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Executive summary

The Kent Thameside Delivery Board agreed in July 2006 that “the resolution of the imbalance between the proposed level of development and the capacity of the transport network should be by a combination of:

• A clear reaffirmation of planning policy for the area, bringing together transport and other environmental considerations;
• An agreement between the partners seeking to minimise the traffic generation impact of the proposed development;
• A package of measures, environmental, public transport, and road building, designed to mitigate likely adverse impacts;
• A funding package, from public and private sectors, with the private sector contribution raised by means of a "Tariff" or "Roof Tax" on new development;
• A process of regular monitoring and review.”

This scoping report pulls together and summarises the best available information describing the package of environmental, public transport, and road building measures necessary to mitigate likely adverse impacts.

A table setting out the various measures has been developed and a best available estimate of the cost of each is given. All costs in the report are based on current prices and inflation will be a key factor to be taken into account depending on the time of implementation.

It is important to note that whilst some of these cost figures are well established and based on fully worked up schemes costed by Jacobs and agreed with the Project Estimate Review Board (PERB), some have been derived from outside sources and their basis is less firm. Some, finally, are merely preliminary ‘order of magnitude’ estimates developed for this report. In essence this final category are very approximate estimates at this early and preliminary ‘concept’ stage.

In this context it is important to bear in mind that there are several factors which could have a significant cost implication and for which little or no information is currently available, for example utilities plant diversions; the fact that LCA Part 1 claims are not included and the limited overall availability of design data. These could significantly alter the estimates given.

Therefore it is essential that proper feasibility studies are carried out to demonstrate practicality and affordability and costs agreed with PERB before these can be made public or used for detailed budgeting purposes.

Even with these caveats on the costs used in this review the following is self evident:

• The total value of local KTS transport projects is approximately £ 610 million;
• Of these the total completed or with funding commitments is approximately £385 million;
• Therefore the funding gap is approximately £225 million.

These figures include capacity enhancements on the North Kent rail line but exclude the strategic schemes that will have an impact on Kent Thameside, but for which it is not the primary purpose. These are CTRL Phase 2; Thameslink 2000; Crossrail; an additional Thames Crossing and the M25 Rapid Widening Programme.
## Table of Possible Transport Schemes in the Kent Thameside Area by Location

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<th>Revenue cost (£m)</th>
<th>Developer S106 (£m)</th>
<th>Developer tariff (£m)</th>
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**Note:** Please refer to the main text to review caveats associated with certain costs. All costs in the report are based on current prices and inflation will be a key factor to be taken into account depending on the time of implementation. The text will have often referred to a cost range, and the number quoted in the table may be an approximation of this range in order to calculate the overall funding totals. Some costs have also been artificially split between the different areas, e.g. car clubs. The actual revenue guarantee for each area may be somewhat different depending on the number and rate of housing completions.

**Key to Costs:** **bold** – estimated cost; **italics** – order of magnitude cost, with feasibility study required to ascertain practicality and affordability.

**Key to Funding Status:**
- Assumed as a standard S106 developer cost. i.e. not related to the tariff
- Expect a contribution or full funding from developer

* Please also note that The Denton station scheme may now not proceed.
Contents

Executive Summary

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1 Introduction

1.1 Introduction

Following recent discussions with the Kent Thameside Transport Strategy Group, Jacobs have undertaken a brief review of the transport strategy currently assumed in Kent Thameside modelling work focusing on identifying all planned infrastructure and district wide demand management measures, as well as flagging ideas for further projects that could be implemented. A review of the out-turn costs of schemes already included in the Kent Thameside Transport Strategy has also been initiated through consultation with scheme promoters, reference to the South East England Regional Assembly’s South East Plan Implementation Plan or preliminary analysis by Jacobs.

It is inevitable that the review has assembled currently available cost information from a range of sources and for proposals at various stages including concept. Future cost estimates could differ significantly from these provided in this report.

1.2 Transport Strategy

The Kent Thameside Delivery Board agreed in July 2006 that “the resolution of the imbalance between the proposed level of development and the capacity of the transport network should be by a combination of:

- A clear reaffirmation of planning policy for the area, bringing together transport and other environmental considerations;
- An agreement between the partners seeking to minimise the traffic generation impact of the proposed development;
- A package of measures, environmental, public transport, and road building, designed to mitigate likely adverse impacts;
- A funding package, from public and private sectors, with the private sector contribution raised by means of a "Tariff" or "Roof Tax" on new development;
- A process of regular monitoring and review."

This scoping report presents an attempt to provide the necessary detail in support of the package of measures, environmental, public transport, and road building, designed to mitigate likely adverse impacts.

Chapters 3 to 8 describe the key schemes in turn, illustrating costs, expected delivery timescale and any funding commitments. The scheme locations are illustrated in Figure 1-1, alongside the key development sites.

It must be emphasised that a great many of the known projects identified as well as the concepts flagged as potentially useful are at relatively early stages of development.

It should be emphasised that estimated costs shown for possible projects at this concept stage should be treated as ‘order of magnitude’ only and are included to provide a complete picture of the whole package. Significant further work is needed to firm many up into deliverable schemes, projects and initiatives and costs will change significantly.

Since the initial drafts the Kent Thameside Delivery Board produced a paper in January 2007 entitled *Strategic Transport Infrastructure 2007-2026*. This scoping report is designed to complement the paper, giving more details about the various schemes and the size of the strategic infrastructure funding gap.
2.1 Introduction

First developed as a multi-modal model in 1995, the Kent Thameside (KTS) model is focused on the Dartford and Gravesham conurbation in North Kent. This includes the areas of Ebbsfleet, Eastern Quarry, Stone, Greenhithe and Northfleet and is an area that has been identified by the Government as part of the Thames Gateway initiative as having significant development potential. All significant highway and public transport links and intersections within the study area are represented in detail. The model was comprehensively rebased in 2001 to reflect the then prevailing highway and public transport (PT) conditions. Subsequently in autumn 2005 there was a further update of the model to reflect present day conditions. This work was in preparation for a forecasting exercise to assess the transport impacts of the large scale land use development proposals envisaged for the area.

The assessment of future development impacts was carried out on a framework basis assuming that different development proposals had different levels of priority. Development scenarios ranged from proposals that were already considered to be “committed” through to a “full development” scenario inclusive of all possible proposals. The assessments were carried out initially for a forecast year of 2025 but then also for 2018 and with and without a range of demand management measures i.e. increased parking charges, improved public transport etc.

It should be noted that the modelling work does not include unfunded improvements such as Crossrail, an additional Thames Crossing or an improved interchange on the A2 at Bean.

2.2 Findings

The assessment framework compared a selection of model inputs and outputs. Inputs included total trips assumed to result from the development proposals and the implied trip growth within the study area. Outputs included journey times and speeds across specific routes, speeds by road type, the amount of predicted queuing and the impact on public transport patronage. Speeds by road type were plotted graphically and minimum speeds benchmarked against each of the four road types. The minimum design speeds were 80 kph for motorway and trunk roads, 50 kph for principal roads and 20 kph for secondary roads. The locations of junctions with at least one over capacity turn were also plotted graphically. In this way the assessment framework was able to show the interaction between increasing levels of development and decreasing levels of service on the areas transportation system.

For the more crowded development scenarios in particular, a number of districts within the study area showed significant congestion stress. These include A2 intersections at Bean and Ebbsfleet, sections of the highway network around the Eastern Quarry and Ebbsfleet developments and parts of the Dartford and Gravesend town centre networks. In addition the A2260 Springhead Road/ B262 Hall Road Roundabout; Marsh Street junction on A206 Bob Dunn Way and other specific junctions at various parts of the network also exhibited significant queue and delay problems.
The model suggests that the PM peak period (1600-1900) will be the time of day when the network is under greatest stress. The KTS model has been run in 2025 to illustrate the scenario where all the priority 1 developments and Eastern Quarry are in situ. **Figure 2-1** illustrates the performance of the network in terms of average speeds on the key road links in the southbound/ eastbound direction, which is the main direction of travel in the PM peak. It should be recognised that the figure merely provides an illustration of the analysis done on the model results. The actual figures depicted should not be taken as finished work.
2025 PM Model Performance - featuring all priority 1 developments and Eastern Quarry - Southbound-Eastbound Speeds (From London)

Figure 2-1
3 Smarter Choices to Manage Demand

3.1.1 Introduction

‘Smarter Choices’ (or softer measures) is the term used to describe the policy, promotion and Travel Plan measures that can be put in place to complement ‘Hard’ sustainable transport measures (cycle and pedestrian routes, Park and Ride services, public transport infrastructure and service improvements) discussed elsewhere in this Scoping Report. Area wide, both ‘Soft’ and ‘Hard’ sustainable transport measures are needed to deliver maximum modal shift to non-car modes.

The previous sensitivity tests carried out on the KTS model for the impact of district wide demand management measures (‘soft measures’) used the conservative estimates calculated by Halcrow\(^2\) of just 5% reduction in peak hour trip levels. This figure was derived from analysis of a number of measures such as:

- Tele-working and video conferencing;
- ‘Parking cash-out’ bonuses paid by companies to employees ‘travelling green’;
- Charge for single occupancy vehicles;
- Restricted parking permits, personalised travel plans;
- Individual Marketing;
- Parking Restraint in residential areas;
- Car Clubs;
- Substitution of some short car trip by walking and cycling;
- Community rail partnerships for secondary/branch lines.

This figure has since been reviewed. Cairns et al. (2004)\(^3\) present a literature review of a number of studies into the impact of soft measures. This concludes that the 5% figure is reasonable if softer measure initiatives continue to be implemented piecemeal as normally happens at present.

However Cairns et al. concludes that there is potential to reduce traffic further if soft measures are introduced with higher intensity and supported by control measures to prevent induced traffic swallowing the released capacity. For instance the authors suggest that:

- Peak period traffic could be reduced by 14% for non urban areas to 21% for urban (i.e. large cities).
- Off-peak period traffic could be reduced by 7% to 13% for these respective areas.

A realistic figure for Kent Thameside will be somewhere in this range, possibly 10%-15%. However Cairns et al. finds that to achieve this level of reduction a comprehensive package of demand management measures would have to be adopted, for instance:

- “Re-allocation of road capacity and other measures to improve public transport service levels;”
- Parking control;
- Traffic calming;
- Pedestrianisation;


\(^3\) Cairns, S et al. (2004): Smarter Choices – Changing the way we travel.
• Cycle networks;
• Congestion charging or other traffic restraint;
• Other use of transport prices and fares;
• Speed regulation or stronger legal enforcement levels."

The following sections describe the potential for these elements and their impact in Kent Thameside in addition to the travel plan work that is assumed as being present by Cairns et al.

3.1.2 Workplace Travel Plans

The potential of workplace travel plans to reduce car trips to new development sites is well established, and local procedures have been established by a number of Authorities for setting mode share targets for individual sites as part of the Development Control process. Reductions in car use achieved have varied between nil and 52% below the estimated unrestrained demand figure, with around 8% to 10% commonly demanded and achieved. Target setting will become more robust as further experience is gained and best practice shared, as more data on the impact of Travel Plan initiatives becomes available, through local monitoring, from Government commissioned research and through the TRICS database.

The securing of effective Travel Plans through the Planning Process is essential to reduce the transport impact of specific developments. While the Travel Plan is produced and implemented by the Developer and/or Occupier of the site, and can be enforced either by Planning Condition or by Agreement, input from the Planning Authority is also required to agree, monitor and enforce the Travel Plan.

Also, it needs to be remembered that development related Travel Plans will impact only a small proportion of all the work-related trips in the Kent Thameside area. To realise the full benefit of workplace Travel Plans and achieve the traffic reductions identified by Cairns, robust measures to promote voluntary Travel Plans and to support employers in developing them are also needed. KHS have a Travel Plan team in place that has already developed a number of key initiatives such as the Kentcarshare on-line car share scheme and the New Ways 2 Work brand and information pack. KCC’s goal for 2011 is that 50% of all Kent employers with over 200 staff will have a Travel Plan.

If the pace of projected development in Kent Thameside is to be accommodated, faster progress than this will be needed, and it is suggested that the appointment of a dedicated Travel Plan officer within KCC for Kent Thameside will be necessary.

The estimated cost for the Travel Plan Officer would be £45,000 per annum, incorporating salary and overheads.

An outcome of the DfT (2002) research into Making travel plans work suggests that the average annual cost of running an area wide (e.g. Kent Thameside) workplace travel plan is £47 per employee per annum to include incentives, car share, parking, ticketing, cycle and walking measures. This will include follow up survey and monitoring work. Given the 50,000 jobs that are likely to be created in Kent Thameside, this would amount to approximately £2.5 million per annum by 2025.

once all the jobs had been created. This could provide the necessary funding for many of the softer demand management measures identified.

Currently £100,000 has been allocated within the Second Local Transport Plan for Kent 2006-11 as funding support for Workplace Travel Plans in Dartford.

### 3.1.3 Residential Development Travel Plans

A number of techniques that can greatly reduce the car use generated by new residential developments are now available. When implemented alongside reduced levels of parking provision on the site, and good public transport provision nearby, substantial impacts on trip generation can be achieved.

Infrastructure measures include the provision of a network of cycle and pedestrian routes giving access to key local services such as a convenience store, health centre or primary school, and bus/rail facilities. Individual dwellings would have fewer parking spaces, but provide suitable ground floor storage for cycles. A new residents ‘starter pack’ would usually be provided by the developer, including information about public transport services, cycle and pedestrian route maps, and passes for free or discounted bus or rail travel for an introductory period. At the highest level, a car club with designated spaces, a free cycle for each new resident and internet links to real time public transport information in each dwelling might also be included.

There is also a need to use forms of welcome packs, discounts, etc. for when people move into existing homes over the 20 year period. It is important to influence the behaviour of new residents to the area whether they are moving into new or existing homes. There is potential that a form of a planning levy will be adopted within Kent Thameside. This could be used to provide funds for local planning authorities to provide welcome packs, discounts, etc. to new residents at the same time as they currently get details concerning council tax, council services, etc.

A number of these measures are already recommended in the Kent Design Guide. Others could be included in the Development Brief for new development sites in Kent Thameside as appropriate. Residential Travel Plans would be supported and monitored by the Kent Thameside Travel Plan officer already identified.

### 3.1.4 Area Travel Plans

Many advantages can be gained where a Travel Plan can be developed for an entire Business Park rather than by individual employers. The larger number of employees provides a greater ‘critical mass’ for car sharing, and greater leverage for negotiating public transport improvements. For a new Business Park Development, a Business Park Travel Plan should be asked for at Planning Application stage; existing Business Parks should be prime targets for assistance with voluntary travel Plans.

A logical development of this is the Area Travel Plan where employers, schools, retail and leisure sites and residents all work together to improve sustainability. Examples in the UK include the Whiteley Area Travel Plan in Hampshire and town centres in the London Borough of Islington.

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3.1.5 School Travel Plans

KCC already have a strong School Travel Plan team in place, supported by central government funding, who are working towards a target of every school in Kent having a School Travel Plan by 2010. £500,000 has been earmarked within the second LTP for ‘Safer Routes to School’ schemes within the Kent Thameside Area. The aim of these schemes is to improve walking and cycling routes and public transport facilities to and from schools in Kent Thameside, and will help schools implement their approved School Travel Plans. No additional special measures should be necessary for Kent Thameside.

3.1.6 Car Clubs

Car clubs can be set up as part of a particular residential or mixed development, but can also be established in existing residential areas. They are particularly suited to areas such as town centres, where parking is at a premium and the majority of everyday trips can be made by non car modes.

Car clubs offer the potential to reduce trip making, since the availability of a new car for use on an infrequent basis provides the flexibility and freedom that a car gives, but at a vastly reduced cost compared to that of owning a car. Since people pay to use the car as they would do for a train or a bus ticket it makes them think more about their use of a car, and consider other modes for their journeys. Often once people have purchased a car, they may feel that they have to get their money’s worth by using the car for all trips, instead of spending more money on a public transport ticket.

The three main car clubs in the UK are:

- Streetcar;
- Whizz Go;
- City Car Club.

Kent County Council is currently in the process of setting up a car club in Maidstone in conjunction with Streetcar. This means that as long as the cars are well used and KCC are able to recharge to other cost centres within KCC, there is no standing charge for using the cars. Inevitably there will be some upfront costs e.g. signing, lining, promotion etc but these should not be too significant. Outside of the working day the cars will be available to the general public who join the car club to use as is the case with other Streetcar clubs in the rest of the UK.

In KCC’s Smarter Choices Appendix to the Local Transport Plan, Gravesend has been earmarked as a third location for a car club. Again the idea is likely to involve KCC underwriting some daytime use to give the project some impetus, with initially the general public using the cars outside the working day. With increased interest from the general public in Gravesend, Streetcar may consider it commercially viable to introduce further vehicles and spread the club to other areas.

There is likely to be potential for car clubs right across Kent Thameside. One strategy would be to assign a certain number of car parking spaces in each development as car club spaces, with the developer pump priming the car club in the early years to make it commercially viable for car club operators. These are likely to be most economically viable in the larger mixed use communities with enough demand from both business and leisure users increasing utilisation of the cars.
Information from Streetcar suggests that developers/businesses will need to guarantee a minimum spend of £7,500 per annum for each car to ensure that a car club is viable.

The overall guarantee will depend on the ratio of car club spaces to homes in the Kent Thameside area. For example, the innovative BedZed development in Beddington, South London has 3 car club cars for 100 homes.\(^7\) This ratio may not be relevant to every development.

It has been assumed that there will be approximately 1 car club car per every 100 of the 25,000 dwellings that are expected to be built in Kent Thameside in the coming twenty years. It is likely that a revenue guarantee would only be required in the initial start-up phase (at this stage it has been assumed for 2 years), and from then on the car clubs would be able to pay their own way. Given an even phasing of development it is expected that the average annual guarantee would be in the region of £200,000 or £4 million over the next 20 years.

However it is expected that this sum would only be required in the initial start-up phase, and given the phasing of development the annual guarantee required would be lower.

**Cost:** Up to £200,000 per annum.

**Status:** Not funded.

**Delivery:** 2007 onwards.

**Source:** Jacobs/ Streetcar.

### 3.1.7 Promotion and Integration of Public Transport

The Fastrack system, linking with mainline national and international rail services, will provide the ‘spine’ of a potentially state-of-the-art bus rapid transit system for Kent Thameside. However if this is to deliver the sustainable community that is aspired to, it will need to be well integrated into the remainder of the sustainable transport network. It will need to be effectively promoted and marketed to residents and visitors. The whole public transport network will also need to be supported by complementary Travel Plan and parking policy measures.

A number of key developments are already addressing promotion, for example ProLogis is installing small monitors inside new homes on the Bridge development providing real-time information on Fastrack. Other developers in key residential sites close to the Fastrack system should be asked to do something similar. For smaller sites, as a minimum, information on Fastrack should be included in ‘residents starter packs’, with the cost borne by developers.

A Kent Thameside Transport Website should be developed and promoted (or possibly a Kent Thameside page on the existing KCC website) with links to Fastrack, bus and mainline rail information, cycle and walking route maps and to local Kentcarshare communities.

The cost is likely to be between £50,000 and £60,000, possibly supported by local businesses, employers, public transport service providers and/or advertising revenue.

There is also a need to think about extending some of the benefits of Fastrack to existing communities and bus routes without adversely affecting the Fastrack brand. Areas that will require investment in bus based public transport include the existing residential areas to the west of Dartford and south and east of Gravesend Town Centres. Since these areas will not be affected by major developments, other sources of funding will be needed to improve bus services, such as kick start funding, which has been successful in Sittingbourne.

Accurate costs cannot be provided without undertaking a proper study, but experience from the Ashford Area Transportation Study\(^8\) suggests that the following could be done, using the Ashford costs as a guide:

- **£5m for pump priming routes** (i.e. operator subsidies)
- **£2.5m for provision of high quality shelters, Real time passenger information and new ticketing systems.**

Currently a start has been made on some of the latter improvements, with funding earmarked within the second LTP for some of these purposes, such as:

- **Gravesham** – **£250,000 for Real Time Passenger Information (RTPI) signing on bus routes linked to the Fastrack network.**
- **Dartford** – **£180,000 for the provision of RTPI signing and bus shelters on rural routes within the district.**

**Cost:** c£7.5m (very approximate).

**Status:** Not funded.

**Delivery:** 2008 onwards.

**Source:** Jacobs Order of Magnitude Estimate.

### 3.1.8 Cycle Routes and Facilities

Cycle schemes for the Kent Thameside area have been developed within the Second Local Transport Plan for Kent. In Dartford relevant schemes to KTS include:

- **Princes Road** (2 schemes) - £230,000.
- **Swanscombe and Greenhithe** - £80,000.
- **A296 Watling Street Toucan Crossing** - £50,000.

In Gravesham, relevant schemes include:

- **Pepperhill to Marling Cross** - £50,000.
- **Gravesend to Strood** - £50,000.

Before the onset of the next Local Transport Plan in 2012, a thorough review of cycling in Kent Thameside will be required to ensure that, as development proceeds, the cycle facilities that will be provided at each can be integrated with each other, and with existing cycle routes, to provide an effective cycle network. Links to key trip generators and attractors, and interchange points with other sustainable modes such as Fastrack and mainline rail, need to be identified. It is also important to consider the benefits of increased cycling in the context of the ‘Green Grid’ aspirations for Kent Thameside.

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\(^8\) RPS (2004): *Ashford Area Transport Study.*

A cycling strategy and phased action plan then need to be developed and possible partners and funding sources identified. The cost to develop the strategy and action plan is to be confirmed – possibly around £20 - £30,000.

Any need for further investment in cycle parking, safety issues, signing and routes will be identified by the strategy.

Costs will vary depending on the scale of the cycle network developed. But of interest given the similar size is the outcome of the Ashford Area Transport Study. This recommended a plan for a core network of 20km of high quality cycle/ foot paths and 20 puffin/ toucan crossings amounting to £3 million. At this early stage, it is reasonable to budget for a similar amount.

Cost: c£3m (very approximate).
Status: Not funded.
Delivery: 2011 – 2026.
Source: Jacobs Order of Magnitude Estimate.

3.1.9 Walking Routes and Facilities

It is widely recognised that significant health benefits can be gained if the number of trips by active transport such as walking is increased. Major benefits can also be secured for the environment, the transport network, the local economy, crime prevention and social inclusion. Walking should also be seen as important in the context of the ‘Green Grid’ aspirations for Kent Thameside.

Nationally nearly a quarter of all trips is less than a mile and could easily be made on foot. Walking is also an enjoyable leisure activity giving visitors and residents the opportunity to explore towns, country and coast of Kent. Walking will also be promoted throughout Kent Thameside in development area, Workplace and School Travel Plans.

Kent County Council is committed to promoting walking throughout Kent and to secure walking schemes and infrastructure improvements. Increasing levels of walking are already being assessed through a Walking Action Plan for Kent, walking schemes in Kent Thameside could form some best practice examples for Kent.

A number of walking schemes with in the Kent Thameside area have been identified within the Second Local Transport Plan for Kent and include the following relevant schemes in Dartford borough:

- **Swanscombe Station pedestrian access improvements** - £250,000 (subject to external funding).
- **Pelican Crossings and other pedestrian crossing improvements** - £105,000.

In Gravesham borough, the following schemes are relevant to KTS:

- **Pedestrianisation of Kings Street** - £200,000.
- **Other pedestrian improvements** - £162,000.

Before the onset of the next LTP, a review of existing walking routes will be required to ensure that walking is an easy, safe and attractive option for the people of Kent Thameside for short trips. Similarly to cycle routes, pedestrian routes will need to be integrated with each other to ensure these routes are safe and convenient for the users.
3.1.10 Parking Policy

The application of rigorous parking standards at new developments is unlikely to be effective in reducing travel by private car if they are not coupled with similarly strict parking controls in the surrounding area.

A parking policy for Kent Thameside needs to be developed with the objectives of:

- Maintaining the viability of local commercial and retail centres;
- Restraining car use and encouraging sustainable transport modes in new developments;
- Maintaining the competitiveness of public transport for reaching local centres and transport interchanges.

The development of a comprehensive parking strategy allows the integration of parking with wider transport and land use policy; it identifies problems and proposes solutions to parking problems which must be integrated with other schemes to deliver an efficient transport system. Parking strategies must be flexible enough to provide an effective demand management tool as well as being able to encourage sustainable growth in targeted areas.

Jacobs have previously delivered a Parking Strategy for Lincoln, which formed part of the Lincoln Transport Study. Despite not covering an area similar in size to Kent Thameside, the Lincoln Parking Strategy provides a good example of the processes involved in the development of a parking strategy.

It should be noted that throughout the Lincoln Transport Study car parking was viewed as a politically sensitive issue with both Councillors and the general public and attracted regular attention from local media. Therefore a strategic parking strategy for Kent Thameside would have to be handled with great care.

The Parking Strategy was delivered using the following methodology:

- Consultation with the client;
- Policy and data review;
- Site visits;
- Identification of problems and issues affecting parking in the area of interest;
- Data collection to establish car park usage, duration of stay, origin/destination information and trip purpose at all off-street car parks. Additionally, a full inventory of private non-residential parking was undertaken to assess the entire parking stock within the identified area of interest;
- Analysis of the Current situation using results of the data collection exercise;
- Future parking demand analysis to assess baseline growth and the effect of other proposals to limit car usage such as travel plans, walking and cycling improvements and the effect of growth and development aspirations within the area of interest;
- An assessment of future parking supply;
- Supply and demand analysis;
- Parking strategy outcomes – short, medium and long term policies.

The Lincoln Parking Strategy cost £70,000 to produce and its findings were used to inform the development of LTP2 and the emerging Local Development Framework for Lincoln City Council. The costs associated with subsequently turning the
strategy into a plan inclusive of finalised policies, was estimated to be in the region of £100,000.

Due to the size of Kent Thameside at least £200,000 may be needed to produce a parking strategy (due to the size of data collection required) and a similar figure for the plan.

**Cost** : c£200,000 for study and c£200,000 to implement based on experience elsewhere.
**Status**: Not funded.
**Delivery**: 2007 onwards.
**Source**: Jacobs.

The current Local Transport Plan incorporates some improvements for parking related issues. In Gravesham, a parking information system has been recently introduced in Gravesend Town Centre indicating to drivers the availability of parking spaces at various car parks within the town. The £130,000 scheme cost was equal joint funded by the Local Transport Plan and Gravesham Borough Council in 2006/7.

A further £100,000 is earmarked within the Local Transport Plan for Variable Message Signs to be introduced on strategic routes on the edge of Gravesend to notify drivers of car parking availability and congestion.

### 3.1.11 Road Pricing

Road pricing in Kent Thameside may be politically unpopular if it is seen as purely revenue driven. However carefully targeted road pricing as part of a package of sustainable transport measures, with charges used to fund provision of high quality public transport and park and ride services, is likely to be more acceptable.

It is anticipated that this is most likely to happen as part of a national road charging scheme. A local scheme may be politically sensitive if neighbouring areas did not adopt a similar form of demand management.

In addition to revenue raised directly, innovative road pricing schemes, well integrated with other measures, could be eligible for Government (TIF) Grants. Viability of such a scheme could be tested through a TIF bid. However it needs to be recognised that the Local Authorities may be opposed to road pricing.

### 3.1.12 Land use planning for an integrated sustainable community

Land use planning will be key to the eventual creation of an integrated sustainable community in Kent Thameside. The timing of various developments and the pieces of transport infrastructure that will support them is crucial. For instance it is important that jobs and homes are delivered around the same time, rather than homes first, which can lead to long distance commuting and the creation of unsustainable travel patterns. It is also vital that these developments contribute to an overall transport vision for the area.

Developments need to be planned based on their future role (i.e. a relatively high density urban area), rather than allow them to develop as a piecemeal succession of ‘edge of town’ sites, with inappropriate transport provision.
It is recognised that planners will not have *carte blanche* control over when and where things can be delivered because of the size of the sites concerned and the timescales involved. Nevertheless, planning officers and developers, as well as the national and local Highway Authorities need to be involved in the creation of a transport blueprint for the area, and work together on translating as much of it into reality as is feasibly possible.
4 Further investment in public transport – Fastrack

4.1 Committed Schemes

Fastrack was successful in attracting major scheme funding (£16.5m) for the initial links to Dartford Town Centre from Bluewater. KCC was also successful in obtaining £2.5 million from the ODPM’s Sustainable Communities Plan for 14 high specification bus vehicles to operate the initial service. Phase 1 of Fastrack was launched by Ministers in March 2006. The project is very successful with patronage even running above that expected one year into operation (i.e. mid 2007) at this stage.

Subsequently Community Infrastructure Funding (CIF) has been forthcoming for Thames Way and Everard’s Link schemes. Phase 2 of Everard’s Link involves extending it eastwards towards The Avenue and into the Ingress Park development. It is expected that this should be in place by 2007.

Cost: £34.2 m.
Status: Funded.
Source: Jacobs.

The costs for other elements of Fastrack infrastructure were last revisited in 2004, and as such they should be treated with caution. The costs incorporated the following elements:

- Design;
- Road works and structures;
- Intelligent Transport Systems;
- Statutory Undertakers Works;
- Land;
- Landscaping;
- Demolition;
- Contingency.

This envisaged that the vast majority of the funding would come from developer contributions.

4.1.1 Planned Infrastructure

Fastrack infrastructure for developments is likely to be required between 2009 and 2025 at a cost to developers of £85 to £142 million depending on optimism bias. Some of this funding is already committed, with ProLogis the developer of ‘The Bridge’ at North Dartford providing approximately £30 million of works to link North Dartford with Bluewater, including a new bridge over the A282. Some of the costs for the later phases of Fastrack incorporate high levels of optimism bias (up to 100%), given the uncertainty concerning the precise nature of the development, at Swanscombe Peninsula and Northfleet Embankment in particular.

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Significant funding is therefore expected from the developers of Eastern Quarry, Northfleet Embankment, Ebbsfleet, Swanscombe Peninsula and Ingress Park to cover the costs of the Fastrack infrastructure within the site boundaries. 2004 estimates (incorporating optimism bias) for the various elements that can be attributed to key developments are as follows:

Table 4-A: Fastrack Infrastructure – Developer funded totals

<table>
<thead>
<tr>
<th>Development</th>
<th>Details</th>
<th>Indicative Costs</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Bridge</td>
<td>North Dartford to Bluewater</td>
<td>£30 million</td>
<td>Current</td>
</tr>
<tr>
<td>Ingress Park</td>
<td>The Avenue to A226 junction</td>
<td>£2 - £3 million</td>
<td>2009</td>
</tr>
<tr>
<td>Eastern Quarry</td>
<td>Access to Eastern Quarry from St Clements Way Roundabout, northeast of Bluewater</td>
<td>£6 - £10 million</td>
<td>2017</td>
</tr>
<tr>
<td></td>
<td>Direct access to Eastern Quarry Development from Bluewater under St Clements Way</td>
<td>£6 - £10 million</td>
<td>2025</td>
</tr>
<tr>
<td>Ebbsfleet</td>
<td>STDR4 from A226 junction to Ebbsfleet Station</td>
<td>£5 – £7 million</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>Ebbsfleet Station to Thames Way via Springhead Valley. Information from the Fastrack Delivery Board suggests that this may no longer be possible, with the alternative being Fastrack lanes alongside SDTR4</td>
<td>£5 - £8 million</td>
<td>2007</td>
</tr>
<tr>
<td></td>
<td>St Clements Way to Ebbsfleet Station via Alkerden Lane and Eastern Quarry</td>
<td>£7 - £12 million</td>
<td>2011</td>
</tr>
<tr>
<td>Northfleet Embankment</td>
<td>Stonebridge Road to Thames Way via Northfleet Embankment</td>
<td>£13 - £27 million</td>
<td>2025</td>
</tr>
<tr>
<td>Swanscombe Peninsula</td>
<td>Ingress Park to Stonebridge Road via Swanscombe Peninsula East and West</td>
<td>£13 - £25 million</td>
<td>2025</td>
</tr>
</tbody>
</table>

Overall Cost: £87m to £132m.
Status: Funded if development goes ahead.
Delivery: 2007 to 2025.
Source: Jacobs – preliminary order of magnitude estimate.

There is also a need to provide additional dedicated Fastrack route sections outside of the development site boundaries, as suggested to the Kent Thameside Fastrack Delivery Executive Board in July 2006\(^\text{11}\). The extent to which these are funded by developers will depend on the nature of the Section 106 agreed with the planning authorities. The key missing dedicated route sections, with order of magnitude of costs are as follows:

### Table 4-B: Fastrack Infrastructure – Missing Links

<table>
<thead>
<tr>
<th>Location</th>
<th>Details</th>
<th>Indicative Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bluewater</td>
<td>Widen existing Bluewater access road network to provide priority lanes between Bluewater exit and Edge Place Roundabout</td>
<td>£2.5 million</td>
</tr>
<tr>
<td>Dartford Town Centre to The Bridge.</td>
<td>Widen existing road to provide priority lanes or provide new dedicated route as part of any future GlaxoSmithKline land redevelopment</td>
<td>£10 million</td>
</tr>
<tr>
<td>Northfleet Embankment to Garrick Street</td>
<td>Removal of old railway bridge, significant widening through Imperial Business Park and relocation of taxi rank</td>
<td>£12.5 million</td>
</tr>
</tbody>
</table>

Overall Cost: £25m.
Status: Funded if S106s can be incorporated into development planning permissions
Delivery: 2007-2025
Source: KCC

Fastrack will also require further vehicles to operate the additional services, with the original intention to provide intermediate mode vehicles by 2011. These are more costly than the high specification vehicles in use, with typical costs estimated to be £4.5 million for a fleet of 15 articulated intermediate mode vehicles. It was intended in the Strategic Business Case that Fastrack will pay its own way, and it is imperative that this happens. Currently it is envisaged that the operator will take on Fastrack as a commercial entity within five years and provide the funding for new vehicles on a regular basis, cascading the existing vehicles to other bus routes in Kent Thameside. However, if this does not happen then funding will be required to make up the shortfall.

### 4.2 Fastrack Concepts

#### 4.2.1 ‘Park and Ride’ at selected Fastrack stations

The National Audit Office report on “Improving public transport in England through light rail” made a number of recommendations for improving what is considered an intermediate mode of transport between the train and a bus. These recommendations are relevant to Fastrack since it aspires to the intermediate mode status. One such recommendation is the use of ‘park and ride’ to widen the catchment area of the system and therefore increase patronage further. Despite the best efforts to create a mixed use community on Kent Thameside, there is still likely to be some significant commuting into the area from Essex, Thurrock, South West Kent and South East London from places where there is no feasible public transport option from door to door because of the geography of the rail network. By providing car parks at selected Fastrack station(s), this will offer an opportunity to reduce traffic levels on the county road network within Kent Thameside.

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As the ‘park and ride’ element merely complements the scheme and is not its *raison d'être*, it is not necessary to provide large car parks, as one would do so for a dedicated park and ride system, such as those serving Maidstone and Canterbury. Instead the approach taken for many railway stations would be more appropriate. Hence a small number of ‘park and ride’ sites at Fastrack stations offering good access to the strategic road network could be an effective means for increasing patronage.

The stations that are likely to offer potential are those on the periphery of the Kent Thameside area, since those in the urban area itself with spare land will be increasingly attractive for residential development pushing up land values, and attracting more car trips into the urban area itself is an undesirable outcome.

A possible option meriting investigation is a park and ride facility located off an improved Bean junction to intercept car trips as they leave the trunk road network with accompanying enhancements to Fastrack routing to serve the site. The ‘park and ride’ site would need to be linked to variable message signs so that drivers on the motorway and trunk road network are aware if the sites are full.

Without any dedicated ‘park and ride’ provision one could expect some informal ‘park and ride’ occurring at Bluewater especially with people taking advantage of the free parking to use Fastrack to reach other areas of Kent Thameside. Bluewater management may use their power to levy charges to non shoppers but this may be difficult and costly to police given the size of the car parking available at Bluewater.

Clearly feasibility studies would be required quickly to assess suitable sites where parking provision could be provided on the existing and later phases, before these are earmarked for other development. Costs would be influenced significantly by the value of the land and the size of hard standing provided. Smaller sites would require fewer junction improvements. Any study would also need to consider:

- Potential abuse of parking provision by residents over spilling from adjacent areas with parking restraint.
- Landscaping issues.

Of note are costs of recently completed schemes (land, design and construction):

- *Stratford-upon-Avon* – 725 cars - £4m.\(^{14}\)
- *Chelmsford* – 600 cars - £3m.

Essex County Council estimates that new park and ride schemes in Colchester featuring between 1,000 to 2,000 spaces will cost between £5 and £6 million per site.\(^{15}\)

Both of the sites recently completed were Greenfield locations, and therefore a site with better development potential could cost more. If a Brownfield site is chosen, then construction costs may have to increase to pay for a clean up of the site. The size of the site would also affect the access arrangements, and a larger site could require more costly junction designs.

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Given the lead-in time required, two car parks of the size of the Chelmsford site could amount to something of the order of £7 to £12m, provided that they were ground level car parks. If multi-storey structures are considered there may be savings in land cost, perhaps with development value, to offset the cost of the structure. However if ground conditions are poor there may be a need to add a strengthening cost.

**Est. Cost:** £7-12m.
**Status:** Not funded
**Delivery:** 2011-2016.
**Source:** Jacobs – preliminary order of magnitude estimate.

### 4.2.2 Possible links to other bus based rapid transit systems

As Fastrack develops it is important to consider linkages with other new bus based rapid transit systems if and when they develop in neighbouring growth areas. These include the following transit systems:

- **East London Transit Phase 1:** Ilford to Dagenham Dock via Barking Town Centre (due to open in 2007);\(^{16}\)
- **Greenwich Waterfront Transit Phase 1:** Greenwich to Abbey Wood (due to open in 2010);
- **South Essex Rapid Transit (SERT):** Thurrock to Basildon, Canvey and Southend (merely a concept at this stage);\(^{17}\)
- **Medway Transit.**

Apart from the Gravesend-Tilbury Ferry and future CTRL services between Gravesend, Ebbsfleet and Stratford there are no established public transport links between Kent Thameside and either East London or South Essex, whereas there are already existing heavy rail links between Kent Thameside, Medway and Bexley. Hence duplicating these rail routes with new bus rapid transit systems are unlikely to be attractive.

However the provision of a high quality public transport link between Kent Thameside and East London/ South Essex would provide people a realistic alternative to the car for travel between these key areas of the Thames Gateway. It may be more cost effective than a rail crossing, and any scheme for an additional Thames Crossing should consider the needs of a bus rapid transit system, with toll exemptions and a dedicated lane avoiding any toll booths likely to boost the operability of such a route.

The relevance of this concept to KTS clearly depends on the alignment of an additional Thames Crossing, which is unknown at this stage.

**Cost:** Unknown.
**Status:** Not funded.
**Delivery:** Dependent on the alignment of an additional Thames Crossing.

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\(^{16}\) *Transport for London (2007): Thames Gateway – Transit Regeneration and Economic Development of the Thames Gateway*

\(^{17}\) *Essex County Council et al. (2006): South Essex Rapid Transit – the concept explained.*
Further investment in public transport – Railways

5.1 Funded Strategic Improvements

5.1.1 Channel Tunnel Rail Link

Phase 1 of the Channel Tunnel Rail Link was completed in 2003, and resulted in high speed trains using a 74km section between Folkestone and Southfleet (Gravesend). Currently Eurostar trains branch off at Southfleet Junction to join the existing route into Waterloo at Fawkham Junction.

Phase 2 involves the construction of 39km of railway between Southfleet Junction and London St. Pancras. The new line travels northwest through the Ebbsfleet Valley to a new international and domestic station at Ebbsfleet and a new junction with the existing North Kent Line. North of Ebbsfleet the CTRL route passes beneath the River Thames to emerge at West Thurrock. There are connections with the c2c railway at Dagenham which provide the potential for the tunnel under the Thames to be used for freight trains between North Kent and East London. Phase 2 is expected to be open to international trains in mid 2007.  

Cost: c£3.3bn.  
Status: Funded.  
Expected Completion: Mid 2007.  
Source: DfT.

5.1.2 Ebbsfleet Station

“At Ebbsfleet, the new station with its extensive ‘park and ride’ facilities and convenient access to the national motorway network will complement the regeneration of the Ebbsfleet Valley with a new commercial and retail development promoted by Land Securities. CTRL Domestic services will be a key driver in the regeneration and growth of the Kent Thameside and Medway areas of the Thames Gateway.”

“The Channel Tunnel Rail Link presents the opportunity to provide high speed services for commuters into London, with significantly reduced journey times. This will attract new business and employment opportunities and open up access from Kent for employment opportunities in Stratford, the Lower Lea and Docklands, and opportunities for reverse commuting.”

Ebbsfleet will have 9,000 car park spaces across six car parks, with 3,000 spaces available for domestic passengers. It is anticipated that Eurostar services to Paris and Brussels will begin in autumn 2007. The following service pattern is proposed:

- Of the planned 32 trains per day operating between London and Paris on weekdays, Eurostar currently intends to stop 14 at Ebbsfleet.
- Between London and Brussels, Eurostar currently proposes to stop ten out of the 20 trains at Ebbsfleet.  

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18 Department for Transport (2005a): “What is the Channel Tunnel Rail Network?”
http://www.dft.gov.uk/stellent/groups/dft_railways/documents/page/dft_railways_035479.hcsp
19 Department for Transport (2005b): “The regeneration benefits of the CTRL”
http://www.dft.gov.uk/stellent/groups/dft_railways/documents/page/dft_railways_035483.hcsp
5.1.3 Current Network Rail Route Programme for Kent

In addition to the CTRL project the following strategic rail projects are of relevance to Kent Thameside. For instance:

- There will be a major timetable recast in 2007, which will be aimed at making better use of existing capacity and improving performance in the critical London Bridge corridor, by optimising the times at which peak trains run through this area;
- Implementation of the new Integrated Kent Franchise (IKF) timetable in 2009. This will provide high speed services from St Pancras via the CTRL to Gravesend, Medway and East Kent, leading to significant journey time reductions. It will also free up track space closer to London which will enable performance improvement and limited additional services on other lines;
- Implementation of the Thameslink Programme. This will largely eliminate the bottleneck caused by the existing track and station layout in the London Bridge area. This will have major benefits for services into Charing Cross, including enabling all trains to call at London Bridge. There will also be some new direct journey opportunities created due to through running from certain Kent routes to the Thameslink network; and
- Interfaces with Crossrail Line 1 at Abbey Wood, and potentially beyond. 21

5.1.4 Integrated Kent Franchise incorporating CTRL Domestic services

This franchise covering Kent, SE London and parts of East Sussex was let to Govia in April 2006. The final specification for trains calling at Dartford is as follows:

- Sidcup line to Dartford: 2 trains per hour (tph) Charing Cross - Gravesend, fast from London Bridge to Hither Green; 2 trains per peak period (tppp) Charing Cross – Dartford; and 2 tppp Cannon Street – Dartford.
- Bexleyheath line to Dartford: 2 tph Cannon Street – Dartford; 2 tph Charing Cross – Dartford; 2 tph Victoria to Dartford.

These services are broadly similar to those provided at the present time, although services from Dartford on the Bexleyheath line will increase from 4 to 6 per hour.

Gravesend also benefits from the new CTRL Domestic services and its services are as follows:

- 2 tph St Pancras – Sittingbourne via Gravesend and Medway Towns (although these will only run as a St. Pancras to Ebbsfleet shuttle during the busiest 2 hours of the peak.)
- 2 tph Charing Cross - Gillingham via Dartford and North Kent;
- 2 tph Charing Cross - Gravesend, fast from London Bridge to Hither Green;
- 3 tppp St Pancras – Broadstairs via Medway Towns;
- 3 tppp St Pancras – Rochester.

Key benefits of these services for Kent Thameside include:

- Faster journey times to Central London – e.g. 18 minutes from Ebbsfleet and 22-25 minutes from Gravesend compared to the current 44-50 minute journey time to London Bridge;
- Improved rail access to Docklands via Stratford;

• Improved rail access to destinations in East Anglia and Essex via Stratford;
• Improved rail access to destinations in the Midlands, Yorkshire and the Northeast via St. Pancras/ King’s Cross.

Subsidy: £585m over 8 years.
Status: Funded.
Delivery: 2009.
Source: DfT.

5.2 Funded Local Improvements

5.2.1 Power Supply and Platform Upgrades

Projects to improve the future capability of rail corridors in Kent Thameside are currently planned. For instance Network Rail states that:

• “Power supply issues, together with several short platforms, prevent operation of 12-car trains on each of the lines to Dartford and beyond. We are currently investigating upgrading the power supply to remove this restriction on the Sidcup and Bexleyheath lines. This work, which would be required anyway by the Thameslink Programme, will also require platform extensions at New Cross, Hither Green, Eltham, Mottingham and Dartford…”

While part of the Thameslink programme, it is under consideration for earlier implementation to help provide more capacity on existing suburban services using Networker trains. These trains were built in the 1990s and do not have selective door opening to allow them to call at stations with short platforms. Network Rail estimate that this scheme will cost in the region of £10m with possible delivery in the 2007/8 financial year. Network Rail is currently preparing the South London Rail Utilisation Study (RUS) and this will provide more detailed costs for these works around Easter 2007.

On the Woolwich line, platform extensions are likely to be very expensive at Woolwich Dockyard because of sheer tunnel walls at both ends of the station, with noted difficulties further east at Gravesend, Strood and Rochester. Network Rail is also considering the costs of selective platform lengthening on this line as part of the RUS. New railway stock (e.g. CTRL trains and Class 376 Electrostars) is equipped with selective door opening, which could allow 12 car trains to call at stations that are too costly to extend if special dispensation is given.

Cost: £10m (approximate).
Status: Funded.
Source: Network Rail.

5.3 Strategic Schemes Awaiting Funding

5.3.1 Crossrail

Crossrail will create a brand new network of services linking areas to the west and east of London. The project involves the construction of a new tunnelled route across London, which will allow existing suburban rail services to run through London offering a range of possible services to areas such as Abbey Wood and Shenfield to the east, and Ealing and Maidenhead to the west, with an option to serve Heathrow Airport.
Earlier versions of Crossrail saw it extended east of Abbey Wood to Ebbsfleet/Gravesend. Nevertheless the Crossrail bill has safeguarded the alignment from Abbey Wood to Hoo Junction yard, providing a four track approach to Dartford station in case it is decided to extend the route again in the future.

The aim of Crossrail is to:

- Establish a brand new network of services linking areas across London and beyond.
- Allow existing suburban rail services to run through London.
- Reduce overcrowding on Underground lines as well as reducing congestion at a number of busy National Rail stations.
- Provide a major boost to the development of London’s integrated transport network.
- Ensure that features such as full access for people with restricted mobility are included as an integrated part of the design.
- Facilitate the regeneration of priority areas, such as the Thames Gateway and the Lea Valley.22

A funding solution is yet to be agreed but it is anticipated that business will provide some of the money. Royal Assent is expected to coincide with the 2007 spending review.

Cost: c£15bn (estimate)23
Status: Not funded
Delivery: 2015
Source: Cross London Rail Links Limited/ BBC.

5.3.2 Thameslink 2000

The Thameslink Programme is a £3.5bn rail infrastructure project that aims to enhance the rail network in and around London. For instance the plans would significantly increase capacity on the over-ground railway to and through London, via St Pancras in the north and Blackfriars and London Bridge in the south. The scheme would result in:

- Longer and less overcrowded trains on main commuter routes.
- Reduced need to change to London Underground/ change trains on many popular journeys.
- A substantial increase in the number of trains travelling through the core route (St. Pancras to Blackfriars) during peak times (from 8 to a capability of 24 trains per hour in each direction).
- Investment and redevelopment at London Bridge, Farringdon and Blackfriars stations, removing bottlenecks. For instance the works at London Bridge would allow better separation of Thameslink, Charing Cross and Cannon Street services by providing 3 additional through platforms and grade separation of tracks to the east to reduce conflicting movements on the approaches to London Bridge;
- Capability for 12 car trains on the core section.24

Proposals for Thameslink 2000 currently involve four trains per hour between Bedford and Dartford via London Bridge, although this could change.

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23 BBC (2006): “Mayor steps up Crossrail pressure” BBC News 06/06/06.
Other South Eastern services should also benefit from these improvements with more punctual services on the suburban services to Kent Thameside.

The Government has recently granted planning permission and legal powers under the Transport and Works Act to Network Rail to progress the Thameslink Programme, with the only remaining obstacle being a funding agreement.

Cost: c£3.5bn.
Status: Not funded.
Delivery: c. 2014.
Source: Network Rail.

5.4 Local Schemes Awaiting Funding

5.4.1 North Kent Line Capacity Improvements

The concept was originally promoted in the Thames Gateway Kent Partnership’s – Area Investment Framework in April 2002 with the stated aim being the delivery of a ‘metro’ style service headway to North Kent.

The North Kent Line upgrade is subsequently found in the Kent and Medway Structure Plan.\(^25\) The aim of the upgrade is to increase the number of rail services to/from the Thames Gateway Growth Area. The Structure Plan clarifies the upgrade as increasing capacity between Dartford and Slade Green, i.e. four tracking. The Structure Plan sees the North Kent Line upgrade as medium to long-term, with delivery envisaged post 2016.

Reliability of rail services is likely to be an issue if more services were provided without increasing capacity. There is already some variation in scheduled journey times between Dartford and the next station on each of the three lines into London to try and make journey times more reliable, although this means that they are often longer. Examples in the current Southeasten Timetable 5 include:

- **Crayford to Dartford** – 3 to 6 minutes.
- **Barnehurst to Dartford** – 5 to 10 minutes.
- **Slade Green to Dartford** – 4 to 7 minutes.

Reliability of additional services on the existing infrastructure is also another reason why Crossrail was dropped between Abbey Wood and Ebbsfleet in that the promoters could not guarantee that a net increase of 2 services an hour east of Abbey Wood could be operated reliably given the existing infrastructure.\(^26\)

From an initial glance, Network Rail have indicated that a scheme to four track the railway between Slade Green and Dartford would be likely to cost a nine figure sum (i.e. at least £100 million)\(^27\). This cost reflects a high amount of risk given the lack of design work, etc.

\(^{25}\) KMSP (2006): Table TP5: Strategic Rail Schemes, pp.158-159
\(^{26}\) Cross London Rail Links (24/11/04): Press Release
\(^{27}\) Telecon between Robert Nicholls (Network Rail) and Jonathan Whittaker (Jacobs) 09/02/06
Given the complexity of rail costs, a proper feasibility study and business case would be required to illustrate practicality and affordability. Network Rail can help with a GRIP (Guide to Rail Investment Projects) Stage 1 (Output Definition) assessment, although this would involve associated costs.\(^{28}\)

To assess whether the scheme is value for money at this early stage is very difficult. The costs are very high (at least £100m) but could be reduced once preliminary work by Network Rail had been carried out. For instance it might be possible to deliver many of the benefits by four tracking only a smaller section. Once the unknowns and risks are assessed then the costs could fall.

In terms of the benefits these may include:

- **Marginally better journey times** – for instance the operator on some journeys has increased the scheduled journey time between Dartford, Crayford, Barnehurst and Slade Green to compensate for possible delays and conflicting rail movements. The monetary value of reducing average journey times could be assessed using passengers’ value of time.
- **Improved reliability** may allow Southeastern to meet its targets, saving it the need to issue season ticket renewal discounts.
- **Passengers may be willing to pay more for tickets** if they know that their journey is more reliable.
- **Improved journey time and reliability** may increase rail modal share thereby increasing farebox revenue.
- **Reduce overcrowding into London.**
- **The ability to operate more services could increase farebox revenue through increased patronage.**

Network Rail’s representative has commented that he thinks that the proposal is very unlikely to satisfy any business case for external funding, and it could result in less capacity for Southeastern because four tracking would result in the loss of sidings at Slade Green Train Depot. They have also indicated that there is no spare capacity at London termini to run a significant number of additional trains. Their argument is at present that the most effective way to achieve more capacity is to lengthen platforms and trains. Consequently they note that any proposal to increase track capacity on the North Kent Line is not being considered by the current South London Rail Utilisation Study due for consultation in Easter 2007.

It is recommended that the Kent Thameside Delivery Board retains the goal of increasing capacity on the North Kent Line, but should see it as a long-term aspiration (e.g. post 2021) that will require review once other rail projects in the area have been opened. This will give time for all involved in rail to assess the impacts of CTRL domestic services, DLR at Woolwich Arsenal, Crossrail at Abbey Wood and Thameslink on rail demand patterns and assess what capacity is freed up at

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\(^{28}\) Network Rail has defined an process for managing investment schemes via its Guide to Rail Investment Projects (GRIP). All railway enhancement projects must progress from definition of need and outline scope, to delivery and implementation in accordance with the GRIP Business Rules and processes. GRIP is a 7 stage-gated process with thorough technical and budgetary reviews and approvals at each stage. Where Third Party Schemes are proposed, Network Rail reviews the proposals in terms of its Strategic Goals for each Route, these being defined within the Route Utilisation Strategy (RUS) Document. For Third Party enhancement schemes the preparation and validation of the Business Case is the responsibility of the Third Party.

5.4.2 Greenhithe Station Upgrade

This £3 million scheme involves the upgrade of Greenhithe station, with a new station building, and enhanced accessibility to the London bound platform. Funding was to be secured through the Second Local Transport Plan, with delivery in 2008/9 although now this is no longer the case. Therefore the scheme is currently unfunded. Potential sources of funding could include developers or Network Rail.

Cost: c£3m.
Status: Not funded.
Delivery: Unknown.
Source: Kent Thameside Delivery Board.

5.4.3 Pedestrian interchange between Northfleet and Ebbsfleet stations

Crossrail was originally planned to run from Central London to Ebbsfleet via the Royal Docks, Abbey Wood and Dartford. However this branch of Crossrail has been curtailed to Abbey Wood for the time being because of costs, with work to solve capacity issues in the Dartford and Slade Green area a key issue. This service would have provided very good accessibility to Ebbsfleet International station by public transport for parts of SE London. However without this service passengers are likely to drive to Ebbsfleet adding to congestion. Nonetheless there is potential to intercept some trips by train given the close physical proximity of Northfleet station to Ebbsfleet station (c 400 metres).

The two stations are currently separated by overgrown sidings (it is understood that these will be re-commissioned by LaFarge in the near future) adjacent to Northfleet station, a gradient and the A226 Thames Way, which is expected to be upgraded to dual carriageway standard. Currently pedestrians would have to make a detour via B2175 Stonebridge Road to travel between the stations, which is unlikely to be attractive to many with bulky luggage.

Access between these stations could be improved in a phased manner. Initially existing walking routes between the two stations could be upgraded, with high quality streetlighting and signing.

Currently the Local Transport Plan anticipates that £300,000 would be required for a scheme to link the two stations via a footbridge over the A226 Thames Way, although KCC will be looking for means other than the LTP to fund it. However a more desirable higher quality scheme is likely to cost significantly more but give higher use in return. Currently it is expected that this will be delivered by 2011, although it is arguable that this needs to be in place as soon as possible.

The ultimate solution would involve a fixed covered walkway (perhaps incorporating a travelator) linking both platforms at Northfleet with the international station and avoiding the need to cross the A226 at grade. Northfleet station could be marketed as Northfleet for Ebbsfleet International, with connections highlighted on railway
maps or even renamed Ebbsfleet International, and the platforms renumbered to highlight the connections. While the connection may seem relatively long, it is in reality little different from the connections at international airport terminals, well served by rail such as Gatwick and Birmingham.

**Budget:** £0.3m (minimum scheme).  
**Status:** Not Funded.  
**Delivery:** 2010/11.  
**Source:** KCC.

### 5.4.4 Northfleet Station Upgrade

The Kent Thameside Delivery Board has also suggested a figure of around £3 million for making improvements to Northfleet station. Given that this is a potential interchange station for Ebbsfleet International, improvements to station facilities are important if people from North Kent and SE London will use rail to access Ebbsfleet. Possible improvements could include improved passenger waiting areas, real-time information, footbridge with lifts. The figure of £3 million is based on the estimated cost for similar improvements to Greenhithe station.

**Cost:** c£3m.  
**Status:** Not funded.  
**Delivery:** Unknown.  
**Source:** Kent Thameside Delivery Board.

### 5.4.5 Swanscombe and Stone Crossing Station Improvements

There may be potential to provide small scale improvements with or without the improved capacity as an interim measure. Currently some stations on the North Kent Line are not particularly inviting to passengers with vandalism at Swanscombe station observed to be a problem, no real-time passenger information at platform level at certain stations (again Swanscombe) and a lack of facilities for those with mobility impairments at several stations through steep steps to platforms from street level or via subways.

The DfT has set aside £370 million for *Access for All* funding, which is targeted at improving the accessibility of railway stations through to 2015. This investment is over and above commitments made in franchises, the ongoing renewal of stations delivered by Network Rail and major station improvement projects. Of relevance to the stations on the North Kent Line is:

- £7 million per year, the majority of which will be available as Small Schemes funding. These projects are intended to be sponsored by a range of bodies including Train Operating Companies, local authorities and Public Transport Executives.⁹

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It is anticipated that sums of the order of £0.5 million could make a difference at Stone Crossing and Swanscombe. This funding source may also provide a useful contribution to Northfleet station improvements. In addition the makes reference to improving foot links between Swanscombe and Ebbsfleet stations, assuming a cost of £250,000. While mentioned in the Local Transport Plan it is understood that KCC will be seeking funding for this scheme from external sources.

**Cost:** c£1.25m.  
**Status:** Not funded.  
**Delivery:** 2007-2016.  
**Source:** Jacobs Order of Magnitude Estimate.

### 5.4.6 New station at Denton

The Canal Basin to the east of Gravesend offers the potential for 1000 homes and 69,000 m² of business space. Previously it was envisaged that Fastrack would be extended east of Gravesend Garrick Street to serve this new development. As this is no longer possible it is important that this regeneration site is served by high quality public transport to reduce the number of trips that would otherwise be made by car. One option involves the provision of a new station at Denton, which is under consideration in Network Rail’s Route Plan for Kent.

A railway halt was previously provided at Denton at the junction of Norfolk Road and Mark Lane until 1961, and as a result this site may still suitable for a railway station. This would also be located adjacent to the proposed Denton Relief Road offering the potential for a car park to increase the catchment area of the station.

Denton station is also a possible location for turnback facilities for Crossrail, should Crossrail be extended to Ebbsfleet/Gravesend.

**Cost:** c£5 – £7 million\(^\text{30}\)  
**Status:** Not funded.  
**Delivery:** Dependent on development of Canal Basin.  
**Source:** Jacobs – preliminary order of magnitude estimate.

However it is understood that the Planning Authority concedes that the delivery of this scheme is now very unlikely. As a consequence other sustainable measures will need to be considered if the Canal Basin is to be considered a sustainable development. This could include enhanced bus services to Gravesend town centre with high quality bus stops (including real time information) provided in the Canal Basin area.

### 5.5 Concepts

#### 5.5.1 Enhanced rail frequency – Maidstone to Gravesend/ Dartford

A logical follow-up to an upgrade of the North Kent line would be to offer improved services to Kent Thameside from Maidstone and the Medway Gap, one of the Government’s growth points, and the administrative centre of Kent. Currently there are on average 2 trains an hour between the Medway Towns, Gravesend and

\(^\text{30}\) Note this is an estimate provided by Jacobs Croydon Office for a scheme featuring a new station with two platforms, and DDA compliant access arrangements.
Dartford, with passengers from Maidstone and the Medway Gap required to connect at Strood. However connections are not always made leading to poor patronage. If Maidstone services were extended in the future from Strood to Gravesend/ Dartford this would improve the catchment area of Kent Thameside by public transport and mean that other development areas served by Fastrack could be reached by only one change.

The new base timetable specified for the Integrated Kent Franchise from 2009 will certainly improve matters with CTRL domestic services from the Medway Towns also calling at Gravesend and Ebbsfleet doubling the number of services between Medway and Gravesend. However Maidstone West services will continue to terminate at Strood.

Even without an upgrade of the North Kent line there may be an opportunity for Southeastern to extend the 2009 baseline requirement of a Charing Cross to Gravesend service via Hither Green to Maidstone West, replacing the Maidstone West to Strood shuttle, although this may have an impact on rolling stock requirements and may be dependent on platform lengths. As this is proposed to be a stopping service this would offer good connections to all of Kent Thameside from Strood, the Medway Gap and Maidstone, and is worth consideration.

If Southeastern cannot be persuaded to run the service based on the commercial merits, then increased subsidy would be required, which only the DfT can provide. Increased platform lengths would be a cost that Network Rail would meet, although this is not scheduled in the current Network Rail Kent Route Plan 2006.

Cost: Unknown.
Status: Concept and unfunded.
Delivery: 2016-2021.
Source: Jacobs.
6 Strategic Highway Schemes

6.1 Committed Schemes

6.1.1 A2/A282 Dartford Improvement

This £120 million scheme includes new roads to link the northbound A282 and the eastbound A2, with new lanes on the A2 westbound for traffic joining the M25 going south, and a fourth lane to be added in each direction on the A2 between the M25 and Bean junction, a distance of approximately 2km. Two new viaducts will also be built alongside Littledale Viaduct and a flyover over the A2 and M25. The scheme is currently under construction and is expected to be completed in mid 2008. The aim of the scheme is to increase capacity in the Kent Thameside Growth Area.

Scheme Cost: £120m.
Status: Funded.
Delivery: Mid 2008.
Source: Highways Agency.

6.1.2 A2 Bean to Cobham Phase 2

The widening scheme is the second phase of the overall A2 Bean to Cobham scheme, with the first phase Bean to Pepperhill, completed in December 2004. The second phase involves the widening of the A2 to four lanes with hard shoulders in each direction between Pepperhill and Cobham junctions.

SEERA’s envisaged outcome is a capacity increase on A2 serving strategic sites, notably Eastern Quarry mixed uses (c 7,000 dwellings), Ebbsfleet station, and other housing and employment (c 20,000 jobs).

Scheme Cost: £122m.
Status: Funded.
Source: Highways Agency.

6.1.3 M25 Widening J1b to J3

Also of relevance to Kent Thameside is this £66 million scheme, which involves widening the M25 between Junction 1b (A225, A296) and Junction 3 (Swanley Interchange):

- Widening the M25 to 4 lanes between the south facing slip roads of Junction 2 and the north facing (M20) slip roads of Junction 3.
- The southbound M25 would be widened to 3 lanes from Junction 1B to south of Junction 2.

Funding is committed and the scheme construction is expected to start in spring 2007.

Scheme Cost: £66m.
Status: Funded.
Source: Highways Agency.
### 6.2 Highways Agency – Schemes Awaiting Funding

#### 6.2.1 Access to Ebbsfleet/ Eastern Quarry

It is expected that the Highways Agency will be reviewing access to the strategic sites of Bluewater, Eastern Quarry and Ebbsfleet over the coming months via various junctions.

It is expected that improvements will be required at the A2/ B255 Bean Interchange for access to Eastern Quarry. The Kent Thameside Model does not currently incorporate junction improvements at this location, since no firm scheme has yet been forward. Nevertheless the Kent Thameside Delivery Board has agreed that indicative costs for a scheme at this location are likely to be in the region of £20 million.

**Scheme Cost:** c£20m  
**Status:** Not funded.  
**Delivery:** 2011-2016 (est.)  
**Source:** Kent Thameside Delivery Board – Order of Magnitude Estimate.

The *Ebbsfleet Transport Strategy* expected that the joint preferred scheme would be provided between 2011 and 2018, which would result in the following:
- The conversion of the south-east junction to a signalised hamburger layout, with additional access to Ebbsfleet provided at the junction;
- The provision of a dual carriageway link between the (Northfleet West) sub-station roundabout and Hamburger junction;
- Relocation of the A2 eastbound on-slip;
- Provision of a westbound link between Ebbsfleet and Pepperhill; and
- Traffic Signals at the northern Pepperhill junction.

However this joint preferred scheme for access to Ebbsfleet from the A2 is currently under review by the Highways Agency and its consultants as the proposed scheme is not considered sufficient to meet the projected demand. It is understood from the Highways Agency, that they were informed that £18 million would be available from developers for junction proposals at Ebbsfleet as a condition on the original planning permission. The Kent Thameside Delivery Board have again estimated that the scheme is likely to cost in the region of £25 million, resulting in a funding gap of £7 million.

**Scheme Cost:** c£25m  
**Status:** A developer contribution will be provided.  
**Delivery:** 2011 – 2018.  
**Source:** Kent Thameside Delivery Board – Order of Magnitude Estimate.

#### 6.2.2 A2 Demand Management

As part of the improvements to the A2 it is expected that the potential for demand management measures discussed for the M25 will also be explored. These include high occupancy vehicle lanes, ramp metering and variable message signs.

Faber Maunsell provided some preliminary of order magnitude costs (including various caveats) suggesting that a eastbound HOV lane running 2km east of M25 junction 2 to M2 junction 2 could cost in the region of £14m.
Faber Maunsell has also considered the potential for intelligent transport systems (ITS) on the trunk road network for the KTS area 2km west of A2/M25 Junction 2 to the A2/A227 interchange, suggesting costs in the region of £40m. Suggested measures include:

- Variable Speed Limit;
- Average Speed Enforcement;
- Average Speed Enforcement;
- CCTV;
- Variable Message Signs;
- Ramp Metering.31

However the £40m estimate for ITS measures was based on a number of assumptions including gantries spaced at regular intervals (actual spacing and positions not determined) and the provision of ‘all new’ equipment including such items as power supply and ducting. However the ‘controlled motorway’ scheme is now assumed to extend between the M25 and M2 i.e. of longer length which will therefore result in an associated increase in costs, even when the potential for cost reductions have been investigated. It is therefore important to recognise that the costs quoted here are very approximate, and may relate to a different scheme to the one actually implemented.

It is also important to recognise that this controlled motorway scheme will cover an area greater than Kent Thameside and hence it is unreasonable to apportion all of its costs to Kent Thameside. The Kent Thameside Delivery Board therefore assume that in the region of £35 million will be required for A2 demand management measures in the Kent Thameside area, with some contribution from the Highways Agency likely, which would still result in a funding gap of approximately £25 million.

**Scheme Cost: c. £35m.**
**Status: Not funded – although a contribution from the Highways Agency may be expected.**
**Delivery: 2016-2021 (est.)**
**Source: Kent Thameside Delivery Board – preliminary order of magnitude estimate.**

### 6.2.3 An Additional Thames Crossing

The pressures facing the key Dartford Crossing of the River Thames was summarised in a Jacobs report for the Highways Agency in 2005. It is expected that the unreliable nature of journeys across the Thames will continue to worsen with the forecast growth in development on either side of the Thames and the need to adapt the Crossing to meet new EU safety directives32. It is also important to note that there are few realistic public transport alternatives for travel between Essex and Kent (although CTRL domestic services will improve access between Kent Thameside and Stratford for East London), with rail passengers requiring to travel into congested London termini and out again. Rail freight from the Channel Tunnel and Thamesport (Grain) also has to use paths through London to reach the rest of the country.

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32 Highways Agency (2005b): Getting the most out of the Dartford Crossing.
The potential for an additional Thames Crossing has been considered before in a number of studies, such as:


These studies assessed the benefits and costs of various road only alignments between Dartford and Canvey Island, some of which may no longer be available because of development in the intervening years. The Dartford Local Crossing Study included a number of options crossing the Thames including a bridge parallel to the existing crossing at Dartford and routes from the Swanscombe Peninsula to either West Thurrock or Tilbury Dock.

In addition the concept of a tidal barrage between Sheerness/ Grain and Shoeburyness carrying road and rail links has been recently promoted by the architect Sir Terry Farrell. This is something more relevant to the long-term and not something to solve Kent Thameside’s short to medium term transport problems.

The DfT is also considering demand at the existing Dartford Crossing and the potential for a further crossing, and set out its stance in an October 2006 press release. In the medium term, the DfT has decided that raising tolls is the only way to keep traffic at manageable levels. Therefore it is anticipated that car fees will increase by 50p to £1.50 from 1 January 2008.

The DfT also considers that better use can be made of existing capacity by providing incentives to vehicles to travel at quieter times where there is a realistic option. Therefore the DfT intends to drop the charge for all vehicles using the Crossing between the hours of 2200 and 0600.

In the longer term the DfT expects demand for use of the Dartford Crossing to continue to grow:

“Various options for new capacity across the Thames have been considered in the past, but the Government believes the issue now needs to be moved forward, particularly in the light of development plans for the Thames Gateway. The Department will therefore be commissioning a study to look at the options for addressing traffic issues in the longer term, including the possibility of a new Crossing. Work will start immediately on specifying the scope of the study with a view to letting the study as early as possible in 2007.”

Prior to the DfT decision, Kent County Council and Essex County Council had announced a £100,000 feasibility study to examine the possibility of another Thames Crossing with potential for road and rail links. The study was to be commissioned in 2007, but this will now depend on the nature of the DfT study brief. The Medway Regeneration Framework is also supportive of the concept of an additional Thames Crossing as it is expected to bring significant economic benefits to the area.

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34 Department for Transport (2006c): “Charging regime at the Dartford -Thurrock river crossings” Press Release 19/10/06
35 BBC (2006): “‘Gridlock ahead’ without crossing”
Current ball park estimates from SEERA suggest that the scheme will cost in the region of £800 million, which excludes the cost of supporting connecting links. However realistic figures will depend on the nature of the scheme, i.e.

- Whether it incorporates a railway/ busway;
- Alignment;
- Tunnel or bridge;
- The number of road lanes/ rail tracks;
- Strategic or local purpose;
- Motorway or dual carriageway standard road;
- Scale of connecting links to existing road and/or rail infrastructure;
- Location and length of river crossing.

Scheme Cost: DfT Study £1m; Actual Scheme: £800m.
Status: Not funded.
Delivery: 2011-2021 (est.)
Source: SEERA.
7 Local Highway Improvements

7.1 Scheme funding dependent on developers

7.1.1 Introduction

The schemes introduced in Section 7.1 are those which are currently part of the Strategic Infrastructure Funding Gap, but where KCC expects a contribution or full funding from developers. If this does not happen then other sources of funding will be required if the schemes are still considered relevant.

7.1.2 Rathmore Road Link, Gravesend

This scheme is part of the second Local Transport Plan and is associated with the regeneration of the Gravesend Transport Quarter. A Masterplan has been produced, and funding for the improvements was committed by the ODPM. However some of the funding for associated transport schemes is expected to come through the Local Transport Plan.

A new link road is part of a phased approach to remodel the town centre. The link road will allow Rathmore Road to operate two-way and enable the removal of traffic from other roads, such as Clive Road (currently one way). The aim is to ease congestion in the area to the south of the railway station and allow Clive Road to function as a bus only link, with improved facilities for pedestrians.

The total cost of the Rathmore Road scheme is approximately £10 million. Originally the Local Transport Plan was expected to fund £2.5 million towards these improvements between 2007/08 and 2009/10. However the scheme will no longer be receiving funding in 2007/08 and in reality KCC is looking for redevelopment of the Transport Quarter to fully fund the scheme.

Scheme Cost: £10m.
Status: Not funded
Delivery: 2010, but dependent on redevelopment of Transport Quarter.
Source: KCC.

7.1.3 A226/ B255 St Clements Way Junction, Greenhithe

Modelling suggests that this junction will be at over capacity by 2018 with further development in Kent Thameside. This is a key junction as:

- The A206/ B255 route is one of the two key routes to Bluewater.
- Fastrack passes through the junction between Greenhithe station and Bluewater.

A number of schemes have been considered for this junction in recent years, including traffic signals or an underpass. SEERA expects that developers would meet some of the costs, with KCC providing the rest of the finance for the scheme. For instance the LTP sets aside £1.1m towards the scheme cost, although KCC may now seek full funding from developers. Estimates for the total cost will depend on the nature of the scheme but could be approximately £5 million to £7 million.

Developers of the adjacent business park at Waterstone Park should be contributing some of these costs, along with those involved in Eastern Quarry and Swanscombe Peninsula. The aim of any scheme should ensure that Fastrack buses can avoid unnecessary delays at this junction.

**Scheme Cost:** £5m to £7m.
**Status:** Partially funded.
**Delivery:** 2006-2011.
**Source:** Jacobs/ KCC.

### 7.1.4 Dualling of South Thameside Development Route Stage 4, Northfleet

This scheme involves dualling the A226 for approximately 1600 metres (1 mile) between the A2260 Springhead Road and the western Ebbsfleet station access to provide increased capacity to cater for the proposed development on Northfleet Embankment and Swanscombe Peninsula. Funding is not currently committed. KCC originally provided SEERA with a ballpark estimate of £10 million to carry out this scheme, with Land Securities expected to provide the necessary funding to enable its delivery.

A site visit confirms that land appears to be available to the south of the existing road, with space for an additional carriageway underneath the CTRL spur bridge. It is understood that land to enable a dual carriageway to be constructed at a later date was included in the initial compulsory purchase order, and is probably still in KCC ownership. The ground however is poor and the roadway will probably need to be constructed on a piled foundation, adding to costs.

However junction improvements will also be required to cater for a dual carriageway with particular costs associated with the following:

- The A226, A2260, (formerly B2175) Springhead Road junction is a five arm roundabout in a constrained site. Conversion to traffic signal operation (benefits for Fastrack through bus priority) or compulsory purchase to widen the roundabout would be required. However widening would be difficult given the listed status of the rectory and the level differences to the north where Springhead Road joins.
- The junction with the new link road to the B259 will be signal controlled, but an additional carriageway to the south of the existing Thames Road will require signal heads to be re-sited, adding to costs.

There may also be need to provide pedestrian and cycle crossing facilities at junctions.

Depending on the junction improvements implemented the cost is likely to be between £6 and £10 million, although firm costs cannot be provided until a proper feasibility study has been carried out.

**Cost:** £6 to £10m.
**Status:** To be funded by the developer.
**Delivery:** 2016-2021.
**Source:** Jacobs – preliminary order of magnitude estimate.
7.1.5 Denton Relief Road and Lion Roundabout, Gravesend

It is expected that the regeneration of the Canal district in NE Gravesend will provide 1000 new dwellings and 69,000 m² of new business use. The aim of this scheme is to provide a link between Dering Way and Norfolk Road to support the regeneration of this part of the town. Currently access to this development site is constrained with Ordnance Road providing the only suitable access to the rest of the highway network. Without another road access all traffic from this development would join the A226 at the Ordnance Road signalised junction, an unsustainable solution.

Consultation with SEEDA has suggested that the base scheme which involves a bridge over the North Kent railway line close to the site of the former Denton Halt will cost £15 million. An additional £4 million had been set aside by the ODPM for remedial works to the Lion Roundabout (A226/ B261/ Lower Higham Road). However these funds have now lapsed so the scheme is also unfunded. This is currently a five arm roundabout with a crash record. Pedestrian movements are high with local shops and North West Kent College on either side of the roundabout. The high costs result because a study revealed that there is a large number of utilities equipment located here.

Cost: £19m.
Status: Not funded.
Delivery: Dependent on Canal Basin Development.
Source: SEEDA.

7.2 Schemes Awaiting Funding

7.2.1 Peninsula Way, Swanscombe

The original idea for this road was a link between the A2 from the Ebbsfleet junction and Swanscombe Peninsula running parallel to the existing B259 and the Channel Tunnel Rail Link. It is anticipated that approximately 3 km (2 miles) of road would be required. However the road could take another form depending on the nature of development. Another possible option would involve widening the connecting link road between Ebbsfleet and a widened STDR4, and a provision of a new road from the A226 to the Swanscombe Peninsula. The option chosen will to some extent depend on the nature of development on the Peninsula.

The link would open up the peninsula for regeneration. Without the link, development traffic would need to use unsuitable roads, such as the B259 through Swanscombe, or add more traffic to the A226 through the St Clements junction. However there are currently no firm proposals for this road regarding either its alignment or strategic role, and these will have a significant impact on its cost.

The strategic nature of the road will have a significant impact, with costs determined by the following issues:

- Single or dual carriageway standard.
- Junction strategy.
- Design speed. A lower speed gives more flexibility with route alignment.
- Structures, earthworks.
- Provision of cycle and pedestrian facilities.
(a) **Option 1 – Direct Route – west of the CTRL**

Probably of greatest impact on cost is the likely difficult terrain. The route corridor and its problems are described northwards from the junction with the B259:

- **The Ebbsfleet Valley** is a former quarry, which is likely to require expensive remedial work to remove spoil, and level ground. Given the development proposals for the Ebbsfleet Valley, this land will also have a significant market value. A topographical study would be required at an early stage of a feasibility study.

- **The North Kent Railway line** is above the quarry on the remaining cliff. A tunnel/bridge would be required to take the road under the railway to the next quarry. A significant risk with this scheme is associated with obtaining Network Rail approvals to any proposals to go under the railway.

- **A small quarry between the railway line and A226.** Again remedial works and topographical surveys would be required.

- **Another tunnel/bridge would be required to take the road under the A226.** Given the presence of cliffs it is very unlikely that an at-grade junction with the A226 can be provided. Therefore a connecting road to provide access to the A226 would be required, with costs associated with providing 2 junctions.

- **Industrial estate land to the north of the A226.** Compulsory purchases may be required and then depending on the nature of the businesses remedial work may be needed to clean up the land.

- **Swanscombe Marshes.** Ordnance survey maps illustrate some spoil. Marshland may require more expensive drainage work to accommodate the road.

The cost of the scheme could also be affected by consultation, a public inquiry or environmental impact assessment.

The CPRE recently found from an analysis of schemes currently funded through the TPI or LTP, that the average cost of a mile of new dual carriageway was £12m37. From this it is reasonable to assume that an average single carriageway road would cost half of this. However given the problems identified, and the significant tunnel/bridge works required to take the road from Ebbsfleet Valley to Swanscombe marshes a budget of the order of £20 to £30 million may be appropriate to build 2 miles of single carriageway road. It is recommended that a proper feasibility study be carried out to demonstrate better the real practicality and cost to move this scheme forward.

While no funding is confirmed SEERA expects that the DCLG and developers will meet the cost of the infrastructure. However given the costs of cleaning up Brownfield land for development and providing Fastrack infrastructure, putting the burden of this scheme cost on the developers may make the Swanscombe Peninsula uneconomic to develop. Hence a bid for government funding could be appropriate in this instance.

**Cost:** £20m to £30m for single carriageway.  
**Status:** Partially funded – i.e. some government funding expected.  
**Delivery:** 2016-2026.  
**Source:** Jacobs – order of magnitude estimate.

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37 **CPRE (2005):** Cost Of Road Building Soars – News Release 27/07/05.
(b) Option 2 – indirect route via STDR4

This option would follow existing roads to reach the A226, although both the connecting link between Ebbsfleet and STDR4 and the STDR4 itself may need to be widened to accommodate additional traffic volumes. In this instance it is assumed that the costs of dualling STDR4 itself would be absorbed by another scheme (see section 7.1.4). North of the A226 it is assumed that a single carriageway link would be provided to access the Peninsula.

The costs of this scheme have been estimated at £15million for the purposes of this study by KCC. In the forthcoming Transport Strategy these costs will have to be developed further and are likely to be affected by these issues:

- Whether widening of the Ebbsfleet-STDR4 link road is required.
- The scale of junction improvements needed on STDR4 and at the existing A226, B2175 junction.
- Ground conditions on the Peninsula.

Cost: c£15m for single carriageway and widening of existing roads.
Status: Partially funded – i.e. some government funding expected.
Delivery: 2016-2026.
Source: KCC – order of magnitude estimate.

KCC expects that option 2 is the most likely scenario given the nature of development currently expected.

7.3 Concepts

7.3.1 A206 Bob Dunn Way/ Marsh Street Junction, North Dartford

This junction is one of the main access points serving the new mixed use development currently under construction at North Dartford, known as ‘The Bridge’.

The Kent Thameside Model suggests that this junction is likely to become a problem by 2018, with traffic queuing on the Marsh Street approach to the roundabout. Since the development already has planning permission, KCC will need to find alternative funding for junction improvements if these are pursued.

Possible options could include a left free flow slip from Marsh Street to the A206 eastbound or conversion of the junction to traffic signal operation to share the capacity of the junction in an efficient manner.

Even for a traffic signal scheme some land acquisition is likely to be needed for widening. This may have an affect on utilities apparatus, and unknown ground conditions warrant the inclusion of a risk allowance in the estimate.

Further modelling of Kent Thameside with increased demand management measures may result in an improvement in this junction’s operation, and therefore it is recommended that this junction be reappraised once this work is complete.

Cost: £2 to £4m.
Status: Not funded.
Source: Jacobs – preliminary order of magnitude estimate.
7.3.2 Hall Road/ Springhead Road Roundabout, Gravesend

This junction performs poorly during the PM peak, with the main problem being unbalanced flows. For instance, the predominant movements are right turns from the south to the housing area, which causes difficulty for traffic exiting the Sainsbury's superstore and southbound traffic on the A2260 to make any progress. In addition, recent changes to the A2 interchange means that traffic to/from the B262 Longfield is required to undertake a ‘u-turn’ at the roundabout for certain movements to/from the A2.

It is understood that some £100,000 of minor improvement works by Peter Bretts Associates are programmed for this junction, and in the short-term the completion of other link roads should alleviate problems at this junction, with traffic from the north using Thames Way and the new link road across the CTRL to access the A2/ B259 interchange. However, modelling work suggests that this junction will again be a problem in the future (2018), with further development in Kent Thameside.

The roundabout is also not large enough to accommodate a traffic signalised gyratory. If enlarged to incorporate a gyratory, this would have significant cost implications with likely compulsory purchase of surrounding properties. Possible solutions include:

- **Provide a link road from the A2260 northbound to the Sainsbury's superstore entry/exit road, so that existing u-turning traffic can use the link road and then turn right on to the A2260 southbound. This would enable the junction to be converted to traffic signal control to share capacity.**
- **Provide traffic signal control on the entry to the roundabout for certain approaches.**

The cost will depend on what option is chosen. The simple solution of traffic signals at certain approaches to the roundabout, similar to those at St George Roundabout in Canterbury, will probably only cost about £0.5 million. The link road option has unknown factors about land values, possible contamination etc and a figure of £5 million is probably justified. Therefore, a feasibility study is recommended to demonstrate practicality and affordability.

**Est. Cost: £0.5m to £5m depending on chosen option.**
**Status: Not funded.**
**Delivery: 2018.**
**Source: KCC/ Jacobs – preliminary order of magnitude estimate.**

7.4 Urban Traffic Management and Control (UTMC)

Implementation of Urban Traffic Control and SCOOT in appropriate areas of Dartford and Gravesend is likely to include provision of signal control at junctions in locations identified as being otherwise overloaded. The signals would be linked to the brand new state of the art control suite in Maidstone and would be heavily supported of investment in Fastrack and in delivering obligations under the Traffic Management Act.

7.4.1 Dartford Town Centre

An Urban Traffic Control scheme was originally developed in 2005 for the proposed mixed use Tesco development on the southern edge of Dartford town centre on Lowfield Street. This scheme involved the creation of a link road through Central Park, the closure of Market Street to cars and the provision of two-way traffic on the...
remainder of the ring road. This scheme required new signals, giving the chance to link them all through an urban traffic control system for Dartford town centre, providing the opportunity to manage demand and enable bus priority, including for Fastrack. The Local Transport Plan for Kent has allocated £50,000 as a contribution to such a system with the developer expected to pay for the remainder of these improvements.

However the original development scheme has been refused permission by the secretary of state and therefore this project is currently unfunded. Another development submission may provide the opportunity to provide improvements to Dartford Town Centre, but future schemes are not likely to be the same. It is expected that the developer would provide all the mitigation measures for the development, including traffic signals.

It is thought likely that revised plans will result in some element of traffic using Market Street, but that this could be restricted to certain times of the day. However KCC state that there is still likely to be a £2million funding gap.

7.4.2 Gravesend Town Centre

It is noted that the Local Transport Plan has also allocated £250,000 for a UTMC system to be installed in Gravesend Town Centre and on the B261 Old Road (it already acts as an informal urban bypass of Gravesend Town Centre).

7.4.3 Kent Thameside-wide Measures

In terms of Urban Traffic Management Control, the following would be beneficial to managing traffic in Kent Thameside:

- **Variable Message Signs on the approaches to Dartford, Gravesend, Ebbsfleet and Bluewater** warn of congestion and suggest alternative routes to provide car parking guidance. It is noted that VMS have already been provided for car parking guidance in Gravesend.

- **Variable Message Signs on the exits from Dartford, Gravesend, Ebbsfleet and Bluewater** to warn of congestion on the Trunk Road network and suggest alternative routes.

- **Integration of Kent traffic control CCTV systems with the Highways Agency, Dartford Crossing, Bluewater, Ebbsfleet and The Bridge and other future developments.** This would ensure the most effective coverage of traffic conditions and incidents facilitating early remedial action.38

- **Integration with Bluewater Systems** to manage inbound and outbound traffic movements in the area bounded by the A2, A282, A206, A226 and B255.

- **Communications to the Kent Traffic Management Centre** to enable links for effective management, control and exchange of information. This will ensure added value from all other infrastructure investment in Kent Thameside.

It will also be important to provide links to public transport management and information systems, such as the:

- **Extension of bus priority and passenger information for routes off the Fastrack network to support integrated public transport.**

38 The Borough Councils do have CCTV systems but the primary aim is for community safety and as such these tend to be located in pedestrian areas and housing estates rather than busy road junctions. Therefore additional cameras would be required in Gravesend and Dartford Town Centres.
Linking information with train services – domestic and international, to keep all travellers informed about road conditions before starting and throughout their journey, with possible direct feeds to mobiles. It may also be possible to provide monitors at Ebbsfleet and even Stratford and St. Pancras illustrating up to date road travel information in Kent Thameside so passengers have the option to change their evening plans or their travel patterns when they arrive at Ebbsfleet.

It is important to realise that this is a preliminary overview of the possibilities for UTMC in Kent Thameside. In the next twenty years, other issues may arise, and new technology for managing urban traffic may become available.

KCC should also seek to encourage developer buy-in to the potential for UTMC systems, with the provision of Fastrack monitors in new homes at The Bridge development being an excellent example.

EST. Cost: £5m.
Status: Not funded.
Delivery: 2018.
Source: KCC – preliminary order of magnitude estimate to be developed further in forthcoming Transport Strategy.
8 Making use of the River Thames

8.1 Introduction

A study has already been carried out on the potential of Kent Thameside’s river frontage for development and transport, so this report does not seek to repeat the work already carried out\(^\text{39}\). Instead this section provides a brief overview of opportunities for interlinking public transport systems on both sides of the Thames by riverbus services.

8.2 Riverbus services

Currently, the sole cross-river ferry service is provided between Tilbury and Gravesend, which can only carry foot passengers, cyclists and motorcyclists. KCC and Thurrock Council continue to support the operation, which runs half hourly Monday to Saturday during the working day. A bus service links the ferry at Tilbury to the town’s railway station and centre. The ferry also forms part of the Sustrans ‘Port to Port Cycle route’ linking Dover and Felixstowe.

There is likely to be a need to continue to provide financial support to the service over the coming years, which is currently covered by the Second Local Transport Plan.

Looking to the medium-term, there may be potential to encourage additional river services to provide links between new developments on either side of the River Thames, and offer connections to Fastrack on one side and South Essex Rapid Transit (SERT) on the other side. This concept is used well on the Tyne and Wear Metro for example with a regular ferry service linking North Shields and South Shields stations.

The Rosenberg study\(^\text{39}\) identified potential at Everard’s Wharf for a riverbus pier that could provide a link to Greenhithe station and Fastrack services.

Of note is Thurrock Council’s intention in its Unitary Development Plan to promote the provision of additional passenger jetties for river bus/ferry services at Grays, Purfleet and West Thurrock\(^\text{40}\). In terms of links to Kent Thameside the water crossings would need to be short and direct to ensure a reasonable overall journey time when the bus/ rail connections are considered. The services will also need to be to destinations where people want to go. Everard’s Wharf would offer potential for passengers from Thurrock because of its Fastrack connections to Bluewater and Ebbsfleet. Hence a service from West Thurrock to Everard’s Wharf could offer potential in the medium to long term.

The potential for these links needs to be explored when further information about the nature of the SERT system and river fronting development on both sides of the Thames is available. The potential will also depend on whether any multi-modal crossings of the Thames are provided.


9 Summary

9.1 Introduction

**Figure 9-1** illustrates the envisaged timeline for transport infrastructure in Kent Thameside, by tying infrastructure proposals to particular development or other stimuli. A table illustrating the costs of schemes by location may be found in the Executive Summary.

**Figure 9-1: Timeline of Kent Thameside Schemes**

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Trigger</th>
<th>Funding Status</th>
<th>capital cost (£m)</th>
<th>revenue cost (£m)</th>
<th>developer S106 (£m)</th>
<th>developer tariff (£m)</th>
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### Physical investment in the wider highway network

#### Strategic Schemes relevant to Kent Thameside

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#### Local Highway Improvements - Measures to ease existing and predicted congestion on the local road network

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### Key to Costs:
- **bold** – estimated cost
- **italics** – order of magnitude cost, with feasibility study required to ascertain practicality and affordability.

### Key to Funding Status:
- **Yes** – scheme funded
- **Subject to Development** – Scheme where some or all funding is expected to come from developers, and without this is unlikely to happen unless other sources of funding can be found.
- **No** – Currently unfunded.

*Please also note* that the station at Denton may now not proceed.

### Note:
Please refer to the main text to review caveats associated with certain costs. All costs in the report are based on current prices and inflation will be a key factor to be taken into account depending on the time of implementation. The text will have often referred to a cost range, and the number quoted in the table may be an approximation of this range in order to calculate the overall funding totals.

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