



Homes &
Communities
Agency

EMPLOYMENT DENSITY GUIDE

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For and on behalf of GVA Grimley Ltd

Disclaimer:

This Guide has been prepared with the utmost care and due diligence by Bilfinger GVA and the Homes and Communities Agency in partnership with a range of industry experts. It provides a strategic view of general employment and economic trends and their influence on employment density. It is intended to provide a general guide to employment density and a robust and consistent base for the HCA and its partners to assess the potential local employment benefits of impacts of changes to the size and use of commercial floorspace in an area.

The Guide is not intended to replace detailed development-specific information or analysis but provide a consistent benchmark to assess local employment density changes. Its contents should not be relied upon for property, investment or financing valuation or economic appraisals requiring central government approval. The authors accept no liability for the use of the Guide beyond its stated aims and objectives.

1. Introduction

- 1.1 This report provides the latest version of the Employment Density Guide (“the Guide”). The previous version of the Guide was published in 2010 and represented the second edition following publication of the original research report in 2001. In the 14 years since the first Guide was published, it has become the ‘go to’ resource for a range of property, planning, regeneration and economic development professionals underpinning a range of impact assessments and appraisals, policy development and strategy production.
- 1.2 Whilst the Density Guide is an important tool in the decision making process there are a range of guides that should be used for specific appraisal purposes. For example, for economic appraisals, the primary source of guidance is HM Treasury’s Green Book, which sets out the appraisal techniques required for an economic appraisal requiring central government approval.
- 1.3 The Guide’s ever increasing role at the centre of a range of property related activities requires that its density metrics remain as up to date as possible, reflecting the latest industry ‘norms’ of how space is planned, developed and utilised to ensure it provides a robust and reliable basis for its ongoing use.
- 1.4 It is against this backdrop of increasing prominence and utilisation that an update to the existing Guide has been prepared. Much has changed since the production of the 2010 Edition, which drew on data and information from earlier years. These changes have had profound effects on not just the shape of the economy but also the way businesses operate and use their premises and the very types of property that now support economic activity.
- 1.5 The core focus of this update has been the identification of the factors influencing the use of employment generating property within the UK and understanding what impact this has on how floorspace supports employment in order to ensure that the Guide remains accurate and relevant in the densities it provides. At the core of the commission is the task of testing the 2010 density matrix against current usage trends and making appropriate modifications to the matrix where necessary.

- 1.6 In order to provide a robust update to the Guide, a number of research approaches have been utilised to understand how use of employment generating floorspace has changed. At the Scoping Stage an extensive literature and research review was completed, drawing on both academic and industry information to set the context.
- 1.7 Consultation was then undertaken to test the findings of the literature review and support the development of the employment density matrix. These consultation 'interviews' were held with a range of property advisors, including planners, property agents, investment advisors and property managers in order to gain a rounded view of industry specific behaviour (See Appendix I).
- 1.8 Finally, draft findings were tested with property occupiers, operators and representative bodies in order to ensure the final matrix aligned with the most up to date trends in property utilisation. This exercise was primarily focused on testing assumptions within the Guide that were subject to the greatest change.

2. Calculating employment densities

- 2.1 This section provides details on the method and issues that must be considered when calculating densities.

Employment densities

- 2.2 Employment density refers to the average floorspace (in m²) per full-time equivalent (FTE) member of staff. It is used as a measure of intensity of building use and an indicator of how much space each person occupies within the workplace.
- 2.3 Calculating the jobs generated by a particular use or building using employment densities relies upon a consistent understanding of floorspace. We provide a simple, introductory guide to floorspace measurement and employment below.
- 2.4 More detailed analysis and guidance is provided on calculating floorspace is provided in the RICS Code of Measuring Practice (6th Edition) which was updated in May 2015 to reflect and incorporate the new International Property Measuring Standards, which currently only apply to offices.

Average employment density figures

- 2.5 Historically average employment densities have been derived from surveys of a large number of buildings; this has provided the baseline understanding of the relationship between floorspace and jobs. Since 2001, a number of industry bodies have continued to survey specific sectors and we draw on this research to inform the Guide, as considered in Section 3 in more detail.
- 2.6 With a robust understanding of employment density, it is also important to ensure the floorspace estimates are as accurate as possible.

Measuring floorspace

- 2.7 The Royal Institution of Chartered Surveyors (RICS) recognises 3 principal measurements of floorspace: gross external, gross internal and net internal. In summary these are:

- Gross External Area (GEA) – this measurement includes walls, plant rooms and outbuildings, but excludes external space such as balconies and terraces. It has a narrow field of use mostly limited to calculating building costs for large industrial and warehouse buildings, planning applications and approvals, council tax banding, and rating in Scotland for industrial buildings
- Gross Internal Area (GIA) – this refers to the entire area inside the external walls of a building and includes corridors, lifts, plant rooms, service accommodation (e.g. toilets). It is a widely used metric used in calculating building costs, marketing, valuation, property management and rating (in England and Wales) of industrial buildings (including ancillary offices), warehouses and leisure units and also the valuation of new residential developments
- Net Internal Area (NIA) – this is commonly referred to as the net lettable or ‘usable’ area of offices and retail units. It includes entrance halls, kitchens and cleaners’ cupboards, but excludes corridors, internal walls, stairwells, lifts, WCs and other communal areas. It is a widely used metric and is the recognised method for marketing, valuation, property management and rating for offices, shops and supermarkets.

Floorspace metrics

- 2.8 In Section 4, the Table of Employment Densities gives the measurement basis for each use class. It is recommended that the relevant floorspace metrics are used consistently throughout a project’s development, appraisal and evaluation.
- 2.9 **It is important to understand the basis of floorspace measurement and to use it consistently.** If necessary, a given figure on one basis can be converted to the appropriate basis for the employment density type.

Converting gross internal to net internal area

- 2.10 Gross internal to net internal ratios can vary significantly according to use:
- For office space the gross figure is typically 15-20% higher than net internal space. However, this will be dependent upon building design and configuration, in particular relating to heights, number of cores and building servicing

- for all multi-tenanted buildings the range may be higher than 15-20% given the space allocated for shared or common areas. More often job estimates will be based on the 'let-able' area which exclude common parts such as meeting spaces
- for larger warehouses, the net area can be as much as 95% of the gross area
- for retail units the net to gross internal area relationship can be in the region of 90%

2.11 As a general benchmark, 15-20% acts as a suitable assumption for converting gross to net areas in non-industrial properties.

2.12 It is worth noting that figures for notional or proposed schemes may be presented as a GEA measurement. To convert these to a GIA, the general benchmark is a reduction of 5%.

Table 1 - Worked Example, Converting GIA to NIA

	Approach
Example Development	1,000sqm GIA development of B1a office used by the Finance & Insurance sector
Appraisal	NIA is calculated using the benchmark in Paragraph 2.10 above: $1,000 \times (100-15)\% = 850\text{sqm NIA}$ Or $1,000 \times (100-20)\% = 800\text{sqm NIA}$

2.13 The figure used will be dependent on the level of space efficiency anticipated at the building. For more efficient buildings, use a lower conversion percentage of 15%.

Vacant space

2.14 When evaluating actual densities, only the occupied floorspace should be used in the evaluation. Appraisers should include a note on the amount of unoccupied space in the building at the time of calculation so that the basis of the calculations are clear. This mitigates the risk of the vacant area distorting the employment density figure.

Table 2 - Worked Example, Calculating Vacant Space

	Approach
Example Development	1,000sqm GIA development of B1a Finance & Insurance Sector office space as per Table 1, resulting in 800sqm NIA
Appraisal	Apply benchmark of 12sqm per FTE as per guidance in Section 4 to NIA floorspace. $800 \div 10 = 80$ FTE
Evaluation	Despite a floor area of 800sqm only 700sqm is occupied, therefore employment is calculated as: $700 \div 10 = 70$ FTE
<i>Note:</i>	<i>The building has remaining vacant floorspace of : $800 - 700 = 100$sqm Equating to potential additional capacity of: $100 \div 10 = 10$ FTE</i>

- 2.15 The FTE and employment density figures in Section 4 are based on 100% occupation of a building.
- 2.16 Vacancy rates in buildings can vary significantly. There is no ‘rule of thumb’ to allocate a vacancy rate for any specific reason such as use type, scale, timing or location. It is recommended that in carrying out a project appraisal, sensitivity analysis is used to generate a number of vacancy rate scenarios (e.g. 50%, 70%, 90%) for, say, 12 months after first occupation of the building to assess the impact on the forecast gross jobs figure.
- 2.17 This sensitivity analysis would also enable an allowance to be made for any ‘void’ periods, i.e. periods when a property is unoccupied and unable to be re-let. These often occur at lease expiry where a property requires refurbishment prior to a new tenant taking up occupancy. Void periods will be directly influenced by the age and condition of the property and the strength of the local market. Estimates should be based (where possible) on these localised trends.

Measuring employment

- 2.18 Employment can be measured in several ways:
- Actual – the number of employees who are full-time, part-time, or on contract
 - Full-time equivalent (FTE) – the number of total hours worked as a proportion of the average annual hours worked in a like-for-like full-time job
 - 1 FTE means the person works full-time

- 0.5 FTE means the person works half-time. Thus 2 part-time staff who work half-time each will equal 1 FTE

2.19 In evaluating completed projects it is recommended that FTE numbers are used to measure employment achieved. These figures should be compared with the employment forecast made as part of the project appraisal. Where there is a significant variance (i.e. +/- 10%) between ex ante appraisal and ex post evaluation, an explanation for the difference should be provided in the evaluation.

Trends in full and part - time working

2.20 The ONS Annual Survey of Hours and Earnings (ASHE), provides data on the proportion of employees working full or part-time in different occupations:

- Service industries: part-time employment ranges between a low of 40% (found in the financial services sector) and a high of 63% (found in the leisure and recreation sector – reflecting shift patterns in bars, pubs and restaurants and seasonal working)
- Manufacturing: less than 10% are part-time

2.21 With regard to the proportion of hours worked by part-time staff to FTE, the majority of part-time staff work between 45% - 55% of full-time hours, with an overall average of 50% for all services and industry.

2.22 A ratio of 2:1 part-time staff to FTE should therefore be applied.

Calculating employment densities for redevelopment projects

2.23 Predicting employment density figures during the project appraisal stage is most accurate for new build (or recently constructed) properties and less accurate for older properties. This is because new buildings are usually designed with regular shaped floors and capable of servicing the employment densities set out in Section 3. See also Section 4 for guidance on density variances in older buildings.

2.24 When an occupied building is to be redeveloped, care needs to be taken in the application of employment density metrics when calculating the **additional** new jobs created by the project (i.e. the gross number of jobs accommodated in the redeveloped building less the previous number of jobs in the original building). If firm

data sets are not available on employment in the original building and employment density ratios are used to determine employment levels, appraisers should adjust for the type and age of the building(s) concerned and the businesses within them.

3. Influences on employment density

- 3.1 As noted within the introduction, there have been significant changes within the property industry and economy more generally that have had a direct influence on how commercial property is planned and utilised since the publication of the previous Guide in 2010.
- 3.2 However, these changes have resulted in more than just a shift in occupier and operational density. Rather than focusing on the buildings themselves, employment density is increasingly more closely aligned to the *nature* of the business or sector which they accommodate. This means that an understanding of the occupier is equally as important as knowing the planning use class. It should be recognised that this can be challenging without an identified ‘pre-let’ occupier.
- 3.3 As such, it is clear that changes to the economic context have driven a fundamental shift in how many types of property can be categorised and therefore considered in employment density terms.
- 3.4 Within this section we provide an overview of the key drivers of change and the broad nature of their influence across property, full details of which are contained within Appendix 1 to this report. This section also provides definitions of the new property classifications used within the density matrix to ensure users can apply the new approach to employment densities effectively.

Key influences on employment density

- 3.5 Based on an initial scoping exercise to identify the key factors influencing employment density, the research has sought to consider the implications of:
- advances in technology
 - the evolution of new forms of workspace
 - changing trading formats
 - sector and sub-sector activity
- 3.6 This list is clearly not exhaustive but these factors appear to have the strongest influence on the design and utilisation of employment space. They reflect
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fundamental changes in the way businesses can and do operate and therefore have different influences on different types of businesses or economic sectors. Their influence is not only changing employment density per se, but also more closely aligning levels of employment with the nature of business activity as much as the 'category' of property they occupy. This is explored in more detail below.

- 3.7 Our engagement and consultation with industry representatives, operators and occupiers confirmed these were the key factors they had experienced that were changing the way property was utilised and the level of employment a given quantum of floorspace would support.
- 3.8 The influence and effect of these factors on the full range of property types contained within the 2010 Guide were considered. Impacts were considered in terms of broad effects and classified as having no discernable influence, an *upward* influence (i.e. they enable people to use space more densely) or a *downward* influence (i.e. they result in a 'less dense' use).
- 3.9 The assessment of broad effects has principally been informed by a mixture of desktop research, which has considered sector-specific and use class-specific information on development delivery and interviews with senior property advisors who are engaged in advising property developers across the full range of property use classes.
- 3.10 The majority of the influencing factors served to have some impact on employment densities and, therefore, necessitate an update to the employment densities within the matrix. However, as set out below, the effects from any single factor are not uniform across all property types or even within a single use; as such some level of judgement has had to be applied in determining the final Density Matrix.

Advances in Technology

- 3.11 The advances in technology made in recent years are having a broad range of impacts on the way employment floorspace is used and, therefore, the level of jobs it supports. However, the impacts of technology on employment density are not linear and have contributed to a complex set of relationships that on the one hand serve to reduce density by making existing processes more efficient. On the other they create

new servicing and employment requirements, placing upward pressure on employment density.

- 3.12 These upward and downward pressures are felt across a range of activities in different ways. From 'high street' activities (such as banking and retailing) through to large scale distribution the effects of new technology are influencing how much employment an activity supports.

High street

- 3.13 Technology is having a major impact on the 'retail' sector in terms of how goods and services are sold to customers and how these are then supplied. Clearly the impact of internet retailing is a major factor and we consider this later in this section.
- 3.14 Technology is also improving the manner in which transactions are completed, increasing the usage of new point of service (POS) technology such as 'self-scan' checkouts and also introducing online terminals in stores for customers to 'self-order' products that the stores do not carry.
- 3.15 Both of these trends impact the level of employment within a store, however they do so in different ways. Increased use of POS reduces the number of cashiers required to deliver sales levels however the relatively new experience has required a number of staff to fill 'customer service' roles, helping customers familiarise themselves with the technology. This has protected some employment however still resulted in a lower density overall.
- 3.16 Increasing use of online ordering within stores has been a major factor for many larger department and other comparison goods stores. This has not appeared to have a significant impact on employment levels, with the focus still retained on customer service, as such employment densities has remained static.
- 3.17 Outside of the retail environment technology has also impacted on the nature of activity undertaken within high street banks and building societies. Branches now provide a much higher level of self-service machines allowing basic banking tasks to be undertaken without the need for a cashier.
- 3.18 However, similar to the retail sector, high street banks have increased the presence of 'customer service' staff who provide much more of a host role, helping customers
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themselves or providing support in using self-service machines. Clearly, the nature of high street banking and the range of financial and mortgage advice provided limits the scope for decreasing employment levels substantially as specialist employees are still required.

Office

- 3.19 Generally technology is having an upward influence on employment density within office properties through the increased flexibility it provides for space planning/usage and the decreasing space requirements of physical infrastructure.
- 3.20 For example, the shift towards flexible working is driven by enhancements to wireless connectivity, which is now much more reliable and able to provide much higher bandwidths. This allows more agile working, lessening the need for many workers to have a 'fixed desk' and therefore reducing under-utilisation of space.
- 3.21 More agile forms of working have also been supported by (and driven) innovations in hardware and office fit outs. The increasing use of laptops and the advent of flat screen monitors have allowed actual desks sizes to be reduced by as much as 10% meaning it is possible to fit a greater number of desks within a fixed area. Taken with greater utilisation of these desks employment density enhancements could be significant.
- 3.22 Similarly increased usage of 'Cloud' computing and the growth in datacentre provision (supported by improvements to the UK's fibre infrastructure) has resulted in less office space being turned over to large server rooms. This reduces the level of non-active spaces within an office, again enhancing the potential employment generated by a particular building.
- 3.23 This has decreased the relative proportion of a business's cost base which is dedicated to property costs, providing an even greater focus on labour costs as a much more significant cost component. This has also begun to change the way offices are designed with greater flexibility and agility allowing new work areas such as breakout and collaboration spaces to be delivered. This creates a more diverse and interesting environment for workers and reduces the employment density of the office to some degree.

- 3.24 Ultimately, through greater electronic storage of information, more flexible working (including hot-desking and increased working from home) and the adoption of open plan space rather than cellular offices businesses are able to make better use of the space they occupy.
- 3.25 However, these trends are not universal, with their impact limited by sectoral activity, floorspace supply and job role. The nature of some activities where there is a high reliance on personal interaction, a need to use specialist equipment or provide call centre services will prevent the introduction of increased flexible working. As such, the influence of technology and changing working practices is likely to be more keenly felt in office-based sectors.
- 3.26 There may be some limitations to increased utilisation in some professional service activities (such as legal and accounting practices) which are unlikely to be able to achieve high space efficiencies through higher occupational density as they need to accommodate greater provision of cellular offices and meeting spaces. However, these would enable some degree of flexible, remote working, raising potential efficiency levels.
- 3.27 Through our research and in consultation with key industry bodies such as the BCO the differing impacts across sectors have been confirmed and have directly influenced both the revised structure of the Guide, which for the first time suggests different densities based on occupier activity.

Automation and Production

- 3.28 Increased automation has had a particularly significant effect on the manufacturing and distribution sector. It is most marked within the UK's automotive sector where much more significant elements of production are automated, reducing the need for production line staffing.
- 3.29 The impact of automation within the distribution sector is not uniform. Whilst widely used in the clothing sector, others are yet to fully embrace new technology, albeit some systems are being developed by industry leaders which are likely, in time, to be adopted by others. Much of the drive towards greater automation is to increase the speed and efficiency of multi-product order picking, which at present is largely

undertaken manually. However, as racking techniques and stock management software advance there may be reductions in the employment requirement.

- 3.30 These factors have had a downward pressure on employment density within units; however there are other factors which are offsetting this trend. With greater automation comes a greater level of servicing and support of the machinery. This has seen an increase in skilled employment within these sectors, particularly for maintenance engineers and computer programmers.
- 3.31 Furthermore, ongoing requirements to improve operating efficiencies are introducing new activities into manufacturing plants and distribution centres in particular. Costs of shipping and reducing margins are driving operators to do more 'final assembly' within units rather than store completed products, which often occupy more space. This reduces the amount of 'pure' warehousing space and increases employment density.
- 3.32 Similarly, facilities are integrating greater levels of office floorspace to enable complete business operations to be accommodated under one roof, reducing property costs. These increase levels of employment within units and hence serve to increase overall employment density.

The evolution of new forms of workspace

- 3.33 There has been a significant shift in business practices in the last 2 decades. The growth in information and digital technology has transformed the way companies organise and communicate. This has also made office functions more complicated.
- 3.34 The economic shift towards knowledge intensive sectors has brought a shift in work practices and the way businesses communicate. Workforce productivity in the UK has stalled since the recession, with some estimates placing it at c.16% below pre-recession levels (Source: Bank of England Quarterly Bulletin, Q2 2014). Given the UK has continued to see employment growth at its highest in the 'knowledge economy' (i.e. professional services, technology and digital/media firms) there is no clear, singular explanation of this apparent 'puzzle' within the UK economy. Economists believe a number of factors are contributing to this weaker than anticipated performance, including: potential mis-management of resources; latent capacity within existing businesses; reduced capital investment driven by tightening

lending and even potentially 'artificially high' productivity in key sectors such as finance in the pre-recession era.

- 3.35 Despite these potentially structural challenges in the UK economy as a whole the growth in knowledge based economic activity has seen firms demand and require new functions from their office space compared to more traditional firms. Digital media firms often need multi-functional spaces in which dedicated desks can combine with collaborative areas to create a communal space to increase creativity. Emerging companies require more flexibility in terms of both office space and rental lease.
- 3.36 Home working in the UK has seen a significant rise over recent years. Data produced by the ONS in June 2014¹ suggests that almost 14% of the UK's working population now work from home, the highest rate since comparable data collection began in 1998, growing at an average rate of 1.2% per annum. The analysis suggests homeworkers tended to be higher skilled, with approximately two thirds self-employed.
- 3.37 Although all regions in England have seen growth in the proportion of people working from home this has been strongest in the South East and North West of England and London, where there has been a percentage point increase of c.2% since 2008. The proportion of the population working from home is highest in the South East and South West, with 16% and 17% of the working population respectively working from home.
- 3.38 This increase has been driven by a range of factors including growth in self-employment, improved broadband connectivity, property prices, commuting distances and efficiency and cost savings. This increase has been present in previously office reliant sectors i.e. consultancy and accountancy. Businesses are adapting to the varying lifestyles of modern employees. Increased flexibility allows for a balance between work, family and other commitments.
- 3.39 There has also been an increasing preference towards the major urban centres with more businesses preferring to re-locate closer to the urban core services. This

¹ <http://www.ons.gov.uk/ons/rel/lmac/characteristics-of-home-workers/2014/rpt-home-workers.html>

process has in part been driven by market and lifestyle choices with workers wanting to be in close proximity to urban amenities.

- 3.40 Affordability is also one of the determining factors for the shift away from more traditional workspace models. With the increasing rental values in the urban core and increasing demand for residential property, affordability is the key factor for many micro and small businesses. New forms of workspace provide a more sharing based option which helps businesses with offsetting some of their operational costs.

Changing trading formats

- 3.41 When the 2010 update of the employment densities guide was undertaken, the retail sector was experiencing considerable challenges as a consequence of the rapid deterioration in the national economy into a prolonged period of economic recession. Much has changed during and since this period of economic instability and recession, with significant implications for retail and town centre growth, which in turn can have influence on the use of floorspace and density levels observed within the sector.
- 3.42 Our engagement with the retail sector suggests that, broadly, the trend identified within the 2010 Guide that employment aligns more closely with a retail unit's turnover rather than its typology remains true. However, a diversification in the way retail is serviced and the way in which it interacts with its customers suggest that the nature of activity within the retail unit is also critical.
- 3.43 The most significant impact and influence lies within the growth of internet retailing, which has increased significantly over the past decade as a share of overall consumer spending. However, recent data suggests that internet shopping has begun to plateau and the days of rapid growth may be over which, in turn, suggests that current practices are likely to be the new normal for the foreseeable future.
- 3.44 The rise in internet shopping has brought new occupiers to the high street. Some retailers were initially 'internet only' but have now sought a shop front on the high street. These tend to be very selective in their locations, focusing on retail centres with high levels of footfall in order to maximise exposure.
- 3.45 Such stores seek to provide a customer 'experience' allowing them to interact with products or whole brands prior to purchase. This activity has a significant focus on customer service and hence tends to provide a high level of employment compared to
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the unit size. However, this is partly offset by the range of goods displayed within the unit, which require larger floorplate units without necessarily requiring increased staffing.

- 3.46 Technology and internet shopping has also changed the nature of activity within stores. The 'Click and Collect' market is the largest on-line growth sector in the UK at the current time and is now recognised as providing a reason for retailers to retain a network of stores to service local markets.
- 3.47 This has 2 opposing influences on employment density within retail units. The provision of click and collect services requires a greater level of customer service provision to enable goods to be collected in an efficient manner by the consumer. Within stores employees are required to staff specific collection points, with further needs for staff within storerooms to sort deliveries and retrieve them for customers. As such, there is a potential uplift in staffing as the storerooms become more active and staff cannot cover the whole 'shop floor'.
- 3.48 Further employment demand has resulted from other specialist click and collect package 'holding' services that occur outside of major retail stores. A range of small and medium sized retailers (including independent convenience stores and firms such as Argos) now offer collection services. These may result in a need for additional staffing to manage deliveries and also serve customers. A further recent trend is the growth in specific collection 'kiosks' in range of locations (such as Doodle who locate within or close to transport hubs). These new entrants to the 'high street' again require staffing.
- 3.49 Depending on the nature of the click and collect goods, a greater level of storage space may be required within retail units, shifting the focus away from active 'trading space'. This may decrease overall density if the relationship is considered solely as one of active floorspace to employment. However, given click and collect have a positive impact on turnover and trading levels this is likely to be offset by increased needs to 'service' customers.
- 3.50 The other major sector that has been heavily influenced by changing customer needs is foodstores. Recent trends show a shift towards more repetitive top-up shopping rather than single large bulk shopping trips. These have been driven by (and also
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influenced) the shift in focus from convenience retailers away from the development of new large superstores towards smaller metro style provision.

- 3.51 This shift is only possible thanks to improvements in the stores supply and logistics chain, which allows efficient stock delivery and management and, in turn, reduces the level of stock held on site. This allows convenience retailers to reduce storage requirements and therefore the size of unit they occupy whilst still providing a full retail offer. This also requires greater stock replenishment activity, with dedicated staff required to deal with more regular deliveries and ensure these are quickly on the shelf for sale. This is critical in stores which provide greater levels of fresh produce or pre-made meals and snacks.
- 3.52 As a result of this shift employment densities within smaller, high street convenience stores have been slightly enhanced, albeit with no actual increase in staff numbers. However, what has happened is that these improved efficiencies have offset any potential reductions from other technology advances such as self-scan.

Sector and sub-sector activity

- 3.53 The nature of activity across all parts of the economy has changed significantly in recent years, with new sectors emerging and existing sectors diversifying or radically changing the way in which they operate. These changes have a significant impact on how space is used and needs to be understood in order to estimate the employment density of particular property types.

Office

- 3.54 The 2010 Guide split the office sector into General Office use (B1a), Call Centres use (B1a), IT / Data Centres use (B1a), Business Park use (B1a) and Serviced Office use (B1a).
- 3.55 However, our analysis of more recent research into office trends suggests that the current categorisation of floorspace in the office sector based on 'typologies' does not capture the nuances of the way floorspace is used by different office sub-sector occupiers. They do not acknowledge the different types and scales of uses undertaken by the varied occupiers within them. This was tested further through consultation with key stakeholders, who confirmed a much closer relationship existing between employment and activity rather than the location or type of property.
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3.56 **Employment density is much more closely aligned to the type of activity undertaken within the property rather than its location or building type.** Our understanding of occupier density (informed by the BCO Occupier Density Study (2013)) suggest that there are five sub-sectors which have identifiable occupancy trends:

- Corporate
- professional services
- public sector
- technology, media and telecoms (TMT)
- financial and insurance.

3.57 It should be noted that many of these sub-sectors fall into more than one office typology, which suggests a more nuanced approach towards understanding office employment density.

3.58 Engagement with both the BCO and BPF has confirmed the differences in density are now more closely aligned to the occupier activity rather than building typology.

B1b uses and the R&D sector

3.59 Within the 2010 Guide B1b uses are not included. In the practical application of the Guide research and development of products and processes have tended to fit within the industrial category of uses. However, more detailed analysis of trends in the sector suggests they do not fit neatly within the current B2 and B1c classification.

3.60 The R & D sector is a dynamic and broad sector, which reflects the significant technological and scientific advances which are shaping the evolution of the industrial sector. The sector can be considered to be split into two key directions; an innovation and science focussed direction which is associated with the knowledge economy and life sciences activity, and a more traditional industrial focussed direction which fits alongside manufacturing.

3.61 The more traditional industrial focussed R&D sector, which sits alongside manufacturing uses, bears similarity with the Light Industry (Business Park) use types within the current density guide, however further analysis into the alignment of

floorspace use will identify the level of alignment with the 47sqm FTE figure from the 2010 report.

- 3.62 The nature of business parks has changed, with a lower presence of light industry activity and a greater focus on space for research and development and office activity. This is much more pronounced than suggested by previous guides with the growth of major new campus based research activities across the UK which tend towards the provision of B1a and B1b floorspace.
- 3.63 The more innovation and science focussed R&D sector, associated with the knowledge economy and life sciences activity, incorporates pharmaceuticals, biotechnology, industrial technologies, creative industries, and technology, media and telecoms (TMT). This sector benefits significantly from agglomeration and the clustering of activity with similar uses and higher education institutions.

Distribution

- 3.64 The 2010 Density Guide identifies two forms of distribution activity: the General Warehousing and Distribution category and the Large Scale and High Bay Warehousing category, both falling within the B8 use class. The 2010 Guide suggested that *“technological developments and restructuring in most industrial sectors is setting a trend for an increase in floorspace per head so that average density is likely to become lower over time”*.
- 3.65 However, our analysis suggests that whilst some factors have decreased the density of employment (such as increased automation within the order picking activity) these have been more than offset by the wider range of job roles required to ensure the distribution facility functions. Similarly changing shift patterns towards 24 hour working as distribution needs increase are also offsetting reductions in the number of workers per shift.
- 3.66 The rise in zero-hours contracts has been a recent trend in the employment conditions of the distribution sector, particularly where activity is linked to the retail sector and therefore staffing requirements more seasonal. However, consultation with the industry has suggested that the impact on total staffing levels has been relatively small to date, and certainly outweighed by wider drivers of change

considered below. These contracts represent a relatively new shift for businesses and therefore the full effects are not yet understood or quantified.

3.67 The warehouse and distribution sector provides a range of employment opportunities at a range of skill levels, which is supported by research by Prologis² undertaken with occupiers of their own sites, indicating the following activities:

- warehouse staff (including forklift drivers)
- drivers
- admin
- managerial
- other (inc. ICT, customer service, sales and engineering).

3.68 This increasingly diverse range of employment opportunities within the distribution sector was supported by research undertaken by Skills for Logistics on behalf of the South East Midlands Local Enterprise Partnership (SEMLEP)³.

3.69 The Prologis research was originally completed in 2010 and benchmarked findings against a similar study by Cranfield University in 2003, allowing some degree of objectivity in the data and research approach. Comparing the two studies shows a number of trends that suggest employment densities have changed within the sector.

3.70 Firstly, the data shows a broadening of activity types between the two surveys, with a greater range of activities in the 'other' category, most notably ICT support. Furthermore, the data shows a reduction in the proportion of workers employed at the lowest levels of 'warehouse staff' decreasing from 68% to 43% of the total workforce. This fall has been offset by increases in the share of workers within admin, managerial and 'other' roles.

3.71 Given the shifts in the sector's occupational profile it is unsurprising that actual employment densities have risen in recent years. When calculated by Prologis in 2006 they estimated distribution activity employed one person per 95sqm, however by

² Prologis: Technical Notes 2011 – Do Distribution Warehouses Deliver Jobs? (<http://www.prologis.co.uk/pdfs/technical-notes-1.pdf>)

³ http://www.semlep.com/resources/uploads/SEMLEP_LOGISTICS_REPORT_2013_final.pdf

2010 this had increased to one person per 77sqm. This is a significant increase in employment density for the distribution sector, highlighting the increasing number of employees that can be supported by new, modern high quality distribution floorspace, even with significant increases in the scale of floorspace. Despite increased mechanisation and deployment of technology the data suggests that as logistics becomes more specialised both a greater number of employees and range of skills are required to operate a modern distribution facility.

3.72 A later update to the Prologis research was published in May 2015⁴ suggests that densities have increased even further to around 69sqm per employee, largely driven by an increased share of jobs within office-based activities. Despite this research having tested this through consultation with others involved in the industry and based on our own understanding of the sector through a range of agency and employment land projects it would appear this level of density is not yet the 'norm'.

New Categorisation Definitions

3.73 Our review of the influences on property planning and utilisation list above has suggested that the density matrix needs to consider a new approach to classifying employment generating spaces. This involves the identification of different 'categories' of space that sit within the use class framework. Below we provide a short definition of each new category.

3.74 These categorisations have been tested with a range of stakeholders through the consultation process informing this update to the Guide. They have also increasingly formed the basis of other research undertaken by both industry bodies (such as the BCO) and public sector agencies (such as the Greater London Authority or Local Planning Authorities).

Office

3.75 The **Corporate sub-sector** is defined as including the following business types; energy, engineering, food, manufacturing, mining, property and retail. The nature of the corporate sub-sector, which incorporates a proportion of space designated for

⁴ Technical Insight from Prologis UK - Distribution Warehouses Deliver More Jobs
(<http://www.prologis.co.uk/downloads/technical-insights/prologis-technical-insight-jobs.pdf>)

client meetings and functions, reception space, and internal meeting and break out space, means that there is a requirement for additional floorspace which cannot accommodate any additional full time employees. This has the effect of reducing the efficiencies of the floorspace occupation for this sub-sector, despite space efficiencies achieved through flexible working approaches.

- 3.76 The **Professional Services sub-sector** is defined as including the following business types; lawyers, accountants, management consultants and property companies. This sub-sector has a wide distribution of employment densities depending on specific uses, more so than for other sectors. Two key business types which exemplify this distribution are management consultants, which commonly adopt flexible working practices facilitating the achievement of relatively high densities, compared with legal firms, which adopt a more structured, less flexible approach to space allocation with many more client meeting rooms and therefore achieve relatively lower densities.
- 3.77 The **Public Sector** is self-explanatory in its inclusion of central government, local authorities and the third sector. This sub-sector again has a requirement for cellular offices and meeting spaces and, for local government 'civic' buildings, public spaces in order for the full range of services to be provided. These tend to drive lower densities. However, increasing requirements for public sector efficiency are increasing densities through the introduction of more flexible working and shared services across previously separate entities.
- 3.78 The **Technology, Media and Telecoms (TMT)** sector is very diverse and incorporates a wide range of tech, media and telecoms businesses ranging from small start-ups to large corporates. This diversity is identified as being contributed to by the way in which some large scale tech and media firms have large corporate environments adopting flexible working and a dense use of floorspace, where other more creative firms (which include significantly smaller firms and start-ups) have much more creative space consuming approaches to their working environment.
- 3.79 The **Financial & Insurance sub-sector** is self-explanatory in its inclusion of banks, building societies and insurance companies etc. This sub-sector tends to have high employment densities given the provision of trading floors and, to a lesser extent, more open plan floorspace with fewer requirements for client meeting and breakout space. There has been little change in the nature of office occupation in this sector
-

beyond the more general impacts of improved technology allowing more flexibility and efficient desk sizes, as discussed elsewhere.

Workspace

- 3.80 Our analysis has suggested there is a need to include a broader definition of workspaces that seek to provide a base for small and start-up businesses. The sector is becoming increasingly diverse, and our current understanding of the most common typologies is set out below.
- 3.81 **Incubator** – There is no set definition of an incubator in property terms as their form will be developed in a bespoke manner to meet the needs of the particular business activity or sector they are seeking to support. In essence incubators are high specification managed workspaces that provide a high level of service in terms of technology, equipment and business support. Within scientific sectors incubators will often provide shared laboratory space alongside cellular offices.
- 3.82 **Studio** - Studio workspaces are usually artist spaces that can be operated as standalone, individually occupied units within a range of settings or as part of a more managed collection of spaces. Traditionally these have come forward in locations with an industrial heritage given the building types these locations provide; they tend to be similar to 'light industrial' units in their specification but are likely to include some integrated desk space.
- 3.83 **Maker Spaces** – These spaces provide an 'open workshop' within a light industrial type unit. They provide a single shared space for working which provides a range of tools and machinery aimed at reducing costs for small and start up production businesses. Maker Spaces tend to be run on a membership model where businesses rent time within the space and time using the large equipment separately.
- 3.84 **Co-Working Spaces** - Co-working space tends to consist of a large open plan office area offering shared desks where businesses work alongside one another. They often provide small meeting rooms and conference facilities alongside shared workspace. Operationally they tend to work on a membership basis with businesses having access for a pre-determined amount of time per month, although many do rent desk space on a permanent basis to provide an anchor tenant.
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3.85 **Managed Workspace** - A managed workspace is commercially rented serviced premises from which small businesses can trade. The delivery of managed workspace could potentially accommodate a range of spaces, from small office suites through to workshop and light industrial units. The principal focus of these spaces is on providing more formal, individual spaces for small and start-up businesses with a number of shared facilities such as meeting rooms and reception services with an on-site management. These tend to be orientated towards meeting 'general' business needs rather than target specific sectors or activities.

Distribution

3.86 Greater importing of both finished products and production components from a range of global locations (most notably China and the 'Far East') has driven the demand for a new network of distribution spaces within the sector generally. These tend to focus on two distinct offers:

- **National Distribution Centres** - where bulk loads of imported goods are processed, sub-divided and shipped (largely via road freight)
- **Regional Distribution Centres** – these centres play the role of distributing goods to end users, either in terms of retailers or manufacturers or, increasingly, direct to clients.

3.87 A third distinct offer, which is a newly emerging type of space relating specifically to the retail sector is **local / 'final mile' distribution centres**. This accommodates 'final mile' parcel distribution companies who move goods from RDCs to individual consumers. These tend to focus on meeting the distribution needs of online retailers who lack the scale to have their own distribution networks, and are known as fulfilment centres.

Data Centres

3.88 Our consultation with leading industry advisors suggests that datacentres have a completely different employment impact than other storage facilities and therefore require their own classification within the matrix.

3.89 There are also different types of datacentre currently operating and being developed within the UK, which generate different employment levels, these are:

- **Wholesale Datacentres** - where 1 or 2 corporate businesses occupy a dedicated data centre
- **A Dark Site Data Centre** - which is managed remotely, so there are considerably fewer staff
- **A Co-location Facility** - where a customer leases a smaller space within a data centre, which could have up to 15 occupiers, with the site managed on site by a service provider.

3.90 Whilst the size of datacentres can vary significant, with ranges from 4,000 sq m to 30,000 sq m (NIA) there is very little difference in employment generation from size, with operational model the key driver. Even within each classification there are wide variations in density:

- wholesale: 200 to 950 sqm
- wholesale dark site: 440 to 1,400 sq m
- colocation facility: 180 to 540 sq m

3.91 To further complicate matters data centre space is not always quoted in terms of floor area, they may be quoted in terms of the cooled IT equipment area, which often only accounts for circa 50% of the total floorspace.

Hotels

3.92 The hotel sector has become highly differentiate on the basis of quality, with the star rating system failing to capture significant differences in the levels of service provided within the sector. As the market has become more segmented in the UK new categorisations have become common which reflect international categorisations.

3.93 These terms can broadly be explained as:

- **Limited Service / Budget** – low cost hotels within the 1, 2 and 3 star category, providing little or no services or amenities to guests. Examples include Travelodge, Premier Inn, Ibis
- **Mid-Scale** – usually a part of a chain and can relate to 3 or 4 star properties that target both leisure and business travellers, providing some dining and leisure facilities. Examples include Hilton Garden Inn, Holiday Inn Express, Park Inn

- Upscale – 4 or 5 star properties providing a range of services for leisure and business travellers, often also include conferencing facilities. Examples include Marriott, Grand Mercure, Crowne Plaza
- Luxury – 5 star plus hotels that provide full, high quality services to guests, most often including restaurant, spa and other leisure facilities. Examples include Sofitel, Inter-Continental, Ritz Carlton.

3.94 These figures assume employment within an individual standalone hotel, not supported by a head office.

Cinemas

3.95 The cinema industry has been through major restructuring in recent years, which on the one hand has seen consolidation of larger multiplex offers into larger centres whilst also seen increased differentiation of offer (such as arthouse or formats aimed at adults).

3.96 The introduction of more adult orientated or arthouse facilities has also diversified the range of facilities within the cinema and often includes a bar and potentially restaurant. With less automation and a greater range of facilities employment densities within this market segment tend to be higher, however it is only a relatively small part of the market.

3.97 Within larger mainstream cinemas improving technology has had an impact on employment levels. The introduction of digital projection has removed the need for specialist projectionists to be employed. Much of the cinema ticketing has now moved online, reducing the need for cashiers and ticket sales staff within the cinema itself, replacing them with self-service collection machines.

3.98 As a result there has been a significant reduction in staffing levels within the mainstream cinema sector which, alongside a move towards larger multi-screen facilities, has greatly reduced employment density.

Implications for the density matrix

3.99 Given the factors considered above it is clear there is a need to revisit both the densities within the matrix and also the way spaces are categorised and considered in the future.

- 3.100 Some of the factors considered clearly require new forms of workspace to be added to the matrix to enable it to be useful as the workspace environment changes. Others confirm that there are nuances within the office, distribution, retail and hotel markets that suggest an alternative characterisation is required that moves beyond a general typology approach.
- 3.101 In the next section we set out the new density matrix which draws all of the research together to provide a guide for future employment assessment. It should be noted that this is a Guide only and that many factors beyond the scope of this Guide will influence how space is delivered and used in the future. Some of these considerations are set out in Section 4 of this report, but this is not intended to be a definitive list.
- 3.102 Any use of the Guide and its density matrix will require the user to exercise their professional judgement to identify any specific factors that may result in a different employment output than is shown in the general trends within the matrix.

4. Employment density matrix

Use Class	Sub-Category	Sub-Sector	Density (sqm)	Notes	
B1a Offices	General Office	Corporate	13	NIA	
		Professional Services	12	NIA	
		Public Sector	12	NIA	
		TMT	11	NIA	
	Finance & Insurance	10	NIA		
	Call Centres		8	NIA	
B1b	R&D Space		40-60	NIA lower densities will be achieved in units with higher provision of shared or communal spaces	
B1c	Light Industrial		47	NIA	
B2	Industrial & Manufacturing		36	GIA	
B8	Storage & Distribution	National Distribution Centre	95	GEA	
		Regional Distribution Centre	77	GEA	
		'Final Mile' Distribution Centre	70	GEA	
Mixed B Class	Small Business Workspace	Incubator	30-60	B1a, B1b – the density will relate to balance between spaces, as the share of B1a increases so too will employment densities.	
		Maker Spaces	15-40	B1c, B2, B8 - Difference between 'planned space' density and utilisation due to membership model	
		Studio	20-40	B1c, B8	
		Co-Working	10-15	B1a - Difference between 'planned space' density and utilisation due to membership model	
		Managed Workspace	12-47	B1a, b, c	
B8 / Sui Generis	Data Centres	Wholesale	200-950		
		Wholesale Dark Site	440-1,400		
		Co-location Facility	180-540		
A1	Retail	High Street	15-20	NIA	
		Foodstore	15-20	NIA	
		Retail Warehouse	90	NIA	
A2	Finance & Professional Services		16	NIA	
A3	Restaurants & Cafes		15-20	NIA	
C1	Hotels	Limited Service / Budget	1 per 5 beds	FTE per bed	
		Mid-scale	1 per 3 beds	FTE per bed	
		Upscale	1 per 2 beds	FTE per bed	
		Luxury	1 per 1 bed	FTE per bed	
D2	Fitness Centres	Budget	100	GIA	
		Mid Market	65	GIA – both types tend to generate between 40-50 jobs per gym	
		Family			
		Cinema		200	GIA
		Visitor & Cultural Attractions		30-300	The diversity of the cultural attraction sector means a very wide range exists
		Amusement & Entertainment Centres		70	Potential range of 20-100sqm

5. Further considerations & guidance

- 5.1 It is clear from the research that the relationship between economic activity, property development and employment generation is changing rapidly. It has been impossible to capture all of these complexities and nuances within a Guide that is intended for more generalised use and needs to remain accessible to a wide audience.
- 5.2 Therefore, within this section we provide some strategic guidance and consideration of other factors which influence employment density but are, as yet, not sufficiently established or robustly evidenced to form generalised assumptions from.

Difference between space planning and space utilisation

- 5.3 The advent of new forms of workspace and the changes to office sector explored in previous sections have meant that the way space is planned and the way in which occupiers ultimately use it are increasingly diverging.
- 5.4 The regulatory framework for the design and construction of commercial buildings within the UK sets firm guidelines for the provision of key emergency and servicing infrastructure which relate directly to the level of employment within any one building or floor within it. Whilst these apply across the commercial property sector they have their strongest influence within the office sector.
- 5.5 At the basic level there is a difference between the current typical fit out assumptions and the built specification of new office development. Whilst typical fit-out specification has now moved towards 10 sqm/per person for a standard office they are actually built to meet the regulatory requirements of a building that is being occupied at 8 sqm/per person. Many developers are delivering buildings in this manner in order to 'future proof' their buildings and ensure they have sufficient flexibility to continue to accommodate changing working practices.
- 5.6 The regulatory framework, however, ultimately limits how efficient a building can become with the 8 sqm per person level currently the maximum a standard office could achieve (although this would be significantly different for a 'trading floor'). The core reason for this is the requirements for the provision of emergency escapes and toilet facilities, which are based on the headcount of each floor within a building.

- 5.7 Therefore, whilst it is potentially possible in occupation terms to achieve a density above 8 sqm it would be uneconomic to construct a building that allows this and meets all the safety regulations. This is partly a cost issue in terms of the infrastructure required but also relates to the impact this has on the scale of servicing cores and therefore the overall efficiency of the building these requirements create. It is likely to deliver compromised floorplates which, in turn, are unlikely to prove attractive to occupiers.
- 5.8 Therefore other methods of driving efficiency are being explored as occupiers seek to reduce costs and there is a greater divergence in how different sectors function and therefore utilise space. In some sectors and property types this is beginning to see a move away from using the amount of space as basis for employment creation and, in the future may require further changes to the approach of the density guide, however at this point no firm conclusions can be drawn.
- 5.9 Hot desking and agile working have already driven up the effective density of office spaces, albeit with some offset for increased provision of breakout spaces. The efficiencies gained from these are exacerbated by further shifts towards greater flexibility in workplace location, resulting in even greater acceptance of home working. The prevalence of home working has continued to rise since the publication of the 2010 Guide, with 2014 ONS data indicating that almost 14% of the workforce now works from home at least some of the time, up from 11% in 1998.
- 5.10 Increasing the utilisation space is particular high on the public sector agenda as cost savings are sought as a result of austerity measures. Typically public sector agencies are seeking a 20% increase in space efficiency, effectively making provision for 8 desk spaces for every 10 employees. This would bring occupation broadly in line much of the private sector, albeit the BCO now report that businesses are moving towards a 7:10 ratio of workstations to FTEs.
- 5.11 The establishment of membership based club rooms and co-working spaces has also driven up the level of employment supported by a given amount of office space. The flexibility of co-working memberships and the lack of fixed workstations mean a much greater number of employees and businesses can be supported from a single workstation.
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- 5.12 However, there are inter-relationships between agile working and co-working spaces. Early indications are that some co-working provision is being used by those working flexibly away from their base office. As such it is important not to over-state the employment potential of co-working and to understand the make-up of members as part of employment density calculations.
- 5.13 Essentially, these efficiencies mean that employment generation may be significantly higher than a simple density calculation may suggest. However, this is not uniform within, let alone between, occupier sectors and whilst the Matrix seeks to make allowances for increased efficiencies as best it can further research is required on a case by case basis, particularly where co-working spaces are proposed.

Approach to leisure/cultural attractions

- 5.14 The diversity of the cultural attraction sector indicates that providing a single density is impossible, and even the range provided requires significant levels of specific understanding to ensure employment estimations are accurate.
- 5.15 The complexity is increased further by the use of volunteers within some sectors such as small theatres and museums, who enable the facility to function but are not actually employed. Heritage attractions and zoos also add complexity as their staffing requirements are intrinsically aligned with their offer and the intensity of management this requires; as such they do not demonstrate any clear relationship between 'space' and employment levels.
- 5.16 Based on our understanding of the sector it is possible to provide some benchmark proxies which can be used to calibrate where within the matrix range a particular use may lie. However it is important to stress these should not be used as the basis for specific calculations themselves. **Given the specificity of these uses and their employment it is vital primary research is undertaken to provide robust employment estimates.**

Attraction Type	Effective Density per FTE
Small Theatre	350 sq m
Arts / Conference Venue	260 sq m
Mixed Use Venue	125 sq m
Commercial Visitor Attraction	120 sq m
Concert Venue	100 sq m
Large Museum	50 sq m

Shift working and contracting

- 5.17 As consumer and customer demands increase and businesses are seeking greater operational efficiencies there have been some shifts in working hours and patterns in the past decade. This has affected a number of sectors but most notably has changed the way distribution and retailers operate. Many of these influences had been addressed by the 2010 Guide and our research has not discovered major differences in the assumptions made at the time.
- 5.18 The introduction of more flexible employment contracts has also made employment more fluid within operations, with the level of 'active' workers able to be more easily adjusted in line with required output. However, this has not really impacted the overall level of employment and hence employment density of an operation, but may impact how and when these jobs are deployed.
- 5.19 We have consulted with the operators and property industry representatives to test how these changes have influenced employment and have based the Matrix on their advice on total employment requirements. This has enabled us to understand the staffing requirement (in terms of FTEs) that enables the particular activity to function under industry standard operating patterns.
- 5.20 As such the density figures presented allow for usual hours of operation, such as 24 hour working within many distribution activities, and therefore do not require adjustment to allow for these trends. However, at an operator or development specific level it may be necessary to adjust the figures if they propose a significantly different operating approach.

- 5.21 At present it would appear that any changes to the shift working patterns have been outweighed by other changes in sectors which have affected the relationship between floorspace and FTE employment.
- 5.22 As discussed elsewhere in this report the recent shifts in contracting towards zero hours contracts is yet to have a noticeable impact on employment density. Whilst it may mean employment activity fluctuates over time our conversations with industry stakeholders suggests that it hasn't altered the overall level of staffing for a property but provided more 'flexibility' for their utilisation.

Other types of employment generating spaces

- 5.23 The density guide focuses on the core commercial property typologies within the UK as a basis for understanding how private sector development and potential public support for commercial property delivery can support wider economic and regeneration aims.
- 5.24 However, it is clear that these are not the only sources of employment, with a much wider range of education, health, institutional and infrastructure related activities also providing a considerable scale of jobs.
- 5.25 These are very complex development types and encompass a wide range of building types, operational models and services which do not have a clear or identifiable relationship between floorspace and employment levels and hence no 'general' employment density.
- 5.26 Rather than a space driven employment requirement jobs in these sectors are much more closely related to the type of offer that the individual facility makes. As such two identically sized spaces within the same sector can have significantly different levels of employment.
- 5.27 As an example, employment levels within a hospital can vary based on any particular specialisms in treatment, teaching and surgery they may have. Where they require higher numbers of operating theatres or specialist care facilities these will have much higher staffing levels than a hospital with more 'general' ward space.

- 5.28 Similarly a school with a particular focus towards vocational courses may have a lower employment density as the teaching spaces are larger than those for classroom based more academically orientated activities.
- 5.29 In all of these sectors it is important to understand that employment is not necessarily the primary driver of space design and utilisation. Spaces are designed and constructed to meet a specific activity's requirements with the level of jobs then determined by what is required for that facility to function.
- 5.30 Some research has been undertaken previously into this field⁵ however no consistent approach has been identified that can be more broadly applied. Given the bespoke nature of property and then the specialised nature of activities within them identifying simple density proxies would require significant primary research and would require a separate Guide where each operation (or mix of operations) could be to be considered on its own merits.

Changes to measuring practices

- 5.31 The RICS has launched new professional guidelines on property measurement, the International Property Measurement Standards (IPMS), which aim to bring transparency and consistency to the global commercial property sector. Initially, this updates the Code of Measuring Practice for office space, and will be further updated to include residential, industrial and retail properties.
- 5.32 IPMS will become mandatory for chartered surveyors from January 2016. Whilst this may potentially impact how density is measured in the future, we have found no evidence of any impact to date on the way space is planned or utilised.
- 5.33 Clearly as use of the new standards becomes common place and is deployed across all property types there may be a need to revisit or reframe the way the relationship between floorspace and employment is described.

⁵ For example see "Planning for Prosperous Economies", Bilfinger GVA, 2009, www.gva.co.uk/WorkArea/DownloadAsset.aspx?id=2147488578

6. Comparison of densities 2015 to 2010

Use Class	Sub-Category	Sub-Sector	2015 Density (sqm)	2010 Density (sqm)
B1a Offices	General Office (NIA)	Corporate	13	12
		Professional Services	12	
		Public Sector	12	
		Tech	11	
		Finance & Insurance	10	
	Call Centres (NIA)		8	8
B1b	R&D Space (NIA)		40-60	n/a
B1c	Light Industrial (NIA)		47	47
B2	Industrial & Manufacturing (GIA)		36	36
B8	Storage & Distribution (GEA)	National Distribution Centre	95	General: 70 Large Scale & High Bay Warehousing: 80
		Regional Distribution Centre	77	
		'Final Mile' Distribution Centre	70	
Mixed B Class	Small Business Workspace	Incubator	30-60	Serviced Office: 10 <i>Detailed explanation for the changes in this category are provided in Section 3 Para's 3.77-3.82</i>
		Maker Spaces	15-40	
		Studio	20-40	
		Co-Working	10-15	
		Managed Workspace	12-47	
B8 / Sui Generis	Data Centres	Wholesale	200-950	47 <i>Detailed explanation for the changes in this category are provided in Section 3 Para's 3.85-3.88</i>
		Wholesale Dark Site	440-1,400	
		Co-location Facility	180-540	
A1	Retail (NIA)	High Street	15-20	19
		Foodstore	15-20	17
		Retail Warehouse	90	90
A2	Finance & Professional Services (NIA)		16	16
A3	Restaurants & Cafes (NIA)		15-20	18
C1	Hotels	Limited Service / Budget	1 per 5 beds	Budget: 1 per 3 beds General: 1 per 2 beds 4/5 Star: 1 per 1.beds
		Mid scale	1 per 3 beds	
		Upscale	1 per 2 beds	
		Luxury	1 per 1 bed	
D2	Fitness Centres	Budget	100	Sports Centres & Private Clubs: 65
		Mid Market	65	
		Family		
	Cinema (GIA)		200	90 <i>Detailed explanation for the changes in this category are provided in Section 3 Para's 3.92-3.95</i>
	Visitor & Cultural Attractions (GIA)		30-300	36 <i>Further Guidance is provided in Section 5 Para's 5.14-5.16</i>
	Amusement & Entertainment Centres (GIA)		70	70

Appendix I – Consultation and Engagement

To inform the development of the 2015 Density Guide one to one interviews were undertaken with a cross section of occupiers, developers, investors and consultants from within Bilfinger GVA and the wider industry.

To test draft findings and refine our understanding key representative bodies were invited to review and comment on the study, including the:

- British Property Federation (BPF)
- British Council of Offices (BCO)
- British Council of Shopping Centres (BCSC)
- Royal Institute of Chartered Surveyors (RICS)
- Royal Town Planning Institute.

All interviews and other feedback has been incorporated into the analysis presented within Section 3 of the Guide and used to inform the density assumptions used within Section 4.

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