scientific/technological manufacture
29201	Manufacture of bodies (coachwork) for motor vehicles (except caravans)	Other scientific/technological manufacture
29202	Manufacture of trailers and semi-trailers	Other scientific/technological manufacture
29203	Manufacture of caravans	Other scientific/technological manufacture
29300	Manufacture of parts and accessories for motor vehicles	Other scientific/technological manufacture
29310	Manufacture of electrical and electronic equipment for motor vehicles	Other scientific/technological manufacture
29320	Manufacture of other parts and accessories for motor vehicles	Other scientific/technological manufacture
30000	Manufacture of other transport equipment	Other scientific/technological manufacture
30100	Building of ships and boats	Other scientific/technological manufacture
30110	Building of ships and floating structures	Other scientific/technological manufacture
30120	Building of pleasure and sporting boats	Other scientific/technological manufacture

30200	Manufacture of railway locomotives and rolling stock	Other scientific/technological manufacture
30300	Manufacture of air and spacecraft and related machinery	Other scientific/technological manufacture
30400	Manufacture of military fighting vehicles	Other scientific/technological manufacture
30900	Manufacture of transport equipment n.e.c.	Other scientific/technological manufacture
30910	Manufacture of motorcycles	Other scientific/technological manufacture
30920	Manufacture of bicycles and invalid carriages	Other scientific/technological manufacture
30990	Manufacture of other transport equipment n.e.c.	Other scientific/technological manufacture
32120	Manufacture of jewellery and related articles	Other scientific/technological manufacture
32401	Manufacture of professional and arcade games and toys	Other scientific/technological manufacture
33120	Repair of machinery	Other scientific/technological manufacture
33140	Repair of electrical equipment	Other scientific/technological manufacture
33150	Repair and maintenance of ships and boats	Other scientific/technological manufacture
33160	Repair and maintenance of aircraft and spacecraft	Other scientific/technological manufacture
33170	Repair and maintenance of other transport equipment	Other scientific/technological manufacture
95210	Repair of consumer electronics	Other scientific/technological manufacture
95220	Repair of household appliances and home and garden equipment	Other scientific/technological manufacture
95250	Repair of watches, clocks and jewellery	Other scientific/technological manufacture
51000	Air transport	Other scientific/technological services
51100	Passenger air transport	Other scientific/technological services
51101	Scheduled passenger air transport	Other scientific/technological services
51102	Non-scheduled passenger air transport	Other scientific/technological services
51200	Freight air transport and space transport	Other scientific/technological services
51210	Freight air transport	Other scientific/technological services
51220	Space transport	Other scientific/technological services
71000	Architectural and engineering activities; technical testing and analysis	Other scientific/technological services
71100	Architectural and engineering activities and related technical consultancy	Other scientific/technological services
71110	Architectural activities	Other scientific/technological services
71111	Architectural activities	Other scientific/technological services
71112	Urban planning and landscape architectural activities	Other scientific/technological services
71120	Engineering activities and related technical consultancy	Other scientific/technological services
71121	Engineering design activities for industrial process and production	Other scientific/technological services
71122	Engineering related scientific and technical consulting activities	Other scientific/technological services
71129	Other engineering activities (not including engineering design for industrial process and production or engineering related scientific and technical consulting activities)	Other scientific/technological services
71200	Technical testing and analysis	Other scientific/technological services
72190	Other research and experimental development on natural sciences and engineering	Other scientific/technological services
72200	Research and experimental development on social sciences and humanities	Other scientific/technological services
74901	Environmental consulting activities	Other scientific/technological services
74902	Quantity surveying activities	Other scientific/technological services
85400	Higher education	Other scientific/technological services
85410	Post-secondary non-tertiary education	Other scientific/technological services
85420	Tertiary education	Other scientific/technological services
85421	First-degree level higher education	Other scientific/technological services
85422	Post-graduate level higher education	Other scientific/technological services
26300	Manufacture of communication equipment	Publishing & Broadcasting
26301	Manufacture of telegraph and telephone apparatus and equipment	Publishing & Broadcasting
26309	Manufacture of communication equipment (other than telegraph and telephone apparatus and equipment)	Publishing & Broadcasting

26702	Manufacture of photographic and cinematographic equipment	Publishing & Broadcasting
58100	Publishing of books, periodicals and other publishing activities	Publishing & Broadcasting
58110	Book publishing	Publishing & Broadcasting
58120	Publishing of directories and mailing lists	Publishing & Broadcasting
58130	Publishing of newspapers	Publishing & Broadcasting
58140	Publishing of journals and periodicals	Publishing & Broadcasting
58141	Publishing of learned journals	Publishing & Broadcasting
58142	Publishing of consumer, business and professional journals and periodicals	Publishing & Broadcasting
58190	Other publishing activities	Publishing & Broadcasting
59000	Motion picture, video and television programme production, sound recording and music publishing activities	Publishing & Broadcasting
59100	Motion picture, video and television programme activities	Publishing & Broadcasting
59110	Motion picture, video and television programme production activities	Publishing & Broadcasting
59111	Motion picture production activities	Publishing & Broadcasting
59112	Video production activities	Publishing & Broadcasting
59113	Television programme production activities	Publishing & Broadcasting
59120	Motion picture, video and television programme post-production activities	Publishing & Broadcasting
59130	Motion picture, video and television programme distribution activities	Publishing & Broadcasting
59131	Motion picture distribution activities	Publishing & Broadcasting
59132	Video distribution activities	Publishing & Broadcasting
59133	Television programme distribution activities	Publishing & Broadcasting
59140	Motion picture projection activities	Publishing & Broadcasting
59200	Sound recording and music publishing activities	Publishing & Broadcasting
60000	Programming and broadcasting activities	Publishing & Broadcasting
60100	Radio broadcasting	Publishing & Broadcasting
60200	Television programming and broadcasting activities	Publishing & Broadcasting
61000	Telecommunications	Publishing & Broadcasting
61100	Wired telecommunications activities	Publishing & Broadcasting
61200	Wireless telecommunications activities	Publishing & Broadcasting
61300	Satellite telecommunications activities	Publishing & Broadcasting
61900	Other telecommunications activities	Publishing & Broadcasting
63900	Other information service activities	Publishing & Broadcasting
63910	News agency activities	Publishing & Broadcasting
63990	Other information service activities n.e.c.	Publishing & Broadcasting
73000	Advertising and market research	Publishing & Broadcasting
73100	Advertising	Publishing & Broadcasting
73110	Advertising agencies	Publishing & Broadcasting
73120	Media representation	Publishing & Broadcasting
73200	Market research and public opinion polling	Publishing & Broadcasting
74100	Specialised design activities	Publishing & Broadcasting
74200	Photographic activities	Publishing & Broadcasting
74201	Portrait photographic activities	Publishing & Broadcasting
74202	Other specialist photography (not including portrait photography)	Publishing & Broadcasting
74203	Film processing	Publishing & Broadcasting
74209	Other photographic activities (not including portrait and other specialist photography and film processing) n.e.c.	Publishing & Broadcasting
95120	Repair of communication equipment	Publishing & Broadcasting

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