

What Warehousing Where?

Understanding the Relationship between
Homes and Warehouses
to Enable Positive Planning

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Foreword

Melanie Leech

CEO, British Property Federation

The logistics sector arguably has one of the simplest business models of any sector. It moves goods from A to B, supported by warehouse storage and other delivery spaces.

Simplicity however belies the sector's fundamental importance to almost everything we do. Logistics underpins the efficient operation of most if not all business sectors and is an integral part of the wider economy. It's also essential to modern life. Nowhere does this touch us more directly as individuals than close to home.

The Prime Minister has made tackling the housing shortfall the top domestic priority for her and her Government. But as the population grows and more homes are delivered across the country, it's equally important that we build in the capacity to serve the people who live there and will require a whole range of goods and services – whether once a generation, once a year or every day. It's not enough to build houses, we have to create sustainable and vibrant places.

This report sets out a series of recommendations aimed at delivering a clear vision – communities that function sustainably and efficiently and are great places to live. To achieve this, the logistics need to be in place to support modern ways of living and our expectations. That means proactive and well-informed policy and planning practice which recognises the inextricable link between homes and warehousing, and the importance of the infrastructure to connect them.

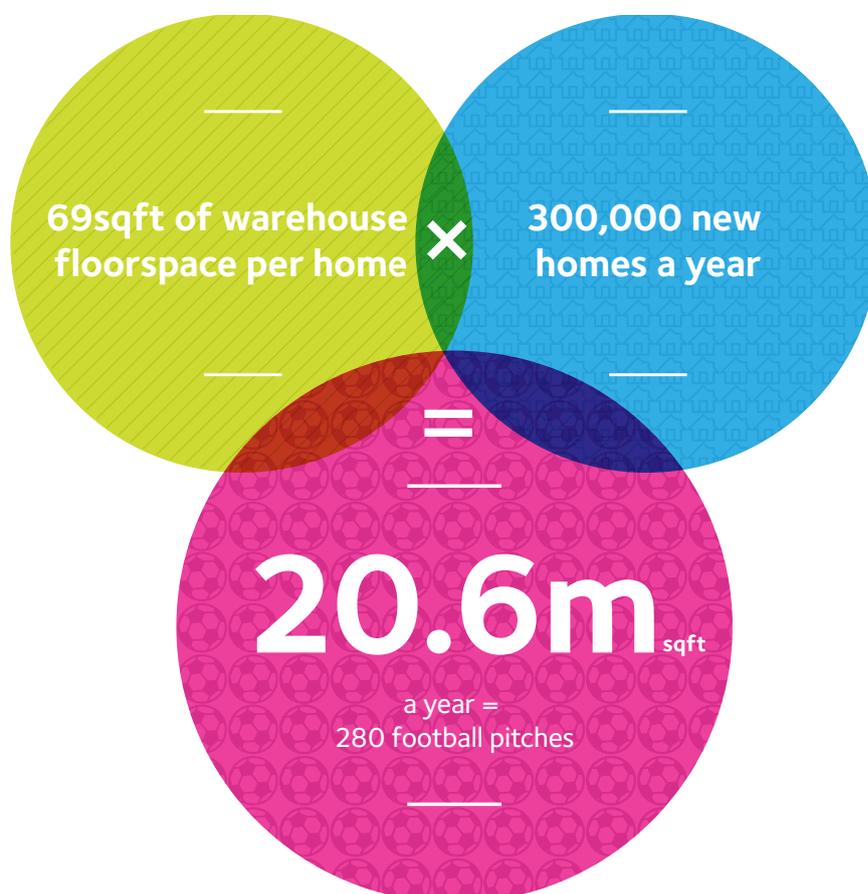
Executive Summary

The logistics sector moves goods from A to B, supported by warehouse storage and other delivery spaces. It 'underpins the efficient operation of most sectors of the wider national economy'.¹ Logistics is therefore an integral and essential element of the way our economy works.

There is a clear link between homes and warehousing, both in terms of quantum and location, which must be recognised in policy. Households generate demand for goods of all types, from cars to carpets to coffee to clothes. In turn car manufacturers require component parts; cafes require coffee bean deliveries and so on. Logistics is the sometimes invisible but always essential tie between demand and supply within the economy. Without it we would be running on empty - without cars or coffee.

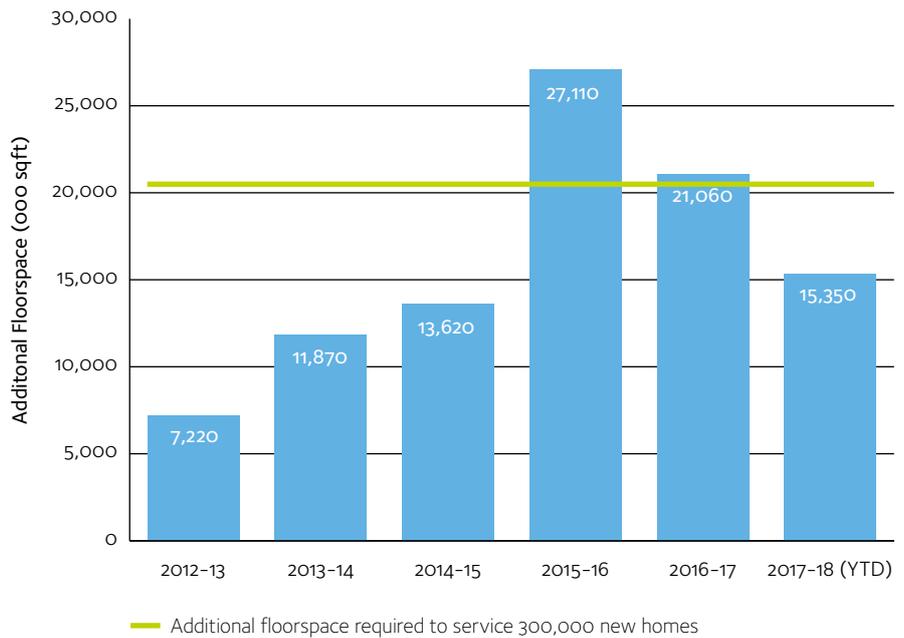
As the population grows and more homes are delivered across the country, additional space for the required logistics response will be needed to meet consumer demand. Logistics should be a central consideration when planning for sustainable communities.

There is presently 69 sqft of warehouse floorspace for every home in England. If this relationship were to continue this would mean 21 million sqft of additional warehouse floorspace is required each year to match the Government's annual target of 300,000 new homes. This is equivalent to 280 football pitches each year.



This level of warehouse floorspace growth has only been achieved in two of the past six years. See Figure below. A step change is required in the way the sector is considered in plan making and related strategies such as Local Industrial Strategies, to ensure that sustainable communities are created as new homes are delivered.

Historic Annual Warehouse Floorspace Growth (sqft) Compared to Future Annual Need to Align with the Government’s Housing Target



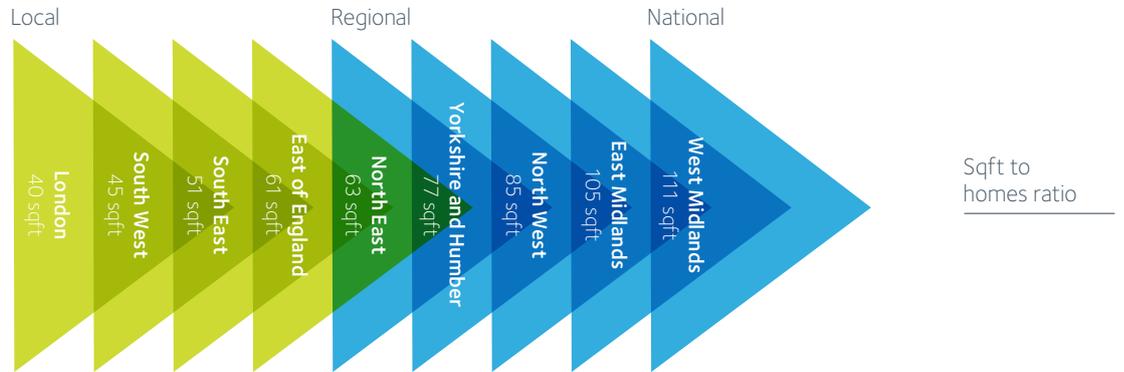
CoStar, 2018; Turley analysis

The figure of 21 million sqft per annum only reflects the historic relationship based on past trends. Planning for logistics space cannot have a one size fits all response and must have flexibility to respond to changes in the way the sector operates and evolves to meet consumer and operator demand.

Planning should be specific to the geography recognising that the ratio varies by region. Regions which play a predominantly national logistics role such as the West and East Midlands (the ‘Golden Triangle’) have ratios above 100 sqft per home. Conversely, regions which play a predominantly local role have a ratio below the national average of less than 45 sqft per home. The lowest ratio is seen in London which has only 40 sqft of logistics floorspace per home.

Dominant Role and Ratio (sqft) of Warehouses to Homes By Region

Dominant Role



Turley analysis of MHCLG and CoStar data, 2018 (2017 data)

The ratio is also subject to change over time. In recent years warehouse growth has gone hand in hand with growth in e-commerce and the diverse range of logistics responses required to support it. The ratio is not static and the quantum of warehouse floorspace required per home is likely to continue to grow over time.

Over the course of 2018 the delivery of new warehouse floorspace in some regions was more than double that of its expected ratio:

- The West Midlands delivered over 1 million sqft more of warehouse floorspace than its ratio would suggest, reflecting its role as a location for national logistics functions. As our population grows it is likely to be felt here through delivery of National Distribution Centres;
- The South East delivered around double the warehouse floorspace that would be expected with its ratio. As well as being an indicator of growth in the South East consumer market it may be a reflection of the regional and last mile requirements for London being sought outside of the capital due to limited land availabilityⁱⁱ.

The ratio will also change by location in response to the housing growth taking place across the country, with the Government identifying broad locations for strategic housing growth. This need is further heightened as saturation of the online retail market is predicted to be reached around 2035, coinciding with the time at which much of the Government's strategic housing growth is likely to be deliveredⁱⁱⁱ. Action must be taken now to put the necessary mechanisms in place.

As such the ratio should be used to inform an understanding of an area's current role within the national logistics network. It should help to guide local plan making and planning decisions as opposed to being applied universally as a static regional ratio to all situations, plans and schemes.

There is a clear and vital need and opportunity for planning policy at all government levels to be cognisant of the importance of the national logistics network, the specific role an area plays and how this is likely to be impacted by housing growth across the country and the heightened role of e-commerce.

Future warehouse floorspace must be accommodated to reflect not only local demand but also the role an area plays in the national logistics network. It is critical that a pipeline of deliverable land is made available to meet future demand or risk economic, environmental and social consequences.

Should the right space not be available to support logistics operations, there will be national and local impacts including reduced sustainability, constrained economic growth and productivity and subsequent non-realisation of employment opportunities.

Recommendations

In calling for positive planning for the economy's need for sustainable logistics provision, the British Property Federation (BPF) Industrial Committee makes the following recommendations:

FOR NATIONAL GOVERNMENT

National Government has an important role to play in ensuring full and appropriate recognition is awarded to the logistics sector across national policies informing the planning system.

1. National planning policy should include full and appropriate consideration of logistics requirements to support housing growth and set out robust mechanisms to enable policy makers to holistically plan for logistics needs as essential to planning well-functioning and sustainable communities. This should reflect on the current or emerging role of geographic areas within the national logistics network.
2. Planning Practice Guidance (PPG) on assessing Economic Need should specifically require Local Planning Authorities to consider the location and site needs of the different components of the sector, as distinct from the needs of others including industrial (B2), and noting the 'larger than local' role of some logistics activities.
3. The Government's Modern Industrial Strategy must fully recognise the role of logistics. In doing so the Government should set a requirement for all Local Industrial Strategies to specifically consider the role of their geographic area in the national logistics network and identify steps to support its efficient and sustainable operation.

FOR SUB-NATIONAL GOVERNMENT

Sub-national government, incorporating Local Planning Authorities, Combined Authorities and Local Enterprise Partnerships, is key to ensuring that necessary logistics space is available in relevant locations across the country, supported by effective plan making.

STRATEGIC PLAN MAKING

1. Evidence bases, strategies and policies including Local Plans, Local Industrial Strategies and Strategic Economic Plans should include full and appropriate recognition of the logistics sector. The warehousing to housing ratio for the location should not be applied as a static figure given this will change over time, but should be taken into consideration in informing an understanding of the role of the geography in the national logistics network.
2. Local plan making should incorporate a specific requirement for new logistics space so as to effectively plan for the location needs of the sector and this should be distinct from other B class uses.
3. There should be greater application of the Duty to Cooperate and related statements of common ground¹⁴ in Local Plan making between local authorities with regards to meeting logistics land requirements reflecting that distribution networks do not stop at administrative boundaries.

FOR PRIVATE SECTOR

4. As land designated as Green Belt is reviewed in Local Plans, consideration should be given to the sustainable development potential of selective releases where this would assist in the siting of logistics development so as to locate logistics facilities appropriately to serve communities and to minimise road miles travelled. The development of planning policy should be sufficiently flexible to be able to anticipate and respond to the rapidly evolving needs of the sector.

SITE SPECIFIC PLAN MAKING

1. Local plan making should acknowledge the appropriate requirements for the location of new logistics space of a variety of types (whether national, regional, last mile, pick up points, or a combination), including when allocating new settlements or Sustainable Urban Extensions so as to plan positively for communities to be sustainably and efficiently planned.
2. Customer parcel collection points should be planned into urban areas and town centres as part of the A1 retail provision or an alternative additional B class designation for logistics pick-up points, recognising the role logistics can play in supporting vibrant and viable high streets.
3. New warehouse space should be planned for positively so as to be delivered in parallel with delivery of new housing, as well as to potentially facilitate new housing sites, to maximise opportunities for sustainable growth.

The private sector must continue to work collaboratively with its partners in informing the planning process to enable efficient and sustainable logistics responses.

1. The logistics sector, including developers, operators and industry representatives, must seek to positively engage at all levels of plan making including Local Plans, Local Industrial Strategies and through engagement in government growth areas to demonstrate its requirements and the role it will play in delivering sustainable places. This could be enabled through a representative body.
2. The logistics property industry should invest in research, working alongside National Government and with input from developers and occupiers, to help inform expectations around likely requirements for logistics provision. This would reflect locations of population growth and housing delivery as well as recent/pipeline B8 development and Local Plan allocations.
3. Developers across a range of sectors including logistics, residential, retail and energy should explore partnership and collaborative working both together and with sub-regional government, to enable holistic and sustainable developments to appropriately meet the full social, economic and environmental needs of an area.

Delivery against these recommendations would enable the logistics sector to be planned for proactively and sustainably; giving it the profile and recognition in policy frameworks needed to ensure well-functioning communities can develop sustainably and efficiently. In this way, the development industry can better support the needs of logistics operators, retail and other businesses, and be a central part of the sustainable growth of the country's communities and economy.

01. Introduction



The Government has a national housing target for 300,000 new homes a year in England to meet population and household growth. As the population grows so too does the requirement for logistics space. New housing is therefore not only a good indicator of the need for new logistics space but the location of this housing will also influence the most sustainable locations for the logistics response within its national network.

The logistics sector has experienced unprecedented growth in recent years, driven largely by the take up of online retail and consumer appetite for ever more rapid delivery. Business supply chains remain an important component of the logistics offer, and also relate to demand associated with population growth, though are seeing less change of established logistics networks.

Accommodating growth in demand and the resultant new operational models required to fulfil e-commerce demand in a sustainable way requires the right type of logistics space in the right locations. This accords with the Government's National Planning Policy Framework (NPPF) which promotes positive planning: **'So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development'**^v covering economic, social and environmental sustainability.

In planning sustainably for growth **'Planning policies and decisions should recognise and address the specific locational requirements of different sectors. This includes making provision for clusters or networks of knowledge and data-driven, creative or high technology industries; and for storage and distribution operations at a variety of scales and in suitably accessible locations'**.^{vi}

Sites for logistics development and properties fit for modern use are under pressure (often from alternative uses) and increasingly in short supply. Added to this, there are out-dated perceptions of the value of the industry. Its borderless network of operations can mean the sector risks falling between the planning cracks.

In a planning system which is largely 'local' in its outlook, and with over 300 individual local authorities and planning authorities preparing plans, there is a great risk that larger than local issues affecting the operation, delivery and efficiency of the logistics industry are overlooked.

This report explores the relationship between homes and warehousing, both in terms of volume and location. It is concluded that for every home built, consideration must be given to serving household consumer requirements and the critical role that the logistics sector will need to play. This goes beyond what space is needed and where, to consider how this should be accounted for through the planning system.

Understanding this relationship, albeit nuanced, will assist policy makers and decision takers in ensuring that the every-day (and the not so every-day) goods we all need as consumers can reach us reliably and sustainably when we need them. Effective planning will enable sustainable logistics responses and support national economic productivity.

THE REPORT

The report explores a central research question:

What is the relationship between housing and warehousing and how does this manifest in different locations?

It considers four aspects:

i – The Why

The role of the logistics sector in the national economy and growth in online retail (chapter 2);

ii – The What

The evidenced ratio between homes and warehousing (chapter 3);

iii – The Where

The location and type of warehousing as part of the e-commerce response in relation to new homes (chapter 4); and

iv – The How

Good practice examples of how the public and private sector in partnership can support appropriate scale and location of logistics provision (chapter 5)

Recommendations are provided to illustrate how policy makers and decision takers at national, combined authority and local government levels should assist positive and sustainable planning alongside the logistics sector, to support the sector to operate effectively and, critically, meeting the needs arising from new housing and a growing population sustainably (chapter 6).

THE APPROACH

Three approaches have been applied to the research to give both desk-based data and real life information as follows:

Data

– analysis of official data sets including Office for National Statistics; Ministry of Housing, Communities and Local Government (MHCLG), as well as industry sources such as CoStar property database; Pitney Bowes/Oxford Economics retail expenditure forecasts;

Demonstrators

– case studies of two PurePlay retailers (with no physical bricks and mortar store presence) to bring the evidence to life:
Ocado – online grocer
AO.com – white goods and technology comparison retail

Discussions

– consultations with 13 companies including developers of logistics property, agents, advisors, and occupiers to understand what drives investment and location decisions. This included nine members of the BPF Industrial Committee;

The analysis begins broadly, considering all warehouse space in England, and narrows to e-commerce related logistics given its important role in driving growth and change in the sector. England has been chosen as a specific geography of analysis to enable comparison with the Government's stated housing target of 300,000 homes a year.

Further detail on the case studies and method are provided in the Appendix 1 and 2 respectively.

02.

The Why – The Nature of Modern Logistics

The movement of goods from producer to consumer is a fundamental component of the global economy. This includes supply chain business to business responses (B2B) as well as business to end consumer (B2C). As a nation we are the largest online spenders in Europe,^{vii} driving rapid growth in the logistics sector. With growth comes change: the sector is innovating and evolving to keep pace with customer expectation.

ECONOMIC IMPORTANCE OF LOGISTICS

In 2015, the BPF published its **Delivering the Goods** research into the economic importance of the logistics sector.^{viii} It found that:

- Logistics accounted for 8% of the UK workforce, equivalent to 2.2 million employees;
- Employment in warehousing operations increased by 40% between 2009 and 2013. The latest data indicates that it has increased by a further 40% between 2013 and 2017;
- The rate of employment growth in the sector (31%) is projected to exceed the national average (20%) between 2013 and 2035. The latest forecasts (2017 to 2038) indicate that employment growth in the sector will remain above the national average;
- The average salary for the sector is greater than the national average;
- Economic productivity in the sector is estimated at £100 billion Gross Value Added (GVA) per year and is projected to grow by 83% between 2013 and 2035;
- The majority of logistics employees live within 15 miles of their work;
- The logistics sector is modernising and pushing technological boundaries to meet rising demand and supply challenges; and
- This is driving a need for more employees to respond to increased technological efficiency as well as demand for skilled employees in electrical and mechanical engineering, IT and analytics.

MARKET DISRUPTION

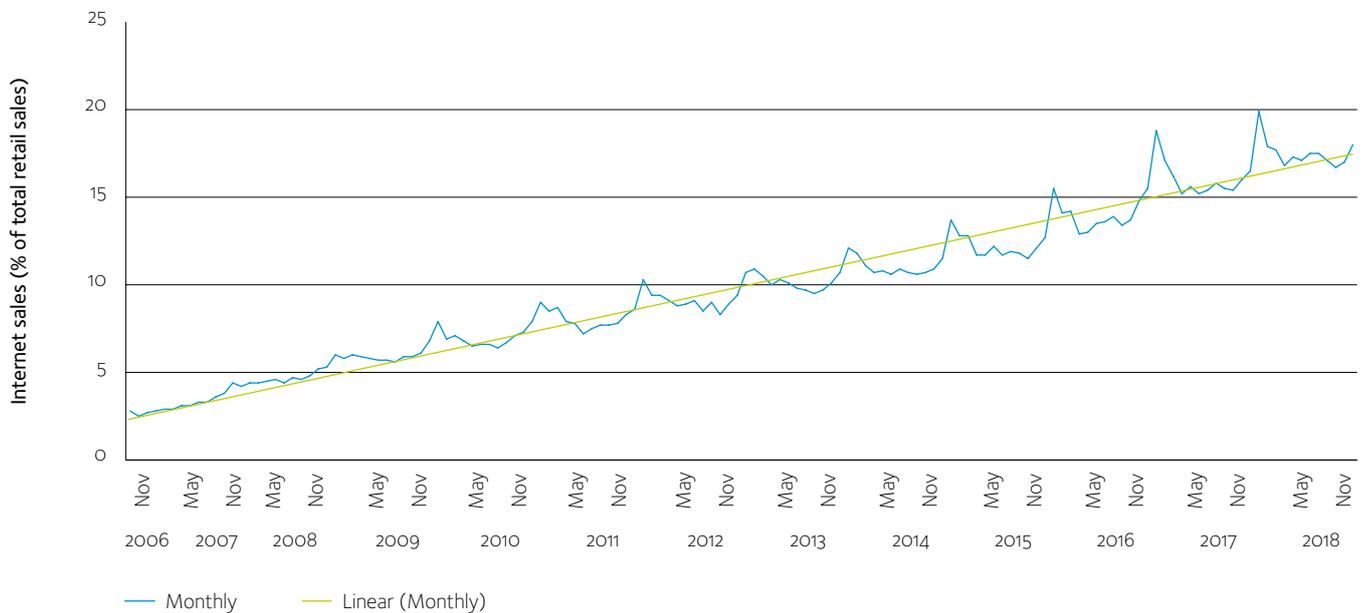
The logistics sector is increasingly influenced by consumers' relationship with the retail sector. The way we shop has implications for the specific logistics response. This in turn influences the locational needs and characteristics of the sector.

While other logistics markets such as B2B remain important, changes within the retail sector are having a notable impact on the way this element of the logistics sector needs to operate and its locational requirements as a consequence. In-store retail continues to be the primary way we shop as a nation. Only around 18% of purchases are made on-line and around half of these still have a store component, for example Click and Collect.^{ix} Stores will continue to be an important element of the online sales offer, for example through fulfilment of items via the existing store network (particularly relevant to grocery retail) and Click and Collect. John Lewis reports that it's Click and Collect^x customers spend an additional 20% in-store on top of their online spend.^{xi}

While in-store retail will remain dominant, growth within online is driving change within the logistics sector. The UK has the largest online expenditure in Europe,^{xii} reaching \$178 billion in 2017.^{xiii} **'More people are buying clothes, accessories, and health and beauty products online than five years ago.'**^{xiv} Amazon was the fifth largest retailer, accounting for £4 in every £100 spent in retail in the UK in 2017,^{xv} demonstrating the importance of online retailing.

Online expenditure continues to grow. Of every pound spent on retail in Great Britain, 18 pence (18%) is spent online.^{xvi} This has been a growing trend over more than a decade (Figure 2.1). In 2008, it was around 5 pence in every pound. Online sales grew at ten times the rate of store sales in the first half of 2018.^{xvii}

Figure 2.1
Internet Sales as Proportion of Total Retail Sales (Nov 2006 – Oct 2018)



ONS, 2018

Growth in online sales is being led by 18–35 year olds who are tech savvy and are choosing online shopping as a preference over traditional forms of shopping. These are the early adopters in the technology take up lifecycle. Demand from other cohorts, including those aged over 65, is growing and is reinforced by new digital technologies, such as 5G, and increased national coverage.

Over half of online spend (11 pence in every retail pound)^{xviii} is on items which are fulfilled with no traditional store involvement (PurePlay retail). Forecasts suggest PurePlay retail as a proportion of total retail expenditure will account for nineteen pence in every pound by 2028.^{xix}

Instant gratification and personalisation of products and delivery options is becoming the norm:

- When surveyed, three quarters of internet users had purchased a product online in the last month.^{xx}
- The main purchase driver presently is free delivery; 60% of online users said this would increase the likelihood of buying a product.^{xxi}
- Reliability of delivery is an important factor for the consumer. Ofcom research revealed that almost half of UK adults had purchased online with next day delivery in the last three months, with one fifth using same day delivery and a third using Click and Collect.^{xxii}

The way we shop and how retailers subsequently fulfil our orders has implications for logistics operations and subsequently land use. There is an increasing blurring of retail and logistics space, for example:^{xxiii}

- Click and Collect requires changes to store logistics networks as well as often dedicated storage areas and collection points in-store. It also drives additional in-store purchases;^{xxiv}
- The use of high street showrooms to drive online purchases, such as IKEA and Made.com;
- Argos uses its national store network as hubs to reach 90% of homes within four hours;^{xxv} and
- There has been a doubling of demand for warehouse space over the past decade, with two thirds being used by retailers compared to one third ten years ago.^{xxv}

Sales for non-store related retail i.e. online sales and delivery with no store interaction, is projected to grow by 116% in the next ten years: £34.7 billion in 2018 to £75.1 billion in 2028.^{xxvi} Overall, online retail, including that with a store interaction, is projected to grow by 81% (£59.8 billion in 2018 to £107.9 billion in 2028). See Table 2.1.

Table 2.1
Forecast Change in Household Expenditure on E-Commerce (2018–28; Comparison and Convenience)

	2018	2028	Change
Online excluding store interaction	£34.7bn	£75.1bn	116%
Online including store interaction	£59.8bn	£107.9bn	81%

Pitney Bowes; Oxford Economics, 2018 Note: Narrow definition relates to online sales which do not pass through a conventional retail store. This is a sub-set of the data for the broad definition. Broad definition includes sales which involve some store interaction (for example through Click and Collect).

Online sales fulfilled without store interaction are driving e-commerce growth and will require additional warehouse space and new models in response. This may be an indication of both a switch to online retailing by consumers, and a move away from in-store fulfilment by retailers as a greater proportion become PurePlay operators and others, such as Fenwick, seek to develop an online presence. Examples of how online retailers are responding to market growth are provided in the Case Studies.

OCADO

CASE STUDY

Ocado is a PurePlay online grocery retailer set up in 2000. Delivering in excess of 300,000 orders a week, it is the world's largest dedicated online grocery retailer. It has over 50,000 items available to buy on its website and offers a number of destination sites such as Fetch (pet supplies) and Sizzle (kitchen store). The company continues to experience double digit year on year growth and its priority is on exceeding market growth. The online market is far from saturated and there remains substantial growth potential as more of the population buy more online, particularly take up of online by younger and older age groups. Ocado is currently planning a fifth CFC to help fulfil orders across the country.

Ocado, Turley consultation

AO.COM

CASE STUDY

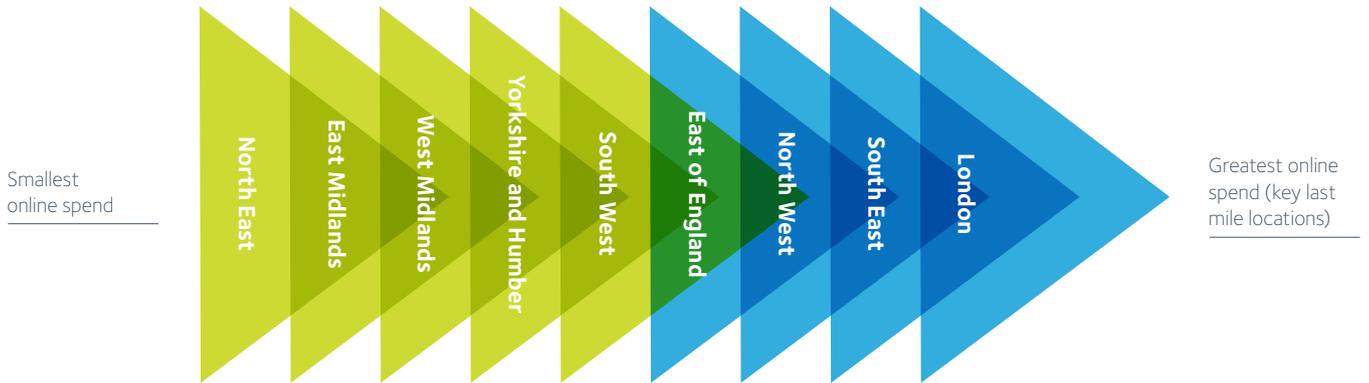
AO.com is a PurePlay appliance and electrical goods retailer which started in Bolton in 2000. It delivers to every post code in mainland UK every day. The company ethos is focused on the consumer and its offer includes Free Delivery, Free Returns and Click and Collect. It offers next day delivery 7 days a week, or selection of delivery date up to 50 days in advance. AO.com continues to experience market growth and considers the market to not yet be at saturation. AO.com has grown from two last mile delivery outbases in 2006 to 17 at present.

AO.com, Turley consultation

WHO IS SPENDING THE MOST ONLINE?

The highest online expenditure is from residents in London and the South East, followed by the North West and East of England, with greater demand, therefore, for premises suitable for a last mile response. Interestingly, areas such as the West and East Midlands which play a national fulfilment role have lower online expenditure. Figure 2.2 ranks England's regions in order of greatest to smallest online spend.

Figure 2.2
Regional Drivers of Online Demand (2018 and 2028; Comparison and Convenience)



Growth in online retail is forecast to be greatest in areas of existing concentrated e-commerce expenditure. This influences the last mile response as well as the supporting network of Regional Distribution Centres (RDCs), National Distribution Centres (NDCs) or stores involved in fulfilment across the country. Table 2.2 shows the current and forecast online goods expenditure by region. It should be remembered that with roll out of national coverage of digital technology and take up of omni-channel retail by different population cohorts these patterns may change.

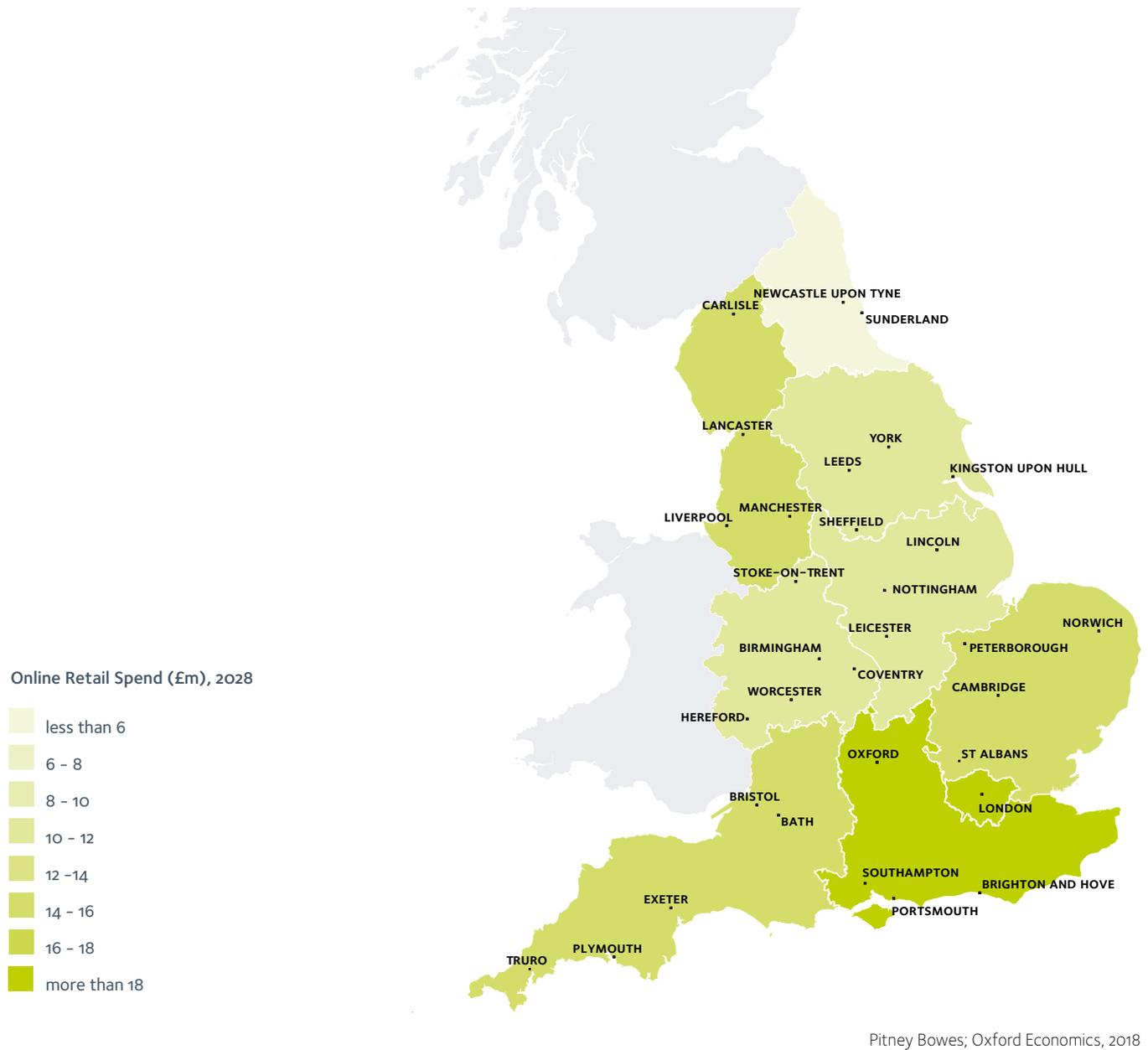
Table 2.2
Total (Comparison and Convenience) Online Goods Expenditure 2018–2028 (£ millions)
Expenditure rounded to nearest 100 million

	2018		2028		2018–28 % Change	
	Broad ▼	Narrow	Broad	Narrow	Broad	Narrow
London	10.2	5.9	18.6	13.0	82%	118%
South East	10.1	5.9	18.5	12.9	83%	120%
North West	7.3	4.2	13.0	9.0	78%	114%
East of England	6.7	3.9	12.3	8.5	83%	119%
South West	6.7	3.9	12.0	8.4	81%	116%
Yorkshire & The Humber	5.4	3.1	9.7	6.7	78%	114%
West Midlands	5.4	3.1	9.5	6.8	77%	112%
East Midlands	5.4	3.1	4.6	6.6	81%	117%
North East	2.6	1.5	4.6	3.2	74%	109%
England	59.8	34.7	107.9	75.1	81%	116%

Pitney Bowes; Oxford Economics, 2018 Note: Broad definition includes sales which involve some store interaction (for example through Click and Collect). Narrow definition relates to online sales which do not pass through a conventional retail store. This is a sub-set of the data for the broad definition.

Figure 2.3 presents the 2028 forecast position across England, with the darker shading in London and the South East demonstrating the concentration of greatest online spend.

Figure 2.3
Online Goods Expenditure by Region, 2028 Forecast (£millions)



Comparison retail fulfilled with no store interaction is currently around 67% of total online comparison spend. It is forecast to more than double in spend in all regions and will be equivalent to 79% of online comparison spend by 2028 (Table 2.3). This type of response, with no store interaction, is expected to be the driver of growth in comparison retail. This will create further demand for more logistics solutions including last mile, regional and national distribution.

Table 2.3:
Online Comparison Goods Expenditure 2018-2028 (£ millions)
Expenditure rounded to nearest 100 million

	2018		2028		2018-28 % Change	
	Broad ▼	Narrow	Broad	Narrow	Broad	Narrow
London	8.2	5.4	15.6	12.3	90%	126%
South East	8.1	5.4	15.5	12.3	91%	127%
North West	5.8	3.9	10.9	8.6	86%	122%
East of England	5.4	3.6	10.3	8.1	91%	127%
South West	5.4	3.6	10.1	8.0	88%	124%
East Midlands	4.4	2.9	8.2	6.5	89%	124%
Yorkshire & The Humber	4.3	2.9	8.1	6.4	87%	122%
West Midlands	4.2	2.8	7.8	6.2	86%	121%
North East	2.1	1.4	3.8	3.0	82%	117%
England	47.8	31.8	90.2	71.4	89%	124%

Pitney Bowes; Oxford Economics, 2018 Note: Broad definition includes sales which involve some store interaction (for example through Click and Collect). Narrow definition relates to online sales which do not pass through a conventional retail store. This is a sub-set of the data for the broad definition.

Table 2.4 shows how online convenience goods expenditure is forecast to change by region. A large proportion of online convenience fulfilment is met from the store infrastructure (76%). The store network therefore plays an important role in fulfilment of online grocery orders for many convenience retailers.

Table 2.4:
Online Convenience Goods Expenditure 2018-2028 (£ millions)
Expenditure rounded to nearest 100 million

	2018		2028		2018-28 % Change	
	Broad ▼	Narrow	Broad	Narrow	Broad	Narrow
London	2.0	0.5	3.0	0.6	50%	31%
South East	2.0	0.5	3.0	0.6	51%	31%
North West	1.5	0.4	2.1	0.4	46%	27%
East of England	1.3	0.3	2.0	0.4	51%	32%
South West	1.3	0.3	2.0	0.4	50%	30%
West Midlands	1.2	0.3	1.7	0.4	46%	27%
Yorkshire & The Humber	1.1	0.3	1.6	0.3	45%	27%
East Midlands	1.0	0.2	1.5	0.3	47%	28%
North East	0.5	0.1	0.8	0.2	42%	24%
England	11.9	2.9	17.7	3.7	48%	29%

Pitney Bowes; Oxford Economics, 2018 Note: Broad definition includes sales which involve some store interaction (for example through Click and Collect). Narrow definition relates to online sales which do not pass through a conventional retail store. This is a sub-set of the data for the broad definition.

THE LOGISTICS RESPONSE

Typology of Logistics Units

There are four main types of space required to enable the effective operation of the logistics sector to support e-commerce (Table 2.5). These relate to the role the physical unit plays in the delivery supply chain from national and regional distribution to point of consumer interaction through last mile fulfilment or pick up points. This typology is specific to e-commerce logistics.

Typical Typology of E-Commerce Logistics Units

National Distribution Centres	500,000 – 1 million + sqft on up to 100 acres
Regional Distribution Centres	200,000 – 500,000 sqft over 5 acres Some occupiers such as Amazon operate larger units
Last mile Fulfilment	Up to 100,000 sqft on a minimum 5 acre site (though can be less on constrained urban sites e.g. 3-5 acres) PurePlay may occupy smaller units of up to 10,000 sqft (such as AO.com outbases, Ocado spokes) Last mile includes parcel hubs
Pick up points	A location to which the consumer travels to collect a parcel such as: <ul style="list-style-type: none"> • Click and Collect space within an existing retail store • Parcel locker facility such as Amazon Locker in central urban locations (such as hotel, store or train station) • Specific pick up store in a town centre of train station such as Duddle. Pick up locations can drive additional in-store spend

Turley consultations Note: the above demonstrates typical requirements; there will be variations in site and unit size, by occupier.

MARKET CHANGES

The logistics sector has developed new models to meet the pace of change:

- New, non-traditional players – as occupiers become increasingly ‘disruptive’, such as PurePlay and those with a dominant technology focus such as Ocado, there also follows a raft of alternative logistics solutions:
 - Stowga offers on demand warehouse space to help occupiers, particularly in e-commerce, respond to changes in the location or volume of demand promptly.
 - On the Dot is a new approach to last mile delivery, offering a modern third party logistics (3PL) delivery solution to smaller companies which rival’s that of larger organisations offering app technology and one hour delivery timeslots.
- Parcel hubs – bespoke and speculative development of last mile facilities for courier firms such as DPD, TNT and Whistl.
- Automation – the natural progression as demand for logistics fulfilment increases and throughput of goods gets larger.
 - Ocado has developed significant technological innovations to increase speed and efficiency in its CFCs using ‘hive’ technology. Its newest CFC at Erith has the capacity to process in excess of 200,000 orders a week supported by a workforce of 2,500 employees. See Case Study.
 - Investment of £50 million in automated parcel sortation at DPD Group UK’s Hinkley hub enables 6,000 parcels to be processed an hour, five times the industry standard of 1,200.^{xxvii}
 - For some occupiers, automation could increase use of shared distribution hubs and enable more intensive plot ratios due to stacking.
- Environmental responses – companies such as UPS are investing in Electric Vehicles and related technology. These approaches are primarily relevant for localised delivery, such as in the City of London, where many parcel drops can be made over a small area.

- Multi-level units – areas of constrained land supply are likely to begin to see multi-story units being considered (see Peruvian Wharf example, chapter 4). Multi-level will not be suitable for every build or every occupier however and should not be considered a panacea:
 - London is a particular example of where a multi-level solution may be relevant. Policy E7 of the Draft London Plan^{xxviii} promotes intensification of business uses including through multi-storey, mezzanines and basements.
 - Organisations such as the City of London, Network Rail and DPD are exploring opportunities to re-use multi-level car parks for distribution purposes, demonstrating the role logistics will play in town centres.

OCADO – HIVE TECHNOLOGY

CASE STUDY

Ocado Technology and Ocado Engineering have developed next generation Customer Fulfilment Centres (CFCs) with Ocado Smart Platform (OSP) technology. This includes ‘the hive’: ‘thousands of robots working together to retrieve from storage the groceries comprising a customer order’. They work along a vaulted grid system retrieving the relevant items and collating them for an order, helping process some of the 260,000 orders Ocado receives a week. Ocado’s newest CFCs at Andover and Erith have OSP technology. Erith alone has the capacity for 200,000 orders. A total of 2,500 employees would be required to manage this throughput.

Ocado Technology is now working on Second Hands (robotic assistance for maintenance technicians) and SoMa (robotic hand grasping).

Ocado, Turley Consultation; <https://www.ocadotechnology.com/what-we-do.1.html>

03

The What – Identifying the Relationship Ratio

There is a fundamental connection between people, and therefore housing, and warehouse requirements. Our shopping habits drive demand. Understanding this relationship will enable policy makers to plan effectively for logistics provision and support economic growth.

ENGLAND'S WAREHOUSES

There are 40,100 warehouses in England totalling 1.7 billion sqft of floorspace¹ (Table 3.1). The majority (82% or 32,710 units) are under 50,000 sqft. This is equivalent to 42% of the country's warehouse floorspace. At the other end of the spectrum, units over 250,000 sqft represent less than 2% (700 units) of the total stock though account for 18% of the total floorspace.

Table 3.1:
Warehouse Floorspace in England by Property Size, 2018 (November YTD)²

Unit Size (Sqft)	Properties		Floorspace (million sqft)	
	Number	% of Total	Number	% of Total
< 50,000	32,710	82%	700	42%
50,000 - 100,000	4,330	11%	297	18%
100,000 - 250,000	2,340	6%	345	21%
250,000 - 500,000	510	1%	169	10%
500,000 - 750,000	120	<1%	74	4%
> 750,000	70	<1%	73	4%
All properties	40,080	100%	1,657	100%

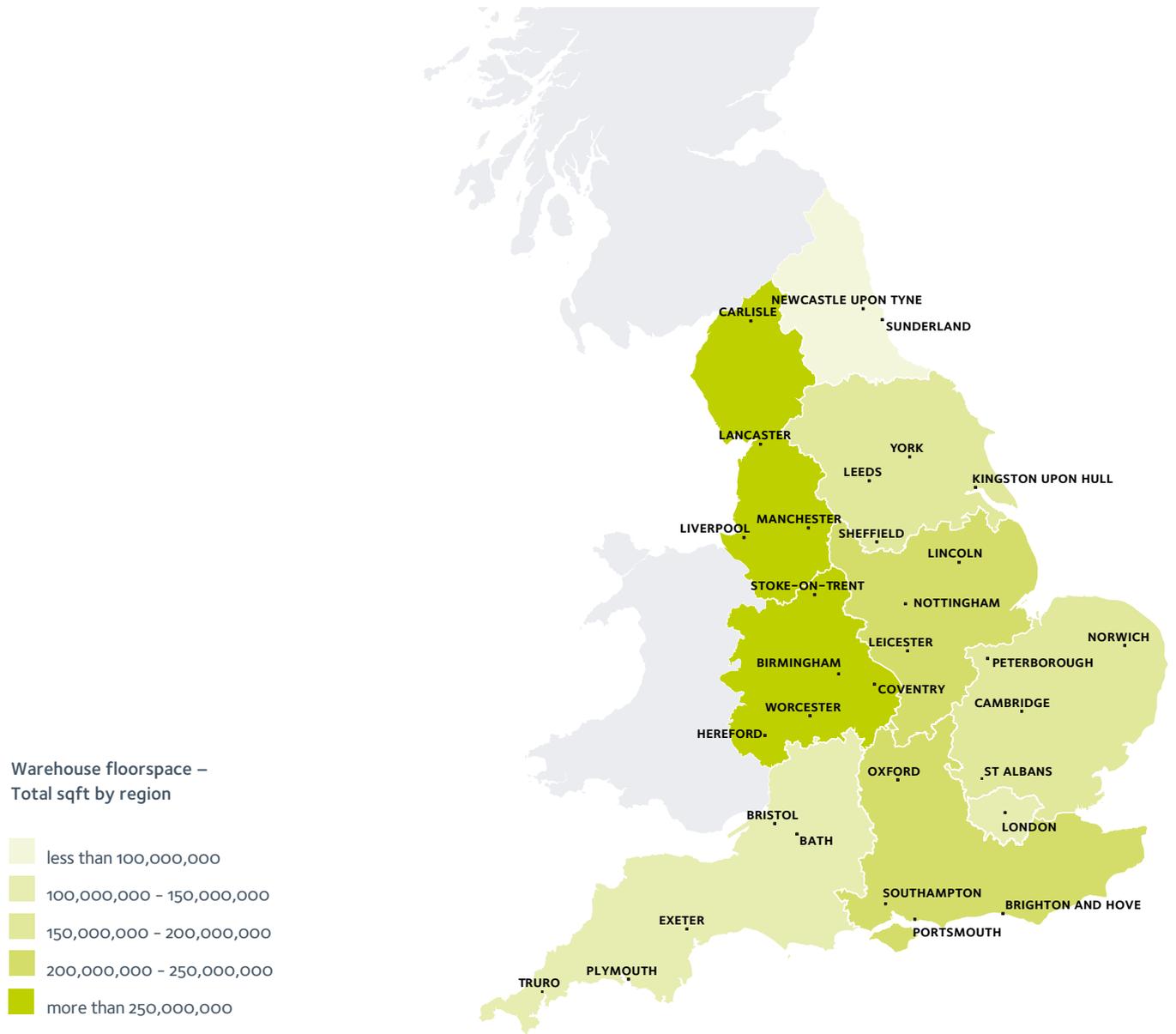
CoStar

The West Midlands, North West and East Midlands have the most warehouse properties and floorspace. The dominance of the West Midlands and East Midlands (forming the 'Golden Triangle') and the North West is attributable to their relatively good motorway, rail freight and port connectivity, and central location in the country, making them the ideal location for national and regional distribution. This is further corroborated by these areas having the greatest number of logistics properties measuring over 250,000 sqft in floorspace.

Conversely, London, the South West and North East have the fewest warehouse properties and least floorspace. London has the fewest warehouse premises over 250,000 sqft (27 properties) reflecting both its role in terms of more localised logistics provision and the lack of space to accommodate large units. Figure 3.1 shows warehouse floorspace (sqft) by region.

1 Some elements of this report apply the 2017 data to ensure compatibility with data on housing growth in terms of timescales used. In 2017 there were 39,400 units covering 1.6 billion sqft.
2 Figures do not sum due to rounding

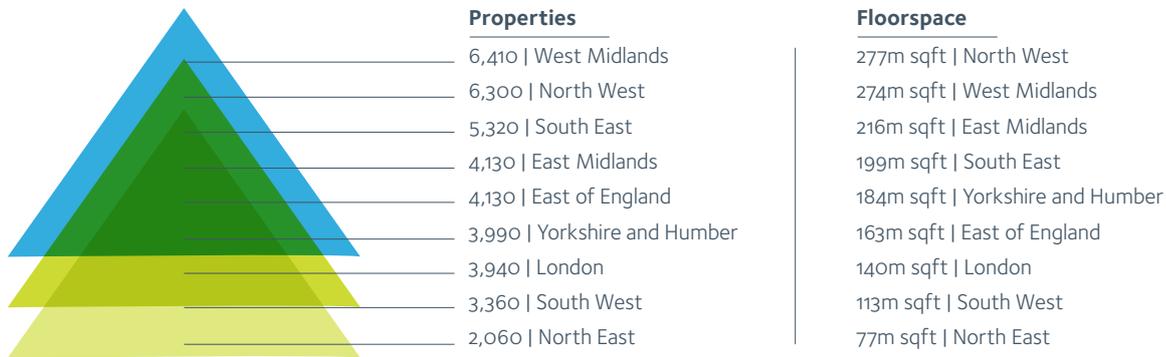
Figure 3.1:
Warehouse Floorspace – Total sqft by Region (November 2018)



CoStar, 2018

Figure 3.2 provides a ranking of England's regions by the number of warehouse properties and floorspace (sqft).

Figure 3.2:
Ranking by Number of Warehouse Properties and Floorspace (November 2018)



CoStar, 2018

Table 3.2 details the number of warehouse properties across England's regions by size (sqft).

Table 3.2:
Warehouse Properties by Location and Size

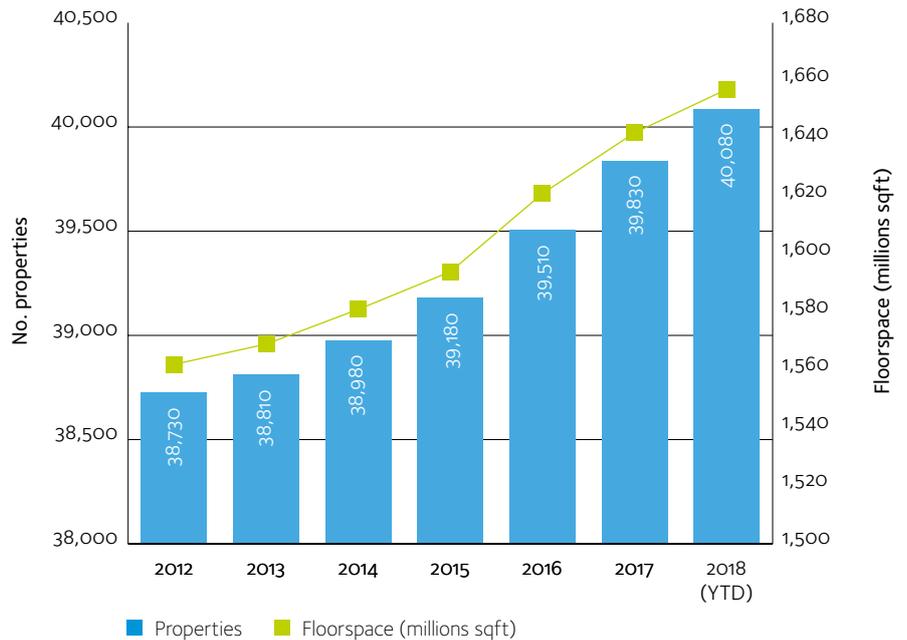
	Floorspace in unit size ('000 sqft)						Total ▼
	< 50	50 – 100	100 – 250	250 – 500	500 – 750	> 750	
West Midlands	5,150	710	430	100	20	5	6,410
North West	5,060	670	450	90	20	10	6,300
South East	4,680	550	220	50	10	5	5,520
East of England	3,410	430	230	40	15	5	4,130
East Midlands	3,180	480	320	100	20	15	4,130
Yorkshire & The Humber	3,170	460	270	50	15	15	3,990
London	3,250	500	160	20	5	2	3,940
South West	2,930	280	110	30	10	5	3,360
North East	1,720	210	90	20	5	5	2,060

CoStar Note: figures do not sum due to rounding.

GROWTH IN WAREHOUSES

Over the last six years there has been a 4% increase in warehouse properties across England, increasing from 38,700 in 2012 to 40,100 in 2018 (Figure 3.3). Units are getting larger, with the increase in floorspace equivalent to 6% (1.56 billion sqft in 2012 to 1.66 billion sqft in 2018). Warehouse Properties and Floorspace in England, 2012 – 2018 (October).

Figure 3.3:
Warehouse Properties and Floorspace in England, 2012 – 2018 (October)

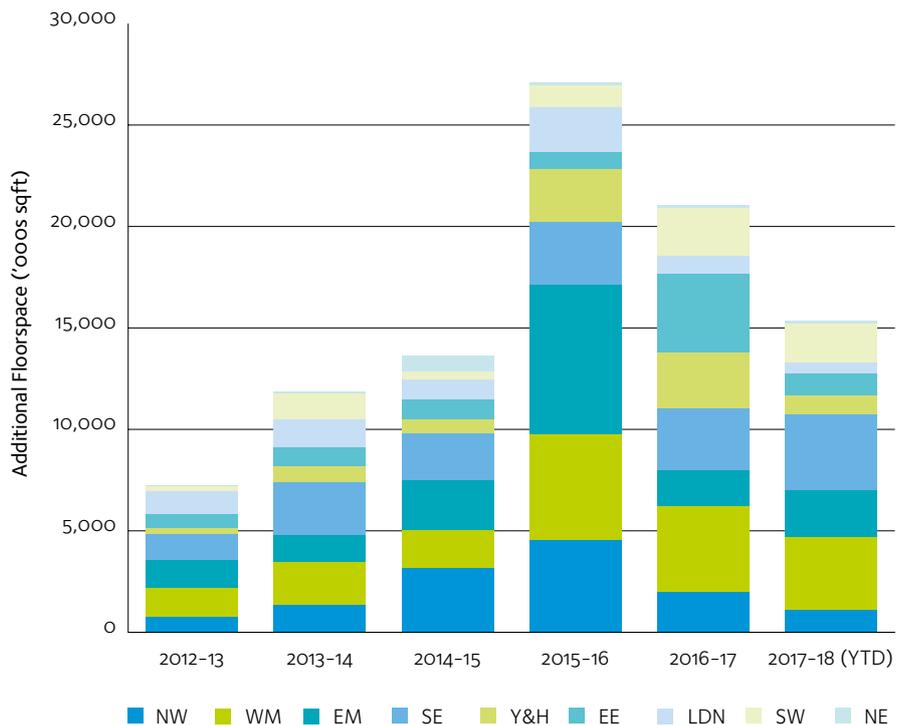


CoStar, 2018

In 2012 the average unit size was 40,000 sqft, rising to 41,000 sqft in 2018. This is likely fuelled by a number of recent 'super box' additions to the portfolio across the country for the likes of Amazon and Ocado.

The period of largest warehouse floorspace growth is attributable to 2015 to 2017. An additional 27.1 million sqft was built in 2015-16 alone, driven by strong growth in the East Midlands, West Midlands and North West. See Figure 3.4.

Figure 3.4:
Annual Additional Floorspace by Region, 2012 – 2018 (October)



CoStar, 2018

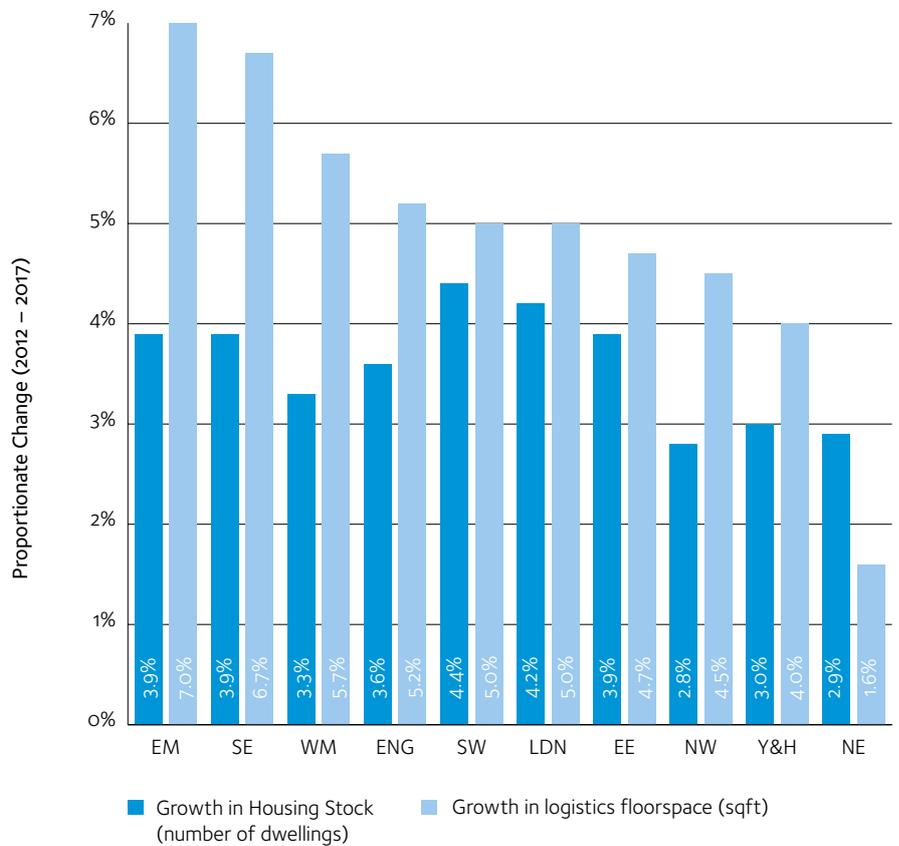
This growth has been in despite of limited site availability and has potentially been subdued by lack of sites. As the sector continues to grow as well as to have more nuanced location requirements it will be important to ensure that there is sufficient land in the right places to respond to demand associated with housing growth.

RELATIONSHIP WITH HOUSING – ESTABLISHING A RATIO

The relationship with housing is an important one. Housing can be considered a proxy for population. Logistics solutions should be considered part of ensuring well-functioning, sustainable communities.

The unprecedented demand for logistics solutions led to warehouse floorspace increasing at a faster rate (5.2%) than the rate of growth in the housing stock (3.6%) between 2012 and 2017. Particularly notable is the rate of warehouse floorspace in the East Midlands (almost double the housing growth rate) and the South East, both experiencing growth over 6%. See Figure 3.5.

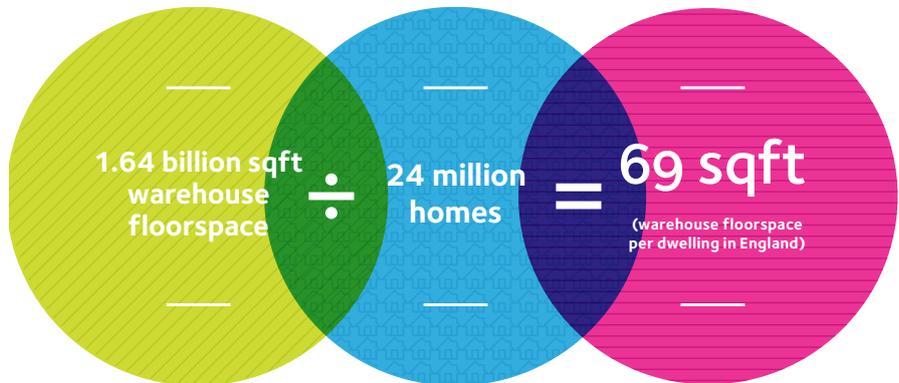
Figure 3.5:
Change in Housing Stock (number of dwellings) and Logistics Space (sqft) 2012 – 2017



Turley analysis of MHCLG and CoStar data, 2018

There were almost 24 million homes in England in 2017. This equates to 69 sqft of warehouse space per dwelling.¹ See Figure 3.6.

Figure 3.6:
The Warehouse to Homes Ratio



Turley analysis of MHCLG and CoStar data, 2018 (2017 data)

Note: the ratio is calculated using 2017 warehousing and homes for consistency of year.

The 69 sqft ratio is not linear: it differs by geography and changes over time.

REGIONAL VARIATIONS

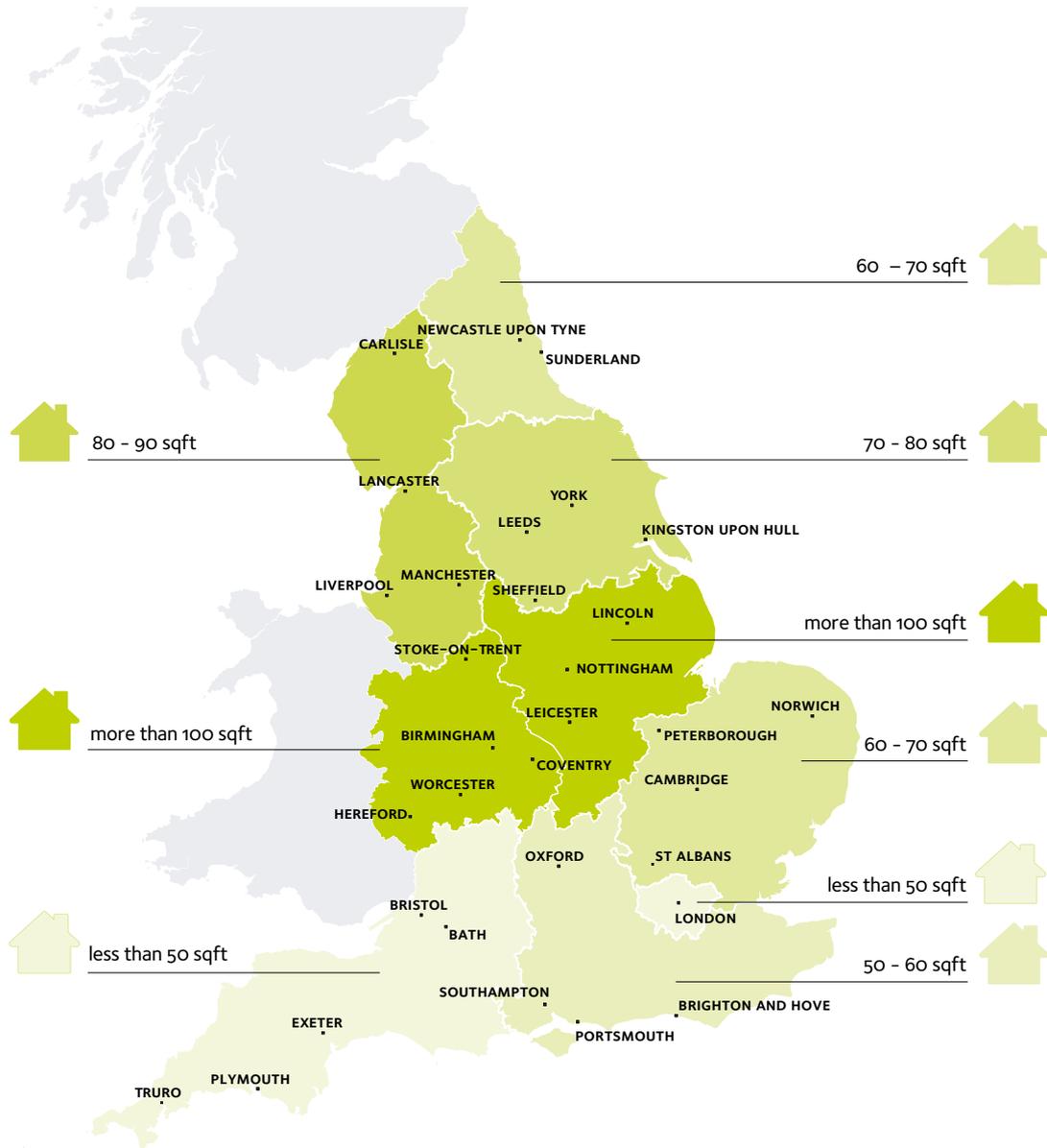
There are significant regional variations in this ratio, reflecting the role of each area in terms of meeting national, regional and local needs within a national logistics network. See Figure 3.7.

The core of the country demonstrates the highest ratios. The West Midlands and East Midlands have the highest ratio of warehouse floorspace to homes, both above 100 sqft per dwelling (over 144% of the England average), reflecting the national distribution role of the 'Golden Triangle' and the number and size of units in this area.

The South West and London have less than 45 sqft per dwelling (less than 65% of the England average) demonstrating the more local role of warehouse space in these areas, as well as constrained land supply in the case of Greater London.

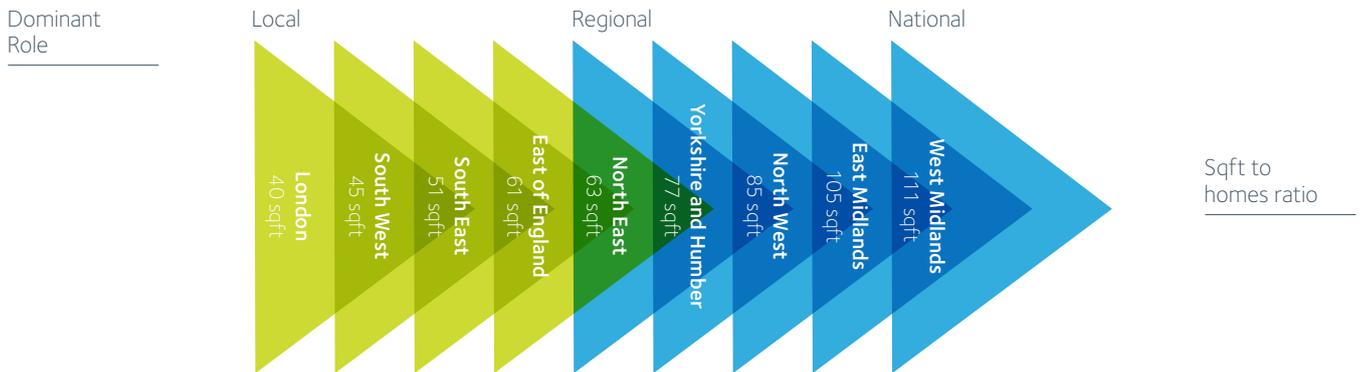
¹ At the time of writing the 2018 figure has not been published, therefore the ratios presented use 2017 data for both homes and warehouses.

Figure 3.7:
Warehouse Floorspace (sqft) per Dwelling – Ratio by Region



Turley analysis of MHCLG and CoStar data, 2018 (2017 data)

Figure 3.8:
Dominant Role and Ratio (sqft) of Warehouses to Homes By Region



Turley analysis of MHCLG and CoStar data, 2018 (2017 data)

OCADO

CASE STUDY

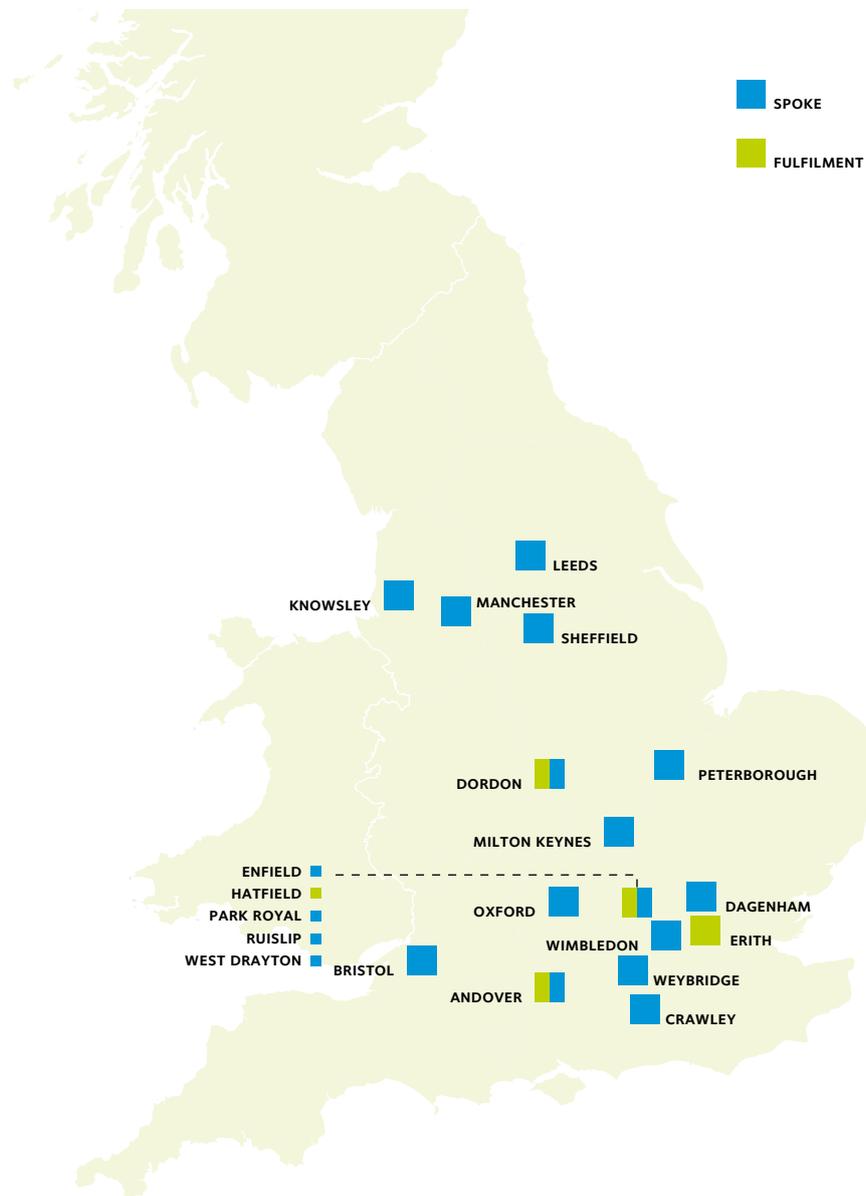
The following Case Studies demonstrate how these companies operate their logistics network spatially across the country to respond to market demand.

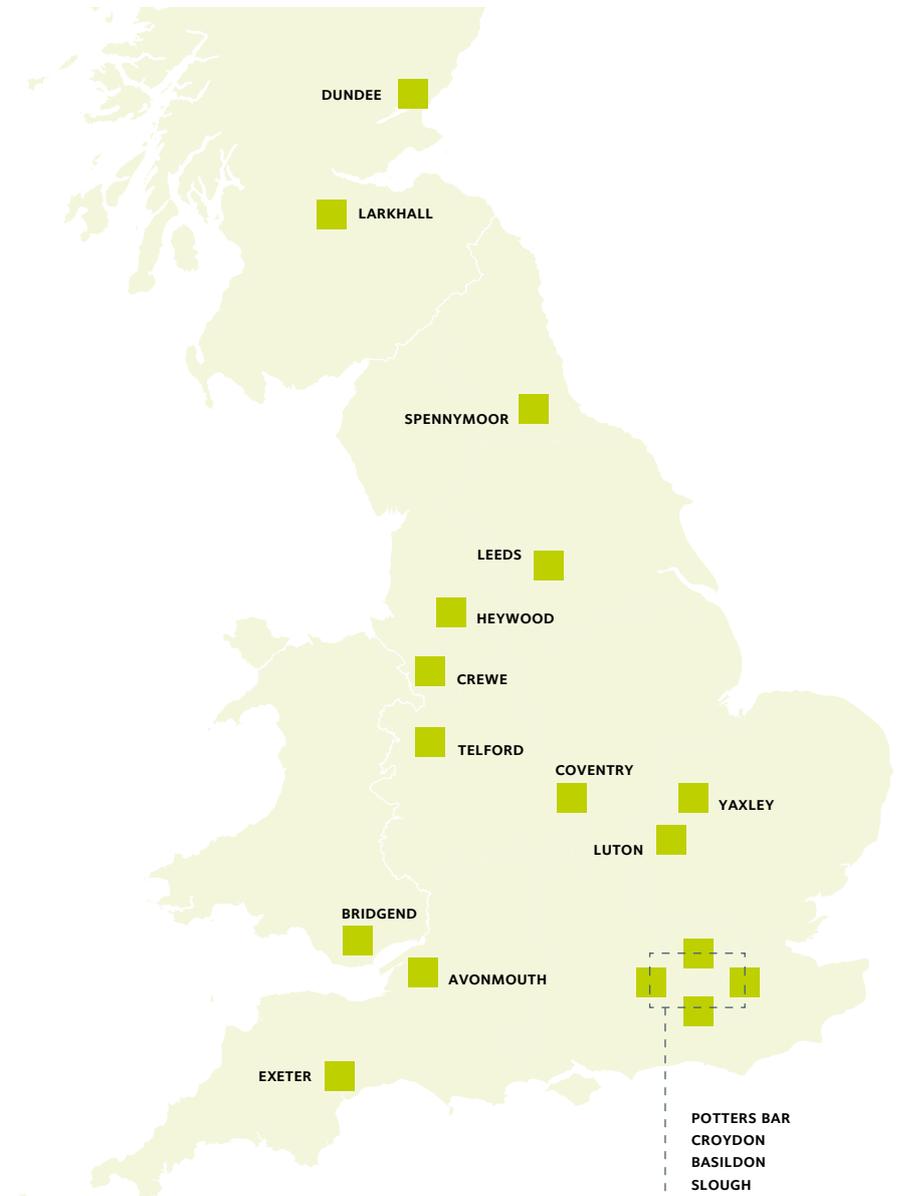
Ocado operates four Customer Fulfilment Centres (CFCs) which fulfil orders to its 17 last mile spokes. The CFCs are located in the south of England:

- Hatfield (Hertfordshire)
- Dordon (North Warwickshire)
- Andover (Hampshire)
- Erith (London Borough of Bexley)

Ocado's 17 spokes are likewise primarily located in the south. Ocado's CFCs and spokes are shown in the map below.

Ocado, Turley consultation





TEMPORAL VARIATIONS

The ratio of warehouse floorspace to housing has increased from around 67.6 sqft per dwelling in 2012 to 68.6 sqft per dwelling in 2017, an increase of 1.5% over a six year period (Table 3.3). The largest increase in ratio occurred between 2015 and 2016; a reflection of the large quantum of warehouse growth in that year.

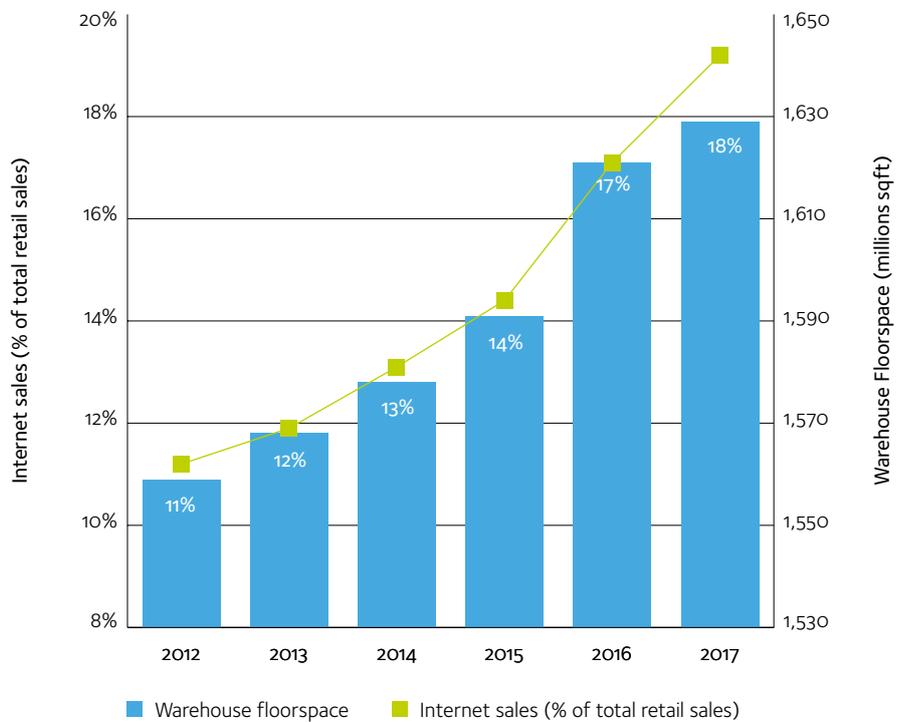
Table 3.3:
Ratio of Warehouse Floorspace (sqft) to Dwellings in England, 2012-2017

2012	2013	2014	2015	2016	2017
67.6	67.5	67.6	67.7	68.3	68.6

Turley analysis of MHCLG and CoStar data, 2018 (2017 data)

This coincides with an increase in the proportion of retail which is online (Figure 3.9).

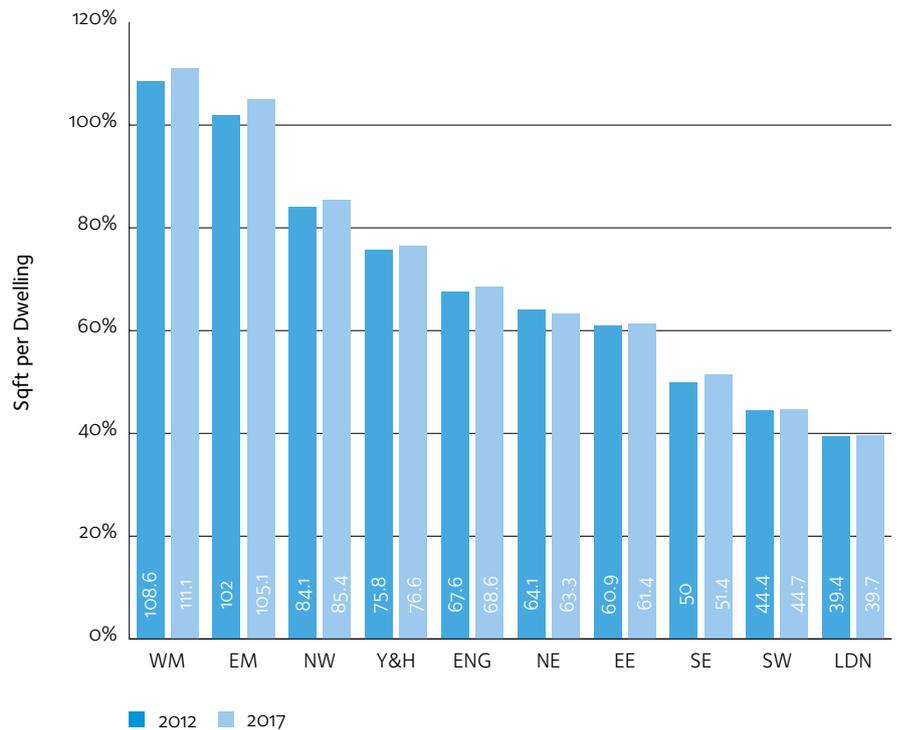
Figure 3.9:
Relationship Between Internet Sales and Warehouse Floorspace in England, 2012 – 2017



Turley analysis of ONS and CoStar data, 2018 Note: data used for online is sourced from ONS to enable historic annual comparison with warehouse delivery. ONS data covers a narrower definition of online retail^{xxxx} but is used here to illustrate the growth trend.

The increase in the ratio between warehouse floorspace and housing was experienced in varying degrees by geography, with all but the North East seeing an increase in sqft per dwelling (Figure 3.10).

Figure 3.10:
Change in Floorspace per Dwelling by Region, 2012 – 2017



Turley analysis of MHCLG and CoStar data, 2018

The ratio demonstrates a measurable relationship between homes and warehousing and provides a yardstick for the level of warehouse space required based on previous levels of provision. As more homes are built in England, the quantum of warehouse space will similarly need to grow.

There are variations by region and over time and the ratio should therefore not be treated as an absolute figure - there is no one size fits all approach:

- There are variations to the ratio by region, reflecting the dominant role of that region (be it national, regional or local) within the national logistics network;
- E-commerce is leading to changes in the locational requirements of occupiers which will in turn lead to ratio changes on a regional basis;
- The change in ratio across the country may not be uniform as areas become more digitally enabled at different rates and as housing growth varies by location;
- The rate of growth in e-commerce is driving new demand for space at an unprecedented level and so the ratio is likely to continue to change;
- Changes within the logistics sector will affect the quantum of floorspace required. Factors such as automation, productivity, latent capacity and ageing stock will all affect the ratio to housing;
- Developer and occupier evidence indicates supply has been restricted so take up may not reflect need. Lack of sites is a constraint on growth and so the ratio may not be a true reflection of need despite recent growth in logistics floorspace; and
- There is a time lag between new market growth and provision of new warehouse units and so the ratio will not reflect the direct relationship between new homes and the new warehousing required to meet its logistics needs.

APPLYING THE RATIO TO HOUSING GROWTH

The Government is committed to ‘significantly boosting the supply of homes’, and as such a continued growth in the housing stock can be anticipated.^{xxx} Over 2017/18 a total of 222,190 new homes were delivered across England.^{xxxii} If the current national ratio of 69 sqft of warehouse space per dwelling is to be sustained, this would require 15.2 million sqft of warehouse floorspace. This is closely aligned with the equivalent growth achieved over the calendar year to November 2018: 15.3 million sqft.¹

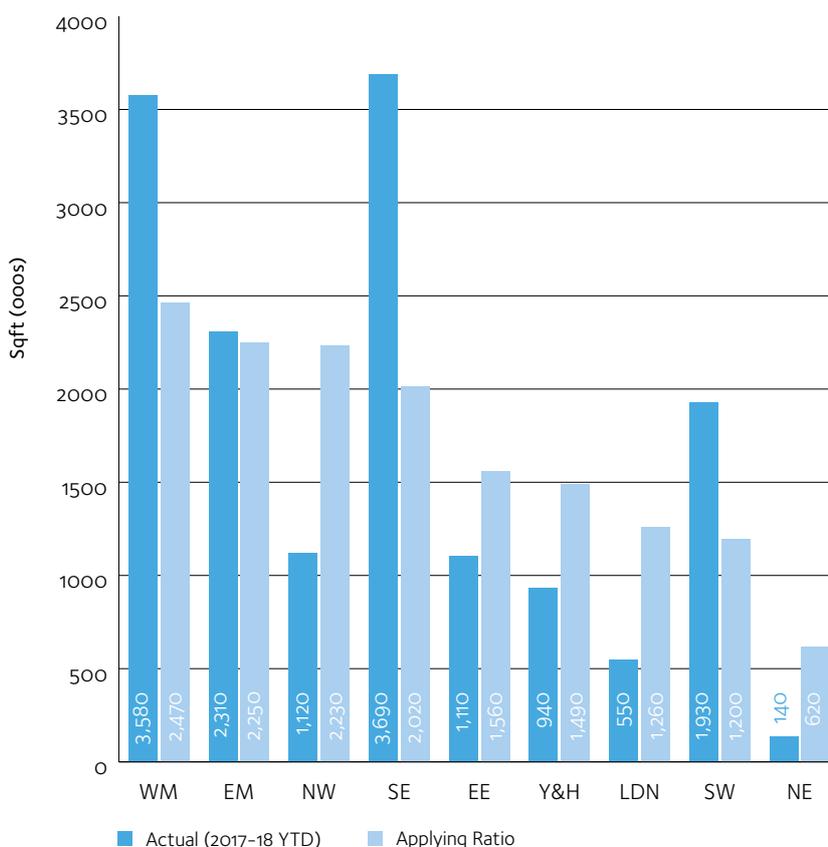
When viewed by region (see Figure 3.11):

- The West Midlands, South East and South West have demonstrated provision of new warehouse floorspace (and therefore implied demand) above the current ratio;
- The East Midlands has delivered broadly in line with its ratio;
- All other geographies have delivered a quantum of new warehouse space considerably below their current ratio.

The level of provision in the West Midlands is a likely reflection of its location within the ‘Golden Triangle’. As demand for national distribution space increases it is likely to be felt most acutely here for good operational and efficiency reasons.

The level of new provision in the South East is substantially above its current ratio. As well as indicating growth in the South East consumer market it may be a reflection of regional and last mile requirements for London being sought outside of the capital due to limited land availability.^{xxxiii}

Figure 3.11: Comparison of Applied Warehouse sqft Ratio with Actual Warehouse sqft Provision 2017-18



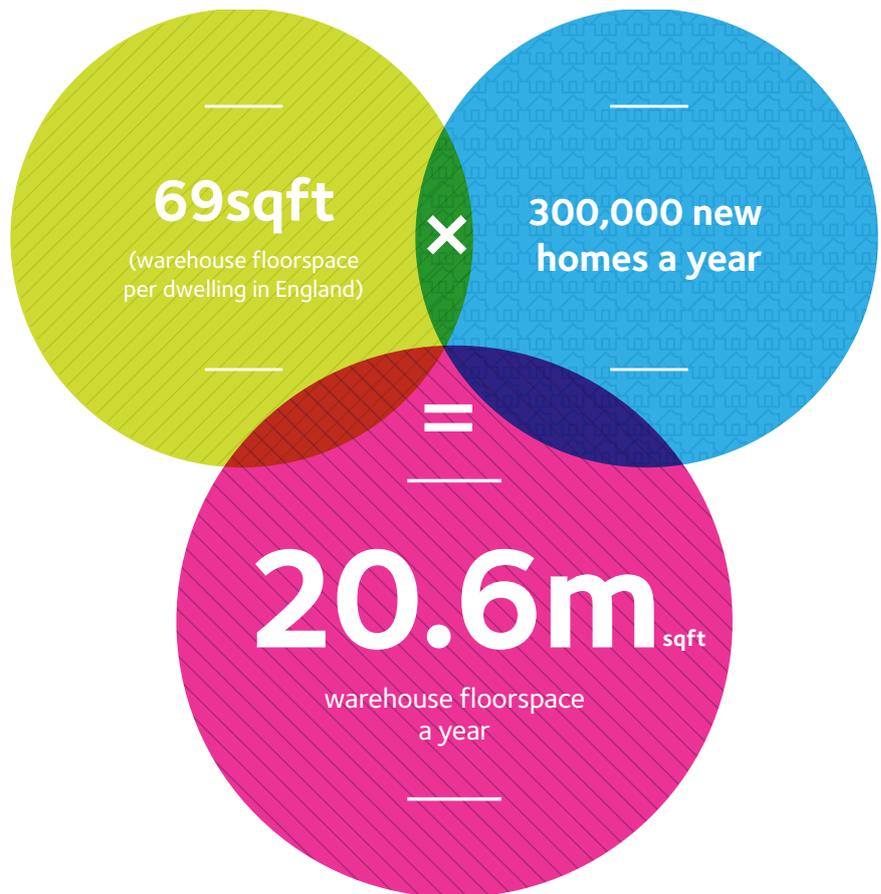
Turley analysis

¹ It should be noted that there will typically be a 2+ year time lag between new market trends and an industry response. This analysis is for illustrative purposes.

To achieve the 69 sqft ratio of warehouse floorspace to homes using the Government target for 300,000 additional dwellings per annum would require 20.6 million sqft of new warehouse floorspace a year. See Figure 3.12. This is equivalent to 280 football pitches each year.

This compares to the peak of recent warehouse floorspace delivery of 27.1 million sqft in 2015-16. Since 2012-13 the only other year to exceed 20 million sqft was 2016-17. In the remaining years, 15 million sqft or less was delivered per annum.

Figure 3.12:
Warehouse Floorspace Required for 300,000 Homes to Maintain Current Ratio (per annum)

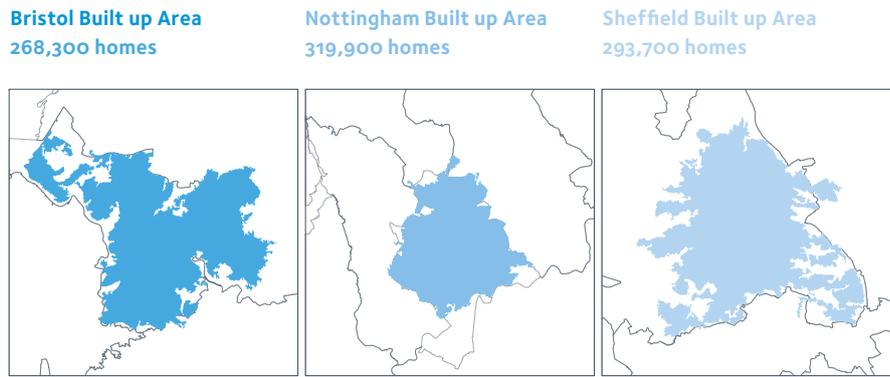


Turley analysis

Figure 3.13 provides an illustration of how built up areas of a size equivalent to the Government’s annual housing target are provided for in terms of logistics space and logistics response.

Figure 3.13:
Illustration of Existing Warehouse Provision in Locations of 300,000 Homes

In order to illustrate how the relationship between homes and warehouse provision looks in different parts of the country, we have chosen three ‘built up areas’^{xxxiii} with approximately 300,000 homes (Bristol, Nottingham and Sheffield, broadly reflecting their city regions). Their existing stock of homes is broadly similar to the Government’s target to build 300,000 homes annually. The level of warehouse provision varies, with ratios ranging from 53 sqft in Sheffield, which is typically served by regional and national distribution from the North West or East Midlands, to 85 sqft in Bristol which has a concentration of regional distribution at Avonmouth, serving the South West.



Warehouse Properties	470	606	645
Total logistics space	22.68 million sqft	24.15 million sqft	15.68 million sqft
Under 50k	11.69 million sqft	12.26 million sqft	8.65 million sqft
50 - 100k	4.54 million sqft	4.82 million sqft	3.21 million sqft
100 - 250k	2.51 million sqft	4.34 million sqft	2.11 million sqft
250 - 500k	1.68 million sqft	900,000 sqft	1.01 million sqft
500 - 750k	550,000 sqft	540,000 sqft	610,000 sqft
Over 750k	1.70 million sqft	1.28 million sqft	0 sqft
Warehouse space per home*	85 sqft	75 sqft	53 sqft

The ways in which the two Case Study companies provide for these three urban areas are as follows:

Case Study: Ocado:

- Bristol – a Bristol spoke is served by Dordon CFC. The spoke operates a fleet of 75 Ocado vans.
- Nottingham – served by Sheffield and Dordon CFCs.
- Sheffield – a Sheffield spoke served by Dordon CFC.

Case Study: AO.com:

- Bristol – served from the Crewe NDC via an outbase at Avonmouth.
- Nottingham and Sheffield – served from the Crewe NDC via an outbase at Leeds. The Leeds outbase is a small unit with a large delivery throughput, serving the M1 area.

Census 2011; CoStar 2018; Turley consultations
 Note: figures are rounded and may not appear to sum

04

The Where – Location Planning



The locations which are most relevant for this additional floorspace will be primarily determined by two things:

- The specific locational requirements of the different elements of the fulfilment response (national, regional and last mile); and
- The location of population as both a driver of market demand and source of labour.

Therefore it is not only the scale of housing growth which will have an impact the logistics response, but also its location.

This section explores where logistics providers choose to place warehousing space in order to meet the demands of customers and why they do so.

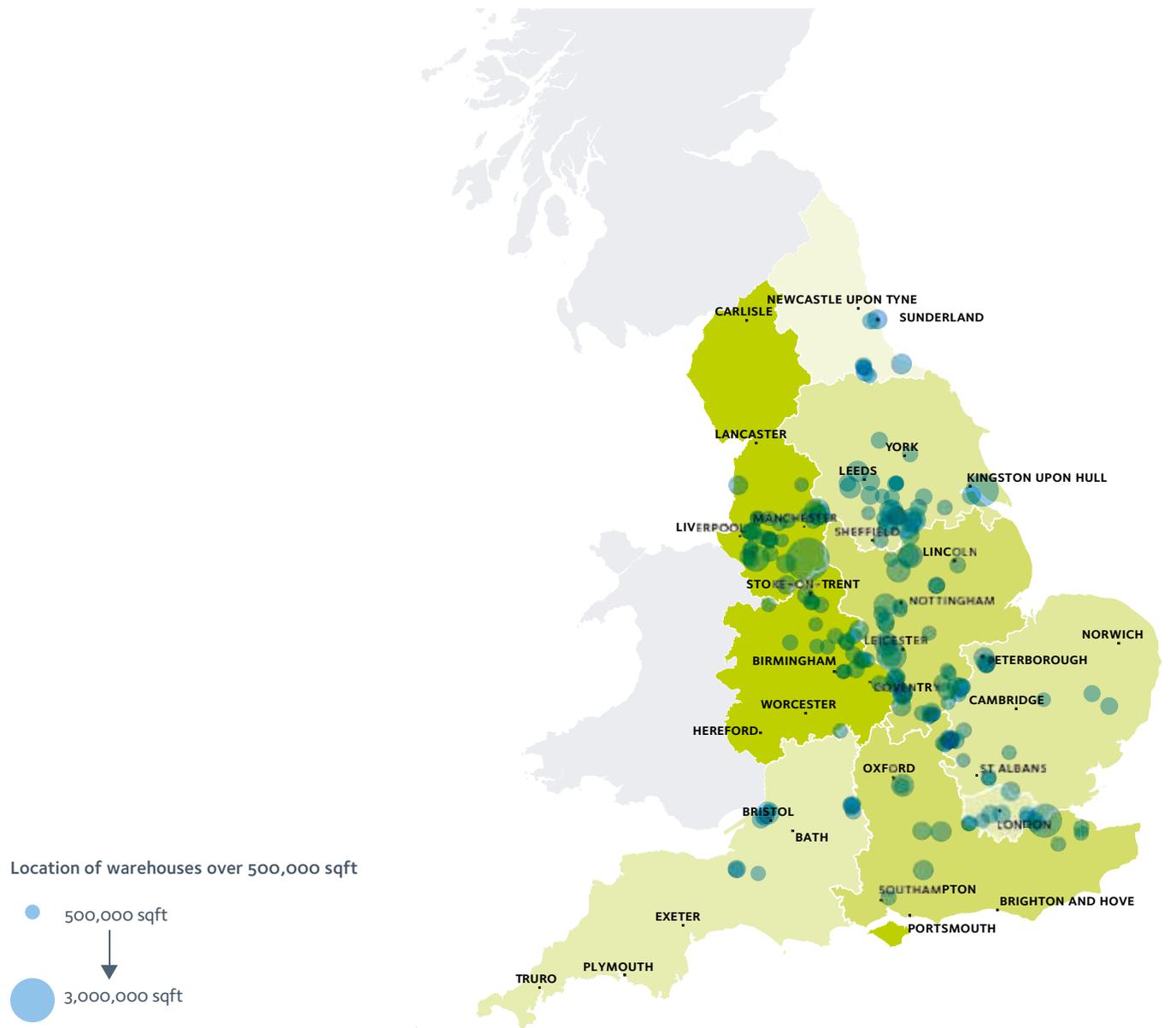
NATIONAL DISTRIBUTION

National Distribution Centres (NDCs) typically require locations which:

- Are in the centre or along the spine of the country;
- Have direct access to the transport network, particularly motorways, Strategic Rail Freight Interchanges (SRFIs), ports, and airports; and
- Are in close proximity to labour, within a certain travel time;
- Have a large power supply.

The country's largest warehouses (over 500,000 sqft), which can be used as a proxy for NDCs, are primarily located on the spine roads and motorway network, near ports, airports, SRFIs or major cities (see Figure 4.1).

Figure 4.1:
Location of Warehouse Units over 500,000 sqft



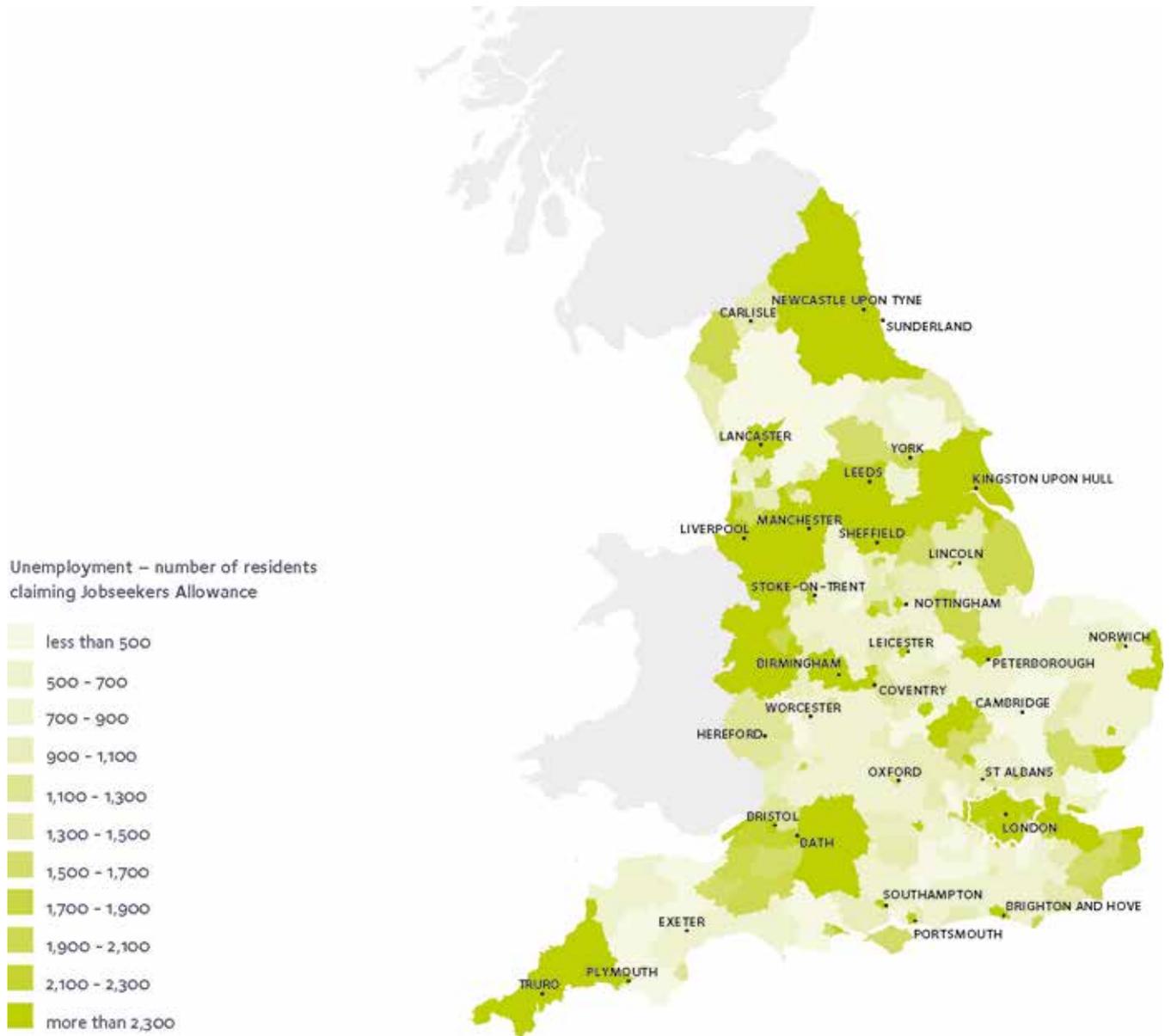
CoStar, 2018 Note: darker shading shows where two or more units overlap on the map

NDCs tend to have considerable workforces. Proximity to an appropriate labour pool is key.

In reviewing location options, occupiers consider the following labour force characteristics:

- Latent capacity in the labour force (i.e. unemployment – see Figure 4.2);
- Skills levels;
- Occupation types; and
- Planned housing growth, including affordable housing.

Figure 4.2:
Unemployment – Number of Residents Claiming Jobseekers Allowance



JSA Claimants, DWP , October 2018

The Examples and Case Studies below provide an illustration of how national logistics locations are identified.

PEEL GROUP

EXAMPLE

Peel reports that its development interest in the North West recognises substantial potential to support logistics employment growth due to availability of labour in the area. The North West is one of the geographies which is leading development in skills for the logistics sector through the Northern Logistics College at St Helen college campus.

Peel Group, Turley consultation

MAGNA PARK LUTTERWORTH, GAZELEY

EXAMPLE

Magna Park Lutterworth, is considered to be the largest distribution park in Europe. It opened in 1988 and has grown to 32 warehouses over its 550 acre site. The site is bounded by the M1, M6 and M69 making it perfectly located in the 'Golden Triangle' for logistics operators. The park is intended to have a strong B8 focus, governed by a use type planning restriction, to enable it to function as a strategic hub. It is home to companies including Asda, BT, DHL and Britvic across the 9.1 million sqft of occupied space.

Total employment exceeds 9,300 jobs. Seventy percent of employees work in direct logistics roles with the other 30% in management, sales, IT, administration and related occupations. The jobs at Magna Park account for more than 20% of all employment in Harborough District. Gazeley has development plans for extending Magna Park, which if approved will provide a further 3.2 million sqft of new distribution and logistics warehousing, including a Logistics Institute of Technology (LIT) with campus and outreach facilities for 1,000 students, an Innovation Centre and a 173 acre Country Park. A 1.1 million sqft facility is currently under construction for the online retailer Wayfair.

Gazeley, Turley consultation; <https://gazeley.com>

PEEL ENVIRONMENTAL

EXAMPLE

Peel Environmental recognises the importance of the power supply for large scale logistics sites. There is a need for energy security to enable continued business operation of occupiers and ensure cost efficiencies. Peel Environmental is rolling out plans across the North West and North East to provide on-site energy generation. This is already being demonstrated through their proposals for Protos at Ellesmere Port which is the destination for energy, innovation and industry.

Peel Environmental, Turley consultation; see www.thisisprotos.co.uk



Protos, Ellesmere Port

AO.COM

CASE STUDY

AO.com fulfils all orders from its two co-located NDCs at Crewe. This covers 800,000 sqft and employs c.700 people. One unit, Alpha, leased in 2011, deals with more complex goods such as audio visual appliances, while the other, Omega, houses bulk stock. Both stock white goods.

Crewe was chosen as it provides good work force availability as well as suitable distance to key talent for managerial positions. The NDCs are a maximum of 4.5 hours from all of its 17 outbases which enables them to operate on a Just in Time (JIT) basis with no on-site storage of stock required.

AO.com, Turley consultation



AO.com, Crewe

REGIONAL DISTRIBUTION

Regional Distribution Centres (RDCs) are more common amongst food retailers and traditional high street retailers and tend to be designed to align with an existing bricks and mortar offer. RDCs will typically reflect an existing store network and link closely to these in operational terms. For many occupiers, orders may still be fulfilled in-store and linked back to the delivery network via the RDC.

The following Example and Case Study demonstrate some ways in which regional locations are identified.

LOGISTICS NORTH

CASE STUDY

Logistics North is located in the logistics 'sweet spot' between the M61 (it sits at junction 4), M62 and M60 near Bolton, Greater Manchester. The site is within a two hour drive of 20 million people and 60% of the UK's businesses. It also has good access to ports in Liverpool and Hull.

Logistics North is the North West's largest live commercial development, with 3 million sqft of a 4 million sqft outline consent across 250 acres built out over the past five years. Developer Harworth Group PLC has also delivered a 550 acre Country Park for employees. The largest unit is First Panattoni's c.1 million sqft unit with Amazon as tenant. Other occupiers include Whistl (3PL for online retail), Aldi, Lidl and manufacturers including Joy Global.

Harworth is also delivering its Multiply scheme in joint venture with the Lancashire Pension Fund which provides modern flexible space in ten units of up to 149,000 sqft, with nine already built and four occupied.

Harworth Group PLC, Turley consultation; <https://www.logisticsnorth.com>



Logistics North

OCADO

CASE STUDY

Where PurePlay online retailers operate RDCs these are more likely to be small in number and/or split by product type as opposed to being based on regional geographies.

Ocado has four Customer Fulfilment Centres (CFCs) in Hatfield, Dordon, Andover, Erith and a fifth CFC coming on-stream. In identifying suitable locations, Ocado consider labour force availability (each CFC employs between 1,800 and 2,500 people) and proximity to last mile delivery spokes.

The CFCs act as major distribution depots fulfilling orders to each of its 17 local delivery spokes. The location of these centres reflects the dominance of Ocado's market in the Greater South East.

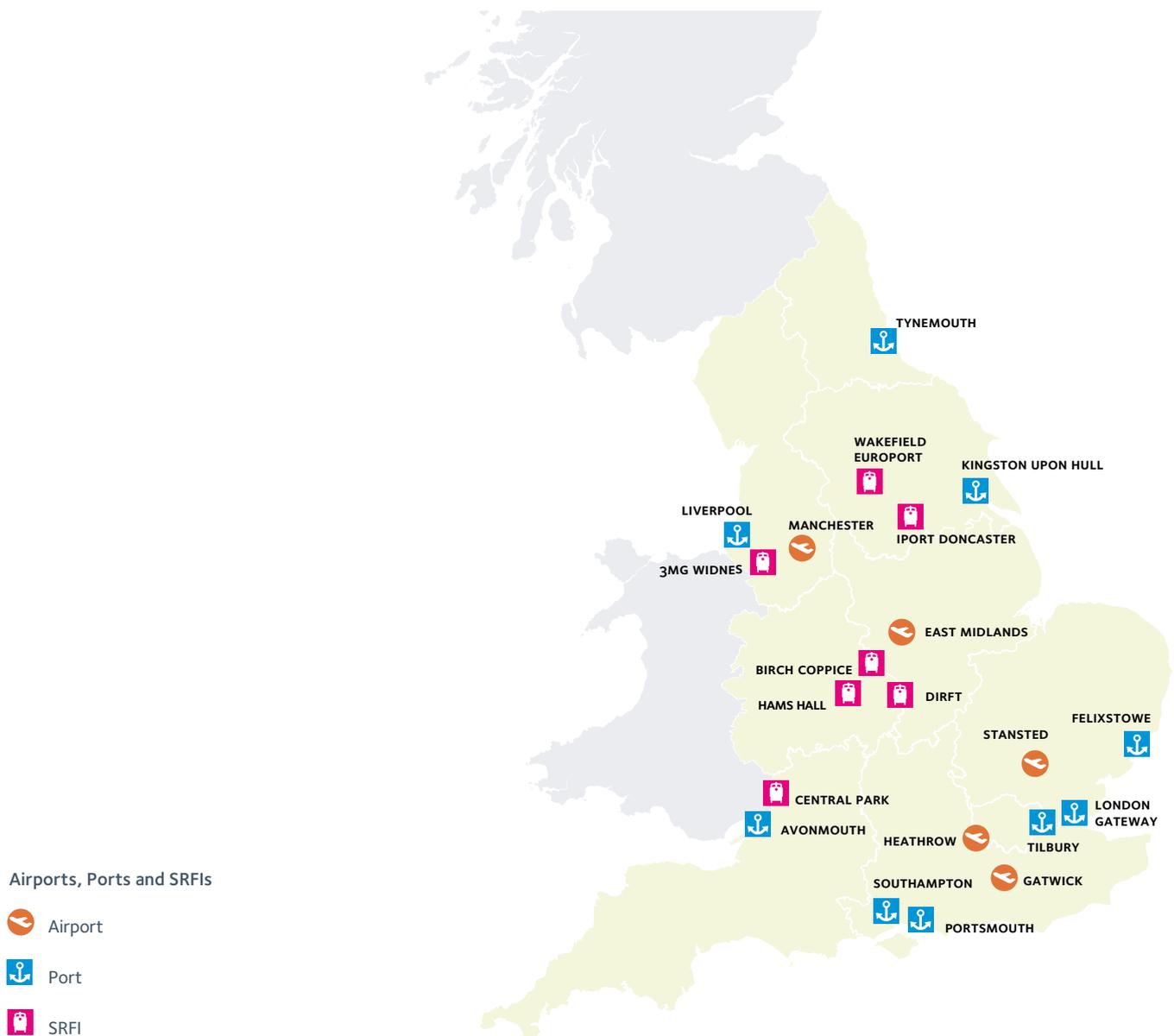
Ocado, Turley consultation

WHAT WAREHOUSING WHERE?

Ports, airports and rail (Strategic Rail Freight Interchanges – SRFIs) provide a focus for regional (and national) distribution (see Figure 4.3):

- Companies such as PLP (Peel Logistics Property) promote logistics sites with multi connectivity at airports: Liverpool John Lennon and Doncaster Sheffield airport are two examples with tri modal connectivity;
- SRFI's accommodate large warehouse floorspace with direct rail head access. For example, Daventry International Rail Freight Terminal (DIRFT) is home to National Distribution Centres including Sainsbury's and Tesco;
- Parcel couriers also see benefit in multiple port and airport locations to give quick access to products and onward market, especially where modal connectivity offers options on fast international and nationwide delivery. See UPS example below. Express rail freight into city centres is also being explored as part of a rail-centric regional to last mile solution.

Figure 4.3:
England's Key Cargo Ports, Airports and SRFIs



The following Example demonstrates the importance of port and airport locations to parcel companies.

EAST MIDLANDS GATEWAY AND LONDON GATEWAY, UPS

CASE STUDY

UPS was granted planning permission for a new freight hub at East Midlands airport in March 2018. The £100 million delivery and sortation complex will be located on a 28.5 acre site at East Midlands Gateway, to the east of the airport. It is expected to employ around 1,400 people by 2025 across 480,000 sqft of logistics and office space. The new scheme will expand UPS's existing operations at East Midlands airport and enable it to have a faster throughput of parcels.

The parcel delivery company also has a unit at DP World London Gateway Logistics Park for international port connectivity in the south of England. The 350,000 sqft package sorting and delivery facility opened in May 2018. UPS cites the growth of online retail, an increase in cross-border trade (increase of 20% in UK export volume in 2017) and unique customer requirements as accelerating demand for their services. 'The new building will act as a UK package processing hub and distribution centre for the local area as well as a gateway to UPS's global logistics network'. It will have capacity to process up to 28,000 packages an hour, with room for further growth. The state of the art building will house over 500 employees.

<https://www.nottinghampost.com/news/jobs/1400-jobs-east-midlands-airport-1282617>
; <https://www.londongateway.com/news-media/news/ups-strengthens-cross-border-capabilities-with-new-flagship-120-million-london-h>

LAST MILE

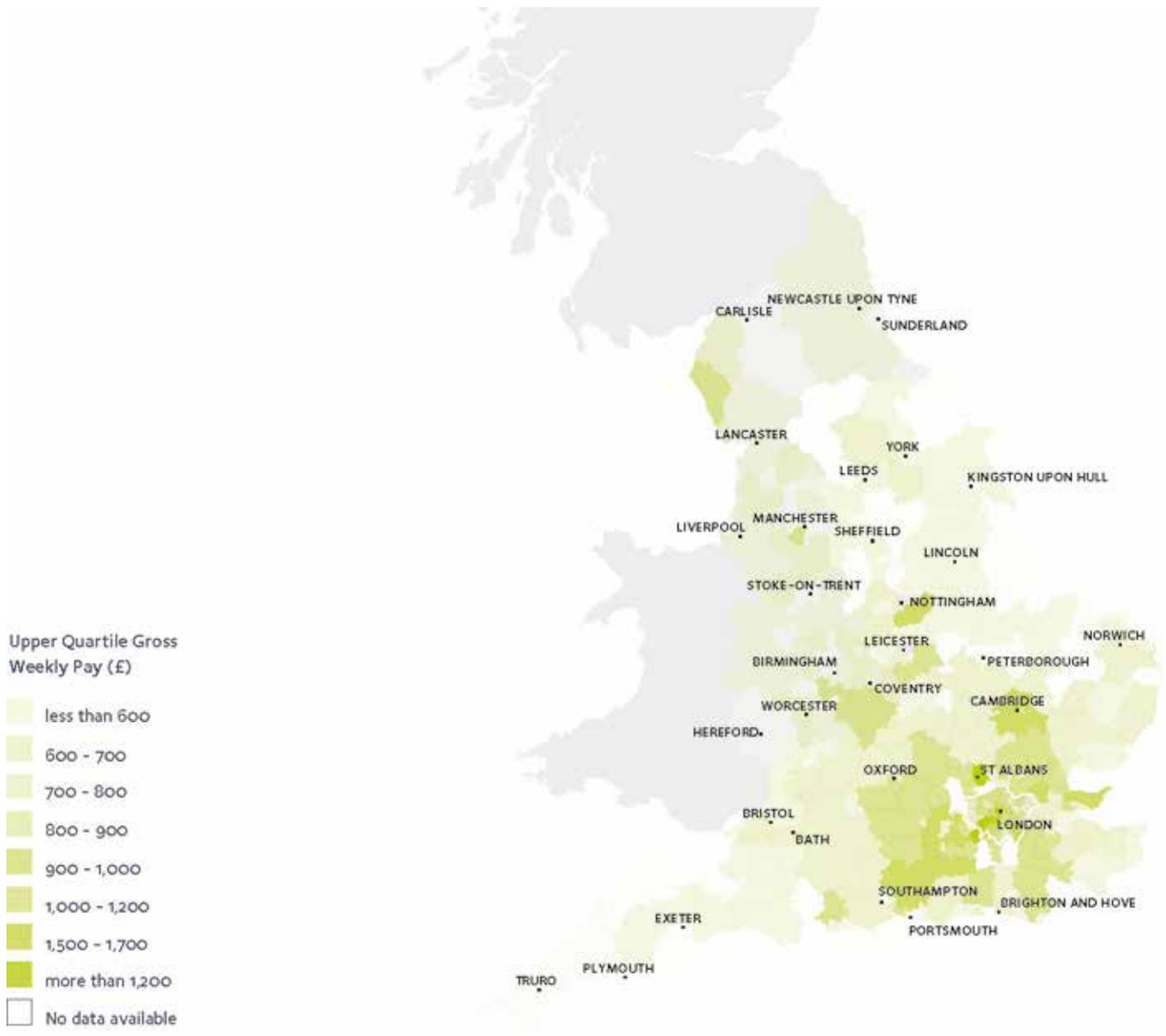
Last mile properties, including parcel hubs, are perhaps the most guided by the 'sweet spot' in location planning terms according to the consultations informing this report. Achieving a balance between immediate proximity to the consumer, access to labour and the road network is paramount.

An effective last mile location can mean a smaller unit is required as operators, such as AO.com, are able to work on a Just in Time (JIT) basis where this fits with their business model. Similarly, John Lewis operates a last mile facility at Origin, Park Royal which sources products from its network of 10 NDCs.^{xxxiv} Such operational models require new and advanced analytics skills in identifying locations.

In identifying 'where next' for last mile facilities, occupiers respond to the market. They consider aspects such as:

- Concentration of population (for example, one developer bases its investments on locations with a population of 500,000 which is forecast to grow);
- Trends in online spend (often specific to the occupier). Online spend can be linked to average weekly income (see Figure 4.4);
- Labour force characteristics;
- Sustainable access, including sustainable transport; and
- Whether the market can be accommodated by an existing last mile facility they operate. Once that facility reaches capacity they will seek an additional site.

Figure 4.4:
Earnings – Upper Quartile Gross Weekly Pay (£)



Annual Survey of Hours and Earnings, 2018

OCADO

CASE STUDY

The Case Studies provide examples of last mile location requirements.

PurePlay online grocery retailer, Ocado, has a unique fulfilment network comprising 17 'spokes' served by four Customer Fulfilment Centres (CFCs). The spokes provide a last mile solution, typically with a 10 mile radius in London or within a 90 minute drive time elsewhere. They therefore need to be in areas of dense population. Each spoke is 20,000–50,000 sqft on average, with the smaller units typically those on constrained sites.

Ocado uses the following factors to identify where to locate a new spoke:

- Existing CFC and spoke network (a new spoke served by the same CFC which is created to accommodate growth where an existing spoke reaches capacity is called an 'infill' spoke);
- Proximity to customers, especially high income households. The average customer basket is £105 for a regular shop or £60 for a last minute shop;
- Labour force characteristics (a spoke employs 250–300 people); and
- Availability of industrial sites of 2–3.5 acres.

Ocado, Turley consultation

AO.COM

CASE STUDY

AO.com's 17 outbases operate on a JIT basis, each within a 4.5 hour drive from the NDC at Crewe. Outbases are chosen for their proximity to consumers so as to decrease the last mile component which reduces the delivery cost component and increases the efficiency of the service time to the customer.

There is no one size fits all outbase model in terms of location. Outbases at Potters Bar, Slough, Croydon and Basildon are close to the built up areas of London and the South East and therefore each serve large and concentrated populations. By comparison, the Peterborough (Yaxley) outbase serves a much wider geography due to its more rural nature in the East of England, though it is one of the busiest outbases. The size of the outbase and the population it serves is planned so as to be the most efficient and reflect AO.com's ambitions around its delivery model.

Outbase locations are identified using factors of:

- Labour force characteristics including skills, qualifications and occupation types;
- Customer locations and how customer demand is expected to grow; and
- Existing companies in the area.

AO.com, Turley consultation

BARRIERS TO ACHIEVING THE ‘SWEET SPOT’

Lack of Available Sites and Stock

In seeking new premises, occupiers often have short turnaround times as they take business decisions reflecting market growth and observed trends. They need to move into the new unit within a fairly short timeframe in order to satisfy consumer/household demand. This immediacy makes speculative build on the part of the developer particularly attractive.

However, positive planning on the part of the Local Planning Authority is needed to support this process, noting that the Local Plan and site allocation process works to a different timescale to logistics occupiers. Often site choice is limited which has an implication for occupiers:

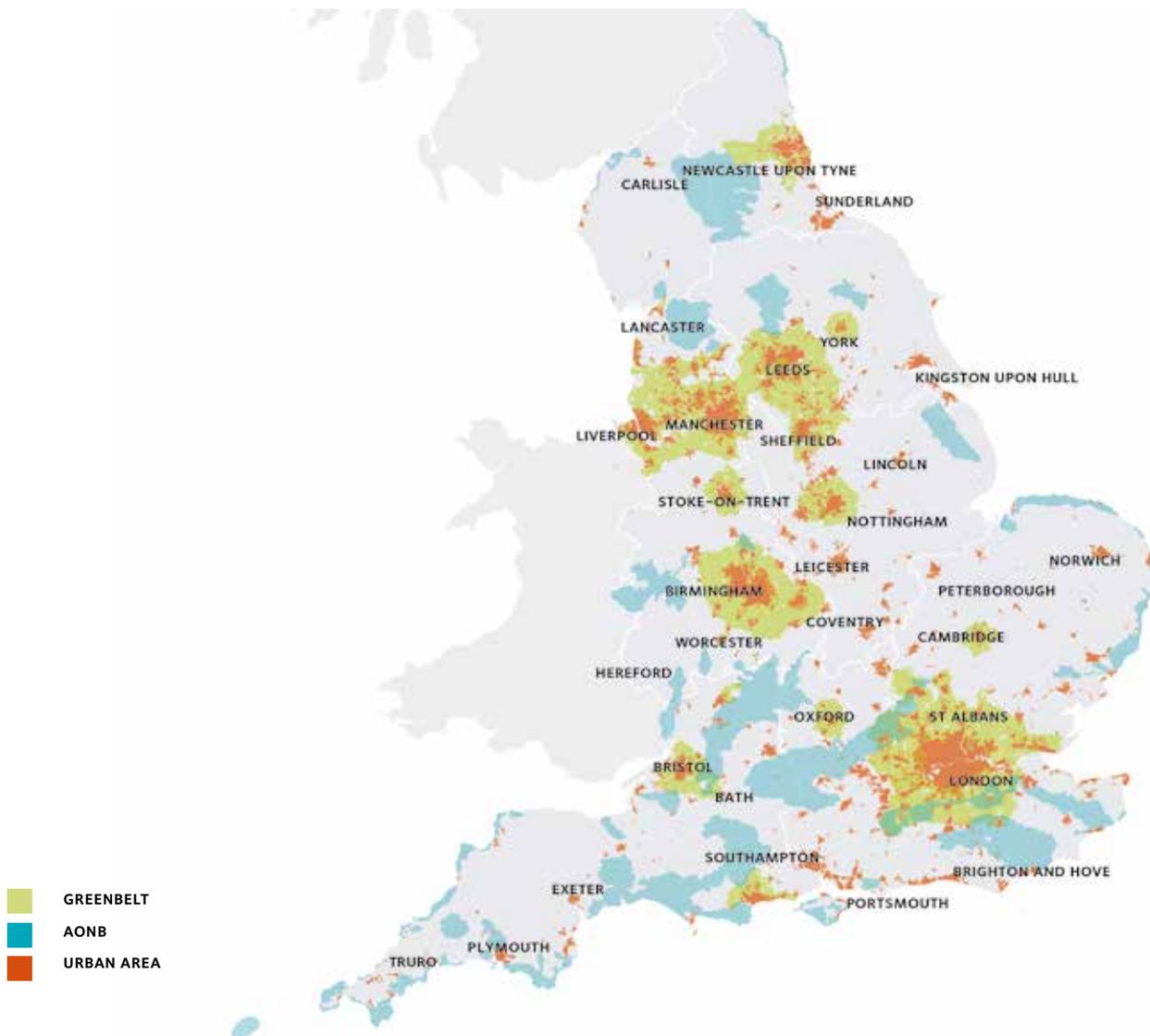
- At the time AO.com took its first NDC building (Alpha) at Crewe, it was one of the only buildings available in the area. Limited sites and premises can make achieving the short turnaround times challenging;
- In some instances a site is chosen for location, with compromises made on other factors such as site size. DHL reported searching for a new central London site for six years before taking a site which only accommodates half of their space requirements. As such, their deliveries must be staggered.^{xxxv} Ocado has similarly struggled to secure central London locations to meet market demand and now seeks smaller sites (c.1.5-2 acres compared to the more usual 4 acres) which will support smaller units;
- And vice versa, with some very large sites being chosen for scale over location due to a lack of supply.

Land Designations

Environmental and planning policy designations such as the Green Belt can restrict development of sites in more suitable locations, close to centres of population, particularly for last mile facilities.

Figure 4.5 illustrates areas of Green Belt and Areas of Outstanding Natural Beauty across England. The Green Belt correlates to areas around large populations which corresponds to areas of greatest consumer demand.

Figure 4.5:
Green Belt and AONB Compared to Urban Concentrations



data.gov, 2014/15; Natural England data download service

This means that appropriate allocation of employment land is crucial in those areas which are not covered by such designations. Often, the availability of sites or premises does not reflect the most efficient and sustainable locations for operators to meet the current or future patterns of need.

Implications of a Sub-Optimal Location

The implications of locating a facility in a sub-optimal location are multi-fold:

- Longer travel distances mean
 - more carbon emissions;
 - greater fuel and driver time cost to the business; and
 - reduced ability to meet customer demands for quick deliveries.
- Access to labour may be reduced

Locating urban logistics sites near to existing concentrations of population and likely areas of housing and population growth would ultimately lead to a more efficient pattern of distribution, reducing operating costs and environmental effects. This will be increasingly important as Electric Vehicles become more prevalent due to the catchments which can be covered. Electric Vehicles are most efficient in areas which have a high volume of deliveries over a small geography.

Should there be insufficient supply and location of sites for logistics this will have wide reaching consequences including non-realisation of jobs and restricted productivity growth.

HOUSING GROWTH

Developers and strategic land promoters will typically have longer time periods for investment returns than occupiers and as such can be informed by the future pipeline of housing provision in considering development locations for logistics space.

For example, when considering investment location decisions, some developers consider what is in the housing growth pipeline within a 45 minute drive catchment. When considering logistics schemes on motorway junctions, this can mean large catchment areas. Some developers also specifically consider where new affordable housing will be as this can strengthen the labour force once occupied.

Occupiers have less capacity to consider future housing growth due to short lead times to committing to a new location following identification of a market trend. They tend to be influenced by the existing population both in terms of labour characteristics and market geography. However, the time at which much of the Government's strategic housing growth is likely to be delivered coincides broadly with when online market saturation is predicted to be reached, around 2035.^{xxxvi}

As the population grows, the volume of goods required will also grow. This includes purchases specifically relating to households and purchases for the home, with new homes driving an average spend of £5,500 per household to make a house 'feel like home'.^{xxxvii}

The Case Studies demonstrate how different occupiers respond to household growth.

OCADO

CASE STUDY

Once Ocado has achieved market saturation it will look at locations of new housing growth to identify new markets. Its operational and investment timeframes are short and do not align with longer gestation periods of locations earmarked for significant housing growth. Once these homes are built, Ocado will respond to trends in demand as it does presently.

Ocado, Turley consultation

AO.COM

CASE STUDY

AO.com's 17 outbases operate on a JIT basis, each within a 4.5 hour drive from the NDC at AO.com's Annual Report^{xxxviii} notes that domestic appliance sales are linked to home ownership: 97% of households own a washing machine. New outbases are planned on the basis of significant market growth. Once AO.com reaches market saturation then the location of new population growth will become particularly important in identifying new market areas. Presently, areas of substantial population growth are of interest.

AO.com, Turley consultation

WHERE WILL HOUSING GROWTH BE?

As well as the national target for 300,000 new homes a year, and individual local authority targets to contribute to this, the Government has identified broad areas for strategic growth.

To support¹ achievement of this step change in housing delivery, the Government is using a number of mechanisms including housing deals with specific local and combined authorities; Government endorsement of National Infrastructure Commission findings around the potential of locations such as the Cambridge, Milton Keynes and Oxford (CaMKOx) corridor; and, funding for garden cities, towns and villages.

Figure 4.6 illustrates the strategic housing growth locations where Government mechanisms may lead to enhanced housing delivery.

Figure 4.6:
Map of Government Growth Locations



¹ The Government has not specifically set targets for these areas. This will remain the role of local and combined authorities in the main and targets will be subject to change.

Application of the regional ratio for warehouse floorspace to the indicative number of new homes for each of these locations illustrates how much warehouse space would need to be provided to maintain the current relationship. See Table 4.1.

These geographies are not mutually exclusive, the timescales for development are not uniform and the ratio may change over time. This information is therefore for illustrative purposes only. The required logistics response to support new housing growth will relate to a variety of locations, not only the local authority or sub-region in which the new homes are built.

Table 4.1: Estimating the Logistics Space Needed in Housing Growth Locations

Location	Housing growth planned	Estimated logistics space required (application of ratio)
Annual housing growth targets smallest to largest		
West of England	7,500 homes per annum	Circa 340,000 sqft required annually, based on regional ratio
London	64,935 homes per annum	Circa 2.6 million sqft per year, based on current London ratio ²
Annual housing growth targets smallest to largest		
Garden towns	Over 10,000 homes	Over 690,000 sqft required per garden town based on national ratio
Oxfordshire	100,000 homes by 2031	Circa 5.1 million sqft based on regional ratio, or 6.9 million sqft based on national ratio
West Midlands	215,000 homes by 2031	23.9 million sqft by 2031, based on West Midlands ratio
Greater Manchester	227,200 homes between 2015 and 2035	Around 19.4 million sqft required between 2015 and 2035, based on regional ratio
CAMKOX/Thames Estuary	1 million homes by 2050	Around 69 million sqft by 2050 when applying national ratio, or between 51-61 million sqft based on regional ratios ³

Turley analysis Note: Information as of September 2018 and subject to change

A new settlement would require central or peripheral last mile sites, as well as peripheral outward looking RDC provision depending on its size and location and occupiers' existing fulfilment network.

The following Example illustrates how new housing can influence the location of last mile sites.

PERUVIAN WHARF, GAZELEY

EXAMPLE

Gazeley is developing plans for a new multi-level logistics development on the Thames-side Peruvian Wharf site in Newham, East London. The building is proposed to be over 450,000 sqft provided over 3 floors, for occupation by either a single occupier or several (e.g. 6 individual suites over 3 floors). It includes a 20% ancillary office component to reflect the need for back office functions relating to the online ordering processes.

While it will act as an RDC, with access to the river, its operation is likely to include a focus on parcel delivery or high volume 'every day' consumer goods to the local population. It lies within the heart of London's Docklands which is expected to experience significant population growth through planned housing development such as the adjacent Royal Wharf. This population growth, coupled with apartment living, few supermarkets locally and GLA limits on residential car parking provision, is anticipated to give rise to a high level of demand for fulfilment of online retail orders in this location.

Gazeley, Turley consultation

2 This compares to approximately 780,000 sqft (based on conversion of 280 ha over the period 2016-41) being suggested in the CAG (2017) London's Industrial Land Demand Final Report which fed into the Draft London Plan. Though it should be noted that due to land constraints less than half of London's assumed requirement based on its ratio has been delivered in the last year. Areas such as the South East may need to accommodate some of London's growth.

3 Both CAMKOX and the Thames Estuary span the South East and East of England regions

05.

The How —
Ensuring the
Right Land in
the Right Places

A positive approach to planning for logistics space needs to be taken both in reflection of the policy requirements of the NPPF^{xxxix} and in appreciation of the nuances and growth of the sector and its importance across the country. The sector is important both in terms of employment and economic productivity including supporting other sectors. Responding to these challenges proactively will ensure that the logistics sector plays its part in delivering ‘sustainable development’ – a principle which is enshrined in the NPPF.

GOOD PRACTICE – LOCAL AUTHORITY RESPONSES

Examples of domestic and international good practice have been reviewed with the focus on local authorities demonstrating approaches to positive planning to achieve a balance between homes and warehouses.

Whetstone Pastures Garden Village, Blaby District

Whetstone Pastures Garden Village is an emerging major development next to the M1 motorway which extends over the administrative boundaries of Blaby and Harborough districts in Leicestershire.

Although at an early stage with no applications yet submitted, the overall 1,089 acres (of what is mainly farmland) is earmarked to accommodate approximately 3,500 new homes, accompanied by 4 million sqft of warehousing space, creating up to 5,000 jobs.

Figure 5.1: Whetstone Pastures site



Leicester Mercury

Blaby District Council state that they are working closely with landowners to progress the scheme, and have together produced a Development Prospectus, which outlines the opportunity to marry housing provision with wider economic development associated with the delivery of logistics employment land, affirming that:

“ The size of the Whetstone Pastures development proposal would signify a step change in the way in which growth is delivered within Blaby district and represents the district and county councils’ proactive approach to delivering future development that meets the needs of current and future residents of the district. ”

The prospectus affirms that:

“ There is expectation that in the light of emerging development pressure across the region that both Blaby District Council and Harborough District Council will be looking to review their current emerging plans to accommodate future housing and economic development needs. ”

As such, leader of the Council, Terry Richardson, has confirmed that the Council wishes to play a major role in shaping the delivery of the site, stating

“ Our getting involved at this stage is the responsible thing to do. It would be wrong for us not to be involved in place-shaping... we want to make it something that happens with us and doesn't happen to us. ”

<https://www.leicestermercury.co.uk/news/local-news/thousands-homes-planned-new-garden-1525070>

Magna Park, Harborough District

Harborough District's new Local Plan is currently close to being adopted and is informed by a study to consider the potential impact on housing requirements of the strategic storage and distribution growth proposed at Magna Park (see chapter 4). The study found that, in order to reduce the need for out-commuting and help to increase the sustainability and self-containment of communities, there should be an increase in housing requirements in Harborough District over and above the objective assessment of need (OAN) to help house the new workers expected to be employed at Magna Park.

'Policy BE2 Strategic Distribution' in Harborough's Submission Local Plan, serves to safeguard Magna Park for strategic storage and distribution uses, setting out that proposals for redevelopment at the existing site will be permitted where:

- a) Each unit has at least 9,000 sqm gross floorspace; and
- b) Any new building or the change of use of an existing building(s) is for Class B8 and ancillary use only; or
- c) The proposal for any non-strategic storage and distribution use is small-scale, proportionate in scale to the strategic storage and distribution use and ancillary to the use of individual plots.

The policy sets out further criteria by which the additional development of up to 700,000 sqm for non-rail-served strategic storage and distribution at Magna Park will be permitted, including that the proposals form an extension of, or be on a site adjoining, Magna Park; that employment opportunities for local residents are increased, including training and apprenticeships; that measures are included to enable an increase in the proportion of the workforce commuting from locations within Harborough District; and that support (or at least have no adverse impact on) the viability and deliverability of existing or further Strategic Rail Freight Interchanges (SRFIs) within or serving neighbouring authorities and Leicestershire.

Harborough District Council (2017) Magna Park Employment Growth Sensitivity Study; 2017 Leicestershire Housing and Economic Development Needs Assessment (HEDNA)

Draft New London Plan

Logistics and industrial uses have been awarded heightened policy recognition in the Draft New London Plan. Policy E4 of the Draft Plan, covering land for industry, logistics and services to support London's economic function, states that there should be 'no net loss of industrial floorspace capacity (and operational yard space capacity) within designated SIL (Strategic Industrial Locations) and LSIS (Locally Significant Industrial Locations)'. This is further emphasised by the fact that, whilst under the 2016 London Plan 19 boroughs can release employment land, in the Draft New London Plan this has reduced to only three.

The Draft Plan also gives recognition to emerging types of logistics uses. For example, Policy E4 puts 'last mile' distribution and micro, small and medium-sized units on equal footing with light industrial and general industrial uses. 'Hybrid' distribution spaces, such as consolidation centres, are encouraged as part of large-scale residential and mixed-use schemes. This shows an appreciation of the importance that, in the modern city, there is effective integration between the movement of goods and deliveries within major mixed-use developments.

Supporting documents to the Draft Plan have given attention to the means by which industrial spaces can be located in close proximity to residential, providing case studies of such design in both London and in an international context, and proposing a number of models whereby industrial space is accommodated next to, below and even integrated into residential buildings. A new Supplementary Planning Guide will provide further guidance on the application of the London Plan and solutions for intensified land use.

Figure 5.2: Concept example of industrial space alongside residential



Fast>Fwd Building – mixed use concept designed by Hawkins Brown <https://www.hawkinsbrown.com/>

Logistics Hotels, Paris

In 2013 the Mairie de Paris (Paris City Council) published the city's Charter for Sustainable Urban Logistics. This sets out measures to reduce the environmental impacts of logistics activity, grow the sector's productivity, and help counter 'logistics sprawl', whereby land pressures see distribution properties spread ever further from central urban areas. Logistics is considered as vital infrastructure to accompany housing growth in the same way as schools and hospitals.

One such measure is the development of 'Logistics Hotels'. These are logistics facilities integrated within metropolitan areas and which focus on last-mile deliveries, seeking to use alternative energy vehicles and also potentially offering other uses, such as community facilities and offices.

The Hôtel Logistique Chapelle International is profiled in the Charter. It occupies the site of an old railway station located in the north of Paris. It was developed and is managed by Sogaris, opened in April 2018 with 33,000 sqm dedicated to logistics. The site can receive two complete trainloads of goods each day (equivalent to 60 trucks), and also accommodates a data centre, offices, sports facilities and an urban farm. There are plans for further urban redevelopment around the logistics terminal, including the provision of housing and other community services.

Figure 5.3: La Chapelle



©Apur

Paris has also introduced a number of smaller underground freight parks to handle growing demand for e-commerce parcels in densely populated areas. One example is the Beaugrenelle development (also developed by Sogaris), which is located in a former car-park in the dense commercial urban area of the 15th arrondissement. Opening in 2013, the site covers 3,000 sqm over two levels, and processes 6,500 parcels daily, each weighing a maximum of 30kg. Reports indicate that there are currently around 20 similar smaller logistics terminals in Paris, with provision for around 80 more to be built within the latest Paris plan.

IFSTAR [The French Institute of Science and Technology for Transport, Development and Networks] (2018) Logistics Hotels in Paris. Available at: <http://www.citylab-project.eu/posters/paris.pdf>; Mairie de Paris (2013) Charte en faveur d'une logistique urbaine durable. Available at: <https://api-site.paris.fr/images/80326>; MotorTransport (2017) Paris promotes warehouse strategy for urban logistics use. Available at: <https://motortransport.co.uk/blog/2017/03/03/paris-promotes-warehouse-strategy-urban-logistics-use/>

06. Conclusions

There is a clear link between homes and warehousing, both in terms of quantum and location. As more homes are delivered additional space for the required logistics response will be needed. Warehousing needs policy recognition at all geographic and government levels to reflect the national logistics network and ensure the sector is able to effectively, efficiently and sustainably support supply chains and deliver the goods to the places and people that require them.

Logistics should be considered a central component in planning for well-functioning, sustainable communities. This is not only relevant in terms of provision of logistics space within new developments. New homes in one location may have implications for a logistics response in another part of the country, reflecting the national logistics network.

This research explores the relationship between homes and warehousing and finds that:

- There is presently **69 sqft** of warehouse floorspace for every home in England;
- If this relationship were to continue this would mean **21 million sqft** of additional warehouse floorspace is required each year to match the Government's target for 300,000 new homes a year. This level of warehouse floorspace growth has only been achieved in two of the past six years;
- However, the ratio of warehouse floorspace to homes has been increasing over time, reflecting the substantial growth in e-commerce and the nuanced logistics response required to support it. This means that the ratio is not static and is likely to continue to grow over time as demand for warehousing continues;
- Saturation of the online retail market is predicted to be reached around 2035, coinciding with the time at which much of the Government's strategic housing growth is likely to be delivered.²¹ Ensuring that there are the right sites in the right places across the country to support the logistics response required to support new communities sustainably will be key;
- The ratio varies by region. Regions which play a predominantly national logistics role such as the West and East Midlands (the 'Golden Triangle') have ratios above 100 sqft per home. Conversely, regions which play a predominantly local role have a ratio below the national average of less than 45 sqft per home. The lowest ratio is seen in London which has only 40 sqft of logistics floorspace per home;
- Over the course of 2018 the delivery of new warehouse floorspace in some regions was more than double that of its expected ratio:
 - The West Midlands delivered over 1 million sqft more of warehouse floorspace than its ratio would suggest, reflecting its role as a location for national logistics functions. As demand for warehousing grows it is likely to be felt here through delivery of National Distribution Centres;
 - The South East delivered around double the warehouse floorspace than would be expected with its ratio. As well as being an indicator of growth in the South East consumer market it may be a reflection of the regional and last mile requirements for London being sought outside of the capital due to limited land availability;
- As new communities are created through the delivery of housing in the Government's strategic growth locations, and fulfilment of online orders without retail store involvement continues to rise, the geographical patterns of logistics response may alter. Therefore an area not presently playing a regional role may become more important in this regard.

There is therefore a need for planning policy at all government levels to be cognisant of the specific logistics role or roles an area plays and how this is likely to be impacted by housing growth across the country and the heightened role of e-commerce. Warehouse floorspace must be accommodated to reflect not only local demand but also the role an area plays in the regional and national logistics network.

RECOMMENDATIONS

As the demand for warehousing continues and logistics developers and occupiers look to respond in the most efficient ways to changes in the sector such as those related to the growth of e-commerce, local, regional and national policy makers and decision takers must give greater recognition to the role and value of the sector so that it is prioritised alongside housing growth. A more positive planning and policy framework is needed in order to achieve this.

In calling for positive planning for the economy's need for sustainable logistics provision, the British Property Federation (BPF) Industrial Committee makes the following recommendations:

For National Government

National Government has an important role to play in ensuring full and appropriate recognition is awarded to the logistics sector across national policies informing the planning system.

1. National planning policy should include full and appropriate consideration of logistics requirements to support housing growth and set out robust mechanisms to enable policy makers to holistically plan for logistics needs as essential to planning well-functioning and sustainable communities. This should reflect on the current or emerging role of geographic areas within the national logistics network.
2. Planning Practice Guidance (PPG) on assessing Economic Need should specifically require Local Planning Authorities to consider the location and site needs of the different components of the sector, as distinct from the needs of others including industrial (B2), and noting the 'larger than local' role of some logistics activities.
3. The Government's Modern Industrial Strategy must fully recognise the role of logistics. In doing so the Government should set a requirement for all Local Industrial Strategies to specifically consider the role of their geographic area in the national logistics network and identify steps to support its efficient and sustainable operation.

For Sub-National Government

Sub-national government, incorporating Local Planning Authorities, Combined Authorities and Local Enterprise Partnerships, is key to ensuring that necessary logistics space is available in relevant locations across the country, supported by effective plan making.

Strategic Plan Making

1. Evidence bases, strategies and policies including Local Plans, Local Industrial Strategies and Strategic Economic Plans should include full and appropriate recognition of the logistics sector. The warehousing to housing ratio for the location should not be applied as a static figure given this will change over time, but should be taken into consideration in informing an understanding of the role of the geography in the national logistics network.
2. Local plan making should incorporate a specific requirement for new logistics space so as to effectively plan for the location needs of the sector and this should be distinct from other B class uses.
3. There should be greater application of the Duty to Cooperate and related statements of common ground in Local Plan making between local authorities with regards to meeting logistics land requirements reflecting that distribution networks do not stop at administrative boundaries.
4. As land designated as Green Belt is reviewed in Local Plans, consideration should be given to the sustainable development potential of selective releases where this would assist in the siting of logistics development so as to locate logistics facilities appropriately to serve communities and to minimise road miles travelled. The development of planning policy should be sufficiently flexible to be able to anticipate and respond to the rapidly evolving needs of the sector.

Site Specific Plan Making

1. Local plan making should acknowledge the appropriate requirements for the location of new logistics space of a variety of types (whether national, regional, last mile, pick up points, or a combination), including when allocating new settlements or Sustainable Urban Extensions so as to plan positively for communities to be sustainably and efficiently planned.
2. Customer parcel collection points should be planned into urban areas and town centres as part of the A1 retail provision or an alternative additional B class designation for logistics pick-up points, recognising the role logistics can play in supporting vibrant and viable high streets.
3. New warehouse space should be planned for positively so as to be delivered in parallel with delivery of new housing, as well as to potentially facilitate new housing sites, to maximise opportunities for sustainable growth.

For Private Sector

The private sector must continue to work collaboratively with its partners in informing the planning process to enable efficient and sustainable logistics responses.

1. The logistics sector, including developers, operators and industry representatives, must seek to positively engage at all levels of plan making including Local Plans, Local Industrial Strategies and through engagement in government growth areas to demonstrate its requirements and the role it will play in delivering sustainable places. This could be enabled through a representative body.
2. The logistics property industry should invest in research, working alongside National Government and with input from developers and occupiers, to help inform expectations around likely requirements for logistics provision. This would reflect locations of population growth and housing delivery as well as recent/pipeline B8 development and Local Plan allocations.
3. Developers across a range of sectors including logistics, residential, retail and energy should explore partnership and collaborative working both together and with sub-regional government, to enable holistic and sustainable developments to appropriately meet the full social, economic and environmental needs of an area.

Delivery against these recommendations would enable the logistics sector to be planned for proactively and sustainably; giving it the profile and recognition in policy frameworks needed to ensure well-functioning communities can develop sustainably and efficiently. In this way, the development industry can better support the needs of logistics operators, retail and other businesses, and be a central part of the sustainable growth of the country's communities and economy.

Appendices

Appendix 1

Case Studies

Ocado

Ocado is a PurePlay grocery retailer set up in 2000. It listed on the London Stock Exchange in 2010. It has 600,000 customers and receives 260,000 orders a week making it the world's largest dedicated online grocery retailer.

The company is first and foremost a technology company. At its head office in Hatfield, a whole building is dedicated to developing new technologies for its warehouses and van fleet. It was the first UK grocery company to introduce Alexa-enabled ordering. In December 2018, 100 new Ocado Technology positions were posted on its website for Hatfield alone.

Ocado is customer focused, aiming to offer the best service, range and price. It has 50,000 items available to buy on its website, as well as a number of destination sites such as Fetch (pet supplies) and Sizzle (kitchen store). It offers 1 hour delivery slots, 7 days a week. People living close to a spoke benefit from a same day delivery option.

Its Corporate Responsibility activities are formalised in The Ocado Way: Vision 2020 which focuses on Education, Entrepreneurship, Environment and Eating Well.

PROPERTY AND OPERATIONAL MODEL

Ocado operates a hub and spoke system, with four operational Customer Fulfilment Centres (CFCs) and a fifth being planned, each delivering to one of 17 spokes which provide the last mile service.

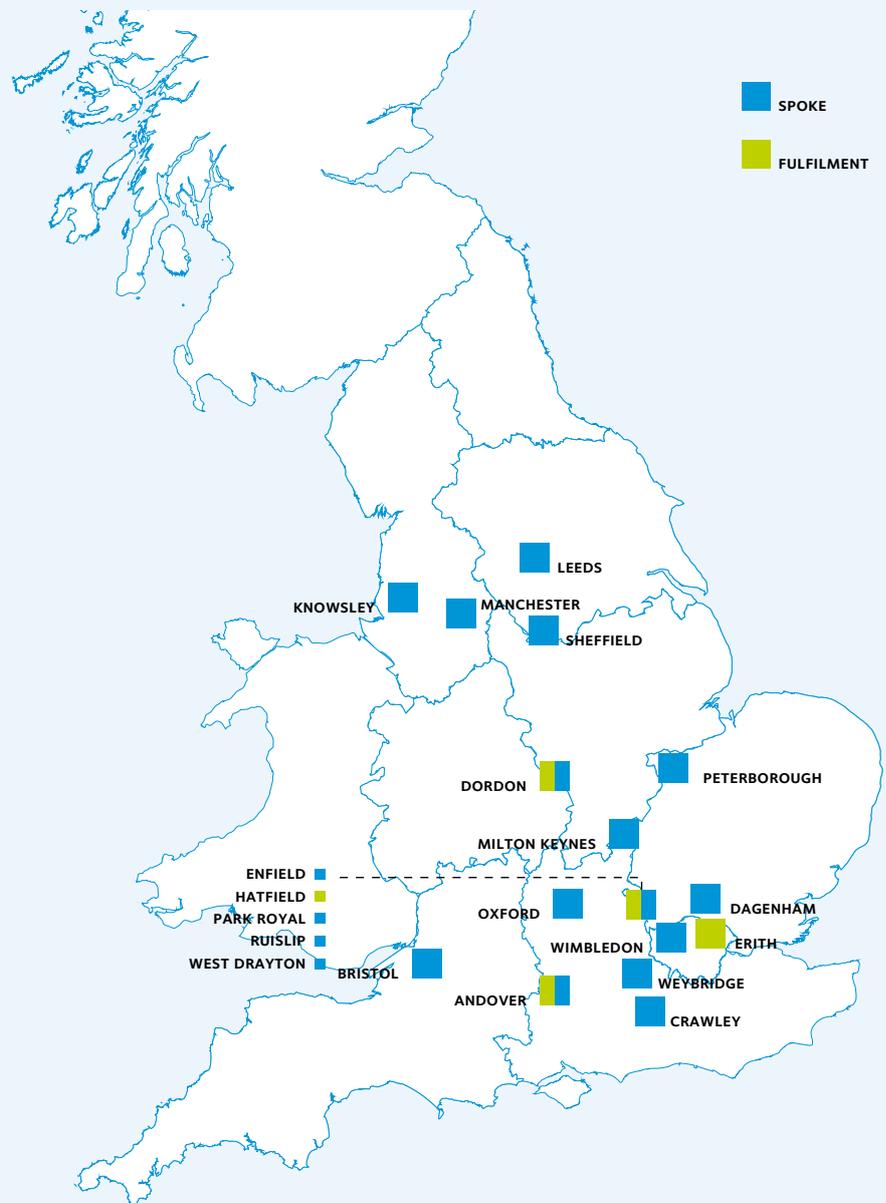
Its CFCs are:

- Hatfield (Hertfordshire) – opened in 2001 Hatfield is also the company's head office and delivers 150,000 customer orders a week;
- Dordon (North Warwickshire) – opened in 2013 and delivers 200,000 orders a week;
- Andover (Hampshire) – opened in 2016 as the first Ocado Smart Platform (OSP) CFC, operating a highly sophisticated Ocado technology called the 'hive' in which 1,000 robots work together across a grid system the size of a football pitch to prepare customer orders;
- Erith (London Borough of Bexley) – opened in 2018 as the second OSP, it is the largest automated warehouse for online grocery in the world (563,000 sqft on 35 acres) with the capacity to handle over 200,000 orders a week. Erith employs around 2,500 people.

The 17 spokes are located as shown on the below. The spokes are 20,000–50,000 sqft on average, with the smaller units typically being those on constrained sites.

The following map shows the locations of the CFCs and spokes across the country.

Ocado CFC and Spoke Locations



IDENTIFYING WHERE TO LOCATE

The CFCs require:

- A good transport network;
- Proximity to labour market (though highly automated, a typical CFC employs between 1,800-2,000 people);
- 20+ acres for a building of 300,000-400,000 sqft;

Ocado uses the following factors to identify where to locate a new spoke:

- The existing CFC and spoke network;
- Proximity (within 10 miles in London or a 90 minute drive elsewhere) to customers, especially high income households;

- Labour force characteristics (a spoke employs c.250-300 people);
- Site availability;
- 1.5-2 acres minimum, up to 5 acres;
- Industrial site location.

Ocado's existing CFC and spoke network informs the location for new spokes. For example, its spoke at Weybridge is one of its best performing. Ocado knows its capacity and the point at which it will exceed this, therefore requiring a new spoke for that geography. It typically works to a 2 year time horizon.

Where demand from a certain geography to an existing spoke increases sufficiently to warrant its own spoke, these are called 'infill' spokes. Infill spokes enable delivery to smaller geographies.

The new Walthamstow spoke is in a sweet spot of demand in London. At the time of writing it is being fitted out for its operational opening in April 2019. By providing an additional spoke in this area, Ocado has reduced the travel time and created a more focused geography of deliveries for the other spokes in the area such as those at Enfield and Dagenham.

In considering new markets, as opposed to infill opportunities, customer penetration is a key indicator of how an area with similar household characteristics may perform and therefore inform investment decisions for new spokes and, if needed, CFCs.

The best locations for new spokes are sites with immediate proximity to the customer, particularly areas with high income households who are their core customer base (the average basket is £105 for a regular shop or £60 for a last minute shop). Ocado typically seeks to serve no more than a 10 mile radius from a spoke in the London market due to the level of demand.

With around 2,000 employees per CFC, Ocado considers the local labour market of future locations. This includes wage rates, unemployment, age profile, skills. They also consider proximity to existing businesses.

The provision of new spokes is limited to site availability. In identifying sites, Ocado consider's those available especially with outline permission and the ability to have an operational unit within 3-4 years. Ocado's spoke in Wimbledon is a high performer and serves a key market area in London, however it is on the proposed route for Crossrail 2 and will be subject to a Compulsory Purchase Order. Ocado needs to identify a site in this location to replace the existing spoke but there are a lack of sites available.

In effectively securing the right sites in the right locations, Ocado sees four actors: the customer and future customer; the Local Planning Authority; Ocado as the occupier; and the developer. While there is interaction between the four, they are rarely joined up, meaning that Ocado struggles to secure the sites and premises it needs.

PLANNING FOR THE FUTURE

Ocado continues to experience double digit year on year growth and its priority is on keeping pace with and exceeding market growth. The market is not yet at saturation point. There is still growth potential as more people, particularly those in younger and older age groups, start buying online. Customer delivery expectations will impact on where it is possible to locate.

Once at saturation point, Ocado will look to locations of new housing. Its operational and investment timeframes are short and do not align with the longer gestation periods of locations earmarked for significant housing growth.

It also considers infrastructure and would need to review its locations if Electric Vehicle policy is introduced by the Greater London Authority. This would put pressure on its sites in terms of necessitating much shorter distances to the customer and increasing its on site power requirements.

PREMISES TO SUPPORT A HYPOTHETICAL NEW SETTLEMENT

In terms of the built up areas of Bristol, Nottingham and Sheffield which are used in the report to illustrate the possible logistics response for the Government's annual housing target, Ocado uses the following fulfilment responses:

- Bristol – a Bristol spoke served by Dordon CFC. The spoke operates a fleet of 75 Ocado vans;
- Nottingham – served by Dordon and Sheffield CFCs;
- Sheffield – a Sheffield spoke served by Dordon CFC.

AO.com

AO.com is a PurePlay (online only) appliance and electrical goods retailer which began in Bolton in 2000. It employs 2,750 people across the UK, Germany and the Netherlands.

It operates its own logistics company (AO Logistics) and holds stock to enable efficient delivery. It delivers to every post code in mainland UK every day.

The company ethos is focused around the consumer and includes Free Delivery, Free Returns and Click and Collect services. Next day delivery is available 7 days a week or customers can select a delivery date up to 50 days in advance.

AO.com also prioritises social and environmental impact. It recycles over 700,000 appliances each year and runs the AO Smile Foundation, a registered charity to give back to local communities.

PROPERTY AND OPERATIONAL MODEL

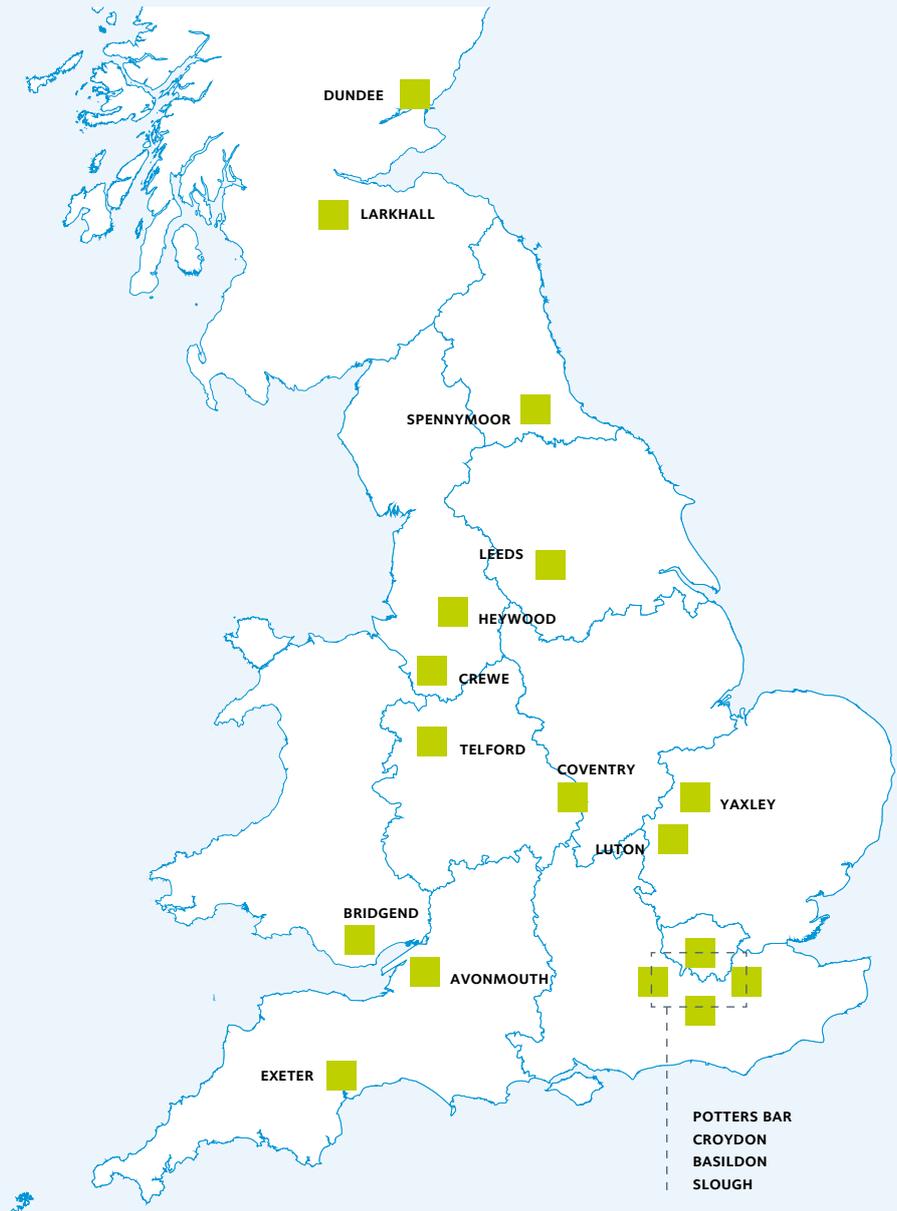
The company has a national distribution location at Crewe (c.800,000 sqft employing 700 people), supported by 17 depots (outbases) of between 5,000 and 30,000 sqft for local delivery across the country. All stock is transferred through the two NDC units at Crewe to arrive at each of the outbases on a Just in Time (JIT) basis in response to online orders. The property model focuses on quick and efficient delivery; the outbases themselves do not hold any stock.

Both of the NDC units were built by Prologis. AO.com bought the first unit, Alpha, in 2011. This unit typically deals with the more complex goods such as audio visual appliances as well as white goods. The second unit, Omega, houses white goods and bulk stock.

IDENTIFYING WHERE TO LOCATE

Crewe was chosen as the NDC location for a number of reasons including AO.com's birth place in the north of England; achieving a balance between local labour force availability and still being within distance of key talent for managerial positions; and importantly being within a 4.5 hour drive to its outbases. Concerningly, when AO.com was seeking to secure an NDC site, Alpha was one of the last warehouses in the north west of England suitable for its needs.

The number of outbases has grown from two in 2006 to its current 17. In identifying locations for future depots, AO.com looks at locations which will get the product closer to the consumer. This will decrease the last mile, therefore reducing the delivery cost component, and increase the efficiency of the service time to the consumer.



There is no one size fits all outbase model, with those at Potters Bar, Slough, Croydon and Basildon close to the built up areas of London and the South East and therefore each serving large and concentrated populations. The Peterborough (Yaxley) outbase serves a much wider geography due to the more rural nature of the East of England but is one of the busiest. The size of the outbase and the population each serves is planned so as to be most efficient and reflect AO.com’s ambitions around its delivery model.

The team at AO.com apply sophisticated analysis to identify where the next outbase should be located. This includes:

- Labour force characteristics including skills, qualifications and occupation types;
- Customer locations and how customer demand is expected to grow;
- Existing companies in the area.

The ideal location for an outbase is edge of urban centre in an area of existing commercial use due to night-time HGV movements. Each outbase is up to 4.5 hours’ drive from Crewe, with the shortest onward journey to the target population.

PLANNING FOR THE FUTURE

AO.com continues to experience significant market growth. It is on this basis that new outbase locations are currently planned. A small number of new outbases are presently being evaluated. Once it has reached market saturation, the location of new population growth will be more important. Only substantial population growth is currently of interest as this will create new market geographies.

There is sufficient capacity at the NDC to allow for a significant increase in throughput, though at some point in the future AO.com is likely to require an additional unit to meet increasing demand and respond to population growth. The main additional floorspace in the short term is required through additional outbases across the country.

PREMISES TO SUPPORT A HYPOTHETICAL NEW SETTLEMENT

With reference to how AO.com serve the three study locations, Bristol, Nottingham and Sheffield are served through the Crewe NDC via a local outbase. Bristol is served by AO.com's outbase at Avonmouth, while both Nottingham and Sheffield are served from an outbase at Leeds. The Leeds depot is a small unit with a large volume of delivery throughput as it serves the large M1 area.

RESPONDING TO SECTOR INFLUENCES

Employment densities are increasing for AO.com as their delivery throughput is increasing. For example, at its Potters Bar outbase there are around 40 outbase employees and installation engineers plus a number of self-employed drivers.

Availability of drivers is crucial to the successful operation of the business. Due to regulations making qualifications for larger 7.5 tonne vehicles very expensive, AO.com primarily uses 3.5 tonne vehicles which need a faster delivery turnaround (and therefore more delivery runs) to make their smaller loads efficient.

Appendix 2

Glossary

NATIONAL LOGISTICS NETWORK

The operation of supply chains across the country. Demand for a logistics response in one location may be most efficiently met by provision of logistics space in another. For example National Distribution Centres and Regional Distribution Centres will serve markets beyond their immediate geography.

LAST MILE

The final stage of delivery to consumer or store.

PICK UP POINT

Locations from which customers can collect items ordered online. This may include in-store, automated lockers for example at train stations, designated pick up stores such as Duddle, and so on.

OMNI-CHANNEL

Retail platforms offered via a range of media such as smart phone, desk top and in-store to provide the customer with a seamless shopping experience.

PUREPLAY

Retail which is fulfilled with a logistics response which has no traditional store involvement.

BRICKS AND MORTAR

Traditional physical retail stores.

Appendix 3

Data Methodology

WAREHOUSING

CoStar data has been used to establish the inventory of warehousing space across England. This was used in preference to other datasets which cannot be tracked in the necessary detail over time. Information in CoStar is researched and verified by the industry's largest professional research team, with over 1,200 researchers and over 130 field research vehicles inspecting over 2 million properties each year and uncovering changes in inventory and availability.

CoStar data has been initially filtered to show only "industrial" properties¹, before applying a second filter which isolates "warehouse" and "distribution" properties. Of the categories available, these provide the closest alignment with logistics:

- Warehouse – A secondary type of industrial building generally used for storage and/or distribution.
- Distribution – These are typically large buildings, both single and multi-tenant, used for the warehousing and distribution of inventory.

CoStar data was collected in November 2018, and therefore provides a snapshot of the inventory of warehousing space at that point in time. Historic data has also been obtained which is understood to provide a snapshot as of 31 December each year to enable trends to be analysed.

Properties have been sensibly grouped according to their size (sqft), noting that there is no widely used measure of the size thresholds for different types of logistics premises and reflecting the findings of the consultations.

HOMES

The Ministry of Housing, Communities and Local Government (MHCLG) produces annual housing stock estimates for local authorities,^{xlii} which have been aggregated to regions to inform this analysis. This provides unrounded estimates of dwelling stock as of 31 March each year, with published tables currently covering a period from 2001 to 2017. There is no more comprehensive measure of total housing stock across England.

Separately, MHCLG annually publishes statistics on "net additions" to local authorities' housing stock over financial years to 31 March.^{xliii} These statistics are published every November, and inform the stock estimates produced the following May. While "net additions" in 2017/18 became known within the process of this research, this had yet to be translated into an overall dwelling stock estimate for 2018. As such the "net additions" have been considered separately within the analysis.

In order to contextualise the Government's targeted delivery of 300,000 homes per year, Census data has been used to identify "built-up areas" with a comparable number of homes. These are official statistical geographies for which 2011 Census data has been published. No official statistics are published for these areas between Census years, however, meaning that it is not possible to bring 2011 statistics up to date.

EMPLOYMENT AND EMPLOYMENT FORECASTS

The Business Register and Employment Survey (BRES) has been used to establish employment levels in the logistics sector. BRES is regarded as '*the official source of employee and employment estimates by detailed geography and industry*'.^{xliv}

1 This process excludes offices, retail units, light industrial premises, hospitality units, land, health care, speciality, sports and entertainment

The logistics sector has been defined through the identification of appropriate codes from the Standard Industrial Classification (SIC). These codes are consistent with those used for previous BPF analysis^{xiv} of the logistics sector:

- 53: Postal and courier activities;
- 492: Freight rail transport;
- 502: Sea and coastal freight water transport;
- 504: Inland freight water transport;
- 521: Warehousing and storage;
- 4941: Freight transport by road;
- 52211: Operation of rail freight terminals;
- 5224: Cargo handling;
- 5229: Other transportation support activities; and
- 5121: Freight air transport².

The figures generated by this analysis should be treated as a minimum, since they do not include the full range of logistics activities where these are not separated from retail. By way of illustration, there are approximately a further 2.45 million people employed in the retail sector in England in 2017, a proportion of whom will work in roles which could be classed as logistics employment.

The quarterly “Local Market Forecasts” produced by Experian are referenced in this report. The analysis is based on the latest forecasts available at the time of writing (September 2018). The forecasts are not broken down by SIC code, and a broader “land transport, storage and post” sector has therefore been used as a proxy for the logistics industry.

EXPENDITURE FORECASTS

Oxford Economics and Pitney Bowes develop forecasts on household expenditure, which have been referenced in this analysis. Expenditure for e-commerce at local authority level is estimated through reference to national assumptions on Special Forms of Trading (SFT). SFT (or non-store retail sales) are sales that do not take place through traditional store-based outlets. SFT therefore covers spending through alternative non-traditional outlets such as the internet, mail order, party plan and vending machines, and other non-store activity such as market and roadside stalls. This can be measured in one of two ways:

- **Broad definition** includes products sourced from existing stores or made via Click and Collect. This includes the narrow definition.
- **Narrow definition** excludes products sourced from existing retail floorspace such as Click and Collect. This is a sub-set of the broad definition.

ADDITIONAL DATA SOURCES

This report also references the following:

- Monthly data on internet sales published by the Office for National Statistics (ONS) as part of its **Retail Sales Index**, up to and including October 2018;
- Data on the number of residents claiming **Jobseekers Allowance** as of October 2018, which is presented at local authority level to indicatively measure latent capacity in the labour force at the current point in time; and
- The upper quartile **gross weekly pay** of employed residents by local authority, drawing upon the Annual Survey of Hours and Earnings (ASHE). The latest available data provides provisional estimates on a reference date of 16 April 2018.

2 This list is shorter than the full list of Logistics roles which that was previously published in ‘Delivering the Goods’, to avoid double-counting. For example, jobs classified under 2-digit ‘SIC 53: Postal and courier activities’ are inclusive of ‘SIC 531: Postal activities under universal service obligation’, and ‘SIC 532: Other postal and courier activities’.

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