Relationship between transport and development in the Thames Gateway

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Front cover

Relationship between Transport and Development in the Thames Gateway for the ODPM

Final Report
July 2003
Llewelyn Davies and Steer Davies Gleave
with
Roger Tym & Partners and Atkins
Strategic overview and summary

Shaping the Thames Gateway: Development and Transport Intertwined

A Sub-Regional Structure

The aspirations for major change in the Thames Gateway make it essential that there is a change of focus: from "the same but more so", to a new shape and set of relationships.

We can envisage the eventual urban structure of this two-and-a-half million population sub-region as being characterised, from east to west, by:

- two major outer conurbations the size of Leicester (Southend / Rochford, Medway);
- a "linear city" in North Kent Thames-side from Gravesend to Ebbsfleet to Dartford and inward;
- a "new town" at Barking / Dagenham / Rainham;
- and the existing places revived and expanded on the south side along the North Kent Line (and eventually Crossrail) spine.

There will be interactions both upstream and downstream, with major job additions not just in London but also concentrated in "city centres" (including Ebbsfleet as well as Southend and Medway) plus some expanding outer areas like Shellhaven and Thurrock. The spinal structure will help achieve a relatively high public transport mode share, with potential for more contra-commuting, thus increasing the efficient use of public investment.

(1) South of the River

From North Kent Thames-side inward to Docklands, there is a string of opportunities, many of them of major significance, with Central London at one end, and the rest of Kent and direct access to continental Europe at the other. The Channel Tunnel Rail Link can be seen as a major point on the spine, with Crossrail filling in the "vertebrae" of intermediate locations, and high quality Transit giving efficient local circulation to get the most out of the potential, in the most sustainable way.

(2) North of the River

Across the Thames there are also huge opportunities, but more mixed and less clearly located along a single major spine and, east of Stratford, less equivalent of the wider connections beyond, to outer areas and to Europe. There will be more of a stress on local hinterlands, and less potential to shift modal choice away from car towards public transport.

(3) Two major outer conurbations

In the outer parts of the Gateway, Medway and Southend will continue to have strong business and commuting relationships with London: but they are growing into medium-sized cities - to become attractive differentiated places in their own right, with a countervailing pull for some commuting in these outer areas, and a social and economic dynamic of their own.

Cross River Relationships

Thames Gateway is a powerful concept, but it is not all one uniform thing. Upstream, the inner Gateway is becoming more like Central and West London, in that the Thames is perceived almost as an incidental open space with little or no effect on residential choice or job moves (so "Docklands" is now an area of housing search, as much as "Southwark" or "Tower Hamlets"). Downstream, on the other hand, where River turns into Estuary, there is no significant north-south relationship between the main places - Southend, Sheerness, Chatham, Basildon - and never will be: all possible economic and social needs are met in their own hinterlands or in London. Even at the Dartford crossing, (with a
Relationship between transport and development in the Thames Gateway

tunnel for forty years, and a bridge for ten), the relationship between South Essex and North Kent is not particularly strong.

In between, there is an interesting area of choice - to actively seek to extend the "inner" logic. The case for a Crossing between Beckton and Thamesmead is not simply that it releases potential of specific sites which are otherwise critically constrained: though it will help attract commercial interest to Thamesmead and Belvedere, and make job opportunities (especially in the Royals) more accessible so widening choice for South East Londoners. It is also about deciding that, together with DLR Woolwich and Crossrail, this part of the Gateway is going to become increasingly economically and socially interlinked; and that this takes both road and rail links for it to be complete and convincing.

A Location of Choice

This ambitious growth and restructuring is critically dependent on changing the location decisions of a large number of individuals. We have got to make people want to live there. Most home moves are very local, and so to get the scale of change we are talking about, we will have to persuade a lot of people to "transmigrate", rather than just move the average 10 kilometres. The Thames Gateway has got to be more attractive - both absolutely and relative to other competing areas. That means partly making it more convenient, with strategic "spinal" and high quality local public transport. And partly making it good to be in - distinctive riverside communities, making places with life, character and activity, protecting and improving green space where this is of value.

As well as a place to live, Thames Gateway must also become a location of choice to work. There need to be many thousands more jobs, and that means making the area attractive and convenient for indigenous and incoming businesses. But there are never going to be enough to make the places within it "self-sufficient" - this is a big busy sub-region with a hugely powerful World City economy at one end of it. Central London / Docklands will remain dominant employment locations for many; Ebbsfleet / North Kent Thames-side will be a new focus, a sort of eastern East Croydon astride the strategic rail lines; Medway and Southend can grow independent job potential, and so they need transport investment for road connections and fast London links for business attractiveness as well as commuting. Job growth will be very substantial, too, in the rest of area, but it will not "keep up" with housing growth there, except in parts of South Essex, notably Shellhaven where job growth will dominate.

The Transport Dimension

Transport investment is clearly fundamental to all this. The Thames Gateway needs help to become a "competitive location", for residential choice as well as commercial investment, since it has identifiable (non-transport) disadvantages at present. It needs high quality regional AND local transport if we are not to waste the potential, especially on the major opportunity sites.

So the Gateway can become a sustainable sub-region, as envisioned in the DPM's Communities Plan. It will not however be a collection of self-contained towns; there will be a lot of travel, and a lot more travel than now. But with the right associated development, there will be a lot less travel than would be associated with developing in other competing locations, where the transport / development logic is not so interwoven. In particular, there is the opportunity to structure much of the development in the Thames Gateway in a way that reduces the overall proportion of travel that is undertaken by car, thereby minimising the environmental "footprint" of this scale of growth.

The Trajectory

This vision of an evolving sub-region does not happen all at once and everywhere. CTRL will be operational in 2007, and so North Kent opportunities are an early priority and they demand focus on the quality, function and effectiveness of local Transit. At the western end, local Transit and DLR system expansion can help to maintain momentum and to secure commitment to very ambitious plans for Barking, Dagenham, Woolwich, and Thamesmead. Crossrail and the Thames Gateway bridge
Relationship between transport and development in the Thames Gateway

come along later to release another layer of potential, as well as new sites on the south side "spine". Opportunities in the remainder of the Gateway area are generally less dependent on major transport decisions, but still need coherent local and strategic programmes to fit with the release of both short and long term potential in each locality.

The Key Relationships

This report argues:

(a) That the combination of available land and new (CTRL) and possible (Crossrail) strategic transport schemes does indeed have the potential - if handled right - to bring about a step change in development potential; but

(b) That if aspirations in terms of homes and jobs and sustainable communities are to be met, close attention must be paid to the planning of transport at the local level, combined with a commitment to integrated planning and funding. Although such an approach is unprecedented in the UK, it would not be unique in European terms, as shown in the benchmarking case studies in the report. Experience to date suggests that rail-based local transport helps to trigger high density, low car dependence development. This argument is not easy to validate with hard evidence from the UK, where rail-based public transport has rarely been planned in relation to new development. We therefore rely instead on benchmarking evidence from various projects around the world. For both rail-based local transport and the strategic transport links, it is in our view a chimera to suppose that incontrovertible evidence of cause leading to effect can be found and measured.

Strategic Focus

Our recommended approach has three main themes.

First, the ability to "win" large-scale high-quality development varies across the Thames Gateway, with some opportunities being dependent on early transport investment decisions, and others either being less urgent or "self starting". It is therefore advisable to focus efforts and resources on transport investment decisions (for the time being) in areas:

- Where there are maximum returns to scale (in terms of development aspirations) associated with transport investment and other factors;
- Where early wins can be achieved in terms of development potential being released by transport investment, and of maximising returns on transport investment; and
- Where there is a danger that without transport intervention potentially valuable sites could be squandered with low intensity or unsustainable development.

Second, strategic transport projects, which link the Thames Gateway area to London, Europe and other parts of South East England can open up longer distance travel. This can play a part in attracting householders and businesses on the scale required. Our recommended approach is to build upon strategic transport improvements as and when they come on stream, requiring a phased implementation. CTRL is committed and under construction and so should drive one of our "focus" areas. Beyond that, however, such major projects can only be delivered in large chunks. In addition they are also dependent on a positive business case within which the benefits to the Thames Gateway will form only a part - and probably a relatively small part compared to strategic considerations.

Third, securing high density sustainable developments in the Thames Gateway will require a step change in the level of commitment to and resources for the building and procurement of local transport systems. Without this there is no reasonable prospect of being able to achieve the quantity or quality of development to which the Thames Gateway project aspires. The local transport systems must provide for connections to the strategic transport hubs, and must integrate core local transport spines with other services. Such systems, however, must be sufficiently robust and credible to attract and support intensive development. There will need to be close control over the timing and delivery of both development and transport. The report discusses the issue of whether bus-based transit will be
sufficient, or whether rail-based transit will be necessary to achieve the desired outcomes. It points out that there is limited evidence-based support for either case made. It is also acknowledged that it has been hard (in the UK) to make a business case for rail-based local transport. It is argued that much will depend on conditions within which local public transport operates, in particular the relationship between parking supply and management, development formats, and the restriction or otherwise of car-based development in locations not served by the new transport system.

Further work will be required to develop integrated transport strategies for each area that reflect the principles suggested in this report, including improved access to major transport hubs and the specification of attractive high capacity local transit systems compatible with the density aspirations of the Communities Plan.

**Chapters 2 - 8: The Main Points in Summary**

Chapter 2 "The scope of the Thames Gateway in 2003" reviews each of the principal areas, the aspirations for them, and the existing and proposed transport schemes to serve them. It compares the estimate of potential in the ODPM "Zonal Action Plans" (ZAP), and concludes that there is probably even more development potential than that ambitious scheme - our assessment suggests that more capacity can be identified in North Kent Thames-side and Barking / Havering Riverside, and substantially more in Greenwich & Bexley Riverside, though the Medway figures are in our view an over-estimate.

Chapter 3 "Transport Analysis" summarises the transport capacity issues and the travel characteristics (current and expected) in the different parts of the sub-region. It concludes that for growth to be successful there will need to be a shift of mode away from car to public transport but new road capacity will still be needed. It is the modal shift which is critical, because if its scale is insufficient, then even with new roadspace it will be highway capacity that will force a limit on development potential. Table 3.1 sets out, for each of the main sites, the expected travel characteristics and constraints at 2016. It suggests that for Barking / Havering, development potential is directly dependent on the capacity of the Light Rail / Transit package; for North Kent Thames-side the road to rail/public transport shift is critical; in Greenwich / Bexley Riverside, Crossrail can unlock the constraints restraining the upper scale of potential; for Medway, rail improvements may possibly release extra potential because road improvements will be swallowed by general traffic growth; and for South Essex, the c2c system may need more additional capacity than is currently proposed.

Chapter 4 "Potential Scale of Development" examines the scale of housing and employment growth suggested for Thames Gateway from the perspective of a "reality check" against past trends, the regional setting and the supply/demand balance, and it sketches out alternative growth scenarios based on varying assumptions about, for example, how much of the South East's forecast growth the Gateway might expect to "claim" over the next fifteen years. It suggests that the ZAP 2016 figures (325,800 jobs, 158,500 homes) are well outside the envelope of even the most ambitious of the scenarios analysed, and that a planning basis might be ranges around 150,000 and 120,000 respectively.

Since the planning capacity exceeds the economic potential to 2016 by this wide margin (both in the gateway and the wider South East), it follows that development can be expected to be at a slower pace (i.e. it will happen, but not by 2016); and that there is a need to choose between the sub-regions of the South East, and within the Thames Gateway sub-region, which areas should receive priority.

Hence the emphasis in our approach on the importance of focus: on places where there is a synergy between development opportunities, demand from private investment, and transport's role in releasing capacity in a concentrated and accelerated way.

The chapter also discusses the relationship between the likely scale of economic growth and the scale of, and reasons for, moves in the housing market. It argues that "local" demand will only create some 20-25,000 units of new housing demand; the rest will have to be driven by the regional economy, and will be in response to job opportunities (in the Gateway, Docklands and in central London) and the
transport links to them. There is thus a powerful economic, and pace-of-development, logic to early commitment of transport investment.

Chapter 5 "Transport and Development Interaction" reviews in turn the strategic and local transport investment issues, in relation to the development potential that could be attracted and / or unlocked. It explores the contribution that CTRL International, CTRL Domestic services and Crossrail can bring to Ebbsfleet, and links this both to the need for careful planning to maximise the potential of the station hinterland itself, and the vital importance of getting the supporting local transport systems right. Crossrail is also assessed in terms of its important contribution west of Ebbsfleet, in the Greenwich & Bexley Riverside corridor, where its single biggest "additionality" is identified. On the third major strategic scheme, Thames Gateway Bridge, the chapter concludes that whilst its structural and transport role is very important, its direct contribution to development potential on the major sites considered in the study may not be substantial.

The analysis of the local transport choices, which we see as critically important to getting the most out of the major sites, is structured as a comparison of two scenarios - "Bus-based transit" and "Tram/LRT based transit". Using benchmarking against experience elsewhere, it is argued that whilst the capacity provided by bus-based transit will be adequate for most of the areas (though not Barking/Havering, where Light Rail is already being proposed), there is limited experience of such systems having any impact on development and modal choices. This makes it a high-risk strategy compared with the more credible and committed rail-based (tram/LRT) systems, in a development environment as unhelpful as that of the Thames Gateway.

Table 5.3 summarises, area by area, the conclusions on the relationship between development and the existing, committed and proposed transport investments. Transport is a significant constraint on development but in some areas proposed transport schemes would release the full potential of sites. There are significant potential gains from these major transport schemes, provided they are supported by local strategies and improvements. In all the areas, the development proposals and transport schemes will have to be fully integrated in order to maximise potential development and the momentum for regeneration.

Chapter 6 "Strategic Focus in the Thames Gateway" looks in turn at Barking & Havering Riverside, Greenwich & Bexley Riverside, North Kent Thames-side and Southend / Rochford, and suggests what elements of transport investment planning and choice need to be addressed, and how they relate to the development track. It also briefly reviews the issue of the peripheral sites (some Green Belt, some Metropolitan Open Land) which have been suggested for development in either the ZAP or our own (Chapter 2) analysis, and sets out a suggested basis for the development case in such locations.

Chapter 7 "Phasing of Transport and Development" summarises the steps that might be taken towards realisation of the full potential identified for the Thames Gateway. For each major location, an approximate "best case" trajectory is described; and then the transport decisions needed and their timing are set out in the table at paragraph 7.2. We also include some remarks on the institutional mechanisms which we believe would support co-ordination of the development and transport Improvements.

Chapter 8 "Conclusions" compares a "zero case", "current aspirations" and "higher aspirations" in an attempt to relate the package of actions, which we believe is necessary, to the very ambitious targets set by the ODPM's Sustainable Communities Plan and the ZAPs.
1. Introduction

1.1 Purpose of the Study

This is the Final Report of the study of the "Relationship Between Transport and Development in the Thames Gateway". The study was commissioned by ODPM in February 2003 from Llewelyn-Davies and Steer Davies Gleave with Roger Tym and Partners and Atkins. The report represents the advice to Government provided by the consultants and does not constitute Government Policy.

The study was commissioned to examine issues raised by the Deputy Prime Minister’s Communities Plan, which identifies the Thames Gateway as a strategic location for major growth of both homes and employment. The Plan recognises the complexity of issues involved, and the requirement for significant investment in transport as well as other infrastructure to support the planned levels of expansion.

The study has investigated these relationships in the areas shown in Figure 1.1:

Figure 1.1: The Broad Areas of Focus

1.2 Method

To meet the tight schedule to submission of this report, the study was carried out on two parallel but related tracks. The first involved the definition of development and transport schemes and aspirations, and testing the interaction between them using available transport models. The second involved studying the underlying relationships and "chains of causation" in order to determine the possible scale, timing and form of development, and the types of transport decision that will be needed to support such development. The final stages of the study sought to achieve a convergence of these two streams of work. This basic approach is illustrated below.

Figure 1.2: Study Approach
In reaching our conclusions three working sessions were held with the client group during which the rationale for transport and development assumptions within the Zonal Action Plans (ZAP) were discussed. Emerging from these sessions was the agreement to focus upon particular areas within the Thames Gateway rather than the four broad cross-river areas. The rationale behind this being that to study cross-river areas pre-supposes the existence of strong physical (transport) links between them, whereas the desirability of such links has been one of the factors for examination in the study. Additionally, some of the major transport schemes serve one side of the river but not the other.

It was also decided not to study two of the areas (Thurrock/Tilbury and Basildon) in detail. The reason being that there are no strategic or significant transport schemes in these areas that could significantly alter the development potential here. It is acknowledged that there is considerable potential for regeneration in these areas, including the respective town centres, but these plans are not dependent upon strategic transport projects (and no such projects were identified).

Thus, the areas for investigation as presented within the following sections of this report were:

- Barking;
- Woolwich, Thamesmead, Erith;
- Kent Thames-side (Dartford, Ebbsfleet, Gravesend);
- Southend; and
- The Medway Towns

Two other studies have been commissioned in parallel with this study:

- DfT have commissioned Mott MacDonald and WSP to model the relationship between increased numbers of dwellings and employment in the Thames Gateway and existing and proposed transport infrastructure; and
- ODPM have commissioned Steer Davies Gleave to undertake an assessment of the impact of transport infrastructure on land values.

Despite working to different programmes and timeframes there has been a need to reach a level of consistency between the three studies. To this end a common set of committed, or very likely to happen, transport schemes has been used to inform the base case.
Due to the very size and nature of the Thames Gateway area there are also many other on-going studies, from smaller site-specific projects and proposals through to larger infrastructure schemes, such as Crossrail. Whilst aware that such studies are progressing we have not sought to consider them on an individual basis.

1.3 Key Questions

The proposal document submitted in response to the brief identified six key questions, which the study has addressed. These have been used as the starting point from which investigations have flowed.

- What decisions are needed regarding transport investment, and when will they need to be taken?
- What are the key thresholds in terms of transport investment, and how significant are they for determining development capacity?
- What measures can be taken to organise and phase development in the identified areas to avoid or delay the need for major transport investment (by utilising existing transport capacity, or by minimising the travel generated by new development)?
- Are there key thresholds in terms of local transport networks, or are they mainly to do with regional links such as new railways and river crossings?
- Would there be advantages in planning for higher proportions of SE growth in the Thames Gateway, e.g. with much higher densities and larger areas?
- How do these conclusions relate to the level of economic demand in the South East economy and to proposals for development of other growth area?
2. The scope of the Thames Gateway in 2003

2.1 Geography and Transport

The Thames Gateway (Figure 2.1) is being defined as a single sub region. In terms of physical geography it is straightforward enough: a river estuary. In terms of urban or human geography it is more complex. The human activities in the estuary originally arrived because of the river as a means of shipping freight between London and the rest of the world. This function still survives, but has gradually shifted downstream, leaving in its wake vast swathes of former dock, warehouse and related industrial land. Communication between the north and south sides was relatively unimportant, however, so although the estuary had a single broad purpose, functionally it could be seen as two more or less independent sub regions. No local administrative boundary ever encapsulated both sides of the river, at least not until the Thames Gateway was conceived.

The original port and industrial functions were linked to London and the rest of the country predominantly by rail. Today the rail network is still important for freight in the lower estuary, but elsewhere it has largely a passenger function. There are two main rail corridors, the c2c along the north bank to Tilbury, and the North Kent line along the south bank. East of the Greenwich Peninsula there is no rail crossing, that is until the CTRL opens in 2007. The DLR extension to Woolwich may or may not open first.

Both NKL and c2c are important commuter feeders to London, but they serve only a small proportion of work journeys from their hinterlands. In the wards closest to the stations the proportion of work journeys of employed residents by rail can exceed 10%. In the settlements as a whole, however, the proportion is lower. The 2016 forecasts used in this study point to overall rail commuting accounting for well under 5% in the eastern Gateway areas.

When the Thames and Medway estuaries retained their river-related functions journeys to work tended to be local, with a small but significant proportion going by rail to other locations within the corridor or to central London (e.g. Rochester to Woolwich Arsenal, Slade Green to Charing Cross, Grays to Fenchurch Street.)

With the withdrawal or shrinkage of those original functions, employment has become more diverse and less related to employees' place of residence. This combined with high levels of car ownership has led to the car-reliant journey to work patterns that we see today.

The high levels of car use have been further compounded by planning decisions that have resulted in a shift of retail and leisure as well as employment away from the established town centres. This in turn has meant a dramatically reduced proportion of all activities that are closely related to the railways.

The River Thames is a barrier to north/south movement throughout the corridor, but this becomes more apparent east of the River Lea where crossings are infrequent. The Jubilee Line Extension and the DLR Lewisham Extension (both opened in 1999) have considerably increased cross-river journeys by public transport in Inner London. Further east, with the exception of the Dartford Tunnel and second Dartford Crossing (opened 1991), there are no fixed river crossings, other than that for pedestrians at Woolwich.

This provides a general overview of the geographic character of the sub region. We now turn to an analysis site-by-site of the main areas with opportunities for development or regeneration.

2.2 Transport, Land use and Opportunities - Site by Site Commentary

The study brief identified the following broad areas in the Thames Gateway for investigation:

- Barking and Woolwich;
- Thurrock/Tilbury and Dartford/Ebbsfleet;
Rochester/Medway; and
- Southend/Basildon.

The first two areas are in effect pairs lying either side of the River Thames. For the purposes of this study we have looked at them independently as to look at them together pre-supposes the existence of strong physical links between the two. All of these areas, with the exception of Basildon and Thurrock/Tilbury are discussed below in relation to the ZAP aspirations and other land use issues.

During the client workshop discussions it was decided not to study either Thurrock/Tilbury or Basildon further as it was concluded that development opportunities in these locations are not closely associated with major new transport decisions.

The original area names and the names used in this report are shown in Table 2.1.

**Table 2.1: Areas of Study**

<table>
<thead>
<tr>
<th>Areas named in Project brief</th>
<th>Areas named in this report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barking &amp; Woolwich</td>
<td>Barking and Havering Riverside (north of the Thames)</td>
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<tr>
<td></td>
<td>Greenwich and Bexley Riverside (south of the Thames)</td>
</tr>
<tr>
<td>Thurrock/Tilbury</td>
<td>Thurrock and Tilbury (not studied in detail)</td>
</tr>
<tr>
<td>Dartford/Ebbsfleet</td>
<td>North Kent Thameside</td>
</tr>
<tr>
<td>Rochester/Medway</td>
<td>Medway</td>
</tr>
<tr>
<td>Southend/Basildon</td>
<td>Southend Basildon (not studied in detail)</td>
</tr>
</tbody>
</table>

**Figure 2.1: Study Area**
2.2.1 Barking and Havering Riverside

The Area

Barking and Havering Riverside (figure 2.2) refers to that area of the Thames Waterfront between Barking Creek and Rainham Marshes, extending northwards to the A13 and beyond to include Barking Town Centre. It is crossed by the c2c railway line running between Fenchurch Street station and Southend and is characterised by industrial uses, such as those at Creekmouth to the west of the area and the Ford Motor Works.

Figure 2.2: Barking and Havering Riverside
Existing and Proposed Transport Schemes

Recent additions to the main road system include the A13 Mar Dyke to West of Heathway scheme (opened 1999) which considerably increased radial highway capacity between the M25 and Dagenham. Further A13 improvements westwards to Limehouse are currently under construction.

With regard to public transport, current plans are for an extension to the Docklands Light Railway to run through the Barking Reach site on to Dagenham and a new station on the c2c railway line between Fenchurch Street and Southend. However, c2c upgrades are not currently under active consideration by the Strategic Rail Authority (SRA). Metro-style services have been promoted in the past, but no proposals are under active consideration at present.

Also proposed is the provision of East London Transit (ELT) to connect Barking Reach with Barking, Ilford, Romford and Dagenham. ELT will run on an alignment south of the A13 utilising existing bus routes and does not directly serve Barking Reach to the south.

Current Aspirations and Potential

The aspiration within ZAP for Barking and Havering Riverside is a new residential focus and centre for advanced manufacture and engineering. Key development areas identified within ZAP are Barking Reach, Barking Town Centre, South Dagenham, Dagenham and Rainham. In total, the ZAP envisages 17,500 new homes and 5,550 new jobs. Of these, the single most significant opportunity is Barking Reach; mainly a former power station site. The aspiration within ZAP is for 12,000 homes and 200 jobs on the site by 2016.

Barking Reach (figure 2.3) is a complex brownfield site criss-crossed by overhead power lines and areas of contamination. The site has been the subject of a number of masterplans and has been promoted by the London Borough of Barking and Dagenham for development since the late 1980s. To date, 400 homes have been built on the northern part of the site by Bellway Homes.

Figure 2.3: Barking Reach
Detailed investigations into the capacity of Barking Reach are currently being undertaken on behalf of the London Riverside Action Group (LRAG)\(^1\). Early figures emerging from this are based on a range of scenarios:

- Do minimum based on current permitted housing development at Barking Reach for 400 units and limited public transport provision. This equates to a low density development totalling about 4,000 dwelling units;

- Blanket assumption of higher density development across the site (approx 120 dwelling units per hectare = dw/ha; which is improbably high) which allows for a net gain in households of 9,200 on the site and a net gain in jobs of 1,170;

- Based on high-density development focused at public transport nodes. This assumes densities of 110 dw/ha around the nodes, particularly DLR, and 75 dw/ha elsewhere. This scenario is based on the site being built out mainly for housing, allowing for a net gain in households of 8,725;

- Urban intensification and spread of growth to other sites, which involves burying power cables below ground (but retaining the power station). Under this scenario the landfill site to the east of the area becomes available. This scenario is also based on the assumption that the site will be built out mainly for housing at densities ranging between 75dw/ha and 110dw/ha, allowing for a net gain of approximately 13,720 homes.

With the exception of the urban intensification scenario, these figures are all below that contained within ZAP.

\(^1\) Sinclair Knight Merz and Llewelyn-Davies for the London Riverside Action Group, March 2003 (Inception report), London Riverside integrated Transport Strategy
Conclusions

In general, there is scope for high density housing around high capacity public transport facilities that provide for commuting westwards and access to local shops and facilities. All the development scenarios for Barking Reach (apart from the 'do minimum') assume that there will be significant investment in transport provision. Current plans include bus-based East London Transit and a DLR Extension. A further stop on the c2c line is also proposed. However, the possible new c2c station would be on the periphery of the Barking Reach site, which will not allow for high-density development focused on the transport node. It is also unlikely that the additional stop would provide the necessary commuting capacity given crowding on sections to the west - any spare capacity would be taken up by growth in demand from areas further to the east.

Employment opportunities at the western end of Barking Reach would be difficult to serve by public transport, but would be accessible to a local catchment population. Opportunities could be encouraged further east, for example at Dagenham Dock, making use of less congested sections of the A13.

There are also further issues for the Barking Reach site, including decontamination, market perception, and the cost benefit derived from additional development through the burying of the pylons across the site. Resolving these complex issues will determine the potential of the site, which is likely to be developed in phases over the time period suggested by LRAG, which sees development taking place between 2006 and 2020, at a rate of about 750 dwelling units a year dependent upon the area of development coming forward and future masterplanning exercises.

2.2.2 Greenwich and Bexley Riverside

The Area

Greenwich and Bexley Riverside (figure 2.4) comprises that part of the Thames Waterfront between Woolwich and Slade Green. It includes the centres of Thamesmead, Abbey Wood, Belvedere and Erith.

Figure 2.4: Greenwich and Bexley Riverside
It is currently served by the North Kent Line and the A2016 road bisects the area, serving all of the main centres. The area is predominantly residential, although significant areas of industrial use front the river in Belvedere.

Existing and Proposed Transport Schemes

Greenwich Waterfront Transit is currently being planned as a bus-based transit scheme incorporating sections of street-running and segregated track. Phase 1 will operate through Woolwich Arsenal and Thamesmead, providing a link to Woolwich town centre and Abbey Wood station on the North Kent Line via riverfront sites. Further sections are planned, including links to Greenwich town centre.

The main highway proposal subject to approval and funding is the Thames Gateway Bridge (2011), which would connect Barking and Thamesmead at Gallions Reach with a local connection. This would enable public transport networks north and south of the river to be better connected, as well as cater for much greater movement across the river by private transport.

Committed public transport proposals include the extension of the DLR to London City Airport (opening 2005). A further extension to Woolwich (opening 2007) is planned, providing a cross-river link from south of the river to the Royal Docks and Canary Wharf if approved (subject to Transport and Works Act approval). Proposals are also being developed to permit 3-car operations providing additional capacity.

Crossrail is a major rail proposal (opening in 2011 at the earliest) that would provide relief to London Underground routes in Central London and serve the Thames Gateway. Line 1 includes two proposed branches to the east, one to Shenfield via Stratford, the other running via Canary Wharf, Woolwich and Abbey Wood to Ebbsfleet. The scheme provides considerably improved access to Central London and Canary Wharf from riverside areas between Woolwich and Dartford. Stations on Crossrail have yet to be decided, but stops at Woolwich, Plumstead, Abbey Wood, Belvedere, Erith,
Slade Green and Dartford are under consideration. Platform lengthening on the North Kent Line to accommodate 12-car trains is also proposed and it may be possible to run additional trains on this line providing additional capacity.

**Current Aspirations and Potential**

This area of London, which is located mostly to the north of the proposed Crossrail route, has an aspirational target within ZAP of 10,250 new homes and 7,300 new jobs. The ZAP vision is for an integrated new town with strong manufacturing logistics and a distribution focus. The single most significant site listed within ZAP is the area to the west of Thamesmead, which has the potential for 500 dwellings pre-2005 and a further 4,500 after. The site has been subject to masterplanning exercises and development is underway.

The remainder of the housing component comes through development at Woolwich (integration of the Woolwich Arsenal site with the town centre), delivery of housing on the oversupply of industrial land at Belvedere, intensification of Erith town centre and development of the White Hart Triangle.

Comprehensive redevelopment of Erith town centre, focused on its prominent riverside location, historic core and potential to link into Crossrail (and possibly to Thamesmead, Woolwich and Greenwich via an expanded Transit system) could stimulate housing development in excess of the 500 units contained within ZAP. However, the masterplanning work required and the subsequent process of redevelopment would see delivery in later phases.

There also exist significant swathes of development land unlisted within ZAP, but which are contained within the Thames Gateway Review published in 2001. Erith Quarry is designated as Metropolitan Open Land (MoL) and despite policy hurdles that would need to be overcome in redesignating this land the adopted Development Plan notes that subject to remediation measures to landfill gas residential development would be permitted. The site has previously been assessed within the Sustainable Residential Quality work undertaken and this estimates that between 1,100 and 1,670 units could be provided, based on the surrounding development pattern.

Other areas of MoL also pepper-pot this area and the potential for developing at least some of these for housing exists. Sites to be considered include that adjacent to Slade Green railway station. This highly accessible location could be a site for high density mixed use development focussed on a transport node providing good access to central London. The same logic could be applied to a (limited) part of the Metropolitan Green Belt within a five to ten minute walk of Slade Green station, where development could focus on the relieved North Kent Line railway services following the completion of Crossrail and CTRL domestic services.

However, the site with greatest potential within this area is Erith Marshes which, again, is unlisted within ZAP. Currently designated as MoL (although only as recently as 1996) and as a Site of Metropolitan Importance for Nature Conservation there are significant policy hurdles to overcome should development go ahead here. This site, which is equal in scale to Barking Reach, could potentially be designed around a transit spine providing links to Crossrail and the North Kent Line services.

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2 Roger Tym & Partners and Three Dragons for the DETR, January 2001, The Thames Gateway Review (see Appendices)
3 LB Bexley Unitary Development Plan, Adopted July 1996
4 Llewelyn-Davies for LPAC, DETR et al, January 2000, Sustainable Residential Quality; Exploring the Housing Potential of Large Sites
5 Llewelyn-Davies for the LDA, July 2002, Thames Gateway UCS
6 ibid.
Also currently within the area designated as MoL is a site allocated for B1, B2 and B8 type industrial use. The 1998 study into the regeneration impacts of the Thames Gateway Bridge in North Bexley\(^7\) noted that this area was originally planned for a high quality business park but it remains vacant. Reallocating this land for housing, in conjunction with development of the areas of MoL noted above would create a critical mass to support local level public transport facilities and the regeneration of Erith town centre.

**Conclusions**

In exploring this area, it is recognised that the potential is highly dependent on an altered approach to land with MoL designation, and also on extra rail capacity being provided to connect with employment to the west.

In general, a number of sites are within walking distance of rail stations and could be developed for high density housing in the short-term. Current proposals for local transport (bus-based Greenwich Waterfront Transit and the DLR Woolwich Extension) are unlikely to prompt high density development in areas east of Woolwich but the provision of Crossrail could produce a major effect by giving much faster access to employment to the west, and to Heathrow and Stansted (via Liverpool Street), but would need to be tied in with a high intensity local public transport system. Highway capacity will probably be adequate to withstand the much larger scale of development discussed below.

The area has limited employment potential in the short-term given its location and poor transport connections. A study for LDA/Newham suggests that there is potential for 3,400 new jobs in this area, but LTS shows only 1,700. The LDA study suggests that Crossrail would generate a further 900.

Major constraints to the scale of development envisaged in this area involve the redesignation of Metropolitan Open Land and the concerns of developing areas of nature conservation interest. Policy hurdles would need to be overcome and mitigation measures provided for, subject to which would see the bulk of development commencing after 2010.

### 2.2.3 North Kent Thames-side

**The Area**

North Kent Thames-side (figure 2.5) is a multi-centre area stretching from Dartford to Gravesend and including the settlements of Northfleet, Greenhithe, Stone and Swanscombe.

**Figure 2.5: North Kent Thameside**

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\(^7\) Llewelyn-Davies for the LDDC, January 1998, The Thames Gateway Bridge & North Bexley; A Study into Regeneration Impacts
The A2 forms the southern boundary to the area and the North Kent Line runs along the north of the area, serving all of the centres. The Dartford Crossing to the west of the area provides a link to development on the north side of the Thames.

Recent development has included the Bluewater Regional Shopping Centre, which was built in a reclaimed Chalk Quarry, and the award-winning Ingress Abbey residential scheme at Greenhithe.

**Existing and Proposed Transport Schemes**

The Channel Tunnel Rail Link (CTRL) Phase 1 is due to open later in 2003, providing a high-speed route on the section of the line into Waterloo between Folkestone and North Kent. Phase 2 is due for completion in 2007 and will provide a direct link into St. Pancras via Stratford. CTRL stations at Ebbsfleet and Stratford will also provide connections from the Thames Gateway to mainland Europe.

The SRA is currently consulting on options to run domestic services on CTRL. Eight peak hour train paths in each direction are potentially available; one option is to run four services via Chatham and four services via Ashford -not all trains would stop at Ebbsfleet. A minimum option would be to terminate trains at Gravesend instead of continuing to the Medway towns. CTRL domestic services will provide additional commuting capacity and considerably reduce journey times to central and inner London including Canary Wharf.

Crossrail would provide a new strategic link between Ebbsfleet and Central London via Canary Wharf, relieving the North Kent Line. In addition it would be the main access route to Heathrow and Stansted (via Liverpool Street). Platform lengthening on the North Kent Line to accommodate 12-car trains is also proposed.

Kent Thames-side Fastrack is a bus-based transit scheme that will serve both existing centres and development areas. The preliminary feasibility of two lines has been established and Phase 1 (opening
217) comprises a route linking Dartford, Bluewater and Gravesend. Later phases would link Ebbsfleet, Eastern Quarry and the Swanscombe Peninsula.

The A2 widening between Bean and Cobham, which is under construction, would relieve significant bottlenecks on radial routes and improve access to the M25. An improved M25-A2-A282 junction would be needed to serve Ebbsfleet; a scheme is in the road programme and is subject to statutory procedures.

Current Aspirations and Potential

The aspiration for this area as contained within ZAP is for a 'Mid-Gateway City', or 'Linear City', with the central focus on Ebbsfleet. The figures for the area as a whole comprise 30,000 new homes and 40,000 new jobs by 2016.

At the heart of the aspiration is the development of Ebbsfleet as a city scale CBD; site preparation works are currently underway. There are many issues to be resolved as a matter of urgency. In particular the allocation of land for parking or development, and the quality and certainty of the local public transport network. A closer balance between the 2,000 dwelling units and 20,000 jobs aspired to within ZAP may help to achieve the sustainable mixed development sought. Employment uses would need to be developed with minimal car parking and this may require special effort to attract developers to this area.

However, many of these jobs would be linked to the development of Eastern Quarry, which, in terms of housing, is the most significant housing site. The ZAP aspirations are for a total of 8,000 dwellings, which is in line with the masterplan produced by Land Securities. This makes provision for approximately 7,250 homes within the chalk pits, three million square feet of commercial, retail and leisure buildings (and community space) and incorporating the Fastrack scheme. The lease on quarrying of the site does not expire until 2008 and the substantial land preparation works required for housing development is likely to delay the delivery of the majority of housing on the site until after 2010. However, under an existing agreement, it is possible that some parts of the site may be developed prior to the expiry of the lease. Land Securities expect that the development will take approximately 25 years to complete. Revenue subsidy for Fastrack or other transit services will be required for part of this period, depending on the configuration and phasing of the development in relation to the transit route.

Also focused on the provision of CTRL is the development of Swanscombe Peninsula. Development on part of the site will come forward prior to completion of the CTRL in 2007, although most is likely to be delivered after this date. The ZAP aspirations are for a total of 2,650 homes and 1,000 jobs. Taken together, Swanscombe East and West comprise a site area of some 200 hectares. Applying a gross density multiplier of 30 dw/ha would deliver in the region of 6,000 dwelling units. This minimum PPG3 density allows for the provision of other uses and facilities. However, higher densities could be applied to a smaller site area to allow for a greater land supply for jobs, but still delivering the same number of dwelling units.

For Northfleet, the figures in ZAP estimate a total of 1,350 homes in the post 2005 period as well as 200 jobs on the riverside site, subject to the relocation of the cement works on schedule. Much of the site is currently vacant, with the exception of two major industrial plants, which are still trading. In order to deliver housing on the site, flood remediation and preparation work would be needed. This could commence relatively soon on those areas currently inactive but would be a time constraint on the delivery of the first phases of redevelopment. The whole area has been subject to capacity estimates within the Gravesham Borough Urban Capacity Study. This estimates that 1,600 dwellings could be provided on the Cement works site, the majority coming in the post 2011 period. However,

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8 see http://www.easternquarry.co.uk/thescheme.asp
9 Llewelyn-Davies for Gravesham Borough Council, April 2002, Gravesham Housing Capacity Study Update
this is based on a minimum PPG3 yardstick multiplier of 30dw/ha\textsuperscript{10}. The riverside location of the site, its proximity to the railway station and the topography could enable much higher densities to be provided. The Urban Capacity Study also estimates that 700 units could be provided on the area known as Northfleet Eastern Embankment, again in the post 2011 period. These two sites alone could therefore generate a minimum of 2,300 units, although the potential exists to increase this as much of the estimates are based on minimum density levels. This number is 1,000 units in excess of the ZAP estimates.

The setting of the Gravesend Canal and Riverside frontage lends itself as an attractive environment for residential development. The ZAP aspirations are for a total of 1,000 units (half of which are to be provided in the pre-2005 period) and 1,000 jobs. A masterplan for the site produced for Gravesham Borough Council identifies the potential for 1,270 residential units, part phased in the period up to 2011 and part after, indicating longer lead in times than those assumed within the ZAP estimates. This may in part be associated with the flood remediation works that would be required here.

The ZAP figures also note the potential for the intensification of Gravesend town centre, of which 150 units are expected prior to 2005 and a further 850 in the following period. Again, the Urban Capacity Study provides figures for Gravesend, which estimates that there is the potential for 4,730 units within the urban area (in addition to the Gravesend Canal and Northfleet embankment sites above). These are for the urban area as a whole, although a significant proportion are located in and around the town centre and its ped-shed\textsuperscript{11} including the development of a number of large surface car parks. The conclusions drawn within the capacity study are that sites with the potential for 2,873 dwellings could come forward prior to 2006 and 1,734 dwellings in the period 2006-2011, with the remainder phased after 2011.

Elsewhere, with regard to sites for jobs, Crossways Business Park is being built out, much of which is already occupied (ZAP has a total of 5,750 jobs), and a planning application was submitted in February 2002 for Dartford Park, which will comprise 278,200sq.m of commercial/science park use.

Finally, ZAP estimates that land in the Green Belt will be released for the development of 7,025 dwellings in the post 2005 period. This needs to be justified in terms of the PPG2 tests\textsuperscript{12} and the sequential approach to the delivery of sites for housing (see also Chapter 6).

Conclusions

Much is already underway within the area as a whole, with the CTRL infrastructure currently being built and site preparation works being progressed at Ebbsfleet. Some sites, such as Ingress Park, Waterstone Park and Crossways are being built out and close to completion. The final figures for these sites are likely to match the aspirations contained within ZAP.

Taking the area as a whole, there is significant scope for development based around improved public transport links (CTRL domestic services, Crossrail, Fastrack) but the timing and quality of these could affect delivery of development. For example, housing will benefit from fast links to London, but the greater potential for this that Crossrail could bring would not come on stream until 2011 at the earliest. Within such a large area of development there needs to be a clear focus on transport nodes (and a new town centre), reducing journeys by car and promoting sustainable forms of development and movement.

Congested highway conditions, especially around the Dartford crossings, turn the desirability of low-car dependent development into an imperative for this area, as already acknowledged in the Ebbsfleet planning strategy.

\textsuperscript{10} Note: This is a gross rather than net density, allowing for the provision of other uses, such as open space.

\textsuperscript{11} Ped-shed’ is an Australian term which refers to the walking catchment of a particular facility or attraction. Typically, it refers to the area within a five or ten minute walking distance from the facility or attraction in question

\textsuperscript{12} ODPM, July 2001, Planning Policy Guidance Note 2: Green Belts
Although site preparation works are well underway at Ebbsfleet there is still much to be done on the other major sites; Eastern Quarry, Swanscombe Peninsula, Northfleet Embankment and the Gravesend Canal Basin. Such works are likely to delay development until after 2006, with Eastern Quarry having a 25-year build-out period and residential units unlikely to be delivered on site until 2010 at the earliest.

2.2.4 Medway

The Area

The Medway towns (Figure 2.6) of Rochester, Chatham, Gillingham, Rainham and Strood comprise a conurbation which is home to some 250,000 people and 4,000 companies. It is one of the largest communities in the South East outside London and an important focus for commerce. In the last 30-40 years, however, the economy of the area has been influenced by national and international trends.

Figure 2.6: Medway

The local economy of the Medway towns was forced to diversify as a result of job losses in manufacturing, engineering and the armed forces, and although it is now relatively stable it continues to lag behind the rest of Kent and the South East region as a whole. Problems of high unemployment remain, although the area has a high proportion of ‘micro’ businesses, which employ fewer than ten people.

In addition to mainstream employment opportunities, Rochester and Chatham also provide another type of attraction: the two urban centres form the historic heart of the Medway towns, with Rochester Castle, the Cathedral Close and the High Street combining to form an historic townscape, with Chatham Historic Dockyard as an eastern focus. The predominance of historic areas has led to tourism activity in the Medway towns being centred around Rochester High Street and the waterfront.
area of Chatham. This historic legacy is unique within North Kent, and is a valuable strength of Rochester and Chatham in terms of attracting new investment to the area.

**Existing and Proposed Transport Schemes**

Medway Transit is a planned major local transport intervention, but is not currently very far forward in terms of definition. The two potential routes identified to date serve town centre and riverside development sites and the Rochester airfield site, but not the peripheral development sites identified in the ZAPs.

CTRL Domestic services to London via Ebbsfleet are under consideration from 2007. CTRL Domestic services will provide additional commuting capacity and considerably reduce journey times to central and inner London including Canary Wharf (via Stratford). Platform lengthening on the North Kent Line to accommodate 12-car trains is also proposed.

The A2 widening between Bean and Cobham, which is under construction, would relieve significant bottlenecks on radial routes and improve access to the M25

**Current Aspirations and Potential**

The Medway figures aspired to within ZAP are for 30,000 new houses and 17,250 new jobs, based on focussing development on the waterfront and the new role for the Medway towns as a University City.

A significant proportion of the housing numbers are located either within the Greenbelt or on greenfield sites (a total of some 12,400 units). Along the West Bank of the Medway this comprises 10,000 units with a further 1,400 units along the M2 and 1,000 units based upon village intensification on the Hoo Peninsula.

The Inspector’s Report on the Medway Development Plan notes that the development pattern as set out in the UDP follows the sequential test approach. This seeks to focus development on key regeneration sites within the existing built up area, such as Strood and Rochester Waterfronts. Development here is intended to be a priority. The Inspector judged that Greenbelt releases would harm the regeneration effort on the waterfront (and other similar) sites. The scale of development contained within ZAP would go beyond that considered in the UDP, and would involve the release of Greenbelt and or greenfield land around the Medway Towns. It is assumed that if PPG2 tests are to be satisfied, such development will be for consideration in the long term.

Most of the other potential development areas identified within ZAP have been subject to other existing studies (Chatham City Vision - Rochester Riverside - Strood Waterfront - Rochester Airfield - Chatham Maritime/St Mary’s Island).

Rochester Riverside (32 ha) is a key regeneration area, with a long-term capacity of approximately 1,500-1,800 dwellings (as noted within the Development Plan), matching the aspirations contained within ZAP (1,700 dwelling units). Turning again to the Inspector’s report, this notes that due to lead times and contamination issues only 300 dwellings are likely to be built out on the site during the period to 2006 with the majority coming after this. These site complexities are not reflected within the ZAP aspirations which allow for 850 dwellings in the pre-2005 period.

On Strood Waterfront the ZAP aspirations are for 600 dwellings (and no jobs), which, on dwelling capacity alone, is judged to undershoot the capacity of the site. The site is 43ha in size, close to the town centre and railway station, and has a good waterfront location. Even applying a gross to net ratio to allow for services/infrastructure and a minimum PPG3 density of 30 dwelling units per hectare the capacity of the site is closer to 950 dwelling units. However, the potential for running Medway Transit through the site and the necessary contamination and remediation works would suggest that higher densities could be achieved. Development of the site is very much dependent

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upon the rationalisation and relocation of existing employment uses, which appear relatively buoyant, particularly compared to those uses that line the Thames further upstream in locations such as Erith. The ZAP figures assume that 300 dwellings will come forward in the period prior to 2005, although with the site preparation works required it is unlikely that housing sites could come forward until later phases.

The other significant regeneration effort within Medway is concerned with the revitalisation of Chatham town centre. Urban intensification and regeneration efforts tied to the implementation of the Chatham City Vision would create a step change and help to deliver the environment for housing and job growth.

Further sites are located on the periphery of the urban area. Based on current densities and patterns of development, St Mary's Island to the north of Chatham has an overall capacity of approx 1,950 dwelling units, being built out at a rate of about 200-250 units per annum. The ZAP figures closely resemble UDP figures, being for 2,000 units.

Rochester airfield is contained within ZAP as a location for 4,500 jobs in high tech industries, as based on various consultancy studies and the outcome of the UDP. ZAP does not make any allowance for dwellings on the site, although the Inspectors Report acknowledges that 200 could be provided. However, it was judged that these do not necessarily meet strategic needs and would take the focus away from the delivery of the key regeneration sites. They have therefore been deleted from the UDP, but could come forward in the longer term. Although not part of the urban area the definition of Airfields in PPG3 and the Land Use Change Statistics classifies these uses as previously developed land (PDL). Following the sequential approach, development here is for the longer term, but should come before greenbelt release.

Gillingham Riverside also has the potential for delivering an attractive riverfront development, with a focus around the existing inlet. The potential here, as identified within ZAP, depends on the future of the Akzo Nobel Company, although the figures provided on site could well exceed the 200 suggested.

Finally, Chattenden Barracks MoD site offers the potential for development beyond the urban boundary of the Medway towns. Although located within the green belt, the MoD land itself constitutes a brownfield site. Following the sequential test, this site should therefore be developed after those discussed above. The ZAP figures of 3,500 may not create the mass required to generate a sustainable settlement and PPG3 notes that 'new settlements will not be acceptable if they will simply function as a dormitory of an existing larger settlement'. Therefore, with the development of Chattenden measures would need to be taken to mitigate the considerable traffic flows that could be generated; a potential role for Medway Transit. The issue surrounding the availability of the Chattenden Barracks was one of the reasons why the period of the UDP was not extended beyond 2006. Although a key location, development is unlikely to happen here until post 2006 and even then, it is not known what land, if any, will be released for development.

Conclusions

There are constraints on the development of the inner sites but these are not dependent on Medway Transit for their resolution. We therefore conclude that Medway Transit is primarily a means of securing better transport and environmental conditions in Medway generally. Its potential for opening up new development appears to be limited to inner sites (e.g. Strood Waterfront) that are currently in employment use.

Sites on the fringes of the built-up areas as identified in ZAP will not be possible to serve with sufficient public transport services whether transit or bus to keep car use within reasonable levels.

14 For example, see the Final Report of the Urban Taskforce, July 1999, Towards an Urban Renaissance
15 DETR, March 2000, Planning Policy Guidance Note 3: Housing
Attention should first be focused on those brownfield sites where it is acknowledged that a regeneration effort is needed. Development of Rochester Riverside could commence soon, subject to remediation works. The other sites have longer lead-in times and would see development occurring after 2006. The ZAP aspirations include a significant amount of greenbelt release. Development in such locations is a long term consideration and subject to both the PPG2 tests and the sequential 'brownfield first' approach.

### 2.2.5 Southend

#### The Area

Located on the northern side of the Thames, Southend (figure 2.7) is a unitary authority which is linked back to London via the A13 and A127 Trunk Roads, and the c2c and Great Eastern railway lines. The administrative boundary of Southend is tightly drawn around the existing built-up area. Peripheral development sites are located in the neighbouring authority of Rochford.

**Figure 2.7 Southend**

![Southend Diagram](image)

*Existing and Proposed Transport Schemes*

Southend Council is currently modifying the A13 and A127 routes to provide improved bus priority into the town centre. There are no other significant transport schemes proposed in Southend.

*Current Aspirations and Potential*
Relationship between transport and development in the Thames Gateway

The Essex and Southend-on-Sea Replacement Structure Plan\(^\text{16}\) notes that provision will be made for a sustainable balance of economic, commercial and housing development and transport investment which:

*Gives priority to investments, infrastructure and allocations, which facilitate widely based economic regeneration and renewal within the extended Thames Gateway (Southend on Sea, London Southend Airport, Castle Point and Basildon New Town).*

The ZAP aspiration is based upon the transformation of redundant town centre business space, high-density housing and edge of town development. The Structure Plan housing targets for Southend (150 dwellings per annum) for the period 1996-2011 are currently being met. This low target reflects capacity constraints in Southend and is below the ZAP aspiration of 5,350 new homes and 9,350 new jobs by 2016.

The prominent area for development within ZAP concerns expansion at Shoeburyness (on the MoD firing ranges). Closure of the MoD site would allow for 1,250 new homes and 3,000 new jobs according to the ZAP estimates.

A development brief for Shoebury Old Ranges has been adopted and Phase I of the development is currently being built out. This comprises 465 dwelling units, leisure, retail, and business and community space. Shoebury New Ranges comprises a site area of 74 hectares which the recent ODPM Committee\(^\text{17}\) noted to have significant potential to make a substantial contribution to housing provision and sustainable regeneration. The Committee paper notes that development here could be a 'showcase linear city based on urban renaissance principles', utilising the Millennium Village concept. However, it is also noted that this concept 'requires significant transport infrastructure investment if the true potential of the site is to be realised' and that for Southend as a whole the 'step change in [the] housing delivery programme...can only be delivered with complementary improvements in transport infrastructure'.

Other than urban intensification the other significant housing site within Southend is the airport. Although there is discussion about the possible closure of the Airport, planning applications have been submitted to reconfigure the site and increase passenger numbers. Permission has already been granted for a new railway station, passenger terminal and car parking and an application has recently been submitted to extend the runway. This would involve the costly relocation of a Grade I Listed Church. The complexities and cost of relocating this could determine the future commercial viability of the airport. ZAP estimates that housing will be delivered in the post 2005 period and in the light of the above discussion we would concur that if development is to happen, it would not be until later phases.

*Conclusions*

The Structure Plan notes that the sub-regional centre of Southend is an appropriate location for large-scale office development and such development will normally continue to be concentrated here for reasons of sustainability. Employment sites on the periphery could have a detrimental impact on traffic conditions and priority should be given to town centre locations that would take advantage of the Council's efforts to improve bus access in the A13 and other radial corridors.

The Structure Plan states that the South Essex sub-region is already a heavily urbanised area close to London and a strong emphasis will continue to be given to safeguarding the stated purposes of the Metropolitan Green Belt and protecting the area's natural and built environment. It also has a substantial employment deficit and suffers the worst transport and movement problems within the Plan area. Any further development provision which is made should primarily be concentrated within the existing larger urban areas through increases in their urban capacity, by redevelopment and land-

\(^{16}\) Adopted April 2001 covering the period 1996-2011

\(^{17}\) House of Commons – ODPM: Housing, Planning, Local Government and the Regions Committee, HC 77-II of Session 2002-03, January 2003, Planning for Sustainable Housing and Communities: Memoranda Submitted to the Committee
use change. It goes on to note that substantial housing growth is feasible in relation to an extended rail and local public transport network, and if sensitively located should not have an undue impact on traffic conditions. Peripheral sites away from core public transport would be difficult to justify.

Southend is heavily constrained and there are few sites available for future development. Of these, the airport site has the potential for long term development. Despite complications regarding its expansion, there is no end date for its current use. The major opportunity lies with the Shoebury New Ranges. Associated with new transport links it is feasible that the figures for the Ranges could well exceed those contained within ZAP, particularly for housing. As the ODPM Committee paper notes (above), a step change in housing and transport delivery is needed to realise the full potential of this area. Subject to the MoD releasing this area of land and the masterplanning exercises that would be required, it is considered that development would not commence until after 2006 at the earliest.

**Summary Table**

Table 2.2 (overleaf) provides a summary of the above discussion. It highlights the differences between the ZAP aspirations and our assumptions based on the site by site discussion. It should be noted that the table only refers to those sites where the ZAP aspirations are in question, it does not consider every site in the Thames Gateway.

What this table shows is that due to remediation issues, preparation work and site availability, development is likely to be delivered in later phases than that suggested by ZAP. However, based on site capacity, the potential exists to provide a higher level of development, particularly with regard to housing. Although the base line figures are the same, the periods of deliverability and capacity estimates are markedly different, as indeed are a number of the sites, which sees a different approach to land release, i.e. greater intensity in the inner areas, particularly Greenwich and Bexley Riverside, with more limited peripheral development in the outer areas, such as Medway.

**Table 2.2: Comparison of Homes in ZAP Aspirations and Llewelyn-Davies Assumptions**

<table>
<thead>
<tr>
<th>Sites</th>
<th>ZAP Aspirations</th>
<th>LD Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre 2005</td>
<td>Later Phases</td>
</tr>
<tr>
<td>Barking and Havering Riverside</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barking Reach</td>
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<td>11,000</td>
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<tr>
<td>Greenwich and Bexley Riverside</td>
<td></td>
<td></td>
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<tr>
<td>Erith Town Centre</td>
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<td>400</td>
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<tr>
<td>Erith Quarry</td>
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<td>-</td>
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<tr>
<td>Slade Green Station - MoL</td>
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<td>-</td>
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<td>Slade Green Station - Green Belt</td>
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<td>Erith Marshes</td>
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<td>-</td>
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<tr>
<td>North Kent Thameside</td>
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<tr>
<td>Ebbsfleet</td>
<td>-</td>
<td>2,000</td>
</tr>
<tr>
<td>Eastern Quarry</td>
<td>-</td>
<td>8,000</td>
</tr>
<tr>
<td>Swanscombe</td>
<td>100</td>
<td>2,550</td>
</tr>
</tbody>
</table>
### Relationship between transport and development in the Thames Gateway

<table>
<thead>
<tr>
<th>Peninsula (East &amp; West)</th>
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</tr>
</thead>
</table>
| Gravesend Urban Area    | 150 | 850 | 2,873 | 1,734
| Greenbelt Release       | -   | 7,025 | - | -

**Medway**

| Greenbelt Release | 700  | 11,700 | - | -
| Rochester Waterfront | 850 | 850 | 300 | 1,400
| Strood Waterfront | 300 | 300 | - | Approx. 950
| Rochester Airfield | - | - | - | 200
| Gillingham Riverside | - | 200 | - | Approx. 200
| Chattenden | 300 | 3,200 | - | Approx. 3,500

**Southend**

| Shoebury New Ranges | 500 | 500 | - | Approx. 2,200
| Shoebury New Ranges Additional Expansion Area | - | - | - | Approx. 9,000
| Sub-Total | 4,500 | 50,425 | 3,773 | 51,234 - 65,499
| Total | 54,925 | 55,007 - 69,272 |
3. Transport analysis

3.1 General Approach

The transport improvements discussed above will facilitate the release of development, especially where current levels of accessibility do not support a significant expansion of homes and jobs without adverse effects on the transport system. The possible location, scale, type or timing of development has been assessed for Thames Gateway areas based on an appreciation of the contribution of transport schemes.

In this section, the transport conditions influencing development in each area are assessed based on an analysis of travel by mode and direction given the scope for transport interventions to overcome access or capacity constraints. Transport schemes are either local or sub-regional - the former provide improved accessibility within action plan areas; the latter provide improved movement between areas and are more critical to the overall delivery of land use aspirations.

Major developments are inevitably significant generators of travel; research and experience suggests that the location of such developments where they can be well served by good quality public transport contributes to the achievement of sustainable development (Transport and Development Areas, RICS 2000). This is consistent with planning guidance on the location of development in established centres or close to public transport interchanges (PPG13: Transport, 2001, Para. 20).

It is not always possible to locate new developments in existing centres or close to transport hubs. PPG13 stresses the need for such developments to be planned and coordinated with necessary improvements to the transport system (PPG13, Para. 83), and for such improvements to be secured by planning obligations. This is not always feasible and development plans need to address the transport infrastructure requirements essential to the support of policies to bring more marginal development areas into use.

In the case of very large developments on brownfield sites or sites outside established centres, it may be necessary for a step-change in accessibility to be achieved at an early stage to facilitate significant change. The Draft Regional Transport Strategy (From Crisis to Cutting Edge, Supporting Statement, SEERA, January 2003) notes for Kent Thameside:

'A package of measures is required in order to achieve the step change in public transport necessary in order to support higher density development.'

The RTS suggests that growth in the Thames Gateway needs to be supported by a focus on improved public transport links as highway improvements cannot provide all the capacity required.

Canary Wharf and surrounding areas were physically isolated following the closure of the docks, and such problems were only overcome by early improvements to road and rail connections that provided direct access to sites. Once development aspirations increased, major second phase road and rail improvements were necessary to provide the capacity to meet emerging transport needs. Solutions have been based on a significant shift away from car access, but this has recognised the investment required to provide appropriate levels of accessibility by other modes.

Development proposals for Canada Water, Greenwich Peninsula, Barking Reach and North Kent have been relatively slow to come to fruition given the long gestation in securing improved highway access and the difficulties inherent in providing access by other modes to minimise car use.

Elsewhere, major developments such as Wembley Stadium, White City and South Ashford are predicated on a significant reduction in car use. A local authority/developers' consortium in Ashford has agreed a transport package that assumes a 28% reduction in car use from commercial sites.

There are several major committed transport schemes in the Thames Gateway that will improve accessibility compared with existing conditions. Further proposals, if realised, would increase the
capacity of the strategic and local transport networks and provide new linkages serving potential
development sites. The contribution made by these schemes towards improving accessibility and
releasing development is considered below, in terms of both scale and timing.

3.2 Transport Capacity Issues

Transport capacity requirements are critically related to the travel characteristics of each area and how
these may be influenced by policy or physical interventions. At present, sites in the west of the
Thames Gateway are more reliant on public transport access than sites to the east. While outer areas
generate considerable radial commuter movement, this is a relatively small proportion of total
movements. In most of the Thames Gateway area under study, and particularly east of the M25,
public transport usage is much lower, and the private car is the dominant mode of travel for almost all
journeys.

Highway capacity is heavily used in much of the Thames Gateway, leaving little scope for major
traffic growth. The river imposes an east/west orientation to travel and where crossing the river is
possible at Blackwall and Dartford, access routes are very congested at times. The highway schemes
discussed earlier may improve local access in some areas, but fundamentally do not alter an overall
pattern of increasing road congestion in the Thames Gateway. Major development growth in Thames
Gateway therefore implies some mix of the following:

- Increasingly congested road network;
- Substantial mode shift to non-car modes (from both existing and new development);
- Substantial increase in both local and strategic road capacity.

The principles of PPG13 and sustainable development suggest that new development should not be
car dependent, but realistically there are few locations outside established centres where this can be
achieved. In reality, few sites can achieve the density of access routes by non-car modes to limit car
use substantively.

Housing sites planned in accordance with PPG3 principles of density and accessibility to local
services can achieve reduced levels of car use if located close to high quality public transport routes.
This enables parking levels to be reduced and higher densities to be achieved.

It is harder to locate major new employment sites in areas accessible by non-car modes given the
dispersed origins of employees. PPG13 sets a national standard for B1 uses equivalent to 2 car spaces
per 3 employees; typically most employment uses outside major centres are car-dependent. Many
local authorities (e.g. Brent, Surrey, Hampshire, Hertfordshire) now vary parking standards according
to the accessibility of a development by public transport and only allow development with demand-
based parking, if at all, in the most inaccessible areas.

Parking restraint is vital to the reduction in car use, but needs to be accompanied by corresponding
improvements in public transport services. Local authorities no longer have recourse to commuted
payments in lieu of parking spaces, but many are now starting to frame planning obligations that
secure funding for necessary public transport improvements. As in Ashford, development plan
justification for a transport package facilitates the negotiation of planning obligations with developers
to fund schemes.

If local authorities seek to impose restrictive parking standards in inaccessible areas without an
appropriate package of measures to improve public transport access, it will be harder to secure
developer contributions. Any reduction in car use implied by reduced parking levels should be
matched by corresponding improvements in accessibility by other modes. If this is the case, not only
is the development more sustainable, but obligations can be sought consistent with the Circular 1/97
test of ‘necessary and reasonable’.
The challenge is to achieve a built form that minimises the need to travel by car for work and other purposes by the co-location of homes and jobs. Ebbsfleet may become such a community if parking provision is constrained and high standard public transport is provided.

Failure to achieve development and local transport systems that result in very much lower levels of car use than is typical in the existing settlements, will mean that highway capacity will be the operative transport constraint. If highway capacity limitations result in limiting the quantity of development on traffic generation grounds, this in turn will reinforce the current pattern of low density development and high car dependence.

The analysis below considers existing and projected patterns of travel in the Thames Gateway, especially the mode split of trips from home and to work. Development potential is assessed in relation to transport capacity, taking into account the ability to effect a shift away from car use and the ability of public transport to handle increased demands.

### 3.3 Travel Characteristics in the Thames Gateway

Three principal factors will influence the capacity of the transport system in the Thames Gateway to accommodate growth aspirations:

- The location of growth sites within the corridor and within action plan areas is integrally linked to their ability to be accessed by existing or new transport facilities.
- The direction of travel movements associated with homes and jobs in each area will determine the transport capacity constraints that may limit development.
- The proportion of trips by car will affect the ability of the highway network to accommodate new development.

Travel characteristics vary across the Thames Gateway as the density of public transport services declines eastward and car use increases. Committed and proposed transport schemes will influence travel characteristics and, hence, the capacity of the transport system to accommodate land use growth as set out in the ZAPs, including growth that would occur after 2016.

Tempro and London Transportation Studies (LTS) model projections have been used to assess mode share and trip distribution characteristics for each area at 2016. LTS has also been used to assess the capacity of private and public transport networks to handle traffic associated with land use growth.

Appendix A discusses in detail the Tempro and LTS results; Table 3.1 gives a summary of the main results and findings.

**Table 3.1: Summary of Transport Characteristics at 2016**

The above table is available in Word format as a download from the foot of this page

### 3.4 Summary

The overview of travel characteristics and constraints above and in Appendix A illustrates the strong linkages between the inner Gateway areas and central London for movement by public transport. In the central Gateway areas this is less evident, although significant numbers of trips are generated. In the outer Gateway areas, inter-dependence with central London is low: the vast majority of public transport trips are local and more likely to be by bus.

There are no strong links with central London for highway trips and most traffic is local or to adjacent areas. There are strong movements to inner and outer London from the central Gateway areas.

Future highway and public transport constraints have been assessed using LTS data for 2016 based on the draft London Plan assumptions; this under-estimates growth in most Thames Gateway areas and if the full Action Plan projections are achieved demand will be higher.
Public transport demand in London is expected by TfL to increase by 39% between 2001 and 2016 using base case am peak assumptions (Analysis of the Transport Programme to Support the Draft London Plan, TfL, January 2003). Planned public transport proposals will increase bus capacity by 50% and rail capacity by 44% over the same period. Crowding on London Underground remains unchanged at 2016 from the present even with Crossrail; without Crossrail crowding would deteriorate, especially on the Central London network. Network Rail crowding improves slightly over the period assuming that more trains can be operated; much of this is attributable to Thameslink 2000.

Highway congestion in London would remain unchanged across most areas of London to 2016, although congestion charging improves the central area. Congestion outside London is likely to worsen due to general traffic growth. Local improvements or development roads will improve access to specific areas, including east London where the new river crossings widen accessibility.

Highway capacity constraints are most severe on the existing Thames crossings, this being an obvious function of the limited number of road crossings east of Tower Bridge. LTS 2001 and Highways Agency congestion maps show that this is an existing problem which is not significantly alleviated by the additional capacity provided by the Thames Gateway Bridge and Silvertown Link, both of which would be tolled.

New river crossings would provide new public transport links (bus transit) but would also generate additional cross river trips. The forecast peak hour flow on the Thames Gateway Bridge is equivalent to the increase in the total number of vehicles crossing the river downstream of Tower Bridge (Transport Case for the Crossings, TfL, October 2002). Some 60% of traffic using the new crossings would have one or both ends of its trip outside the six boroughs either side of the river (Barking & Redbridge, Newham, Tower Hamlets, Lewisham, Greenwich and Bexley).

Dartford Tunnel is already tolled and higher tolls could limit cross-river congestion. The concern is that longer distance traffic using the Thames Gateway Bridge would result in congestion on local roads and could impede rather than improve access to Barking and Woolwich sites. It is proposed by TfL that differential tolling for local and non-local traffic would mitigate this problem.

Other evidence suggests that problems at M25 junctions north and south of the river are likely to continue. Improvements to the M25/A282/A2 junction would alleviate problems associated with development at Ebbsfleet.

Committed highway schemes on the A2 and A13 are intended to overcome existing problems or those created by traffic growth already expected. Committed public transport improvements will do little to alter travel behaviour in the corridor, although some schemes are locally significant.

Changes in accessibility by mode in the Thames Gateway are likely to be highly variable. Areas served by new public transport links will benefit significantly from specific proposals such as DLR extensions, Crossrail or bus transit.

Major road and rail schemes provide the strategic connections that provide high-speed and high quality links to destinations in the region and beyond. Public transport interchanges can become the hubs that integrate strategic and local services, providing the connections to sites not immediately adjacent to stations by local public transport modes.

The choice of local links will depend upon the nature of the area and the density of development. Low to medium density development is more readily served by bus-based schemes that combine low cost with maximum flexibility to cover many routes. Tram-based systems are more suited to high density development where high cost and fixed routes are feasible if they can attract high patronage levels.
4. Potential scale of development

4.1 Introduction

The range of potential development out-turns from the Thames Gateway is very variable, and is influenced by a host of different factors: macro-economic changes, market conditions, investor perceptions relative to other locations in Southern England, specific site characteristics in the key development locations, the effect of transport infrastructure improvements, and mechanisms for achieving change. The role of investment in transport infrastructure is but one ingredient, albeit an important one, in the overall recipe for the regeneration of the Thames Gateway.

The central purpose of the study is to examine the influence of transport on the scale and type of growth that could occur in the Thames Gateway. Here it is necessary to consider the likely orders of magnitude in terms of demand for housing and households and growth in jobs. It is not our intention to provide a single projection but to identify a realistic range, which can be considered as a form of "reality check control total". Against this we review first, what the Thames Gateway has been achieving in the recent past and what it is likely to do in the future and, second, what might be possible as a variant reflecting transport infrastructure and other public policy interventions.

4.2 Recent Trend Growth in the Thames Gateway

The Thames Gateway has been a focus of attention for some ten years since the publication of the original East Thames Corridor study. In 1995 special regional planning guidance was published as a supplement to the South East Regional Planning Guidance - RPG9A The Thames Gateway Planning Framework. Despite this focus the area continues to grow at a rate slower than the regional average.

The table below sets out employment change for the Thames Gateway between 1991-2001. Employment in the wards that most closely correspond to the Thames Gateway grew by 26,000 or 7.6%. Whilst the past decade represents one of reasonable employment growth in the Thames Gateway it should be noted that this was a decade of exceptionally fast growth in the UK as a whole and in the South East in particular. A combination of employment policies, cyclical trends and demographic factors combined to raise employment through increased labour supply higher activity rates and reduced unemployment. For the South East as a whole employment increased by more than 1.5m jobs or at a rate of nearly 2% p.a. Employment growth in the wards that made up the Thames Gateway was slower than for the Thames Gateway Districts as a whole. Growth in the Thames Gateway Districts in turn was below that for the South East.

Table 4.1: Growth in Employment 1991-2001

<table>
<thead>
<tr>
<th></th>
<th>1991-2001</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thames Gateway Wards</td>
<td>25,877</td>
<td>7.6%</td>
</tr>
<tr>
<td>Thames Gateway Districts</td>
<td>99,703</td>
<td>11.9%</td>
</tr>
<tr>
<td>Isle of Dogs</td>
<td>48,344</td>
<td>341.9%</td>
</tr>
<tr>
<td>London</td>
<td>620,345</td>
<td>18.3%</td>
</tr>
<tr>
<td>Rest of South East</td>
<td>945,200</td>
<td>23.6%</td>
</tr>
</tbody>
</table>

Source: ABI/AES/RTP data for employees in employment

This comes back to the reason why the Thames Gateway is a policy priority area in the first place: notably, economic under-performance especially compared to other parts of the region.

The table also highlights growth in the Isle of Dogs where a different and exceptional pattern of growth can be seen, but there are arguably a set of exceptional circumstances. Geographically it is...
very close to central London and has taken on a character of employment that resembles central London expansion. It is a comparatively small area compared with the Thames Gateway as whole and is not actually in the officially designated Thames Gateway boundary. It has also been the recipient of substantial public sector investment in the form of Enterprise Zone subsidies, transport investment in the Jubilee Line extension and DLR. Isle of Dogs employment has increased by 50,000 jobs in the past ten years albeit at a time when the economy of London and the South East was also expanding very rapidly. This is 7.8% of London's employment growth over this period which represents a significant spatial redistribution of London's employment.

Table 4.2 below sets out employment and household growth by district within the Thames Gateway

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Barking and Dagenham</td>
<td>48,100</td>
<td>-9,600</td>
<td>-17%</td>
<td>67,300</td>
<td>9,100</td>
<td>16%</td>
</tr>
<tr>
<td>Bexley</td>
<td>63,500</td>
<td>4,800</td>
<td>8%</td>
<td>89,500</td>
<td>4,500</td>
<td>5%</td>
</tr>
<tr>
<td>Greenwich</td>
<td>61,700</td>
<td>-1,800</td>
<td>-3%</td>
<td>92,800</td>
<td>8,100</td>
<td>10%</td>
</tr>
<tr>
<td>Havering</td>
<td>75,200</td>
<td>4,500</td>
<td>6%</td>
<td>91,700</td>
<td>2,600</td>
<td>3%</td>
</tr>
<tr>
<td>Lewisham</td>
<td>62,800</td>
<td>1,700</td>
<td>3%</td>
<td>107,400</td>
<td>8,200</td>
<td>8%</td>
</tr>
<tr>
<td>Newham</td>
<td>64,200</td>
<td>2,200</td>
<td>3%</td>
<td>91,800</td>
<td>11,800</td>
<td>15%</td>
</tr>
<tr>
<td>Tower Hamlets</td>
<td>149,800</td>
<td>44,600</td>
<td>42%</td>
<td>78,500</td>
<td>15,600</td>
<td>25%</td>
</tr>
<tr>
<td>Isle of Dogs</td>
<td>62,500</td>
<td>48,300</td>
<td>342%</td>
<td>9,400</td>
<td>1,800</td>
<td>19%</td>
</tr>
<tr>
<td>Basildon</td>
<td>66,600</td>
<td>10,000</td>
<td>18%</td>
<td>69,200</td>
<td>7,000</td>
<td>11%</td>
</tr>
<tr>
<td>Castle Point</td>
<td>17,900</td>
<td>3,800</td>
<td>27%</td>
<td>35,300</td>
<td>2,500</td>
<td>8%</td>
</tr>
<tr>
<td>Southend-on-Sea</td>
<td>60,700</td>
<td>2,000</td>
<td>3%</td>
<td>71,000</td>
<td>3,600</td>
<td>5%</td>
</tr>
<tr>
<td>Thurrock</td>
<td>53,500</td>
<td>12,400</td>
<td>30%</td>
<td>58,500</td>
<td>9,400</td>
<td>19%</td>
</tr>
<tr>
<td>Dartford</td>
<td>44,000</td>
<td>10,200</td>
<td>30%</td>
<td>35,200</td>
<td>4,300</td>
<td>14%</td>
</tr>
<tr>
<td>Gravesham</td>
<td>28,200</td>
<td>3,900</td>
<td>16%</td>
<td>38,300</td>
<td>2,700</td>
<td>8%</td>
</tr>
<tr>
<td>Medway Towns</td>
<td>1,700</td>
<td></td>
<td>2%</td>
<td></td>
<td></td>
<td>9%</td>
</tr>
</tbody>
</table>
As can be seen, household growth has been moderately strong throughout the Thames Gateway. It has been highest in Inner London, in Tower Hamlets and Newham, but high also where there have been major new housing schemes such as Barking Reach in Barking & Dagenham and Chafford Hundred in Thurrock.

The employment pattern has been more mixed. With the exception of Tower Hamlets (largely outside the actual Gateway), employment growth in London has been modest and low compared with London as a whole. In many of the districts outside London, employment has however grown faster than the regional average.

But growth is not necessarily concentrated on the core Thames Gateway riverside areas of these districts. Within the more narrowly-defined Thames Gateway wards, only two wards stand out as having very high growth. West Thurrock grew rapidly in the first half of the decade due to the opening of Lakeside, and Greenhithe in Dartford grew rapidly at the end of the decade due to the opening of Bluewater. Between them these two wards saw an increase of 16,700 jobs during the period 1991-2001, roughly 60% of the total.

### 4.3 Supply Side Capacity and Aspirations

#### 4.3.1 Planning Growth Areas

Within the South East there are five identified sub-areas with capacity to deliver much of the region's employment and housing growth between 2001 and 2016. In addition to London, the ODPM Communities Plan identifies four key growth areas: Milton Keynes-South Midlands, Ashford, London-Stansted-Cambridge (LSC), and the Thames Gateway. These five growth areas have individually estimated their capacity to deliver growth and set out planning aspiration forecasts accordingly.

But in addition to the identified growth areas we would expect continued growth in other parts of the South East. Table 4.3 therefore sets out the growth aspirations for each of the identified growth areas of the South East, together with estimated growth for the remainder of the region.

The planning aspiration forecasts are derived from different sources which, although different in the way they have been calculated, are largely similar in producing bottom up estimations based on development potential:

- The TG ZAP - these are the Thames Gateway Zonal Action Plan figures relating to the 14 zones within the Thames Gateway area.
- Milton Keynes (excluding Northamptonshire) - figures are based on the Milton Keynes and South Midlands Study produced by RTP, Halcrow, and the Three Dragons. The estimated figures relate to development capacity within local authority areas in the sub-region, so we reduce the areas to include just the local authorities within the South East\(^{18}\).
- Stansted Corridor - a study of the London-Stansted-Cambridge sub-region produced by ECOTEC\(^{19}\), looked at the spatial development pattern in the region based on various scenarios.

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\(^{18}\) We define the South East as the Standard Statistical Region, i.e., Government Office South East plus Bedfordshire, Hertfordshire and Essex.

\(^{19}\) ECOTEC, London-Stansted-Cambridge Sub-Regional Study, July 2002
Ashford - An RTP study\textsuperscript{20} for Ashford Borough Council assessed Ashford's capacity for growth under three scenarios. We have taken the medium growth scenario based on the mixed urban consolidation/growth strategy. Figures for housing and job growth between 2001 and 2016 were available.

London - for London we use the London Plan's 2016 household and job growth figures. These are based on a top down forecast for the whole of London and disaggregated spatially using bottom up supply side analysis. London Thames Gateway wards are omitted from the London estimates due to being covered elsewhere.

TG Remainder - these growth figures cover the rest of the Thames Gateway local authority areas in North Kent and South Essex. This is the area outside the wards covered by the Zonal Action Plan above.

SE (SSR) Remainder - for the remaining areas in the South East we take households and employment growth from Tempro 4.2 policy-led forecasts. These Tempro figures differ from the data set used in our Tempro South East total in that household growth figures are based on RPG 9 with jobs growth adjusted accordingly.

### Table 4.3: Growth Forecasts

<table>
<thead>
<tr>
<th>Planning Aspiration Forecasts by Area, 2001-2016</th>
<th>Households</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG ZAP</td>
<td>158,885</td>
<td>325,800</td>
</tr>
<tr>
<td>Milton Keynes (exc: Northants)</td>
<td>96,500</td>
<td>76,000</td>
</tr>
<tr>
<td>Stansted Corridor (exc: Cambs, LB Redbridge, Lea Valley)</td>
<td>91,020</td>
<td>105,336</td>
</tr>
<tr>
<td>Ashford</td>
<td>13,050</td>
<td>10,305</td>
</tr>
<tr>
<td>London (exc: TG)</td>
<td>456,903</td>
<td>517,062</td>
</tr>
<tr>
<td>TG Remainder (outside ZAP in TGSE &amp; TGNK)</td>
<td>6,539</td>
<td>17,387</td>
</tr>
<tr>
<td>SE (SSR) Remainder</td>
<td>311,094</td>
<td>465,040</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,133,991</strong></td>
<td><strong>1,516,930</strong></td>
</tr>
</tbody>
</table>

The planning aspirations envisage a growth of 1.5m jobs and 1.1m households over the period 2001-16, a similar level of growth to that experienced between 1991-2001.

### 4.4 Forecasts for the South East

In general we would expect more moderate growth for the South East as a whole than has been experienced over the past decade. Forecast produced by regional forecasting bodies tend to support this view of growth.

For the South East as a whole Experian Business Strategies project a growth of just 1m jobs in the period 2001-16, compared with growth of 1.5m in the period 1991-2001. Tempro forecasts suggest growth of 1.4m for the period 2001-16 compared with 1m between 1991-2001.

\textsuperscript{20} Roger Tym & Partners, Ashford’s Future, for Ashford Borough Council and Strategic Partners, December 2002
Forecasts recently published by Cambridge Econometrics give the following growth projections by county for population and employment.

**Table 4.4: Forecast Growth By South East County**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Buckinghamshire</td>
<td>1.0%</td>
<td>2.3%</td>
<td>0.8%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Surrey</td>
<td>0.3%</td>
<td>2.1%</td>
<td>0.4%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Berkshire</td>
<td>0.8%</td>
<td>1.7%</td>
<td>0.6%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Hertfordshire</td>
<td>0.4%</td>
<td>1.0%</td>
<td>0.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Oxfordshire</td>
<td>0.8%</td>
<td>1.3%</td>
<td>0.7%</td>
<td>0.7%</td>
</tr>
<tr>
<td>London</td>
<td>0.4%</td>
<td>0.4%</td>
<td>0.4%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Essex</td>
<td>0.5%</td>
<td>1.1%</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>West Sussex</td>
<td>0.7%</td>
<td>1.6%</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Hampshire</td>
<td>0.6%</td>
<td>1.1%</td>
<td>0.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Kent</td>
<td>0.4%</td>
<td>0.6%</td>
<td>0.4%</td>
<td>0.5%</td>
</tr>
<tr>
<td>East Sussex</td>
<td>0.7%</td>
<td>0.7%</td>
<td>0.5%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

Source: Cambridge Econometrics

As can be seen, London, Essex and Kent have in the past grown in employment terms at a rate considerably below that of the counties to the west of London. And only London is projected to have a higher growth rate in the forecast period than it did for the period 1981-2000.

Whilst these represent quite positive growth trends, they are significantly below what has been achieved in the past decade. For the under-performing parts of the Thames Gateway to grow at the regional average rate under such circumstances would be a remarkable achievement. It would mean other, more successful, parts of the region would have to grow relatively more slowly than they have in the past, both in relation to absolute growth rates and also in relation to the region.

### 4.5 Alternative Growth Scenarios for the Thames Gateway

We have prepared four alternative scenarios based on different levels of growth for the Thames Gateway. For ease of comparison with other transport studies we have used the Tempro dataset for the base date. The scenarios have also been presented in terms of the principal boroughs/districts in the Thames Gateway. The only sub-borough area is "Tower Hamlets", which excludes the Central London part of that Borough. These figures therefore include those parts both within and outside the Thames Gateway boundary.

The Thames Gateway itself is more narrowly defined both in the official definition and in the area looked at by the Thames Gateway Strategic Executive.

One assumption might therefore be that all net growth in the Thames Gateway districts occurs within the Thames Gateway area. This might be considered a reasonable assumption on the grounds that this is where the available sites are located and are being accorded policy priority in terms of development. However this would mean no net growth in the rest of the district. As we have noted over the past decade, even within the Thames Gateway districts the wards outside the Thames
Relationship between transport and development in the Thames Gateway

Gateway have grown more rapidly in employment terms than those inside the Thames Gateway. Thus the assumptions set out below must be considered a best case option for the Thames Gateway. An alternative is that the Thames Gateway wards only get their proportionate share of the district's growth.

4.5.1 "Tempro Planning Policy Growth" Scenario

The Tempro policy scenario uses the latest Tempro Policy version of the data. The Tempro policy dataset was published in January 2003 and is the result of consultations with regional planning authorities. This might be equated with continuation of existing trends.

Table 4.5: Growth by Thames Gateway Local Authority Area (Tempro Policy)

<table>
<thead>
<tr>
<th>TG Area</th>
<th>LA</th>
<th>Jobs</th>
<th>Tempro Policy 2001</th>
<th>Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGL</td>
<td>Barking &amp; Dagenham</td>
<td>59,400</td>
<td>4,100</td>
<td>66,700</td>
</tr>
<tr>
<td></td>
<td>Bexley</td>
<td>67,000</td>
<td>-3,100</td>
<td>90,200</td>
</tr>
<tr>
<td></td>
<td>Greenwich</td>
<td>87,500</td>
<td>2,500</td>
<td>92,300</td>
</tr>
<tr>
<td></td>
<td>Havering</td>
<td>91,400</td>
<td>-4,900</td>
<td>93,200</td>
</tr>
<tr>
<td></td>
<td>Newham</td>
<td>80,400</td>
<td>21,300</td>
<td>86,000</td>
</tr>
<tr>
<td></td>
<td>Tower Hamlets (Isle of Dogs)</td>
<td>113,300</td>
<td>19,200</td>
<td>82,500</td>
</tr>
<tr>
<td>TGL Total</td>
<td></td>
<td>499,000</td>
<td>39,100</td>
<td>510,900</td>
</tr>
<tr>
<td>TGNK Dartford</td>
<td>34,700</td>
<td>3,600</td>
<td>36,400</td>
<td>4,900</td>
</tr>
<tr>
<td></td>
<td>Gravesend</td>
<td>27,000</td>
<td>1,200</td>
<td>37,500</td>
</tr>
<tr>
<td></td>
<td>Medway</td>
<td>99,500</td>
<td>15,200</td>
<td>122,500</td>
</tr>
<tr>
<td></td>
<td>Swale</td>
<td>39,600</td>
<td>3,200</td>
<td>49,200</td>
</tr>
<tr>
<td>TGNK Total</td>
<td></td>
<td>200,800</td>
<td>23,300</td>
<td>245,600</td>
</tr>
<tr>
<td>TGSE Basildon</td>
<td>72,100</td>
<td>3,600</td>
<td>69,100</td>
<td>4,800</td>
</tr>
<tr>
<td></td>
<td>Castle Point</td>
<td>21,400</td>
<td>-900</td>
<td>33,500</td>
</tr>
<tr>
<td></td>
<td>Southend-on-Sea</td>
<td>69,600</td>
<td>1,000</td>
<td>80,400</td>
</tr>
<tr>
<td></td>
<td>Thurrock</td>
<td>57,200</td>
<td>10,600</td>
<td>57,300</td>
</tr>
<tr>
<td>TGSE Total</td>
<td></td>
<td>220,300</td>
<td>14,300</td>
<td>240,300</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>920,100</td>
<td>76,700</td>
<td>996,800</td>
</tr>
</tbody>
</table>
4.5.2 "South East Growth Share" Scenario

As we have noted, the Thames Gateway is not the only area in the South East that aspires to or expects growth. It could be argued simply that, given its past under-performance, the best that the Thames Gateway might reasonably expect is that it gets its share of South East growth. We have therefore capped growth for the South East at the rate forecast by Experian Business Strategies and assumed that the Thames Gateway districts manage to maintain their 10.3% share of employment over the period. Within the Thames Gateway allocations between districts have then been made proportionately to the aspirations as set out in the TG ZAP data.

Table 4.6: Growth by Thames Gateway Local Authority Area (SE Growth Share)

<table>
<thead>
<tr>
<th>TG Area</th>
<th>LA</th>
<th>2001 Jobs</th>
<th>SE Growth shared</th>
<th>2001 Households</th>
<th>SE Growth shared</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGL</td>
<td>Barking&amp; Dagenham</td>
<td>59,400</td>
<td>500</td>
<td>66,700</td>
<td>12,400</td>
</tr>
<tr>
<td></td>
<td>Bexley</td>
<td>67,000</td>
<td>2,100</td>
<td>90,200</td>
<td>1,800</td>
</tr>
<tr>
<td></td>
<td>Greenwich</td>
<td>87,500</td>
<td>8,800</td>
<td>92,300</td>
<td>16,800</td>
</tr>
<tr>
<td></td>
<td>Havering</td>
<td>91,400</td>
<td>1,400</td>
<td>93,200</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Newham</td>
<td>80,400</td>
<td>17,200</td>
<td>86,000</td>
<td>16,800</td>
</tr>
<tr>
<td></td>
<td>Tower Hamlets (Isle of Dogs)</td>
<td>113,300</td>
<td>46,500</td>
<td>82,500</td>
<td>4,300</td>
</tr>
<tr>
<td></td>
<td><strong>TGL Total</strong></td>
<td><strong>499,000</strong></td>
<td><strong>76,600</strong></td>
<td><strong>510,900</strong></td>
<td><strong>52,200</strong></td>
</tr>
<tr>
<td>TGNK</td>
<td>Dartford</td>
<td>34,700</td>
<td>7,000</td>
<td>36,400</td>
<td>10,700</td>
</tr>
<tr>
<td></td>
<td>Gravesham</td>
<td>27,000</td>
<td>7,300</td>
<td>37,500</td>
<td>4,300</td>
</tr>
<tr>
<td></td>
<td>Medway</td>
<td>99,500</td>
<td>5,900</td>
<td>122,500</td>
<td>21,400</td>
</tr>
<tr>
<td></td>
<td>Swale</td>
<td>39,600</td>
<td>4,300</td>
<td>49,200</td>
<td>7,600</td>
</tr>
<tr>
<td></td>
<td><strong>TGNK Total</strong></td>
<td><strong>200,800</strong></td>
<td><strong>24,600</strong></td>
<td><strong>245,600</strong></td>
<td><strong>44,000</strong></td>
</tr>
<tr>
<td>TGSE</td>
<td>Basildon</td>
<td>72,100</td>
<td>1,500</td>
<td>69,100</td>
<td>4,200</td>
</tr>
<tr>
<td></td>
<td>Castle Point</td>
<td>21,400</td>
<td>300</td>
<td>33,500</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Southend-on-Sea</td>
<td>69,600</td>
<td>2,900</td>
<td>80,400</td>
<td>2,400</td>
</tr>
<tr>
<td></td>
<td>Thurrock</td>
<td>57,200</td>
<td>6,500</td>
<td>57,300</td>
<td>13,800</td>
</tr>
<tr>
<td></td>
<td><strong>TGSE Total</strong></td>
<td><strong>220,300</strong></td>
<td><strong>11,200</strong></td>
<td><strong>240,300</strong></td>
<td><strong>21,300</strong></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>920,100</strong></td>
<td><strong>112,400</strong></td>
<td><strong>996,800</strong></td>
<td><strong>117,500</strong></td>
</tr>
</tbody>
</table>
If the Thames Gateway wards maintained their share of South East employment growth, then employment in the more narrowly defined area would rise by 74,200 instead of 112,400.

4.5.3 "Recent Trends" Scenario

Recent rates of growth in the Thames Gateway, as elsewhere, have been high. However, for the reasons set out above, we do not expect South East growth levels to be so rapid and hence do not consider this the best indication of what is likely to happen in the future. Nonetheless, it is one possible variant and is set out below for comparison.

This scenario is most likely to be realised if South East growth does indeed continue at past rates.

**Table 4.7: Growth by Thames Gateway Local Authority Area (Recent Trends)**

<table>
<thead>
<tr>
<th>TG Area</th>
<th>LA</th>
<th>2001 Jobs</th>
<th>Trend Growth</th>
<th>2001 Households</th>
<th>Trend Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGL</td>
<td>Barking &amp; Dagenham</td>
<td>59,400</td>
<td>-14,400</td>
<td>66,700</td>
<td>13,700</td>
</tr>
<tr>
<td></td>
<td>Bexley</td>
<td>67,000</td>
<td>7,200</td>
<td>90,200</td>
<td>6,800</td>
</tr>
<tr>
<td></td>
<td>Greenwich</td>
<td>87,500</td>
<td>-2,700</td>
<td>92,300</td>
<td>12,100</td>
</tr>
<tr>
<td></td>
<td>Havering</td>
<td>91,400</td>
<td>6,800</td>
<td>93,200</td>
<td>3,900</td>
</tr>
<tr>
<td></td>
<td>Newham</td>
<td>80,400</td>
<td>3,200</td>
<td>86,000</td>
<td>17,700</td>
</tr>
<tr>
<td></td>
<td>Tower Hamlets (Isle of Dogs)</td>
<td>113,300</td>
<td>72,500</td>
<td>82,500</td>
<td>2,600</td>
</tr>
<tr>
<td>TGL Total</td>
<td></td>
<td>499,000</td>
<td>72,800</td>
<td>510,900</td>
<td>56,900</td>
</tr>
<tr>
<td>TGNK</td>
<td>Dartford</td>
<td>34,700</td>
<td>15,300</td>
<td>36,400</td>
<td>6,400</td>
</tr>
<tr>
<td></td>
<td>Gravesesham</td>
<td>27,000</td>
<td>5,900</td>
<td>37,500</td>
<td>4,000</td>
</tr>
<tr>
<td></td>
<td>Medway</td>
<td>99,500</td>
<td>2,500</td>
<td>122,500</td>
<td>12,500</td>
</tr>
<tr>
<td></td>
<td>Swale</td>
<td>39,600</td>
<td>13,500</td>
<td>49,200</td>
<td>6,900</td>
</tr>
<tr>
<td>TGNK Total</td>
<td></td>
<td>200,800</td>
<td>37,200</td>
<td>245,600</td>
<td>29,900</td>
</tr>
<tr>
<td>TGSE</td>
<td>Basildon</td>
<td>72,100</td>
<td>15,000</td>
<td>69,100</td>
<td>10,500</td>
</tr>
<tr>
<td></td>
<td>Castle Point</td>
<td>21,400</td>
<td>5,600</td>
<td>33,500</td>
<td>3,700</td>
</tr>
<tr>
<td></td>
<td>Southend-on-Sea</td>
<td>69,600</td>
<td>3,000</td>
<td>80,400</td>
<td>5,400</td>
</tr>
<tr>
<td></td>
<td>Thurrock</td>
<td>57,200</td>
<td>18,500</td>
<td>57,300</td>
<td>14,100</td>
</tr>
<tr>
<td>TGSE Total</td>
<td></td>
<td>220,300</td>
<td>42,100</td>
<td>240,300</td>
<td>33,700</td>
</tr>
<tr>
<td>Grand Total</td>
<td></td>
<td>920,100</td>
<td>152,100</td>
<td>996,800</td>
<td>120,500</td>
</tr>
</tbody>
</table>
The Thames Gateway wards as specified in the TGSE maps account for 6.8% of South East employment at 2001. If this more narrowly defined area were to maintain its share of South East employment growth over the coming planning period, then it too would grow employment, but again by proportionately less.

4.5.4 "LTS London Plan" Scenario

A further set of projections is provided by the work prepared for the London Plan. Table 4.8 compares past and projected change by growth area, using the planning inputs used in the LTS run for the London Plan. Under this scenario the forecast change in jobs 2001-16 is 180,000 and the forecast change in households is 129,000. This would mean the Thames Gateway getting a greater than proportionate share of South East employment, with employment in the Thames Gateway growing at an average of 1.2% p.a. compared with 1.0% p.a. for the South East as a whole. Employment in the Thames Gateway would have to grow at a rate 50% higher than it did during the period 1991-2001 at a time when employment in the South East is growing at a slightly slower rate than in the previous period21.

Within this fixed total we have amended the distribution of the Thames Gateway so that it reflects the TG ZAP data, which does not seem to be adequately reflected in the LTS planning inputs.

As can be seen from Table 4.8, the London part of the Thames Gateway would be responsible for most of the growth under this scenario. It would mean Thames Gateway London continuing to grow at 1.5% p.a., with the Isle of Dogs responsible for the largest single component of this growth.

We would consider that 187,000 represents the upper end of the range for realistic demand. The London Plan projections contain three factors that suggest growth for the Thames Gateway is toward the higher end:

- They are based on forecasts for London of continued high growth resulting in a further 636,000 jobs between 2001-16.
- They factor in a policy preference to encourage growth in East London and the Thames Gateway
- They are based (though not exclusively dependent) on a number of schemes set out in the Mayor's Transport Strategy being realised (such as the river crossings and Crossrail).

Table 4.8: Growth by Thames Gateway Local Authority Area (LTS London Plan)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TGL</td>
<td>Barking &amp; Dagenham</td>
<td>59,400</td>
<td>800</td>
<td>66,700</td>
<td>13,500</td>
</tr>
<tr>
<td></td>
<td>Bexley</td>
<td>67,000</td>
<td>3,400</td>
<td>90,200</td>
<td>1,900</td>
</tr>
<tr>
<td></td>
<td>Greenwich</td>
<td>87,500</td>
<td>14,100</td>
<td>92,300</td>
<td>18,200</td>
</tr>
<tr>
<td></td>
<td>Havering</td>
<td>91,400</td>
<td>2,300</td>
<td>93,200</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Newham</td>
<td>80,400</td>
<td>27,600</td>
<td>86,000</td>
<td>18,200</td>
</tr>
<tr>
<td></td>
<td>Tower Hamlets (Isle)</td>
<td>113,300</td>
<td>74,600</td>
<td>82,500</td>
<td>4,700</td>
</tr>
</tbody>
</table>

21 Here for consistency we compare employment and household change the LTS planning inputs. These differ from the estimates provided earlier on past change.
### 4.6 London Forecasts

For London, we have more detailed forecasts available based upon the work undertaken for the London Plan, mainly by Volterra. The DLP incorporates the Mayor’s Transport Strategy, which has a number of schemes that bring transport enhancements to the Thames Gateway, such as the package of river crossings and Crossrail. As such, this might be considered the realistic upper limit of growth for the London part of the Thames Gateway.

The table below sets out employment forecasts, by ZAP planning area, consistent with the forecast produced for the London Plan.

**Table 4.9: Employment Forecasts**

<table>
<thead>
<tr>
<th>ZAP Area</th>
<th>2001</th>
<th>2016</th>
<th>2001-16</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Isle of Dogs</td>
<td>57,200</td>
<td>127,900</td>
<td>70,700</td>
<td>124%</td>
</tr>
<tr>
<td>2. Deptford/Lewisham/Greenwich</td>
<td>23,100</td>
<td>26,300</td>
<td>3,200</td>
<td>14%</td>
</tr>
<tr>
<td>3. Greenwich Peninsula &amp; East Greenwich</td>
<td>16,300</td>
<td>21,900</td>
<td>5,600</td>
<td>34%</td>
</tr>
<tr>
<td>4. Stratford/Leaside/Royals</td>
<td>39,300</td>
<td>59,800</td>
<td>20,500</td>
<td>52%</td>
</tr>
<tr>
<td>5. Barking/Havering Riverside</td>
<td>37,300</td>
<td>39,200</td>
<td>1,900</td>
<td>5%</td>
</tr>
<tr>
<td>6. Woolwich/Belvedere/Erith</td>
<td>26,300</td>
<td>30,100</td>
<td>3,800</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Thames Gateway London</strong></td>
<td>199,500</td>
<td>305,300</td>
<td>105,800</td>
<td>53%</td>
</tr>
</tbody>
</table>

On this scenario the Thames Gateway London area as a whole would grow by 106,000 jobs compared with a growth of 636,000 for London as a whole.
The jobs are overwhelmingly concentrated at the western end of the Gateway. On this scenario the Isle of Dogs, which is not strictly in the officially designated Thames Gateway area, would grow by a further 70,000 jobs. This is mainly due to the proposed development at Canary Wharf. Such a level of growth would, amongst other things, require Crossrail to be built. There would also be a further 20,000 jobs in Newham, at Stratford and the Royals.

**4.7 Forecast Conclusions**

The forecast scenarios set out above have provided a range of alternative growth levels for the Thames Gateway. These are summarised below. The difference between the upper and lower limits can perhaps be thought of in terms of transport provision as the difference between the existing committed schemes and those set out in the Mayor's Transport Strategy. However, transport schemes themselves are not sufficient to realise these growth levels. More fundamentally, the choice of transport schemes is likely to influence the distribution of growth within the Thames Gateway. The table below summarises the growth scenarios:

**Table 4.10: Summary of Growth Scenarios**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Jobs Growth 2001-16</th>
<th>Households Growth 2001-16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tempro Policy</td>
<td>76,700</td>
<td>72,500</td>
</tr>
<tr>
<td>South East Share</td>
<td>112,400</td>
<td>117,500</td>
</tr>
<tr>
<td>Trend</td>
<td>152,100</td>
<td>120,500</td>
</tr>
<tr>
<td>LTS London Plan</td>
<td>180,300</td>
<td>127,400</td>
</tr>
</tbody>
</table>

Set against the ZAP 2016 aspirations:

325,800 158,500

It is apparent that the ZAP figures are well outside the envelope of even the most ambitious of the scenarios analysed above. Our best current estimate for the two key figures, allowing for judgements on the availability of major sites, a "policy-on" thrust and favourable decisions about transport and other investment priorities, would be for the job growth figure to be around 150,000 (range 110-190,000) and household growth to be around 120,000 (range 117-127,000).

**4.8 The Thames Gateway Potential in Context**

What emerges clearly from this analysis is that planning aspirations for both the Thames Gateway and the wider South East exceed what can be perceived to be a realistic share of growth arising in Southern England. Choices need to be made both between different locations in Southern England - Thames Gateway, London - Stansted, Milton Keynes and South Midlands and Ashford - but also between locations in the Thames Gateway. In short, the planning capacity for growth exceeds what can be justified by a realistic appraisal of the likely regional economic outcome.

This is especially important within the Thames Gateway in respect of the current study of transport and development. Attention should be focused on sites which support a mutually reinforcing synergy between development opportunities, the potential for private investment and the role of transport infrastructure in stimulating downstream investment in jobs and housing development.

In our view, investment in transport infrastructure has a clear role to play in ramping up the scale of development output. This is because employment locations fundamentally require good transport accessibility. The manufacturing and distribution sectors require good road access, whilst offices require public transport accessibility as well. Furthermore, any step change in housing development also requires improved transport provision in the Thames Gateway in order to induce a major shift in current market patterns of housing moves.
In England most housing moves are local\textsuperscript{22} - some 60 per cent of moves are of 5 miles (8 km) or less and 75 per cent are within 10 miles (16 km). The average household moves about every 7.5 years and the main drivers of housing moves are as follows:

<table>
<thead>
<tr>
<th>Driver</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanting to buy</td>
<td>36%</td>
</tr>
<tr>
<td>Change in personal circumstances</td>
<td>27%</td>
</tr>
<tr>
<td>Larger house or better area</td>
<td>12%</td>
</tr>
<tr>
<td>To live independently</td>
<td>11%</td>
</tr>
<tr>
<td>Job related move</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
</tr>
</tbody>
</table>

The 2001 Census indicates that there are 1,075,300 households in the Thames Gateway London Boroughs and Kent and Essex Districts (total Borough/Districts rather than the Thames Gateway component). Thus, if these households show the average propensity to move there could be the following pattern of moves within a 10 mile radius of the Thames Gateway districts:

- Total moves in 7.5 years: 143,370
- Total moves 2001-2016: 286,750
- Total moves within 10 miles: 215,060

Of course not every household move will move to a new house. The very great majority of moves are within the existing housing stock. The Housing Market Report\textsuperscript{23} indicates that approximately 11 per cent of all housing market transactions are to new dwellings; although in recent years this percentage has been falling. Assuming a similar proportion for rental transactions this means that the indigenous population of the Thames Gateway district could generate a requirement for some 23,700 new dwellings up to 2016 within 10 miles of the relevant districts.

Even if all these were to be provided within the Thames Gateway this simple calculation shows that to achieve the scale of development which the Thames Gateway is capable of (say, the suggested range of 117-127,000 above) then there will need to be major changes to established patterns of housing moves. In essence, it will be necessary to achieve a significant increase in moves associated with migration and job related change of housing location.

To assist with this process of more longer distance and job related moves, and perhaps also moves associated with the availability of cheaper housing in an attractive environment, it is important to provide improved transport accessibility within and to/from the Gateway. This is because, first, a higher rate of non-local moves requires good access to jobs, either in existing employment locations or in "new" locations. Second, because jobs in the fastest growing economic sectors (office or B1 based jobs), are most dependent on good quality transport access, particularly public transport facilities.

We have illustrated in this Chapter that the planning aspirations for the Thames Gateway exceed what has been achieved in the past, and what could be achieved by 2016 given the continuation of past trends and a relatively optimistic upward adjustment. Planning aspirations also exceed the "reality check control total", in terms of the overall level of demand in the South East. Although it is not

\textsuperscript{22} See the Report of the 1997/98 Survey of English Housing (DETR)

\textsuperscript{23} Housebuilder Housing Market Report, No.88, August 1999
formally part of this project to provide a review of market aspirations from a developer or investor's perspective, it may be useful to provide some commentary on this issue.

4.9 "Market Reality"

We all know that in much of the Thames Gateway, market demand is low and uncertain. This reflects the area's need for regeneration and the need to enhance market confidence. However "The Market" is not all one thing. It comprises three broad interest groups: landowners, developers and end users.

Landowners want to sell low-value land which may have a low existing value (farmland, or worn-out industrial or extractive sites) for high-value development, at the price of the latter. Sometimes they want to take part in realising the value, not just in disposing as early as possible. They may hold on to land if they cannot achieve high values at present.

Developers/housebuilders ideally want to build in safe, popular already-established places where houses will sell readily. They want to build on cheap land (i.e. they do not want to pay landowners for the value they themselves are creating), and they know that in such areas higher land prices are inevitable - so they are also, to a greater or lesser extent, interested in areas and sites with a higher-risk / lower-price combination. For employment development, they want to build in areas with good access: by motorway/main road for distribution and "business parks", by rail for offices where a wide varied labour pool is otherwise difficult to tap. They also want to avoid "abnormals" - whether site conditions or assembly difficulties.

End users in the housing market mostly want a home that is in a pleasant, safe, established place with good schools and services, and access to a choice of jobs for both partners; and where the house will rise in value or at least not fall. Particularly in the London metropolitan region, there are important variants to this: some related to choice (such as for a more urban and sociable lifestyle); some enforced, notably by the great pressure in the regional housing market. End users in the business market, as employers, want to lease or buy where they can serve their markets (mainly by road, but also face-to-face) and where they can draw on a good range of staff.

Policy seeks to:

- Meet housing and employment demand (the "market" cannot do the first, it generally can do the second)
- Regenerate Thames Gateway (the market will not do this on its own)
- Bring brownfield land back into use (often needing incentives)
- Create reasonably-balanced communities (the market and the planning system together can do this, but only slowly and locally)
- Protect environmental assets (countryside, town quality, ozone layer...)
- Avoid political confrontation leading to inability to deliver.

So "the Market" is not going to deliver what policy wants, unless several conditions are met. First, the level of risk incurred in land acquisition and abnormal development costs needs to be limited. Second, areas for housing development should be underpinned by improved access to employment locations. Third, the planning system needs to deliver clear and timely decisions and, fourth, there needs to be a perception of improving quality of place and security.

From a market perspective, interventions need to focus on reducing "risk". On the supply side, the more certainty there is of steadily improving quality, access, and a pipeline of conflict-free sites, the less values will be discounted for risk, and the faster investment will be committed and values will rise. On the demand side, the same commitments will similarly help trigger a "virtuous circle" of attractiveness, which will support rising land values with rising sale prices and rents - as significant locations in the Gateway become much more areas of choice than hitherto.
Our assessment of the transport / development relationship fits within this construct. We are not simply trying to identify technical bottlenecks in the transport system, given certain assumptions about development future. Nor are we, beyond that, just adding questions about extra capacity which might be released by better transport, although both are important issues. We are trying to identify how transport investment can act as part of the package of measures which will stimulate investment, maintain it over the medium to long term, and leave the Thames Gateway eventually as a self-sustaining competitor to equivalent locations on the other sides of London. Critical in this, as argued at 4.8 above, is the need to prioritise transport investment at those locations within the Thames Gateway which have the best prospects for development to clearly focus demand on the realistically achievable winners.

4.10 Conclusions

There is the physical supply-side capacity to develop more housing in the Thames Gateway and allocate more employment land than market demand can support. This is not necessarily surprising as one of the objectives of the Thames Gateway initiative is to stimulate regeneration. However, the magnitude of the difference between what has been brought forward in the recent past, even if tempered by a more optimistic assessment of what the Thames Gateway's share of regional economic growth might be in the future still represents a considerable gap between the supply-side capacity, (per ZAP, say 160,000 households and 330,000 jobs); and a realistic view of the scale of demand.

There is no single figure for household or employment growth which represents the exact expression of market demand. Demand is variable but there is a clear linkage between the scale of growth in housing and jobs which can be achieved. This is because major shifts in current patterns of housing moves need to be supported by the provision of additional local jobs and an improvement to public transport connections to both existing and "new" employment locations.

Improved transport connections, especially public transport links, can play an important role therefore both in stimulating the movement of additional households into the Thames Gateway and in creating the necessary conditions in order to attract new employment generating activities. Thus, whilst transport investment may not directly create higher land values, it can create the conditions necessary to attract potential demand for additional housing and employment development leading to higher land values.
5. Transport and development interaction

5.1 Strategic and Local Transport

Settlements require a range or 'layering' of transport facilities, each serving trips of varying lengths and purposes. The conception in the Thames Gateway needs to pay equal attention to strategic and local networks, and the means whereby these are integrated. We deal with these in turn below.

5.2 Strategic Transport

Three major transport proposals are of undoubted strategic sub-regional significance: CTRL (full operation, 2007), Crossrail, and Thames Gateway Bridge. A fourth important proposal - a DLR extension to Barking, Dagenham and Rainham - is essentially a local link but has the ability to release a significant amount of potential development in its immediate corridor. The three projects all have the capability to help shape development choices and urban structure over sizeable tracts of the Thames Gateway.

Nonetheless, the relationship between "strategic" transport facilities and development in the Thames Gateway needs to be closely examined. While we cannot, in the limited time available for this study, examine all of the arguments, we highlight some aspects in the following paragraphs.

The regeneration areas are mostly closely related to established rail corridors (the North Kent line, and the c2c lines to Tilbury and Southend). These provide for longer distance movements to central London, as well as providing an alternative to the car for some internal east-west movements, including education, shopping in the inner areas, and to the coast for recreation. However, the existing settlements have high levels of car use for both local and longer journeys, and the road system caters for the great majority of all trips, even the journey to work.

Strategic rail improvements (CTRL international and domestic, and Crossrail) can significantly reduce the percentage of commuting by car, but the following must be recognised:

They will play a limited role in serving inward commuting to sites within the Thames Gateway (because only the two east/west directions are served)

They will have little effect on the mode split of local journeys (say, up to 5 miles), which account for the great majority of traffic.

Basic questions regarding the strategic rail schemes are:

Are they sufficient to trigger area-wide regeneration (as opposed to individual sites)?

If built, do they release greater development capacity?

The answer in both cases is yes, but that the strategic rail schemes will not achieve this by themselves. This conclusion is based on the roles that strategic routes will perform. In terms of the rail routes, their main function is to provide "inbound" accessibility to non-residential activities in central London. The south east rail network, including the two key lines through Thames Gateway, serves this function above any other. They are relatively little used, and are unsuited, for other journeys, simply because any particular station can be reached only from two directions.

For inbound accessibility to concentrations of employment and other activities within Thames Gateway itself, much more reliance must be placed on local transport networks; hence the conclusion above that strategic rail schemes by themselves need to be supported by attractive local public transport networks in order to realise the full development potential.
5.2.1 Ebbsfleet

The relationship between strategic long-distance transport facilities and development is neither straightforward nor direct. It depends on the trip making and development characteristics. At Ebbsfleet three strategic rail facilities are proposed:

CTRL International services to the Continent (2007)

CTRL domestic services to Stratford and St Pancras, and to both Ashford and beyond and to Medway and beyond (potentially 2007).

Crossrail adopting the North Kent Line as far as Woolwich and thence via Docklands to Central London and thence further west to Heathrow and other destinations.

Aspirations for Ebbsfleet include:

A major transport hub with local, national and international public transport services

A location for major commercial and mixed use development including housing (20,000 jobs and over 3,000 homes)

A Parkway Station with a 9,000 space car park

The reconciliation of these roles will require careful planning, especially since there is potential for conflict between them. For example, a basic criterion for attracting both commercial development and park and ride rail passengers is proximity to the station platforms. Parking and commercial developments are thus competing for the space closest to the station. This is a major issue for the masterplanning of the area, the resolution of which might involve different solutions at different phases of development, or giving priority to one role over another. The following might be seen as relevant factors:

In the early phases, the emphasis might be on park and ride car parking around the station;

As development in the wider area increases, total traffic generation including park and ride will overload the highway network, and so development with lower car trip generation could take place on some of the car parking area (in effect reducing park and ride traffic to allow for trip generation by commercial development). This could work if local transit services (Fastrack) offer a sufficient alternative to the car for access to Ebbsfleet;

If demand is strong enough to justify the extra cost, the remaining car parking could be provided in multi-storey format, thus releasing further land for development within the immediate catchment of the station;

Given the competing demands on parking spaces from park and ride rail users, commuters to Ebbsfleet employment, and visitors to the area, priorities can be established to inform a parking management strategy that allocates spaces, for example on the basis of price, length of stay or another device.

In addition there will be a need to reconcile the operation of Ebbsfleet with the objectives of the North Kent Thameside transport strategy. A target was established in 1999 for the development overall to have a public transport mode share of 40% (and a private car mode share of 60%). This may be difficult to achieve at Ebbsfleet if, as currently expected, 75% of people using the station arrive by car.

It is beyond the scope of this project to determine answers on these points. The relevant point here is that the potential for development created by the new public transport hub is very much dependent on the conception and design of the areas (a) around the public transport stops and portals; (b) within the reasonable "station to office" walk catchment; and (c) in the wider hinterland of commercial interest.

The planning of Ebbsfleet apparently has not yet reached the stage where these relative roles have been determined. It is therefore difficult to judge to what extent the strategic transport facilities will
Relationship between transport and development in the Thames Gateway

enhance or diminish the development potential. What has been determined, through this and earlier studies, is that unless development in the area generates minimal proportions of trips by car, the strategic road network (A2/M2, Dartford Crossings etc) will be unable to cope, even with the currently planned increases in capacity. This is summarised in the table at the end of this chapter.

5.2.2 CTRL International Services

The certain arrival at Ebbsfleet of international rail services (2003; full service 2007) give it a potential edge over competing locations seeking inward investment: comparable in some ways to places with an adjacent airport - though some of this is perceptual, in that the direct links are to Paris, Brussels and Lille, not the much wider range that an airport would usually bring. So they do make it more likely that North Kent Thames-side, and Ebbsfleet in particular, could compete to attract office / B1 jobs in business sectors with growth potential. Crossrail and CTRL domestic services should further reinforce this. And because the decision was taken in 1998, the 2003/2007 dates are now there as potential "early win" targets.

5.2.3 CTRL Domestic Services

The regeneration potential of Ebbsfleet International station is augmented by the (2007) potential for domestic services. They clearly support the effort by providing a fast direct link to St Pancras (and, via Stratford, to Canary Wharf), comparable to the sort of access that East Croydon has in South London. The routes are currently out for consultation. The SRA published a consultation document on CTRL domestic services in February 2003. This set out an initial appraisal of a number of options for the services that included through running from the CTRL via Ebbsfleet to the Medway Towns and beyond as well as via Ashford to East Kent.

The SRA appraised options on the basis that the service would be, as far as possible, supplementary to the existing service. However, due to capacity constraints at Rochester, the options for serving the Medway Towns all included substitution of existing services.

Kent County Council and Medway Council have recommended options for serving Medway Towns with no or reduced substitution of existing services and produced a revised economic case. The options supported by the Kent local authorities are currently being considered by the SRA with a recommendation on the proposed service plan for CTRL domestic services expected later this summer.

Beyond Ebbsfleet, the potential released within the study areas would appear to be useful, but far from dramatic:

there are limited new development sites that could be brought into play within 800 metres of the stations served; and

the Medway towns already have quite a high proportion of rail commuting to London, served by a relatively good train service to both the City and the West End, and it is likely that the frequency of CTRL domestic trains serving Gravesend and further east to the Medway towns would be 4 trains per hour (not necessarily all additional).

5.2.4 Crossrail

Crossrail will be a very important addition to the transport infrastructure in Thames Gateway. It would significantly enhance development opportunities in Greenwich & Bexley Riverside and North Kent Thames-side: it would add to the commercial attractiveness of Ebbsfleet, and to the development potential east of Abbey Wood. However, it is not the case that Crossrail's case depends on its effects in the Gateway because it serves many other important purposes. Also, even without Crossrail some lower level regeneration of the Thames Gateway would take place.

Crossrail would serve the Thamesmead-Erith and North Kent Thames-side areas directly and Barking Reach/Dagenham indirectly via a possible DLR or Transit connection from the Royal Docks. The principal benefits of Crossrail would occur in the catchment areas up to around 800 metres from the
proposed stops. To release more new development potential the stations will need to be connected to new areas outside the immediate catchment area by high quality local public transport, integrated with major local public transport investment, and combined with the re-designation of sites within station catchment areas for development.

Assuming such potential is realised, Crossrail would significantly increase travel opportunities to central London and to Canary Wharf as well as providing fast access to Heathrow and Stansted airports. This too could be a major advantage in attracting businesses to the areas served by Crossrail.

5.2.5 Thames Road Crossings

Cross-river links, particularly upstream of Dartford, offer the prospect of knitting together parts of the Thames Gateway to become more like the rest of Outer London, with economic and social links in more directions and more choice of employment, homes and entertainment. There has thus tended to be a policy thrust in favour of such linkages for many years. Various studies have nonetheless found it difficult to make a strong regeneration case for the provision of new road crossings of the Thames. This is partly because the benefits are in part seen as a result of improved image and perception, which inevitably are difficult to quantify.

Two proposed road river crossings have been included in the transport tests summarised in the table at the end of this chapter: the Silvertown link (outside our main area of study) and the Thames Gateway Bridge (which includes a bus transit link connecting East London Transit on the north side of the river with Waterfront Transit on the south side of the river which would in effect connect the North Circular Road A406 and Beckton across the Thames to the Thamesmead spine road east of Woolwich. A Lower Thames road crossing between Thurrock and North Kent Thameside has also been suggested, but not defined as a project.

A number of studies have been undertaken into the impacts of the Thames Gateway Bridge. Having considered the various arguments, the main points for this study are that:

Development of the Greenwich & Bexley Riverside and Barking & Havering Riverside areas is not dependent upon the Bridge; though on the southern (Thamesmead / North Bexley) side it would have positive effects in terms of attracting employment investment;

The Bridge would enlarge the area that is accessible within a given time to people each side of the river, both by public and private transport, but the significance of this in promoting development is difficult to judge, especially compared to the accessibility improvements offered by other public transport projects in the area (e.g. DLR extension to Barking Reach and Crossrail to Greenwich and Bexley Riverside);

Some labour market and business development advantages can thus be identified, and they benefit areas targeted for regeneration, but they are not great in scale;

On this basis we conclude that the decision on the Thames Gateway Bridge should be made by weighing the different impacts in relation to its costs, but that in this process the argument of releasing or stimulating development potential should not be over-played. There is a scenario in which it can be argued that the Bridge would have a positive impact on development (particularly on the south side), but there is another scenario in which the trip making encouraged by the bridge is of relatively little value to the area, and could even be counter-productive (congestion on the north side). The overall judgement then has to be set against the cost of the Bridge.

The specific arguments rehearsed in various studies are briefly summarised in Appendix D.

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24 For example, see the contribution to the debate made by: SACTRA, 1999, Transport and the Economy; Llewelyn-Davies for TfL, 2002, Thames River Crossings: Economic and Regeneration Impacts; and Whitelegg, 2002, Thames Gateway River Crossings: A Social, Economic and Environmental Assessment
5.3 Local Transport

"Developers will want to see a quantum advance on the public transport commitments before they even consider going on site"

(Alex Nickson in "Regeneration & Renewal", 28th March 2003.)

5.3.1 The Requirements

Transport must serve a range of access requirements, but in terms of volume of movement, the most important are local in character. So although the strategic transport links are vital in attracting and shaping the economic potential, it is the local transport provision for the Thames Gateway that will be the main determinant of how people actually travel, and the degree of sustainability that is achieved.

Investment in local transport systems in Thames Gateway needs to satisfy accessibility and trip-making demands in a way that:

1. Reduces existing high levels of car use, a task common to virtually all settlements in the UK. The growth and intensification occurring as part of the Thames Gateway project could help with this task in the existing settlements.

2. Enables and promotes the building of new settlements that achieve higher standards of sustainability than existing settlements, and avoids the excessive costs of road investment (or high levels of congestion) associated with high levels of car-dependency.

These objectives are linked, since the greater the mode shift away from car for existing travel, the less stringent will be the requirement to limit car travel generated by new development. In practice new public transport services will link into existing settlements, and will thus open up potential for mode shift in all the areas served. This is an explicit objective of the Fastrack proposals for North Kent Thames-side, for example, where a target has been set for 40% of all motorised trips to be made by public transport by 2025 (Kent Thames-side, "Draft Fastrack Specification", April 2003).

A number of local transport schemes are envisaged for the Thames Gateway, at varying levels of specificity and commitment. A key question is whether the schemes as currently envisaged are sufficient in extent and quality to enable the identified development potential to be realised.

There are two parts to this relationship, namely capacity and quality; and neither is straightforward. In our view the extent and character of local transport provision is not something that should be assumed will simply follow on from key development decisions, but needs to be planned in relation to those development decisions. The criteria that need to be satisfied include:

Will the capacity of the public transport system be sufficient to accommodate the expected and desired demand, consistent with the target mode split?

Will the public transport system be of a quality that will attract users who have a car at their disposal?

Will this quality be sufficiently self-evident to persuade property investors and developers to adopt development formats with low levels of parking and car use?

Will other aspects of local transport provision, especially parking supply and price at employment retail and other facilities, be consistent with the desired mode share and levels of demand?

If it were simply a matter of matching the capacity of the system to the anticipated eventual passenger demand, the choice of transport system could safely be assumed to be a matter to be resolved at the local planning stage. In the Thames Gateway there are wider matters to be addressed as explained below. The choices available are:

1. Conventional bus

2. High quality bus (vehicles, infrastructure, facilities and services), with or without segregated running
3. High quality bus with variants of power supply and guidance technology (usually referred to as "intermediate" modes or Bus Transit)

4. Tram or light rail, with or without segregated running (generally with, to get the benefits).

During the course of this study there was considerable debate about the type of local public transport system that should be provided in the Thames Gateway area. There were differences of view between members of the study team, and between them and people on the client side. It has not been possible to fully reconcile these views in a way that is satisfactory to all parties.

The conventional bus is assumed to be a component of all local transport systems in the Thames Gateway, providing for access on non-core routes with low to medium demand. There is no particular issue here. The main point at issue is whether bus-based systems (choice 2 above) are capable of meeting the criteria set out above.

Two scenarios can be put forward.

5.3.2 Scenario 1 - Bus Based Transit

This is the scenario currently being developed for the East London Transit, Greenwich Waterfront Transit, and Fastrack (North Kent Thames-side).

The main argument in favour of the bus-based systems currently being pursued is that of infrastructure cost. Buses using the general road network are cheap to provide, especially at relatively low passenger densities. Segregated bus ways (roads solely for buses) are cheaper to provide than segregated tramways. For street running on existing roads the cost of bus infrastructure is negligible compared to that required for tram operation. However, the infrastructure costs tend to converge on wholly new sections of track, such as can be provided in the Thames Gateway new settlement areas. Also, costs get closer to that of the tram once guidance systems and electric power supply systems are introduced.

Cost is not the only point in favour of the bus, however. The Fastrack specification, for example, highlights the advantage of being able to implement the system in relatively small sections that can be timed to coincide with development. In addition, the long lead time expected in certain development areas (e.g. Eastern Quarry) means that route flexibility is important. Changing tram routes is much more expensive and difficult than changing bus routes.

The capacity argument is acknowledged, that buses deliver a lower passenger capacity for any given service frequency than the tram. Nevertheless, some of the bus transit systems in Thames Gateway are being developed to a specification that will allow them to be converted at some future date to intermediate mode or even to tram operation. This can work if increasing patronage results from more sites being developed, but it does not work if the final development densities are too low to support a tram service.

The specification for Fastrack (and it is assumed the other bus transit systems) is for a very high level of quality compared to conventional buses, including well designed, air-conditioned and fully accessible vehicles, real-time information systems, and facilities at stops. The aim is to ensure that the image presented by the system is sufficient to persuade all concerned to design for and to use public transport.

Overall, the arguments in favour of bus transit for the circumstances of most parts of the Thames Gateway are persuasive if bus transit is sufficient to attract investors and developers and to affect their decisions, and if one can thereby ensure that a high proportion of travel is undertaken using the system. In those circumstances, it would be very difficult to justify the expense involved in building tram systems. The main difficulty here is that we have been unable to uncover any example of this having been done before, either in the UK or elsewhere. The benchmarking exercise found few examples of new public transport oriented development, and none that demonstrated low-car development formats in relation to the bus. One possible exception to this is the proposed guided bus
system serving satellite extensions to Cambridge, but this is still at the planning stage, and unlike Thames Gateway is an area where there is very strong pressure for development.

5.3.3 Scenario 2 - LRT / Tram Based Transit

This scenario is currently being developed for Barking / Havering Riverside (proposed DLR extension from the Royals) and for Medway (proposed Medway Transit system, which is at an early stage of development). It can be argued that only LRT or tram can provide the degree of certainty and commitment necessary to attract and promote development at a high density in areas like Barking, Greenwich / Bexley Riverside, and North Kent Thames-side.

LRT / tram (particularly Light Rail) is undoubtedly more expensive than other modes, at least in terms of construction cost. Operationally, at high passenger densities there comes a point where a tram at least is cheaper to operate than bus systems. (Cost comparisons with intermediate modes are less easy in view of the small number of systems currently built.)

LRT / tram, however, has the big advantage of a powerful image, due partly to the appearance of the vehicles, but more importantly due to the fixed certainty of the system, the commitment to the route taken, and the message that it sends out that there will be high quality services in perpetuity. The large-scale investment signifies to everyone that there is a high level of commitment to public transport, and that utilising that investment is an imperative sufficient to persuade people that services will not be allowed to wither and diminish over time.

The higher capacity offered by rail-based systems is also significant. To justify the investment it is necessary to build at high densities and to organise roads and parking so as to limit the use of cars for local journeys. The pressure thus created on developers and planners alike thus works to ensure the success of the system. The clearest example of this is Barking Reach / Dagenham Dock; not only are the upper levels of development probably only achievable in transport terms with new rail-based access (whether DLR plus ELT, or DLR plus ELT tram, or ELT tram only), but also developers are unlikely to commit to high-density schemes (other than right on the waterfront) without the certainty of fixed routes.

It is therefore apparent that the "inflexibility" of LRT/ tram is, in this scenario, portrayed as a positive factor. Investors, developers and end users want certainty that the system will meet their requirements in the long term, not the sort of flexibility that leaves open the question as to what level of service will still be there in five years.

Development in much of the Thames Gateway will have to overcome the problems of poor image, low land values, high remediation costs, etc which account for the slow progress that has been made since the broad strategy was adopted more than a decade ago. Consequently, if local public transport is inadequate (or even simply perceived as being so), and does not raise the stakes significantly in terms of image and credibility, then the prospects of meeting the aspiration of sustainable settlements will not be fulfilled.

A significant issue in terms of LRT/tram development is that systems can only be implemented in relatively large phases. Timing and co-ordinating development to minimise the gap funding to support services until patronage has built up requires skilful planning. Our example of Wateringse Veld (see section below) shows that it can be done, however.

There are a number of examples of high density development being promoted in relation to new or extended tram or light rail lines, and these are set out below (see "Benchmarking"). These examples demonstrate that there are circumstances in which the rail-based transit is seen as affordable and deliverable in the context of new settlements. An as-yet-unrealised example is Granton, Edinburgh (see example below). Consequently, arguments to the contrary in Thames Gateway should therefore be confined to the specifics of the project, rather than relying on general truths or accepted approaches.

Wateringse Veld (Den Haag, Netherlands)
Relationship between transport and development in the Thames Gateway

**Case example of public transport-oriented development**

Waterings Veld is a new suburban district at the south west corner of the Den Haag agglomeration.

It comprises 8,000 houses on 57 hectares of land, accommodating 20,000 people. The development includes schools, shopping facilities and leisure/sports facilities. The construction period is 1996-2005.

Two features are of particular importance:

5. The high density of development at a location that is relatively remote from the city centre;

6. High quality public transport links provided simultaneously with the early phases of the development, in particular a direct tram link to Den Haag opened in 1999, but also bus links.

The implementation of the tram route and the housing project started at the very same moment in 1996. The reason behind this was to prevent new residents from buying a second car by providing them with a public transport connection as soon as they moved in. A fortunate side-effect was that most builders could make use of the tram to go to work.

The local authorities involved were able to proceed both projects simultaneously because the housing project was programmed to be built over a short period of time, therefore providing the necessary critical mass to sustain the tram relatively soon. Other housing developments are generally divided in phases and spread over a longer period of time, which restricts a simultaneous implementation.

**Granton, Edinburgh** - Comparison of Masterplans with and without Tram Schemes

Note: the "with tram" masterplan has been adopted, and funding for the tram linking the area with Leith and central Edinburgh was approved by the Scottish Office in 2003.

<table>
<thead>
<tr>
<th>1998* (Without Tram)</th>
<th>Jan 2000* (With Tram)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residential:</strong></td>
<td><strong>Residential:</strong></td>
</tr>
<tr>
<td>45ha @ 45-85 dw/ha</td>
<td>48ha @ 30-170 dw/ha</td>
</tr>
<tr>
<td>2,925 du (approx.)</td>
<td>5,000 du (approx.)</td>
</tr>
<tr>
<td><strong>Office/Business Space:</strong></td>
<td><strong>Offices:</strong></td>
</tr>
<tr>
<td>50,000m² covering 23.3ha</td>
<td>75,000m² covering 8ha</td>
</tr>
<tr>
<td>including a 12-15ha urban business park with an anchor tenant comprising 4,500m²</td>
<td></td>
</tr>
<tr>
<td><strong>Industry and Workshops:</strong></td>
<td><strong>Light Industry:</strong></td>
</tr>
<tr>
<td>45,000m² covering 15ha</td>
<td>67,500m² covering 8ha</td>
</tr>
<tr>
<td><strong>Retail:</strong></td>
<td><strong>Mixed Use Local Centres:</strong></td>
</tr>
<tr>
<td>2.25ha (0.05ha per 1ha residential land); and 2ha within central mixed use/leisure area</td>
<td>2 local centres comprising 12ha of land</td>
</tr>
<tr>
<td><strong>Community/Institutional:</strong></td>
<td><strong>Schools:</strong></td>
</tr>
<tr>
<td>20.25ha community uses; and 10.75ha institutional uses</td>
<td>8ha (primary and senior)</td>
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<td><strong>Leisure:</strong></td>
<td><strong>Leisure:</strong></td>
</tr>
<tr>
<td>6ha</td>
<td>see mixed-use local centres above</td>
</tr>
<tr>
<td><strong>Open Space:</strong></td>
<td><strong>Open Space:</strong></td>
</tr>
<tr>
<td>Unknown</td>
<td>30ha</td>
</tr>
<tr>
<td><strong>Total Land Take: 124.55ha</strong>*</td>
<td><strong>Total Land Take: 114ha</strong>*</td>
</tr>
</tbody>
</table>
Relationship between transport and development in the Thames Gateway

* This table is representative of the 'key' land-uses. The total site area is 176ha. The figures exclude the land take for:
- water activity, core roads, infrastructure corridors and incidental open space.

NB: Building heights in January 2000 masterplan vary between 1-2 and 8-10 storeys.

**Note on Parking Standards:**

The standards contained within the January 2000 masterplan are based upon those recently adopted by the City Council, therefore maximum (rather than minimum) standards of one space per residential unit and one space per 50m² of gross commercial floor space are advocated.

The proposals also allow for:

- The majority of car parking being in communal rather than private or dedicated use to ensure the maximum use of the land;
- Car parking being provided in internal courts, undercroft or on the street - not in vast open car parks;
- The landscaping of car parks as treed squares within which the cars sit, the squares being framed by buildings not roads;
- The use of pricing systems (including residential and employment permits) to encourage the minimal effective levels of car use and ownership; and
- The staged reduction in car parking provision for access to work could be introduced by the use of green transportation plans as the quality of, and improvements to, public transport increases. Certain car parks within the masterplan are thus later development sites.

The masterplan is based upon a flexible grid pattern/urban block structure; the overriding principle being to provide choice of mode and route.

**5.3.4 The Basic Choice**

The choice between the two scenarios would appear to turn on which factors are seen as the most important. Table 5.1 below attempts to summarise the main differences. It illustrates that if the most important criteria are believed to be low cost, flexibility of phasing, and speed of construction, then bus transit will be the logical choice. If, on the other hand the most important criteria are believed to be credibility and certainty, good image, high capacity and environmental performance, then LRT/tram is the logical choice.

It may thus be concluded that the differences of view exposed in the study are in fact differences of judgement as to what order of local public transport investment is needed to achieve the aspirations for development in the Thames Gateway.

If the levels and types of development aspired to for the Thames Gateway can be achieved on the basis of bus transit systems, as currently planned, then this will represent a considerable success in minimising infrastructure investment.

In acknowledging the robust reasoning behind the bus transit approach, however, we must warn of the potential dangers of relying on an approach that is both innovative and untested - especially in an area with such substantial disadvantages for development as found in the Thames Gateway.

**Table 5.1: Attributes of Transit Modes**

<table>
<thead>
<tr>
<th>Positive Attribute</th>
<th>Negative Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cheap to build</td>
<td>X</td>
</tr>
<tr>
<td>2. Quick to build</td>
<td>X</td>
</tr>
</tbody>
</table>

Expensive to build
Less quick
3. Easy to phase delivery  X  *  ~  Delivery in 'large chunks'
4. Proven technology  ~ X  *  Unproven technology
5. Credible\textsuperscript{A}  ~  *  X  Less credible
6. Good Image  ~  *  X  Less good image
7. High Capacity  ~  *  X  Lower capacity
8. Environment friendly\textsuperscript{B}  ~  *  X  Less environment friendly

Key:
\textsim  Tram/LRT
\texttimes  Bus (including Kerb Guided)
*  Intermediate Modes (Various Systems)

Table Notes:
\textsuperscript{A}  Credible is a cryptic adjective used here to include the degree of certainty and persuasiveness of the system in delivering high density and high quality levels of service in the long term. The acid test is whether developers will adopt low car use development formats on the certainty that the transit system will handle a large proportion of generated trips.
\textsuperscript{B}  Environment Friendly means zero emission and low noise at point of use.

5.4 Benchmarking Public Transport Oriented Development

To aid further consideration of the case it may be instructive to look at cases where public transport oriented development has been attempted.

The table below (Table 5.2) lists some examples of urban extensions based on bus, tram, light rail and heavy rail systems.

It is apparent that the best examples producing significant public transport mode share are where development form discourages car use, and where high quality public transport is implemented in an integrated way with the development. The Dutch probably provide the best examples.

Table 5.2: Examples of Public Transport Oriented Development Worldwide

<table>
<thead>
<tr>
<th>Development Promoted in relation to Bus Transit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place</td>
</tr>
<tr>
<td>Runcorn, Cheshire</td>
</tr>
<tr>
<td>Almere, Netherlands</td>
</tr>
<tr>
<td>Curitiba, Brazil</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Place</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Utrecht, Netherlands</td>
</tr>
<tr>
<td>Den Haag, Netherlands (Wateringse Veld, Rijswijk)</td>
</tr>
<tr>
<td>Amsterdam</td>
</tr>
<tr>
<td>Portland Oregon</td>
</tr>
<tr>
<td>Freiburg, Vauban district suburban extension</td>
</tr>
<tr>
<td>Granton, Edinburgh</td>
</tr>
</tbody>
</table>
Relationship between transport and development in the Thames Gateway

<table>
<thead>
<tr>
<th>Supported by and requires tram to achieve low car share.</th>
<th>2003.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joondalup, Western Australia</td>
<td>New settlement and station with Park and Ride rail services to Perth. Public transport mostly for journeys to city (dormitory function). Most of Joondalup is low-density car-based form of development</td>
</tr>
<tr>
<td>Copenhagen, airport extension</td>
<td>New suburban community between airport and city centre. Funded through uplift in land values expected from new airport line Under construction</td>
</tr>
<tr>
<td>Tokyo, Makuhari</td>
<td>New business and residential centre 40 km from Tokyo centre served by fast rail service to airport Still being developed. Residential district 84 hectares, 8,900 households, 26,000 population (10,000 by 2001) (Gross density 105 h/h per hectare) Major commercial centre including HQ offices, congress centre, hotels, etc.</td>
</tr>
</tbody>
</table>

Other Evidence of Patronage Uplift due to Quality Upgrade

| Leeds guided bus | Quality bus route with some guideway sections 20% increase compared to former bus claimed, but some data inconsistencies |
| Manchester | Metrolink 20% more than previous bus corridor |
| Birmingham | Showcase bus routes More than 20% increase in patronage |
| Portland, Oregon | Believed to be uplift in passengers to downtown on tram corridor formerly served by bus. 40% uplift compared to bus |
| Stated preference surveys by SDG (Theoretical) | Tram compared to bus Stated 20-25% uplift. |

5.5 Transport and Development Linkages

5.5.1 Area Assessment

A further strand of analysis in this study is based on the relationship between transport capacity and development capacity, area by area. The results of this are presented in Table 5.3 below.

Table 5.3: Relationship of Development to Transport Interventions by Area

The above table is available in Word format as a download from the foot of this page.
5.5.2 Transport and development interactions

Table 5.3 draws together the capacity issues, scheme proposals and the levels of jobs and homes they could support.

The conclusions are drawn on the assumption that transport interventions should be proportionate to the need to encourage and sustain development in areas where it can be served by a range of public transport services that minimises car use and avoids excessive travel by road. As discussed in Section 3, transport schemes may be worthwhile in their own right, but are not necessarily aligned to the strategic patterns of development that are envisaged.

The form and scale of development in each area is clearly a function of the extent to which planned transport schemes come forward and, in some cases, further proposals are developed. In considering the development potential of each area, the extent to which committed and proposed schemes can overcome constraints has been examined.

Consideration is also given to the location of sites in terms of their current and potential accessibility. It is assumed that, in addition to proposals, local improvements would be implemented to access and serve developments as appropriate; for example, the provision of local bus services and other measures that may be secured by developer agreement.

It is also a priority to ensure that modal shift changes induced by public transport improvements are consolidated by planning conditions, travel plan initiatives, parking controls etc. to deter or limit car use.

With regard to timing it is recognised that, in general, transport schemes are developed in response to existing problems and then to overcome them; similarly, development responds to opportunities that are generated by the availability of land. Ideally, a process of optimisation brings transport and development into alignment. However, if the timescales of transport and land use decisions are entirely different this results in stasis within the system.

This lack of synergy between transport and land use trajectories can be illustrated by reference to the transport constraints identified in Section 3 and their relationship to the travel needs of new development in each area.

The information contained in Table 5.3, suggests further key issues will need to be resolved if transport interventions are to achieve the required development outcomes:

- Housing areas within the M25 must have high quality rail access to central London if diverse and sustainable communities are to be created;
- Public transport networks supporting development in the Barking and Woolwich areas must provide a hierarchy of rail, transit and bus services that effectively integrate developments with surrounding communities;
- New river crossings in addition to major public transport improvements may contribute to the release of further development potential;
- Kent Thames-side and Medway/Grain cannot be driven by trying to build their way out of highway constraints. Isolated public transport improvements will be inadequate, and must be replaced by full integrated rail/transit/bus networks that change modal behaviour.
- Thurrock Riverside lacks the focal points for the creation of transport hubs/networks that could become the heart of sustainable communities. Highway constraints will not begin to limit development for 5 to 10 years; beyond this, a more coherent pattern of development is needed that can be served adequately by public transport.
Basildon, Canvey, Shellhaven and Southend face similar problems of working towards the strengthening of existing communities around less car-dependent modes of travel. Public transport strategies are needed for these areas, otherwise patterns of development will only reinforce existing travel behaviour.

5.5.3 Summary

Lack of transport is a significant constraint on development. In some but certainly not all areas currently-proposed interventions would release the full potential of sites. The main reasons for this are:

Not all transport capacity constraints would be resolved by current proposals (c2c line, highway capacity etc.).

Currently proposed rail/transit schemes do not serve all sites.

Some of the sites are disparate and dispersed, and are not readily integrated into public transport networks.

However, where development can be achieved there are significant gains arising from major transport interventions, provided these are supported by local strategies and improvements. The broad findings are as follows:

Barking & Havering Riverside and Greenwich & Bexley Riverside areas illustrate the scope for development to be phased as the transport hierarchy is built and for significant amounts of dense urban development to be achieved with a fully integrated network.

North Kent Thames-side areas will fail to achieve its full potential unless networks can be better integrated and mode shift effected so that car use can be reduced to levels consistent with highway constraints.

Areas north of the river between Thurrock and Southend face various threats to success, including highway constraints, but currently the levels of intervention proposed are not proportionate to the scale of the problem. A more tightly defined strategy of site development in relation to public transport networks is required.

In general, it is easier to achieve housing growth in most areas, as travel needs are easier to influence and to satisfy. The location of new jobs in an area inevitably results in car commuting and this can only be overcome in the most well served town centre locations.

Crossrail is regarded as essential to regeneration and the economic success of the Woolwich to Ebbsfleet arc including Greenwich and Bexley Riverside as without it development would be limited by lack of capacity and poor accessibility by all modes. New river crossings, in addition to major public transport improvements, may contribute to the release of further development potential, but are on a less significant scale given the jobs and markets that are already accessible in East, Central and SE London.
6. Strategic focus in the Thames Gateway

6.1 End State Logic or Aspiration

The analysis in the preceding chapters leads us to the following broad view of the potential of the Thames Gateway:

- Total development potential for housing as set out in the ZAPs is not unrealistic in the long term, but will not be achieved by 2016;
- Development at this level could be distributed on a somewhat different basis to that identified in ZAPs, in order to maximise the potential for public transport use. In particular the Greenwich and Bexley Riverside area could capitalise on Crossrail investment;
- Densities can be increased provided that local public transport is good enough (and perceived as such); to stimulate such development; and
- The vision for the entire Thames Gateway area can be achieved, but requires a much greater commitment to public transport investment than has been envisaged to date. The timescale is likely to be longer than that assumed in the ZAPs, partly due to the long term nature of major transport investment, and partly due to demand.

6.2 Logic of the Focus and Other Areas

Delivery of the overall vision will be difficult if efforts and resources are fragmented and dispersed throughout the Gateway sub region. It is preferable to concentrate resources (investment and planning and construction effort) in a few places at a time. This applies to the release of major development potential, and does not mean delaying the normal development pipeline.

Not all development potential is dependent on major transport investment decisions at the regional level. Some of the areas in the Thames Gateway have been judged during the study process to have relatively less potential for development and have transport constraints which appear more difficult to overcome. We are not saying that development outside focus areas should be frozen, but that it should be determined through the normal planning process at the local level, in response to demand.

From a Thames Gateway perspective, the recommended focus is as follows:

6.2.1 Barking and Havering Riverside

Although there is significant market interest, realising the full potential of this area is dependent upon major investment in local public transport. Without an integrated high capacity public transport system, development intensity would not reach its full potential. Consequently, if strong public transport orientation cannot be achieved in the short term, the bulk of development should be held back until major public transport infrastructure and road connections are committed. The aim should be a high density development spine through the area within the medium term. During the period of construction, the remainder of the site currently sterilised by power installations can be prepared for future development, in conjunction with further public transport investment. The long term outcome of this approach could be a total dwelling capacity some 10,000 or more than without the major public transport investment.

A quality bus transit system is under consideration, the first phase of which is committed running on existing roads to the north of the area. Later phases could operate on an alignment via Barking Reach, although this would not provide sufficient scope to warrant the highest densities of development.

The current assumption is that the fixed-track public transport investment will be a new DLR shuttle from Canning Town, linking to the present system across the Roding Valley. To reach Central London or Canary Wharf would require changing to another DLR service or the Jubilee Line at
Canning Town and one of the main advantages of a DLR service (as opposed to a different system) might be reduced. There are also issues about the ability of DLR to be satisfactorily integrated with the new residential environment at Barking Reach. In the light of this, the issue of which transit technology (or technologies) is most appropriate could be reviewed.

In terms of the present assumptions, the DLR, with or without Crossrail, and possible new stops on the c2c line would provide much improved radial rail services, but proposed local services may not have the capacity or coverage to serve high density development. The proposed ELT is designed with the capability to be upgraded to a tram-based system - this should be kept under review and its feasibility examined in relation to high density development. There is also scope to expand the transit system to provide access to more local destinations, including other centres and public transport interchanges.

6.2.2 Greenwich and Bexley Riverside

This area has potential for a "second linear city" running parallel to the current settlements served by stations on the North Kent Line. Although subject to various open land and nature conservation designations, there are large tracts of land that could be said to be of comparatively little value in their current state. Re-designation for development (in effect reverting to earlier planning aspirations in the Thamesmead era) could open the way for a reversal of the area's poor image, a boost to the currently flagging industrial area adjacent to the river, and a revival of the image and attractiveness of Thamesmead.

This element of the strategy will, however, require:

- strong commitment and planning over a period of 10 years;
- An expanded transit system to provide a feeder network of links from new and existing development to rail stations (transit technology to be determined in relation to development density);
- Major phases of development to be timed to capture the benefit of Crossrail services which could be operating by 2011 at the earliest.

6.2.3 North Kent Thames-side

The full CTRL service to St Pancras should be operating by 2007. Ebbsfleet needs to be planned and prepared as a major development focus to coincide with that date. Current aspirations for Ebbsfleet are not fully supportable by planned local transport improvements, which may not achieve a reduced level of car use consistent with highway capacity constraints. The proposed bus-based local transit scheme does not provide certainty that all new development can be served by public transport of adequate quality or capacity to achieve a transport and development outcome that meets sustainability objectives.

The development of other parts of NKT also needs to be up-rated and this should be achieved through more ambitious masterplanning, and the orientation of development around a high grade local transit system. Development guidelines should address issues of urban design quality and reduced car use, and marketed as such. With this approach the same or higher development capacity can be achieved without encroaching on Green Belt and open land designations as envisaged in the ZAPs.

6.2.4 Southend

Currently Southend is attempting to cope with a congested road system, for example by introducing more bus priority measures. There are long-standing plans for a northern relief road, and this is seen locally also as a means of enabling urban expansion without further overloading the road network. We believe that if such a major addition to the road network is constructed, then expansion on a much greater scale can be envisaged. This would take the form of an extension further eastwards to take in something in the order of 300 hectares of land that is mostly MOD firing ranges at Shoebury; it could also be combined with an extension of the rail passenger service beyond the Shoeburyness terminus.
6.2.5 Non-focus areas

Other areas have development potential and plans to exploit it (Medway, Thurrock, Basildon, etc.). However, these either have scattered sites and variable potential or, for example as in the case of Rochester Riverside, they can be developed through the planning process as it stands. In these other areas, development potential is not significantly dependent upon major new transport investment.

6.3 Peripheral Development Areas

Although Green Belt land is highly protected in policy terms, the current debate within the planning profession about the future of policy centres on the compatibility of Green Belts with the principles of sustainable development. Whilst green belt land is not considered sacrosanct, the recent ODPM Committee paper on sustainable housing and communities notes:

"The Statement further calls for better use of land, by improving design, increasing densities and using brownfield sites to the full and announces a public service agreement target aimed at protecting the valuable countryside around the towns and cities and in the green belt".

With regard to the land identified to meet the ZAP aspirations this has particular relevance to Medway and North Kent Thames-side where the aspirations include the release of green belt land to accommodate 12,400 and 7,000 dwelling units respectively. It is not our purpose to provide a view on the merits of development in relation to Greenbelt or other designated areas. However, in terms of the sequence of development in the Thames Gateway as a whole, it is important to note that there is land potentially available in Greenwich and Bexley Riverside with similar capacity. In our judgement, these areas are better related to major public transport investment (i.e. Crossrail and Greenwich Waterfront transit), than are the peripheral Medway sites identified in the ZAPs.

Figure 6.1: Strategic Focus in the Thames Gateway

25 The Royal Town Planning Institute, May 2002, Modernising Green Belts: A Discussion Paper. We also acknowledge other contributors to the debate, such as the Council for the Protection of Rural England and the Town and County Planning Association.

26 House of Commons – ODPM: Housing, Planning, Local Government and the Regions Committee, HC 77-II of Session 2002-03, January 2003, Planning for Sustainable Housing and Communities: Memoranda Submitted to the Committee
Relationship between transport and development in the Thames Gateway

Figure 6.1: Strategic Focus in Thames Gateway

Legend:
- **Orange**: Transport and Development Focus Areas
- **Red**: Outer Conservation Areas
- **Yellow**: Key Development Potential

Legend:
- **Transport & Development Focus Areas**
- **Outer Conservation Areas**
- **Key Development Potential**

Reference:
- **Lambeth-Darwin**
- **Relationship between Transport and Development in the Thames Gateway**
- **Final Report**: April 2000

Ref: [19189]
7. Phasing of transport and development

7.1 Trajectory of Change

This section summarises the steps towards realisation of the full potential identified for the Thames Gateway. It is based on a "fair wind and following seas" scenario involving firm commitments and powerful "delivery vehicles".

7.1.1 Barking Reach

- Fully completed by 2016
- Dual market: City and Dockland commuters, together with indigenous families "moving up" to houses
- Rapid development to minimise pump priming of public transport
- Transport not the only barrier to be overcome

Transport interventions

- High density development reliant on high grade public transport
- New, strong public transport connection into the existing major public transport routes (DLR, c2c), to Barking centre, and to local employment

7.1.2 Greenwich and Bexley Riverside

- Medium to long term major opportunity
- Step change in potential dependent on alternative view of current open land designations
- Medium to long term phasing in view of timing of major transport infrastructure and re-planning of area
- Adds to prospects for new and revitalised centres at Thamesmead, Woolwich and Erith.
- Strengthen access to employment and Belvedere and Woolwich.

Transport

- Restructure community and development around new transit system, linking to stations on North Kent Line and also served by Crossrail (from 2011 at the earliest)
- Thames Gateway Bridge is useful but judged not to be critical to achieving this scenario.

7.1.3 North Kent Thames-side

- Delivery vehicles need urgent attention to avoid undershoot of potential
- Upgrading of Ebbsfleet as a major new centre requires urgent planning review
- Later wins including Eastern Quarry dependent on early phase success
- Green Belt incursions unnecessary
- Mix of internationally-oriented business, local services, local housing demand, and commuter demand
- Major shift of "travel styles" and development quality needing vigorous promotion

Transport
Relationship between transport and development in the Thames Gateway

- Early win at Ebbsfleet building on CTRL catalyst
- Dependent on matching CTRL strategic transport with high quality local transit
- Medium term boost from Crossrail, including improved airport access

7.1.4 Southend
- Long term expansion
- Expansion focused to east of Southend with much greater potential than identified to date
- Job-led growth dependent on expanded and revitalised economic role

Transport
- Exploits upgraded road and public transport system, at the same time ameliorating existing local transport problems. Conversely it is assumed that major growth is dependent on new road and rail transport infrastructure.
- Linear character of conurbation to be continued as highly conducive to transit, both for commuter and local travel demand. Implemented primarily through extension of c2c line.

7.1.5 Other Areas
- Development encouraged and managed using existing mechanisms and aspirations
- Not crucially depended on major investment in strategic transport schemes
- Deferment of peripheral expansion on green field sites in Medway.

7.2 Delivery Mechanisms

It was not an explicit part of our remit (ref. the ODPM's research specification "Objectives" paras. 7 - 10 and "Outputs" para. 11) to advise on the organisational structures, or the resources, associated with the ambitious aspirations for the study area. Nonetheless, implicit in the approach which we have arrived at is the need to recognise Thames Gateway as very much an organisational and financial "special case".

As we have argued, something on this scale has not been done before, and certainly not in the highly-integrated way necessary to maximise the quantitative and qualitative benefits sought; not, either, in such a relatively unhelpful market setting.

The sort of change, and concentrated attention, needed to deliver the aspirations is in our view completely outwith the potential of a response which relies just on conventional tools like the normal planning process, developers' responses within that, and planning obligations as the source of a significant proportion of the infrastructure needs.

In the areas where we regard "Strategic Focus" as the key, this suggests to us a logic of special mechanisms which can shape the development process and the transport investment in tandem, and which can couple with that all the other aspects of delivery from marketing through enforced joint local authority working to advance funding of initial services.

This does not mean that the whole of Thames Gateway needs a single "super LDDC". Several of the areas appear to be capable of realising the aspirations within the existing framework and broadly on current plans: Basildon, Thurrock, Medway are probably in this category. But for the focus areas, getting the most out of the transport / development interface will not be achieved without mechanisms explicitly targeted at that objective.

There is a public interest case here. Thames Gateway, despite its market problems and site constraints, is in many ways a very good place to attempt this ambitious scheme. It has critical mass,
and a lot of transport infrastructure already. Every house built here is better than one built in most other competing locations, in regeneration and environmental terms. If it can be achieved, it can be a model for the rest of the country and Europe.

But it does need machinery - to convert that evident public interest and potential into achievement, at the ambitious scale envisaged.
8. Conclusions

8.1 Outcomes in Homes and Jobs

The central question is "what needs to be done in terms of transport to realise the development potential of the Thames Gateway?" We have sought to answer this by looking at the development potential of several of the key areas, by comparing this with planning and transport criteria, and by considering the demand side in the context of the south east.

Our conclusion is that the total physical potential for growth in the number of homes as set out in the ZAPs is of the right order of magnitude for the long term. However, our preference would be for a redistribution of sites from peripheral to more central areas in order to meet sequential test and accessibility criteria.

In terms of jobs, the number set out in the ZAPs is considered over-optimistic in terms of likely demand, and the ability of public transport networks to serve them adequately.

In terms of demand, the report points out that meeting the aspirations for growth would involve a major stepping up of development rates, and that the higher points in the range are unlikely in terms of total demand in the south east.

Different cases have been considered and we summarise our conclusions below.

8.1.1 "Zero Case"

This assumes that the only transport schemes will be those already committed, or are "very likely" such as the Woolwich DLR extension. Local transport improvement would be relatively small scale and delivered through LTP type projects, and with contributions from s106 agreements.

The outcome would be a continuation of the relatively slow pace of growth. The form of development would be predominantly low to medium density and largely car-dependent. There would be little emphasis of employment at transport nodes, reliance on existing centres of employment (including central London and Docklands) and probably continued pressures for retail, leisure and employment development on out-of-centre sites close to major roads.

Public transport would continue to play a relatively small role in the total transport mix, and the road network would become increasingly congested, despite the gains in homes and jobs being relatively modest.

The conclusion here is that if only committed approaches and trends are continued into the future, the desired quantity and quality of growth cannot be achieved, even in the long term.

8.1.2 "Current Aspirations"

This assumes that the transport schemes set out by TGSP are implemented in the medium to long term.

This scenario would service a higher level of development than in the zero case. However, there are identified problems of rail overcrowding, including on the c2c, and increasingly congested road networks, for example in relation to river crossings. There is a concern, though not a quantified one, that the scenario of transport schemes might encourage longer distance travel, including by car, and that transport capacity would thereby to an extent be absorbed by increasing trip lengths rather than increasing homes and jobs.

Doubts have been expressed about the suitability of the package of transport schemes for the task of turning round perceptions of the area, sufficiently to attract development at the scale envisaged in ZAPs or of the type envisaged in "Sustainable Communities". The doubt is about the balance of investment as between strategic and local transport, and the reliance on buses for local public transport.
Relationship between transport and development in the Thames Gateway

transport. This in turn raises doubts that the full potential of the Thames Gateway can be realised, even in the long term.

To the extent that developers will not play using the sustainable development rules, sites will slowly be built out at sub-optimal levels, thus pre-empting the ability to realise the full development potential.

8.1.3 "Higher Aspirations"

To overcome the limitations of the current aspirations scenario, we have considered a further case whereby more emphasis is given to the generation of strong and credible local public transport as the driver of high density, mixed use development, and the creation of significant centres for employment and other facilities.

Although it is not possible to supply evidential proof of the workability of this scenario, benchmarking of similar attempts around the world suggest that successful models have involved rail-based local public transport.

It is acknowledged also that the required synchronisation of transport and development schemes to achieve the desired results has not been attempted before in the UK, and would in addition be going ahead in an area which at present could be regarded as fairly inauspicious. Consequently, commitments would need to be backed with special and more powerful delivery mechanisms.

8.2 Further Transport Schemes

A range of schemes are considered in this report, including both strategic and local schemes supplied by the Thames Gateway Strategic Partnership. Two changes are put forward.

First, the report discusses the case for higher order (rail-based) local public transport provision, due to concerns that the currently proposed bus-based systems may not attract development interest on the scale or format desired. It is also suggested that such high grade systems are likely to have a more powerful impact in releasing development potential than certain of the strategic transport schemes currently on the table, and in particular the river crossings east of the M25.

Second, although not explored in detail, the report has found evidence to suggest that by 2016 the c2c line west of Dagenham will be overcrowded to the point where it would be uncomfortable for users. It is therefore suggested that some priority is given to exploring ways of upgrading capacity on c2c. This is something for further consideration, but is not central to our main argument.

8.3 Assumptions Regarding Ambitions and Market Response

It is assumed that most development will be carried out by the private sector. It is therefore important to provide a robust analysis of how the private sector will bring forward development, and how it will respond to various levels of Government transport intervention. In section 2 we explored the current development ambitions as expressed in the ZAPs. Having investigated further the potential of various sites in the Thames Gateway, it was concluded that the total quantum of development expressed in the ZAPs was of the right magnitude, but with two important qualifications:

- First, a proportion of the development in the long term should be redistributed away from sites with poor prospects for transport sustainability and towards others that have greater potential in this respect;
- Second, the total development potential cannot be realised by 2016. This is partly because of the likely longer response time to Crossrail, but more importantly because of limits to the capacity of the private development sector, and to the overall demand in the south east.

Earlier in this report we have discussed the model of causation we have assumed to apply in relation to transport investment and market response. Two points bear repetition here, noting also that they are closely related.
The development industry will respond positively where there is confidence of sufficient demand combined with low risk over the entire development period.

The development response will be of a higher order (more policy compliant, higher density, higher quality) where public transport systems are committed in advance and are perceived to be of a very high quality.

If these conditions are not present, then the market response will be hesitant and likely to result in sub-optimal development schemes. This in fact is a fairly accurate characterisation of the market response in Thames Gateway over the past 10 years.

Having said these things, it must be acknowledged that this model of causation is difficult to validate with hard data, and impossible to verify as a model that is generally applicable in all circumstances. It is, however, based on our knowledge and experience both generally and specifically in relation to Thames Gateway.
9. Appendix A: Travel characteristics and capacities

9.1 Data Sources

The Department for Transport's Tempro program provides trip end and mode split data for existing and future years by local authority area. Tempro has been used to provide an indication of mode shares for each zone of change area. Local authority areas are wider than the zones; hence, mode shares derived are for larger areas.

Transport for London's London Transportation Studies (LTS) model is used to assess the effects of land use and infrastructure changes for London and areas immediately outside the M25. LTS gives trip ends and mode shares by zone; data has been aggregated for each zone of change area and mode shares compared with Tempro. LTS also gives private and public transport link loadings, and these are compared with capacities to assess future network conditions.

Tempro and LTS model three hour am peak periods (0700 to 1000). Mode share and network capacities given below are for an average 3-hour period. Trips are given for an am peak hour (0800 to 0900) assuming that 40% of peak period trips occur in the peak hour.

Tempro and LTS provide outputs at 2016, which have been used for the purposes of the following assessments. Where LTS has been used to examine trips by mode to/from Action Plan areas, trip-end growth 2001 to 2016 due to new homes and jobs has been removed and growth due to Action Plan projections substituted. The trip data for Action Plan areas reflects, therefore, the full projections.

9.2 Modal Characteristics

Tempro am peak period mode shares for 2016 by area are summarised in Table A.1.

In general, car is the predominant mode of travel in all areas. Rail use is low with the exception of outbound trips in the inner Thames Gateway areas where it is 11% of trips. Bus use is also typically low, although in the inner areas it exceeds 10% for inbound trips.

<table>
<thead>
<tr>
<th>ZAP Area</th>
<th>Car</th>
<th>Bus/ Coach</th>
<th>Rail/ Underground</th>
<th>Walk/ Cycle</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in</td>
<td>out</td>
<td>in</td>
<td>out</td>
<td>in</td>
</tr>
<tr>
<td>5. Barking / Havering</td>
<td>58%</td>
<td>54%</td>
<td>11%</td>
<td>9%</td>
<td>3%</td>
</tr>
<tr>
<td>6. Woolwich/ Belvedere/ Erith</td>
<td>56%</td>
<td>53%</td>
<td>15%</td>
<td>9%</td>
<td>2%</td>
</tr>
<tr>
<td>7. Kent Thameside</td>
<td>66%</td>
<td>64%</td>
<td>7%</td>
<td>8%</td>
<td>1%</td>
</tr>
<tr>
<td>8/9. Medway/ Grain</td>
<td>60%</td>
<td>68%</td>
<td>7%</td>
<td>2%</td>
<td>1%</td>
</tr>
</tbody>
</table>
Relationship between transport and development in the Thames Gateway

<table>
<thead>
<tr>
<th>10. Sittingbourne/Sheerness</th>
<th>63%</th>
<th>65%</th>
<th>4%</th>
<th>7%</th>
<th>1%</th>
<th>2%</th>
<th>32%</th>
<th>26%</th>
<th>100%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Thurrock</td>
<td>72%</td>
<td>66%</td>
<td>6%</td>
<td>7%</td>
<td>1%</td>
<td>2%</td>
<td>22%</td>
<td>24%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>12. Basildon</td>
<td>69%</td>
<td>65%</td>
<td>6%</td>
<td>8%</td>
<td>1%</td>
<td>2%</td>
<td>24%</td>
<td>25%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>13. Canvey/Shellhaven</td>
<td>66%</td>
<td>67%</td>
<td>6%</td>
<td>7%</td>
<td>1%</td>
<td>2%</td>
<td>27%</td>
<td>24%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>14. Southend</td>
<td>62%</td>
<td>63%</td>
<td>9%</td>
<td>8%</td>
<td>2%</td>
<td>2%</td>
<td>27%</td>
<td>26%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Total Area</td>
<td>62%</td>
<td>61%</td>
<td>9%</td>
<td>8%</td>
<td>2%</td>
<td>6%</td>
<td>27%</td>
<td>26%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

LTS models future year trips by mode and thus reflects the influence of capacity constraints and proposed schemes. LTS has been run for 2016 with the draft London Plan assumptions of land use change and transport proposals. For the areas included within this study, LTS assumes 48,000 new homes and 36,000 new jobs; these projections are lower than the ZAP totals, hence LTS outputs need to be adjusted to reflect this. LTS includes all major transport schemes, including Crossrail and the Thames Gateway Bridge.

Table A.2 compares Tempro and LTS mode splits by area. As LTS only models trips by motorised modes, the Tempro data excludes walk trips in this table. Tempro shows that high levels of car use are maintained for both inbound and outbound trips at 2016 (taking account only of demographic changes). LTS shows similar levels of car use are maintained at 2016 for inbound trips as in Tempro despite significant public transport improvements. For example, private car use in Barking Havering is 77% in LTS compared with 80% in Tempro.

For outbound trips, LTS shows lower car use than Tempro. For Barking and Havering, private car use is 48% compared with 73% in Tempro. LTS confirms the conclusion above that mode share can be more readily reduced for home-based trips than trips to employment.

Table A.2: Comparison of Tempro and LTS Mode Shares

<table>
<thead>
<tr>
<th>Area</th>
<th>TEMPRO</th>
<th>LTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private</td>
<td>Public</td>
</tr>
<tr>
<td></td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>Barking/ Havering Riverside</td>
<td>80%</td>
<td>73%</td>
</tr>
<tr>
<td>Woolwich/Belvedere/ Erith</td>
<td>77%</td>
<td>72%</td>
</tr>
<tr>
<td>Kent Thameside</td>
<td>89%</td>
<td>84%</td>
</tr>
<tr>
<td>Medway/Grain</td>
<td>88%</td>
<td>95%</td>
</tr>
</tbody>
</table>

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9.3 Trip Distribution

The distribution of private and public transport trips associated with each area influences the extent to which specific capacity constraints are relevant. Equally, the reliance of growth in each area on specific transport schemes is a function of the trip movements they service.

LTS has been used to extract 2016 private and public transport trip movements for each area. LTS zones correspond very closely with the boundaries of the Action Plan areas.

LTS trip matrices have been modified by the abstraction of trip growth from 2001 to 2016 and its replacement with trips associated with action plan homes and jobs. The mode and distribution characteristics of LTS trips have been retained, but controlled to numbers of trips generated by projected numbers of homes and jobs in each area.

LTS models all trips within an area bounded approximately by the M25; outside this area trips that do not pass through London or use the M25 are not modelled. Residual volumes have been derived for areas outside the LTS area, representing the difference between total trip ends and modelled trips. Residual trips will be primarily local trips or longer distance trips within the SE that do not use the M25 or rail routes via London.

Annex (Tables A.7 - A.15) summarises for each area trips by mode to/from each area by sector. The sectors used to aggregate trips for analysis are shown in Table A.3.

Trips are summarised in Annex 2 in the form of trips to/from each area and are average hourly flows for the am peak period (7 to 10 am). The sectors include other action plan areas (combined into inner, central and outer) and geographical regions in London and elsewhere. Central London trips are summarised separately - this is the LTS definition and corresponds with the area inside the Inner Ring Road (and congestion charging cordon).

Table A.3: LTS Trip Matrix Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>Local Action Plan Area</td>
</tr>
<tr>
<td>Thames Gateway Inner</td>
<td>Barking &amp; Woolwich</td>
</tr>
<tr>
<td>Thames Gateway Central</td>
<td>Dartford, Kent Thameside &amp; Thurrock</td>
</tr>
<tr>
<td>Thames Gateway Outer</td>
<td>Medway Towns/Grain, Canvey/Shellhaven, Basildon &amp; Southend</td>
</tr>
<tr>
<td>Central London</td>
<td>Inside Inner Ring Road</td>
</tr>
<tr>
<td>North East Inner</td>
<td>NE Inside M25</td>
</tr>
<tr>
<td>South East Inner</td>
<td>SE Inside M25</td>
</tr>
</tbody>
</table>
The summaries below discuss the trip distribution characteristics of each area. Table A.4 shows trips to/from Central London by mode for each area to illustrate differences in radial commuting patterns. The table shows trips from action plan sites and the rest of each area in 2016.

Private vehicle commuting to Central London from all areas is predicted to be 800 vehicles in the am peak hour, increasing to 1143 with the action plan sites. Vehicle commuting is highest from areas south of the river. Outbound commuting is lower with 854 vehicles/hour.

Public transport trips are higher and, given the distances involved, will be almost entirely by rail (with some commuter coach). Total trips towards London are predicted to be 15,155 per hour, rising to 21,433 with the action plan sites. To put this in context, over 300,000 people per hour enter Central London by public transport in the am peak period. Total outbound trips (1,149) are minimal.

The inner Thames Gateway areas generate most commuting to Central London from action plan sites, especially Barking/Havering (1,907), Woolwich/Belvedere/Erith (1,309) and Kent Thameside (1,099). All flows are a significant increase on existing movements. There are also significant commuter trips from Thurrock (503) and Medway/Grain (675) areas. Basildon and Southend sites are not significant generators of commuter trips.

Table A.4: Central London Trips by Action Plan Area (2016 am peak hour)

<table>
<thead>
<tr>
<th>Area</th>
<th>Private Vehicles</th>
<th>Public Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td>Action Plan</td>
</tr>
<tr>
<td></td>
<td>In</td>
<td>Out</td>
</tr>
<tr>
<td>Barking/ Havering Riverside</td>
<td>27</td>
<td>55</td>
</tr>
<tr>
<td>Woolwich/ Belvedere/ Erith</td>
<td>189</td>
<td>157</td>
</tr>
<tr>
<td>Kent Thameside</td>
<td>102</td>
<td>94</td>
</tr>
<tr>
<td>Medway/Grain</td>
<td>51</td>
<td>64</td>
</tr>
<tr>
<td>Sittingbourne/ Sheerness</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>Thurrock Riverside</td>
<td>107</td>
<td>124</td>
</tr>
<tr>
<td>Basildon</td>
<td>51</td>
<td>60</td>
</tr>
<tr>
<td>Canvey/ Shellhaven</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Southend</td>
<td>19</td>
<td>4</td>
</tr>
</tbody>
</table>

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9.3.1 Barking and Havering Riverside

Barking/Havering Riverside includes sites with potential for 17,500 homes and 5,500 jobs. Tempro shows in 2016 that 58% of inbound trips in the am peak would be by car (including passengers) and 54% outbound would be by car. There is moderate public transport use with 11% of inbound trips by bus and 11% of outbound trips by rail.

Table A.7 shows the additional am peak hour private, public and goods vehicle trips to/from the area as projected using LTS assumptions. Inbound private car trips (1388 trips) vehicles mainly arrive from the NE inner area (813). Inbound public transport trips (706) are also predominantly from NE inner (461). The LTS data suggests that most jobs are served by road and bus services from within local areas. Cross-river movements are negligible.

Outbound private car trips (2,240) and public transport (3,666) are much higher given the new housing sites identified. The highest private car trips are to NE inner (1,480), but most public transport trips (1,907) are to central London.

Goods vehicle movements (451 inbound/1,989 outbound) are mainly to local areas, but add significant volumes of traffic on access routes to riverside areas.

9.3.2 Greenwich and Bexley Riverside

The action plan envisages 10,250 homes and 7,300 jobs for this area. Table A.8 summarises am peak hour trips. Tempro shows that over 50% of am peak trips in 2016 would be by private car. There is significant inbound bus travel (15%) and outbound rail use (11%).

Table A.8 shows that inbound private car trips (1,721) are predominantly from local SE inner (882), although there are some trips from NE inner (256) crossing the river. Inbound public transport trips (1,328) are mainly local from SE inner (551).

Outbound private car trips (1,229) are mainly local to SE inner (521). Outbound public transport trips (2,662) illustrate the positive attraction of central London (1,309) and NE inner (455), which includes Canary Wharf. This shows the positive influence of Crossrail.

Goods vehicle movements (288 inbound/540 outbound) are mainly local and would be dispersed over a number of access routes.

9.3.3 North Kent Thames-side

The action plan envisages 30,000 homes and 41,650 jobs for this area. Table A.9 summarises am peak hour trips. Tempro shows that 66% of inbound and 64% of outbound trips would be by car. Bus use is moderate with 7% of inbound and 8% of outbound trips. Rail use is low with 4% of outbound trips by this mode.

Inbound private car trips (11,156) are predominantly from SE inner (1,666) and South outer (755), although there are some trips from NE inner (326) and central Thames Gateway (549). Inbound public transport trips (1,904) are mainly from areas on the fringes of SE and NE London.

Outbound private car trips (6,520) are mainly internal (820) or to SE inner (775). Outbound public transport trips (4,880) illustrate the positive attraction of central London (1,099).

Goods vehicle movements (3,334 inbound/2,040 outbound) are widely dispersed; many of the non-local movements are likely to use the M25.
9.3.4 Medway Towns

The action plan envisages 30,000 homes and 17,250 jobs for this area. Table A.10 summarises am peak hour trips. Tempro shows over 60% of trips being by private car. Public transport trips are typically 2% or less of all trips, except for inbound bus trips at 7%.

Inbound private car trips (4,483) are predominantly from south outer (359). Inbound public transport trips (1,279) are mainly from internal and local areas.

Outbound private car trips (5,711) are mainly south outer (639). Outbound public transport trips (4,541) illustrate the positive attraction of central London (675).

Goods vehicle movements (463 inbound/708 outbound) are widely dispersed; many of the non-local movements are likely to use the M25.

9.3.5 Sittingbourne/Sheerness

The action plan envisages 10,610 homes and 12,550 jobs for this area. Table A.11 summarises am peak hour trips. Tempro shows over 60% of trips by car with low public transport usage; 7% of outbound trips are by bus.

Sites in these areas are most likely to generate local trips within and around the Medway Estuary. Inbound private car trips (2,586) and public transport trips (1,311) are mainly from within the area or from outer Thames Gateway and South outer.

Outbound private vehicle (2,003) and public transport (1,879) are also predominantly local, although there are 184 public transport trips to central London.

Goods vehicle trips (418 inbound/310 outbound) are low and likely to have little impact on local roads.

9.3.6 Thurrock Riverside

The action plan envisages 17,800 homes and 8,900 jobs for this area. Table A.12 summarises am peak hour trips. Tempro shows 72% of inbound trips and 66% of outbound trips by car. Bus trips comprise 6% of inbound and 7% of outbound trips; rail trips are negligible.

Inbound private car trips (2,285) are predominantly from NE inner (229) and internal areas (138). Inbound public transport trips (589) are mainly from NE inner (72).

Outbound private car trips (3,629) are mainly internal (138) or to NE inner (373). Outbound public transport trips (2,902) illustrate the importance of central London (503) and NE inner (163) as the principal destinations.

Goods vehicle movements (457 inbound/983 outbound) are widely dispersed; many of the non-local movements are likely to use the M25.

9.3.7 Basildon

The action plan envisages 5,850 homes and 7,300 jobs for this area. Table A.13 summarises am peak hour trips. Tempro shows 69% of inbound and 65% of outbound trips by car. There is moderate bus use, but rail use is negligible.

Inbound private car trips (1,072) are predominantly from NE outer (269) and NE inner (98) areas. Inbound public transport trips (176) are mainly from NE inner (29).

Outbound private car trips (1,034) are mainly to NE outer (172) or NE inner (116). Outbound public transport trips (1,023) illustrate the importance of central London (310) as the principal destination.

Goods vehicle movements (190 inbound/261 outbound) are mainly internal or to/from South outer.
9.3.8 Canvey/Shellhaven

The action plan envisages 4,700 homes and 10,000 jobs for this area. Table A.14 summarises am peak hour trips. Tempro shows 66% of inbound and 67% of outbound trips by car. There is moderate bus use and negligible rail use.

Inbound private car trips (2,861) are predominantly from NE outer (80) and NE inner (80) areas. Inbound public transport trips (453) are mainly from NE inner (20).

Outbound private car trips (827) are mainly to NE outer (56) or NE inner (61). Outbound public transport trips (920) illustrate the importance of central London (148) as the principal destination.

Goods vehicle movements (231 inbound/104 outbound) are mainly to/from NE inner and outer.

9.3.9 Southend

The action plan envisages 5,350 homes and 9,350 jobs for this area. Table A.15 summarises am peak hour trips. Tempro shows over 60% of trips by private car. Bus use is moderate with 9% of trips inbound and 8% outbound, but rail use is 2% or less.

Inbound private car trips (1,581) are predominantly from NE outer (56) and NE inner (23) areas. Inbound public transport trips (1,559) are mainly from NE outer (61).

Outbound private car trips (470) are mainly to internal and local areas. Outbound public transport trips (1,227) illustrate the importance of central London (142) as the principal destination.

Goods vehicle movements (66 inbound/44 outbound) are mainly to/from NE inner and outer.

9.4 Transport Capacity in 2016 by Area

The capacity of road and rail routes serving each area has been examined using various sources relating to both existing and future conditions. Sources include published Transport for London, Strategic Rail Authority and Highways Agency statistics, and reports from local authorities in the Thames Gateway, including Local Transport Plans.

In addition, the London Transportation Studies (LTS) model has been used to provide an analysis of highway and public transport capacity on key screenlines in the Thames Gateway corridor. LTS has been run for 2016 including London Plan growth assumptions and all proposed transport schemes, including Crossrail. Tables A.5 and A.6 summarise respectively the highway and public transport flow/capacity and crowding ratios on routes across several screenlines. LTS data for the base year (2001) has also been examined to provide an indication of existing conditions.

LTS data is presented for an average hour within the 3-hour am peak period (0700 to 1000); peak hour loadings will be higher. For highway links, practical capacity represents the limit above which traffic conditions become highly unstable. For public transport links crowding factors are shown; a ratio of 1.425 represents very crowded conditions above which it becomes more difficult to maintain scheduled running times.

9.4.1 River Crossings

The Blackwall Tunnels and Dartford Crossings are already subject to congestion in the peak periods and both are operating above capacity in the am peak northbound at 2001; the only river crossings between these routes is the Woolwich Ferry, which has minimal capacity.

Table A.5 shows that the Blackwall Tunnels would be 14% above capacity northbound in the am peak hour at 2016. Dartford Crossings would be 22% over capacity in the am peak hour northbound and close to capacity southbound.

The Thames Gateway Bridge is intended to be a local crossing but, even with tolling, it is predicted to carry a flow of 3,340 vehicles per hour northbound, which is 87% of capacity. About only 40% of
vehicles using the bridge are entirely local (both trip ends within the six boroughs served by the crossing).

The Silvertown Link would be at 94% capacity. The Thames crossings would be close to capacity in 2016. TfL estimates that 41% of traffic on the Thames Gateway Bridge would be local movements within the six boroughs north and south of the river, the rest would have it least one end of its trip outside local areas. This suggests that some longer distance trips are being attracted, and this could affect conditions on local roads either side of the river.

Table A.6 shows line loadings on rail crossings of the river screenline. Crossrail is shown with a crowding factor of 1.45, suggesting that it is highly successful in attracting trips from other lines. The DLR Woolwich Extension carries 1,500 pph northbound, indicating its value as a new public transport river crossing.

**9.4.2 Barking/Woolwich Screenline**

The A13 eastwards from Dagenham to the M25 is a newly constructed high quality strategic route; capacity is currently being increased westwards to reduce delays at junctions such as Movers Lane and Prince Regent's Lane. The latter schemes are expected to give faster access to the A406 North Circular Road and the Blackwall Tunnels. Barking Reach will have direct access to the A13 at grade-separated junctions.

Table A.5 shows that the A13 to the west across the River Roding would be operating at 97% capacity in the am peak; this suggests that there is likely to be congestion on this route in the peak hour. The adjacent Ripple Road north of the A13 is also close to capacity.

South of the river, the route through Thamesmead (A2016) is within capacity (62%) east of the new bridge. Woolwich Road (A206) is estimated to be above capacity (101%) in the westbound direction; this represents a considerable worsening compared with 2001. Routes in this area are likely to be affected by traffic accessing the Thames Gateway Bridge.

Public transport loadings in Table A.6 show that the First Great Eastern services into Liverpool Street are very crowded (1.50) and the c2c line into Fenchurch Street via Upminster is approaching this level (1.35).

Barking Reach and riverside areas at Dagenham and Rainham have poor public transport accessibility being some distance from the c2c line into Fenchurch Street; services currently only stop at Rainham and Dagenham Dock. There are proposals for new stations at Renwick Road and CEME, although these will still be some distance from most sites and the line is expected to be very crowded in 2016 (1.68).

The latest figures published by c2c show that in 2001, 0.3% of passengers travelled in excess of capacity (PIXC) in the am peak. PIXC equates to 35% above the number of seats.

East London Transit (ELT) will penetrate the area and provide improved local connections to Ilford and, subsequently, Barking. The improvement of north/south routes is especially important in linking new and existing communities with facilities in centres to the north by public transport.

Given the capacity constraints on the c2c line, which would be expensive and difficult to overcome, alternative public transport links to the west would be needed. The proposed DLR Extension to Dagenham Dock via Barking Reach provides access to much of the area and complements ELT services. Table A.6 shows only 550 pph westbound using this route in the am peak, suggesting that its viability is dependent on high levels of development. However, in its absence, other public transport services have limited capabilities to serve new development areas.

South of the river, the North Kent Line (NKL) provides a stopping service between Chatham/Dartford and London, but has limited capacity. NKL already operates at capacity in the peaks and there is no possibility of running additional trains; longer trains may be a possibility. The operator, Connex South East, has an overall PIXC of 3.2%.
Crossrail and NKL would share track east of Woolwich and the number of services on each route has yet to be determined. It has been established that at least 4 tph above present levels could be accommodated. Table A.6 shows the combined Crossrail/NKL loadings, indicating no capacity problems on this section.

9.4.3 Dartford Screenline

The Dartford screenline represents operating conditions on road links only just inside the M25. North of the river, the A13 westbound has an average am peak period loading of 82%. South of the river the A206 and A2 are the main radial routes into London and are not congested.

9.4.4 East of M25 Screenline

The screenlines to the east of the M25 are drawn in slightly different locations. The road screenline is immediately to the east of the M25 to include traffic on access routes. The rail screenline is further east to intersect lines at more logical points.

National trunk road congestion maps already show localised problems on approaches to the M25 from the east, including the A127 and A2.

Table A.5 shows the A127 operating at 92% capacity in the am peak, suggesting that there will be significant congestion in the peak hour. The improved A2 is shown to be at 82% capacity.

Table A.6 shows that only the West Horndon to Upminster section of the c2c line is close to being very crowded (1.34); other radial rail routes are operating satisfactorily.

Table A.5: Private Vehicle Link Capacity1 by Screenline in 2016 AM Peak Hour (average hour during the am peak period 0700 to 1000)

<table>
<thead>
<tr>
<th>Thames Crossings</th>
<th>Northbound</th>
<th>Southbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link</td>
<td>Link Capacity</td>
<td>Flow</td>
</tr>
<tr>
<td>Blackwall Tunnel (A102)</td>
<td>3,410</td>
<td>3,897</td>
</tr>
<tr>
<td>Silvertown Link</td>
<td>2,200</td>
<td>2,100</td>
</tr>
<tr>
<td>Thames Gateway Bridge</td>
<td>3,850</td>
<td>3,340</td>
</tr>
<tr>
<td>Dartford Crossings (M25/A282)</td>
<td>6,100</td>
<td>7,400</td>
</tr>
<tr>
<td>Totals</td>
<td>15550</td>
<td>16740</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Barking/Woolwich</th>
<th>Westbound</th>
<th>Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link</td>
<td>Link Capacity</td>
<td>Flow</td>
</tr>
<tr>
<td>A123 (Ripple Rd)</td>
<td>979</td>
<td>907</td>
</tr>
</tbody>
</table>
### Relationship between transport and development in the Thames Gateway

<table>
<thead>
<tr>
<th>Link Description</th>
<th>Westbound Capacity</th>
<th>Westbound Flow</th>
<th>Westbound V/C (%)</th>
<th>Eastbound Capacity</th>
<th>Eastbound Flow</th>
<th>Eastbound V/C (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A13 (between jctns with King Edward's Road and Gascoigne Road)</td>
<td>4125</td>
<td>3994</td>
<td>97%</td>
<td>7645</td>
<td>2321</td>
<td>30%</td>
</tr>
<tr>
<td>A2016 (Eastern Way)</td>
<td>4125</td>
<td>2538</td>
<td>62%</td>
<td>2184</td>
<td>1780</td>
<td>81%</td>
</tr>
<tr>
<td>A206 (Woolwich Rd)</td>
<td>1061</td>
<td>1068</td>
<td>101%</td>
<td>3375</td>
<td>368</td>
<td>11%</td>
</tr>
<tr>
<td>Totals</td>
<td>10290</td>
<td>8507</td>
<td>83%</td>
<td>14149</td>
<td>6690</td>
<td>47%</td>
</tr>
</tbody>
</table>

#### Dartford

<table>
<thead>
<tr>
<th>Link Description</th>
<th>Westbound Capacity</th>
<th>Westbound Flow</th>
<th>Westbound V/C (%)</th>
<th>Eastbound Capacity</th>
<th>Eastbound Flow</th>
<th>Eastbound V/C (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A13 (between M25 J30 &amp; A1306 jct.)</td>
<td>4125</td>
<td>3364</td>
<td>82%</td>
<td>4125</td>
<td>2969</td>
<td>72%</td>
</tr>
<tr>
<td>A1306 (London Rd, between M25 and A13/A1306 junction)</td>
<td>1103</td>
<td>784</td>
<td>71%</td>
<td>2000</td>
<td>981</td>
<td>49%</td>
</tr>
<tr>
<td>A206 (A282 to A2)</td>
<td>3650</td>
<td>2069</td>
<td>57%</td>
<td>1529</td>
<td>981</td>
<td>111%</td>
</tr>
<tr>
<td>A226 (West Hill, between jcts. with Highfield Rd and Sheppard’s Lane)</td>
<td>4145</td>
<td>992</td>
<td>24%</td>
<td>1206</td>
<td>944</td>
<td>78%</td>
</tr>
<tr>
<td>A2 (west of M25))</td>
<td>8415</td>
<td>4548</td>
<td>54%</td>
<td>5775</td>
<td>3536</td>
<td>61%</td>
</tr>
<tr>
<td>Total</td>
<td>21438</td>
<td>11757</td>
<td>55%</td>
<td>14635</td>
<td>10131</td>
<td>69%</td>
</tr>
</tbody>
</table>

#### East of M25

<table>
<thead>
<tr>
<th>Link Description</th>
<th>Westbound Capacity</th>
<th>Westbound Flow</th>
<th>Westbound V/C (%)</th>
<th>Eastbound Capacity</th>
<th>Eastbound Flow</th>
<th>Eastbound V/C (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A127 (at Childerditch)</td>
<td>4125</td>
<td>3788</td>
<td>92%</td>
<td>3925</td>
<td>3811</td>
<td>97%</td>
</tr>
<tr>
<td>A13 (east of roundabout A13/A1012)</td>
<td>5775</td>
<td>2902</td>
<td>50%</td>
<td>5775</td>
<td>2467</td>
<td>43%</td>
</tr>
<tr>
<td>A1306 (between jcts with A1012 Clockhouse Lane)</td>
<td>1192</td>
<td>662</td>
<td>56%</td>
<td>3190</td>
<td>281</td>
<td>9%</td>
</tr>
<tr>
<td>A1013 (London Rd)</td>
<td>1192</td>
<td>125</td>
<td>11%</td>
<td>3265</td>
<td>79</td>
<td>2%</td>
</tr>
<tr>
<td>A226 (north-east of)</td>
<td>3265</td>
<td>508</td>
<td>16%</td>
<td>3190</td>
<td>102</td>
<td>3%</td>
</tr>
</tbody>
</table>
Table A.6: Public Transport Link Capacity by Screenline in 2016 AM Peak Hour (average hour during the am peak period 0700 to 1000)

<table>
<thead>
<tr>
<th>Thames Crossings</th>
<th>Northbound</th>
<th>Southbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trains / hour</td>
<td>Flow (Passenger)</td>
</tr>
<tr>
<td>Crossrail</td>
<td>12</td>
<td>28,900</td>
</tr>
<tr>
<td>DLR (from Woolwich)</td>
<td>15</td>
<td>3,300</td>
</tr>
<tr>
<td>CTRL (International)</td>
<td>8</td>
<td>1,500</td>
</tr>
<tr>
<td>CTRL (Domestic)</td>
<td>8</td>
<td>6,300</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Barking / Woolwich</th>
<th>Westbound</th>
<th>Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trains / hour</td>
<td>Flow (Passenger)</td>
</tr>
<tr>
<td>Ilford - Manor Park (First Great Eastern)</td>
<td>4</td>
<td>64,758</td>
</tr>
<tr>
<td>Barking - Upminster (c2c)</td>
<td>5</td>
<td>22,022</td>
</tr>
<tr>
<td>Dagenham Dock - Barking (c2c)</td>
<td>4</td>
<td>4,000</td>
</tr>
<tr>
<td>DLR Dagenham Docks - Dagenham Vale</td>
<td>10*</td>
<td>550</td>
</tr>
<tr>
<td>CrossRail and Connex (Abbey Wood)</td>
<td>9</td>
<td>16241</td>
</tr>
</tbody>
</table>

1 - Link capacity defined as practical capacity above which traffic conditions become unstable.
## Relationship between transport and development in the Thames Gateway

### Essex / Kent

<table>
<thead>
<tr>
<th>Stations</th>
<th>Westbound</th>
<th>Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trains / hour</td>
<td>Flow (Passenger)</td>
</tr>
<tr>
<td>Billericay - Shenfield (First Great Eastern)</td>
<td>6</td>
<td>10,510</td>
</tr>
<tr>
<td>West Horndon - Upminster (c2c)</td>
<td>3</td>
<td>17,130</td>
</tr>
<tr>
<td>Tilbury Town - Grays (c2c)</td>
<td>3</td>
<td>2,080</td>
</tr>
<tr>
<td>Stone Crossing - Dartford (Connex)</td>
<td>3</td>
<td>4,710</td>
</tr>
<tr>
<td>Farningham Road - Swanley (Connex)</td>
<td>3</td>
<td>6,760</td>
</tr>
</tbody>
</table>

1 - Crowding factor of 1.425 equals 'very crowded'

* The proposal for this service is still at an early stage but the aim is to achieve a frequency level of 10 trains per hour in the am peak.

### 9.5 LTS Network Assumptions

The following transport infrastructure assumptions were included in the LTS 2016 model runs:

- Latest National Rail/TOC Improvements as planned by SRA
- Thameslink 2000 (full planned service at 24 trains per hour in the peak hour)
- Channel Tunnel Rail link (International and Domestic services included)
- East London Line extensions (As SRA Business Case 4 car only)
- PPP London Underground improvements plus 2017 District Line imps
- Bus:
  - frequency improvements (as SDS i.e. 38% mp, 47% ip)
  - LBI1 (as SDS)
  - 70p bus flat fare (as SDS)
  - boarding/alighting improvement of 10% (as SDS)
  - bus reliability of 25% (as SDS)
Relationship between transport and development in the Thames Gateway

- Road network improvements
- General planned improvements (as SDS - Tables 3.1, 22.1 of TN52) (as SDS)
- A406 improvements (as SDS)
- Shoreditch one-way system converted to two-way
- Vauxhall Cross new layout phase 2
- World Squares - latest plans
- Aspirational Borough Schemes not implemented except Thames Road Dualling
- Continuation of tolling of Dartford Crossing as SDS
- No tolling on Blackwall Tunnel as SDS
- Congestion Charging as SDS
- Change in bias on green time phasing along IRR from 50:50 to 55:45 as per SDS
  - Crossrail 1 package (latest test 5 spec)
  - Crossrail 2 package (as per latest spec. 26/11/02)
- DLR extension to City Airport package
- DLR extension to Woolwich Arsenal package
- DLR extension to Dagenham Dock package
- DLR extension Canning Town to Stratford International package
- Croydon Tramlink existing routes - now more detailed representation than SDS rather skeletal representation
- Croydon Tramlink Extensions (2 additional routes: new services provided to Streatham/Purley/Sutton/Tooting Broadway)
- River crossings:
- DLR extension to Woolwich Arsenal package
- Thames Gateway Bridge package - as SDS
- TGB with IM services across bridge
- Tolling at same level as Dartford Crossing
- Closure of Woolwich Ferry
- Silvertown Crossing package - as SDS
- No tolling on Silvertown or existing Blackwall
- Bus service through Silvertown as per SDS
- Removal of peak tidal flow at Blackwall
- Light transit (IM) schemes (WLT, CRT, ELT, GWT)
- all represented as bus, same as for SDS work
- assumed to be the full schemes
9.6 LTS Trip Distribution Tables

Tables A.7 to A.15 show the number of private vehicle, public passenger and goods vehicle trips to, from and within each Zonal Action Plan area. The sectors for which trips are tabulated are listed in Section Three.

The base (2001) trips are taken from LTS 2016 matrices with employment and housing growth removed. The Action Plan trips are those generated by the projections of homes and jobs.

Table A.7: Barking and Havering AM Peak Hour Trips by Mode
Table A.8: Woolwich/Belvedere/Erith AM Peak Hour Trips by Mode
Table A.9: Kent Thameside AM Peak Hour Trips by Mode
Table A.10: Medway/Grain AM Peak Hour Trips by Mode
Table A.11: Sittingbourne and Sheerness AM peak hour trips by mode
Table A.12: Thurrock Riverside AM Peak Hour Trips by Mode
Table A.13: Basildon AM Peak Hour Trips by Mode
Table A.14: Canvey/Shellhaven AM Peak Hour Trips by Mode
Table A.15: Southend AM Peak Hour Trips by Mode

The above tables are available in Word format as a download from the foot of this page
10. Appendix B: Planning aspiration forecasts for SE sub areas

Within the South East there are five identified sub-areas with capacity to deliver much of the region's employment and housing growth between 2001 and 2016. In addition to London, the ODPM Communities Plan identifies four key growth areas: Milton Keynes-South Midlands, Ashford, London-Stansted-Cambridge (LSC), and the Thames Gateway. These five growth areas have individually estimated their capacity to deliver growth and set out planning aspiration forecasts accordingly.

In isolation to the sub-region planning growth forecasts, regional forecasts of households and jobs have been produced using econometric models that draw on historic trends and future expectations of changes in the national and global economy. These forecasts are largely demand driven, but supply features like working population growth, skills, etc are factored in.

To see if the planning aspiration growth of households and jobs in the sub-regions matches the South East region based forecasts, we set out sub-regional estimations alongside the South East forecasts in Table B.1. We also use this to assess the likely share of the South East Region's growth occurring in the Thames Gateway.

Table B.1: Growth Forecasts

<table>
<thead>
<tr>
<th>Anticipated Growth Forecasts, 2001-2016</th>
<th>Households</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experian BS Forecasts</td>
<td>914,183</td>
<td>1,091,473</td>
</tr>
<tr>
<td>Tempro (v1.4)</td>
<td>1,173,861</td>
<td>1,228,179</td>
</tr>
<tr>
<td>Planning Aspiration Forecasts (below)</td>
<td>1,133,991</td>
<td>1,516,930</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Planning Aspiration Forecasts by Area, 2001-2016</th>
<th>Households</th>
<th>Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>TG ZAP (Excluding later development phases)</td>
<td>158,885</td>
<td>325,800</td>
</tr>
<tr>
<td>Milton Keynes (exc: Northants)</td>
<td>96,500</td>
<td>76,000</td>
</tr>
<tr>
<td>Stansted Corridor (exc: Cambs, LB Redbridge, Lea Valley)</td>
<td>91,020</td>
<td>105,336</td>
</tr>
<tr>
<td>Ashford</td>
<td>13,050</td>
<td>10,305</td>
</tr>
<tr>
<td>London (exc: TG)</td>
<td>456,903</td>
<td>517,062</td>
</tr>
<tr>
<td>TG Remainder (outside ZAP in TGSE &amp; TGNK)</td>
<td>6,539</td>
<td>17,387</td>
</tr>
<tr>
<td>SE (SSR) Remainder</td>
<td>311,094</td>
<td>465,040</td>
</tr>
</tbody>
</table>

The planning aspiration forecasts are derived from different sources which, although different in the way they have been calculated, are largely similar in producing bottom up estimations based on development potential. We set out below the method for deriving these estimates.

27 Dwelling unit numbers rather than households are used in some planning forecasts, but due to the close relationship between households and unit numbers, we have interpreted unit values to be households where household figures are not available.
The TG ZAP - these are the Thames Gateway Zonal Action Plan figures relating to the 14 zones within the Thames Gateway area. These ODPM produced estimates are based on sites within the zones that have potential to develop into housing and employment uses. The figures relate to high growth estimates, and presume the full complement of transport investments to release development. Alongside ZAP site/area estimates are ordinal values between 1 and 4 relating to potential for development. The ZAP figures shown exclude sites with the lowest probability of coming forward, as they are not expected to happen until the later development phases.

Milton Keynes (excluding Northamptonshire) - figures are based on the Milton Keynes and South Midlands Study produced by RTP, Halcrow, and the Three Dragons. The estimated figures relate to development capacity within local authority areas in the sub-region, so we reduce the areas to include just the local authorities within the South East. The study estimates households and jobs growth between 2001 and 2031; to estimate what would happen by 2016 we pro-rata the figures by a multiple of 0.5.

Stansted Corridor - a study of the London-Stansted-Cambridge sub-region produced by ECOTEC, looked at the spatial development pattern in the region based on various scenarios. No indication of the likely and most suitable scenario and spatial pattern is given, so we base our figures on a moderate growth scenario and regeneration spatial pattern. The study produces estimates of household numbers and the implication for new employment land in terms of hectares required to come forward by sub-areas within the study area. As a result we exclude areas outside the South East, i.e., Cambridge plus areas in London (these are covered in the London and Thames Gateway figures). No employment estimates are shown, so we convert the employment land requirements into jobs by applying plot ratio and employment density factors. We use a plot ratio of 52.5%, based on research by RTP of a mix of business uses in and around London. Once floorspace is estimated, we apply a floorspace to employment ratio of 38 square metres per job, partly based on densities used by English Partnerships and a conversion applied by RTP to cover a variety of employment uses. The study covers the period 2001 to 2026, so we pro-rata the figures down to 2016 by multiplying by 0.6.

Ashford - An RTP study for Ashford Borough Council assessed Ashford's capacity for growth under three scenarios. We have taken the medium growth scenario based on the mixed urban consolidation/growth strategy. Figures for housing and job growth between 2001 and 2016 were available.

London - for London we use the London Plan's 2016 household and job growth figures. These are based on a top down forecast for the whole of London and disaggregated spatially using bottom up supply side analysis. London Thames Gateway wards are omitted from the London estimates due to being covered elsewhere.

TG Remainder - these growth figures cover the rest of the Thames Gateway local authority areas in North Kent and South Essex. This is the area outside the wards covered by the Zonal Action Plan above. The estimates are based on identified sites in the local plans and issue papers covering the area, and do not factor in demand influences. Where no information on household and job figures are provided, we introduce a land density of 50 dwellings per hectare for areas with housing designation, and apply the conversion factors for employment land as in Stansted Corridor.

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28 We define the South East as the Standard Statistical Region, i.e., Government Office South East plus Bedfordshire, Hertfordshire and Essex.
29 ECOTEC, London-Stansted-Cambridge Sub-Regional Study, July 2002
30 Roger Tym & Partners, Convoys Wharf, Report produced for the LB Lewisham, January 2003
31 Roger Tym & Partners, Ashford’s Future, for Ashford Borough Council and Strategic Partners, December 2002
SE (SSR) Remainder - for the remaining areas in the South East we take households and employment growth from Tempro 4.2 policy-led forecasts. These Tempro figures differ from the data set used in our Tempro South East total in that household growth figures are based on RPG 9 with jobs growth adjusted accordingly.

Each of the sub-region's growth is estimated without consideration of the total South East forecasts and the share of this growth in the other sub-regions. The planning assumptions focus primarily on the capacity for delivery rather than market realities. Work on market realities, i.e., what the demand for housing and jobs will be and the ability of areas to meet the demand, has been undertaken more thoroughly at the regional level using econometric models. Such forecasts use historic trends to produce multivariate regression analysis for the UK and regions. We use the South East forecasts as a control total, therefore adjusting the sub-regional planning aspirations so that when aggregated they produce a consistent number of households and jobs forecast to the control total. The regional forecasts come from two sources:

- Tempro 4.2, Trend based (version 1.4) - these are standard forecasts produced by Cambridge Econometrics for the Department of Transport. The forecasts, based on trend, are considered optimistic. Planning influences, unlike forecasts for SE Remainder, are not used for the regional figures as the policy based figures for London look suspicious and appear to be based on the London Capacity Study (1999) which does not take into account a large part of new housing that is delivered through windfall site gains. In Table 2 we provide the growth forecasts for London and counties in the South East under the trend based and policy based sets. This shows the wide difference between the forecast and in particular the ratios behind them, shown in Table 3.

- Experian Business Strategies - these forecasts for the South East offer an alternative to Tempro's forecast. Forecasts are produced up to 2012 so we extrapolated the 2001-2012 trend by four years to produce an estimate for 2016. A big difference between Experian BS and Tempro is that Experian BS factor in supply side influences. What is noticeable in comparing Tempro's forecast with Experian BS is the evenness of jobs to household numbers under Tempro, which compares to a divergence between jobs and household growth under the Experian BS forecasts.
11. Appendix C: Examples from the Netherlands

11.1 Wateringse Veld

Wateringse Veld is a new suburb of The Hague, included here as an example of a high-density, public transport-orientated development, with an extended tramline as the focus for the scheme, and for the higher density housing.

11.2 Sloterdijk

This area is included in view of the parallels with Ebbsfleet station, as an employment location at the intersection of rail-based public transport.

A transport interchange point and commercial development area that was planned at the intersection of a radial and an orbital rail line serving Amsterdam. The commercial appeal of the area was accentuated by restrictions on office development in central Amsterdam, and by the high degree of public transport accessibility from several directions.

The interchange is the focus for the following services

- 56 buses per hour
- 6 trams per hour
- 6 metro trains per hour
- 22 main line trains per hour (including direct trains to Schiphol airport and Amsterdam central station)

11.3 Utrecht new satellite suburb "Nieuwegein"

This major satellite new town was built south of Utrecht (Netherlands) during the 1980s. From the start it was linked to Utrecht with a tram line that was built from scratch. The development and the tram stops are mostly well integrated. The new suburb has recently been further extended in conjunction with a new branch of the tram (to Ijsselstein), and general upgrade of the tram facilities and vehicles.

Above: View of higher density housing fronting onto a boulevard carrying the tram line. The tram was operating before the development was fully occupied and, as can be seen, even before the road system was complete (Wateringse Veld)
Above: A second view of the boulevard with tram, high density housing, and ample space for pedestrian and cycle paths, tree planting (not yet implemented), parking and single lane carriageway (Wateringse Veld).

Above: Aerial view of the development. The boulevard with high density development alongside can be distinguished (Wateringse Veld).

Above: Credible local public transport services (trams and buses) are integrated with two intersecting rail lines at Sloterdijk.
Above: **Sloterdijk** is not just a transport interchange but also has significant office and other development within a short walk of the station.

Above The **Sloterdijk** area under construction. As with Ebbsfleet, the area was developed from scratch.
Above: Map of Nieuwegein, showing the route of the tram through the development.
Appendix D: Thames Gateway Bridge - Summary of arguments

12.1 The Thames Gateway Bridge and North Bexley - A Study into Regeneration Impacts (Llewelyn-Davies, 1998)

12.1.1 Access Benefits

The TGB would bring improvements to the local area in terms of places, jobs and businesses within its 'catchment'. It is estimated that the population within the 20-minute drive time catchment would increase by 60%, and number of jobs by 57% (71,000 existing jobs). Journey times by car to destinations such as the Royals, Barking and the M25/M11 junction would decrease by between 10/15 minutes.

(The impact of Crossrail, DLR extensions or other public transport schemes was not compared in this study.)

12.1.2 Impact on Local Businesses in Bexley

The study concluded that the TGB would be likely to improve the competitive position of businesses in Bexley. Many businesses consider the river as a barrier to business - construction of the bridge would improve access to a wide range of destinations including Dagenham, Beckton, and City Airport. The bridge would bring access benefits to places like Dagenham, City Airport, central London and Essex.

12.1.3 Maximising Development Potential

The study argued that the bridge would be likely to add value to land available for development in the area. Although the land would be likely to be developed regardless of the bridge, the TGB would be likely to encourage a greater intensity and variety of use, which could increase the number of jobs created.

12.1.4 Impact on Working People in Bexley

The TGB would provide better access to around 71,000 existing jobs, by bringing them into a 20-minute drive time catchment. Will also provide better access to areas of high job growth such as the Royals. The report also suggests that the newly accessible jobs north of the river - both existing and potential - would be of an appropriate type for the Bexley working population.

A counter factor was that the bridge would also increase competition for jobs in Bexley from those commuting from north of the river.

12.2 Thames River Crossings: Economic and Regeneration Impacts (Llewelyn-Davies, 2002)

12.2.1 Accessibility Changes - User Transport Benefits

For people living south of the Thames the Bridge would provide access to employment opportunities in the north. The potential impacts for people north of the river are less evident.

The report commented on the Whitelegg Report (see below) which argued against the Bridge and for creation of local employment to address the problems of some of the Thames Gateway area - "the best solution to unemployment in Greenwich is more jobs in Greenwich". The Llewelyn-Davies report argued that it is Greenwich's (and other areas in the Gateway) inability to generate sufficient employment that is at the heart of the problem, and argued instead that the area's workers need access to jobs where the jobs are and are growing, and that its businesses need to be "normally competitive in access and labour catchment terms".
12.2.2 Changes in Population and Employment Catchment

Woolwich and Erith town centres have a catchment that is constrained by being on the riverside. They are weak in comparison with other London centres, such as Bexleyheath, Ilford and Romford. The pattern is of a series of low-value low-intensity places, that tend to duplicate more than complement each other, especially south of the Thames. The report does not, however, specify how the Bridge would alter this.

This part of the Thames Gateway is not getting the full potential from the fact that "London - World City" has expanded towards it, nor getting as much benefit as they could from activities such as City Airport, ExCel and the London Arena. While the Bridge would make access to these easier from south of the river, so too would the Woolwich DLR extension to Woolwich, and Crossrail. The report did not seek to compare these impacts.

12.2.3 Changes in Environmental Quality

The report generally argues that the environmental impacts of the Bridge are acceptable.

Some routes would inevitably experience increased traffic volumes, but local roads in Greenwich and Bexley would experience lower levels of traffic congestion as traffic is directed onto more direct purpose built roads. (The balance between these impacts was not explored.)

The report argues that air quality would generally improve due to reduced congestion, but the report does not set this against increased overall traffic levels.

On the crossing approach, overall noise levels would increase. Most of these increases would be on routes incorporating substantial buffer-zones, so impact on sensitive landuses would be minimal.

There would be no impact on conservation sites of national importance. The bridge would have a visual impact, but with careful design this impact could be positive in terms of a symbol of local identity.

12.2.4 Coincidence with Development Opportunities

There would be an opportunity to 'step up' to new markets. Land will become more marketable for headquarter and logistics uses for example, where accessibility and reliability is important.

Sites already in use could be intensified. Current under-used sites will be made more attractive for development.

However, the impact of the crossing on site development prospects will not extend very far geographically. Taking in the site and development market reviews and changes in accessibility the report suggests an area of impact containing ten main groups of sites: Belvedere/Erit, Thamesmead, Woolwich, North Greenwich/Charlton Riverside, Lower Lea, Leamouth and Canning Town, West Royals, Beckton & East Royals, Barking Reach and Dagenham Riverside.

12.2.5 Social and Community Impact in terms of Distribution

This relates to how the crossing may contribute to the eradication of social exclusion in this part of the Thames Gateway. Although the impact on specific aspects that contribute towards social exclusion will be minimal (poor health, crime) the crossings could be expected to deliver positive - though limited - effects such as better labour market performance, which may reduce the incidence of poverty to at least some extent where this is a result of constraints to access.

12.2.6 Network Effects

A network effect is argued in the report, but it is not made clear what relevance if any this has for development.
12.3 Thames Gateway River Crossings - Accessibility & Regeneration (Brook Lyndhurst, 2002)

The report points out that the case for river crossings must now be made in a much wider context than in the past - connectivity by itself is not sufficient reason.

This report confined itself to testing the hypothesis that increases in accessibility in the Gateway are associated with higher levels of employment. If there is a relationship between accessibility and employment, then improvements to accessibility may bring about an increase in potential employment - other factors, including the wider economic environment, the availability of sites etc. will influence whether this potential is actually achieved.

Brook Lyndhurst created a model to assess the likely potential employment gains through the use of selected employment and accessibility indicators. Employment potential was generated for the boroughs of Hackney, Lewisham, Newham, Tower Hamlets, Barking and Dagenham, Bexley, Greenwich, Havering, Redbridge and Waltham Forest.

The model calculated that as a result of planned changes in public transport and highways (excluding the Thames Gateway Crossing) potential employment may rise by between 125,300 and 132,400. Additional potential employment created by the crossing could be between 17,300 and 25,800 (a total increase of between 142,600 and 158,200). The report does not argue, however, that the Bridge itself would be responsible for generating such increases in employment.


The report argues that the Thames Gateway River crossing is based on a flawed concept that providing new infrastructure to improve accessibility will translate to job creation of the type that will assist in the regeneration of East London. The report argues that this job creation will not happen and the crossing will have an adverse effect on environmental quality and the health of local residents.

Criticisms were made over the levels of consultation used, stating the proposals have emerged from a process of top-down thinking, where the interests of the business community have been given greater prominence than those of residents.

The report states that studies into the crossing proposals have not acknowledged that environmental conditions in East London are already very poor and that for many residents and streets the crossings will make this problem worse.

The report claims evidence used in studies regarding the crossing showing the link between building bridges or tunnels producing social or economic transformation is weak. It claims that there has been no attempt made to evaluate alternative models of job creation and regeneration.