



Inner Thames Estuary Feasibility Study

Response to Airports Commission Call for Evidence

The Mayor of London's Submission: Supporting technical documents

23 May 2014

Title: The Strategic Planning Case for a New Hub Airport in the Inner Thames Estuary

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Purpose of paper: To identify the role a new hub airport in the Inner Thames Estuary location could have in relation to supporting the sustainable, long term development of London and its wider city-region.

Key messages:

- London and its wider city-region are facing a number of considerable pressures from an increasing population and continued economic success. These pressures have significant implications for long term strategic planning in terms of how future demands can be met in a way that is sustainable and supports the continuing growth of London's economy.
- Despite its economic success, there are a number of wider social issues, prevalent within parts of east London and the wider Thames Gateway area which could, to a large extent be addressed as part of the wider development benefits associated with the development of a new Inner Thames Estuary hub airport.
- A new hub airport in the Inner Thames Estuary along with its associated surface access improvements would act as a catalyst for regeneration and local economic growth, impacting on land use development patterns, urban and regional economies and other social and community factors.
- A new hub airport located in the Inner Thames Estuary would be best placed to capitalise on a number of significant development advantages to the east of London and, 'kick start' large scale economic growth and regeneration across the Thames Gateway area. This would contribute to the establishment of a long term, integrated strategy for meeting London's and wider city-region needs beyond 2036.

The Strategic Planning Case for a new Hub Airport in the Inner Thames Estuary

1. Introduction

The Mayor of London believes that the delivery of additional aviation capacity in the south east should look beyond 2030. This is essential because not only will new airport infrastructure take many decades to plan and construct, but the scale of growth that is forecast and the potential implications for the long term planning and development of London are significant.

Should a truly long-term approach be taken, it would result in an unprecedented, once in a lifetime opportunity to address much more than airport capacity. A new hub airport could have a critical role in addressing the much wider long term strategic planning challenges that London and its wider city-region face. A new hub airport in the Inner Thames Estuary could help promote sustainable development in appropriate locations, and help secure the long term economic competitiveness of London, the South East and the UK.

Having published the Feasibility Terms of reference for assessing an Inner Thames Estuary option in March 2014¹, the Commission have set out a number of important issues in which further understanding is sought. In responding to each, it is clear that developing a new hub airport in the Inner Thames Estuary will have a number of potentially significant strategic planning implications which could have a pronounced positive impact on the long term spatial and economic development of both London and South East England. These effects would not be constrained to the immediate surrounds of the airport itself, but extend much wider across London and its city-region.

The issue of how the delivery of airport capacity may influence strategic planning decisions is particularly relevant when considering how London may develop beyond 2036. For example, the current draft version of the Further Alterations of the London Plan (January 2014), already identifies that there is insufficient capacity to meet the demand for new housing as set out in the Mayor's draft Housing Strategy. This suggests that opportunities to extend beyond the metropolitan boundary may need to be considered in the longer term if London is to continue to grow.

To help inform the forthcoming feasibility studies and inform the further assessment of an Inner Thames Estuary hub airport option, this report has been prepared alongside TfL's work looking at the economic impacts, surface access improvements and environmental effects. It identifies the potential spatial and strategic planning benefits and impacts that realistically could occur should the construction of a new hub airport in the Inner Thames Estuary take place.

Although the focus of this report is on the construction of a new hub airport in the Inner Thames Estuary, there will be far wider ranging implications for the long spatial development of London associated with whichever option is chosen to address the issue of airport capacity in the UK. Notwithstanding this, the level of direct and indirect impacts and benefits associated with each of the final shortlisted options are likely to differ significantly. It is therefore important that each option is considered within the context of how it can address the wider strategic planning challenges up to 2050 and beyond. In recognition of this, the study undertakes a high level review of what the potential strategic planning implications may be for each of the shortlisted options, based on the information submitted by the scheme promoters as part of their submissions to the Airport's Commission.

¹ Terms of Reference: Inner Thames Estuary Feasibility Studies (Airports Commission, March 2014)

The Structure of the report is as follows:

Section 2 – The study context.

Section 3 – The key strategic planning issues facing metropolitan London and the wider south east of England.

Section 4 – The role that a new Inner Thames Estuary hub airport could have in helping address long term spatial planning challenges identified in Section 3.

Section 5 – A potential development scenario, which demonstrates how the wider strategic planning benefits could be achieved as part of the delivery of a new hub airport in the Inner Thames Estuary.

Section 6 – A high level comparison of how each shortlisted option could help address the strategic planning challenges set out in Section 4, highlighting the need for more detailed consideration of the spatial planning case of each option at the Commission's detailed assessment stage.

The appendices set out in more detail the approach which has been taken to identifying a potential development scenario as a demonstration of how the wider strategic planning benefits could be realised across London and the wider city-region.

2. Study Context

The fundamental aim of this study is to consider the potential strategic planning implications of developing a new Inner Thames Estuary hub airport. As stated, the spatial planning implications embraces effects which will potentially impact on land use development patterns, urban and regional economies and other social and community factors.

Within the terms of reference for the Inner Estuary Feasibility Study, the Commission have identified a number of key issues which are critical to assessing the likely cumulative benefits of delivering a new hub airport within the Inner Thames Estuary and its potential role in addressing not only the issue of airport capacity but also wider long term development challenges. These questions are not only relevant to the construction of a new hub airport, but are also pertinent to the wider long term development challenges facing London and its city-region.

In identifying the long term challenges facing London and the wider south east, consideration has been given to those issues which are highlighted in the Further Alterations to the London Plan², the Mayor's Transport Strategy³, the Mayor's 2020 Vision⁴, draft London Housing Strategy (2013)⁵ and emerging issues set out in the Long Term Infrastructure Investment Plan for London: Progress Report⁶. In considering what the potential benefits of the airport would be, the study builds upon the other work which has been undertaken by TfL and which forms part of its submission to the Commission. Of particular relevance is the economic forecasting work undertaken by Oxford Economics / Ramboll.

In carrying out the work, a number of important assumptions have been made and 'fixes' established, which include:

- Land currently occupied by Heathrow Airport will ultimately become available for redevelopment as a result of Heathrow's eventual relocation (facilitated by the assumed opening of a new hub airport elsewhere).
- The Inner Thames Estuary airport surface access package identified by the Mayor will be fully delivered by 2050.
- Assessment scenarios relate to a timeframe of up to 2050 whereby a new hub airport is assumed to be operating at a capacity of up to 170mppa.
- Potential airport related and catalytic employment generation and associated dwelling demand has been based on the economic forecasts completed by Oxford Economics / Ramboll.
- Potential development capacity has been based on existing evidence and assumptions about potential future sources of supply and constraints (see Appendix 5 for further details).

² Draft Further Alterations to the London Plan (GLA, January 2014)

³ Mayor's Transport Strategy (GLA, 2010)

⁴ Vision 2020 <https://www.london.gov.uk/mayor-assembly/mayor/vision-2020>

⁵ Homes for London: The London Housing Strategy (draft) (GLA, 2013)

⁶ Long Term Infrastructure Plan for London: Progress Report (GLA, 2014)

3. Strategic Planning Drivers and London's Challenges to 2050

KEY MESSAGES

- **London is the engine of economic growth for the UK and South East region.**
- **Despite its economic success, London and its wider city-region suffers from concentrations of high deprivation and unemployment.**
- **London is facing a number of significant immediate and long term challenges as a result of unprecedented population growth and continued economic growth.**
- **These challenges have significant implications for the long term strategic planning of London and its wider city-region in terms of how future demands can be met in a way that is sustainable and supports the continuing growth of London's economy.**
- **There are significant opportunities to secure the potential long term sustainable development outside of the metropolitan area when looking to the east of London.**

3.1 Overview

As the growth engine of the UK's economy and in the context of unprecedented population growth, London and the wider south east are facing a number of long term pressures and challenges which need to be addressed. A co-ordinated approach to long term spatial and land use planning has a key role in helping to address these.

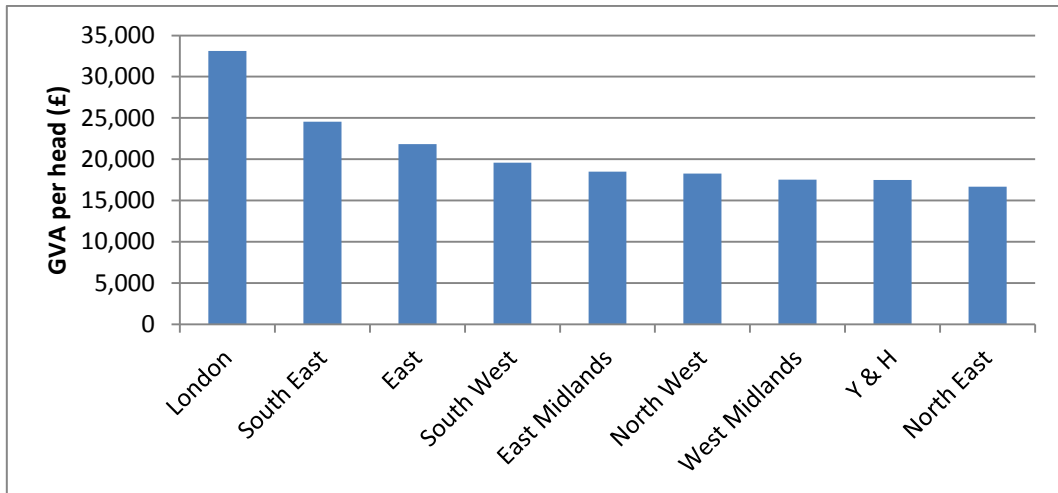
Before setting out how the construction of a new hub airport in the Inner Thames Estuary could act as a catalyst in helping to address these challenges, it is important to identify the primary long term spatial and land use issues that are of fundamental significance to London and the wider south east.

3.2 London and the Greater South East are the engine of the UK's value added economy

London and the Greater South East is the engine of the UK's high value, innovation driven economy. This is reflected in London and the South East having a substantially higher average GVA per head. GVA per head also continues to rise faster in London and the South East compared to the rest of England.

New jobs are being created in greater numbers and at a greater rate in London and the South East, with approximately 80% of new jobs being generated being in the private sector. This reflects the regions' concentration of high productivity, competitiveness and export-oriented industries compared to the rest of the country. The increasing agglomeration effects of high-wage financial, business and professional services in London and the South East confers major benefits to the rest of the UK. These industries tend to be multinational and globally focussed, and are among the most intensive users of aviation services.

Figure 1: Regional GVA per head 2012 (£)



Source: ONS

Figure 2: Index of GVA per head 1997 - 2012



Source: ONS

Figure 3: Regional Employment Growth 1998 - 2012



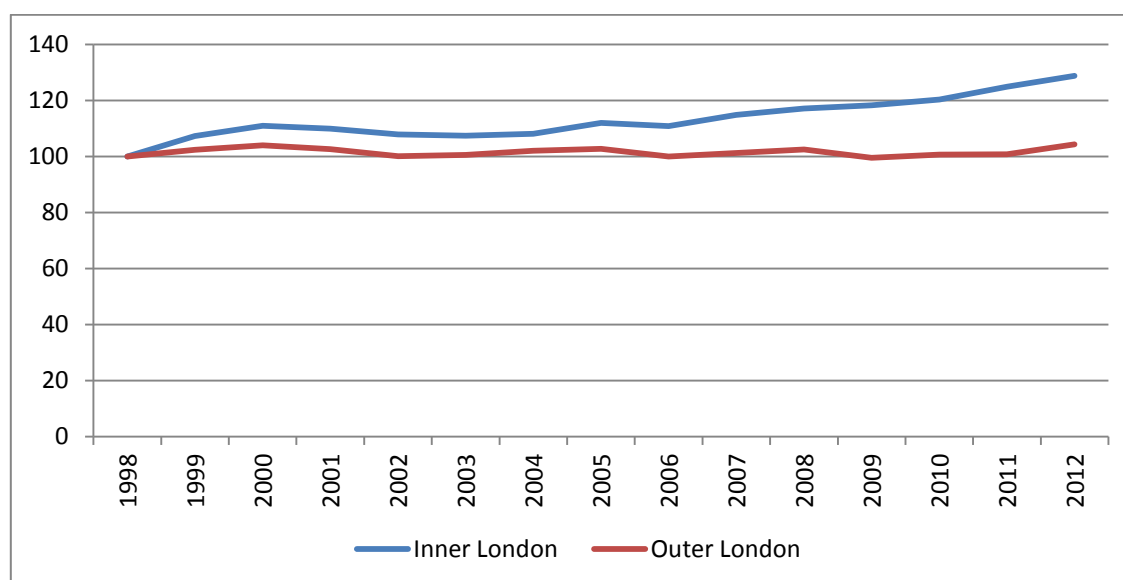
Source: Annual Business Inquiry / Business Register and Employment Survey

3.3 An increasing proportion of job growth in London is being concentrated in Inner London Boroughs.

Over the last 20 years, an increasing proportion of job growth in London has been concentrated in Inner London Boroughs. This reflects a variety of factors including agglomeration effects, proximity to strategic national and international transport hubs, access to major markets and business viability issues. This pattern of growth will remain critical and reinforces the importance of supporting productive economic capacity of Inner London locations including those where growth historically has been less well pronounced (e.g. Newham, Hackney, Greenwich, and Lewisham).

Notwithstanding this, it is also important to recognise the need to help rebalance London's economy, distributing it more widely across Outer London areas; promoting long term sustainable economic growth for London by providing for a range of employment types, better alignment between highly skilled labour supply (located in outer London Boroughs and outside of London) and allowing businesses to benefit from more affordable workspaces.

Figure 4: Distribution of Employment Change in London 1998 – 2012

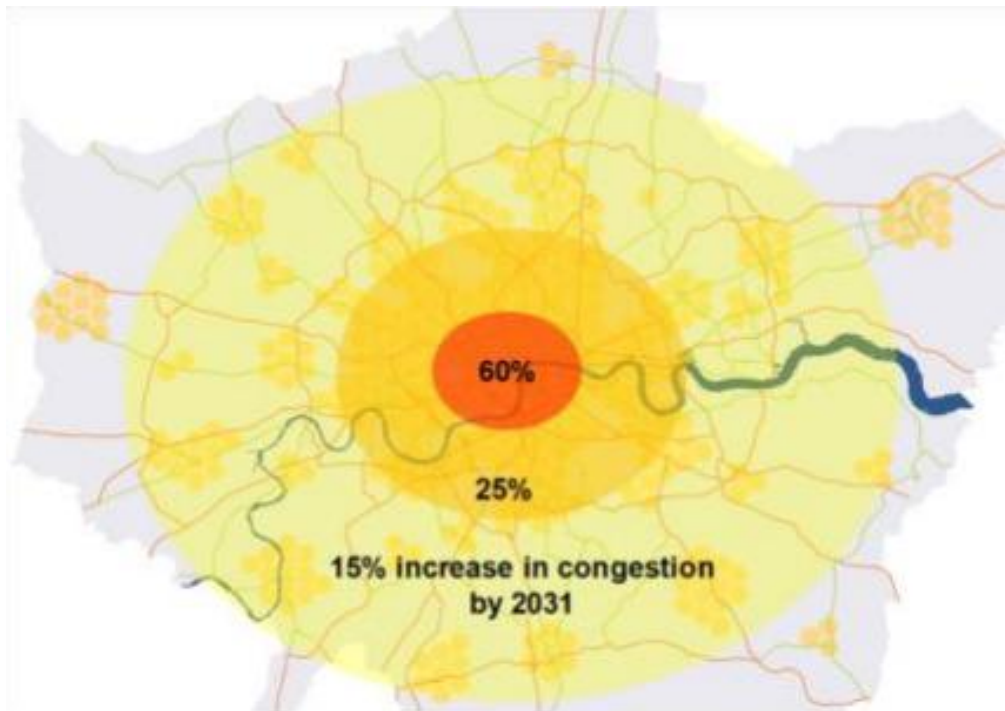


Source: Annual Business Inquiry / Business Register and Employment Survey

The concentration of employment within Inner London Boroughs also has associated challenges relating to the effective long term management and operation of London's transport network. The sustained employment growth of Inner London, combined with affordability issues which limit residential location choice to cheaper areas further from the centre, will continue to exert pressure on London's transport network, particularly on public transport routes which are currently subject to severe congestion or overcrowding. If current development patterns continue, it is likely that the demand on the London's transport network would be unsustainable, especially on radial routes to and from Inner London Boroughs and at key transport interchanges.

Within his Transport Strategy, the Mayor recognises that if London is to develop more sustainably, then a more effective integration between land use and transport planning is required (e.g. the London Plan supports the delivery of employment growth in Outer London areas to help better align the provision of jobs with where people live), along with additional investment in radial routes and the wider public transport network. To help to relieve pressure on the centre of London, the Mayor has identified a number of Opportunity and Intensification areas, many of which are located in outer London areas to the north and east of London where significant development capacity exists.

Figure 5: Forecast Increase in road congestion to 2031



Source: Mayor's Transport Strategy

Figure 6: Standing Passengers on London Underground



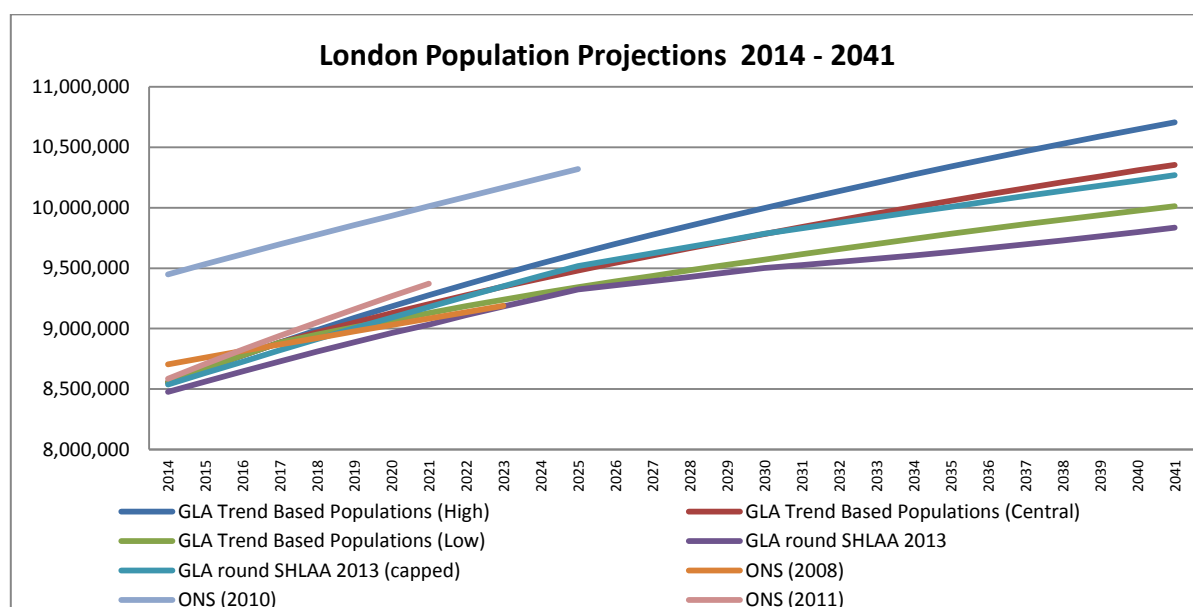
Source: TfL 2014

3.4 Unprecedented population growth as a result of in-migration and continued economic growth

The 2011 Census showed that between 2001 and 2011, London grew at a much faster rate than was previously projected. London's population grew by an average of 87,000 pa, to 8.2 million in 2011 rather than the 7.8 million previously projected.

By the 2020's it is expected that London's population will be greater than it has been at any time in its history. GLA population projections suggest that London's population could grow between 64,000 – 88,000 pa up to 2036 resulting in over 10 million people living in London by 2036. Even under lower growth scenarios, the population is expected to exceed 10 million by 2041.

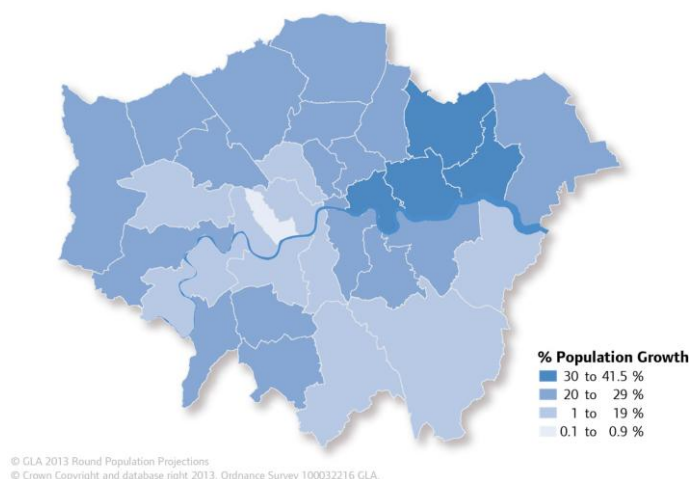
Figure 7: London's Projected Population Growth 2011 - 2041



Source: GLA Demographic Projections 2013

The majority of future growth is forecast to occur in the northern and eastern Outer London Boroughs, confirming the important role that the Outer London Borough's (particularly east London Borough's) will have in accommodating London's long term growth.

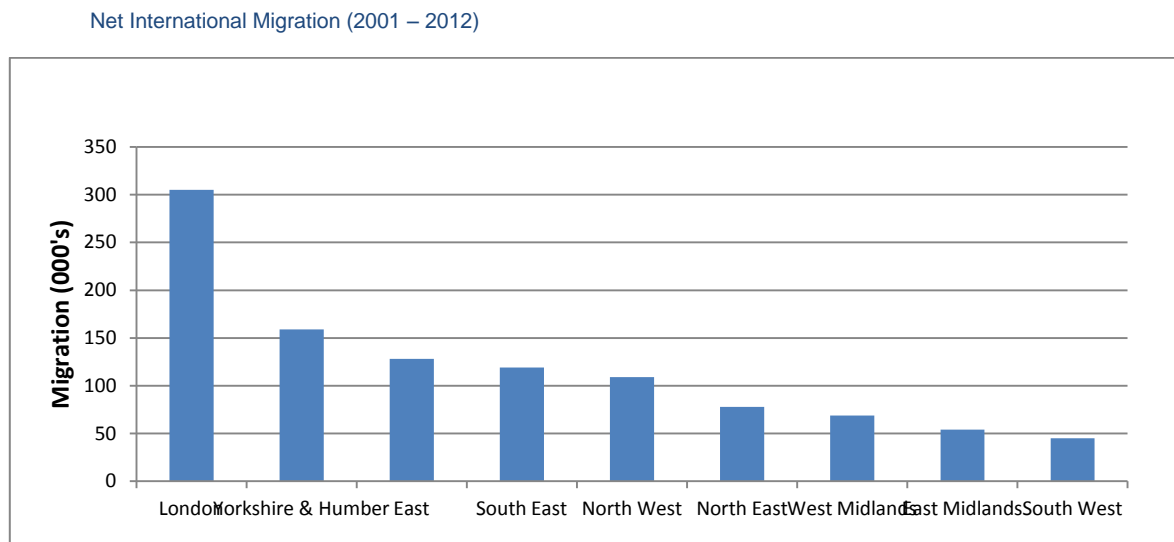
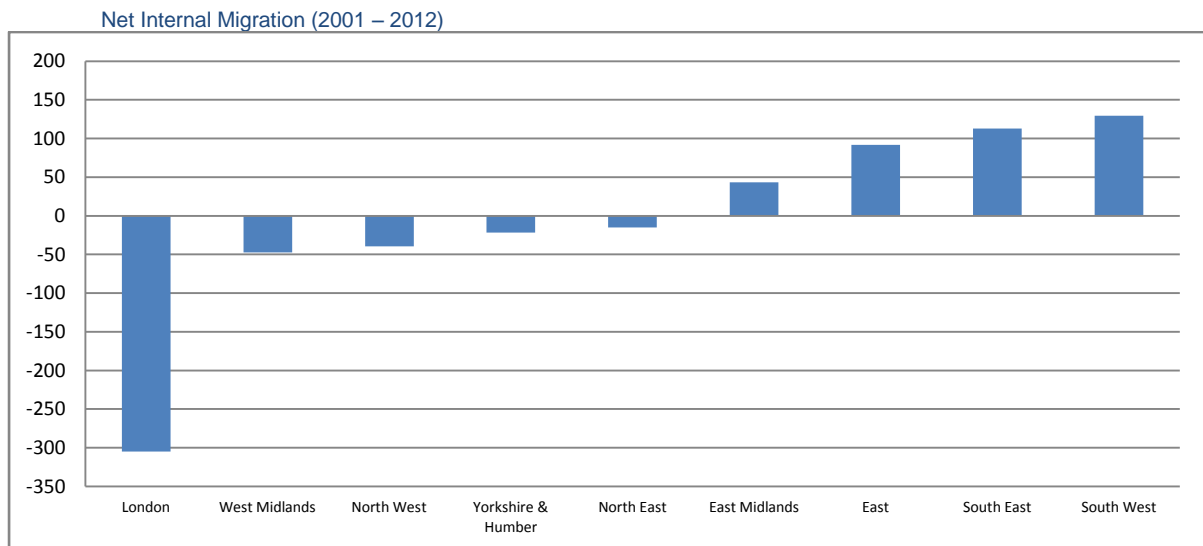
Figure 8: Distribution of London's Population Growth 2011 – 2036



3.5 Delivering the housing required to maintain London's economic competitiveness

Despite high rates of population growth in London, these trends mask patterns of migration whereby London is a major net importer of international migrants and the UK's leading net exporter of internal migrants. This partly reflects a lack of housing supply and knock on effects of housing affordability constraints amongst low and middle income earners in the capital.

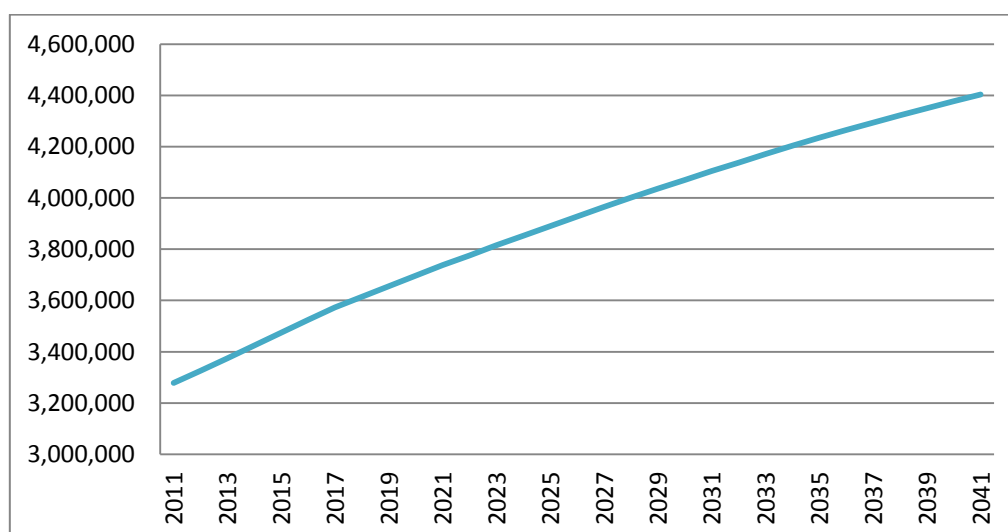
Figure 9: Net Internal 'out' Migration and International 'in' migration 2001 - 2012: London's role



Source: ONS

Recent household projections produced by the GLA suggest that by 2041 there will be a total of 4.4 million households in London. This equates to an additional demand of 1,260,000 dwellings (or 42,000 dwellings per annum).

Figure 10: London's Projected Household Growth



Source: GLA Household Projections (2013)

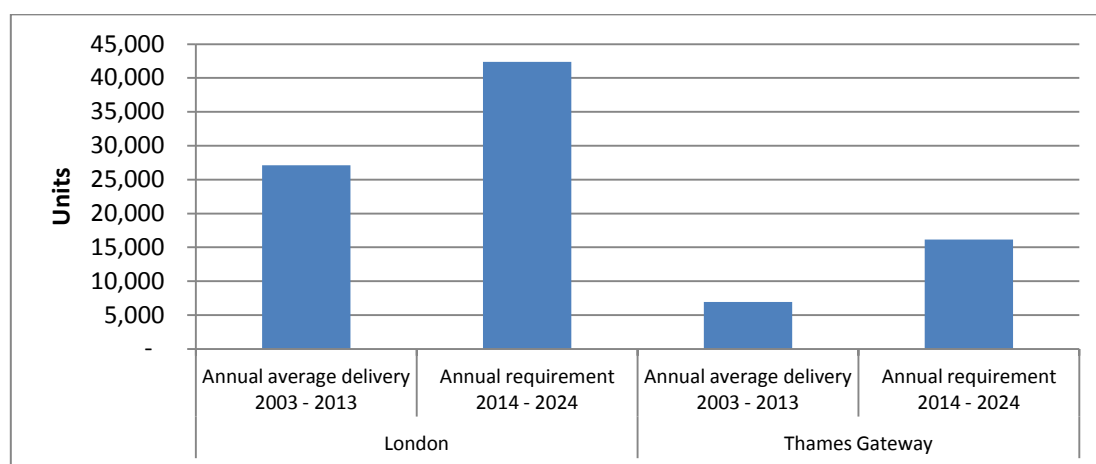
Despite the exceptional demand for additional housing, there are two main challenges (Box 1) that suggest in the long term, the available housing land supply available in London will be insufficient to meet the projected demand.

Box 1: Constraints to meeting London's housing need

Maximising delivery within London – the Further Alterations to the London Plan (FALP) identifies a housing target of 42,000 dwellings per annum. Current delivery rates within London Boroughs overall are well below this, with the average delivery rate over the last 10 years (2003 – 2013) being 27,130 (see Figure 11). There are particular delivery issues within east London Boroughs where greatest population growth is expected over the next 20 years. Currently, the average delivery rate for east London Boroughs is approximately 60% of their target (over the last 10 years) and these Boroughs would be required to up their combined delivery rate by approximately two and a half times in order to meet FALP requirements.

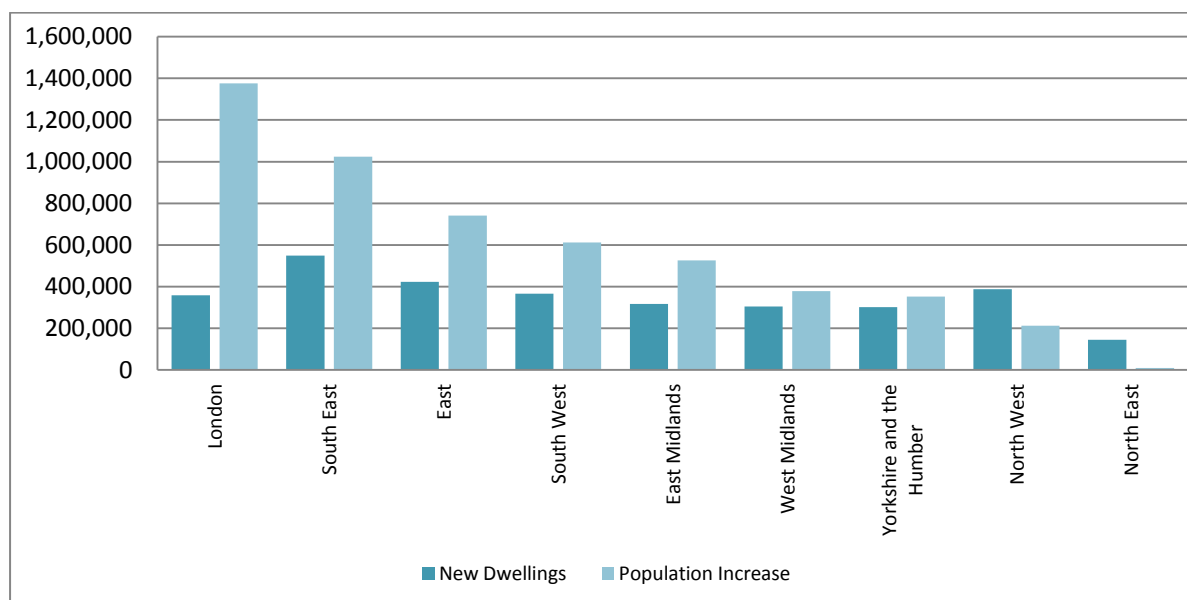
Meeting London's housing demand within London's boundary – Notwithstanding the 42,000 dpa target set out in the FALP, the projected demand for additional households up to 2036 is 49,000 dpa (draft London Housing Strategy, 2013). The lower figure of 42,000 set out in the FALP is as a result of constrained land supply within London's metropolitan boundary as identified in the 2013 London SHLAA. In the long term, this suggests that in the long term, it is likely to be difficult to meet London's housing need within its boundary and greater consideration will need to be given to meeting this demand outside the metropolitan area.

Figure 11: Housing Delivery vs Housing Targets in London



Source: GLA Further Alterations to the London Plan 2014

Figure 12: Increase in Dwellings Supply and Population Growth by Region 1991 – 2011



Source: ONS & DCLG

As a consequence of London's housing supply issues, there is an emerging housing affordability crisis. In October 2013, the average house price in the capital was £438,000⁷, compared with an England average of £248,000, with average prices in London having risen by 10% in the last twelve month period, compared with 4% nationally.

The challenges of meeting London's long term housing demand, coupled with high affordable prices, means that there are significant constraint on London's housing market which need to be addressed if London is to maintain its global competitiveness as an economic powerhouse and engine of growth for the UK. The recent London Business Survey⁸ confirmed that the affordability of housing is impacting on business productivity and identifies housing costs as one of the biggest threats to competitiveness within the London, with almost half of respondents (46%) see it as a high or medium risk to their business.

⁷ Mayor of London draft Housing Strategy (December 2013)

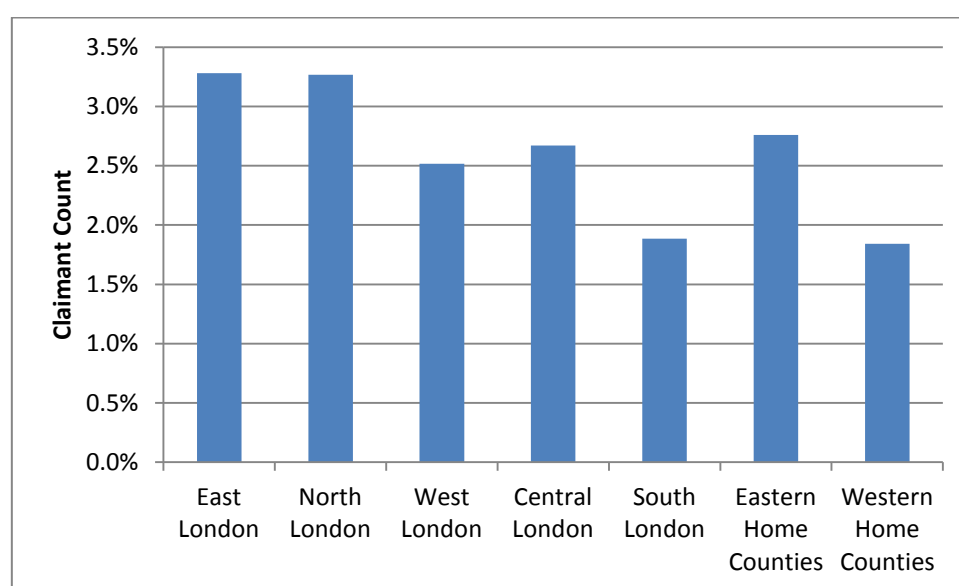
⁸ London Business Survey (CBI, April 2014)

3.6 Although London and the Greater South East drive the UK economy, substantial concentrations of deprivation and unemployment stubbornly remain.

Despite its economic success, London and its wider city-region still suffer from significant pockets of deprivation and high unemployment. Many of these exist in east London and within the wider Thames Gateway area. When considering the issues, potential opportunities to address these and the potential benefits of doing so, it can be seen that:

- London's potential supply of new development capacity is located primarily where the extent and concentration of deprivation is most pronounced.
- Unemployment is relatively high in east London. In the Thames Gateway sub-region, the overall employment rate is 71% compared to 75% in surrounding areas.
- Deprivation is especially significant east of London. In the Thames Gateway, around 10% of local areas are amongst the top 10% most deprived in England (compared to 4% overall in the Greater South East). Maps 3 and 4 in Appendix A show the high levels of deprivation along east London and parts of north Kent and south Essex (along the Thames Gateway).
- If GDP and GVA in the Thames Gateway were to match the Greater South East's averages in 2012, this would add an additional £12billion to the regional economy by 2020⁹.

Figure 13: Sub-Regional Claimant Count April 2014 (residence based %)



Source: ONS

3.7 Managing London's effects beyond the metropolitan area

Forming part of a wider city region, London is inextricably linked with the wider south-east. With almost two thirds of the city region's population living outside of London, and almost half of all jobs located outside of London, the wider city-region is facing similar challenges to those of London's metropolitan area. As with London itself, these challenges require a joined up and co-ordinated approach if the long term sustainable development of the city region is to be achieved.

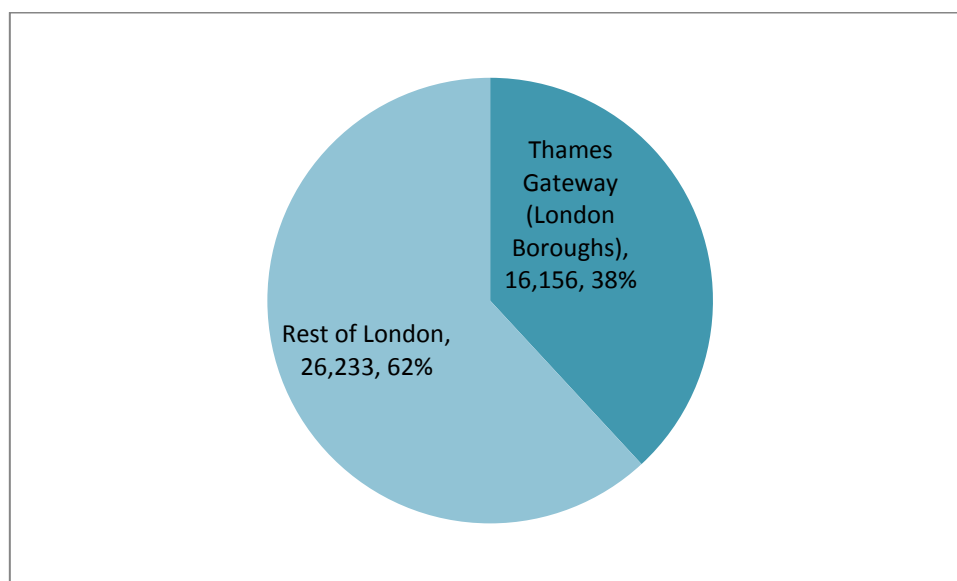
⁹ Atkins analysis of ONS Gross Value Added statistics 2012

Through the London Plan, the Mayor advocates the better coordination of strategic planning through the identification of a number of growth corridors which extend beyond London's metropolitan boundary and into the wider city region. The successful growth of these areas is yet to be realised and delivery within these corridors is critical if the competitiveness of London and the wider city region is to be maintained in the long term.

When looking at the Thames Gateway, this offers the largest single latent supply of development capacity in the Greater South East and offers unprecedented opportunities to address the economic balance between east and west, with the opportunity to enhance demand and help realise underlying economic opportunities. Key characteristics of the Thames Gateway area include:

- Over 36% of London's identified housing supply for the period up to 2021 is located in the Thames Gateway sub-region.
- Of the total potential housing land supply identified in the Greater South East, over 34% is located in the Thames Gateway (which represents only 3% of land in the Greater South East).
- The vast majority of the land available for development in the Thames Gateway has been previously developed. The sub-region represents the largest economic regeneration opportunity in Europe.
- The Thames Gateway¹⁰ has a total identified capacity for the provision of at least 380,000 residential units. Key development locations identified to date include: Barking Riverside; Greenwich Peninsula; Bexley Riverside; Dartford; Gravesham; Medway; Basildon and south Essex coast. Maps 3 and 4 in Appendix A illustrate the distribution of latent development capacity in London and the Greater South East.

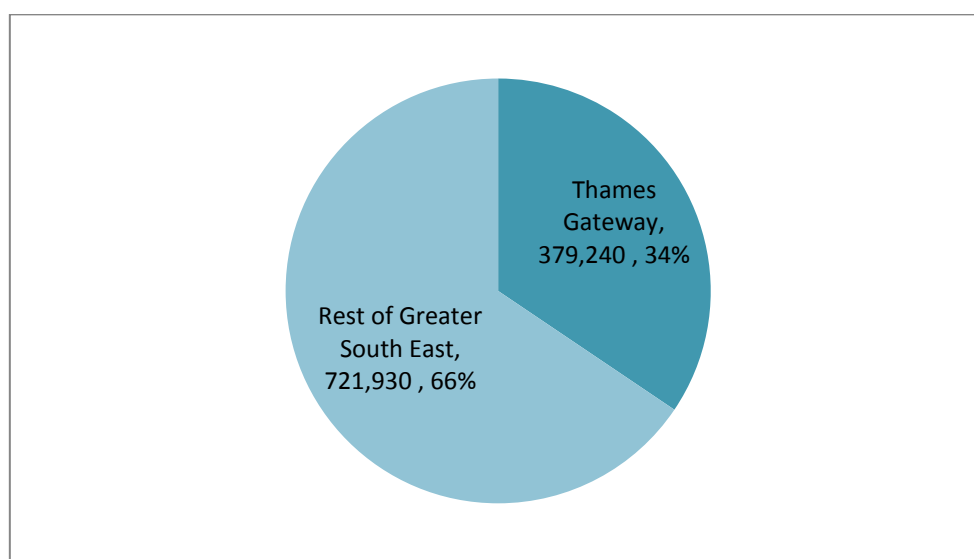
Figure 14: Identified Housing Capacity (dpa) in London 2014 - 2024



Source: Further Alterations to the London Plan 2014

¹⁰ LB Barking & Dagenham; LB Bexley; LB Greenwich; LB Havering; LB Lewisham; LB Newham; LB Redbridge; LB Tower Hamlets; LB Waltham Forest; Southend; Thurrock; Basildon; Castle Point; Rochford; Medway; Dartford; Gravesham and Swale.

Figure 15: Total identified Housing Capacity in Greater South East



Source: Previously Developed Land Statistics DCLG

Despite the Thames Gateway / East Thames Corridor regeneration concept having been in existence for 20 years, the delivery of new residential and employment opportunities has been much lower than originally envisaged. The Audit Office has identified a lack of transport / access infrastructure investment being the single largest constraint to development¹¹. Other key factors include physical development constraints such as land contamination and site assembly challenges. Moreover, the market has been reluctant to invest on a magnitude required to generate sufficient momentum and critical mass required to kick start waves of large scale and Gateway wide development.

¹¹ People, Places and Prosperity: Delivering Government Programmes at the Local Level (Audit Commission, 2004).

4. How can a new hub airport for London in the Inner Estuary help to address London's long term strategic planning challenges?

4.1 Overview

The development of a new hub airport within or in the vicinity of the Inner Thames Estuary has the potential to act as a major and unprecedented catalyst for regeneration and economic growth across the sub-region, especially along the identified Thames Gateway growth corridor.

An intervention of a similar scale to that which would be associated with delivery of a new hub airport in the Inner Thames Estuary is likely to have a significant upward effect in terms of land and development values; creating a boost to the viability of large scale development projects, many of which are located within the airport's wider development corridor and have remained dormant for many years. Moreover, the catalytic effect of locating a hub airport to the east of London would stimulate housing markets in previously less buoyant areas; helping to address the long term issues relating to housing supply in London and the south east. In turn this would impact positively on London's labour market and help address the economic imbalance across the wider city-region economy as a whole.

Within the context of the long term challenges set out in Section 3, it can be demonstrated that the potential benefits and impacts of a new hub airport in the Inner Thames Estuary are likely to have a number of significant advantages in terms of delivering growth and helping to secure the long term economic competitiveness of London. In turn, these benefits are likely to have a number of wider impacts, such as reduced commuting times, the provision of employment within the most deprived areas of London and the south east; and most significantly, the delivery of much needed housing.

However, critical to maximising the latent regeneration and development opportunity presented by the delivery of a new hub airport to the east of London would be the need to capitalise fully on the surface access solutions aimed at serving airport demand. This would require a clear integrated planning framework for delivery of new transport infrastructure with the dual objective of serving surface access demand and significantly improving access to key development areas. Together, this level of investment could kick start development along the Thames Gateway, helping to bring forward key development nodes and helping to shape the long term sustainable development of London.

The potential development benefits of an Inner Thames Estuary hub airport are considered in more detail below.

4.2 Helping to address the west – east spatial metropolitan economic imbalance

In 2012, London accounted for 22.4% of the UK's total GVA output. West London locations are accountable for the majority of this with west Inner London areas and Outer Boroughs in west and north west London accounting for 60% of the total GVA output. In contrast, the output of London's eastern areas is almost half that of western areas, accounting for only 33% of total output.

Figure 16: Geographical breakdown of London's GVA 2012, current prices



Source: GLA 2014¹²

When comparing east London Borough's to west London Borough's across a number of key economic indicators¹³, it can be seen that:

- Overall, east London Borough's have a lower employment rate (67%) and higher unemployment rate (10.5%) compared to west London Borough's (71% and 8.5% respectively). When comparing individual Borough's, the difference in employment is far greater with unemployment in Richmond upon Thames (3.2%) significantly less than that seen in the most deprived Boroughs of Barking and Dagenham (15.5%) and Tower Hamlets (12.4%).
- There is a higher proportion of benefit claimants in east London Boroughs (12.4%) compared to west London Boroughs (9.3%).
- There is a much lower skilled workforce in east London Boroughs with a higher proportion of working age population having no qualifications (10.8% compared to 7.6%) and almost 10% fewer residents with Level 4 qualifications or above compared to east London Boroughs.
- There are a higher percentage of low paid workers in east London Boroughs (see Figure 17).
- There are fewer active businesses in east London Boroughs (9,024) compared to west London Boroughs (12,954) meaning that there are fewer jobs available and as a result a much lower jobs density in east London (0.56) compared to west London (0.77).

Together, these variations in economic performance between east and west London Boroughs' impact upon the ability to achieve long term sustainable economic growth across London. Not only do they demonstrate a level of inequality between London's various sub-regions, but they also result in significant pressure being placed on employment centres in London Boroughs where there is a higher proportion of lower skilled jobs. For example, 2001 Census Travel to work data shows that central London sources employees with low

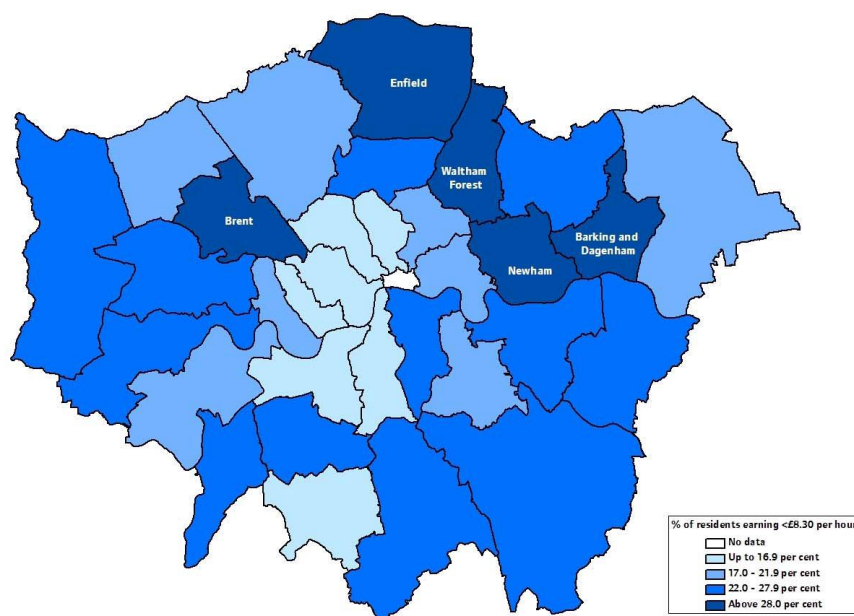
¹² Regional, sub-regional and local gross value estimates for London 1997 – 2012: Current Issues Note 41 (GLA, 2014)

¹³ Taken from FALP and London Data Store Borough Profiles (2014)

qualification levels primarily from the east¹⁴. In turn, these trends place increased pressure on the transport network, which as outlined above has the potential to impact on the economic competitiveness of London in the long term.

Whilst it is important to maintain the economic strength of west London (which currently hosts a number of multinational company headquarters and other high value employment), there is also a need to ensure that the benefits of London as a global economic hub are spread more widely across the metropolitan area, by encouraging an increase in employment across other parts of outer London where it can reduce pressure on existing employment centres and help to address wider issues, such as concentrations of high unemployment or deprivation .

Figure 17: Low paid employees, by area of Residence (Source: GLA Economics, 2012)



By helping to develop a range of employment opportunities more closely aligned to available workforce; promoting new employment centres in key locations; helping to improve self containment; and encouraging higher skilled workers to the sub-region, the delivery of a new hub airport in the Inner Thames Estuary would have a critical role in helping to address the economic imbalance between east and west London.

From the analysis of projected employment growth from a new hub airport in the Inner Thames Estuary and existing trends associated with Heathrow in the west of London, it is reasonable to consider that a number of lower skilled employment opportunities (such as those in the transport / wholesale sectors) directly linked to the airport and its supply chain will be provided in both east London Boroughs and its adjoining areas. However, the hub airport and associated investment in surface access infrastructure would also mean that east London Boroughs and eastern areas outside the metropolitan area would also attract a number of higher skilled employment opportunities through the accommodation of catalytic employment growth, especially within established or emerging employment centres.

However, it is important to note that despite the relocation of Heathrow airport, it is expected that a new hub airport in the Inner Thames Estuary would continue to support the expansion of existing high value employment sectors in the west of London as the area would still be located within an appropriate journey time of a major hub airport, would enable businesses to build upon existing agglomeration benefits and would not affect a number of the other factors which affect locational decision making of large multinational

¹⁴ Working Paper 36: Commuting patterns in London by qualification level and employment locations (GLA Economics, 2009)

businesses. Furthermore, the relocation of lower value airport operations, would have a positive impact on helping to address potential constraints on continued economic growth currently associated with the availability of employment land.

4.3 Bringing forward new employment areas and supporting the growth of established employment sectors elsewhere in London and the south east

As well as supporting the generation and enhancement of employment opportunities in east London and wider city region, the delivery of a new hub airport in the Inner Thames Estuary would also have a number of positive benefits for boosting employment sectors elsewhere in London, by supporting the growth of existing employment centres and enabling a more polycentric approach to employment development.

A significant proportion of low skilled residents in East London, South Essex and North Kent currently commute to central London for work. The hub airport would provide a range of new jobs aligned with skills of the economically active population in these areas, which would indirectly free up a number of lower skilled employment opportunities in more central London Boroughs as a result of fewer residents from east London seeking suitable employment. This would have a positive impact on helping to improve self-containment (particularly with lower paid work) for London as a whole.

The delivery of a new hub airport in the Inner Thames Estuary could also facilitate the development of new employment hubs at key growth areas in east London Boroughs and neighbouring areas (e.g. the potential for a new transport / logistics hub around Thurrock / Dartford) and the significant redevelopment opportunities offered by the provision of redevelopment opportunities brought about by the relocation of London City and Heathrow airport.

By reducing the level of commuting for lower skilled jobs and facilitating the development of new employment hubs, the construction of a hub airport in the Inner Thames Estuary could help free up development capacity and capacity on the existing transport system, key transport nodes and interchange. This additional capacity could be used to support the most productive employment sectors (e.g. financial sector [City of London]; digital, creative, science and technology [Islington /Camden]), located within established employment centres, facilitating wider agglomeration benefits and contributing towards wider economic objectives of the Mayor and London Enterprise Panel¹⁵.

4.4 Unlocking London's and the South East's Development Potential

The delivery of a new hub airport in the Inner Thames Estuary is likely to have a critical role in maximising London's development potential and significantly boosting the supply of housing, thus underpinning sustainable economic growth within the capital and making a positive contribution towards meeting the challenging housing targets set out in the London Plan. An Inner Estuary hub would help support a long term development strategy along an established growth corridor which will help meet long term development needs of London and the wider south East.

Located to the east of London, there would be a number of significant opportunities for the new hub airport to act as a catalyst for wider development along the Thames Gateway which, as previously stated has the biggest supply of previously developed land in the south east of England. Within a London context, the hub would help facilitate the significant uplift in delivery rates required to meet the London Plan targets set out in the FALP. How a new hub airport in the Inner Thames Estuary may help achieve this is set out below.

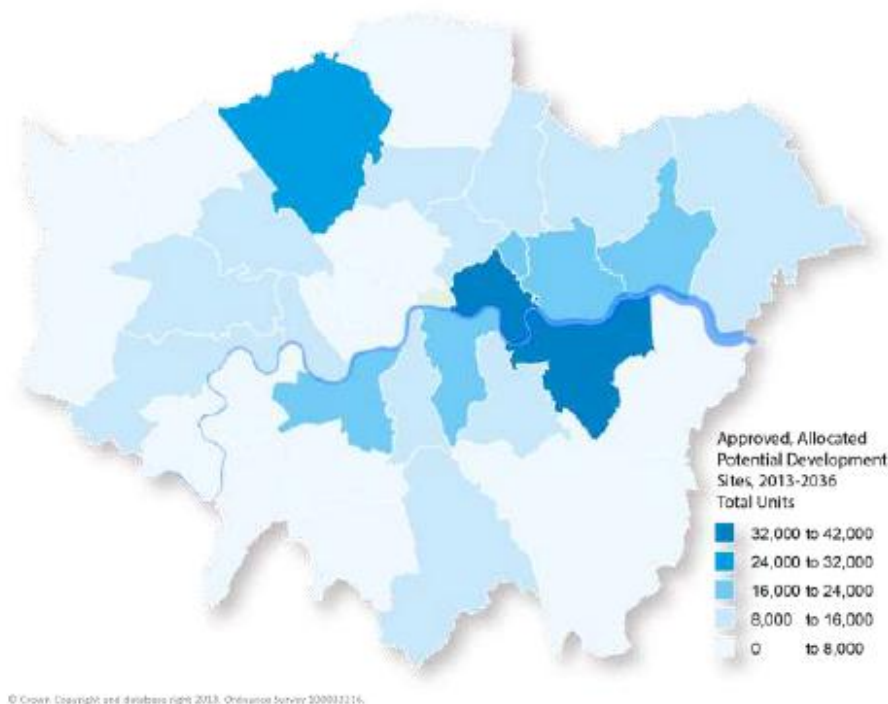
Helping to maximise available land supply and make a significant contribution to meeting London Plan / South East Housing and Employment Targets

When looking at the potential residential capacity in both east and west London, it is clear that there are far greater opportunities to bring forward residential development within eastern metropolitan areas, with the London SHLAA (2013) identifying a long term total development capacity in east London Boroughs of almost

¹⁵ Jobs and Growth Plan for London (London Enterprise Panel, 2013)

two and a half times that of west London Boroughs (214,091 compared to 87,626). When considering the type of land that may be developed, there is a far greater supply of previously developed land to the east of London, with almost two thirds more than in the western authorities.

Figure 18: Spatial Distribution of allocated, approved and potential sites by Borough 2013 – 2036



A similar pattern of land availability can also be seen when looking beyond London boundaries at potential long term development opportunities in the wider south east region. Based on a high level review of SHLAA data, it is estimated that the development capacity of those local authorities in those areas which may form part of a wider east or west development corridor (i.e. Surrey and Berkshire to the west of London / Kent and Essex authorities along the Thames Estuary); non metropolitan authorities to the east of London have a far greater potential land supply than is required to meet their current targets compared to those in the west of London. Those authorities to the east of London have capacity for almost 100,000 more dwellings than those in the west.

When looking at availability of employment land, there is also a definitive pattern of greater supply within the east London Boroughs compared to west London Boroughs. When looking at the London Employment Site Database (LESD) for employment sites up to 2031, there is far greater potential in east than west London Boroughs. The database identifies the supply for approximately 70% more jobs in east than west London¹⁶, whilst the draft Further Alterations to the London Plan, identifies east London Boroughs as having the greatest scope for the transfer of industrial land to other uses. Within the wider South East (outside of London), a high level review of available employment land information suggests that the availability of total employment land is slightly greater in the west.

Notwithstanding the existing availability of land to the east of London, the construction of a new hub airport in the Inner Thames Estuary and the relocation of Heathrow would also free up a significant land supply for both employment and housing use, not only from the availability of the Heathrow site itself, but also from sites which become vacant as those businesses that are directly linked to the airport's supply-chain relocate towards the airport.

¹⁶ GLA London Employment Sites Database: Final Report (Peter Brett / Roger Tyms and Partners, 2013)

Potential to help unlock key development sites

Despite the demand for housing in London, housing completions have averaged 27,130, well below the current adopted London Plan target of 32,000 dpa and significantly lower than the proposed target of 42,000 in the FALP (and over 20,000 dpa) and projected need of 49,000 dpa¹⁷.

In 2012, the GLA identified the market-perceived barriers to residential development in London¹⁸. Four main constraints were identified which included:

- **Control of the Pipeline** – a significant proportion of sites with planning permission is not in control of companies that build.
- **Funding** – difficulty in financing debt, particularly of schemes of £20m plus.
- **Private Sector Capacity** – limited number of development companies with limited appetite to expand. Developers only bringing forward sites which they consider to be deliverable.
- **Public Sector Speed and Consistency** – planning system constraints and changing policy which adds additional burden on development costs.

Outside of London, similar constraints have been identified within the Thames Gateway where, although having been identified as a growth corridor for over 20 years, it continues to struggle to meet its development potential. An Audit Commission report in 2004¹⁹ identified that a number of barriers to delivery related to the need to deliver a step change in connectivity between the Gateway and London as well as the need for confidence within the development industry that infrastructure would be delivered and that an area will be attractive to future residents.

Although not being able to fully resolve these constraints, the delivery of a hub airport in the Inner Thames Estuary along with the associated surface access transport can positively contribute to addressing these barriers and help speed up housing delivery in these areas. The potential benefits of a new hub airport are set out below.

- **Support integrated infrastructure delivery** – the delivery of an integrated surface access package which serves the new hub airport, will allow a number of new transport nodes and interchanges to be established across the Thames Gateway which could serve key development locations, linking them between the airport and key employment sectors. The delivery of a multi-billion pound infrastructure within the Thames Gateway would provide the certainty about wider infrastructure investment across the city region.
- **Positively impact upon land values** – the increased demand for employment locations within east London and the Thames Gateway (as a result of firms seeking better access to the hub airport and agglomeration benefits) will not only increase the demand for employment land, but will also increase residential demand as workers look to relocate. This additional demand would positively impact upon land values, providing more favourable conditions for land owners to sell and allow the development industry to absorb the higher development costs associated with delivering large scale communities and development on previously developed sites.
- **Strengthen Political and Policy Support** – the development of a new hub airport is likely to strengthen the political support for development across east London and Thames Gateway area as local authorities seek to capitalise on significant levels of inward investment and wider economic opportunities associated with the delivery of airport related jobs and wider catalytic employment generation.

¹⁷ As identified in London's draft Housing Strategy (2014)

¹⁸ Barriers to Housing Delivery: what are the market perceived barriers to housing delivery in London? (GLA, 2012).

¹⁹ People, Places and Prosperity: Delivering Government Programmes at the Local Level (Audit Commission, 2004).

- **Improve confidence across the development industry** – together, these factors would have a positive impact on development confidence within the development industry helping to bring forward more substantial rate of development than has been seen in this area previously.

4.5 A new Inner Thames Estuary hub airport can help promote synergies in transport infrastructure investment and utilisation

The construction of a new Inner Thames Airport would result in significant infrastructure investment. To serve the airport, it is assumed that an integrated surface access strategy similar to that identified by the Mayor as part of his July 2013 submission to the Airports Commission will be implemented. A significant proportion of this would be over and above that already committed, which would help deliver a step change in connectivity, specifically to the east of London. Along with the additional employment generated by the airport and its catalytic effects, would encourage 'counter-commuting' and provide steady passenger demand throughout the day. The subsequent provision of viable transport links would have a number of positive effects in helping to alleviate a number of long term transport pressures and could also be used to support wider delivery of the key regeneration and opportunity areas and would not be exclusively related to the operation of a new hub airport.

When considering the potential for investment in the transport in other areas of London and the wider city-region, there is already significant infrastructure investment committed (e.g. Crossrail, HS2) and there would be more limited opportunities (and it is likely to be more difficult) to deliver the scale of increased capacity presented by the Inner Thames Estuary Option.

Notwithstanding the significant level of infrastructure investment that would come forward as a consequence of delivering a new hub airport, an Inner Thames Estuary Option is uniquely placed to provide a much wider integrated transport network across the South East of England, encouraging long term investment, helping to increase London's, the South East's and the UK's ability to capitalise on its connectivity with Europe.

Existing infrastructure investment already committed or delivered within the Thames Gateway corridor and the wider South East Region, along with the construction of a new hub airport will provide integration for certain sectors whilst supporting mobility for others. Specifically the airport will be at the centre of a freight gateway, connecting key modes of freight transport such as the London Gateway International Container Port, EuroTunnel interchange at Ebbsfleet and the Inner Thames Estuary hub airport. Together these key freight interchanges will help maximise the potential from growth in the logistics sector which is seen as a key growth sector in relation to both airport related and catalytic employment. Away from the logistics sector, the hub airport will also be well located in relation to High Speed 1 and the south east ports, helping to facilitate international business, particularly within Europe.

4.6 Help promote regional integration

As well as supporting international connectivity, the construction of a new hub airport in the Inner Thames Estuary would have positive benefits for securing greater integration between London and other UK regions.

At a more local level, the construction of a new hub airport in the Inner Thames Estuary will strengthen the existing integration between London and the wider south east as a result of enhanced surface access, the delivery of and expansion of London's employment centres as a direct result of improved transport links between the Thames Gateway and London, and much-improved local links across east London, north Kent and south Essex.

For example, a new north-south rail link including a lower-Thames rail crossing could open up opportunities for passenger services connecting Chelmsford – Basildon – Gravesend – Medway Towns. Freight services could have new opportunities to better connect with ports and other distribution and forwarding centres in the region, and there could be wide ranging benefits from services - including those using the Channel Tunnel – having alternatives to routes which avoid passing through Central London. A new Lower Thames Crossing could also open up such opportunities.

Beyond the south east of England, the construction of the airport will also help improve wider integration with other UK regions as a result of:

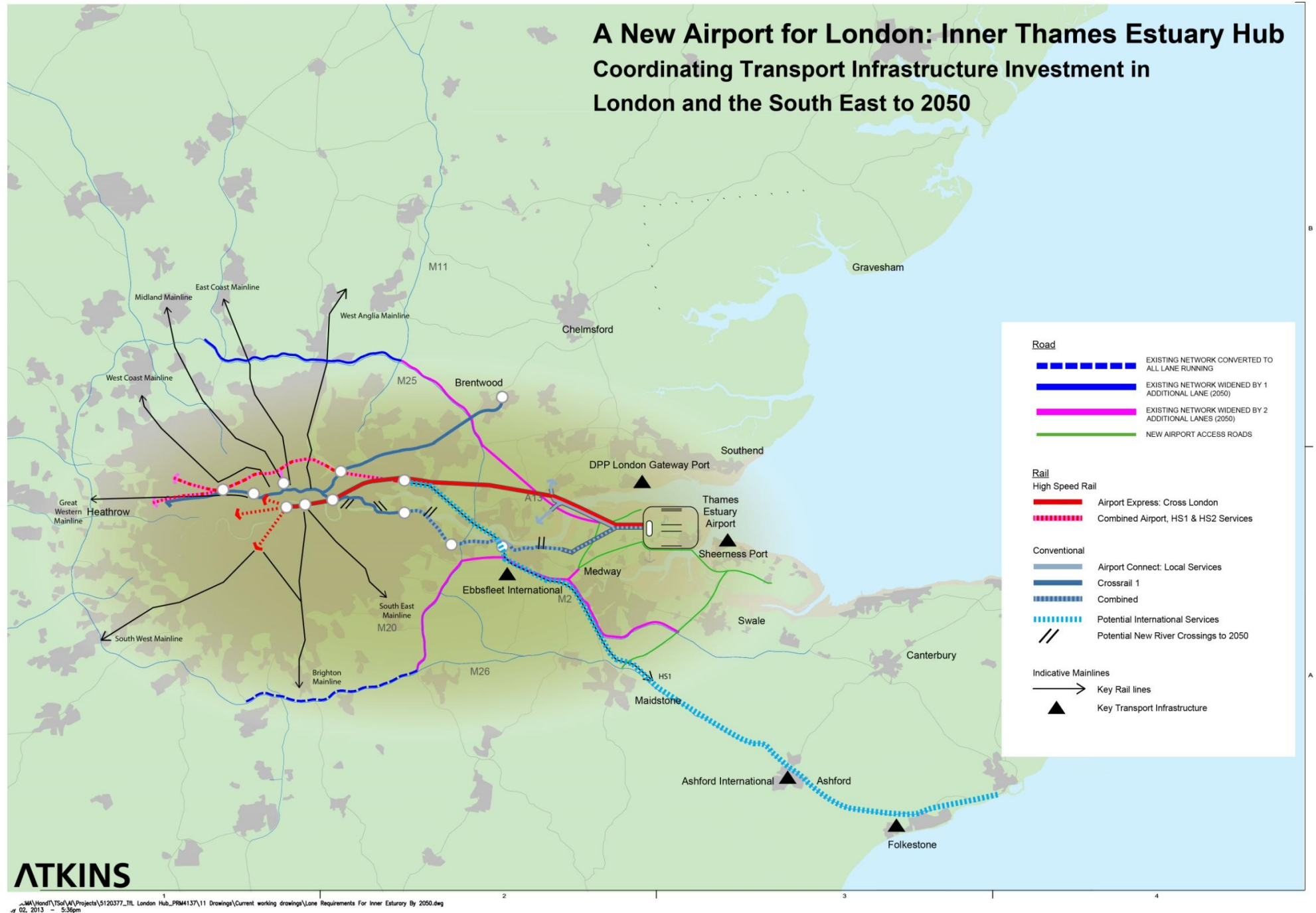
- i) much improved domestic air services²⁰;
- ii) Much improved rail and road connections, including the airport-related demand making viable for the first time by 2050, a cross-London rail services via a high-quality HS1-HS2 link.

This additional connectivity would have a positive impact on the number of people who are able to access other regions from London, and is expected to have a positive impact on regional economies²¹, particularly in relation to the more peripheral regions and those major cities which currently have poor international connectivity.

²⁰ We note that by 2050, a new hub airport would provide 63 more daily regional air connections than if no additional hub airport capacity is provided, which is 43 more than today and 45 more than Heathrow could sustain with a third runway (York Aviation and Oxford Economics "The Impact of a New Hub Airport on Domestic Connectivity" (forthcoming May 2014))

²¹ York Aviation and Oxford Economics "The Impact of a New Hub Airport on Domestic Connectivity" (forthcoming May 2014)

Figure 19: Key Transport Infrastructure



5. Potential Development Strategy from a new hub airport at the Inner Thames Estuary

KEY MESSAGES

- A total of 273,000 and 59,100 homes will need to be accommodated as a result of constructing a new hub airport in the Inner Thames Estuary.
- Development effects of the airport are likely to be focused along a key development corridor stretching from the hub airport in the east through to the former Heathrow site in the west.
- Away from the airport, additional employment will be focused within London's existing high profile employment centres and within the high capacity areas of east London and wider Thames Gateway as businesses seek to relocate to either support the operation of the airport or capitalise on improved connectivity.
- Residential development will take place further from the airport within the high capacity areas of east London, the wider Thames Gateway and within the redeveloped Heathrow airport site. Residential development would be focused in areas where there is potential to capitalise on improved transport connectivity and employment growth.

5.1 Overview

This section considers the spatial development effects that could result over a 35 year timeframe assuming the delivery of a hub airport in an Inner Thames Estuary location, operating at 90 mppa upon opening in 2029, increasing to 170 mppa by 2050. In the longer term, the full capacity of a hub airport is likely to reach 180 mppa or more. This development scenario also assumes the delivery of associated surface access infrastructure which is either planned or committed to 2050²².

It is not the purpose of this assessment to assess and quantify the economic effects of new airport options as this has already been undertaken as part of a separate comprehensive study which has used detailed econometric modelling techniques²³. However, this study builds upon the research undertaken within those studies to examine the potential scale and spatial distribution effects of development stimulated or facilitated by the creation of a new hub airport and business cycles.

5.2 Employment and Development Impact Assumptions

Before progressing with the assessment of potential spatial development effects, it is important to establish a 'fix' in terms of the likely direct, indirect, induced and catalytic employment and labour effects of a hub airport's construction and operation.

Estimates for the number of jobs which will be provided by the construction and operation of a new hub airport have been derived from the economic forecasts produced by Oxford Econometrics and Ramboll on behalf of TfL²⁴. This work sets out additional employment that will be generated as consequence of the airport's construction and operation. Further detail on how the total employment for this study has been derived is set out in Appendix 3.

²² Planned or committed infrastructure to 2050 is set out in Appendix 2.

²³ Economic forecasts undertaken by Oxford Economics / Ramboll on behalf of TfL

²⁴ Impacts upon the local and national economy; Impacts of new hub Options on Business Locations, FDI and Alignment with Strategies (Oxford Economics / Ramboll)

In addition to the employment which will be generated by the construction and operation of the hub airport, it is also necessary to consider the potential spatial development consequences of additional dwelling demand which will be required to meet the needs of the additional direct and indirect airport workforce plus the additional population required to support long term catalytic employment growth across the wider region. The projections for additional population (and therefore additional dwelling demand) for this study has been derived by applying a number of assumptions based on the initial assessment of population growth set out in the OE / Ramboll employment forecasts undertaken to date; evidence of airport development taking place elsewhere or applying known travel to work patterns based on Census (2001) travel to work data. Further detail on how the total dwelling demand has been calculated for this study has been derived is set out in Appendix 3.

It has been estimated that there would be an additional 273,000 jobs generated by the airport, resulting in a population increase of approximately 132,000 by 2050. This translates to an additional demand for 57,500 dwellings up to 2050 (or 1,643 dpa). The demand for additional dwellings would be in addition to the existing baseline housing target for London and wider city-region (2014 – 2050) which is estimated at approximately 49,000 dpa²⁵. A summary of future growth is set out in Table 6.

Table 1: Potential development requirements (2015 – 2050²⁶) for London and wider city region as a result of hub airport development and baseline demand

		Total no. Jobs from airport development (2050)	Total additional Population from airport development (2050)	Total no. additional dwellings from airport development (2050) [dpa]	Estimated baseline demand for additional dwellings per annum within London and wider city region	Total additional dwellings per annum (including baseline)
Operation (2050)	Inner Estuary (Isle of Grain)	273,000	132,336	59,100* [1,689]	49,000 dpa	50,689 dpa

* includes 1,600 dwellings which need to be re-accommodated following displacement.

Given the unprecedented nature of delivering a hub airport within the UK and the underlying level of uncertainty at this stage of how travel to work patterns may be affected by a change of employment on this scale, these estimates are considered to be a relatively conservative estimate of the amount of additional development that a new hub airport could facilitate across the city-region. Furthermore, development requirements have been averaged over a 35 year period, whilst in reality, there are likely to be peaks in demand, for example following the opening of the airport.

5.3 Distributing Growth at a Strategic Level

Having identified the development requirements which need to be accommodated as a result of constructing and operating a hub airport and its catalytic impacts, it is necessary to consider how that development may be accommodated within the local area and wider sub region.

To support both the construction and operation of a new hub airport, additional development will be required across a number of Spatial Distribution Areas. SDAs have been defined on the basis of the type of

²⁵ Given the uncertainties of long term projections, baseline demand has been identified from the London Plan targets set out in FALP (2013) and current/emerging Local Plan targets for those local authorities within the wider city –region which have been identified as part of a potential wider development corridor (Appendix 4), rolled forward to 2050.

²⁶ Based on 35 year timeframe (2015 – 2050) to align with OE / Ramboll economic forecasts

employment growth that would be generated by the airport and are based on the assumptions that have been applied as part of the economic forecasting.

For the purpose of this study, four broad spatial distribution areas have been defined which reflect the type and purpose of airport related growth summarised above. The Spatial Distribution Areas and their general parameters are set out in Table 2. Further information about how the SDAs have been identified is set out in Appendix 4.

Table 2: Spatial Development Areas

Spatial Development Area (SDA)	Type of development taking places within SDA	Geographical Parameters SDA
On-Airport Development Area (OADA)	Employment related development essential for the operation of a hub airport.	Within indicative hub airport boundary
Off-Airport Development Area (OFADA)	Employment related development associated with the indirect operation of the airport or supply chain support.	Approximate 10 minute journey time from the airport boundary.
Airport Development Zone (ADZ)	Employment related development which facilitates the location / relocation of businesses looking to benefit from location near to hub airport. Additional residential development, retail and social infrastructure for additional airport and other workers.	Development corridor within local area ²⁷ identified as part of economic modelling.
Wider Development Corridor (WDC)	Employment related development which supports activities relating to supply chain uses or wider catalytic employment which benefit from good connectivity to a hub airport or existing employment hubs. Additional residential development, retail and social infrastructure for additional airport and other workers.	Located outside of ADZ and within the wider region as the area likely to attract additional FDI and support businesses looking to locate for the area and build on existing agglomeration benefits of existing employment centres. The corridors have been based on a narrative about the potential regional area impact provided as part of Ramboll / Oxford Economics Technical Note 6 ²⁸ .

Using a general assumption based on the 'aerotropolis' concept that airport related jobs (direct / indirect / induced) will be located closer to the airport whilst catalytic jobs along a Wider Development Corridor, as well as taking into account development potential within each SDA, Figure 20 shows an indicative distribution scenario associated with the development of a hub airport. Although this is only one potential distribution scenario, it is considered realistic and achievable on the basis of the evidence of development impacts resulting from the opening of hub airports in other European countries and in the context of the identified development opportunities and characteristics of the relevant local authorities and sub-regions.

The approach taken to identify the potential development scenario for each SDA is set out in Table 3 and 4 with further detail provided in Appendix 5.

²⁷ In relation to the economic modelling which has been undertaken, the local area has been defined for Inner Estuary Option (Medway; Swale; Maidstone; Tonbridge and Malling; Gravesham; Dartford).

²⁸ Ramboll / Oxford Economics – Impact of new hub options on business locations, FDI and alignment with strategies

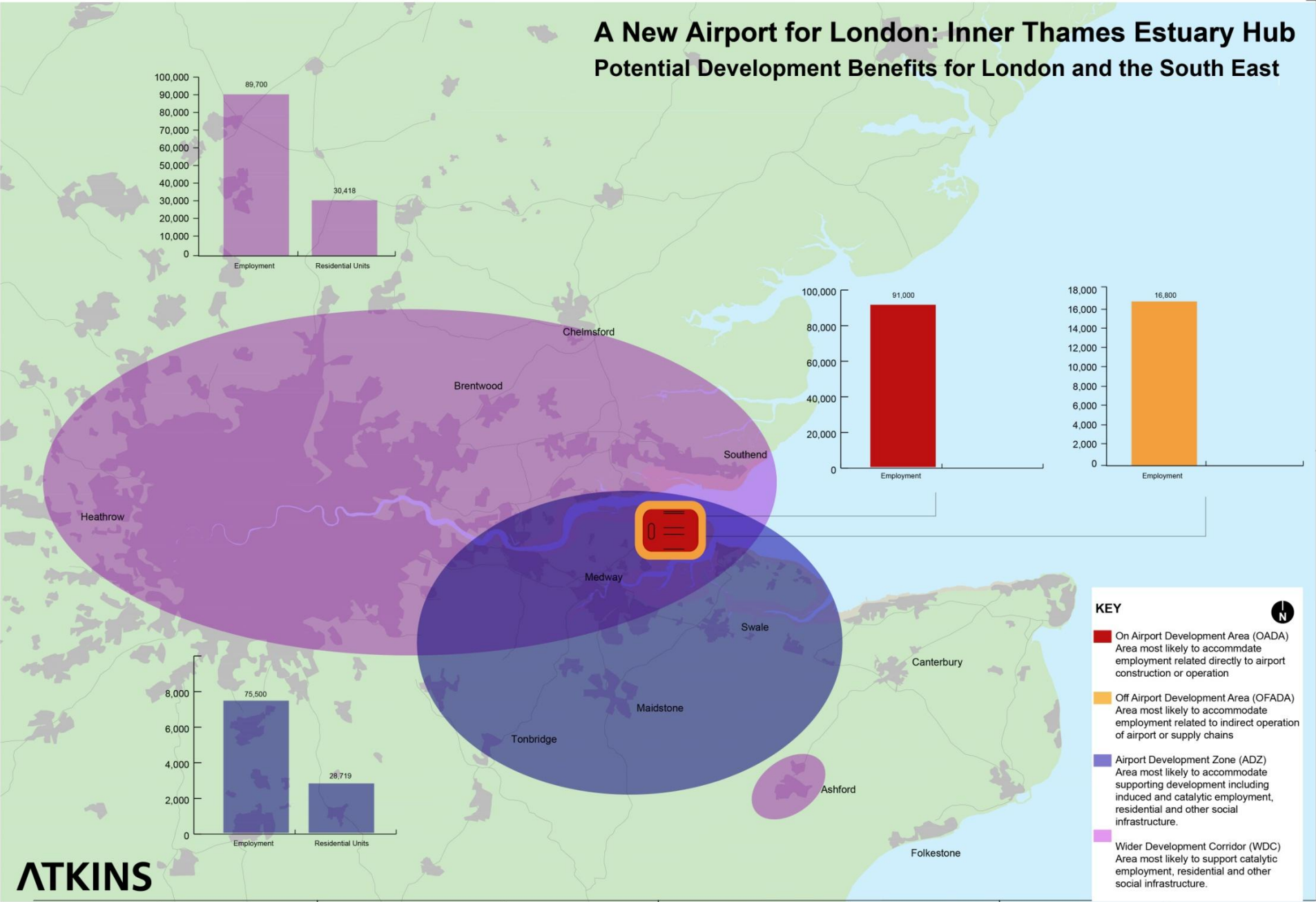
Table 3: Approach to distribution of employment development

Step	Approach
1	Direct employment is distributed wholly within airport boundary (OADA).
2	Indirect employment is focused in OFADA, with some indirect employment distributed within ADZ based on existing connectivity to the airport and location of established employment areas.
3	Induced employment is split between OFADA and ADZ in a way which recognises the need to support (but safeguard) airport critical jobs as well as demand from existing employment sectors and existence of service centres / accessibility.
4	Catalytic employment distributed within ADZ and WDC based on suitability of location in terms of following factors: <ul style="list-style-type: none"> - Comparison of likely impact on employment sectors against existing strength of different industry sectors; - accessibility to the airport and the wider strategic transport network; - local development capacity / development potential; - potential environmental constraints; - potential location of workforce; - existing policy approach to economic growth and expansion (e.g. identified growth locations / planned development / growth corridors etc).

Table 4: Approach to distribution of residential development

Step	Approach
1	No residential development has been located within the OADA or OFADA due to the sensitive relationship between residential development and the operation of the hub airport, as well as the need to accommodate a significant number of direct and indirect jobs within these areas to support the operation of the job.
2	Dwelling requirements arising from jobs generated within the 'local area' (and displaced homes) have been split between ADZ and WDC. Apportionment has been based on approximate journey times of workers currently observed at Heathrow / Stansted airports and then split between local authorities / growth nodes using the following criteria: <ul style="list-style-type: none"> - development capacity (as identified by SHLAA work / National Land Use database; - potential environmental constraints; - policy support (local/ strategic planning policy context); - location of existing / upgraded surface access infrastructure - market demand
3	Remaining dwelling demand generated by catalytic growth have been accommodated within WDC and ADZ taking into account: <ul style="list-style-type: none"> - proximity to potential employment growth areas / existing industrial sector strengths; - accessibility to the wider strategic transport network and London; - development capacity (as identified by SHLAA work / National Land Use database; - potential environmental constraints; - policy support (local/ strategic planning policy context); - known development proposals / growth locations; - market demand

Figure 20: Potential development Benefits for London and the South East



5.4 Potential Key Growth Areas and Nodes

Across each of the Spatial Development Areas, it is expected that there will be a number of key growth locations for both employment and residential development. When considering the location of potential growth areas for airport related employment, these are likely to be focused within the areas closest to the airport given the direct correlation between the airport and employment generation.

However, beyond these areas and when looking within the wider development corridor, there will be a range of growth areas that could benefit significantly from the induced and catalytic employment generated by the airport. This is particularly the case where locations are able to capitalise on the opportunities that will be presented by both the construction of the airport itself and the step change in surface access transport provision to key regeneration areas and areas of significant development opportunity.

Beyond the On Airport Development Area and Off Airport Development Area, it is expected that the main growth locations are likely to be focused in areas:

- where there are opportunities to build upon existing policy support (e.g. within identified growth areas / opportunity areas) and where there are areas of significant development opportunity;
- along existing and proposed infrastructure routes which provide good connectivity between the airport and London;
- within areas which are easily commutable to the airport;
- around existing service centres within the ADZ which have the potential to support airport workers;
- in areas in which there are opportunities to build upon existing employment strengths, particularly in relation to those employment sectors which will be positively impacted by airport development;

One high level potential development scenario based on these core principles is shown in Figures 21 and 22²⁹. This spatial pattern of growth reflects the downstream development effects of locating a new hub airport with excellent transport links to high density regeneration and redevelopment areas, of which a significant number are present along the Thames Gateway growth corridor. Whilst the degree of causation between the development of a new hub airport and the realisation of development value clustered around these growth nodes at this stage is more subjective than scientific, the analysis undertaken as part of this study has sought to provide an indication of the scale and type of development which may be able to be achieved within these locations and how the wider development benefits of a new hub airport may be realised across London and the wider city-region.

5.5 Potential Key Growth Areas and Nodes: Development Case Studies

To provide an indication of how certain growth nodes within the Airport Development Zone (ADZ) and Wider Development Corridor (WDC) may benefit from the construction of a new hub airport and its associated surface access, this study has sought to undertake a more detailed assessment of four case study areas, all of which have been identified as potential areas that would benefit from additional growth as a result of the construction of the hub airport in the Inner Thames Estuary.

The four case study areas are located within either the Airport Development Zone or Wider Development Corridor and form part of the strategic corridor that would link central London with the Inner Thames Estuary

²⁹ Development scenarios provide an indication of broad location and scale of development. They only consider where additional employment and residential development may occur as a result of airport related and catalytic effects and do not take into account baseline demand. However, it is reasonable to assume that these areas would also accommodate some baseline demand, especially in the short – medium term.

Airport. Cumulatively the sites have the potential capacity to accommodate 54,000 jobs and 59,000 new homes for up to 135,000 people by 2036 (six years after the opening of the new airport). Existing evidence suggests that beyond 2036, the capacity and overall development potential of these locations is likely to increase as a direct result of improved connectivity, release of major development sites, and increased demand from identified employment growth sectors as a direct result of increased demand from improved transport connectivity and locational benefits locating closer to a new hub airport in the Inner Thames Estuary. For example, it is estimated that new road crossings could help to unlock over 20,000 additional homes and a similar number of additional jobs in the Greater London area alone over the next 20 years³⁰, although the final effects could be much larger if a new airport in the Thames Estuary and associated infrastructure were provided.

Royal Docks (LB Newham)

The Royal Docks provides 1,100 ha for development and is capable of accommodating for approximately 6,000 jobs and 11,000 new homes for up to 25,300 people by 2036. Identified as London's next business district, the site will build upon the success of the existing employment hub at nearby London Docklands to become a world class business location.

Although the area would benefit significantly from the opening of Crossrail in 2018, there would be further significant benefits realised from infrastructure investment related to the opening of the airport, such as the extension of Crossrail to the Inner Estuary airport by 2030 and opening of a new Airport Express by 2040. Furthermore, the delivery of a new Silvertown Tunnel opening in 2023 together with a new crossing at Gallions Reach by 2028 will make a step change in cross river movement, connectivity and market size, resulting in a positive impact for the economic competitiveness of the area.

The level of development benefit that could potentially be leveraged from the improved infrastructure can be illustrated by the impact of the opening of the Jubilee Line Extension (JLE) in 1998. Employment levels rose +17% in the areas affected by JLE as compared with 8% in Greater London and made up of predominantly high value and high productivity. Residential prices in Canary Wharf and Tower Hamlets around the time of the Jubilee line extension in 1999 rose by more than 60% in the four years running up to the opening of the extension³¹. Post opening, the estimated total property value increase around Southwark and Canary Wharf Stations was over £2.1bn, mainly through new completions in the commercial property sector, and this can be solely attributable to the impact of the JLE³².

In addition to the scale of development benefit leveraged from infrastructure investment, the delivery of a new Inner Estuary Hub airport would also help to build upon the successful delivery of currently identified development opportunities across the Royal Docks site by facilitating the release of City Airport (48ha). As a windfall development site, the closure of City Airport would provide capacity for the accommodation of approximately 5,000 jobs (worth £0.4 billion GVA each year) and 2,750 new dwellings for 6,100 people.

London Riverside (LB Barking & Dagenham and Havering)

London Riverside³³ provides 2,500 ha for development providing sufficient capacity to accommodate 14,000 jobs and 25,000 new homes for up to 57,500 people. As with the rest of the Thames Gateway Area, the land available is made up of primarily Brownfield sites and is well located to town centres.

Despite the extensive land availability and locational advantages, the area has experienced low development activity in recent years. When comparing the completion rate over the last 5 years (2008 – 2013) against the current adopted London Plan target, the residential delivery rate for the two Boroughs' is less than half of that required and would require an increase in delivery rate of over 200% if the forthcoming targets set out in the draft FALP are to be met.

³⁰ River Crossings Development Study, Atkins 2014

³¹ Knight Frank London hotspots - Residential development opportunity areas

³² Quantification of the non transport benefits resulting from rail investment, David Bannister, October 2007.

³³ Within the Area development will be focused on the Barking Riverside, Dagenham Dock, South Dagenham, Beam Reach, Beam Park and Rainham West sites with scope for intensification in Barking town centre, Rainham Village and South Hornchurch.

It can therefore be demonstrated that within the London Riverside Area, there is an urgent need for a catalyst to help pump prime development sites and increase delivery rates. As a well known development catalyst, it is considered that the step change in public transport access as a result of constructing a new hub airport in the Inner Thames Estuary will be the primary mechanism against which property values / rental yields will increase, thus creating more favourable conditions for the development industry. These effects are supported by the study of similar public transport infrastructure projects across London such as Cross Rail 1, where it was estimated that Crossrail could help create £5.5 billion in added value to residential and commercial real estate over a 10 year period³⁴.

Within the London Riverside area, Barking Riverside will benefit from a new rail extension which is planned to open in 2019. It is expected that the delivery of improved access will accelerate the completion rate of the 10,800 housing units on the 180 ha site so that half the units are built by airport opening in 2030. There is also the potential for the area to benefit from a new river crossing at Gallions Reach by 2028 and a new Lower Thames Crossing between 2025 and 2030.

Beyond 2030, Barking Riverside along with the wider Opportunity Area will also benefit from the opening of a new Airport Expressway station and an additional crossing from Belvedere to Rainham. The additional transport investment and accessibility will not only improve residential values, but also allow for higher density development to come forward in accordance with the PTAL principles set out in the London Plan (particularly around key transport nodes and interchanges). This is likely to have a positive impact upon the areas development potential, both in terms of the rate of delivery and overall development capacity.

Bexley Riverside (LB Bexley)

Bexley Riverside³⁵ provides 1,350 ha for development which could accommodate 7,000 jobs and 4,000 new homes for up to 9,200 people. Nearby, Thamesmead and Abbey Wood have 811 ha for development capable of accommodating 4,000 jobs and 3,000 homes for a further 6,900 people. As with other areas along the Thames Gateway, Bexley has experienced significantly low completion rates over the last 5 years (2008 – 2013) and would require an increase in the delivery rate of 38% to meet forthcoming London Plan targets set out in the draft FALP.

While Abbey Wood will already benefit from Crossrail in 2018, the wider area will benefit from the extension of Crossrail to the Inner Estuary airport by 2030, supporting growth in the north of the borough which will become a key site within the airport's wider development corridor. The area will also be supported by a new river crossing at Gallions Reach by 2028 and an additional crossing from Belvedere to Rainham from 2035 onwards.

Within this location, it is likely that there could be particular development benefits from the development and implementation of a high growth spatial strategy (e.g. Enterprise Zone, Housing Zone) across the 300 ha of competitively priced industrial land in the borough. If implemented, such a zone would offer the potential to add 30,000 to 40,000 new jobs linked to the delivery of 25,000 new homes for up to 57,500 people.

A recent report on the success of Enterprise Zones³⁶ suggest that to be successful, they should be of a significant size (avoiding competition with the local area) and also require investment in skills and infrastructure. Whilst the planned infrastructure associated with the airport's delivery would increase the attractiveness of the area for business investment and significant residential development, the establishment of an Enterprise Zone will help support employment sectors which build upon the areas' industrial heritage, emerging knowledge base sector and innovation sectors.

Consistent with policies set out in Bexley Core Strategy and Bexley's Regeneration Framework (to deliver a more diverse employment mix within the local area), key growth sectors are likely to include business and technical services, medical and bio-sciences and advanced manufacturing, all of which have been identified as key growth employment sectors as a result of catalytic growth as a result of the construction of an Inner Estuary hub.

³⁴ Crossrail Property Impact Study (GVA, 2012)

³⁵ Bexley Riverside is composed of parts of Erith, Crayford, Slade Green and Belvedere

³⁶ Do Enterprise Zones Work? An Ideopolis Policy Paper (The Work Foundation, 2011)

Kent Thameside and Ebbsfleet (Gravesham / Dartford)

Unlocking large scale housing development sites has been identified as critical to driving the supply of new homes in the medium to long term. Across various large sites in the 22 sq miles (57 sq km) of Kent Thameside there is potential to accommodate 22,600 homes over the next 20 years for around 52,000 people.

Key to the Government's promotion of large scale development is the delivery of new Garden Cities, for which it is expected that developments are to "be at or above the 15,000 homes level, delivered more quickly than is typical through the existing planning system". Three sites within the Kent Thameside area have already chosen as the location for a new Garden City where 15,000 units will be home for up to 34,500 people.

Whilst, a large part of speeding up the delivery of the new Garden City relates to governance arrangements which are beyond the scope of the airport's influence, there are a number of benefits which could be leveraged from the airport's delivery which could help address existing development constraints, by generating demand for both residential and employment development and by helping to deliver infrastructure improvements, which in turn improve developer confidence and help establish a long term commitment to developer support across the wider area.

Both the Ebbsfleet Valley and wider development sites within the Kent Thameside area will be significantly enhanced as a result of the extended Crossrail to the Inner Thames Estuary airport from 2030 and additional lower Thames River crossing between 2025 and 2030. Although there is a committed infrastructure investment package for the initial Garden City proposals, the additional infrastructure investment outlined above off the back of the airport's delivery, ongoing demand generated by airport and catalytic employment as well as supporting a step change in the attractiveness of the location for business investment, will all help expedite development delivery rates in the area.

The long term development potential of mixed use sites that can be leveraged from enhanced infrastructure provision can be demonstrated in part by the impact of the Manchester Metrolink in relation to the development of the Salford Quays Site. The Manchester Metrolink extension to Salford Quays was opened in 1999. By 2006, Salford Quays had once again become a thriving and prosperous quarter of the city, with over 700 businesses employing about 13,000 people and generating massive benefits for the local and regional economy, as well as supporting a growing residential community, well served by shops, leisure facilities and cultural attraction.

When assessing the impact of the regeneration activity on businesses locating within the Salford Quay area, it can be seen that there was significant growth in private sector businesses which accounted for the largest growth in private sector employment (+11.5%, from 82,400 to 91,900 private sector employees) across Greater Manchester³⁷. Furthermore, when looking at the key drivers of private sector growth in Salford, financial & professional services, have been the outstanding growth sectors which have more than doubled in size over the last decade. It is these employment sectors that are expected to benefit the most from the construction of a new hub airport in the Inner Thames Estuary.

³⁷ Greater Manchester Local Economic Assessment: Salford (AGMA, 2010)

Figure 21: Potential Development Scenario to 2050: Employment

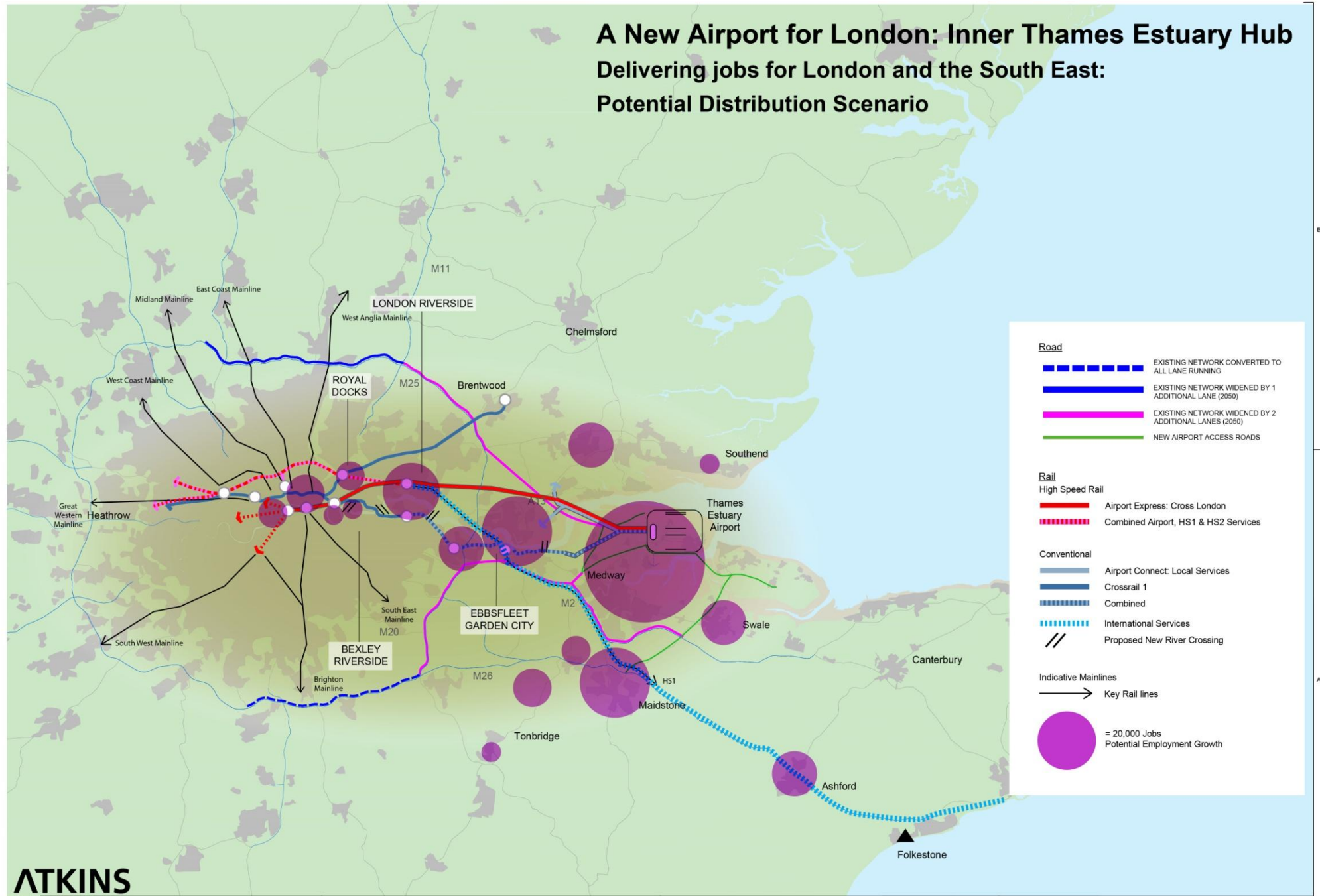
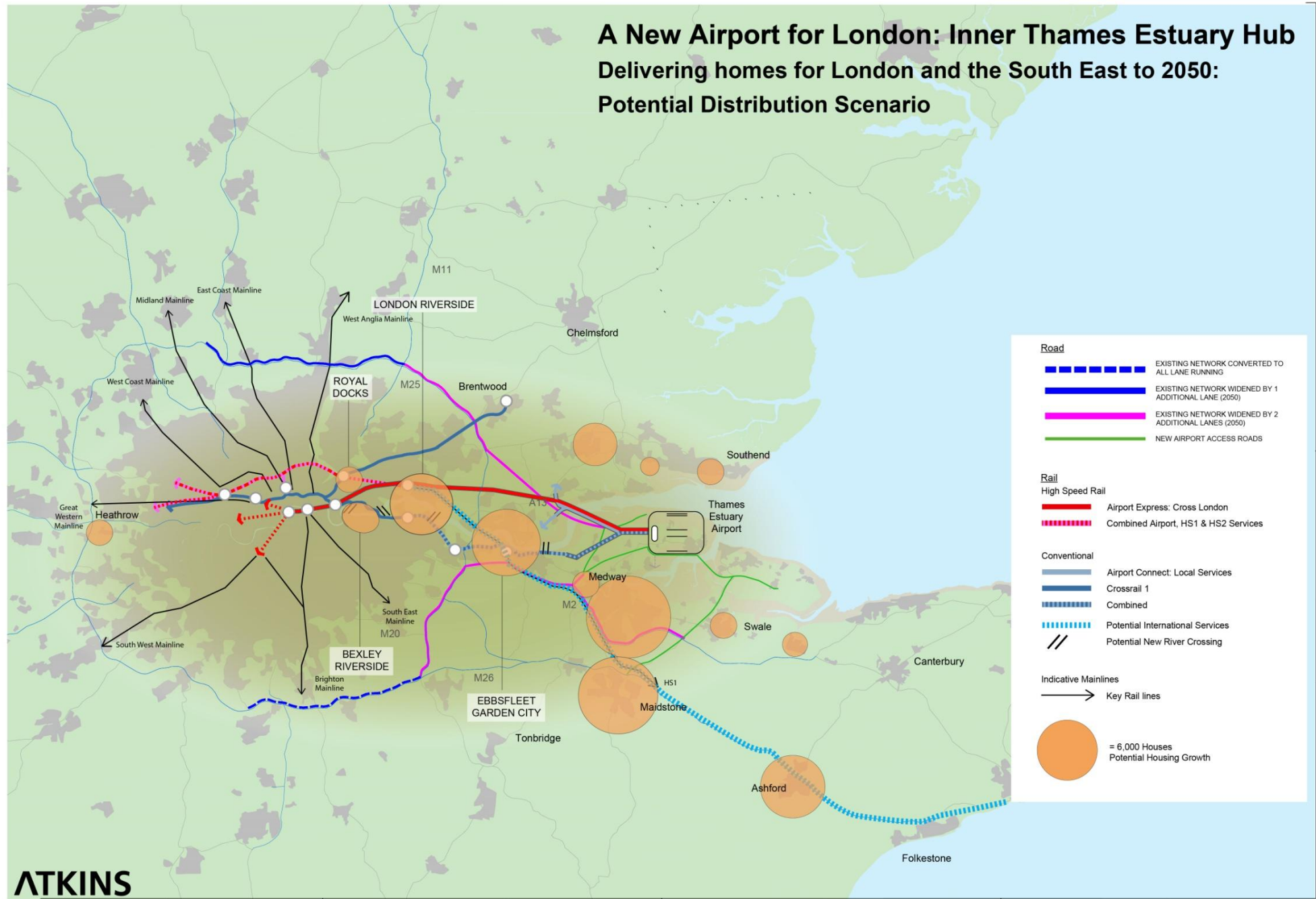


Figure 22: Potential Development Scenario to 2050: Residential



6. Potential of each airport option in addressing Spatial Planning Challenges

The primary purpose of this study is to identify the role that an Inner Thames Estuary may have in helping to address the long term strategic planning challenges facing both London and the wider city-region. However, with each of the shortlisted options being located within the London area, each has the theoretical potential to help support wider strategic planning objectives as identified in this report. As noted at the outset, it is considered important that each option should be considered within the context of how it can address the wider spatial planning challenges up to 2050 and beyond.

Although, it is beyond the scope of this study to undertake a detailed comparative assessment between the various shortlisted options, a high level, comparative analysis has been carried out for each option (and Inner Thames Estuary Option) against longer term strategic planning objectives / challenges, to demonstrate how wider benefits may or may not be achieved at the same time as addressing the issue of UK aviation capacity.

Table 5 provides an overview of the potential impact of each of the shortlisted option against an Inner Thames Estuary Option in relation to addressing the long term strategic planning challenges, whilst Table 6 sets out in more detail the potential advantages / disadvantages that may be realised for each option.

Table 5: Summary of potential impact of each shortlisted option and a new hub airport in the Inner Thames Estuary in relation to identified long term spatial planning challenges.

	Inner Estuary	Gatwick Additional Runway	Heathrow (NW Runway / Heathrow Hub)
Addressing the west – east metropolitan economic imbalance	✓✓	–	–
Encouraging growth of established employment sectors, whilst supporting the development of new employment locations across London and the south east	✓	–	–
Unlocking London's and the South East's Development Potential and encouraging the efficient use of land	✓✓	–	✗
Help promote synergies in transport infrastructure investment and utilisation	✓	–	✓
Promoting regional integration	✓	–	✓
Encouraging more sustainable forms of development in the long term	✓	–	–

KEY

✓ = Positive Impact

– = Neutral Impact

✗ = Negative Impact

Table 5: Comparative Analysis of Potential Strategic Planning Impacts of shortlisted Airport Options and new hub airport in the Inner Thames Estuary

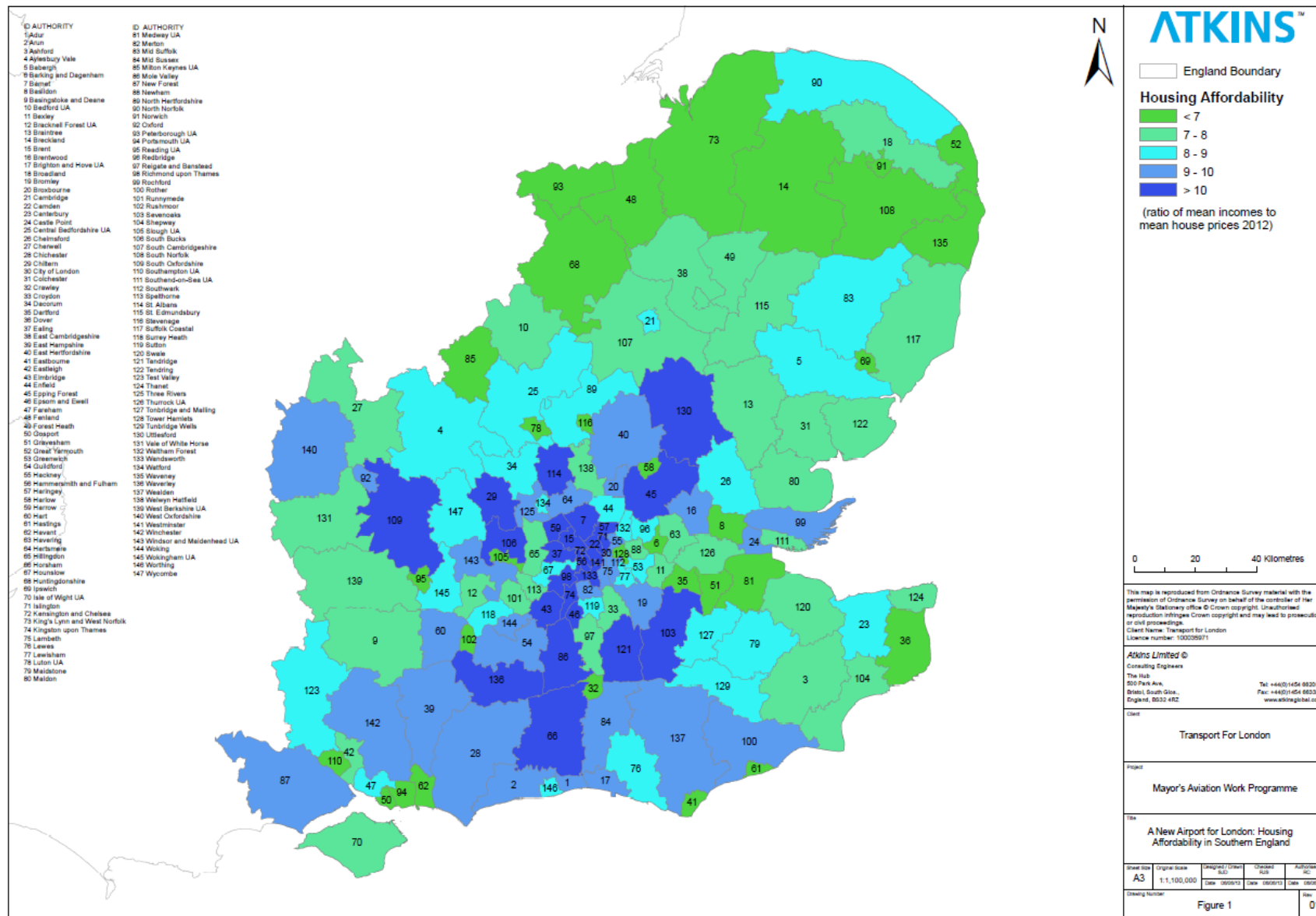
	Inner Estuary	Gatwick Additional Runway	Heathrow (NW Runway / Heathrow Hub)	Discussion
Addressing the west – east metropolitan economic imbalance	✓✓	—	—	<p>Inner Estuary – would make a positive contribution to London's economic productivity providing GVA of ~£42bn. Option would help develop and support the ongoing development of new employment clusters within east London and the eastern city region. It would help with the better alignment of jobs with available workforce, resulting in a better east-west balance.</p> <p>Gatwick – would make a positive contribution to London's economic productivity providing GVA of ~ £40bn. Option is likely to encourage growth and development primarily within the established Gatwick Diamond economic area. Although a significant proportion of development is likely to be within the vicinity of the airport and therefore away from the metropolitan area, there are likely to be some additional employment benefits from catalytic employment within south east London Boroughs and there may be some economic benefits for north east London Borough's and established employment sectors which are identified as benefitting from catalytic employment (e.g. financial / insurance sector in Tower Hamlets).</p> <p>Heathrow – would make a positive contribution to London's economic productivity providing GVA of £ 100bn net present value. Option would maintain overall competitiveness and agglomeration benefits of London and M4 corridor, resulting in an ongoing focus of employment development and inward investment within west London Boroughs. There would be some support for established employment sectors which are identified as benefitting from airport related employment (e.g. financial sector in Tower Hamlets) in north east Boroughs. Likely to maintain status quo.</p>
Encouraging growth of established employment sectors, whilst supporting the development of new employment locations across London and the south east	✓	—	—	<p>Inner Estuary – would result in the generation of approximately 134,000 net jobs locally and up to an additional 138,000 catalytic jobs across the wider sub-region. Located away from significant employment centres, option would result in a number of new employment centres directly relating to airport employment generation and also catalytic employment generation, particularly along new surface access infrastructure corridors. Within wider development corridor, option is likely to encourage growth of existing employment locations within key growth locations as well as capitalise on existing sector strengths in east London. Is likely to have a greater impact on existing employment areas in west London associated with the relocation of Heathrow and loss of airport supply chain demand in surrounding areas, though impact on established, high value employment sectors in west London would be less.</p> <p>Gatwick – would result in the generation of approximately 120,000 new jobs across the city-region. Building on strengths of existing airport, is likely to encourage growth of existing employment centres locally and along key transport corridors. Potential for new employment centres more limited as the airport is already reliant on well established employment centres located along existing transport links which will be used to serve airport expansion. Positive impact on existing employment centres located within the metropolitan areas unlikely to be as significant as with other options due to established employment areas around existing airport (e.g. Crawley) and there is likely to be a negative impact on existing airport related employment sectors in west London as a result of potential relocation / reduced growth at Heathrow – impact on airport supply chain and relocation of other businesses.</p> <p>Heathrow NW – safeguards 114,000 existing local jobs and provides an additional 50,000 jobs locally, 20,000+ across the London and a further 50,000+ across the UK. Building on strengths of existing airport, option is likely to continue to encourage continued investment in west London employment areas, particularly around clusters of high value jobs. Will continue to promoted development within Thames Valley Corridor and other established employment centres</p>

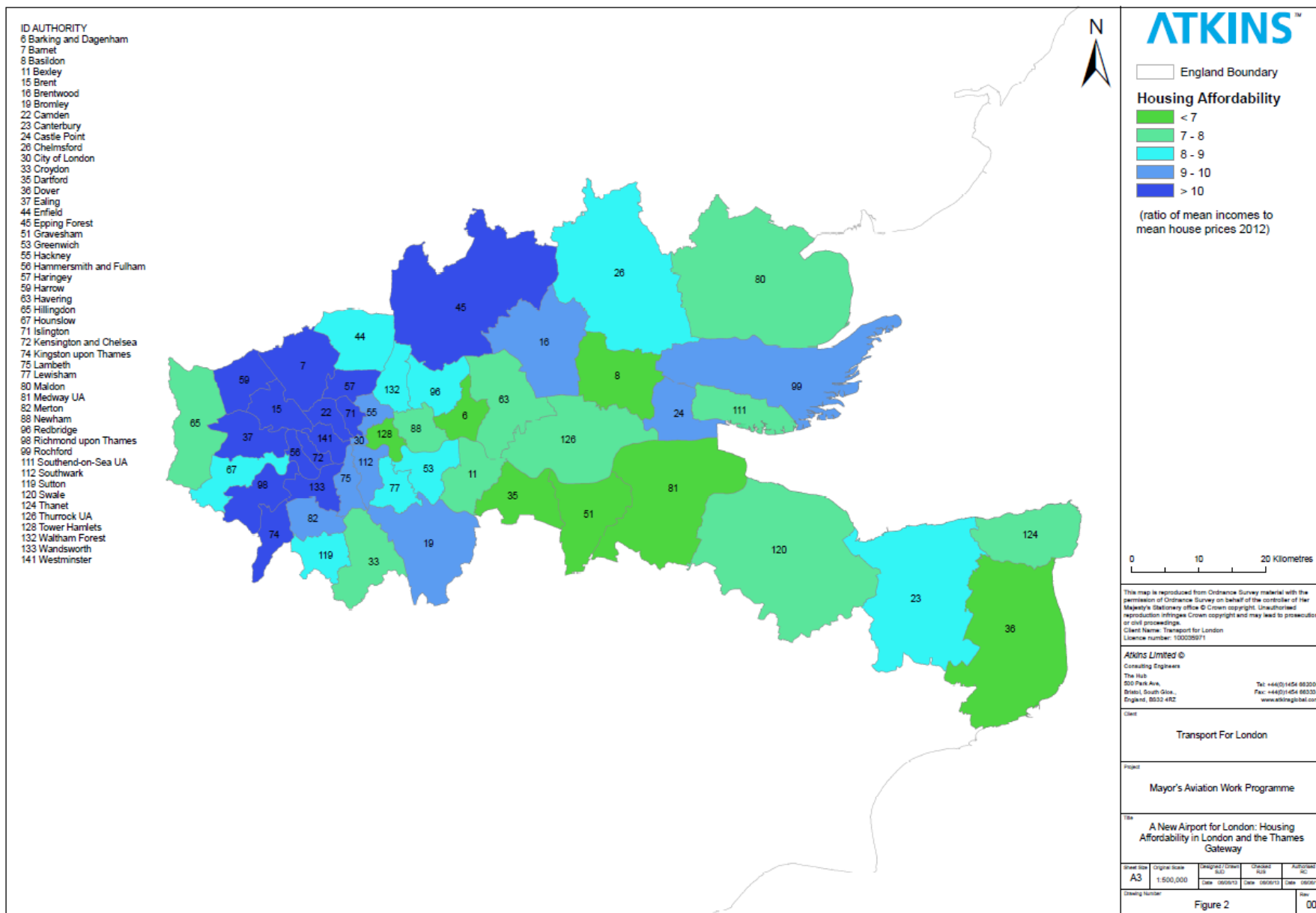
				<p>within metropolitan areas. However, due to limited availability of employment land within metropolitan area and dominance of existing employment areas and their relationship to the existing airport, opportunities to develop new employment centres and for existing employment areas for high value sectors located in west London may be more limited.</p>
<p>Unlocking London's and the South East's Development Potential and encouraging the efficient use of land</p>	<p>✓✓</p>	<p>—</p>	<p>✗</p>	<p>Inner Estuary – expected to generate a demand for additional ~59,100 dwellings which includes the re-provision of up to 1,600 which would be lost. Option is likely to deliver a step change in infrastructure investment to the east of London, which would serve both the airport and key developments sites along an established growth corridor. There are significant growth opportunities and development capacity within east London and the Thames Gateway which are currently slow in terms of delivery. There is a good supply of previously developed sites for both housing and employment land in east London and wider city region. Airport development would help generate more favourable development conditions which could help overcome delivery barriers. Would help to release sites for development in west of London.</p> <p>Gatwick – currently unknown housing demand with up to 100 residential properties and 120 commercial properties at risk. Option is likely to build upon existing transport links, but more limited in terms of new provision. Would support delivery of sites within identified growth corridor (Wandle Valley), which includes key Opportunity Areas within the metropolitan area (e.g. Croydon, London Bridge, Deptford). More limited in terms of bringing forward brownfield sites, particularly within Gatwick Diamond where there are large areas of undeveloped, Greenfield land. Would help to release large sites for development in west of London. Role in relation to helping realise development potential likely to be less significant than with other options.</p> <p>Heathrow – currently unknown housing demand but approximately 750 dwellings lost and up to 1,450 further dwellings at risk which would need to be re-provided in an area with a more restricted supply of housing land. It is expected that the scheme will build upon existing transport links, but more limited in terms of 'new provision'. Would help bring forward development within growth corridor and could support development of Opportunity areas, though these are more limited than for other options and more likely to be driven by already committed infrastructure schemes (e.g. HS2 at Old Oak Common). Would not make Heathrow site available for redevelopment for residential / employment purposes and would a lesser impact in terms of bringing forward more challenging development sites in other parts of metropolitan area. Beyond metropolitan area, more limited opportunities for long term development with potentially more significant land constraints.</p>
<p>Help promote synergies in transport infrastructure investment and utilisation</p>	<p>✓</p>	<p>—</p>	<p>✓</p>	<p>Inner Estuary – would require coordinated surface access investment package (both committed and planned), delivering a step change in infrastructure investment within East London and along Thames Gateway. Would provide good connectivity between the airport and London for both public and private surface access transport. Would provide improved locational advantages in relation to coordinated international connectivity by developing integration between road, sea and rail (with particular benefits for logistics sector). More limited in terms of national rail connectivity, but would provide rapid rail connections to various London terminals (e.g. via Crossrail) which would help facilitate access to other UK regions.</p> <p>Gatwick – is likely that airport development would build upon existing transport infrastructure provision (e.g. upgrading of Brighton mainline / M25 / M23). More limited potential for linkages with other modal types (e.g. ferry ports) than other options. More limited improvements associated with connectivity to London and national rail connectivity (i.e. rail link to fewer rail terminals / interchanges) and no direct link to regional links.</p> <p>Heathrow – it is likely that airport development would build upon existing or committed transport infrastructure provision (e.g. upgrading of M25 / HS2 / Crossrail). Increasingly limited potential for linkages with other modal types (e.g. ferry ports) than other options. Good linkages to London and regional connection by both public and private transport (e.g. via HS2 / Crossrail/ M4).</p>

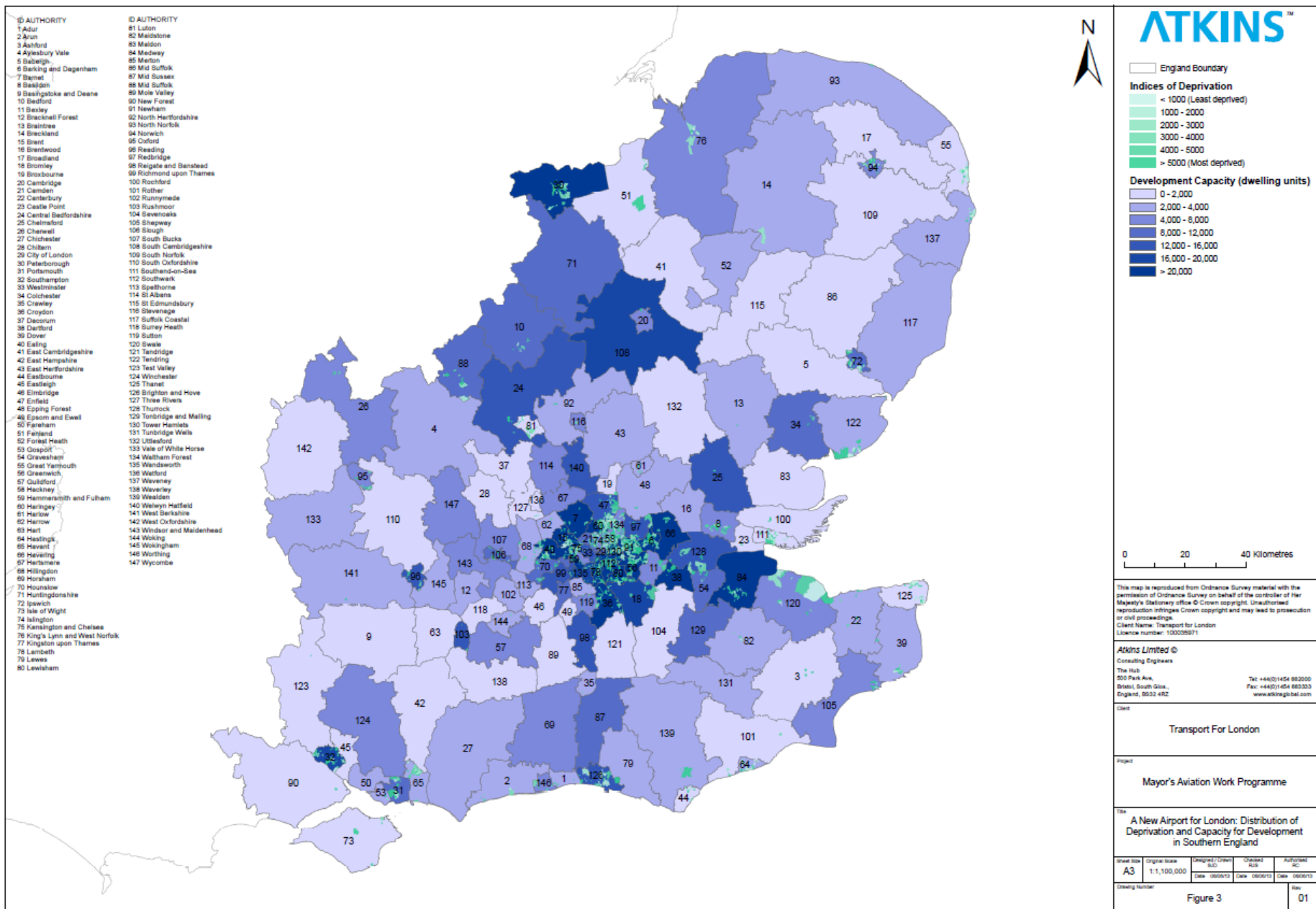
Promoting regional integration	✓	—	✓	<p>Inner Estuary – option is likely to have a positive impact on regional integration with additional airport capacity encouraging increased daily flights between London and other UK regions and provide regional rail links via a new HS1 – HS2 link by 2050. There is likely to be more limited regional connectivity via rail /road network than other options due to geographical location of the airport. Construction of the airport will help facilitate development within the Thames Gateway, helping to better coordinate long term development strategy which could help meet long term needs of both London and wider city region.</p> <p>Gatwick – option is likely to have a positive impact on regional integration with additional airport capacity encouraging increased daily flights between London and other UK regions, though likely to be less than other options. There is likely to be more limited regional connectivity via rail /road network than other options due to geographical location of airport. Construction of the airport will help facilitate development within the Wandle Valley and Gatwick Diamond, helping to better coordinate long term development strategy which could help meet long term needs of both London and wider city region, though opportunities may be more limited than for other options.</p> <p>Heathrow – option is likely to have a positive impact on regional integration with additional airport capacity encouraging increased daily flights between London and other UK regions. There is likely to be good regional connectivity via rail /road network than other options due to geographical location of airport and planned / committed infrastructure (M4 / HS2). Construction of the airport will help facilitate development within the Western Corridor (M4 Corridor), which could have a role in coordinating a long term development strategy to help meet long term needs of both London and wider city region, though opportunities may be more limited/less sustainable than other options due to land availability and other constraints.</p>
Encouraging more sustainable forms of development in the long term	✓	—	—	<p>Inner Estuary – this option is likely to help promote long term sustainable development across London and the wider city-region, and its positive impacts are likely to be greater compared to other options. There would be particular benefits associated with sustainable housing delivery (helping to deliver Brownfield sites), helping to address economic imbalances across London and in address long term transport pressures. Potential impact on statutory designations.</p> <p>Gatwick – this option is likely to make some contribution towards the promotion of long term sustainable development patterns across London and the wider city region, though given geographical location and existing development pressures this will be more limited than other options. It is likely to have a less profound effect on addressing wider transport / environmental pressures due to level of potential infrastructure investment and utilisation of existing transport links. The contribution that the option can make in relation to bringing forward development on Brownfield sites is likely to be more limited than other options, though could help with developing key growth areas across the wider Gatwick Diamond and encourage high level of Greenfield development. It is therefore unlikely to have a significant influence on changing existing development patterns in the long term. Unlikely to have a significant impact on designated sites.</p> <p>Heathrow – this option is likely to make a limited contribution towards the promotion of long term sustainable development / facilitating a change in development patterns across London and the wider city region, given geographical location and existing development focus around the airport and west London. Option is likely to have a less profound effect on addressing wider transport / environmental pressures due to scale of potential infrastructure investment and utilisation of existing / planned transport links. The contribution that the option can make in relation to bringing forward development on Brownfield sites is likely to be more limited than other options, though will have a positive influence in supporting the ongoing development of Thames Valley / M4 Corridor. Unlikely to have a significant effect on changing existing development patterns in the long term. Unlikely to have a significant impact on designated sites.</p>

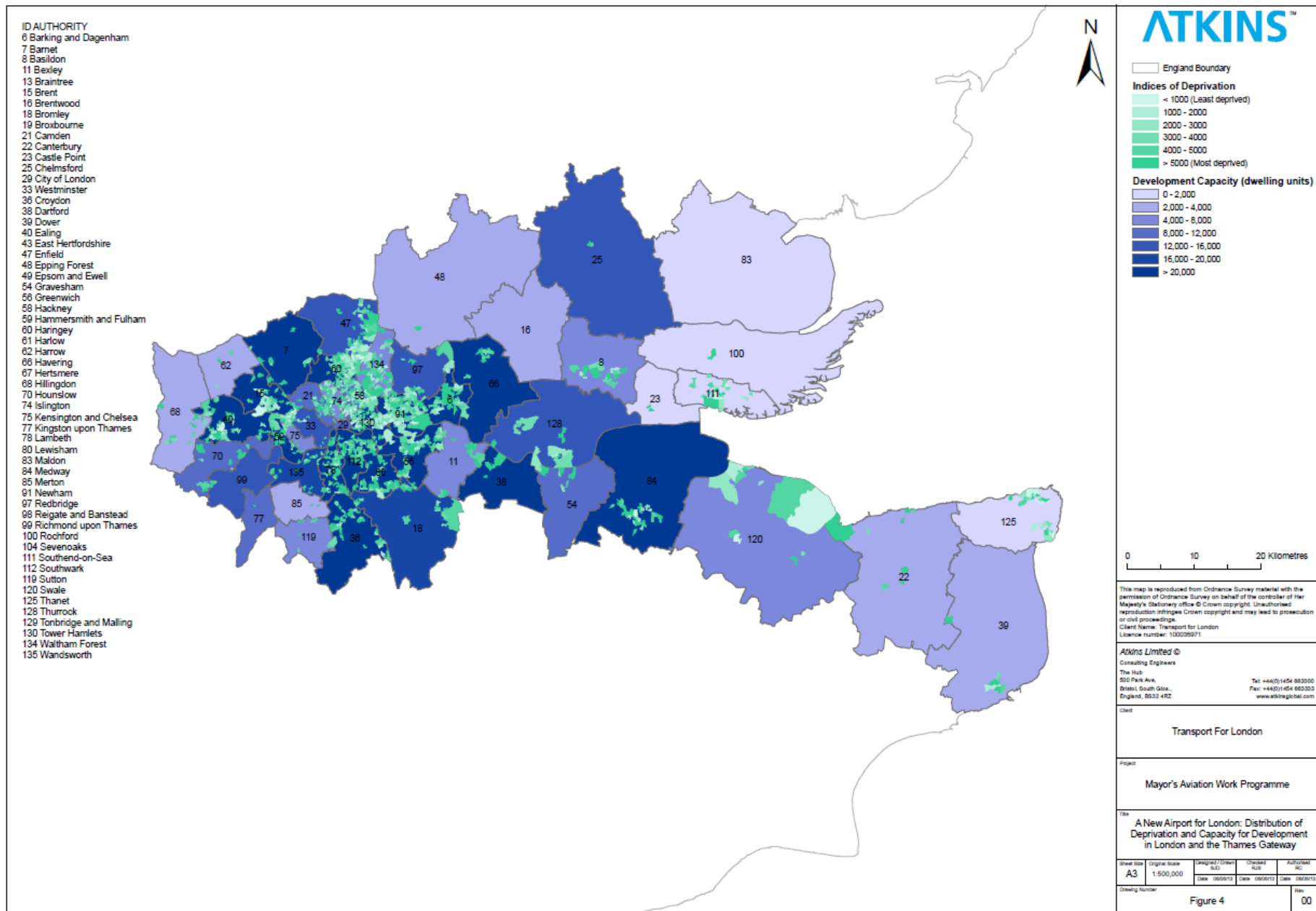
Appendices

Appendix 1 – Socio-Economic Baseline Maps









Appendix 2 – List of Planned / Committed Infrastructure associated with an Inner Thames Estuary Hub Airport Option

Proposed Infrastructure Item	Expected scale of Investment	Expected Delivery / Opening Date	Scheme Description / Indicative location
Crossrail 1	£18 billion	Opening in 2018	A new high frequency, cross London transit network. The central and north – east route section serve a number of central and east London employment centres, transforming rail transport in London – easing congestion by increasing capacity by 10% and cutting journey times across the city and wider metropolitan area.
Silvertown Tunnel	£700 million	Opening in 2023	A four lane road tunnel linking Silvertown, Royal Docks, on the north side of the Thames, with Greenwich Peninsula on the south.
New Lower Thames Crossing	£2 billion	Opening between 2025 and 2030	Building on existing proposals for LTC (Option C) to ensure it has sufficient capacity for peak airport demand.
A second new East London River Crossing at Gallions Reach	£800 million	Opening 2028	A new bridge linking Gallions Reach on the north side of the Thames with Thamesmead on the south.
A third new East London river Crossing at Belvedere	£800million	Delivered by 2035	A new bridge or tunnel linking Rainham on the north side of the Thames with Belvedere on the south.
Crossrail 1 extension to ITE airport (south of Thames)	TBC	Delivered by 2030	Extensions from Abbey Wood via Dartford and Gravesend to provide an additional rail alternative to/from Central London
ITE local and strategic road improvements	TBC	Delivered between 2029 – 2050	New access roads and widening of existing roads, to provide efficient access, with two links to provide resilience. Widening and enhancement to mitigate against delay and congestion for airport and non-airport users.
Dedicated Airport express (north of Thames)	TBC	Delivered by 2040	High speed connectivity to key London destinations - Waterloo (28mins) Riverside (14mins), Canary Wharf (20mins) and London Bridge (24mins)Dedicated, high speed rail connectivity to key London destinations – Waterloo (28mins) TBC
Local Rail Connections	TBC	TBC	Connections to South Essex (via the Thames Crossing), North Kent and South East London, including radically enhanced connectivity to growth and regeneration areas such as the City, City Fringe, Riverside and Thames Gateway

Appendix 3 – How employment and dwelling growth has been derived

This assessment considers the spatial development effects that may result from each option over a 35 year timeframe assuming a hub airport operating at 90 mppa upon opening in 2029, increasing to 170 mppa by 2050. In the longer term, the full capacity of a hub airport is likely to reach 180 mppa or more. Consequently, this assessment considers the scale and spatial distributional development effects over the medium – long term rather than the overall growth which may eventually need to be accommodated. The assumed passenger numbers for which this assessment for the Inner Estuary option is based is set out below:

Table 5: Passenger Assumptions for the new Hub Airport

	2029	2030	2035	2040	2045	2050
Inner Estuary (Isle of Grain)	90,000,000	95,807,556	121,526,581	134,800,938	150,412,367	170,103,034

Source: OE / Ramboll

Projected Employment Generation

Estimates for the number of jobs which will be provided by the construction and operation of a new hub airport identified by the econometrics modelling undertaken by Oxford Econometrics and Ramboll on behalf of TfL³⁸. Economic modelling undertaken by OE / Ramboll sets out the additional employment generation in terms of **'Direct'**, **'Indirect'**, **'Induced'** and **'Catalytic'** effects. These effects are summarised below.

- **'Direct Impacts'** – quantify the effects of the businesses directly involved in a given project or industry. In relation to the hub airport they relate to the employment generated by firms which will build and operate the airport and associated transport links. Activities include operational offices, retail and catering in terminals, hotels in terminals, maintenance facilities/hangars, fuelling facilities, multi-storey parking.
- **'Indirect' Impacts** – occur in the wider supply chain as firms directly involved in developing and operating the airport, purchase goods and services from UK-based suppliers, in turn generating output, profits and employment amongst suppliers.
- **'Induced' Impacts** – arise because the direct and indirect impacts result in additional wages are paid to workers resulting in additional spending which supports additional businesses that supply in the industries that supply these businesses.
- **'Catalytic' Impacts** – jobs generated by "catalytic effects" (the impact of development from businesses wanting to be close to a hub airport). These activities are likely to be along a development corridor from airport fence to central city location. The development zone could include science and business parks, conference facilities, hotels, logistics, healthcare/medical services, higher education and advanced manufacturing. Could also include residential development.

It should be emphasised that the catalytic economic impact of airports is subject to wide ranging debate and there is no solid consensus as to the magnitude and nature of such effects. However, there is sufficient evidence to indicate that such effects would be significant. Moreover, more recent research suggests that major new hub airports that are planned as part of an integrated development framework for the airport and its direct sphere of influence are likely to facilitate greater catalytic economic and social impacts. One such example is the approach advocated by the 'Aerotropolis model.'

³⁸ Impacts upon the local and national economy; Impacts of new hub Options on Business Locations, FDI and Alignment with Strategies (Oxford Economics / Ramboll)

The job numbers below have been derived from the economic outputs which have been assessed as part of the detailed economic modelling which has been undertaken by Oxford Economics / Ramboll on behalf of TfL.

For the purpose of identifying an employment figure to for this study, the net local employment impacts expected during the operation of the airport at the year 2050 have been used. The net figures have been used as this reflects the likely additional jobs that will generated within the local area after other existing jobs have been displaced by the hub airport activities.

To determine the wider spatial planning implications from the construction of a new hub airport, it is also important to consider the scale of the catalytic effects which are likely to occur as a consequence of the 'direct', 'indirect' and 'induced' jobs. The economic modelling undertaken by Oxford Economics / Ramboll identifies a lower and higher range of catalytic jobs that are likely to occur as a result of a new hub airport. The number of catalytic jobs that are likely to be achieved are dependent on a number of factors including the proximity of the airport to economic and service centres, surface access connectivity and land availability.

For the purpose of this study, the higher figure has been used as this would be more consistent with the level of wider infrastructure investment that would be delivered within the Thames Gateway area and also demonstrates the likely development impacts from a high growth scenario. It should be noted that the ranges are considered by OE/Ramboll to be realistic, though generally conservative and therefore the number of overall jobs may be higher still.

Table 6: Net Local Employment (000's) Impacts of a new Hub Airport Operation at 2050

		Direct	Indirect	Induced	Catalytic (Higher)	Total
Operation (2050)	Inner Estuary (Isle of Grain)	91	6	38	138	273

Source: Oxford Economics / Ramboll

Residential Development

In addition to the employment which will be generated by the construction and hub airport, it is also necessary to consider the potential spatial development requirements of additional Residential Development which would be required to meet the needs of the additional direct and indirect airport workforce plus additional housing supported by longer term economic growth across the wider city-region.

Although there is some unemployment within the locality of both options, this is relatively limited and there will be a need for significant in-migration to fill the jobs. For an Inner Thames Estuary hub option, the level of in-migration to meet the additional demand for direct, indirect and induced jobs are estimated at 81,000 for the Inner Estuary Hub Option.

In relation to the additional population generated by the catalytic job generation, projections were not provided as part of the Ramboll / Oxford Economics forecasts. Therefore, a number of assumptions have been made as to the additional population that is likely to be generated by the catalytic jobs and these are set out below. It has been assumed that the additional catalytic jobs would increase the population by an additional 51,336 for the Inner Estuary Option.

The population generated by the additional jobs (including catalytic jobs) has been assumed.

- **Inner Estuary** = 81,000 + 51,336 = 132,336 additional population up to 2050

Having established what the likely additional population from the expected increase in employment will be, it is necessary to convert this into the total number of residential dwellings which will need to be accommodated. To do this a household rate of 2.3 has been applied to each of the total population figures.

- **Inner Estuary** = $132,336 / 2.3 = 57,537$ additional dwellings up to 2050

When considering the breakdown between airport related employment and catalytic employment, each employment type will generate the following demand for additional dwellings over and above the baseline projections.

Table 7: Summary of Residential Growth

Hub Option	Airport related residential growth	Catalytic employment related residential growth
Inner Estuary*	35,217	22,320

* in addition to the job generated growth, it is also estimated that approximately 1,600 existing residential homes would be displaced with an Inner estuary Option. These would also need to be re-accommodated within the local area.

It is important to note that both the population generated by the airport related jobs and the catalytic jobs will be in addition to the projected baseline and the additional population generated by direct, indirect and induced jobs.

Calculating additional population and requirement for new dwellings as a result of catalytic activity

In the absence of any population projections relating to the catalytic jobs, it has been necessary to identify what the potential population increase within the wider city-region may be in order to identify the additional number of dwellings which would be required.

Identifying the additional population from Catalytic employment

In identifying the additional population that may be required to fulfil airport related jobs, the OE / Ramboll economic forecasting has taken into account commuting flows (based on 2001 Census) and the types of direct / indirect and induced (DII) jobs that may attract commuters.

When looking at the number of additional people (additional population above baseline projections) which may be required to migrate into the 'local area'³⁹ to fulfil airport related jobs, the following assumption can be made.

Isle of Grain = 81,000 additional population by 2050 / 135,000 DII jobs = additional 0.6 people per job.

As a starting point in identify the additional population that may be generated by the catalytic jobs and are likely to be required to be accommodated within the defined SDAs, an assumption has been made that each new job will require 0.6 people to relocate to the area for each catalytic job generated by the hub airport.

When taking into account the additional catalytic jobs generated by the airport and its construction, this would generate the following additional population above the existing baseline projections for both options⁴⁰:

Isle of Grain = 138,000 additional catalytic jobs x 0.6 = 82,800 additional population

However, in reality, not all people who occupy the jobs within the wider region are going to live and work within the same area. Although in part, this is already reflected by applying the same population rate

³⁹ As defined in Impacts upon the local and national economy (Oxford Economics / Ramboll)

⁴⁰ The upper catalytic job range for Inner Estuary Option is 138,000

assumed by OE / Ramboll forecasts, by definition catalytic jobs will not be directly related to the airport and therefore are likely to have a wider catchment.

Furthermore, although there would still be an increase in some of the lower paid sectors under a catalytic scenario, it has also been identified that for the Inner Estuary Hub Options⁴¹, there are likely to be significant increase in the number of jobs generated in skilled (and therefore higher paid) sectors. As higher skilled sectors and higher paid jobs are often associated with higher levels of commuting⁴², it would be prudent to increase the level of out commuting within the relevant Spatial Development Areas that would occur with these sectors, ensuring that the potential development requirements are not overestimated. It is also considered that the level of in-commuting into the defined Spatial Development Areas (for catalytic jobs) may be higher for the Inner Estuary Hub Options due to high existing levels of in-commuting and further issues relating to land availability, improved connectivity and cost of living which may exacerbate the issue further in the longer term. Notwithstanding this, when taking into account the geographical scope of the WDC's for both options and the concentrations of potential development areas, it is considered that a high number of employees generated by catalytic jobs will still live in the WDC, even if they travel elsewhere within it to seek employment.

To ensure that the population estimates relating to the catalytic employment are not overestimated, a further review of existing travel to work data (Census 2001) has been undertaken within the WDC to determine an appropriate discount rate which can be applied to identify the likely minimum additional population which will need to be accommodated within the Spatial Development Areas.

Review of Existing TtW Data

Inner Estuary Hub Option – for the Inner Estuary option, the existing self containment rate for those living and working within the corridor is approximately 62%. Therefore for the purpose of this study, it has also been assumed that at least 62% of the additional population (derived from the OE / Ramboll forecasts) would seek accommodation within the WDC.

It could be argued that for the Inner Estuary hub option, the significant land supply within the Thames Gateway growth corridor and other potential redevelopment opportunities (e.g. at London City Airport) would mean could result in a better live / work balance within the corridor. Whilst this may be the case there is currently limited evidence to support this and therefore a more conservative approach which has been evidenced as being realistic under current conditions has been taken.

Isle of Grain WDC = 82,800 additional population x 0.62 = 51,336 additional population living in WDC by 2050

For both Hub Options, the outstanding population in both cases is assumed to be located elsewhere in the UK, though this is likely to still be focused elsewhere in the London city-region.

Identifying the additional demand for housing from Catalytic employment

To determine the number of dwellings that the additional catalytic job population will generate, a standard household size of 2.3 has been applied to the estimated population.

Isle of Grain = 51,336 additional population / 2.3 = 22,320 additional dwellings by 2050

These dwellings will be in addition to both the demand for dwellings generated by the direct, indirect and induced jobs as well as projected baseline demand.

⁴¹ Impacts upon the local and national economy; Impacts of new hub Options on Business Locations, FDI and Alignment with Strategies – Appendix 1 (Oxford Economics / Ramboll)

⁴² Williams, 2012: A Comparative Study of Commuter Patterns and Trends in Great Britain, Ireland and the US

Summary of Employment and Residential Development from Airport and Catalytic Growth

It has been identified that a significant amount of additional development is required to be accommodated within the vicinity of a new Inner Thames Estuary hub airport. A summary of the scale of development which needs to be accommodated on top of current projected baseline demand is set out below.

The projections for additional population and therefore additional housing demand for this study has been derived by applying a number of assumptions based on the initial assessment of population growth set out in the OE / Ramboll employment forecasts; evidence of airport development taking place elsewhere; and applying known travel to work patterns based on Census (2001) travel to work data.

Given the unprecedented nature of delivering a hub airport within the UK and without knowing how travel to work patterns may be affected by delivering a step change in employment within a relatively discrete geographical area alongside opportunities for the significant redevelopment of previous developed sites (for the Inner Estuary Hub Option) and improved surface access both locally and at sub-regional level; the development figures relating to the potential additional demand for housing is considered to be a relatively conservative estimate of the amount of additional development that a new hub airport could facilitate across the sub-region.

Table 8: Summary of Employment and Residential Development from Airport and Catalytic Growth

		Total no. Jobs (2050)	Total additional Population (2050)	Total no. additional dwellings (2050)
Operation (2050)	Inner Estuary (Isle of Grain)	273,000	132,336	59,137*

* including 1,600 dwellings which need to be re-accommodated following displacement.

Appendix 4 – Identifying Spatial Development Areas

To identify the geographical scope for each of the Spatial Development Areas (SDAs) a number of assumptions have been taken from the existing modelling work and other available research. The assumptions applied for each SDA are set out in Table 3.

Table 3 – Identifying Spatial Development Areas

Spatial Development Area (SDA)	Geographical Area of SDA	Rationale
On-Airport Development Area (OADA)	Indicative hub airport boundary	When examining the potential airport generated employment, the OE / Ramboll work , Direct employment is defined as those jobs which relate to the employment generated by firms directly involved in constructing and operating the airport and transport links. This suggests a discrete employment zone within the airport boundary which would accommodate all direct jobs.
Off-Airport Development Area (OFADA)	1km development zone adjacent to airport boundary.	When examining the potential airport generated employment, the OE / Ramboll work , Indirect and Induced employment is defined as those jobs which relate to the employment generated within the airport supply chain by firms directly involved in constructing and operating the airport and transport links. The modelling of indirect jobs only forecasts those jobs directly relating to the airport (and which occur within the defined 'local area'). Given that there is a direct correlation between the airport and these jobs, this suggests the need for a direct, time efficient link between the airport operation itself and supply chain sectors. This in part is supported by the clustering of airport related employment adjacent to existing major airports. For the purpose of this boundary, it has been assumed that there is likely to be a concentration of employment within an area that is a short journey time from the airport boundary and will be a focus of airport related employment.
Airport Development Zone (ADZ)	Local Authorities identified as 'local area' as part of economic forecasting.	The modelling of Direct, Indirect and Induced jobs undertaken by OE / Ramboll have been modelled within a defined local area consisting of those local authorities in the immediate vicinity to the airport. A consistent approach has been taken for the purpose of this study.
Wider Development Corridor (WDC)	Located within the wider region as the area likely to attract additional FDI and support businesses looking to locate /relocate towards the airport. The corridors have been based on a narrative about the potential regional area impact provided as part of Ramboll / Oxford Economics forecasting work.	OE / Ramboll forecasts contains a high level narrative about the likely geographical extent of Regional Impact areas in which catalytic employment is likely to occur (see Table 5 below). This narrative has been used as the basis for identifying the parameters of the WDC. For consistency, the boundaries of both WDCs are broadly consistent with constituent local authorities which would fall within this corridor and are listed in Table 4.

Table 4: Potential Regional Impact Areas

Airport Hub Option	Brief Overview of Regional Impact Area
Inner Estuary (Isle of Grain)	An Inner Estuary airport hub could, with associated road and rail infrastructure investment, offer strong opportunities for the development of an 'Eastern Growth Wedge' stretching from Southend in the east through central London to Heathrow in the west. Such a development corridor would likely attract additional FDI and strengthen the competitiveness of London and the South East as a business location. With this, there is a potential to transform London into a polycentric centre (central London and an eastern development corridor encompassing local areas around the Inner Estuary such as Medway, Southend, Thurrock and Dartford). An eastern growth wedge, would also offer the potential to rebalance the local economies and close the income gaps which currently exists between the east and the west in London and the South East.

Source: Ramboll / Oxford Economics

Table 5: Indicative local authority areas for each SDA

Spatial Distribution Area	Inner Estuary
On-Airport Development Area (OADA)	Medway
Off-Airport Development Area (OFADA)	Medway / Gravesham
Airport Development Zone (ADZ)	Medway / Gravesham / Swale / Maidstone / Tonbridge and Malling / Dartford
Wider Development Corridor (WDC)	Southend –on-sea / Ashford / Castlepoint / Basildon / Thurrock / LB Havering / LB Barking & Dagenham / LB Newham / LB Islington / LB Hackney / City of London / LB Camden / City of Westminster / RB Kensington and Chelsea / LB Hounslow / LB Ealing / LB Hillingdon / LB Bexley / LB Greenwich / LB Lewisham / LB Southwark / LB Tower Hamlets / LB Lambeth / LB Wandsworth / LB Richmond, LB Hammersmith & Fulham ⁴³

⁴³ The development effects within the Wider development corridor are likely to extend much wider than the identified local authorities. However, due to existing and planned improvements connectivity, as well as the existence of established employment centres, it is expected that the majority of development will be focused within those local authorities listed.

Appendix 5: Overview of approach taken to identifying a Spatial Distribution Scenario for an Inner Estuary Hub Airport

It has been necessary to identify a potential high level spatial distribution scenario in order to identify how the jobs and homes required to support the construction and delivery of a new hub airport and wider economic growth may be accommodated across the wider city-region. The number of jobs/homes to be distributed within each of the Spatial Distribution Areas has been determined following the analysis and evaluation of each of the SDA's against a number of criteria which are considered to be key determining factors of where new growth may be located.

It is necessary for different approaches need to be taken for each of the different SDAs to reflect the nature of the jobs and dwellings being provided for. The following steps have been undertaken to determine the appropriate spatial distribution for each SDA and in considering the spatial distribution for both employment and residential development.

Table 6 – Approach Taken to distributing employment growth

Step	Approach	Rationale
1	Direct employment is distributed wholly within airport boundary (OADA).	Within the OE/ Ramboll forecasts Direct jobs are assumed to be directly related with the operation or construction of the airport. They have therefore been assumed to be wholly accommodated within the OADA.
2	Indirect employment is focused in OFADA, with some indirect employment distributed within ADZ based on existing connectivity to the airport and location of established employment areas.	Given that there is a direct correlation between the airport and Indirect jobs, it has been assumed that a number of the supply chain sectors will locate either adjacent to the airport or where good connectivity exists which allows for a direct, time efficient link between the airport operation itself and supply chain sectors.
3 ⁴⁴	Induced employment is split between OFADA and ADZ in a way which recognises the need to support (but safeguard) airport critical jobs as well as demand from existing employment sectors and existence of service centres / accessibility.	Within the economic forecasts, induced jobs are a direct consequence of the need to support workers employed in relation to either direct or indirect jobs. As it is unlikely that induced jobs will be provided within the airport boundary itself and that the focus within the OFADA will be for airport related supply chain employment, it has been assumed that the majority of jobs would be located within the ADZ. The distribution takes into account external factors such as the proximity of existing service centres, accessibility and overall development potential.
4	Catalytic employment distributed within ADZ and WDC based on suitability of location in terms of following factors:	The OE / Ramboll forecasting provides an overview of the likely employment impact for different industrial sectors.

⁴⁴ Step 1 to 3 will ensure that all airport related growth (non-catalytic) is accommodated within the defined local area, consistent with OE / Ramboll forecasts

	<ul style="list-style-type: none"> • Comparison of likely impact on employment sectors against existing strength of different industry sectors; accessibility to the airport and the wider strategic transport network; • local development capacity / development potential; • potential environmental constraints; • potential location of workforce; • existing policy approach to economic growth and expansion (e.g. identified growth locations / planned development / growth corridors etc). 	<p>It is assumed that within the OADA, OFADA and ADZ, the majority of employment will be focused towards airport related growth. However, from the experience of hub airports elsewhere and evidence of strong business demand for access to aviation (which suggests that businesses will seek to locate close to the airport). There will also be external factors to take into account such as potential capacity, environmental constraints, accessibility, strength of existing employment sectors (i.e. the benefits that could be secured from agglomeration benefits) etc.</p> <p>Where possible, employment growth has been focused across the WDC, taking into account the assessment criteria listed, with an emphasis of focusing new catalytic employment as close to the airport as possible. The remaining catalytic employment has been allocated to areas where there are known employment areas or clusters which directly correspond with the major growth sectors identified within the economic forecasts. This reflects the downstream development effects of locating a new airport with excellent transport links to high density regeneration and development hubs.</p> <p>Whilst the degree of causation between the development of a new hub airport and the realisation of development value from the sites clustered around these growth nodes is subjective rather than scientific, the analysis has sought to provide an estimate of development which could potentially be facilitated by a new airport and potential upgrades to existing surface access infrastructure.</p>
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Table 7 – Approach Taken to distributing dwelling growth

Step	Approach	Rationale
1	No residential development has been located within the OADA or OFADA due to the sensitive relationship between residential development and the operation of the hub airport, as well as the need to accommodate a significant number of direct and indirect jobs within these areas to support the operation of the job.	The development focus within the OADA and OFADA is considered to be employment focused due to construction and operational needs as well as the environmental sensitivities between residential development and airport operations.
2	<p>Dwelling requirements arising from jobs generated within the 'local area' (and displaced homes) have been split between ADZ and WDC.</p> <p>Apportionment has been based on approximate journey times of workers currently observed at Heathrow airport and then split between local authorities / growth nodes using the following criteria:</p> <ul style="list-style-type: none"> • development capacity (as identified by SHLAA work; National Land Use database; • potential environmental constraints; • policy support (local/ strategic planning policy context); • location of existing / upgraded surface access infrastructure • market demand 	<p>Existing travel to work data from Heathrow provides a good basis of what travel to work patterns may exist following the construction of a new Hub airport. As a basis for distributing growth at this stage, it has been assumed that the 'local area' – e.g. the entire ADZ for both options is considered to have a journey time of not more than one hour. Although it is likely that will be areas outside of the ADZ which may have a journey time of less than one hour, the 'under one hour' travel time when compared to the 'under half hour' journey time is only representative of a relatively small number of employees at Heathrow (25%). Therefore the number of workers who may be located outside of ADZ and within 'under an hour' travel time catchment is therefore likely to be limited and only make up a small proportion of the overall workforce.</p> <p>The other criteria are common assessment criteria in developing spatial development strategies and have been used to help distribute additional residential demand between the constituent local authorities within each SDA.</p>
3	<p>Remaining dwelling demand generated by catalytic growth have been accommodated within WDC and ADZ taking into account:</p> <ul style="list-style-type: none"> • proximity to potential employment growth areas / existing industrial sector strengths; • accessibility to the wider strategic transport network and London; • development capacity (as identified by SHLAA work; National Land Use database; • potential environmental constraints; • policy support (local/ strategic planning policy context); • known development proposals / growth locations; • market demand 	<p>For residential development related to catalytic growth, additional development to be accommodated within the ADZ has been determined by identifying key growth locations that may have capacity to deliver additional dwelling growth (above that in Step 3) but also where there is good connectivity with the wider sub-region / region (e.g. motorways / railway lines etc).</p> <p>Within the WDC, residential growth has been allocated on the basis of each local authority's performance against the listed criteria.</p>

Limitations

The assessment has been undertaken using existing evidence and applying previous experience from Atkins' undertaking previous assessment of potential development opportunities arising from the construction of transport infrastructure projects. However, there are limitations to the approach. These can be summarised as:

- time horizon of existing evidence (generally up to 2031) has been considered against the longer term operation of the hub airport up to 2050;
- assumed level of infrastructure investment as set out in Appendix 2;
- limitations associated with identifying the potential development impacts for an unprecedented level of infrastructure investment within the UK⁴⁵;
- at this stage reviews have been undertaken at a strategic level and have not considered local issues which may affect ability to accommodate additional development.
- only considers statutory / absolute environmental constraints (e.g. statutory designations / known environmental assets).

Consequently, some of the indicators (e.g. land supply / potential development areas) already relate to areas which have already been identified to accommodate development or growth required to meet existing identified needs and therefore may not be wholly available to meet the needs arising from a new hub airport. However, it is considered that at least some of the opportunity areas identified will, at least in part be capable of accommodating the needs generated by a new hub airport, given the likely development timescales and the catalytic role that a new hub airport may have in 'kick starting' development within the Thames Gateway area.

⁴⁵ Although examples can be taken from similar international projects, there is no guarantee at this stage that the UK market will react in a similar way

Appendix 6: Potential Employment Distribution Scenario for Inner Thames Estuary Option

Below demonstrates, step by step how employment growth has been distributed across each of the Spatial Development Areas. The tables below provide a breakdown (and justification) of total growth across the four SDA's.

Inner Estuary Hub Option – Employment

The total employment growth (000's) to be accommodated with an Inner Estuary Option.

		Direct	Indirect	Induced	Catalytic (Higher)	Total
Operation (2050)	Inner Estuary (Isle of Grain)	91	6	38	138	273

Step 1

Step	Approach	Proportion of jobs (%) allocated to each SDA				Rationale
		OADA	OFADA	ADZ	WDC	
1	Direct employment is distributed wholly within airport boundary (OADA).	100	-	-	-	100% of direct employment (all 91,000 projected jobs) have been apportioned to the OADA.

Step 2

Step	Approach	Proportion of Jobs (%) allocated to each SDA				Rationale
		OADA	OFADA	ADZ	WDC	
2	Indirect employment is focused in OFADA, with some indirect employment distributed within ADZ based on existing connectivity to the airport and location of established employment areas.	-	90	10	-	Around the Isle of Grain the area is largely undeveloped and there is relatively poor connectivity. However, there are likely to be significant opportunities as part of developing a new hub airport to provide for sufficient employment land within the OFADA as there would be fewer barriers to development and would enable the establishment of a strong efficient network between the operating airport itself and the supply-chain networks required to support the construction / operation of the airport. Although there would inevitably be associated surface access improvements within the ADZ, the ADZ is likely to be a less optimal

						location for those businesses directly involved in the supply chain for the airport and therefore would experience a lower demand. It has therefore been assumed that for the Inner Estuary Option, a significant number of indirect jobs will be provided within the OFADA with fewer indirect jobs located within the ADZ.
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Step 3

Step	Approach	Proportion of Jobs (%) allocated to each SDA				Rationale
		OADA	OFADA	ADZ	WDC	
3	Induced employment is split between OFADA and ADZ in a way which recognises the need to support (but safeguard) airport critical jobs as well as demand from existing employment sectors and existence of service centres / accessibility.	-	30	70	-	The demand for land within the immediate vicinity of a new hub airport is likely to be highest for those directly involved in the airport supply chain or from transport related businesses which are likely to require quick, direct access to the airport. However, there is likely to be some correlation between induced and the direct / indirect employment as the induced jobs arise from the need to provide additional services related to both the direct and indirect jobs. A 30 / 70 split between has therefore been made between the OFADA and ADZ to reflect the demand for services by those working within or adjacent to the airport but also the potential role of existing service centres within the ADZ which will provide a strong basis for supporting induced jobs and existing connectivity.

Step 4

Step	Approach	Proportion of jobs (%) allocated to each SDA				Justification
		OADA	OFADA	ADZ	WDC	
4	<p>Catalytic employment distributed within ADZ and WDC based on suitability of location in terms of following factors:</p> <ul style="list-style-type: none"> - Comparison of likely impact on employment sectors against existing strength of different industry sectors; - accessibility to the airport and the wider strategic transport network; - local development capacity / development potential; - potential environmental constraints; - potential location of workforce; - existing policy approach to 	-	-	35	65	<p><u>Existing Strength of Employment Sectors</u></p> <p>When looking at the sectors that are likely to be most affected by the generation of catalytic employment, there are a number of industry sectors already well established within the ADZ which are likely to be impacted most significantly by catalytic growth. Specifically, there is a clear correlation between retail / wholesale – likely to be driven primarily by large out of town retail centres around Dartford / Medway area.</p> <p>The concentration of other key employment growth sectors are located within the Wider Development Corridor. Specifically, there are concentrations of transportation in west London (though driven by current operations at Heathrow); accommodation within more central London locations and professional jobs within Central London.</p>

	economic growth and expansion (e.g. identified growth locations / planned development / growth corridors etc).				<p><u>Accessibility</u></p> <p>Accessibility to the Isle of Grain location is currently limited. However, it is assumed that with the construction of the airport, there would be a number of surface access improvements to existing transport links, focused on existing strategic transport links such as M25 / M2 and along existing rail links.</p> <p><u>Local Capacity</u></p> <p>Approx 15% of pdl capacity is located within the ADZ with significant concentrations in Medway and Gravesham. However when looking at overall capacity, it can be seen that there are other areas of large PDL supply in Thurrock and Dartford as well as elsewhere in the WDC (Tower Hamlets / Barking and London Riverside) which is also likely to be able to support large scale development.</p> <p><u>Environmental Capacity</u></p> <p>There are a number of statutory designations both within the ADZ and WDC which would need to be considered. Potential constraints are more concentrated towards the airport and there are fewer constraints heading west along the WDC.</p> <p><u>Policy Support</u></p> <p>There is a commitment within the London Plan / Economic Strategy (2010) for East London to remain a spatial priority for the delivery of new jobs and homes to help deliver regeneration objectives and to rebalance economy with rest of London. The most significant opportunities are identified along the Thames Gateway growth corridor and along an 'east west axis' which is seen as an engine for growth (particularly along existing infrastructure corridors). Priorities are generally reflected in Local Development Plans and number of growth locations are identified, particularly to the eastern side of the WDC and along the Thames Riverside. This includes the recent identification of a Garden City location at Ebbsfleet.</p> <p>In determining the potential strategic distribution between the ADZ and WDC, consideration has been given to the existing concentrations of employment, but also the attractiveness of the airport in attracting new employment clusters, (both from the relocation of existing industries and inward investment) and the potential development capacity and opportunities and a 35 / 65 split between the ADZ and WDC has been considered a probably distribution scenario. Notwithstanding this it, is considered that there would be concentration of economic activity developing within the east of the corridor (particularly around the Dartford / Thurrock / Barking and London Riverside) in response to the more</p>
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					<p>favoured connectivity likely to be enhanced by new access (local, regional and international) provided by the development of a new hub airport, but also reflects strong policy support for development within the Thames Gateway and land availability. Such agglomeration activity around new hub airports has been demonstrated by previous examples of airport related development (e.g. Schiphol), a number of the jobs are attracted by the locational advantage to the airport, resulting in higher density agglomeration nearer to the airport and reduced uptake further away from the airport. This approach also reflects the need to take into account potential environmental constraints further east.</p> <p>Notwithstanding this, there is likely to remain a concentration of certain employment uses within the established employment centres in central London, taking advantage of established markets, tourism and other agglomeration benefits.</p> <p>It is also necessary to consider the role that the redevelopment of Heathrow could have in accommodating additional growth. As demonstrated above there is a tendency for new jobs to gravitate towards the new hub airport and as such it expected that the majority of jobs will be located to the east of the WDC or build upon existing sector strengths within Central London Boroughs. Therefore, it is considered that most of the jobs delivered as part of the Heathrow redevelopment is likely to be brought forward to meet wider baseline demand or compensate for the loss of airport related at jobs at Heathrow, rather than from the new hub airport itself. The Heathrow redevelopment scenarios produced for TfL by JLL and Peter Brett Associates support this approach by identifying that the strengths of Heathrow will be its proximity to London rather than the new Hub Airport and a number of the potential key growth sectors at a redeveloped Heathrow site (such as education) are only expected to experience a modest change as a result of the hub airport development.</p>
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Distribution of Employment Growth for Inner Estuary Hub Option (at SDA level)

	Direct	Indirect	Induced	Catalytic	Total
OADA	91000	0	0	0	91000
OFADA	0	5400	11400	0	16800
ADZ	0	600	26600	48300	75500
WDC	0	0	0	89700	89700
Total Jobs	91000	6000	38000	138000	273000

Appendix 7: Potential Residential Distribution Scenario for Inner Thames Estuary Option

Below demonstrates, step by step how residential growth has been distributed across each of the SDA. The tables below provide a breakdown (and justification) of total growth across the four SDA's.

Hub Option	Airport related residential growth	Catalytic employment related residential growth
Inner Estuary	36,817*	22,320

*includes additional 1,600 residential development as a result of displacement

Step 1

Step	Approach	Proportion of dwellings (%) allocated to each SDA				Rationale
		OADA	OFADA	ADZ	WDC	
1	No residential development has been located within the OADA or OFADA due to the sensitive relationship between residential development and the operation of the hub airport, as well as the need to accommodate a significant number of direct and indirect jobs within these areas to support the operation of the airport.	-	-	-	-	No dwellings have been included within the OADA or OFADA due to compatibility issues with the construction and operation of the airport.

Step 2

Step	Approach	Proportion of Airport related dwellings (%) allocated to each SDA				Rationale
		OADA	OFADA	ADZ	WDC	
2	Dwelling requirements arising from jobs generated within the 'local area' (and displaced homes) have been split between ADZ and WDC. Apportionment has been based on approximate journey times of workers currently observed at Heathrow airport and then split between local authorities / growth nodes using the following criteria:	-	-	68	32	<p>Heathrow travel to work data suggests that:</p> <ul style="list-style-type: none"> - 43% of workers travel to work in under 30mins - 25% of workers travel to work in less than 1 hour - 32% of workers travel to work over 1 hour <p>For the purpose of this study, it has been assumed that the ADZ can be accessed in less than 1 hour whilst the WDC will have journey time over 1 hour. Residential development has been apportioned in a way which is consistent</p>

	<ul style="list-style-type: none"> - development capacity (as identified by SHLAA work; National Land Use database; - potential environmental constraints; - policy support (local/ strategic planning policy context); - location of existing / upgraded surface access infrastructure - market demand 					with the Heathrow Travel to Work data. Displaced dwellings have been included in this distribution.
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Step 3

Step	Approach	Proportion of Catalytic employment related dwellings (%) allocated to each SDA				Rationale
		OADA	OFADA	ADZ	WDC	
3	<p>Remaining dwelling demand generated by catalytic growth have been accommodated within WDC and ADZ taking into account:</p> <ul style="list-style-type: none"> - proximity to potential employment growth areas / existing industrial sector strengths; - accessibility to the wider strategic transport network and London; - development capacity (as identified by SHLAA work; National Land Use database; - potential environmental constraints; - policy support (local/ strategic planning policy context); - known development proposals / growth locations; - market demand 	-	-	15	85	<p>Within the ADZ, there are a number of identified growth locations (e.g. at Maidstone and Dartford), including proposed Garden City Development at Ebbsfleet. It would appear from a high level review of current SLAAs that the majority of local authorities within the ADZ are able to meet their current need and there is an overall surplus in land supply. There are good access links within the ADZ to the wider area and particularly along the WDC, both by private and public transport.</p> <p>However, there are potential environmental constraints which are likely to limit significant development in the longer term and any available developable land would likely be competing with dwellings already allocated within the ADZ to support direct airport related employment. Therefore a relatively low allocation of 15% has been allocated to the ADZ in relation to catalytic employment growth.</p> <p>Within the WDC there are a number of opportunity areas and growth areas which have the potential to deliver significant elements of housing. There are potential limitations of developable sites, particularly within the central London Boroughs in the longer term, However, it is considered reasonable that the outstanding residential growth generated by the catalytic employment growth (and expected to be accommodated within the WDC) is accommodated within the WDC, particularly in areas that are within commuting distance of both London and the airport (and supporting employment). .</p>

Distribution of Residential Growth for Inner Estuary Hub Option (at SDA level)

	DII	Catalytic	Total
OADA	0	0	0
OFADA	0	0	0
ADZ	25,371	3,348	28,719
WDC	11,446	18,972	30,418
Total Dwellings	36,817	22,320	59,137