

Estimating the Value of Discounted Rental Accommodation for London's 'Squeezed' Key Workers



Dolphin Living

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Estimating the Value of Discounted Rental Accommodation for London's 'Squeezed' Key Workers

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Foreword

London's population is expected to grow to 10 million in the next 10 years, adding the equivalent of a Birmingham and a Manchester to the capital. The biggest existential threat arising from London's growth is the lack of housing, particularly homes that are 'affordable' for ordinary working Londoners. The fear is this will strangle the city's ability to grow and damage its economy. Some companies are considering creating their own 'affordable' homes for employees to keep staff they need.

Yet there are few indicators that the 'affordability' of London's homes is set to improve in this timescale without radical intervention – which is why the role of Dolphin Living in providing subsidised 'intermediate' rented homes is important. And this is why we want to understand more about the contribution people who have been called 'key workers' make to London's economy.

In 2014 we asked the University of Westminster to carry out a cost-benefit analysis of our first completed key worker development in Westminster in central London. Their report concluded the benefit to London's economy for each affordable home provided at One Church Square in Pimlico was 'more than £19,000 per annum'.

Since then we've developed a number of new schemes and we've asked the University to revisit its findings and update its work by looking at the 141 households that we have accommodated in two new schemes, one in Soho and one at King's Cross. We also asked the University to consider a question we were frequently asked after the first piece of research, which was 'why deliver key worker housing in the centre of London when it's so expensive?'

So we also asked the team to look at another Dolphin Living scheme, the New Era estate in Hackney, where we've introduced an innovative income based rent scheme – called 'Personalised Rents' – to see if there is a better way for boroughs to define 'affordable rents' when they negotiate planning agreements (called S106 agreements) to avoid 'over-subsidising' some of the

tenants – which we believe the current arrangements enable. This would help make more resources available to create more affordable homes.

This new research shows:

1 The economic value of providing discounted rental housing to key workers is, on average, £27,000 per household. From this we have deducted the cost of providing it of c.£14,000. The net benefit to London's economy per household is at least £12,500 per annum.

2 Although it is marginally cheaper to provide key worker housing in outer boroughs, there are significant costs to be offset – transport, time, etc, and these almost negate the benefits of doing so. And because costs of housing in outer boroughs are rising so quickly, the differential is disappearing. Wherever we look across London there is a problem of 'affordable' living. If we wish to avoid the 'doughnut' effect – evident in Paris – where the workforce is 'ghetto-ised' in an outer suburban ring, we need to make provision for key workers across London. Failure to do this will have serious implications for the London economy.

3 The approach to fixing rents in S106 agreements typically over-subsidises a percentage of tenants who could afford to pay more. A personalised rent model, which we have applied at the New Era Estate would be more cost effective and allow more key worker housing to be created.

The 'Squeezed Middle' problem and resulting skills shortages have been well documented by others, notably the CBI, London First, the Peabody Trust, Centre for London and the Resolution Foundation.

We believe there are answers. The London Land Commission is compiling a database of public land that can be developed for homes. The new Mayor Sadiq Khan has instructed Transport for London to make its underused land available for development. New policies are being considered to encourage the rented

sector and there is an estimated £30bn of institutional money earmarked for rented property.

One big obstacle is the higher land value that development of for-sale homes commands compared to for-rent. If a significant amount of the land that comes forward could be designated for development ONLY for rental products (market and discounted rents) then this would attract investment from long-term investors, who have stated their interest, and who, given access to the land, would build and let the housing at the scale, and to the quality, that London desperately needs.

We do not need more homes for sale. We need homes for working Londoners.

The Mayor and central government can make this happen if they change thinking around what is really 'best value' for London when public land is sold. We think this research helps make the case for that change.

Jon Gooding
Chief Executive
Dolphin Living



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Executive Summary

This report presents a variety of evidence on the economic and social challenges London has faced over the past two decades, and considers the implications for future housing policy.

Our focus is on the provision of Discounted Rental Accommodation in London, and its potential to mitigate negative impacts arising from a continued increase in costs of accommodation, that far outstrips wage growth for a 'squeezed' middle of workers. The study builds on findings from a previous report that began this programme of research, and we are grateful for continued funding from Dolphin Living (DL).

Within the economic literature it is recognised that the value of an individual worker's productive contribution is not always fully reflected in the value of the wage they earn. For instance, the wage of teachers is much lower than the productive contribution they make to the economy – their work is associated with a high 'positive externality' or 'spillover'. This also applies to nurses and other public sector 'key' workers – their value to the London economy is much higher than their wage and as a result, we argue that DL developments help tackle this implied market failure.

When considering the additional teachers, nurses and other public sector workers in DL funded developments, the calculations of researchers provide estimates of the value to the London economy and society, of overcoming these market failures. A key part of the value added from DL developments is the fact that, when compared to the counterfactual state of the world (which we create using Labour Force Survey data), there are higher proportions of these 'key' workers whose value to the London economy is much greater than their remuneration. The provision of accommodation to these key workers, changes the local labour market mix to include individuals who have a higher value to the London economy, even if their wage does not reflect this. In addition to these public sector

workers, there are a number of occupations in the private sector which are also of much greater value to the London economy than their earnings would suggest.

For instance, those working in London's *Mainstream Cultural Attractions* provide an essential service to the London economy. An individual who contributes to the successful run of a sell-out show will make a contribution well beyond the immediate takings at the box office – their work will lead to increased revenues from surrounding businesses, it will likely make some contribution to the reputation of London as a cultural centre, having a positive impact on tourism and also acting to draw in more individuals to work and live in London. Because these individuals are paid well below their true value to the economy, economic theory would suggest an expansion of their numbers; but exactly the opposite has happened, as the steep rise in housing costs has made the wages on offer even less attractive.

We classify the following as 'key workers' amongst London's squeezed middle, and find that 52% of DL residents fall into this category of key worker:

- Teachers, Nurses and Emergency Service workers.
- Those working in areas that fuel London's Creativity, Innovation and 'New Movements' who are essential for the success of developments such as Inner East London's Tech City.
- Those working to support London's Mainstream Cultural Attractions.
- Those working in London's public services outside of Health and Education (Civil Servants) and those working in the Charitable Sector.

The Estimated Benefits of Dolphin Living in King's Cross and Soho

We estimate the economic impact arising from DL developments at King's Cross (N1) and Hopkins Street (Soho), based on these economic arguments. The estimates are created for 214 tenants, resident in 77 apartments at the King's Cross location and 64 apartments at the Hopkins Street (Soho) location.

The suggestion from our model is that 141 units (for 214 tenants) in DL developments at King's Cross and Soho, provide a benefit of £3.8 million per annum. This includes consideration of the negative impact of £554,000 arising from lower incomes associated with a less affluent distribution of occupations, and the potential for a percentage of units to remain partially occupied for a large part of the year under the market-rental scenario.

Calculating the annual revenue that would accrue from rents charged by DL, the implied subsidy is approximately £2 million and this gives an estimated benefit-to-cost ratio of 1.9 for Dolphin Living developments. It is important to note that the costs used here, cover 100% of the 214 DL residents; but the benefit is calculated for only 52% of residents who we identify as key workers. Therefore, we can consider that the benefit-to-cost ratio for Dolphin Living developments lies somewhere between 1.9 and 3.7. Anything over 2 is considered as 'high value' by the National Audit Office.

London's Squeezed Middle

Exact definitions of the 'squeezed middle' vary according to the topic under scrutiny, and the perspective from which the issue is approached. The Resolution Foundation was one of the first bodies to systematically analyse this concept, and considers households earning just below median incomes across the UK (Resolution Foundation, 2013; page 5). More specifically, they define the squeezed middle as households with incomes between the 10th and 50th

percentiles, who do not receive more than 20% of their income from benefits – they suggest that this group continue to experience a squeeze on living standards, and here we argue that this is particularly so for the equivalent range of households in London.

Our estimate of value added from DL developments derives from the value that 'key workers' in the squeezed middle bring to the London economy, and we do not consider any value from [the 48%] of workers in DL developments who are part of the wider squeezed middle, but who are not considered as 'key'. We argue that this represents a cautious approach to evaluation, as many of these other workers will be residents in the local borough, and one can argue that there are social benefits to provision of discounted rental accommodation. One reason for our caution, is that estimates of such social benefits are scarce. However, it is also based on the literature that details the decline in demand for many 'mid-skill' jobs, that have typically been associated with those in the middle of the income distribution – a phenomenon that has been described as a 'hollowing out' of the labour market (McIntosh, 2013).

Many commentators make a case for some form of support to this wider squeezed middle, outside of those who are 'key' workers. However, the lack of empirical evidence on the benefits of such interventions, and the decline in demand for many 'mid-skill' jobs, leads us to concentrate on the value of key workers in this group.

Demographics and Housing in Central, Inner and Outer London

Our approach to analysis of the value of discounted rental accommodation uses a 'local' counterfactual, and this allows us to estimate how much an intervention changes the 'mix' of local labour supply. We argue that the current cost of accommodation is leaving an increasing number of key workers locked out of the local labour market, and we can value the DL intervention by considering how much they boost the

supply of these key workers, by comparison with the existing mix of working residents. However, one could argue that we should boost supply of our key workers (i.e. alter the labour supply mix available to London's employers) by moving them to accommodation in Outer London.

Our analysis of occupation and industry sector using Labour Force Survey data, shows that this is already happening to a certain extent, with those in occupational groups below professional and managerial level being squeezed further and further out of the centres, and away from areas with good transport links. One could argue that there is no need to change the 'local' labour force mix in Central/Inner London (to boost those whose work has a much wider 'unrecognised' value to London), as there is plenty of affordable housing in the Outer regions – perhaps we don't need to change the local labour market mix by locating residents in Central/Inner London, because the local labour supply mix can be impacted by Outer London residents.

However, our analysis suggests that, the direct costs of travel, the opportunity cost of time whilst commuting, and the need to secure higher percentage returns in less affluent areas of London (i.e. compression of yields); tend to offset many of the savings from location of workers in cheaper, but less easily accessible, parts of London. Whichever area of London we consider the challenge remains the same, as any improvements in transport infrastructure, have an immediate impact on the costs of accommodation. Expanding transport infrastructure is essential to the continued success of London, but as soon as an area gains better transport links, the cost of housing rises, and locks out many of the key workers on which the capital depends.

This is something that needs to be taken into account for all those in lower socio-economic groups who are steadily being pushed to the periphery. However, this study is particularly concerned with individuals in our key skill groups – the quality of life associated with a long commute will simply not be sufficient to justify working in London as a teacher, nurse, theatre worker,

software analyst etc. The contribution of these workers to London is essential, but the wedge between their value to the capital (much of it not directly captured by their employer) and their real wage, will only continue to grow, as the cost of 'living' in London continues to rise [whether this is the 'cost of living' associated with residence in the expensive centre, with limited direct and opportunity costs of commuting; or in the less expensive Outer London area, with all the offsetting costs of commute].

In addition to these compelling economic arguments for interventions [including discounted rental developments] that accommodate key workers in London's squeezed middle, this discussion taps into a wider concern. Our analysis of ward-level LFS data highlights the continued squeezing of resident populations who are not working at the very top of the occupational ladder (whether or not they are key workers). Whilst there is more occupational variation the further we move from the centre; over time, this is decreasing in all areas. We are steadily seeing a move towards more and more Inner London areas exhibiting the same characteristics of the Central region; and this is also spreading to Outer London.

These trend occupational changes are apparent in the rest of the UK, but in London they have become 'super-charged', as the rising cost of accommodation, re-enforces an increasing geographic segregation according to socio-economic group. One can see improved transport links as part of the solution, and we must pursue these. However, any area that obtains significant improvements in transport links, experiences a relative increase in the costs of accommodation that pushes out those on lower incomes. The process is dynamic and constantly changing, and what is 'affordable', similarly, constantly changes. However, the impact is the same, as it increases geographic segregation by occupation (and therefore education and other indicators of 'difference'); re-enforcing the geographic differences that we saw in voting patterns following the June 23rd referendum.



A Personalised Rent Model in Dolphin Living Developments

The approach being adopted by DL at the New Era Estate uses the Minimum Income Standard (MIS) developed by the Joseph Rowntree Foundation (with Loughborough University) [JRFMIS]. For each household type, this allows DL to calculate the minimum household budget required to achieve an acceptable standard of living; they can then compare this to the net income of the household; and a proportion of the remaining difference (or 'Residual Income') is set as the rent.

Our approach is to use existing information on the 141 tenant households that form the focus of our analysis; and estimate the revenue from rental income if a Personalised Rent approach were taken. We then compare this to the DL intervention scenario under current approaches to renting, and consider the implications.

We find that the Personalised Rents approach has clear potential to deliver significant Social Benefits, by matching rents charged to London's working households, with their ability to pay – another way of looking at this, is that current Section 106 agreements lead to some amount of over-subsidisation, according to the JRFMIS calculations. This is in addition to the economic benefits we have detailed elsewhere in the report, arising from the accommodation of key workers in the squeezed middle. There is a lot more work to be done if such an approach is to be implemented, but we would suggest that the calculations and discussions in this report represent a good starting point for wider consideration of this approach and how this could be incorporated in Section 106 agreements.

Conclusions and Policy Recommendations

The approach adopted in this report allows us insight into the relative costs of location in different regions of London. When we consider moving individuals to regions of the capital that have lower average costs of accommodation (and therefore require a smaller implied subsidy), there are significant offsetting [direct and opportunity] costs of commuting. This report serves to underline that, wherever we look across London, there is a problem of affordable living. In our attempts to clarify the location decisions facing those who provide discounted rents, we have underlined the lack of choice facing many workers, who are at risk of being squeezed out of the London labour market.

The pattern we describe is inevitable in many ways, for a city that will hopefully continue to thrive. For those key workers who are essential to the continued economic success of London, but under-valued because of a market failure, there is a strong economic case for something to be done. This will go some way to retain an amount of diversity in this increasingly segregated city, but more importantly it will help ensure that the success continues. A city that struggles to attract good teachers, nurses, creatives, software analysts and others, will find its success under threat.

The Personalised Rent calculations in this report are very much a first step in considering the wider

implications of such a model for working Londoners. The underlying challenge that becomes apparent from our calculations, is the need to obtain a balance between (i) retaining incentives to effort in the labour market and adopting an approach that is acceptable to higher income earners; whilst (ii) allowing sufficient revenues to provide discounted rents to those who have the greatest need. However, this is an approach that DL is already implementing on the New Era Estate and the response of tenants has been very positive, so this is not a wholly 'academic' exercise.

More work needs to be done if the Personalised Rents (PerR) approach is to be rolled out generally. However, there is clear potential for the adoption of a PerR model to allow for the provision of more subsidised housing, without negatively impacting on the affordability of existing/planned housing. A common theme throughout the report is the necessity for an expansion of the approaches used in London to tackle problems of accommodation, and this report is a first step in tackling the lack of discussion around a Personalised Rents approach, as part of the raft of measures considered. If we are going to support a thriving city, then key workers need to be better accommodated; and the implication from our calculations, is that a Personalised Rents approach may be particularly effective in achieving this outcome at minimum cost.

"When we consider moving individuals to regions of the capital that have lower average costs of accommodation (and therefore require a smaller implied subsidy), there are significant offsetting [direct and opportunity] costs of commuting. This report serves to underline that, wherever we look across London, there is a problem of affordable living."



1. Introduction

This report presents a variety of evidence on the economic and social challenges London has faced over the past two decades, and considers the implications for future housing policy.

Our focus is on the provision of Discounted Rental Accommodation in London, and its potential to mitigate negative impacts arising from a continued increase in costs of accommodation, that far outstrips wage growth for a ‘squeezed’ middle of workers. The study builds on findings from a previous report¹ that began this programme of research, and we are grateful for continued funding from Dolphin Living (DL). Themes pursued in the current report are continuations of issues flagged in the previous study.

First, a key outcome of the previous programme of research was the estimation of value added to the London economy and society, from a development funded by Dolphin Living [One Church Square]. The previous report began with a detailed review of the London economy, the academic literature that considers

the economics of agglomeration, and other socio-economic issues relevant to large global cities. For instance, there is an extensive economic literature estimating the productive contribution teachers make to the wider economy, and the extent to which this productivity is not reflected in their earnings. The work of teachers is associated with a high ‘positive externality’ or ‘spillover’; and this is an argument that also applies to nurses, and a range of other public, and private sector, workers. These ‘key’ workers have a particularly high value to the London Economy, but are increasingly squeezed by the widening gap between their wages and accommodation costs. Accommodating such workers provides a benefit to the London Economy [in addition to the direct productivity benefit to their employer] that can be estimated from economic data.

¹ Urwin, P., D’Costa, S., Lister, M., Rich, V. and Hedges, P. (2014), Housing Policy in High Density Global Cities: a Cost Benefit Model, *Dolphin Square Foundation*.

Section 2 begins with a brief summary [in Section 2.1] of discussions from the previous study, reviewing the academic literature to identify key workers who are associated with these spillover benefits. Section 2.2 then presents an estimate of the value of DL developments [at King's Cross and Soho], that provide Discounted Rental Accommodation to London's squeezed key workers in the private and public sectors. This extends our previous model, to include a broader range of accommodation, which on [average] is provided to DL tenants at 40% of market rents (varying from 25% to 70% depending on the specific unit of accommodation).

Section 2.3 provides a brief introduction to the remaining aspects of the study, explaining how the estimates in Section 2.2 relate to issues of skills demand, and the wider group of workers that commentators consider as the 'squeezed middle'. In doing so we touch upon questions such as, why do individual employers not pay for this accommodation?

An outcome of our discussions in Section 2.3, is the need to identify the changing skills mix in London's 'local' labour market, over recent decades. More specifically, in Section 2.2, the estimated value to London from Discounted Rental Accommodation [DRA] is based on the fact that DRA alters the skills mix in the local labour market - by accommodating key workers. This raises questions of what we mean by the 'local' labour market; how the skills mix has been changing across London; and the role of transport infrastructure within this context. To begin the process of tackling



these issues, Section 3 considers the changing patterns of occupation and industry sector amongst London's resident working population, since the mid-1990s, when the cost of housing started to accelerate.

The analysis in Section 3 describes socio-economic changes separately across the Central, Inner and Outer London areas between 1994 and 2014, using

the quarterly Labour Force Survey. The findings from Section 3.1 identify a number of interesting demographic shifts in the makeup of London society over this twenty-year period. As one might expect, any such shifts are most pronounced in Central London, where increases in the cost of accommodation have been highest. However, we also identify similar changes in the makeup of communities in the wider Inner, and Outer, London areas, and this provides us with interesting insights into what we mean by the 'local' labour market. Section 3.2 then takes this issue further, with a key question arising from the previous study [of where to locate London's discounted rental accommodation], leading to further clarification on the role of transport infrastructure and the challenges facing London.

At present DL operates mainly in Central London, in some of the most expensive locations in London. The value to London of a DL development is in housing workers whose productive contribution may be lost to the wider London economy - i.e. by changing the local skills mix (where 'local' covers at least the Inner London area). We therefore consider where these workers are best accommodated, in and around London. Section 3.2 sets out three broad options for location; in an area where housing barriers are 'extreme' (mainly Central London); an area where housing barriers are 'high' (a broader Inner London area, outside of the Centre) and then key parts of the Outer London region. The

discussion provides a broad overview of the trade-offs we might expect from location of workers in different regions of London, and begins to uncover the fact that affordable housing is a problem faced in many areas of London, not just the centre.

Section 4 considers one approach that may help with some of the challenges identified in previous sections. A Personalised Rent (PerR) model takes into account the amount of disposable income required by each household to achieve an acceptable standard of living (as defined by the Joseph Rowntree Foundation), and charges a rent based on this. This is a newly emerging area for policy consideration, and little has been written on this issue - what has been written does not take a quantitative approach to consideration of impacts. Section 4 considers the implications for DL if it were to adopt this approach across its developments.

Section 5 brings together key findings from various sections of the report, concludes and presents recommendations. At a time when the new mayor is formulating an approach to the housing challenge, the current study provides important new evidence. A particular focus of discussion in Section 5 is the issue of Section 106 Agreements.



2. Estimating the Value of Dolphin Living Developments

The 2014 report began by considering the range of economic and social challenges that face large global cities such as London and the implications these have for housing policy.

The report identified five areas of the economy, critical to London's future economic growth. Section 2.1 summarises the assumptions that underpin our estimation of economic value from DL developments, arising from discussion of these economic and social challenges. Section 2.2 then sets out the estimated benefit arising from DL developments across the King's Cross and Soho areas. Section 2.3 concludes with a consideration of key issues that form the focus of discussion from Section 3 onwards.

2.1 What are the Economic Benefits of a Dolphin Living Development?

Within the economic literature it is recognised that the value of an individual worker's productive contribution is not always fully reflected in the value of the wage they earn. For instance, Harvard University's Prof. Eric Hanushek (2010) has estimated the *Economic Value of Higher Teacher Quality*; showing that a small increase in teacher quality leads to substantial increases in the discounted future lifetime earnings of the children they teach. However, the wage of these teachers is much lower than the productive contribution they make to the economy – their work is associated with a high 'positive externality' or 'spillover'. This also applies to

nurses and other public sector 'key' workers – their value to the London economy is much higher than their wage² and as a result, we argue that DL developments help tackle this implied market failure. What do we mean by 'market failure'?

Generally, economic theory suggests that when the price of a good or service is equal to the [marginal] cost of producing it, or when the wage of a worker is equal to the [marginal] benefit to the firm, of employing them, then the market is acting effectively to allocate scarce resources to the correct productive activities (a situation where there is no market failure). If there are activities that provide a much higher value to the economy than the current cost of doing so, the implication is that we should expand these activities³, until the [marginal] cost equals the [marginal] benefit.

When considering the additional teachers, nurses and other public sector workers in DL funded developments, the calculations of Hanushek and others provide estimates of the value to the London economy and society, of overcoming these market failures. A key part of the value added from One Church Square was the fact that, when compared to the counterfactual state of the world⁴ (which we created using Labour Force Survey data), there are

² There is often a wage premium associated with working in London, but in most sectors this is inadequate to compensate for the higher costs of accommodation and/or to internalise any externalities.

³ In this case, efficiency is achieved when the wage [w] equals the Marginal Revenue Product of a worker. Our suggestions remain valid, when considering theories of wage setting that recognise an amount of market failure arising from asymmetric information, such as efficiency wages, the concept of incomplete contracts and the idea of wage posting. Effort cannot be effectively monitored/measured for most individuals – if all the students, or parents of students, knew the value of a good teacher (and could identify them) they could pay more. Efficiency wage arguments may be even more pertinent when productivity is hard to capture and dispersed amongst many beneficiaries.

⁴ That is, our estimate of what the distribution of occupations would be at One Church Square if DL were not providing discounted rental accommodation – hence counterfactual, as it is 'counter' to the 'factual' state of the world

higher proportions of these ‘key’ workers whose value to the London economy is much greater than their remuneration. The provision of accommodation to these key workers, changes the local labour market mix to include individuals who have a higher value to the London economy, even if their wage does not reflect this.

In addition to these public sector workers, the 2014 report made the case that a number of occupations in the private sector were also of much greater value to the London economy than their earnings would suggest (one of the key outcomes from the review of economic and social challenges facing London). For instance, those working in London’s *Mainstream Cultural Attractions* provide an essential service to the London economy. The evidence is that individuals are drawn to large cities because of the increased demand for social interactions (Glaeser et al., 2001; Glaeser and Gottlieb, 2006) and cultural attractions are a key part of this (not least, as a ‘pull’ for the ‘creative classes’ of Richard Florida, 2002, 2003).

Florida and Gates (2001) find that cities with many “bohemians” (creative cities) or with large gay populations (tolerant cities) innovate more; and this is very closely associated with the ‘pull’ of cities as centres of consumption. According to Glaeser et al (2001) this can happen because there are goods and services such as opera or fine restaurants that are available in cities but not in rural areas; cities act as centres of aesthetic consumption (beautiful architecture); and Glaeser et al. (2001) show that high-amenity cities have grown faster than low-amenity cities. Workers engaged in production and support of these cultural attractions provide a clear benefit to London, that is not reflected in their earnings (because it is not captured directly by their employer) – this is before we have considered their role in supporting tourism revenues.

An individual who contributes to the successful run of a sell-out show will make a contribution well beyond immediate takings at the box office – their

work will lead to increased revenues from surrounding businesses, it will likely make some contribution to the reputation of London as a cultural centre, having a positive impact on tourism and also acting to draw in more individuals to work and live in London. Because these individuals are paid well below their true value to the economy, economic theory would suggest an expansion of their numbers; but exactly the opposite has happened, as the steep rise in housing costs has made the wages on offer even less attractive.

These arguments underpin our development of a model that captures the costs and benefits of DL developments. Across the public and private sectors, there are key workers that provide value to London that (i) is essential to the effective functioning of the regional economy; but which (ii) is not reflected in their earnings; and therefore (iii) is most at risk of being underprovided as a result of rising costs of accommodation. As we shall see in Section 2.3, these workers can be seen as a subset of the wider group, who have been described as the ‘squeezed middle’ (see for instance, Resolution Foundation, 2013); who face rising costs of living, but stagnating wages.

In addition to these arguments, we also consider the literature on ‘economic diversity’. Glaeser et al. (1992), Henderson et al. (1995), Combes (2000) and Rosenthal and Strange (2003) find that economic diversity enhances growth, whilst city specialisation fails to do so. This suggests that knowledge spillovers are greater across, rather than within, industries and that cross-fertilisation of ideas enhances growth (for instance diversity increases growth in high-tech firms). The evidence suggests that city specialisation does not enhance growth while diversity does and this resonates strongly in the case of London, where one possible scenario going forward is a growing dominance of the financial and business services sector to the detriment of economic diversity. Economic diversity is also considered when calculating the benefits of DL development in Section 2.2, but a lack of empirical evidence limits its contribution to our estimate of benefit from DL developments.

2.2 The Estimated Benefits of Dolphin Living in Kings Cross and Soho

This section estimates the economic impact arising from DL developments at King’s Cross (N1) and Hopkins Street (Soho), based on the economic principles set out in Section 2.1. The estimates are created for 214 tenants, resident in 77 apartments at the King’s Cross location and 64 apartments at the Hopkins Street (Soho) location. Table 1 details the rents charged by DL in Hopkins Street and King’s Cross, as of September 2016.

Table 1: Dolphin Living Gross Rents and Estimated Market Equivalences

Hopkins Street			
	Gross rent per week	% of Market Rent	Distn of 64 Units
1 Bedroom	£171	38%	5
	£194	44%	5
	£295	67%	9
2 Bedrooms	£190	30%	10
	£217	34%	10
	£307	49%	18
3 Bedrooms	£202	25%	2
	£234	29%	2
	£362	44%	3

Kings Cross, N1			
	Gross rent per week	% of Market Rent	Distn of 77 Units
Studio	£177	52%	25
1 Bedroom	£239	58%	25
2 Bedrooms	£296	51%	11
	£338	58%	16

Source: *Dolphin Living*, September 2016

For instance, when considering Hopkins Street, the implied subsidy is highest for the category of 3 bedroom units being let at a gross rent of £202 per week, as this is only 25% of the market rent for an equivalent property in the same borough. The lowest level of implied subsidy is associated with the 1 Bedroom units being let for £295, as this is estimated at 67% of the market rent. For the King’s Cross development, the rents charged for all units vary between 51% and 58% of market rents charged in the Borough of Camden.

Section 2.1 identifies a number of occupations in the private and public sectors where we are likely to see the market underprovide suitably skilled individuals – because the wages on offer do not reflect the wider economic contribution of these workers, in addition to that captured by their employer. Much of the value we estimate for DL developments arises because the occupational distribution of the 214 tenants contains a higher proportion of these private and public sector workers ‘key’ to the successful functioning of the London economy; who are part of a wider ‘squeezed middle’ of workers. We compare the value arising from the distribution of occupations in the situation where DL provides discounted rental accommodation, to the situation we would expect if development of these locations were left to the market (with the ‘left to the market’ scenario calculated using data from Quarter 1 of the 2015 Quarterly Labour Force Survey).

Table 2 shows the occupational distribution of 214 tenants in the King’s Cross and Soho developments, under the current DL approach to rent setting reflected in Table 1. For instance, there are 26 Nurses and this amounts to 12% of the total resident population; whilst the 10 teachers constitute 5% of tenants. There are 48% in our category of ‘Other Private sector’ and this reflects DL targeting of a range of indicators when considering applicants for discounted rental accommodation – which means they accommodate a wider range of workers from the squeezed middle, not just the ‘key’ workers identified here. The focus in this section is on the value to London of housing ‘key’ workers within this wider squeezed middle group; but we return to consideration of the wider group from Section 2.3 onwards.

Table 2: The Distribution of Occupations in Dolphin Living Developments ⁵

King's Cross (77 flats, 118 tenants) + Hopkins St (64 flats, 96 tenants)

Occupation/Sector	Number	Percentage
<i>Public Sector</i>		
Civil Servants	13	6%
Teacher	10	5%
Education (excluding Teachers)	11	5%
Nurses	26	12%
Health (excluding Nurses)	3	1%
Emergency Services	1	0%
Charitable Sector	5	2%
Transport	3	1%
Total Public Sector	72	34%
<i>Private Sector Key workers</i>		
Research	6	3%
Mainstream culture (incl. Theatre/West End)	8	4%
Creative (including art, design, etc.)	13	6%
IT (including software development)	13	6%
Total Private Sector Key Workers	40	19%
<i>Other Private Sector</i>		
Real Estate, Finance and Business Services	19	9%
Administrator/Assistant	17	8%
Customer Service	1	0%
Engineering	1	0%
Legal	3	1%
Sales/Marketing	5	2%
Manager	24	11%
Tradesperson	2	1%
Construction	2	1%
Other	24	11%
None	4	2%
Total Other Private Sector	102	48%
Total	214	100%

Source: Dolphin Living, September 2016

⁵ Rounding error means that our 34%, 19% and 48% do not add to 100%

Table 3: Estimated Distribution of Occupations under Market Rents

Estimates of comparable Inner London occupation/industry distribution

Occupation/Sector	Number Inner London	Percentage
<i>Public Sector</i>		
Civil Servants	197,872	11.4%
Teacher	44,028	2.5%
Education (excluding Teachers)	15,535	0.9%
Nurses	34,574	2.0%
Health (excluding Nurses)	23,485	1.3%
Emergency Services	5,162	0.3%
Charitable Sector	66,077	3.8%
Transport	9,211	0.5%
Total Public Sector	395,944	22.7%
<i>Private Sector Key Workers</i>		
Research	16,948	1.0%
Mainstream culture (incl. Theatre/West End)	32,433	1.9%
Creative (including art, design, etc.)	78,939	4.5%
IT (including software development)	76,329	4.4%
Total Private Sector Key Workers	204,649	11.8%
<i>Other Private Sector</i>		
Real Estate, Finance and Business Services	160,334	9.2%
Administrator/Assistant	146,137	8.4%
Customer Service	26,619	1.5%
Engineering	15,004	0.9%
Legal	40,996	2.4%
Sales/Marketing	146,585	8.4%
Manager	222,310	12.8%
Tradesperson	15,056	0.9%
Construction	28,175	1.6%
Total	1,401,809	81%
Remaining	326,917	19%
Total	1,728,726	100%

Source: Quarterly Labour Force Survey, January-March 2015

We are likely to observe a different distribution of occupations in this DL financed project than if the same buildings were provided at market rents, not least because of the selection processes that DL implements to select tenants. The key question for our analysis is therefore, how many teachers, civil servants, nurses, software developers, theatre workers and others would we expect to see in these 141 apartments if DL were not providing the accommodation at discounted rents?

Table 3 presents our estimate of the occupational distribution that we would expect, in the case where these 141 apartments were provided at market rents. The estimate is created by carrying out an analysis of the 1st Quarter 2015 version of the Quarterly Labour Force Survey⁶. We use this survey to produce an estimate of what the distribution of occupations/industries looks like for the Inner London resident population, and scale this to 214 working individuals. This then constitutes our 'counterfactual' scenario – that is, the skills mix of the resident population that would likely be observed in the state of the world where DL does not intervene to provide discounted rental accommodation at these two locations⁷. This is the distribution of occupations we would expect in the absence of DL, and from this we can create estimates of the value that these individuals bring to the London economy.

We may expect the [productivity] contribution of those resident in DL developments [Table 2] to be greater [than Table 3], because we expect more key workers to be accommodated, whose value to the London

economy is much higher than their wage. However, working in the opposite direction, one of the potential downsides of a DL development is the loss of higher earners who would have rented/purchased properties in the absence of DL intervention – by definition these individuals would have to pay higher housing costs and therefore, on average, will have higher earnings (again calculated using the 2015 QLFS)⁸.

Our approach of representing both a DL-rental, and Market-rental, scenario allows us to adopt a more straightforward framework for analysis⁹. Readers who wish to gain greater insight into the technical detail of the model should refer to the 2014 report. However, it is important to detail here the evidence underpinning our estimation of the value of Externalities, Productivity and Spillovers associated with each category of worker in Tables 2 and 3; as this is where the majority of economic impact comes from, but also where we face challenges in identifying appropriate research to estimate impacts (especially for key workers in the private sector).

Table 4 summarises the sources underpinning our estimates of impact arising from the different occupational categories, and the relevant earnings estimates. For instance, if we take Hanushek's most conservative estimate for a teacher who, in terms of quality, is at the 60th Percentile (slightly above the average) with a class of 30 children, the suggestion is that this translates into a gain of \$158,745 or £96,834.45 to the children they teach (and therefore society)¹⁰. Thus, when we are considering the additional teachers in

⁶ Office for National Statistics, Social Survey Division and Northern Ireland Statistics and Research Agency, Central Survey Unit, Quarterly Labour Force Survey, January - March, 2015. Colchester, Essex: UK Data Archive [distributor].

⁷ The counterfactual scenario assumes all residents are in employment (i.e. no economically inactive or unemployed individuals resident in the developments). Given the locations being considered this seems justifiable, and errs on the side of caution, as inclusion of the unemployed or inactive in our counterfactual, would boost the estimated value added from Dolphin Living intervention.

⁸ Part of the calculation of counterfactual incomes requires the use of household type (i.e. how many couples we have with children etc.) and readers should refer to Urwin et. al. (2014) for more detail on these calculations.

⁹ For instance, we might argue that some consideration needs to be given to disposable income, rather than gross income. However, any such considerations apply equally to our discounted rental, and counterfactual, scenarios; and therefore tend to cancel out, when considering the net impact.

¹⁰ The exchange rate used here pre-dates the recent downturn in the value of sterling.

Table 4: Sources of Information and Estimates of Productivity/spillover Impacts

Occupation/Sector	Source of estimate	Value
Public Sector		
Civil Servants	LFS 2013 average earnings multiplied by 3	£70,656
Teachers	Hanushek, 2010 (£96,834.45) plus earnings multiplied by two	£138,309
Education (excluding Teachers)	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£87,313
Nurses	Dall, Chen, Seifert, Maddox and Hogan (2009) (£34,099) plus earnings multiplied by two	£93,989
Health (excluding Nurses)	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£54,438
Emergency Services	LFS 2015 average earnings multiplied by 3	£80,409
Charitable Sector	LFS 2015 average earnings multiplied by 3	£80,156
Transport	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£71,547
Private Sector Key workers		
Research	LFS 2015 average earnings multiplied by 3	£97,704
Mainstream culture (incl. Theatre/West End)	LFS 2015 average earnings multiplied by 3	£100,292
Creative (including art, design, etc.)	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£112,848
IT (including software development)	LFS 2015 average earnings multiplied by 3	£142,707
Other Private Sector		
Real Estate, Finance and Business Services	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£99,315
Administrator/Assistant	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£46,283
Customer Service	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£36,062
Engineering	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£169,819
Legal	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£57,151
Sales/Marketing	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£52,888
Manager	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£107,959
Tradesperson	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£73,540
Construction	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£55,627
Remaining	LFS 2015 average earnings multiplied by two (Dearden, Reed & Van Reenen, 2005)	£42,062

DL-funded apartments, compared to the counterfactual, Hanushek's calculations give us some indication of the value this has to the London economy and society¹¹.

We are also able to draw on research that calculates the external economic value of a nurse¹² where the suggestion is that in the US national productivity is increased by about \$9,900 per year, per additional registered nurse (RN) and medical savings are worth an average of \$46,000 per RN. For each nurse this translates into an additional external benefit of \$55,900 or £34,099 in sterling¹³. Together with nurses and teachers, we identify the following 'key workers' amongst the squeezed middle:

- Those working in areas that fuel London's Creativity, Innovation and 'New Movements' who are essential for the success of developments such as Inner East London's Tech City.
- Those working to support London's Mainstream Cultural Attractions.
- Those working in London's public services outside of Health and Education (Civil Servants) and those working in the Charitable Sector.

However, whilst there seems to be a strong argument that providing sub-market rental accommodation to these individuals has a value to the London economy, there is little specific research to draw on. McIntosh (2011)¹⁴ utilises the findings of research from Dearden, Reed and Van Reenen (2005)¹⁵ that suggests training leads to an increase in productivity that is double the increase in earnings. McIntosh (2011) underlines that estimates from Dearden et. al. (2005) 'consider only

productivity spillovers at an industry level', and do not take into account wider social and economic benefits. Following this research, our cost-benefit model assumes that immediate productivity impacts of workers are twice their wage, and for teachers/nurses we have the above estimates to provide us with some indication of the value of spillovers, in addition to this.

For the other categories of key worker listed above, we multiply the wage by three (to take into account the additional external value of these jobs to the London economy, in addition to productivity impacts that are roughly double the wage according to Dearden et. al.). This is not ideal, but it should be remembered that we are explicitly taking into account the counterfactual in these situations and therefore any increase in the scale of external impacts also increases the value of our counterfactual. In addition, we estimate no figures for the economic and/or social value of providing affordable rents to the 48% of DL tenants who are in the 'squeezed middle', but not identified as key workers (an issue to which we return).

We estimate the loss of income implied by a less affluent occupational distribution in Table 2, compared to Table 3, at £554,000 p.a. – a figure that is derived using gross incomes, rather than net incomes, and therefore may be expected to accentuate this potential negative impact from depression of consumption expenditures. Similarly, our counterfactual likely overstates the proportion of some key occupations, because it covers an area that has lower average costs of accommodation than the Central London areas. Taken together we argue that these approaches, and

¹¹ It is more accurate to say that these values provide an idea of the 'scale' of these external impacts, as the values relate to marginal increases in teacher quality, not the actual value of a teacher.

¹² Dall, T. M., Chen, Y. J., Seifert, R. F., Maddox, P. J., and Hogan, P. F. (2009), "The economic value of professional nursing", *Medical Care*, Vol. 47, No. 1; pp 97-104; as reported in Keepnews, David. (2013), *Mapping the Economic Value of Nursing: A White Paper*, Seattle: Washington State Nurses Association.

¹³ Again, using an exchange rate that pre-dates the current decline in sterling.

¹⁴ McIntosh, S. (2011), "Measuring the Economic Impact of Further Education", *Department for Business Innovation and Skills*, Research Paper No. 38.

¹⁵ Dearden, L., Reed, H., and Van Reenen, J. (2005), "Estimated Effect of Training on Earnings and Productivity, 1983-99", *CEP Discussion Papers* dp0674, Centre for Economic Performance, LSE.

the attributing of value only to key workers, offsets concerns over the use of a factor of 3 for occupations not covered in the research into externalities.

Having calculated the value of these occupations to employers, and the value of spillovers to the wider London economy, the suggestion is that 141 units (for 214 tenants) in DL developments at King's Cross and Soho, provide a benefit of £3.85 million per annum. This includes consideration of the negative impact of £554,000 arising from lower incomes associated with a less affluent distribution of occupations, and the potential for a percentage of units to remain partially occupied for a large part of the year under the market-rental scenario¹⁶.

This figure of £3.85 million marks the starting point for analysis in the current study, as we now move on to consider the offsetting costs that are incurred by DL in achieving this benefit. More specifically, Section 3.2 estimates the costs that one would likely incur in achieving this benefit across the Central, Inner and Outer London regions – with the analysis providing insight into what we might consider as the 'local' labour market, and how to view London's transport infrastructure within this context. Section 4 then estimates the costs of providing discounted rental provision, if DL were to adopt a Personalised Rent model. However, before this, Section 2.3 considers how our approach relates to wider policy debates that encompass the squeezed middle and issues of skills demand and supply.

2.3 London's Skills demand and the Squeezed Middle

This updating of estimates, to cover a wider range of DL developments, leads us to a variety of issues which now form the focus of investigation. First, it is important

to be clear on exactly what our estimates of economic impact represent and how they relate to more commonly considered questions on skills availability.

For instance, figures in the London Business Survey, (September 2014) suggest that two-thirds of firms (66%) reported difficulty recruiting highly skilled people, such as IT/technology specialists (20%), creative specialists (14%) and finance and engineering specialists (12%). The survey also reflects UKCES findings that skills shortages continue to be a problem for some businesses, as almost half of firms (45%) report that not all their staff have the right skills for the job. The same research shows that employers aren't able to fill almost a quarter (23%) of all vacancies in London due to a lack of applicants with the right skills.

Since these surveys were carried out, the economy has slowed. However, the most recent evidence suggests that in many of the same areas we have skills demand outstripping supply in London¹⁷, and this is unlikely to change significantly as a result of increased uncertainty following the 23rd June Referendum outcome. In our calculation of the benefits of a DL development, this evidence may be seen as useful – for instance, the shortage of IT/technology and Creative specialists provides further support for our suggestion that DL developments accommodating individuals from these professions, provide a value to the London economy. However, we do not necessarily have to observe reports of skills shortages in the occupations and industries that underpin our estimate of the value of DL developments, for these estimates to be valid.

Take the example of an employer who advertises the position of Production Manager in the Theatre, at a real wage $[w/p^{18}]$. We can expect the employer to set a wage $[w]$ based on calculation of the value that a

¹⁶ Our estimate of this value is 10%, which is a conservative take on the findings from Ramidus Consulting Limited (2013), "Taking stock: the relationship between Businesses and Office provision in the City", *City of London Corporation*, Research Report, March.

¹⁷ See for instance, CBI/CBRE (2016), *London Business Survey*, February

¹⁸ The real wage is a measure that reflects the purchasing power of the [nominal] wage you receive. It is your nominal wage $[w]$ divided by the price level $[p]$. If the cost of living rises (as represented by the general price level, p) your real wage falls, and this is the situation we find ourselves in when costs of accommodation rise.

Production Manager contributes, and the revenues they can expect from the show. If they offer a wage of [w] and there are no suitable applicants, they can consider raising the wage – and would likely be one of the employers reporting difficulties recruiting ‘creatives’ in skills surveys. We may consider that a Discounted Rental development helps to alleviate such problems, as it makes [w/p] more attractive by reducing [p]. However, in all of this discussion, the value of [w] only reflects the productivity gain to the employer from employing the Production Manager. As we have already discussed, even if the employer were able to fill the position at a wage [w], this would not reflect the individual’s true value to the London economy, in the case of ‘key’ workers; and considerations of economic efficiency would suggest a further expansion of employment in this area.

Because the wage [w] does not reflect the true economic value of a job in these situations, there will be too few individuals in London supplying their labour to fill such posts; and employers will not expand employment up to the efficient level, because they do not capture the wider benefits that accrue to the London economy. We argue that the nature of interventions that provide discounted rents act to reduce [p], effectively raising the real wage [w/p], and go some way to rectify this market failure. If, in addition to this situation, we observe skills shortages in some of these key professions, then we may argue that skills supply is even further from the ideal (efficient level) as it does not even meet existing (sub-optimal) levels of demand from employers.

However, there is an important distinction between these market failure and skills shortage arguments; and this is best illuminated by answering the question, why do employers not provide discounted rental accommodation (or simply raise the nominal wage on offer)?

In the case where employers face standard skills shortages, it is hard to argue against them bearing the cost of a higher real wage; or altering their processes to accommodate changing skill and wage relativities. In the case of skills shortages, the employer is offering a wage that will allow them to achieve a certain level

of profit (or equivalent in the public sector), and there is no suggestion that the employee has a value in addition to this direct productivity. In such a situation we may argue that the employer either puts up the wage or reconsiders their business model. Urwin et. al. (2014) discuss this further, considering the potential for rising costs of living in the capital to force employers to move. This is a concern, if the rising cost of living is driven by factors outside the labour market (such as the attractiveness of London property as an investment vehicle), but it is hard to argue that this represents a market failure. In the case where the productive value of private and public sector key workers is spread across many firms and individuals in London, the employer will face no incentive to raise the real wage; and we would not expect them to, as they do not stand to benefit significantly from any increased employment.

Finally, it is important to relate our approach to a wider literature that considers the ‘squeezed middle’. Exact definitions of the squeezed middle vary according to the topic under scrutiny, and the perspective from which the issue is approached. The Resolution Foundation was one of the first bodies to systematically analyse this concept, and considers households earning just below median incomes across the UK (Resolution Foundation, 2013; page 5). More specifically, they define the squeezed middle as households with incomes between the 10th and 50th percentiles, who do not receive more than 20% of their income from benefits – they suggest that this group continues to experience a squeeze on living standards, and here we argue that this is particularly so for the equivalent range of households in London.

For the whole of the UK, the Resolution Foundation approach translates into a range of gross annual household incomes between £12,000 and £30,000 for couples without dependents; for single parents with two dependents the range is between £13,000 and £32,000; and for couples with two dependents, this is between £17,000 and 41,000. In the Resolution Foundation report (2013), the authors suggest that close to one third of all working-age households fall into the category of ‘squeezed middle’, when aggregating across household types in the UK. The

authors do consider the regional distribution of these households and, as one would expect, using these income categories to define low-to-middle income families, London contains the lowest proportion.

However, for the purposes of this study, we need to adopt a different approach, as we wish to consider the sort of incomes that place a London household between the 10th and 50th percentiles, according to the income distribution in London. Answering this question in detail is an entire study in itself, but we can use data from the *Annual Survey of Hours and Earnings* [ASHE] (2015) and figures provided by the Greater London Authority (2012/2013¹⁹) to get some idea of the income and earnings bands we need to consider when talking of the squeezed middle in London, relative to the UK – and importantly, some idea of where our key workers sit within this group.

It is important to note limitations of our approach and those of existing studies. For instance, a study carried out by Leadbetter, Wilson and Theseira (2014; p37) suggests that, for London, the equivalent bands are £20,000 to £33,000 for working households (not retired) who are singles and/or single parents; and for couples with dependent children, they suggest a range between £25,000 and 43,000. The authors suggest that their approach to calculation of London’s squeezed middle (or ‘Endies’ as the report calls them), is in line with that used by the Resolution Foundation for the UK as a whole. However, the authors provide few details of their calculations and, importantly, they refer to ‘earnings’, rather than ‘income’. The Resolution Foundation bands include means-tested benefits (exclusive of tax credits) and therefore measure ‘income’, whereas ‘earnings’ typically refers to pay from employment. We do not wish to get into a detailed discussion over measurement issues, but the Leadbetter et. al. (2014) bands seem relatively low, when we consider that the median gross annual wage for those working in Inner London is £34,473, compared to a median of £22,044 for the UK as a whole (ONS, 2014).

¹⁹ <http://data.london.gov.uk/apps/gla-household-income-estimates/>

Moreover, using the GLA estimates of total Median [Gross] Annual Household Income (2012/2013), we can see that [as one would expect] any median wage figure for Inner London as a whole, hides a lot of variation across London boroughs, with Camden having a median of £43,750 and Westminster a figure of £47,510. The large majority of units in Dolphin Living developments cater to households with incomes that are at, or below, these median earnings bands for the relevant London boroughs where they are located. However, some of the most expensive three-bedroom units require much higher salaries in the region of £60,000-£70,000.

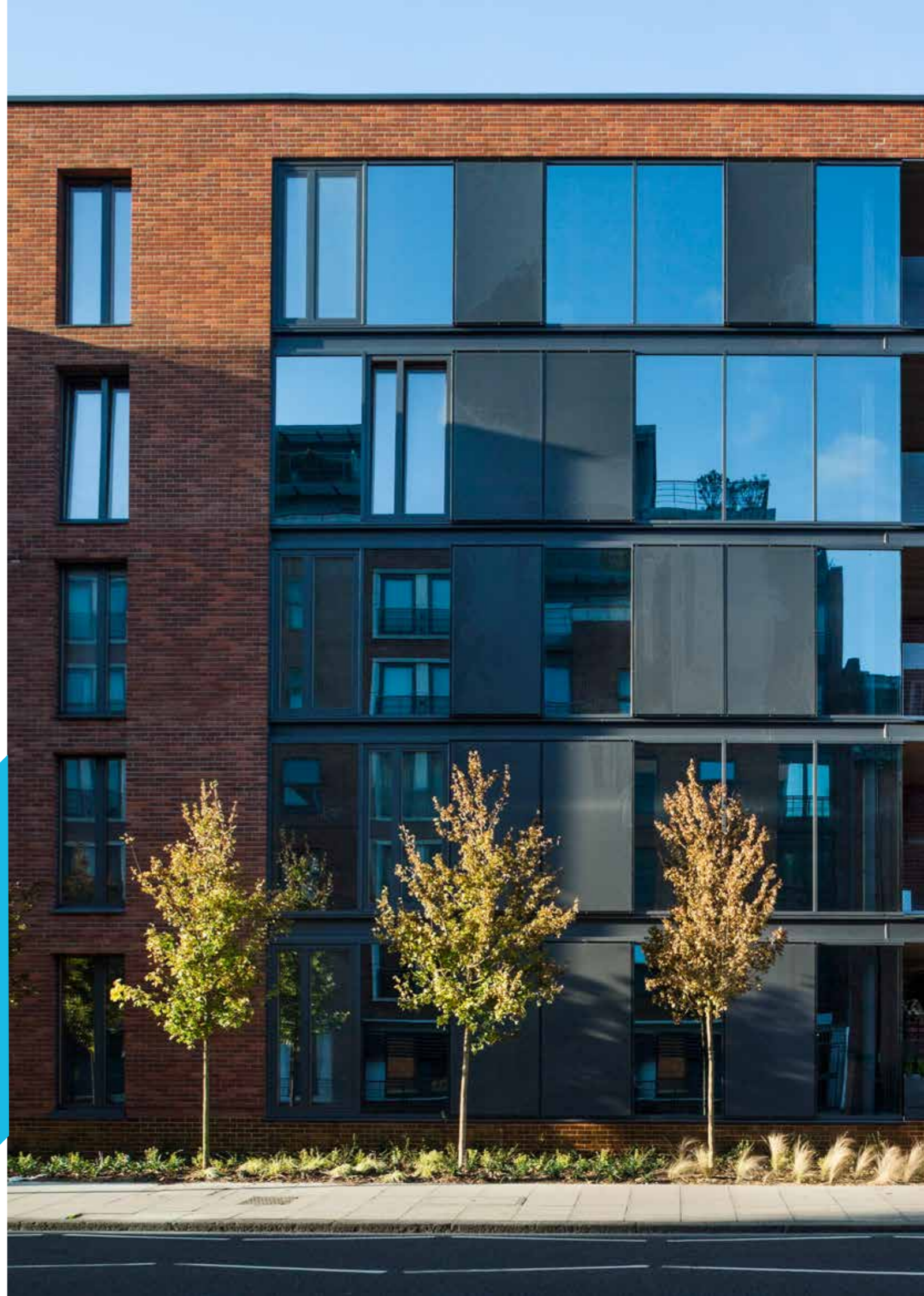
As a result, one may perhaps argue that Dolphin Living is catering to a slightly higher gross income band than that typically taken as the ‘squeezed middle’. However, as we have already suggested, the key parameter here is real earnings. In London the rising cost of accommodation means that even median gross earnings in many boroughs are now wholly inadequate. Thus it seems reasonable to consider a higher upper limit to our income bands than those suggested by other commentators, when defining London’s squeezed middle. Even without this extension upwards, it is clear that a range of key workers fall squarely within the squeezed middle of working Londoners. For instance, in Inner London, an individual teacher on the Upper Pay Ranges, will have gross earnings between £42,756 and £46,365; whilst even Leading Practitioners, at the very top of the top pay scale, will be on £65,978. In contrast, a Registered Nurse in London earns an average gross salary of £24,458 per year and the range of these salaries does not go much above £40,000.

In this report our estimate of value added from DL developments derives from the value that key workers in this squeezed middle bring to the London economy, and we do not estimate any value from the 48% of workers in DL developments who are part of the wider squeezed middle, but who are not considered as ‘key’. We argue that this represents a cautious approach to evaluation, as many of these other workers will be

residents in the local borough, and one can argue that there are social benefits to provision of discounted rental accommodation. One reason for our caution, is that estimates of such social benefits are scarce. However, it is also based on the literature that details the decline in demand for many 'mid-skill' jobs, that have typically been associated with those in the middle of the income distribution – a phenomenon that has been described as a 'hollowing out' of the labour market (McIntosh, 2013).

To summarise the hollowing out phenomenon, there has been a steady decline in the proportion of individuals working in intermediate/administrative occupations over recent decades; as technological innovations and increasing globalisation have led to declining demand in occupations where tasks can be easily automated and/or outsourced. This has depressed wages and limited job opportunities in this intermediate, mid-skill, range of occupations and contributed to a squeezing of those in the middle of the income distribution. Alongside this decline in mid-skill jobs, the numbers in high skilled occupations has continued to grow (as technological innovation and globalisation act as complements, rather than substitutes, for these posts); and the plumbers, electricians and other personal service workers, that either cannot be automated/offshored, or grow in proportion with the high skilled jobs, have not suffered the same apparent 'squeeze'.

Many commentators make a case for some form of support to this wider squeezed middle, outside of those who are 'key' workers. However, the lack of empirical evidence on the benefits of such interventions, and the decline in demand for many 'mid-skill' jobs, leads us to concentrate on the value of key workers in this group. This is an issue to which we return, starting in Section 3 with a study of the decline in mid-skill professionals in the Central, Inner and Outer regions of London over recent decades; and continuing in Section 4 with our consideration of a Personalised Rent (PerR) approach.





3. Demographics and Housing in Central, Inner and Outer London

In Section 2 we draw on economic principles and a variety of research evidence to estimate the economic value of a DL development to the wider London economy. DL developments provide value, because they help alter the skills mix in the ‘local’ labour market, orienting towards key workers who have a higher value to London.

The value arising from provision of discounted rents derives from the fact that the individual works in the London area, and one may argue that it is not necessary for them to live in Central (or even Inner) London. In this section we consider the question of where one would wish to locate discounted rental accommodation, and what the relative costs and benefits are of locating across different locations.

As a first step in this, Section 3.1 considers the changing demographic makeup of those living in Central, Inner and Outer London regions between 1994 and 2014, to see if there is an argument for location in one particular area, because of changes that have taken place within resident communities. Furthermore, we may expect analysis of changes in Central and Inner London over recent decades, to provide some idea of what to expect across the wider London region in coming decades, as the crisis in affordability continues to spread out from the centre. The first line of investigation considers the changing occupational distribution of London’s working resident population, between 1994 and 2014; and then moves on to track other demographic indicators between these years.

Section 3.1 can be seen as one strand of investigation to tackle a key issue arising from the previous 2014 study – why do we need to locate these workers in Central London, rather than in the wider Inner London, or even Outer London regions? Section 3.2 approaches this issue from another angle, by providing an overview of the offsetting costs and benefits from location in these different areas of London.

3.1 The Changing Demographics of London’s Communities

This section presents findings from an analysis of Quarterly Labour Force Survey data between 1994 Quarter 1 and 2014 Quarter 4. Statistics presented in the following Figures are created by combining sample observations across the relevant four quarters for each year. The data are obtained under Special Licence from the UK Data Archive/ONS, and Table 5 shows how we re-categories the 32 London Local Authorities (LAs) into three groups.

The three groupings of London Boroughs follow the categorisations of housing affordability as set out in the 20th February (2015) Issue of *Inside Housing*. These are mostly in line with the ‘Central’, ‘Inner’ and ‘Outer’ London groupings usually adopted in studies of the Greater London area. The ‘*Extreme Barriers: mainly Central London area*’ covers the five main LAs, with the City of London dropped from analysis as there are not enough residents in the sample to allow analysis (broadly covering Zone 1 and much of Zone 2). We then have 14 LAs in the ‘*High Barriers: Mainly Inner [excluding Central] London area*’, broadly covering much of Zone 3; and then the ‘*Lower Barriers: Mainly Outer London area*’ considers 13 remaining LAs spread across Zones 4 to 6. The figures are created for all women aged between 18 and 59; and all men aged between 18 and 64 – this difference between men and women is becoming increasingly outdated, but tends to still be retained in labour market studies, as workers in older age groups have considered these as ‘retirement ages’ for the majority of their working lives.

Table 5: Grouping Local Authorities according to the 'Buying Barrier'

Extreme Barriers: Mainly Central London

Camden
City of London
Hammersmith and Fulham
Islington
Kensington and Chelsea
Westminster, City of

High Barriers: Mainly Inner [excluding Central] London

Barnet
Brent
Brent
Hackney
Haringey
Kingston-upon-Thames
Lambeth
Lewisham
Merton
Richmond-upon-Thames
Southwark
Tower Hamlets
Waltham Forest
Wandsworth

Lower Barriers: Mainly Outer London

Barking and Dagenham
Bexley
Bromley
Croydon
Enfield
Greenwich
Harrow
Havering
Hillingdon
Hounslow
Newham
Redbridge
Sutton

The initial aim is to understand the changing distribution of occupations and industries of those resident in these LAs, and also some key demographics, such as broad household type, between 1994 and 2014. Shares are expressed as a proportion of the total number of local residents or the number of local working residents.

For instance, Figures 9, 10 and 11 of the Appendix show that, if we consider the entire resident population of these three zones separately, there is not much difference in overall trends [in terms of the changing proportions of employed, unemployed and inactive between 1994 and 2014], but the absolute proportions do vary. Generally, there has been a small increase in the proportion who are employed; little change in the proportion who are unemployed, and a decline in the proportion of residents who are economically inactive, across all three zones. However, whilst the proportion of economically inactive in Outer London averages around 23% for the period; and the Inner London region shows some decline from 26% to 23%; in Central London, the rate of economic inactivity averages just under 30% for most years between 1994 and 2014.

This provides a backdrop to our discussions of other changes, as we now focus on those in employment, first considering the changing proportions of residents working in different professional groups across Central, Inner and Outer London. Comparisons over such a long time period face challenges, as the categorisations used in Standard Occupational Classifications (SOC) and Standard Industrial Classifications (SIC) change over the decades. However, even where this results in some potential discontinuities in the series, relative comparisons should remain valid, as any impacts should apply equally across the regions we are considering²⁰.

²⁰ Readers should note that we have changes to the Standard Industrial Classification in 1992, 2003 and 2007; and changes to SOC in 1990 and 2000. During all such periods, we have used the conversion tables provided by ONS, but one cannot rule out some discontinuity.

Figures 1 through to 3 of the Appendix set out the changing occupational distribution of working residents between 1994 and 2014, weighted to the relevant regional populations. As already suggested in previous discussions on 'hollowing out' of the labour market, our broad category of Managers, Professionals and Associate professionals has grown over recent decades. For instance, across the whole of Great Britain between 1994 and 2014, the proportion of workers in this category grew from around 35.8% to 45.9% of those in employment. In contrast, the proportion working in Administrative, Secretarial and Skilled Trades fell from 36.1% to 27.3%; and the numbers in our Personal Service Occupations category grew slightly, but fell in proportionate terms from 10% to 9% (those working in Plant, Machine or Elementary Occupations also fell from 18% to 17%). These are very broad amalgams of occupational groups, but they can be considered as representing a hierarchy of professions within the labour market.

As we can see from Figures 1, 2 and 3 of the Appendix, London has experienced a 'super-charged' version of these trends. Figure 1 suggests that in 1994, 60% of Central London's resident population was already made up of workers in the higher occupational categories (Managers, Professionals and Associate professionals), and by 2011 this had increased to 73% (falling back a little since then). Alongside this, there is a decline in the proportion of workers in administrative and skilled trades, from 21% to 12%. The Central region is clearly moving towards a resident working population that is almost solely focused in this higher occupational category of workers; alongside a particularly pronounced proportion of inactive individuals (Figure 9).

Figures 2 and 3 identify similar trends for the Inner and Outer London areas, with increasing proportions of residents working in Higher level professions, and declining proportions of residents working in mid-skill administrative and skilled trades. As we might expect, the proportion of residents working in the highest occupational categories is increasing in all areas, but is still only 46% by 2014 in the Outer

London area (very close to the proportion for the UK as a whole). In contrast, by 2014 these professionals make up 59% of working residents in Inner London. The category of workers in our mid-skill group declines from around 30% to 20% of working residents in the Inner London area; and from around 40% to 28% in the Outer London area, between 1994 and 2014. Over the period under study, Outer London changes from a region with almost the same proportions in our groups of Managers/Professionals and Administrative/skilled occupations, of around 40% each up to 1999 – but over the next 15 years the former group moves towards 50%, and the latter drops below 30%.

Figures 1 to 3 underline just how far London's resident population has moved towards domination by the higher occupational categories. Is this a problem? A recent report from the IPPR (April 2016) considers the question of skills demand in London and notes that the sort of mid-skill occupations we see in decline in Figures 1, 2 and 3 will still represent a substantial (approximate 25%) of all London job opportunities in coming decades. The IPPR report suggests that, 'across all mid-skill occupations, we estimate that there is a shortage of 22,000 people annually'. Whilst these occupations are in decline, they are still experiencing skills shortages, as the real wage associated with these jobs has stagnated, particularly in the face of rising costs of accommodation.

If we consider this issue in the context of discussions from Section 2.1 and Section 2.3, we may argue this is more 'deficiency of skills supply', rather than 'market failure'. Whatever the exact nature of this challenge, there is an argument that the provision of discounted rental accommodation to a broader group of mid-skill workers (outside of our 'key' workers) has some value to London. However, there remains a large question-mark over how we would estimate this. Any additional value attributed to the provision of discounted rental accommodation to this wider group, would not be able to draw on research findings or economic principles. Given this, we retain an approach that estimates impacts only for key workers, as there is a clear market failure and we are able to draw on some key research findings.

Figures 1 to 3 underline how extreme the situation in Central London has become; but also how quickly the Inner and [to a lesser extent] Outer London areas are moving towards a similar situation. One may argue that, in an attempt to retain some amount of socio-demographic diversity in Central London, we may wish to locate discounted rental accommodation here. However, we can clearly see that any concerns over occupational diversity also apply to the Inner London region; and given enough time, Outer London. Does consideration of the changing balance of employment amongst resident populations according to industry sector, alter this conclusion?

Figures 4, 5 and 6 of the Appendix describe the changing nature of employment amongst resident working populations, according to the sectors in which they work. To provide context, across Great Britain as a whole, there has been an increase in the proportion of those employed in our category of Finance, Insurance and Real Estate (FIRE)²¹ from 14% to around 19% between 1994 and 2014. The proportion employed in Public Services has risen from 25% to 30% (despite recent reversals²²); and our category of Other Services, has risen slightly from around 5% to 6%. Trade and Catering (incl. hotels, catering, retail and wholesale) has stayed roughly constant at around 20%. Manufacturing has continued its long-term decline, falling from 20% of employment in 1994 to only 11% in 2014.

Figure 4 of the Appendix suggests that the proportion of Central London residents working in the FIRE sector has increased by 10 percentage points over the last 20 years and is now more than double the proportion we see in the rest of the country. The proportion of residents working in public services is much lower than that seen in the rest of the UK, but has experienced little change over the period. In contrast, the proportion of working residents employed in Trade and Catering, experienced quite a pronounced decline from 19% to 10% between 1994 and 2011, but has recovered somewhat since then.

As we would perhaps expect, Figure 5 of the Appendix identifies an average proportion of Inner London's resident population engaged in the FIRE sector which is around 10 percentage points lower across all years; but with growth in this proportion at a similar rate to that seen in Central London, ending the period at 30%. The proportion of residents working in the Public Sector is around five percentage points higher than we see in Great Britain as a whole, but remains roughly static across the entire period. The proportion of residents working in Trade and Catering is at a similar level to that seen in the Central region, and there has been a similar decline between 1994 and 2014.

When considering the sectoral composition of resident working populations, it is Outer London where we observe some differences in trends; compared to those shared by Central and Inner London residents. Figure 6 of the Appendix shows that the Outer London area accommodated a slightly lower, or roughly equivalent, proportion of public sector workers than the Inner and Central London regions respectively, in 1994. However, between 1994 and 2014 the Outer London area saw an increase in the proportion of residents working in this sector, from 23% to 28%. Whilst we observe some small decline in the proportions working in Trade and Catering, and growth in the proportion working in the FIRE sector; these trends are not as pronounced as those in the Inner and Central regions, and it is the decline in residents employed in manufacturing, from 11% to 5%, that is most pronounced in this Outer area.

Having described the changing occupational and sectoral focus of employment amongst the resident population between 1994 and 2014, we now consider change in key demographics. In terms of the London labour market, one may speculate on a (somewhat stereotypical) career lifecycle. It is suggested that much of London's dynamism comes from the inflow of individuals in the early stages of their career, the majority of whom we may not expect to have

dependents. These individuals may be willing to put up with relatively poor accommodation in early career, but at some point they face a decision of whether to continue living in London (for many this, 'in or out' decision comes at the point where they have children). We may then expect a proportion of this group to leave London and a proportion to stay – as the costs of accommodation have risen, we may expect a larger proportion of leavers.

This is very much speculation and there are a number of ways one could look at the flows of individuals in and out of London. However, whatever the specific perspective, it seems reasonable to suggest that the steep rise in costs of accommodation over recent years is likely to have had an impact on demographics of the resident population. In the representation above, we might expect a falling proportion of individuals amongst the resident population in Central London, aged over 40 who have dependent children, as costs of accommodation have risen. However, our analysis suggests the opposite and further disaggregation of this trend provides us with interesting insights.

In fact, one of the most striking trends from our analysis of LFS data, is the rising proportion of Central London residents over the age of 40 with dependents [aged 18 or less], which increases from 12% to 17% between 1994 and 2014 – a rise that has been particularly pronounced over the past decade²³. In contrast, there has been a fall in the proportion of those aged between 18 and 30 without dependents, in the Central London resident population, from around 30% to 25% between 1994 and 2014.

We need to be careful in our interpretation, as there is some variation in the figures for those aged under 30 from year-to-year, but these are a reflection of trends in the rest of the country – over the same period, the UK has seen an increase in the proportion of individuals aged over 40 with dependents from 15% to 20%. We

do not present the figures for Inner and Outer London, as they are similar to those in Central London.

This evidence seems to run counter to our 'stereotypical' representation of London's career lifecycle. In our stereotypical representation we might expect a falling proportion of individuals amongst the resident population in Central London, aged 40+ who have dependent children, as costs of accommodation have risen – even given the opposing trend apparent in the rest of the UK. However, separate analysis of higher, middle and lower occupations, shows that it is the higher occupations that are driving these trends, particularly in Central London. In Figure 7 of the Appendix, we can see that the proportion aged 40+ with dependents, amongst Central London's resident population who work in our category of 'Higher Occupations', increased from 12.5% to around 20% over the period of study. In contrast, we see no such trend amongst our other occupational groups – for instance, whilst the proportions aged 40+ with dependents amongst Central London's resident population who work in our category of 'Middle Occupations', varies a lot between 1994 and 2014, the proportion at the start and end of our 20-year period is virtually unchanged.

This difference seems to be driven by the fact that, as we move up the occupational ladder, the relevant pool of potential job applicants becomes much larger – at the top-end of the professional ladder, the pool from which applicants are drawn, is truly global. More importantly, these highly remunerated posts can afford to pay sufficient wages to attract workers and their families to live in London (and become part of the 'local' labour market). For instance, Figure 8 of the Appendix shows how much of the increase in the proportion aged 40+ with dependents, amongst Central London's resident population working in our category of 'Higher Occupations', has been driven by immigration. As the footnote to Figure 8 suggests, we

²¹ This is a very broad category also containing Real Estate, Renting, Business Services, Law and other high-value added Professional Services.

²² Also, readers should note that what constitutes 'Public Service' employment will have changed over the period, but our category remains constant.

²³ This analysis is not based on 'households', but still retains the 'individual' as the unit of analysis. As a result, some changes to family makeup could drive part of the changes we observe. However, as our analysis progresses this becomes less likely and we identify some key drivers of change that would be reflected in figures, even if we were to use the household as our unit of analysis.

are getting to the point where numbers are low and we must be careful in interpretation, but it is clear that the trend has been at least partly driven by an increase in 40+ foreign nationals in these higher occupations, with dependents²⁴.

Over the last 20 years, London has increasingly been drawing in workers at a later point in their career (aged 40+ with dependents) to fill posts in highly remunerated occupations, and this has changed the demographics of Central London – higher occupations simply ‘buy in’ skills, alongside families, from overseas. Our analysis of these trends according to industry sector, shows that it is predominantly Finance, Business Services and other highly remunerated sectors that are driving this. In lower-level-to-middling occupations, the relevant pool of job applicants is still [mainly] London and the wider UK, but the wages on offer do not seem sufficient to entice workers to move to London with their families. Therefore, we see a more stereotypical pattern, especially amongst our public sector key workers.

Whilst continuation of these trends is called into question by the Referendum result on 23rd June, it is important to note that our category of ‘European’ in Figure 8 is not limited to those countries in the European Union and some of the trend we identify is driven by immigration from the ‘Rest of the World’. This serves to emphasise just how reliant London is on foreign workers, especially in the highly remunerated occupations, and the demographic impacts this is having.

3.2 Location in Central, Inner and Outer London

The arguments under Section 2.1 and calculations in Section 2.2 provide an estimate of the economic benefit to London from DL provision of accommodation to London’s key workers. In the previous section we describe some of the changing demographics

of London’s resident population, in the Central, Inner and Outer regions; and one may consider the findings as providing some justification for location of developments providing discounted rents in the Central London area. It could be argued that Central London boroughs reap specific benefits from DL-type developments, as this helps them retain an amount of (socio-economic) diversity that is clearly being eroded.

However, whilst the Central region is experiencing particularly pronounced manifestations of these trends, they are also apparent in Inner London and, to a lesser extent, Outer London. There may be more of an argument for location in Central London on the grounds that one wishes to retain an amount of socio-economic diversity amongst the resident population, but there is also a growing argument for location outside of the Central area on these grounds. To shed light on this debate, and to consider the offsetting costs incurred in achieving the estimated benefits in Section 2.2, this section sets out some of the pros and cons of locating discounted rental accommodation in Central, Inner and Outer London.

We take as our starting point, the £3.85 million benefit for 214 tenants across 141 units estimated in Section 2.2. This is calculated by comparing the distribution of occupations in the DL development, with the distribution we would expect in a similar development located across Inner (including Central) London. As already suggested, comparison with Inner London has the potential to deflate our estimates of impact. Section 3.1 shows that the distribution of occupations in Central London is likely to contain fewer ‘key’ workers than in the wider Inner London area; so comparison of DL developments in Camden and Soho with an Inner London counterfactual, will likely identify a lower level of value added (because the impact we have on the occupational distribution [or skills mix] will be less pronounced). However, this estimate of £3.85m can be taken as an indication of the benefit derived from location across Inner/Central London; and we can now

create estimates of the likely costs incurred in different locations, and compare this to the overall benefit.

To begin, consider the figures presented in Table 1 of Section 2.2. We can see that a rent of £177 per week for Studio flats in the King’s Cross development, is set at 52% of the rent that an individual would be expected to pay for a similar flat on the open market. In this case we calculate the implied market rent as £342 and consider the difference of £165 (£342 minus £177²⁵) as the implicit subsidy – this is our estimate of the weekly ‘cost’ of providing this studio flat at a discount. For each category of unit in Table 1 (i.e. studio, 1 bedroom, 2 bedroom, 3 bedroom) we can calculate the implied market rent, multiply this by the number of units, and calculate the annual revenue that would accrue from these rents under a market scenario. Using the figures in Table 1, this comes out at £3.8 million per annum. We then calculate the annual revenue that would accrue from rents charged by DL set out in Table 1, which is £1.8 million. The implied subsidy is therefore approximately £2 million and this gives an estimated benefit-to-cost ratio of 1.9 for DL developments. It is important to note that the costs used here, cover 100% of the 214 DL residents; but the benefit is calculated for only 52% of residents who are key workers. Therefore, we can consider that the benefit-to-cost ratio for DL developments lies somewhere between 1.9 and 3.7.

Anything over 2 is considered as ‘high value’ by the National Audit Office and, as flagged in previous discussions, decisions taken at various points in the process of estimation, suggest this is a cautious estimate of the range for a benefit-to-cost ratio arising from DL developments. However, the question we now need to ask is how much the cost (subsidy) aspect of this calculation changes when we vary the location of discounted rental developments.

The approach we take, is to first select three boroughs that have rental values close to the median for the Extreme, High and Lower areas (which are mostly in

line with ‘Central’, ‘Inner’ and ‘Outer’ categorisations) across London, detailed in Table 5 (with the exception of Westminster, which is included for reference and has an average rental value higher than the average for Central London). Table 6 lists the boroughs selected for this analysis, together with estimated annual average rental values for the units under analysis.

In each of these areas we carry out a process of calculation similar to that for the DL development detailed above. For instance, we use the estimated rental values in Table 6 to calculate the annual revenue that would accrue under a market scenario for the 141 units detailed in Table 1, if they were located in Hammersmith and Fulham. More specifically, in Hammersmith and Fulham we estimate the average monthly market rent for a studio as £1,040. We can therefore estimate that the revenue from 25 studio flats [that are part of the King’s Cross Development], if they were located in Hammersmith and Fulham, would be £26,000 per month (or £312,000 p.a.). We can do the same for the 44 one-bedroom units; 65 two-bedroom units; and 7 three-bedroom units (that are part of the Hopkins Street and King’s Cross developments). Using this approach, we estimate the annual revenue that one would receive from these 141 DL units – if they were located in Hammersmith and Fulham and let at market rents – as £2.5 million. This compares to the figure of £3.8 million that we estimate would accrue from renting the DL developments at market rents, in their current locations.

The suggestion is that the implicit subsidy required for provision of equivalent discounted rental accommodation, located in Hammersmith and Fulham, is much lower than that required for location in the Central London areas of Westminster and Camden – and this is what one would expect. More specifically, the market rental scenario for 141 units in Central London (Westminster) would provide an estimated revenue of £3.8 million; the annual revenue in this location from discounted rents is just under £1.8 million; and

²⁴ It is possible that some foreign nationals aged over 40 with dependents could be resident in Central London, but their dependents resident elsewhere. However, such a long term trend is unlikely to be driven solely by such workers.

²⁵ These figures do not include decimals and therefore are subject to a small amount of rounding error. We also create an indicator of market rents in our models that combine a range of sources, and use a weighted average across these different sources.

therefore, the implied subsidy is approximately £2 million. In Hammersmith and Fulham, the market rental scenario for a similar 141 units is estimated at £2.5m; and therefore, provision of discounted rents [at the same absolute level as those in Table 1], implies an estimated subsidy of approximately £700,000. This is quite a drop, but before completing our calculations we need to consider some of the direct offsetting costs to location further from the centre.

One of the key issues from an individual worker's perspective is the cost of commuting, in terms of direct costs, opportunity costs and wellbeing. For instance, Stutzer and Frey (2008)²⁶ find that [for Germany], commuting reduces reported wellbeing by about 'an eighth of the impact we expect from being unemployed'. This is quite high, as unemployment has

one of the largest negative impacts on wellbeing in the literature. However, more recent work challenges these findings of a direct causal link between commuting distance and subjective wellbeing (Dickerson, Risa Hole and Munford, 2012)²⁷. To ensure our study continues to err on the side of caution, we do not estimate any offsetting wellbeing impacts from location further out of the centre, limiting ourselves to direct and opportunity costs (in terms of lost productivity).

The approach we adopt is to define a point approximately central to the City of Westminster [Marble Arch] and measure all distances travelled (using the TfL Journey Planner) from the centre of the relevant borough, to this central point. In the case of Hammersmith and Fulham, the relevant annual tube season ticket for travel from the centre of the borough to Marble Arch is £1,296, and

Table 6: Average monthly rents in Boroughs close to Central, Inner and Outer London medians

Central London	Studio	1 Bedroom	2 Bedroom	3 Bedroom
Hammersmith and Fulham	£1,040	£1,343	£1,712	£2,383
Westminster	£1,300	£1,950	£2,708	£4,054
Camden	£1,083	£1,517	£1,950	£2,817
Inner London				
Ealing	£802	£1,150	£1,375	£1,700
Haringey	£825	£1,170	£1,408	£1,733
Kingston upon Thames	£750	£995	£1,300	£1,600
Outer London				
Redbridge	£700	£850	£1,100	£1,400
Newham	£750	£900	£1,200	£1,400
Sutton	£650	£800	£1,099	£1,350

²⁶ Stutzer, A. and B. Frey (2008). Stress that doesn't pay: The commuting paradox. *Scandinavian Journal of Economics* 110(2), 339–366.

²⁷ Dickerson, A., Risa Hole, A. and Munford, L. (2012), "The Relationship Between Well-Being and Commuting Re-Visited: Does the Choice of Methodology Matter?", Sheffield University, Economic Research Paper Series, SERP Number: 2012016.

the time taken to travel one way is 33 minutes. Using a figure of £36 for average Gross Value Added (GVA) per workforce member, per hour in London (Office for National Statistics, 2015), we calculate the loss of productivity associated with this journey time. For the 214 residents in our DL developments, these direct and opportunity costs of location in Hammersmith and Fulham amount to £1.2 million, offsetting the majority of our [£2 million minus £500,000] implicit subsidy savings, gained from moving location²⁸.

It is important to recognise that, in these calculations, we implicitly assume the location of tenants in current DL developments incurs no direct or opportunity cost of travelling. However, in the calculation of offsetting costs above, we are only taking into account the opportunity costs of travelling in one direction – an approach that is designed to offset this potential under-estimate²⁹. Also, whilst we have set out the example for Hammersmith and Fulham, it is perhaps the comparison with the Inner London region that is most illuminating. Table 7 presents the outcomes from the process of calculation for the wider Inner and Outer London areas (based on the categories used in Table 5).

The second column of Table 7 sets out our estimates of the average market rental scenario across three Inner London boroughs. We arrive at an estimate of approximately £2 million for the average annual market revenue accruing to our 141 units, if they were located in these boroughs. Across the three Outer London boroughs the figure averages £1.7 million. When setting out the example of Hammersmith and Fulham, we do not alter calculation of the subsidised scenario, as average market rents are always at a level higher than the discounted rent level. However, when we start to consider some of the Inner London market rents, and certainly those in Outer London, the DL subsidised rent is sometimes higher than the market rent. In these situations, the lower market rate

is used in calculations, as in these situations we wish to represent a situation of zero subsidy. The specific rents used in these calculations, for each type of unit, are set out in the second half of Table 7. In cases where the subsidised rent figure is lower than that set out in Table 1, we have a situation where the average market rent for the region is lower than the subsidised rental value.

This approach allows us insight into the relative costs of location in different regions of London; and as we can see, the net impact on overall cost estimates is minimal, because of the offsetting direct and opportunity costs of transport. When we consider moving individuals to regions of the capital that have lower average costs of accommodation (and therefore require a smaller implied subsidy), there are significant offsetting [direct and opportunity] costs of commuting. This section serves to underline that, wherever we look across London, there is a problem of affordable living. In our attempts to clarify the location decisions facing those who provide discounted rents, we have underlined the lack of choice facing many workers, who are at risk of being squeezed out of the London labour market; and provided an additional rationale for DL developments locating in Central London.

This Section suggests that, the direct costs of travel, the opportunity cost of time whilst commuting, and the need to secure higher percentage returns in less affluent areas of London (i.e. compression of yields); tend to offset many of the savings from location of workers in cheaper, but less easily accessible, parts of London. Whichever area of London we consider the challenge remains the same, as any improvements in transport infrastructure, have an immediate impact on the costs of accommodation. Expanding transport infrastructure is essential to the continued success of London, but as soon as an area gains better transport links, the cost of housing rises, and locks out many of

²⁸ In these calculations, we assume the same distribution of our 214 residents across the 141 developments, in all location scenarios.

²⁹ We have run calculations that assume there is a travel cost for Westminster residents, assuming that they spend on average 18 mins in travel time, which comes from travelling from the centre to the edge of Westminster. This incurs a total travel cost of £790,000. However, this is more than offset by inclusion of calculations that accommodate two-way travel for the other areas of London – for instance, raising the estimate of opportunity cost from travel time by £950,000 for Hammersmith and Fulham.

the key workers on which the capital depends. Wherever we look in the Greater London area, there are limited opportunities for living and commuting, for workers who are essential to London economy and society, but whose value is not fully reflected in their wages. A more sustainable housing policy is needed across the whole of London, not just in the Central

region. Recent headlines have focused on the question of how much new stock needs to be built, but this detracts from an equally pressing question – how do we utilise the current housing stock to ensure London continues to attract the diverse range of individuals it needs to thrive?

We return to this issue in Section 5.



Table 7: The gains and losses from location in Inner and Outer London

Market rental scenario for the 141 units in Table 1

	Inner London (average across Haringey, Ealing and Kingston-upon-Thames)	Outer London (average across Newham, Redbridge and Sutton)
Studio, weekly market rent	£213	£188
1 Bed, weekly market rent	£259	£199
2 Bed, weekly market rent	£323	£269
3 Bed, weekly market rent	£362	£298
Total annual rental income	£2,094,379	£1,719,106

DSF subsidised rental scenario for the 141 units in Table 1

	Inner London (average across Haringey, Ealing and Kingston-upon-Thames)	Outer London (average across Newham, Redbridge and Sutton)
Studio	£177	£176
1 Bed	£233	£189
	£171	£171
	£194	£187
	£246	£189
2 Bed	£296	£257
	£308	£257
	£190	£190
	£217	£217
3 Bed	£303	£257
	£202	£202
	£234	£234
	£340	£280
Total annual rental income	£1,760,963	£1,554,535
Cost of travel	£1,915	£1,863
Time spent travelling (one way in minutes)	45	57
Lost productivity	£6,044	£7,712
Total Direct and Opp Cost of Travel	£1,687,155	£2,029,908
Difference in subsidy	£56,436	-£135,624

4. A Personalised Rent Model in Dolphin Living Developments

In Section 2.2 we have estimated the benefit associated with DL provision of discounted rental accommodation and in Section 3.2 the cost of achieving these benefits, in terms of the required implicit subsidy, across different London locations. In this section, we consider the implications for DL of achieving this benefit using a Personalised Rent model.

The existing literature on Personalised Rents (for instance, Stone, 2006)³⁰, tends to consider the concept when deciding which measures most accurately reflect levels of housing affordability. For instance, in Table 1 we are implicitly measuring affordability with respect to market rents in the locality; and in Section 2.3 we have considered some of the problems facing those whose incomes place them within a 'squeezed middle' – here affordability is relative to the median income for a locality. Our aim is not to consider a Personalised Rents approach as another way of measuring affordability; but as a way of implementing 'means tested' rents.

The approach being adopted by DL at the New Era Estate uses the Minimum Income Standard (MIS) developed by the Joseph Rowntree Foundation (with Loughborough University)³¹ – referred to as 'JRFMIS' in the following calculations. For each household type, this allows DL to calculate the minimum household budget required to achieve an acceptable standard of living³²; they can then compare this to the net income of the household; and a proportion of the remaining difference (or 'Residual Income') is set as the rent. In the New Era Estate, the starting point for consideration of this issue is very different to the situation in DL developments at Hopkins Street and King's Cross. At

New Era, Dolphin Living inherited a range of existing rent levels, and these are at a much greater discount to market rents (i.e. the implied subsidy is much higher), than those set out in Table 1. As a result, the distribution of tenants on the New Era Estate is very different to the distribution across the 141 units that form the focus of this report.

The approach in this section of the report is therefore to use existing information on the 141 tenant households that form the focus of our analysis; and estimate the revenue from rental income if a Personalised Rent approach were taken. Within the context of discussions from the previous section, this is simply an alternative estimate of the revenue arising in the 'DL intervention scenario'. We then compare this to the DL intervention scenario under current approaches to renting, and consider the implications.

For each of the 141 households in Hopkins Street and King's Cross, we utilise information on *Household type* and *Household Income*, and from this we calculate *Net Household Income* and the associated *Minimum Income Standard*. This gives us an estimate of the Residual Income and from this we can calculate the implied *Personalised Rent (PerR)*. In practice, when we implement this approach, we face the question of what proportion of the residual income should be allocated to rent - the calculation is set out in Equation [i] below. We would clearly not wish to allocate all residual income to rent ($X=100$), as this would remove incentives for individuals to increase their income and progress in the labour market. The question is, what proportion of residual income would we wish to allocate to rent? As a starting point, we calculated the

³⁰ Stone, M. E. (2006), "What Is Housing Affordability? The Case for the Residual Income Approach", Housing Policy Debate, Vol. 17, Issue 1.

³¹ <http://www.lboro.ac.uk/research/crsp/mis/>

³² With the concept of what is 'acceptable' identified as part of a programme of research carried out with members of the public by Loughborough University researchers.

rental income that would likely accrue if rents were set for each household at 75% of Residual Income. Our approach allows the Personalised Rent to be set at a level lower than that currently charged to each of the 141 households in a DL unit; but 75% was chosen, as it provided an estimated rent close to that already being charged by DL, or slightly above, for the majority of tenants.

$$[i] \text{ Personalised Rent (PerR)} = [X\% * (\text{Net Household Income} - \text{JRFMIS})]$$

From these initial calculations, we estimate a rental income of £2.45m, from 141 household units (containing 214 individuals). However, we find this approach can produce large variations across households, that are perhaps less desirable – as we move up the income distribution, 75% of residual income can become a very large amount in absolute terms and would still be expected to produce strong disincentive effects in the labour market. As a result, we take an approach to allocation of Personalised Rents that is something of a combination of the New Era approach, and that set out in Equation [i].

First, Equation [ii] describes the approach that DL are adopting at New Era, where the *Residual Income* is calculated as the *Net Household Income*, minus a combination of the *Minimum Income Standard* and the *Existing Rent* being charged. The Residual Income in this case, is that which remains having taken into account all living costs, including the existing rent; and half of this figure is added to the existing rent, to arrive at the Personalised Rent (PerR). If this calculation results in a positive Residual Income for the household in question, then Equation [ii] determines the rent set³³. This approach, agreed with existing New Era tenants, reduces the variability we can expect across the income distribution – better retaining incentives in the labour market.

$$[ii] \text{ PerR} = \text{Existing New Era Rent} + [\text{Net Household Income} - (\text{JRFMIS} + \text{Existing New Era Rent})]$$

However, in order to transfer this approach to a more general setting, we must propose a ‘Base Rent’ figure to replace the ‘Existing New Era Rent’ in Equation [ii]. The figure of £175 p.w. in equation [iii] has been chosen as it is the rent that is just affordable (using MIS living costs) to a household with a net income of approximately £20,000 p.a. – that is, a single working-age adult earning a gross income of around £25,000 per annum (the approximate point in the earnings distribution [currently £26,000], above which benefits are capped). Alternatively, one can think of this as a working-age couple, each earning the London Living Wage of around £18,300 p.a. Those with a net household income below £20,000 per annum are supported by Universal Credit and are not currently targeted for support by DL (an issue to which we return in the concluding section of this report).

$$[iii] \text{ PerR} = \text{Base Rent of } £175 + [\text{Net Household Income} - (\text{JRFMIS} + \text{base rent})]$$

Using Equation [iii] as our basis for calculation, we estimate a revenue from Personalised Rents of around £2.19 million³⁴. This compares to the £1.9 million revenue that we have already calculated in Section 3.2, under current DL approaches to rent setting; and the £2.45 million figure that we arrive at when setting the rent at 75% of the total Residual Income. To give an idea of what this means, we calculate the average rent [across our four types of accommodation unit] in King’s Cross and Hopkins Street, that is needed to meet this revenue of £1.9 million, with 141 units. In this context, the extra £290,000 gained in revenues under the PerR model [£2.19m minus £1.9m], implies that we could provide (on average) an extra 17 units in the King’s Cross Development and 6 in Hopkins Street. Such additional units are possible, because we are using an approach that better fits the rent of an individual

to their ability to pay. In these calculations we have factored into the Personalised Rental scenario, a cost for administration and the details of this can be found in the Appendix.

Figure 12: Estimated additions to rental payments under a PerR model, by Household Income: King’s Cross

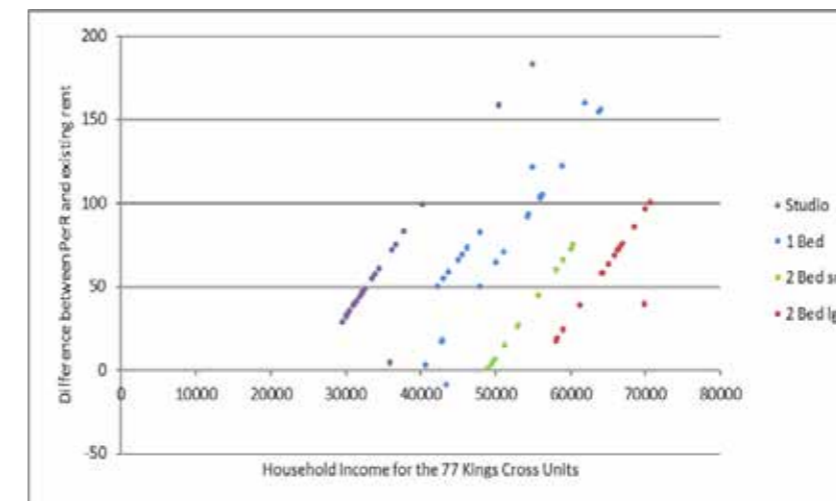


Figure 12 gives some idea of where this extra revenue comes from, by subtracting the existing rent paid by each DL household

in the King’s Cross development, from the PerR they would pay under the model set out in Equation [iii]. Figure 12 suggests that Equation [iii] still retains a progressive approach to rent setting, with higher household incomes within each unit-type incurring a greater additional rent under the PerR model.

Most of those renting Studios would pay less than £50 per week extra, but two households on incomes of £50,000+ in these units would pay between £150 and £200 more.

A similar pattern is evident for the remainder of

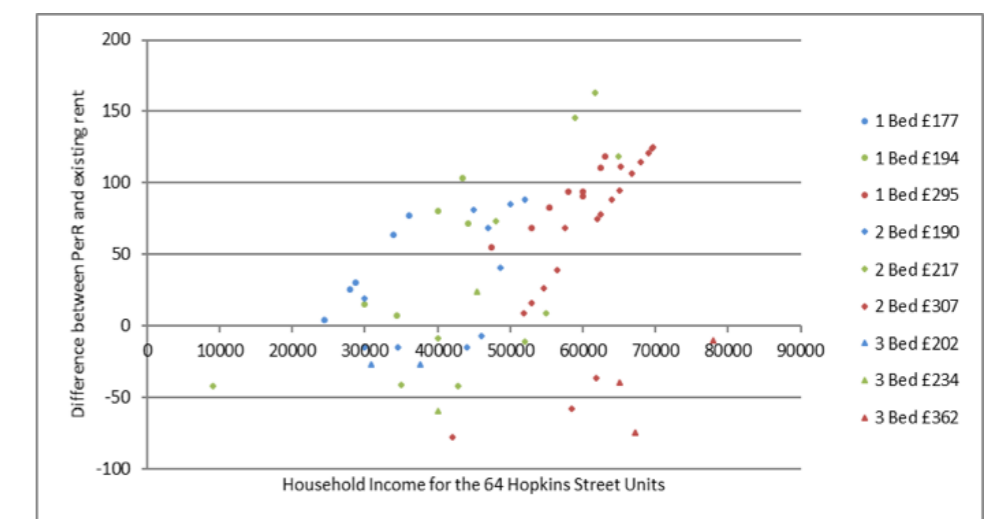
unit types in Figure 12, with a majority of tenant households paying an additional £50 to £100 per week under the PerR model; but with some households on higher incomes in the one-bedroom developments

paying significantly more, and a significant number in the two-bedroom units paying very close to the rent already set. As we move from Studios to the largest two-bedroom units, we observe less variation in the difference between existing rents and those implied by a PerR approach.

Comparison of Figures 12 and 13 underlines the difference between tenants in Hopkins St and King’s Cross, with a much higher proportion paying a lower rent under the PerR model in the

former development, when compared to their current rent. Because there are many more categories of unit, the pattern is less obvious, but we still have a

Figure 13: Estimated additions to rental payments under a PerR model, by Household Income: Hopkins St.



clearly progressive approach within each unit type. The Hopkins Street development shows clearly where the benefits of a Personalised Rent model lie, as there is the potential for significantly improved social outcomes, from matching rents to ability to pay.

³³ In New Era, Dolphin Living have a ‘collar’ (or minimum rent) set at the current New Era rent + (CPI+1%).

³⁴ Here we set a collar of the Base Rent, but this does not have any impact for the current income distribution of tenants.

The calculations in this section of the report are very much a first step in considering the wider implications of a Personalised Rent model for working Londoners in the squeezed middle. The underlying challenge that becomes apparent from our calculations, is the need to obtain a balance between (i) retaining incentives to effort in the labour market and adopting an approach that is acceptable to higher income earners; whilst (ii) allowing sufficient revenues to provide discounted rents to those who have the greatest need. However, this is an approach that DL is already implementing on the New Era Estate and the response of tenants has been very positive, so this is not a wholly ‘academic’ exercise. Much more work needs to be done if this approach is to be rolled out generally, but there is a potential for this approach (alongside others) to help tackle London’s housing challenge.

It is worth flagging some of the key issues that still need to be tackled if this approach were to be used more generally:

- The approach we have taken for existing DL tenants reduces the variability in impacts across the income distribution, mainly because of the addition of a ‘base rent’. As we move up the household income distribution, our approach (in Equation [iii]) acts to reduce the residual income given over to ‘personalised rent’ by a ‘fixed’, and a ‘proportionate’ amount. As incomes become much larger, there would still be the problem that, even with this absolute and proportionate reduction, we would observe particularly high personalised rents. This is not an insurmountable problem, as one can set the fixed and proportionate amounts in discussion with tenants, based on the income distribution under consideration.

More importantly, this line of reasoning leads to some direction on another key issue – over what sort of income bands would we envisage utilising a PerR approach for London’s working households? At the lower end of the household income distribution, we are inclined to follow the general direction of the Resolution Foundation, with those

obtaining a large proportion of their income from benefits, requiring some other form of intervention. At the top end of the income distributions outlined in Figures 12 and 13, we have a situation that is essentially self-regulating – if the income of a household implied a PerR very close to market rents (perhaps 90% or above), then they would not qualify for the development. For instance, the GLA limit intermediate rent and affordable rent to 80% of the market rent, and limit those who benefit from subsidy to households with incomes of £90,000 per annum or lower.

- This last point brings us to consideration of Section 106 agreements, which we argue could become simpler and remove many of the ‘cliff edges’ implied by existing agreements, under a PerR approach. Specifically, Section 106 agreements currently specify both income bands and discounted rental values – they essentially specify both stages of a two-stage process and as a result, produce anomalies. For instance, we may find that a household in extreme need of affordable housing, that DL would wish to accommodate in a two-bedroom unit; does not fall within the income band for a three-bedroom unit, and if the two-bedroom units are exhausted; there is no potential to house them. A PerR approach has some potential to overcome these challenges, as one can more clearly define the first stage of this process and allow some flexibility in the second stage.

Using an agreed formula (along the lines of Equation [iii]), Section 106 agreements could specify those who qualify for discounted rental accommodation, according to their circumstances (Residual Income). Having passed this first stage, which would ensure that those most in need were being accommodated, a more detailed version of Equation [iii] would be able to specify a number of Personalised Rent options open to the household across the different units. The ‘average’ base rent used in the first stage, could be varied according to the specific accommodation unit being considered by the household in the second stage



– presenting them with a variety of options, that traded-off a higher Personalised Rent, but a lower proportion of residual income retained. Again, much work needs to be done, but the PerR model has potential to overcome some of the existing limitations of Section 106 agreements.

- Such an approach would also help clarify the dynamic nature of the decision process around the letting of units following the initial allocation, as a result of tenant turnover. Section 106 agreements would dictate (to a large extent) the sort of household mix initially accommodated across new developments and would also provide similar guidance as units become available (working

to ensure a similar distribution of households, according to Residual Income).

To give an idea of the sort of issues that would need to be considered using such an approach, assisting a number of people who could afford (under the PerR model) to pay 95% of market rent, would enable DL to assist more households on lower incomes, than would currently be possible. However, in extremis this would see a polarised mix of housing incomes, with a proportion of tenants on 95% rents and many on only 10% rents. DL would therefore wish to set some parameters about the desired mix, informing a more intelligent cap/collar.



5. Conclusions and Policy Recommendations

The approach adopted in this report allows us insight into the relative costs of location in different regions of London. When we consider moving individuals to regions of the capital that have lower average costs of accommodation (and therefore require a smaller implied subsidy), there are significant offsetting [direct and opportunity] costs of commuting. This report serves to underline that, wherever we look across London, there is a problem of affordable living. In our attempts to clarify the location decisions facing those who provide discounted rents, we have underlined the lack of choice facing many workers, who are at risk of being squeezed out of the London labour market.

The pattern we describe is inevitable in many ways, for a city that will hopefully continue to thrive. It is hard to argue for the use of extensive subsidies to offset this for the broad swathe of our 'squeezed middle'. However, for those key workers who are essential to the continued economic success of London, but under-valued because of a market failure, there is a strong economic case for something to be done. This will go some way to retain an amount of diversity in this increasingly segregated city, but more importantly it will help ensure that the success continues. A city which struggles to attract good quality teachers, nurses, creatives, software analysts and others, will find its success under threat.

The Personalised Rent calculations in this report are very much a first step in considering the wider implications of such a model for working Londoners.

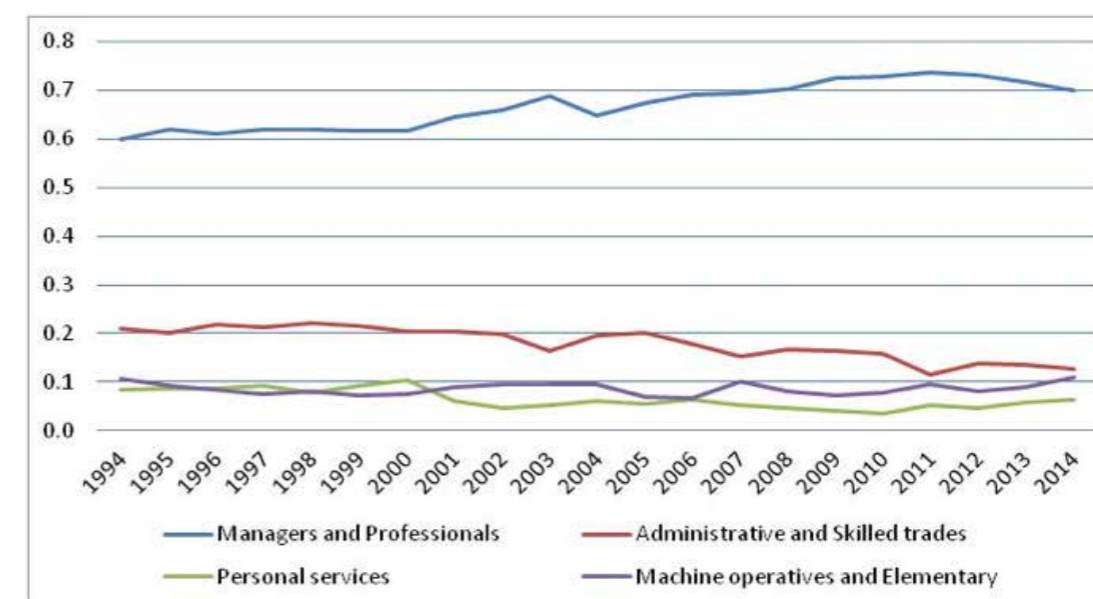
The underlying challenge that becomes apparent from our calculations, is the need to obtain a balance between (i) retaining incentives to effort in the labour market and adopting an approach that is acceptable to higher income earners; whilst (ii) allowing sufficient revenues to provide discounted rents to those who have the greatest need. However, this is an approach that DL is already implementing on the New Era Estate and the response of tenants has been very positive, so this is not a wholly 'academic' exercise.

More work needs to be done if the PerR approach is to be rolled out generally. However, there is clear potential for the adoption of a PerR model to allow for the provision of more subsidised housing, without negatively impacting on the affordability of existing/planned housing. A common theme throughout the report is the necessity for an expansion of the approaches used in London to tackle problems of accommodation, and this report is a first step in tackling the lack of discussion around a Personalised Rents approach, as part of the raft of measures considered. If we are going to support a thriving city, then key workers need to be better accommodated; and the implication from our calculations, is that a Personalised Rent approach may be particularly effective in achieving this outcome at minimum cost.

Appendix

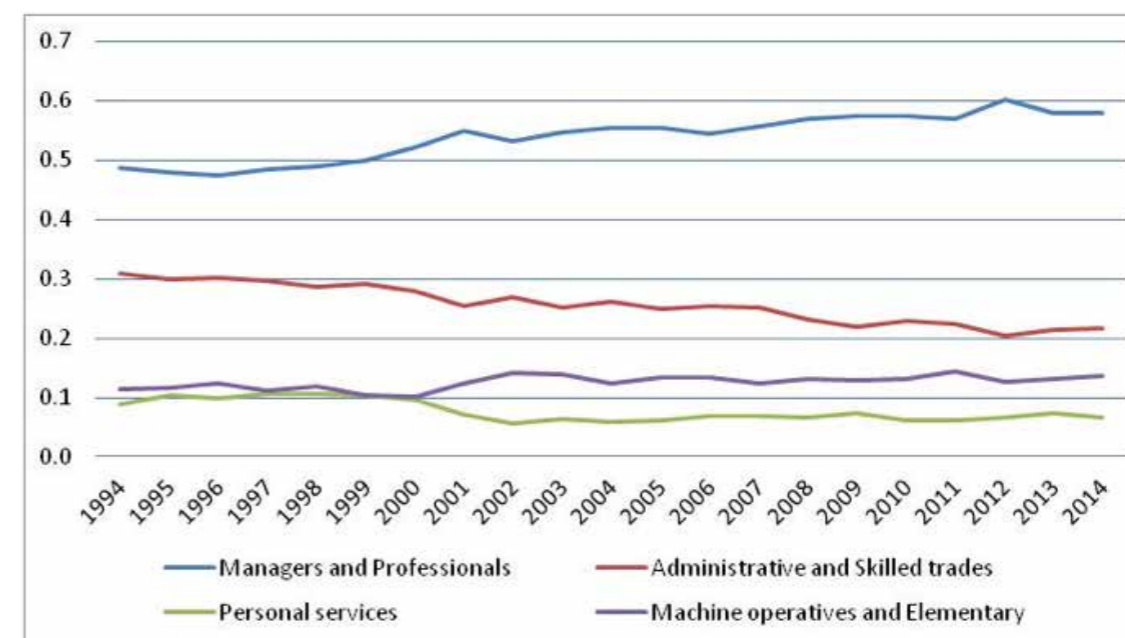
Figures 1 to 11

Figure 1: Changing occupational distribution of the resident working population, in Central London between 1994 and 2014



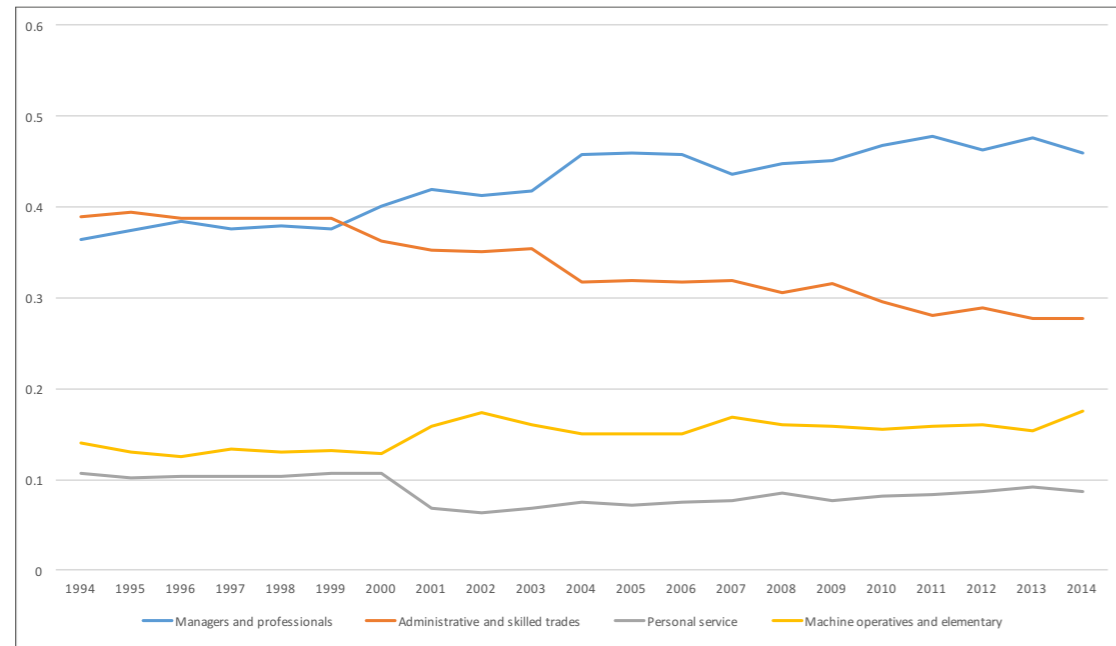
Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

Figure 2: Changing occupational distribution of the resident working population, in Inner London (excluding Central) between 1994 and 2014



Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

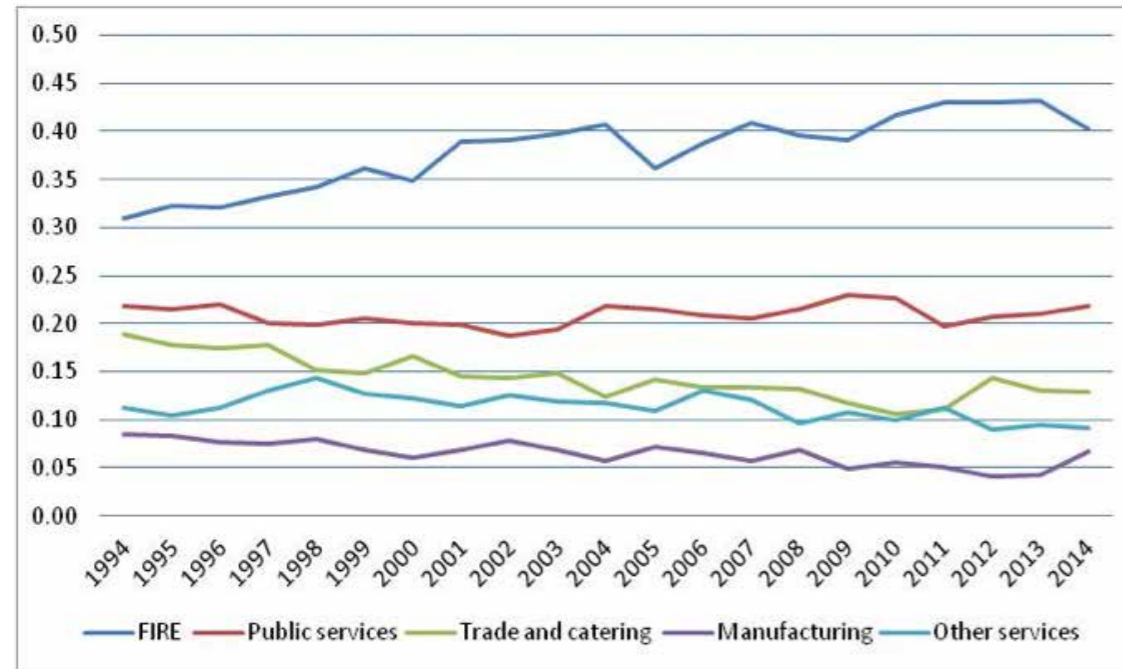
Figure 3: Changing occupational distribution of the resident working population, in Outer London between 1994 and 2014



Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

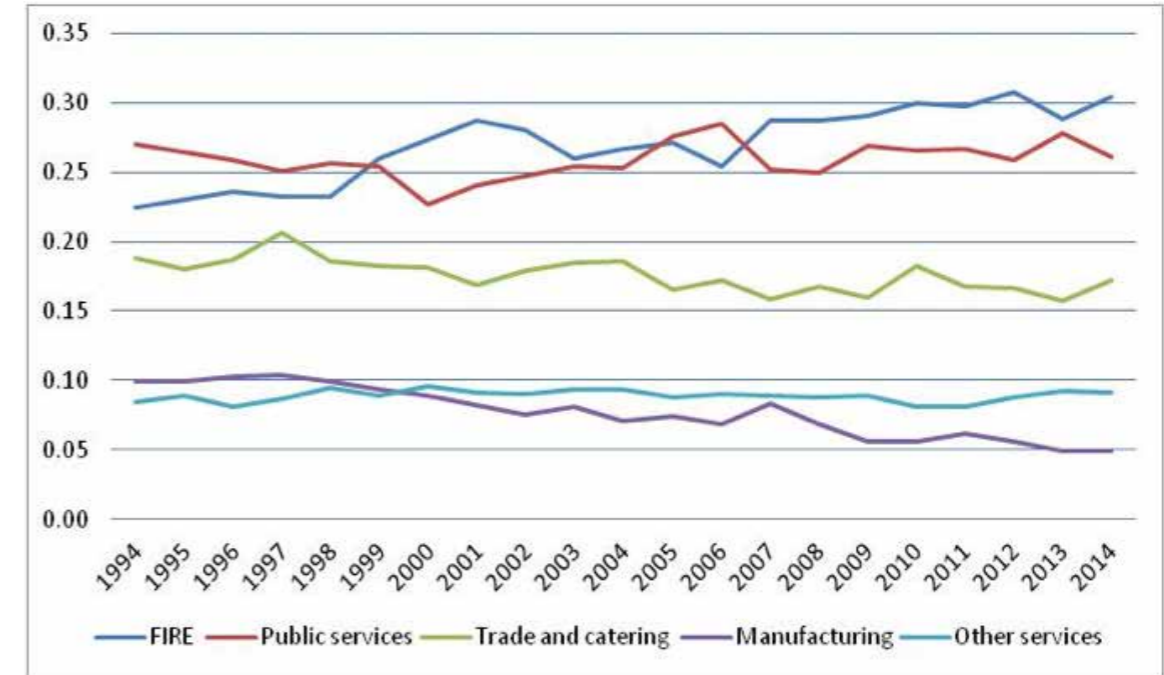
Figure 4: Changing industry sector of the resident working population, in Central London between 1994 and 2014

Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4



Note: FIRE stands for finance, insurance, real estate and business. People working in agriculture and mining have been dropped from the sample

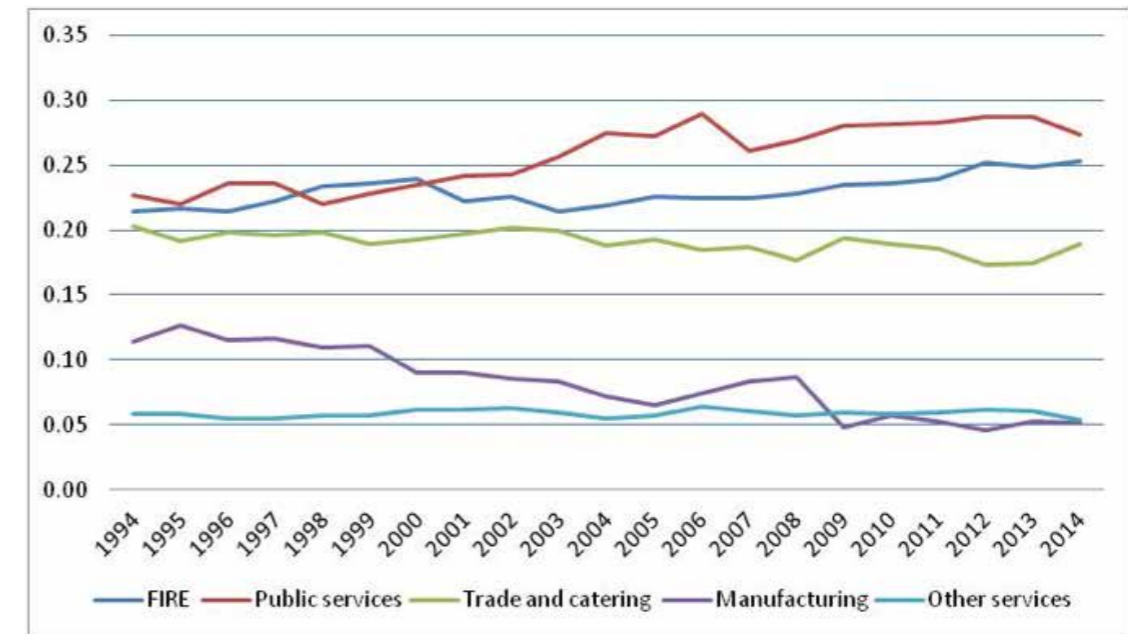
Figure 5: Changing industry sector of the resident working population, in Inner London (excluding Central) between 1994 and 2014



Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

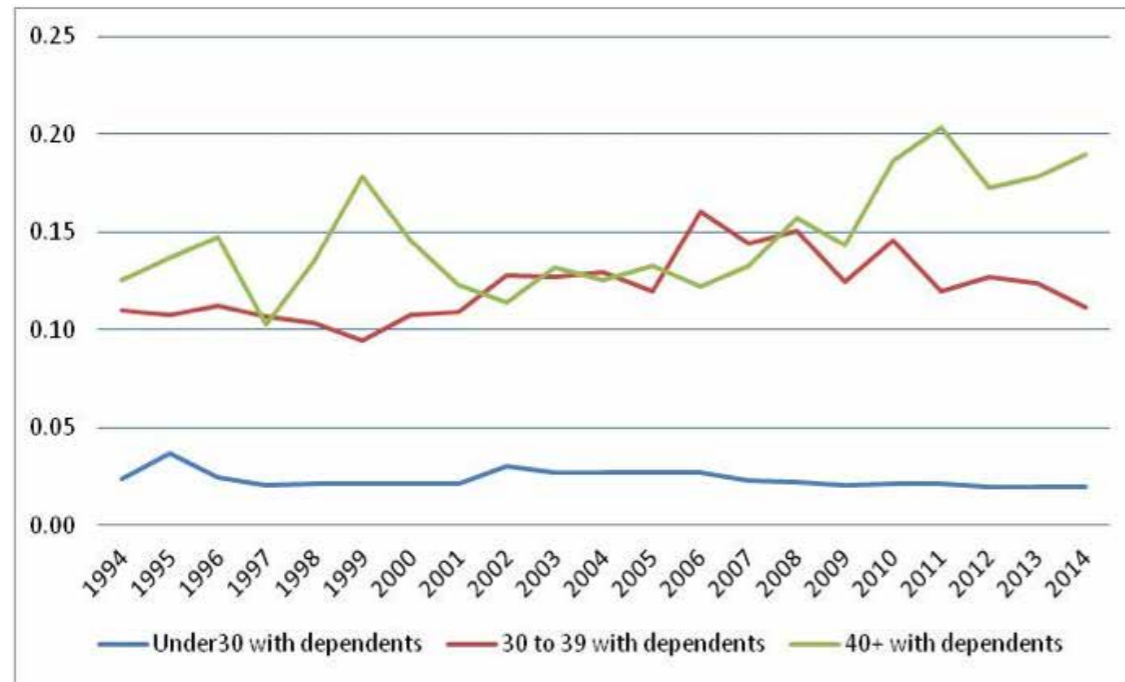
Note: FIRE stands for finance, insurance, real estate and business. People working in agriculture and mining have been dropped from the sample.

Figure 6: Changing industry sector of the resident working population, in Outer London between 1994 and 2014



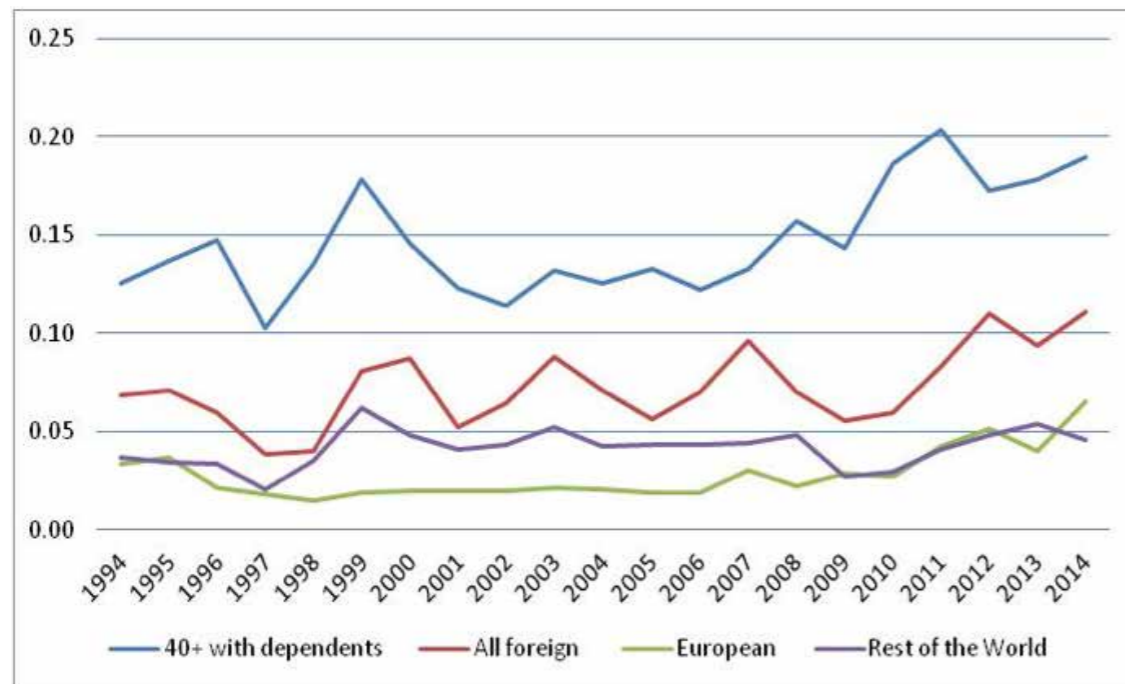
Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

Figure 7: The changing makeup of Central London's resident population in higher occupations according to Age Group, with dependents aged under 18



Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

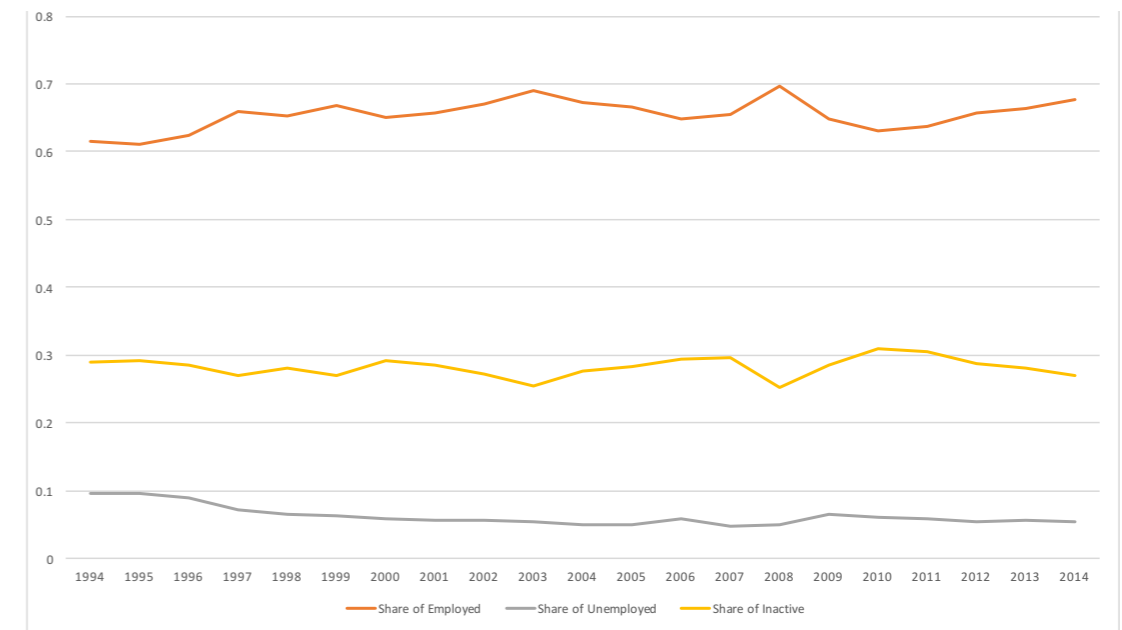
Figure 8: Shares of all foreign, European and Rest of the World among 40+ with dependents, in higher occupations who reside in Central London



Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

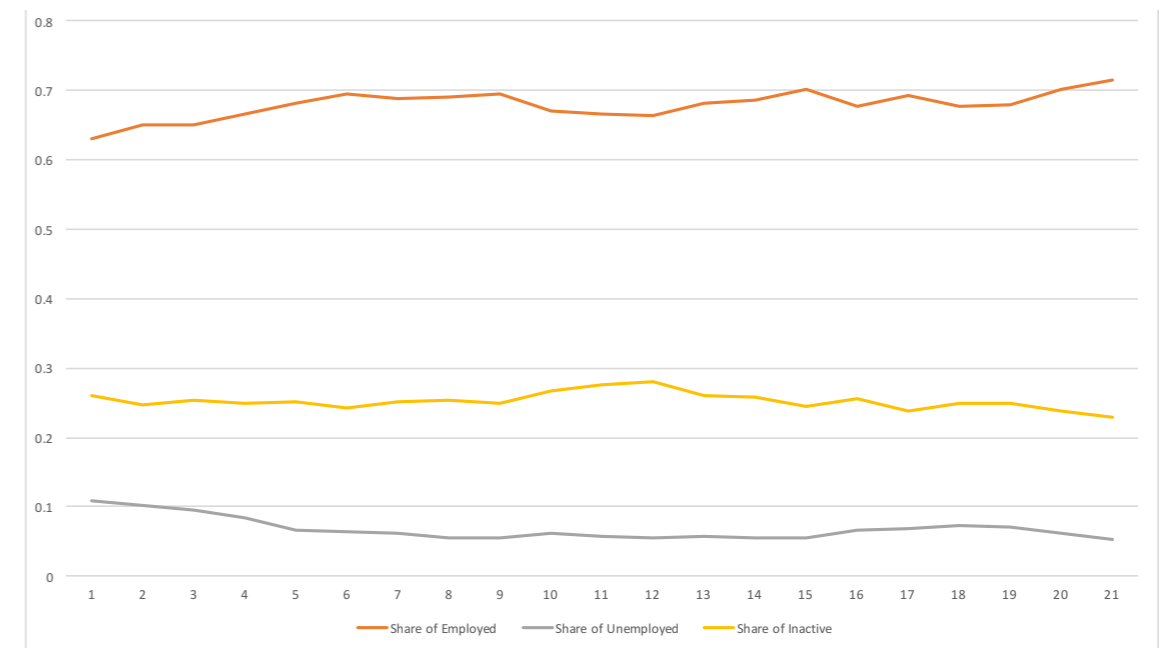
Note: In order to construct Figure 8, we have had to impute values for some years in the series, where the values were blanked because of low cell count. The value for 1997 is replaced with the average between 1996 and 1998; the 2001 value with the average between 2000 and 2002; and the 2004 value with the average between 2003 and 2005

Figure 9: The changing proportions of Central London residents who are Employed, Unemployed or Inactive



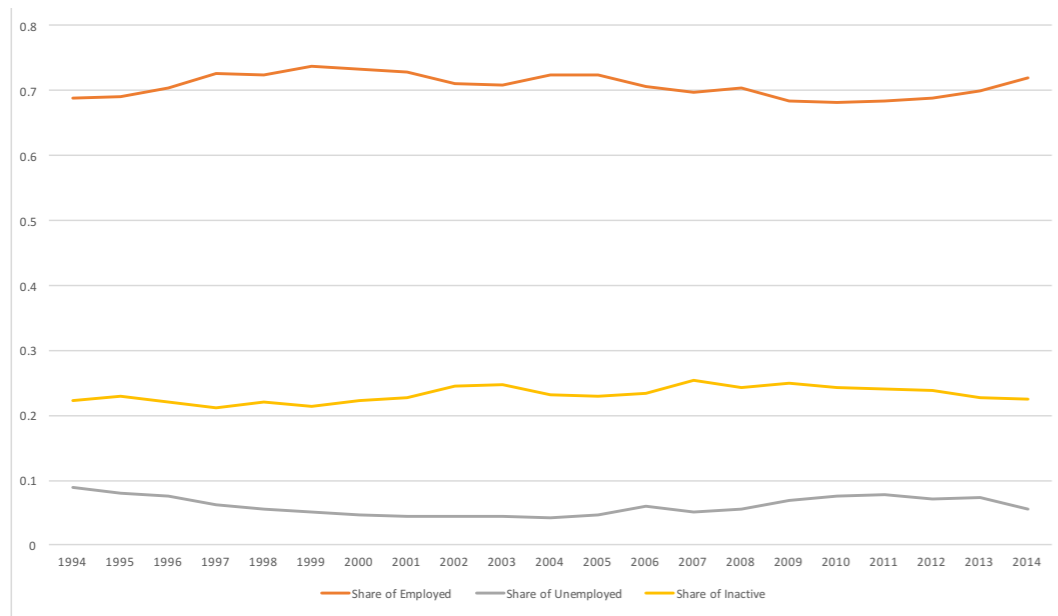
Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

Figure 10: The changing proportions of Inner London residents (excluding Central) who are Employed, Unemployed or Inactive



Source: Quarterly Labour Force Survey, 1994 Quarter 1 to 2014 Quarter 4

Figure 11: The changing proportions of Outer London residents who are Employed, Unemployed or Inactive



Source: Quarterly Labour Force Survey data between 1994 Quarter 1 and 2014 Quarter 4

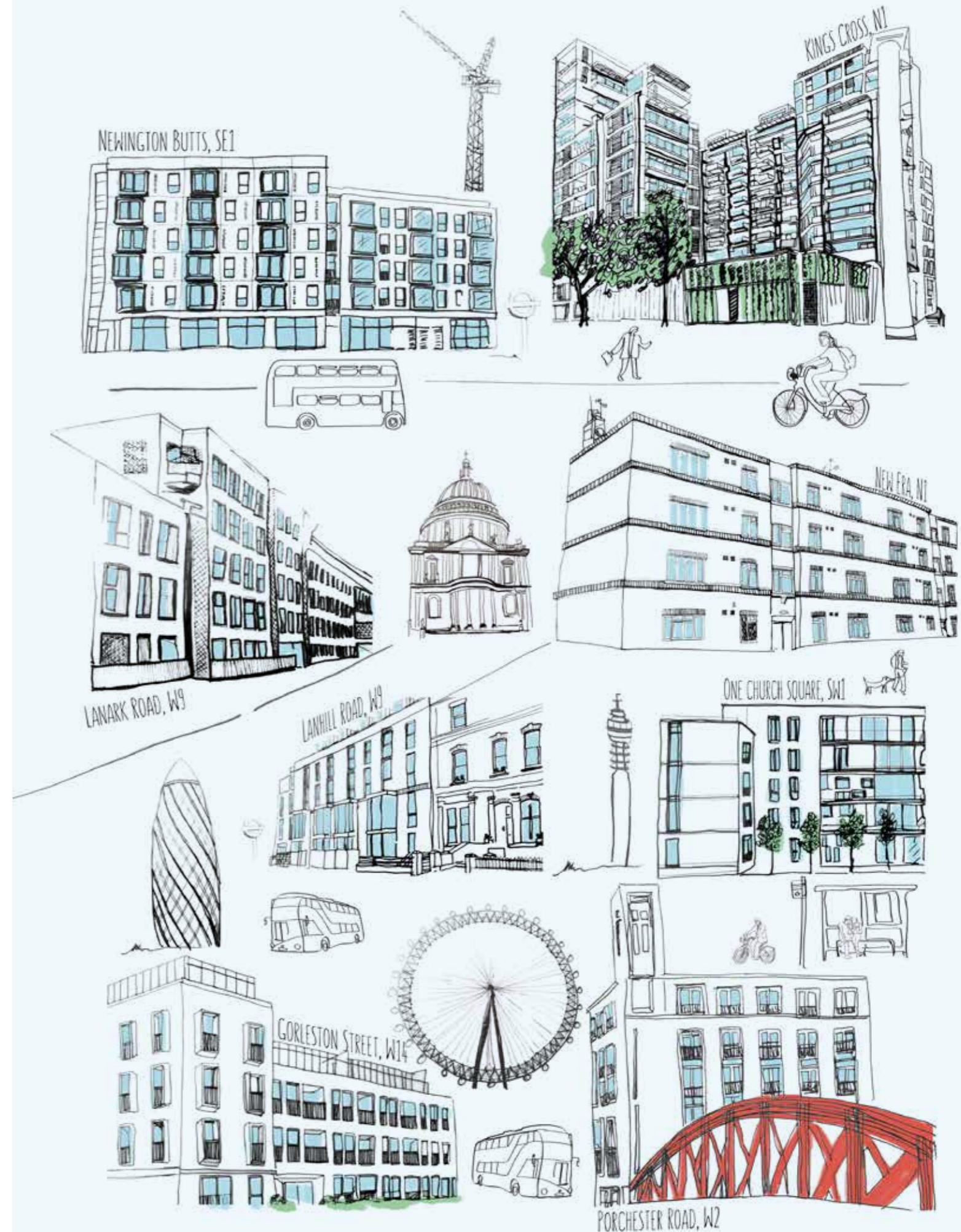
Cost of administering Personalised Rent means tests

The cost for assessing 89 households on the New Era Estate was approximately £16,000 inc. VAT (around £180 per property). This was the cost of hiring a team of officers and a manager from an external contractor, to conduct home visits, complete the proforma, check evidence, administer the data collection and analysis, and calculate rents. A large proportion of this cost is unique to setting personalised rents, owing to the need to set rents on an individual basis. Additionally, much of this cost was associated with the comprehensive approach taken as a result of the high profile estate on which it was implemented, and because it was the first attempt to implement such a policy.

Rent-setting is an existing annual task carried out by landlords. Whilst a rent must be set for each property (and therefore a formula-based calculation or a market-valuation pegged figure must be generated) this is done without the need to contact, gather evidence

from, or means test, the individual tenant. Therefore, we can consider that around 95% of the £16,000 costs associated with the New Era process, were associated with tasks unique to setting personalised rents. In contrast, it is not entirely necessary to visit tenants in order to conduct the means test and a registered provider typically visits 10% of its property a year in order to verify the details of the household, and this means-test is a natural successor to these Tenancy Verification Visits.

In line with other decisions made in this report, we err on the side of caution and assume that the Personalised rental scenario incurs a cost of £16,000 every three years for each 89 properties (as this is the period of tenancy renewal). Clearly some tenants will terminate their tenancy before completing the three-year fixed term, prompting a new letting and means test (and associated cost). However, predicted churn is just under 10% p.a. and our adoption of a figure of £16,000 every three years, which we argue is an over-estimate of costs, incorporates this aspect.





Dolphin Living