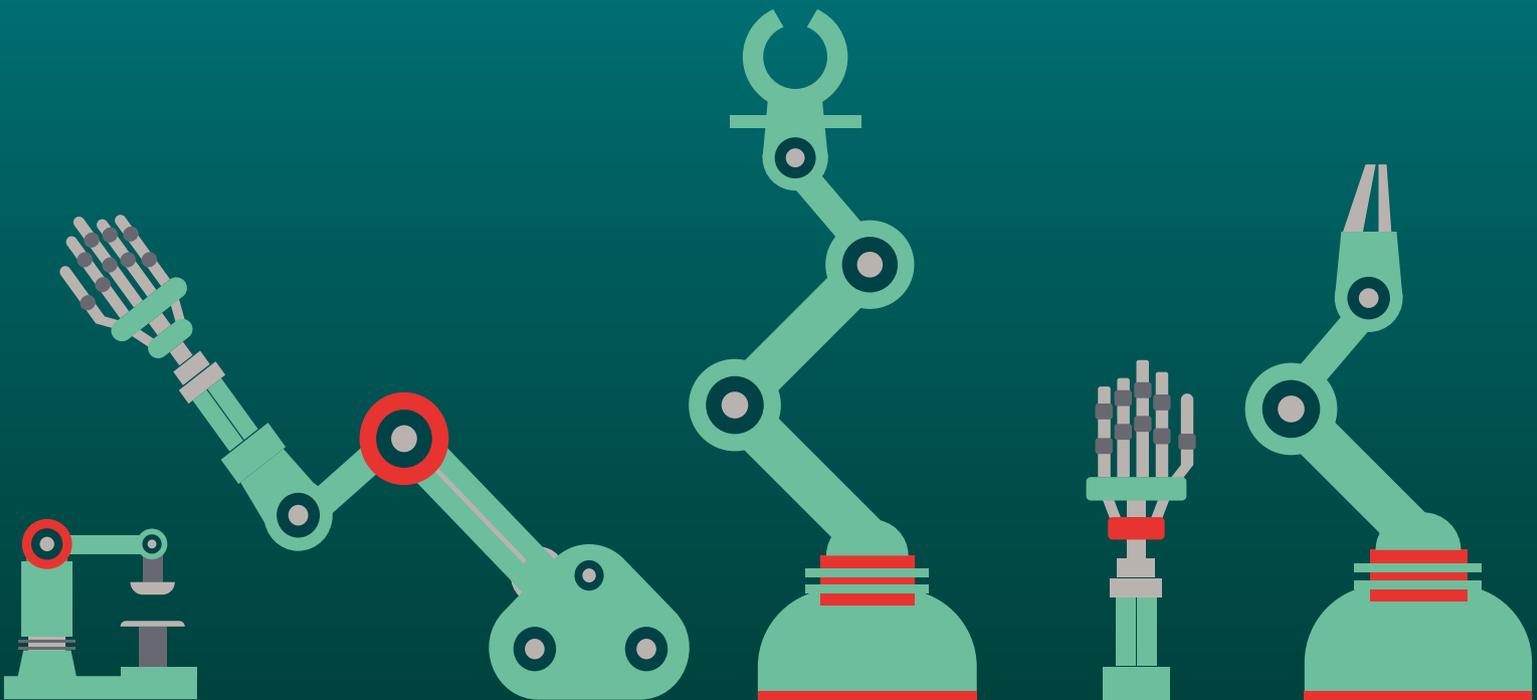
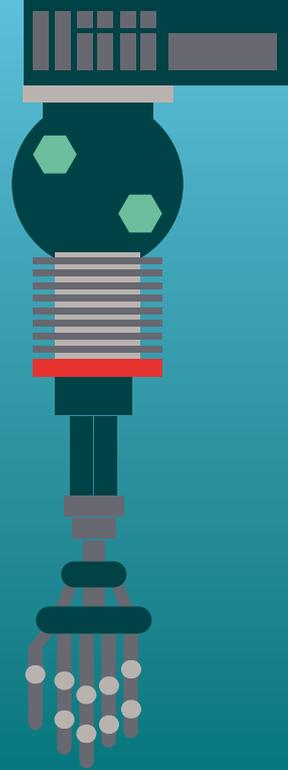


AVISON  
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# The rising warehouse

man and  
machine



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The last five years have seen a substantial increase in the demand for distribution space across the UK, driven by the evolution of the way we live and shop



# Introduction

The last five years have seen a substantial increase in the demand for distribution space across the UK, driven by the evolution of the way we live and shop. This structural change has not only caused the amount of take-up activity to increase across the sector year on year but has also driven efficiency in the use of space.

Whilst this robust demand has stimulated development, vacancy rates across core markets have continued to fall. The result of this has been traditionally 'off-piste' locations seeing an increase in demand for both design & build and speculative units. This is fuelled by internet retailers looking for low-cost locations with large pools of available labour and associated requirements for some 1,500 people or more on a shift system. This is likely to continue as the importance placed on 'last-mile' delivery will continue to support demand for industrial assets. Logistics requirements are expected to increase in step with the 10% annual increase in online retail sales.

Interestingly, the growth in the sector has been set against a backdrop of record employment levels. Since 2012, the number of people in employment has increased steadily across the UK, resulting in the lowest unemployment rates since the mid-1970s. This has created a unique situation and whilst historically distribution warehousing decisions have been made on a purely locational basis, there is now an understanding that access to the appropriate workforce may be just as relevant a factor in decision-making.

To fill this widening labour gap, the logistics sector is seeking support from the latest technologies. The industry is utilising robotics and automation not only as a substitute for workers, but to enable more efficient utilisation of distribution space in order to effectively tackle the growth of e-commerce. This is having a significant impact on building specifications for logistics warehouses.

Branded as inflexible by the industry, robotics and automation were once a rarity in logistics. Left fairly unexplored, operators were unsure as to how these new systems could fit into existing spaces and operations. This has changed, with technology now readily embedded into logistics operations and growing at a significant rate.

The significant growth of robotics and automation is hardly surprising. With a diminishing labour pool, combined with significant wage growth and the price of robotics and automation gradually reducing, there is often a financial incentive for operators to invest in new technologies, not to mention the additional benefit that robots can work 24/7 without ever needing to clock off.

This report takes a view on how logistics is evolving in the midst of technological change, the effect on its workforce and how this relationship will drive warehouse specification and distribution decisions in the short-medium term.

# Location, location, vocation?

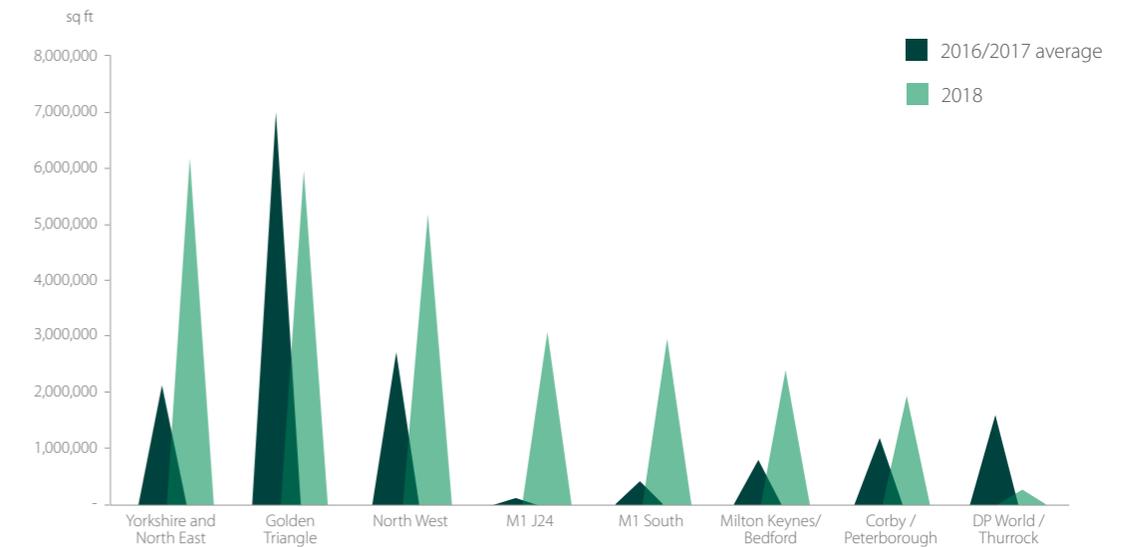
We are constantly told that the most important fundamentals to the property industry are 'location, location, location'. However, the changing dynamics within the logistics sector are challenging what is viewed as an optimum location. Priorities are shifting, influenced by increasing demand, e-commerce processes and logistics networks and scarce labour availability in key locations.

There remains a significant advantage to locating a distribution centre within the 'Golden Triangle' with its optimum access to the major motorways and ports, and most of the UK population within four hours' drive. This has led to the 'Golden Triangle' seeing significant rental growth and diminishing land availability, with some occupiers being priced out of the market. But perhaps most significantly there is an increasingly restricted labour pool.

In the distribution market, occupiers are increasingly considering non-prime locations that provide lower cost solutions and a greater level of pre-let opportunities. Amazon has taken 20% of all large distribution unit take-up over the past three years and the majority of this has been outside core prime locations. In fact, Yorkshire and the North East made up over 20% of all industrial take-up in 2018.



Figure 1: Key shifts in recent big shed take-up



There are other examples of activity moving from the traditional M1/ M6 corridor to areas such as Peterborough and Corby, along the A1 and A14 corridors, where road upgrades have made these locations increasingly accessible; further enabled by the attraction of a good labour supply. The East Midlands Gateway is an example of a new prime scheme at J24 of the M1, the apex of the Golden Triangle, which saw 2.5 million sq ft of transactions in 2018.

Similarly in the South East, there has been a significant rise in the number of deals north of the M25 in Hatfield, Dunstable and Bedford. There has also been increased occupier activity along the M40 corridor. Figure 1 indicates the greater spread of demand for big sheds during the past year compared to the previous two years.

**The East Midlands Gateway is an example of a new prime scheme at J24 of the M1, the apex of the Golden Triangle, which saw 2.5 million sq ft of transactions in 2018**

# The diminishing availability of labour

The saturation of activity in prime areas means that there are significant issues with the availability of labour. The competition for employees, in particular skilled trade workers (such as forklift operators and manual labourers), in warehousing is intense. Not only is labour more plentiful in secondary locations but it is also more cost efficient.

In the UK, there is a shortage of warehouse operatives and employment levels have been particularly dependent on access to non-UK workers. The effect of Brexit may well exacerbate the situation and there are significant concerns regarding the reduction in eastern European workers, which make up 15% of all warehouse staff.

Occupiers have placed increased importance on the availability and cost of labour over the past few years and this is likely to intensify in the near future, as businesses make decisions based not only on its strategic location, but also the 'right' access to employment.

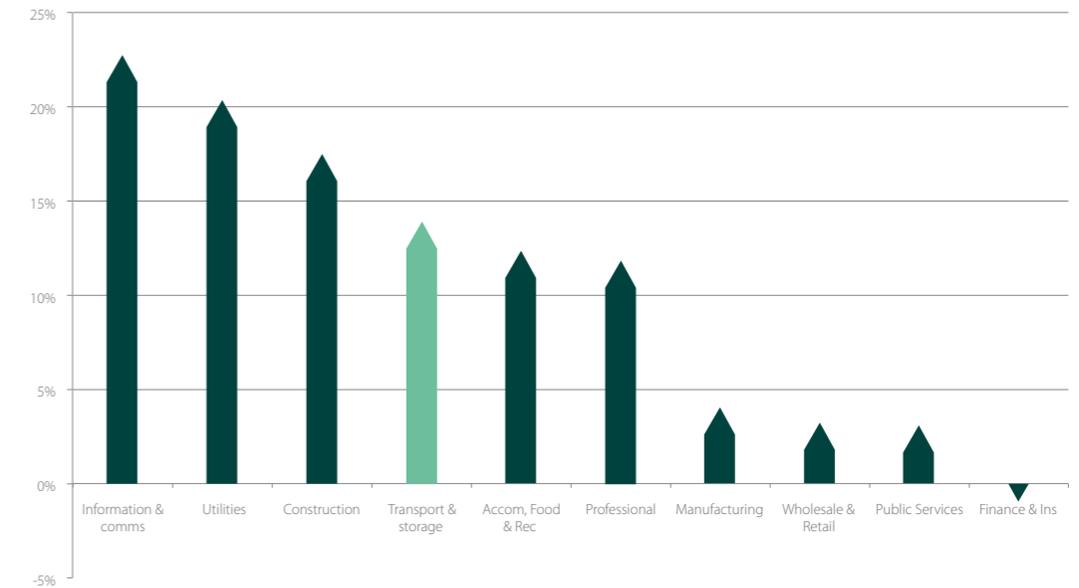
According to Experian there are currently 1.54 million workers in the transport and storage sector in the UK, a 14% increase in employment since 2013.

However the sector has an ageing workforce and there is already a shortage of HGV drivers and warehousing staff, leaving many occupiers struggling to find skilled employees.

The solutions occupiers are adopting to mitigate the shortage of workers include recruitment away from other industries, relocation to secondary locations where there is greater labour availability and investment in automation to increase efficiency.



Figure 2: UK employment growth by key sectors 2013 to 2018



Source: Experian

The need for more workers will drive automation of warehouses and use of management systems to mitigate this concern. The use of robotics in warehousing is increasing but technology is not yet at the stage where staff numbers are reducing. In fact the rise of online retail and the need to deal with returns has become a significant part of the operation.

Product returns can run up to almost 50%, are very labour intensive and a major cost of the online retail business as many retailers now operate separate warehouses to deal with returns alone. There will therefore continue to be a concern in the short to medium term about the availability and cost of labour for this activity.

# Creating a balance

Employment and transport costs make up the majority of overall warehouse running costs; approximately 45% each. Rent and other property costs are relatively small by comparison, accounting for just 10% of overall costs. The prime rent for warehouses over 100,000 sq ft in locations across the country vary from £5.50 psf (Darlington, Doncaster, Corby) to £7.25 psf (Bristol), a 32% difference. Rents around the M25 and London are much higher, such as Enfield (£12.50 psf) and Thurrock (£9.50 psf).

In considering alternatives to the prime locations where labour is scarce, the decision for logistics operators is whether cheaper labour costs and better availability of workers, offset the greater transport costs of secondary areas.

In order to give an indication of the spread of employment costs and the availability of labour we have carried out a broad comparison exercise across prime and secondary distribution locations, using standard industry variables of:

## LABOUR COST

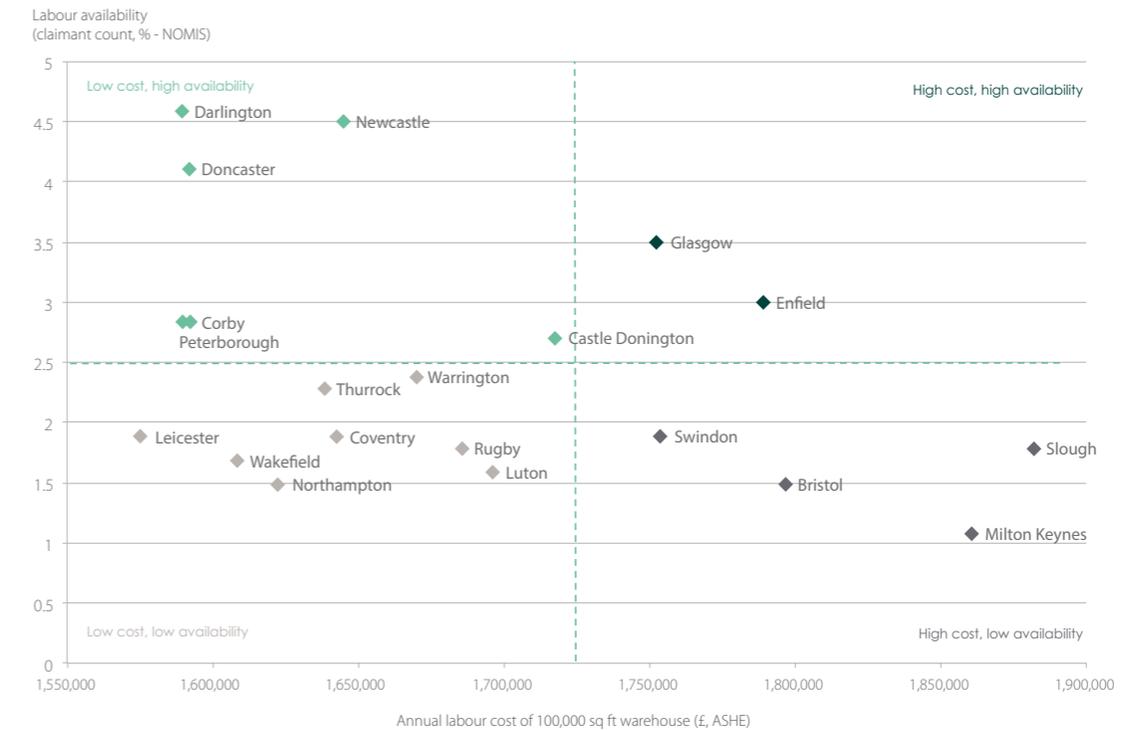
Gross weekly FTE wage (10th percentile (lowest) from the Annual Survey of Hours and Earnings) varies across the locations between £310 in Leicester and £370 in Slough, a **19%** difference.

## LABOUR AVAILABILITY

We have used the claimant count unemployment figure (NOMIS)

In Figure 3, we have placed labour availability and labour cost in a matrix in order to show the spread between different locations, mapping the availability of workers against the cost of workers.

Figure 3: Labour costs v labour availability



# Automation in the warehouse

With the concerns that surround the costs and availability of labour, occupiers are increasingly seeking to improve operational efficiencies. Whilst it is not expected to be a short-term answer, warehouse automation is widely regarded as one of the most effective ways to do this and is widely expected to fundamentally change operational activity, efficiencies and reduce costs over the long-term.

Technology is becoming increasingly embedded into logistics operations. The global sales of service robots, those that perform useful tasks for humans or equipment, are dominated by logistics, according to research by the International Federation of Robotics (IFR). The IFR says that the industry is now responsible for 63% of the total number of units sold globally, with the value of robotic logistic systems estimated at around £1.8 billion in 2017, a 138% increase year-on-year.

**With the concerns that surround the costs and availability of labour, occupiers are increasingly seeking to improve operational efficiencies.**

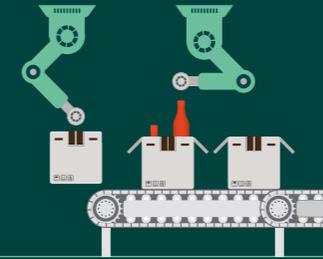
Automation is also growing at a significant rate. The global logistics automation market amounted to around £33 billion in 2017. This is expected to grow to £97 billion by 2026, according to the latest report by Analytical Research Cognizance.

This type of technology is now a lot easier to install than it once was. When it comes to robotics with modular building designs, there is no need for significant structural changes and the technology can be easily scaled up or down. With software advances happening all the time, and robots becoming increasingly energy efficient, introducing these technologies into warehouses is often a no-brainer.

Automation seeks to identify repetitive, time-consuming tasks, eliminate errors and speed up the documentation processes. Warehouse automation can be generally divided into devices that assist the movement of goods and those that improve their handling. This includes a number of operations such as automatic data capture, software systems, storage and retrieval. The following gives a brief overview of the most prominent uses of automation in the warehouse.

## PICKING AUTOMATION

Modular shelving systems combined with warehouse robotics (Goods-to-person technologies – GTP) are making it possible to automate the picking process, which traditionally is repetitive, time-consuming and error-prone. Robots now have the intelligence to vary their functions in response to their surroundings.



## AUTOMATED VEHICLES

Forklifts and pallet jacks are being replaced by automated guided vehicles (AGVs). AGVs can easily be incorporated into existing specifications, being added as required and gradually replacing forklifts.



## BARCODE LABELS AND SCANNING AUTOMATION

Occupiers save dramatic amounts of man hours and eliminate errors by automating the documentation processes that manage the inventory with barcode labels, rack labels and warehouse signs.



## INVENTORY AND BACK-OFFICE AUTOMATION

Warehouse management systems (WMS) that provide real-time data are the easiest and most cost-effective strategies warehouses can use to start implementing automation.





# The new warehouse

The development of new technology in warehouses is driving change in the way developers and occupiers view their space. This is consequently influencing the specifications and dimensions of new developments.

The logistics industry's new found reliance on automation and robotics will certainly change the landscape for big sheds. But the need for more space with greater warehouse efficiency remains the primary necessity for logistics operators and occupiers in the UK.

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The incorporation of new technology in warehouses is driving change in the way developers and occupiers view their space

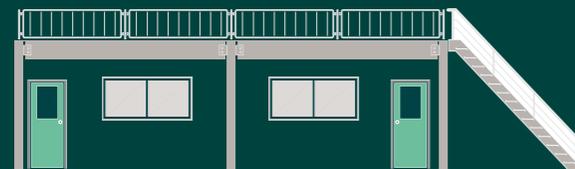
### MEZZANINE

Automated systems are now regularly embedded into multi-tiered mezzanine floors, which means businesses are starting to utilise space to its full potential and measure space by volume.

As well as this, developers are also planning for mezzanine expansion by occupiers to ensure there is room for external areas, such as staircases. The changing warehouse space, driven by this growth of automation and robotics, has significant implications for the big shed market.

The market is observing a shift from traditional heights of 10-12m, to taller buildings of 15-21m. Automation can allow businesses to operate at even greater heights of 22m to 30m, above the maximum height which can be currently served by forklift trucks (18m).

We are seeing increasing demand for taller buildings, particularly driven by occupiers such as Amazon who utilise multi-level mezzanines. The latest generation of large speculative warehouses includes buildings such as Altitude at Milton Keynes and DIRFT 535 where clear heights are 21m. With the greater height comes the need for higher specification floors that can accommodate greater loadings.



### POWER

Automation may be a saviour of sorts for the logistics industry, but technology is not without its faults. Automating all repetitive processes within the production chain to minimise production cost involves greater power consumption. There is a fine balance in finding a solution that is both cost-effective and energy efficient. Increased levels of electrical power can be a challenge to secure, especially given the pressures on the electricity network from competing uses such as new housing developments and an increase in chilled distribution. This could certainly prove to be a challenge in the warehouse design process.



### FOOTPRINT

By taking storage upwards, a high-bay warehouse requires less land and can have the same storage capacity as a conventional warehouse, although yard depths have also increased as vehicle movements and parking has increased. However some warehouse operators are not content with merely an increase in their vertical space, with the average footprint of a warehouse also increasing.



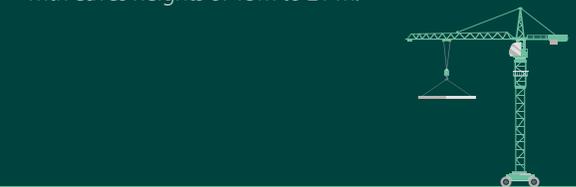
### OPERATIONAL EFFICIENCY

The modern warehouse is not simply viewed as a space in which to handle goods. It is recognised as a machine, with its cogs and bolts connected by data, technology and people. The design of a warehouse is crucial to maximising operational efficiency; a good design can save time and money in the intensifying e-commerce environment. That is why occupiers are increasingly involved in the design process. This is particularly evident with the expansion of e-commerce at new developments such as East Midlands Gateway, Midlands Logistic Park in Corby, iPort Doncaster, DIRFT and OMEGA Warrington.



### SPECULATIVE DEVELOPMENT

However, speculative development and existing buildings continue to have strong appeal for many businesses whose timescales/budgets do not allow them to opt for bespoke space. Amongst some companies there is a perception that design and build carries a much greater risk of the property not being available on time, which results in this procurement route being excluded. We do not therefore think speculative development will reduce and we are seeing larger developments being built by Panattoni, IM, Prologis and Gazeley of 400,000 sq ft to 550,000 sq ft with eaves heights of 15m to 21 m.



### DESIGN & BUILD

There is uncertainty around the implications of certain technologies that are predicted to be introduced into logistics over the next few years. Large occupiers such as Amazon and Ocado are very much involved in the development of their warehouses, with robotics and automation at the heart of their enterprises. Ocado, which produces its own warehouse robots, invests in visualisation tools to observe the live state of a warehouse anywhere on the planet. This system helps plan the construction of further warehouses and identifies potential modifications for warehouse structure.

With many occupiers relying on warehouse design to provide greater efficiency, this does not mean that design and build development will dramatically overtake speculative buildings. The level of design and build development in recent years has varied between 55% and 65% of total take-up and we expect this trend to continue.



# Conclusion

The last few years have seen a substantial increase in the demand for distribution space across the UK, driven by online shopping. This increased demand means that prime distribution locations such as the 'Golden Triangle' have seen strong rental growth and diminishing land availability.

Perhaps more significantly though is the increasingly restricted labour pool in these prime areas. As a result occupiers are placing greater importance on the availability and cost of labour and are now considering locations away from core prime areas. These areas provide lower cost solutions as well as a greater level of pre-let opportunities, and with the current levels of demand, this trend is likely to continue.

As their priorities change, the decision for logistics operators is whether cheaper labour costs and better availability of workers in secondary locations, offset the greater transport costs. Considering alternative locations is not the only solution that occupiers are adopting to mitigate the shortage of workers. They are also recruiting workers from other industries with greater labour availability and they are increasing investment in automation to improve efficiency.

While automation is not expected to be the short-term answer to the problem of labour availability, it is widely expected to fundamentally change operational activity, efficiencies and reduce costs over the longer term. Technology is now much easier to install and is increasingly embedded into logistics operations, growing at a significant rate. In fact, the global logistics automation market is expected to triple between 2017 and 2026.

Automation is increasingly performing repetitive, time-consuming tasks, eliminating errors and speeding up processes that assist the movement of goods and improve their handling. The incorporation of new technology in warehouses is driving change in the way developers and occupiers view their space. This is having significant impacts on the specifications of new development in terms of building height, vertical storage, overall footprint, increased demand on the electricity network and the intensification of use from the improvements of data and processes.

Whilst the issue of labour availability and strong demand for warehousing is changing the locational focus for occupiers in the short term, rapidly increasing automation and improved efficiencies of logistics and new designs of warehousing will continue to preserve the attraction of prime locations in the longer term.

If you'd like to talk to one of our team to discuss property services or any market leading research, please get in touch.

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