

# LGF Transport Business Case Report Rathmore Road Link

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# **1** Introduction

## 1.1 Overview

Amey has been commissioned to provide business cases for the Kent County Council (KCC) schemes that are being funded or partly funded by the central government's Local Growth Fund (LGF). An LGF allocation was provided to South East Local Enterprise Partnership (SELEP) to administer amongst the local authorities within the partnership, of which KCC is one.

# **1.2** Purpose of report

The overall purpose of this Transport Business Case report is to provide a 'proportionate' justification for the funding allocated to the Rathmore Road Link (Gravesend Town Centre, Gravesham District).

The report broadly follows the 5-Case Model for Transport Business Case preparation (Strategic/Economic/Financial/Management/Commercial). Whilst all cases will be addressed, the report focuses mainly on the strategic and economic cases; 'why the scheme is needed / what benefits does it provide' and 'does it provide value for money'. In addition, to show a robust consideration of deliverability, the report also addresses the design, procurement, operational and environmental issues.

The scope of the transport business case is not aligned with any specific stage of the Department for Transport (DfT) 'Transport Business Cases' procedure. Rather, it is a 'lighter touch' report in the spirit of the DfT advice for' LEP Assurance Framework' (December 2014), which agrees with using 'proportionate appraisal' appropriate to the scope of a transport scheme.

## **1.3 LGF Business Case Process**

Currently promoters of all schemes involving an investment of public funds over a threshold set locally (understood to be £8m in the South East) for 'major schemes' are required to prepare and submit a Transport Business Case. Previously a Business Case would be submitted directly to the Department for Transport (DfT).



Recent Government policy changes have involved the devolution of decision-making for smaller major schemes to Local Enterprise Partnerships (LEPs). These bodies are designed to direct investment for an area based on economic priorities set through a partnership which is private-sector led. Kent County Council is in the South East LEP (SELEP) area.

The devolved funding arrangements were put in place in July 2014 through the Local Growth Deal announcements, including devolution of funds to the SELEP. This Transport Business Case, which will be submitted to the SELEP, effectively forms a bid to request confirmation of the already allocated LGF funding for the Rathmore Road Link (RRL) scheme.

Amey will develop the business case on behalf of KCC to submit to SELEP's Independent Technical Evaluator (ITE) via a two-stage gate review process. The ITE will then give recommendations to the SELEP board.

#### **1.4** Scheme Aim and Objectives

KCC intends to re-locate the southern section of Gravesend town centre ring road, on to the A226 Rathmore Road. The aim is to ease traffic circulation, to improve public realm and to contribute to the successful introduction of sustainable access opportunities, to the town, Gravesend railway station and between the station and a proposed Barrack Row bus interchange, multi-storey car park and the town centre, across Clive Road/Barrack Row. This will be achieved by displacing ring road traffic further to the south of the rail station.

There is a long standing recognition of the need for the Link Road scheme, no obstacles to its delivery and assuming LGF funds are granted, complimentary funds from the Homes and Communities Agency will ensure it is fully funded. It will enable the following key objectives to be achieved:

- To move the ring road traffic from Clive Road and Barrack Row to the south of the station to integrate the station with the town centre and bus stops;
- To remove the ring road traffic from the part of Stone Street that separates the Civic Square from the station and bus stops;
- To provide public realm on old Rathmore Road and Clive Road to give improved streetscape and continuity with the earlier Civic Square works;



- To improve the southern entrance to the station with a dedicated drop off/pick up facility, taxi rank areas and disabled parking spaces; and
- To enhance the opportunities for jobs and homes in the town centre.

The Link Road scheme is a standalone project but the next deliverable phase of a wider project within an earlier Gravesend Transport Quarter Master Plan (GTQMP). The outline planning permission for the Master Plan was allowed to lapse because some changes were made to the Link Road scheme and with it now being delivered by the County Council, as Highway Authority, the planning application was determined by the County Planning Authority.

The underlying principles of the Master Plan relating to a town centre transport hub, improved accessibility, reduced severance and quality public realm remain as objectives for Gravesend Borough Council (GBC) and are all included within the policies of the adopted Gravesham Local Plan Core Strategy. The first phase provided the improvement of the Civic Square with some highway improvements and was completed in 2011. Future phases include the upgrade and expansion of the station car park and an enhanced bus interchange. The Link Road scheme will enable this to be delivered effectively by removing traffic from Barrack Row.

The provision of the transport interchange alongside the rail station will form a Gravesend Transport Hub. This will also contribute to the Gravesham Borough Council Local Plan by supporting plans for regeneration and development in the surrounding area, including new development at Northfleet Embankment to the West of Gravesend.

A detailed highway scheme layout has been designed and approved for the RRL and interconnected road sections on Darnley Road, Stone Street and Clive Road. In principle, the RRL will perform satisfactorily and provide advantages, in its own right, as a stand-alone highway improvement. However, its purpose is mainly as an enabling scheme, because it is a necessary prerequisite for the Local Plan, incorporating the GTQMP as well as the Gravesend Heritage Quarter and by establishing the Gravesend Transport hub, the wider development and regeneration aspirations for Thameside as a whole.

The anticipated total £9.2m cost of RRL is expected to be funded, jointly, by two public contributors, namely:

SELEP LGF	- £4.2m (earmarked)
Homes and Communities Agency (HCA) fund	- £5.0m (committed)



## **1.5** Structure of the Document

This report is structured in accordance with "The Transport Business Cases", the DfT guidance on transport scheme appraisal, as updated in January 2013. Following this introduction, the remainder of the document is structured as follows:

- Chapter 2 states the Strategic Case;
- Chapter 3 presents the Economic Case including the Value for Money Statement;
- Chapter 4 outlines the Financial Case;
- Chapter 5 details the Commercial Case;
- Chapter 6 provides the Management Case; and
- Chapter 7 sets out the Conclusions and recommendations.



# 2 Strategic Case

# 2.1 Policy Context

#### 2.1.1 National

The National Planning Policy Framework [NPPF], March 2012, sets out the government's planning policy and its expectations for the application of this. Overall, the policy makes a presumption in favour of sustainable development.

Paragraph 17 of the document identifies that it aims to:

"actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable."

Expanding on this, paragraph 32 states that plans and decisions should take account of whether:

- The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
- Safe and suitable access to the site can be achieved for all people;
- Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development; and
- The development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

The DfT published 'Consultation on The Strategic Road Network and the Delivery of Sustainable Development' in February 2013. This consultation is for a revised policy setting out the role of the strategic road network in enabling economic growth.

In reducing regulation, the updated policy will encourage growth by making it easier for businesses and communities to develop, while at the same time ensuring that the road network continues to operate efficiently.

The new document aims to remove the expectation that the traffic impact of a new development on the Strategic Road Network should be mitigated so as to be no worse off after the 10 year review period.



#### 2.1.2 Kent

Kent is South East England's fastest recovering region and has great potential for successful economic growth. In the last 20 years, Kent has seen 100,000 more people living in the county, housing stock increase by over 60,000 homes and 130,000 more cars on roads. This pace of change is set to accelerate further over the next 20 years with a projected 8 per cent population increase, and Kent Thameside identified as one of the UK's four Growth Areas.

Local growth alone is predicted to result in 250,000 extra journeys on Kent's roads by 2026. Coupled with a forecast increase in international traffic this leads to tackling congestion being regarded as one of the main priorities for Kent. KCC's framework for regeneration "Unlocking Kent's Potential" defines what Kent should look like in 20 years' time and includes as 1 of its 5 priorities "delivering growth without transport gridlock" - by designing communities that will encourage walking, cycling, and healthy leisure activities. Based on this "Growth without gridlock: A transport delivery plan for Kent" establishes transport priorities for the next 20 to 30 years to support Kent's Environment Strategy target of reducing greenhouse gas emissions by 20% by 2020 and 80% by 2050.

Growth without Gridlock recognises that road transport is responsible for around 30% of Kent's greenhouse gas emissions and that the way forward is to provide low carbon transport options allied with better planning to reduce the need to travel, which in turn will support economic growth, housing growth and tackle climate change. The Plan states that:

"the private car will continue to remain the most popular and dominant form of transport for our residents and these expectations and demands increase pressure on our transport network, on our environment and on us as individuals. This reliance is also the reason why our road network is congested and in response our vision is to create a high quality integrated transport network which will create opportunities for real transport choice as well as enabling economic growth and regeneration".

Some of the key transport challenges identified by the Plan are:

- Transferring existing and new car trips onto public transport, walking and cycling, especially for short journeys;
- Tackling congestion hotspots;
- Integrating rail services and improving connectivity between stations;



• Providing sufficient transport infrastructure to mitigate the impact of the planned development including walking and cycling routes

Kent's third "Local Transport Plan (LTP3), 2011-16" sets out KCC's Strategy and implementation plans for local transport investment in the short term. It proposes a new approach to prioritising investment in transport infrastructure in order to support housing and employment in Kent's Growth Areas and Growth Points, make Kent a safer and healthier county, improve access to jobs and services, especially in disadvantaged areas, and cut carbon emissions. Its planned measures are prioritised under five themes: Growth Without Gridlock, A Safer and Healthier County, Supporting Independence, Tackling a Changing Climate and Enjoying Life in Kent. Under each theme the Plan prioritises a range of sustainable transport initiatives, by area and by mode which have also subsequently been aligned with the local area development and regeneration plans produced or in the process of being produced by Gravesham Borough Council and Dartford Borough Council.

#### 2.1.3 Kent Thameside

Kent Thameside (KTS) is the area formed by Gravesham (Gravesend and surrounds) and, its neighbouring district, Dartford. It forms part of Thames Gateway (Kent), within the wider Thames gateway. Kent Thameside is centred around Bluewater Shopping Centre, and includes Dartford, Gravesend, Northfleet and Swanscombe; aswell as Ebbsfleet International station. The promotion of the area is based on the developing public transport network formed by the Fastrack Bus Rapid Transport (BRT) and the HS1 Domestic rail services.

Kent Thameside is one of the UK's four growth areas, but suffers from significant congestion in the town centres of Gravesend and Dartford and on the A2 corridor. Reducing the reliance on the private car, especially for journeys between or around the town centres at peak times, can have a substantial impact on the congestion in the town centres, thereby facilitating economic growth.



The key developments planned in the Thameside area are Ebbsfleet Valley (500,000 sqm of mixed used development), Ebbsfleet Garden City (15,000 residential units in initial phase), Dartford Northern Gateway (mixed use development with 2,000 residential units and 1,200 new jobs), Eastern Quarry (6,000 residential units), Dartford Town centre (Town centre rejuvenation with 1,000 residential units and 300 new jobs), Crossways Business Park in Dartford (3 million sq. ft of offices, warehousing and industrial units), Northfleet Embankment (mixed use development with around 1,000 residential units and 1500 new jobs), Bluewater shopping centre extension (Redevelopment of West village to accommodate 30,500 sqm of retail space), Paramount Park on Swanscombe Peninsula (leisure resort with potential of 27,000 jobs) and Rejuvenation of Gravesend Town centre (890 new homes and 700 new jobs).

The delivery of approximately 9,000 new homes is expected in Gravesham up to 2026. Key development sites include Gravesend town centre, Canal Basin and Northfleet Embankment. Ebbsfleet International Station is located in the west of the borough and will form the focus of a major mixed use development. This will include a business district which will create up to 20,000 new jobs. An additional 17,000 homes are planned in Dartford up to 2026, which will increase the borough's population by over 40%. New communities will be created in the Ebbsfleet to Stone corridor, on the Thames waterfront and in Dartford town centre. One of the largest of these will be at Eastern Quarry, where more than 6,000 homes will be built.

Like Dartford, Gravesham's existing road network is already operating at close to maximum capacity during peak periods. If this growth is to be delivered without creating transport gridlock, a high quality public transport network linking the new development sites with local town centres, employment areas, transport interchanges and key services is essential. The growth strategy for both Gravesham and Dartford is therefore predicated on the further development of the Fastrack BRT network, including a direct route through the Northfleet Embankment development between Gravesend and Ebbsfleet International Station.



Since 2007 the Fastrack network has delivered a high quality BRT service to Kent Thameside and it is now necessary to invest in the wider transport network to fully maximise the benefits of this infrastructure. Delivering a fully integrated network in the region, linking Fastrack with walking and cycling routes, as well as high speed and domestic rail services, can therefore deliver a significant reduction in the proportion of journeys made by private cars. There are relatively high levels of deprivation in Kent Thameside as indicated by the Indices of Deprivation 2010, and increasing access to services, employment and education for those within the area who do not have access to a car is essential to allow economic growth.

The map at **Error! Reference source not found.** below illustrates the proposed developments in Kent Thameside and the Thames Gateway (Kent).



Figure 1: Development Kent Thameside & Thames Gateway (Kent)



## 2.2 Rathmore Road Link scheme

The Gravesend town centre ring road (A226) essentially operates as a one-way gyratory with clockwise traffic circulation. Traffic travelling from west to east, between London Road and Milton Road, passes eastbound on West Street around the northern edge of the town centre. Conversely, traffic travelling from east to west, between Milton Road and London Road, runs westbound from Civic Square along Clive Road / Barrack Row, around the southern side of the town centre. The existing Rathmore Road does not operate as part of the main ring road circulation. Rather it forms a local, anticlockwise gyratory with Clive Road to access the railway station and current bus interchange.

It is proposed that the RRL scheme will operate, in part, as a displacement route for traffic that currently travels westbound on Clive Road / Barrack Row. It will also still carry the existing eastbound movements that use Rathmore Road. The scheme will entail widening, realigning and re-configuring Rathmore Road, between Darnley Road and Stone Street, from one-way eastbound to two-way single carriageway. The upgraded road will have a more southerly alignment through part of the existing Gravesham BC surface offstreet car park. It will have traffic signal controlled junctions, including pedestrian 'puffin' crossings, at either end. It will also have a pedestrian 'puffin/toucan' crossing midway, to connect the south side of the new Rathmore Road with Gravesend rail station on the north side of the old Rathmore Road and a new pedestrian route into the town centre.

There will be an eastbound vehicle layby on the north side of Rathmore Road to serve the railway station, with full turning movement junctions at each end. There will also be a replacement off-street surface level car park on the south side of Rathmore Road with a single two-way access junction. The new car park will contain 65 spaces, including 6 bays for disabled people, as partial replacement for the existing 225 commuter parking spaces in the old car park. The remaining displaced parking, including further parking for disabled people, will be accommodated at Gravesham Borough Council's nearby Parrock Street car park.

On the North side of the rail station traffic currently interacts with the bus-only area of Garrick St where some buses (including Fastrack Route B to Dartford/Ebbsfleet and Bluewater) load before returning into the traffic flow on Barrack Row (stops A-Fastrack, B and C). Other local buses (stops S,T,U) currently stop in Clive Road itself.



Once in place, buses will be routed westbound along the new RRL. This will enable Garrick Street and Barrack Row to be designated solely for bus/taxi use and bus stops to be relocated there to form a transport hub, improving interchange with rail services and providing additional capacity for buses to access the town centre. Bus/Taxis will travel clockwise through the area, accessing it either via New Road or via a busgate to be installed at the top of Clive Road. A bus lane will be constructed for buses exiting the area left onto Darnley Road.

The westernmost junction of RRL and Darnley Road will provide for northbound ahead and right in turns and westbound left out and right out turns, but no southbound left in turn. The easternmost junction of RRL and Stone Street will provide for northbound ahead and left in turns and eastbound left out turns.

**Error! Reference source not found.**, below, shows the general location of the RRL scheme, relative to Gravesend town centre ring road. The main scheme is dashed in green, whilst tie-in connections are shown dashed in blue.



Figure 2: Location of Rathmore Road Link

**Error! Reference source not found.**, below, provides details of the specific scheme, illustrating the proposed street realignments, drop off areas for the station, buses only area, bus lane, car parks, new pedestrian and cycle routes and pedestrian crossings.









As a consequence of the scheme this section of the ring road will now be further from the town centre, and will reduce severance of the station's northern forecourt from the town centre, allowing the forecourt to be better designed. The mainline traffic flow will now be south of the railway, and Clive Rd will provide only local access to Thamesgate Shopping Centre and the station car park. The exit for local traffic will now be via Railway Place and the Civic Square, rather than Barrack Row.



Figure 4: Before and After Rathmore Road Link

The key elements of the scheme are:

- A new footway ramp will provide a pedestrian connection to the Link Road and to the station and town centre via the controlled crossing;
- A new forecourt will be provided in high quality materials for the south side of the station accessed from the Link Road by an "In and Out" arrangement. The area will provide room for the "drop off and pick up" of passengers, a taxi stand and 5 disabled parking spaces - 2 more than existing;
- An acoustic fence will be provided along the northern boundary of the retained car park adjacent to the Link Road to mitigate any noise impacts on the rear of properties in Cobham Street;
- The Link Road will generally be at a lower level than the retained car park and the level difference will be accommodated by a landscaped earth slope and a brick or stone faced retailing wall behind the footway;



- The existing Rathmore Road will generally be subsumed within the scheme but a retained section between Stone Street and the station will be improved using high quality materials to create a cyclist and pedestrian area also planted with a line of trees. The road will cater for vehicles serving No. 24 Stone Street and the station yard, which will enter from Stone Street and exit via the station forecourt;
- Clive Road will become a "cul de sac" with a connection to Barrack Row maintained for bus use only. Clive Road will no longer be used for ring road traffic but will provide local access to the north side of the station, the station car park and premises, access to Thamesgate car park and rear service access to some town centre shops;
- The footways, kerbs and some sections of carriageway along Clive Road will be upgraded to provide a higher standard of public realm and to emphasise the connectivity between the station, bus stops, town centre and the Civic Square;
- Traffic signals will be provided at the junction with Stone Street to control the movement of traffic, to reflect Clive Road being in two-way use, and to provide controlled pedestrian crossing facilities;
- Railway Place will be improved to accommodate the turning movements of heavy goods vehicles from the changed distribution of traffic resulting from Clive Road becoming two-way and no longer part of the one-way ring road. Three disabled parking spaces will be removed but these have already been provided for on Windmill Street as part of the earlier Civic Square scheme;
- Barrack Row together with Garrick Street will be limited to bus use and vehicles serving frontage premises. The southern footway will be improved in both width and by the use of higher quality materials to allow the relocation of bus stops from Clive Road to provide a more centralised public transport facility at Barrack Row and Garrick Street. Three disabled parking spaces will be lost but they have already been provided for within designated spaces at Parrock Street car park; and
- St James Street junction with Darnley Road will be made "exit only" to offset any risk of an increase in traffic using it to bypass the signed Darnley Road and New Road route arising from the changed distribution of traffic resulting from use of the Link Road.



Disabled spaces, convenient to the town centre, have already been designated to offset the aggregate net loss of 9 spaces at Rathmore Road car park, along existing Rathmore Road and at Barrack Row. While there is a net loss of disabled parking spaces at Rathmore Road it is assumed that some users are visiting the Civic Centre or town centre and the new spaces at Parrock Street are not significantly less convenient.

Under the scheme Equalities Impact Assessment action plan, the Council will seek to ensure that Gravesham Borough Council provide sufficient disabled parking spaces at the Parrock Street car park during the scheme construction period and also to review the overall number and location of disabled spaces following completion of the Link Road scheme.

#### 2.3 Purpose of the scheme

**Highway Improvement** - The scheme allows junctions to be improved and separates through traffic from town-centre-bound traffic earlier, easing congestion. The conflict between buses and other traffic is removed. Conflict with pedestrians is also reduced, and more pedestrian routes can be introduced.

**Public Transport (Travel time savings)** - Cross-town bus routes will have an improved routing, with less conflict, through the town via Stone St/Clive Road/Barrack Row. There will also be an improved movement for the Dartford/Bluewater facing Fastrack B and local buses using the bus only area.

**Public Transport (Railway station forecourts)** - The scheme creates more space on both the north and south sides of the station to enhance the size and quality of station forecourts. A new pull-in to the station forecourt to the South of the rail station will be provided.

**Public Transport (Pedestrian access/egress)** - The scheme reduces severance between public transport (rail and bus) modes and the town centre. Furthermore, in conjunction with the highway design, additional pedestrian crossing points will be introduced to widen and improve the quality of walking routes from south of the town.

**Public Transport ('interchange')** -The scheme also reduces severance between public transport interchanges (rail to bus and vice versa). In addition the existing bus stops in Garrick St and Clive Rd can be rationalised into a wider bus-only area away from other vehicular traffic. This will improve waiting areas and allow for improvements to bus stop infrastructure, including scope to provide additional bus stops.



**Public Transport (new routes)** - The current turning loop in the town centre around Garrick St is limited in space, and this together with the current lack of bus stop capacity is a constraint on the provision of new routes, especially the aspired Fastrack Route C to serve Ebbsfleet and Dartford, via Northfleet Embankment.

**Active modes (Pedestrian) -** Improved pedestrian access will encourage more people to walk to the town centre and the public transport interchange points within this. Mode shift to Public Transport modes will also be accompanied by some increase in walking.

**Active modes (Cycling) -** Improved routing will be introduced for the final approach to the town centre and station encouraging more people to cycle to these facilities. In addition a new cycling hub at the station, to be provided as part of separate LEP Growth fund promoted scheme (Kent Thameside LSTF - integrated Door to Door Journeys), will also attract cyclists.

**Development** - The scheme aims to ensure the development in Gravesham's Local Plan, particularly the Heritage Quarter in the town centre, is more sustainable.

**Townscape** - The scheme allows the creation of public spaces in a widened town centre footprint. This area includes Clive Road and the northern railway entrance, civic square and the old alignment of Rathmore Rd including the southern railway entrance.

## 2.4 Scope of scheme

#### 2.4.1 Current Conditions

Travel surveys were undertaken in early July 2015 to examine the current use of Public Transport – local bus, Fastrack and rail. This has consequences for the flow of pedestrians crossing and moving around Clive Rd. The surveys established access and exits from both forecourts of the railway station; bus stops A, B and C; and one of the crossings of Clive Rd (near the Station exit). They were subsequently extrapolated, based on an assumption of 50% (in relation to observed), to the other Clive Rd crossing and bus stops S, T and U.

The pattern of public transport usage is one of higher rail usage in the peak hours and higher bus usage in the off-peak. This would seem to reflect use of rail primarily for commuting, including London and use of buses for other purposes.





Figure 5: Public Transport Use

An Automatic Number Plate Recognition (ANPR) survey was also undertaken of the town centre ring road cordon to capture existing vehicular travel patterns through/within the town centre, in addition to junction turning count and non-motorised user (NMU) surveys.

At present there is a traffic flow of circa 11,000 (12-hr) along Clive Rd / Barrack Row. This leads to a level of severance between the railway station and the town centre. In addition an analysis of the ANPR cordon suggests that approximately 35% of the traffic entering the one-way system is 'through-traffic' (i.e. cross town-centre traffic). This is noted as a probable underestimate as one of the main car parks (Parrock St) is situated outside of the surveyed cordon. If the through traffic is removed there are about 3,000 peak hour trips to and from the town centre. These trips can be targeted to switch to Public Transport. The through-traffic is also a possibility but is considered less likely.

Traffic journey times are not regarded as greatly problematic, as shown by both Google tracking and an analysis of the ANPR matches. The inter-peak and PM peak show the higher journey times.





Figure 6: Current Peak Time Traffic Speeds (Google Tracking) Google ©





Clive Road and the rest of the one-way system has been classified as an Air Quality Management Area (AQMA) with Nitrogen Dioxide ( $NO^2$ ) being monitored at sites GR39 and GR40, either end of Clive Rd / Barrack Row. The latest available Kent and Medway Air Quality Monitoring Network report shows that the GR39 and GR40 monitoring sites measured an annual mean Nitrogen Dioxide ( $NO_2$ ) level of 40.7 and 48.8 µgm<sup>-3</sup> respectively in 2013 compared with the national objective of 40 µgm<sup>-3</sup>.



Site ID	Location	Site Type	Within AQMA?	Triplicate or Co- located Tube	Full Calendar Year Data Capture 2013 (Number of Months)	2013 Annual Mean Concentration (µg/m <sup>3</sup> ) – Bias Adjustment factor = 0.87
GR39	Stone Street (post), Gravesend, DA12 1AP	Roadside	Yes	No	12	40.7
GR40	Somerset Public House, 10 Darnley Road, Gravesend, DA11 0RU	Roadside	Yes	No	12	48.8

#### Figure 8: Air Quality Data

An analysis of personal injury crash data for the previous 5 years indicates that the town centre ring road is not a particular accident hotspot. **Error! Reference source not found.** below provides a visual summary of the incidents occurring during this period which shows sporadically located crashes of primarily slight severity. No clusters of crashes and no trends in causation factors are identifiable from the data.



#### Figure 9: Accident Data

#### 2.4.2 Gravesend Regeneration

A specific aim of the RRL is to enable progress towards delivering the Gravesham Borough Council Local Plan, the Gravesend Transport Quarter Master Plan (GTQMP), the Gravesend Heritage Quarter and to support the other regeneration areas of Gravesend.

All regeneration areas for the town are identified in the map at **Error! Reference source not found.** below:





Figure 10: Gravesend Regeneration Areas

## Gravesham Borough Council Local Plan Core Strategy, 2014

The Gravesham Borough Council Local Plan consists of a Core Strategy, produced in 2014 and a Site Allocations and Development Management Policies DPD to be produced in the future. The Core Strategy was adopted in September 2014 and sets out the Council's long term spatial vision for the Borough for the period from 1 April 2011 to 31 March 2028, including the strategic objectives for the Borough based on the characteristics of the area and the key issues to be addressed. Within this specific objectives are set for Gravesend, Northfleet and Ebbsfleet, as follows:

 SO4 - Support existing neighbourhoods and creates a number of new residential neighbourhoods, mixed use areas and employment areas along the Thames Riverside at Gravesend and Northfleet and on land at Coldharbour Road;



- SO5 Create a mixed use community at Ebbsfleet including a sub-regionally significant office based employment hub in the longer term, to provide further jobs;
- SO6 Enhance the role of Gravesend town centre as a public transport hub and as the main location for retail, leisure, culture and offices whilst preserving and enhancing its character as a riverside heritage town;
- SO7 Enhance the Borough's public transport network to serve existing and new neighbourhoods and communities in Gravesend, Northfleet and Ebbsfleet.

The Local Plan Core Strategy provides a vision for the 'Gravesend Town Centre Opportunity Area' (policy CS05) which proposes that, by the end of the plan period, it will have built upon its strengths as a commercial centre and heritage riverside town to establish itself as a dynamic and desirable place to live and work and be a focus for shopping, leisure, service provision, culture and tourism. Regeneration will have acted as a catalyst for the improvement of the town centre's offer where high quality design and public realm will enhance the distinctive character of the centre.

A number of development and regeneration areas are identified within the Gravesend Town Centre Opportunity Area as illustrated in **Error! Reference source not found.** below.



#### Figure 11: Gravesend Town Centre Opportunity Area

The Gravesham Local Plan Core Strategy identifies opportunities for the town centre that will provide around 890 homes and 700 new jobs. The latter within 10,500 square metres of retail use and 5,670 square metres of office space planned for the area around the station and Civic Square. It also confirms the importance of developing the Fastrack led public transport system. However, amongst the key issues it highlights as needing to be resolved in order to bring about development is that:

- Whilst the environment of Gravesend town centre has been significantly upgraded over the past 20 years, further environmental improvements will be needed to ensure it remains a good place to live, work and visit and competes well with other centres;
- Some parts of the Opportunity Area are dominated by traffic resulting in noise and poor air quality with the one-way system being declared an Air Quality Management Area. The existing one-way system also has an adverse impact in that it divides the core town centre from the riverside and badly affects one of the finest heritage assets - Harmer Street (A226);

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#### Gravesend Transport Quarter Master Plan

The Gravesend Transport Quarter Master Plan was formally adopted by the Borough Council in October 2009 and has subsequently been incorporated into the Gravesham Borough Local Plan Core Strategy (Policy CS11 Transport). The Local Plan Core Strategy rationale, for the development opportunity, will depend, to a large extent, upon successful delivery of the proposed sustainable transport access and public realm improvements (including RRL), in order to secure the identified new homes and jobs.

Gravesend Transport Quarter is centred on Gravesend Railway Station. It is 33.5 hectares in size and is bounded to the west by Darnley Road (including the southern end of Bath Street), to the south by Rathmore Road car park and Woodville Place, to the east by Windmill Street and Stone Street and, to the north by the western end of New Road between its junctions with Garrick Street and Darnley Road.

The Transport Quarter has a limited range of existing land uses. It includes the car park on Rathmore Road which currently accommodates 225 spaces, used primarily by commuters but also visitors to the town. The car park in Barrack Row provides up to 71 spaces mainly for rail commuters. On Barrack Row there is also a commercial vehicle sales centre, a mini-cab office and a small public open space at the junction with Darnley Road. There is a lack of residential, commercial, leisure and A3 (café and restaurant) uses within the site boundary. The Civic Centre and Woodville Halls which provide the town's cultural entertainment are within the eastern part of the site.

The quality of the public realm within the proposed Transport Quarter is currently considered poor. The pedestrian environment is dominated by traffic with its associated congestion, pollution and noise, as well as the quality of the public realm in general. There are two small open spaces (under 0.2 hectares) immediately north of the Civic Centre, including the adjoining Sensory Gardens and an area on the southern side of Barrack Row, immediately east of its junction with Darnley Road. Both are under used due to their location adjacent to busy roads and the quality of their existing design.



The Gravesend Transport Quarter Master Plan proposes a multi-phased approach to improving the transport connections to the town. It aims to provide opportunities to improve public transport and 'active modes', including freeing up land for a public transport hub & interchange and providing better access to the town centre by public transport. There are also aspirations for a pedestrian 'Town Bridge' linking Rathmore Road with Clive Road outlined in the GTQMP, although these are not included in the initial development phases. However the land is to be safeguarded to enable the bridge to be built at a later date.

The GTQMP identifies four phases to development:

- Phase 1 GTQMP, Civic Square redevelopment and traffic management This has been completed;
- Phase 2 GTQMP, Railway Station multi-storey car park This requires a renewed planning application from Network Rail and consent from Kent CC/Gravesham BC;
- Phase 3 GTQMP, Rathmore Road Link and 'access-only' on Clive Road This has received planning consent from Kent CC in November 2014; and
- Phase 4 GTQMP, Barrack Row bus interchange This needs planning application and consent from Kent CC/Gravesham BC and also prior completion of the RRL scheme.

The specified aims of the master plan are:

- To provide a new transport interchange hub in the heart of Gravesend, which caters successfully for all modes of transport;
- Eliminate severance, by revised traffic circulation so that the local community can thrive and enjoy the benefits that further regeneration of the town will bring;
- Establish the station as a major gateway to Gravesend, catering for increased passenger numbers from High Speed and domestic rail services;
- Accommodate the new Kent Thameside Fastrack bus services;
- Strengthen the link between the main shopping area and the station;
- Improve the public realm, through streetscape improvements to enhance the pedestrian experience and attract more shoppers, workers and visitors;



- Realise the full potential of existing and proposed public open spaces to regenerate the town centre (particularly north of the station and adjacent to the Civic Centre);
  - Maximise development opportunities within this town centre location to create a sustainable community;
  - Support the needs of new housing and jobs in the town centre, whilst retaining current levels of public car parking;
  - Promote sensitive development, which reconnects the urban fabric of Gravesend and the wider area; and
- Develop urban design principles, which are adaptable and achievable taking ownership, conservation and physical restraints into account.

To achieve these aims the specific works proposed within the GTQMP include:

#### Area to the North of Gravesend Station

- Replacement of the existing at level car park (71 spaces) with an interchange building comprising a multi-storey car park accommodating a maximum of 400 spaces, retail space and a new public space;
- Creation of a bus interchange with 6 bus stops, cycle park facilities along Barrack Row connecting with the proposed interchange building containing a car park and retail units;
- Re-location of bus stops from Clive Road to Barrack Row;
- Extension of the interchange around the 'island block' (Garrick Street/Barrack Row) which will be closed to cars but open to buses and taxis; and
- A priority area for pedestrians on the western end of New Road, Garrick Street and Barrack Row.

#### Area to the South of Gravesend Station

- The realignment and widening of Rathmore Road including alterations to the junction with Darnley Road and the provision of a new road junction with Stone Street immediately south of no. 20 Stone Street;
- Removal of the existing car park on Rathmore Road;



- The erection of an office development on the west side of Wrotham Road immediately north of no. 6, with a maximum floor space of 234m2;
- Erection of a row of new residential buildings on the South side of Rathmore Road;
- Taxi rank at Rathmore Road station entrance to be improved;
- Retention and extension of disabled car parking bays adjacent to station entrance;
- Improvements to car drop-off facilities to station on Rathmore Road;
- Introduction of new pedestrian crossings and improved junctions on the eastern and western end of Rathmore Road in connection with the new road;
- Improved pedestrian environment;
- New cycle routes to and from the station; and
- Retention of existing cycle parking facilities.

#### Civic Centre and Environs

- Renewal of the forecourt directly north of the Civic Centre involving its integration with the sensory gardens and closing the access road between Windmill Street and Stone Street (known as Albert Place) to through traffic. New lighting, hard and soft landscaping will be introduced;
- On Clive Road, replacement of one-way traffic with two way traffic between Stone Street and Anglesea Place. Vehicle access from Garrick Street, Barrack Row to Darnley Road will be prohibited except for buses and taxis.

The GTQMP highlights that Gravesend is part of the emerging urban structure of Kent Thameside which has four main centres, Gravesend and Dartford as historic town centres, Bluewater as a regional shopping centre and Ebbsfleet as the emerging major commercial and business centre. Ebbsfleet is also designated as a regional transport hub.



The physical separation of Bluewater and Ebbsfleet mean that these cannot function as one central place; hence the urban structure will consist of a series 'of pearls' strung out along an eastwest path between the Thames and the A2 trunk road. In this context Gravesend performs an important retail, service, leisure and employment function, with considerable scope for enhancement.

The transport improvements proposed by the GTQMP are regarded as critical to maximise the regeneration potential that new and improved public transport projects across Thameside offer Gravesend. However, unless the RRL can be progressed it is highly unlikely that Phase 4, Barrack Row bus interchange, will proceed and Phase 2, Railway Station multi-storey car park, will also be more difficult to achieve. Notwithstanding this, the Transport Quarter is in the heart of Gravesend and is in need of physical regeneration in its own right.

Specifically in terms of sustainability:

- The proposed interchange building will create new employment opportunities in the heart of Gravesend Town Centre. In addition to this, the proposed scheme will secure existing jobs by making the area more accessible to shoppers, visitors and employees;
- The streetscape enhancements will make the town more attractive to live, work, go out in, and visit, securing local jobs and creating the potential for new businesses and jobs in some sectors such as retail and entertainment;
- Improving the appearance and attractiveness of Gravesend to shoppers will assist in reducing out-commuting from the area to centres such as Bluewater for shopping and entertainment. In the longer term, the physical regeneration of the Transport Quarter has the potential to attract more employees and businesses;
- The scheme will make a significant contribution towards the use of sustainable transport modes as an alternative to cars. Travelling to and from Gravesend by train and bus will be faster and more convenient as a result of improvements to the rail service, train station and bus interchange. Journeys involving the use of more than one mode of public transport will also be faster and more convenient;



- The provision of a car park adjacent to the train station and shopping area is intended to make the interchange with other sustainable modes more convenient and is intended to reduce overall distances travelled by car within the region as a whole. Amalgamating the two existing commuter car parks to provide a modern facility with real time information on the availability of car parking spaces will be easier for drivers to understand;
- The excellent public transport facilities on the doorstep of Rathmore Road offer the potential for the occupiers of the residential development and the users of the offices on Wrotham Road to adopt green travel measures, as an alternative to using the car. Such measures could include the display of information relating to local bus times, car sharing schemes and the use of train information to reduce the need for visitors to travel to the site by car.

#### Gravesham Borough Council, Heritage Quarter

The Gravesham Borough Council, Heritage Quarter, is situated in the town centre and will benefit from a more attractive transport network; allowing a greater proportion of new trips to be made by sustainable modes. The Heritage Quarter will provide around 400 new houses and new commercial and employment sites.

The regeneration adds to the creation of the 'civic square', an improved public space in front of the civic hall and theatre. This was created by an earlier diversion of another portion of the ring road as part of Transport Quarter Phase 1.

Heritage Quarter West lies to the north of St George's Centre which is part of the town's main shopping area. It comprises a family centre, West Street open air car park, part of St George's Centre car park and the former Blockbuster store. Heritage Quarter East lies to the north of the Borough Market. It consists of the open air Horn Yard and Market Square car parks. Given the clear opportunities to make more efficient use of these under-used areas, improve townscape character and improve links to the river, the High Street and surrounding areas, both are identified as Key Sites.

Whilst new retail development will be directed to the existing Primary Shopping Area, there are insufficient sites available within that Area to accommodate the total need for retail development over the plan period. The Heritage Quarter Key Site, located adjacent to the Primary Shopping Area, is the Council's sequentially preferred location for new larger scale retail provision.



Heritage Quarter West will function as a logical extension to St George's Centre and be located relatively close to the proposed transport hub. It is anticipated that it will accommodate around 10,500 sqm gross retail floorspace. This could be entirely comparison retail floorspace or it may include a convenience retail floorspace element. Heritage Quarter East will provide complementary uses such as restaurants and bars which help improve the town's evening economy and a hotel to improve tourist provision. The Key Sites will also accommodate residential development, especially Heritage Quarter East, and make provision for office uses. There will also be a need to make provision for public car parking to replace that lost as a result of development.

It will be important that proposals for the Heritage Quarter Key Sites are appropriate to context; fully integrate with the existing townscape; preserve key views to and from the river; improve the public realm; and enhance the setting of the key heritage assets including the Grade II listed St George's Church. It is also important that development improves pedestrian connections with the historic High Street and the riverside and Imperial Retail Park and Asda superstore to the west

#### 2.4.3 Canal Basin & Northfleet Embankment

There are also developments proposed in the nearby surrounds of Gravesend that the Gravesend Transport Quarter improvements, including the RRL, will support. In particular these include: Canal Basin to the north-east and Northfleet Embankment to the west.

Canal Basin is just outside of the town centre (approx.  $\frac{1}{2}$  mile) and is probably best regarded as a town centre extension. It is mixed use including around 600 homes.

Northfleet Embankment is about 1½ miles outside of the town centre on the western side of the town, linking into the wider Kent Thameside area. Originally promoted by SEEDA, this is an area, partly held by the Homes and Communities Agency, with potential for a wide variety of usage. It will be best served by additional dedicated bus provision. However, in the absence of such provision access will be strongly vehicular-based as the site, whilst close to the Public Transport network, would be noticeably disconnected. The site is promoted in two parts, east and west. There will be significant employment and likely to be over 1,000 new homes. The site is included in the emerging Ebbsfleet Development Corporation (EBC) Masterplan.





Figure 12: Northfleet Embankment

# 2.4.4 Public Transport – Fastrack and Local Bus Services

Substantial quantities of development are proposed across Kent Thameside; i.e. the urban areas of Dartford and Gravesham Borough's north of the A2. The Gravesham Local Plan Core Strategy commits the Borough to producing 6,170 homes and 4,480 jobs by 2028, although as explained below development proposals emerging since this was produced mean these numbers are likely to increase.

Even before this was known Transport study work in the mid 1990's, summarised in the 1999 document 'Looking to an Integrated Future', showed that a substantial shift to public transport was required to support the development proposed. More recent assessment work by Highways England (HE) and London Paramount (both as yet incomplete) has confirmed public transport will need to play a critical role in mitigating the impact of development on the highway network in the area. The HE work in particular, although focussed on A2 junctions, identified that substantial congestion will occur, if additional public transport, primarily bus services, are not made available.


Based on the initial transport studies, to address the highlighted concerns it was decided to provide a Bus Rapid Transport (BRT) to serve Kent Thameside. This resulted in the Fastrack network being introduced in 2006/07, at that time in the form of two routes route A between Bluewater and Dartford and route B between Gravesend and Dartford.



#### Figure 13: Current Fastrack Network

The aim of Fastrack is to provide a high quality bus service that is frequent and reliable and has as much dedicated 'track', priority at junctions etc. as possible to make it as attractive as possible and in this way encourage take up. Alongside this complementary enhancements to the local bus network were envisaged and Arriva the operator of Fastrack and the majority of other services in the area have over the years consistently upgraded the local bus network, most recently on the 480/490 (Valley Drive/Riverview Park to Bluewater/Dartford) which, like Fastrack, uses their 'Sapphire' standard.

Kent Thameside consists of 4 major transport nodes in a line at: Dartford, Bluewater, Ebbsfleet and Gravesend, plus some other significant locations such as Greenhithe station. Once in place it was expected that Fastrack would be developed and routes would be amended or added to meet the requirements of development as this was brought about. For instance the route of Fastrack B has already changed several times as off road sections of route have been built – the most recent example being a diversion of the route to serve Ingress Park from Greenhithe station.



In 2010 the plans for Fastrack included a proposal to add a third route, Fastrack Route C, to enable travel between Gravesend and Dartford via Northfleet Riverside, thus serving the Northfleet Embankment development proposed.



## Figure 14: Fastrack Proposals in 2010

At present Fastrack route B is a hybrid between routes B & C shown above, minus the Eastern Quarry and Northfleet Riverside links, operating on a 10 minute frequency. However, the long term intention was that route C would cross Eastern Quarry, Ebbsfleet and then travel along Northfleet Riverside to Gravesend. Whilst Route B would serve the riverside through Ingress and then continue via Thames Way into Gravesend Town Centre via Imperial Business and Retail Park. The section through Ingress Park back onto the A226 at Swanscombe is currently in the process of being completed.



When preparing the Gravesham Local Plan Core Strategy in 2012 for various reasons, including developer aspirations and site viability at the time, it was considered no longer appropriate to plan for a Fastrack route along the riverside in Gravesend as there would not be the residential development to support it. However, since then circumstances have changed again. The Ebbsfleet Development Corporation has now come into existence and proposals are emerging from London Paramount for a major leisure resort development on Swanscombe Peninsula. The former are charged with increasing the rate of delivery and housing numbers with  $\pounds$ 310m allocated in the autumn statement over the next 5 years to assist delivery, focussed on infrastructure of all types. Master planning work is underway with the results expected in the early summer 2016. The Homes & Communities Agency is already marketing the site known as Northfleet Embankment East and the dwelling total is likely to be significantly more than that identified in the Core Strategy. Three sites have been designated Enterprise Zones: Northfleet Rise in Ebbsfleet, and parts of Northfleet Embankment East and West.

The brief for the Ebbsfleet Development Corporation sets an objective of up to 15,000 homes of which about 11,000 are already consented and form part of both the Dartford and Gravesham Core Strategies. As part of the process and taking into account actual progress on development of sites (there are for example now housing completions in Eastern Quarry) the Fastrack and local bus networks need to be reassessed and new long term plans developed. A Fastrack Board exists, inter alia, for precisely this purpose.

The London Paramount proposal (based on their PEIR report dated April 2014) is subject to change as a result of on-going technical work. Peak usage by visitors is expected at weekends or bank holidays with a strong seasonal component. Total annual visitors have been estimated at 15m (by way of comparison Alton Towers is 2.5m and the top Kent attraction, Canterbury Cathedral, 1m). The graph below gives an idea of the visitor numbers involved. The primary mode of travel for visitors is expected to be road, with rail (HS1) and ferry on the public transport side. There will need to be transport provision between Ebbsfleet International and the Park entrance north of A226, in which Fastrack and other local buses will play a role in facilitating access as well as dedicated services.





Monthly Average Footfall - Year 5

Source: London Resort Company Holdings Forecast

#### Figure 15: London Paramount, Estimated Visitor Numbers

London Paramount will result in a substantial number of jobs for which local bus services will be an important source of transport. The development itself (ignoring knock on effects) will produce up to 9,830 FTE, or 13,160 jobs in total. This includes on site hotel accommodation but not that which may be provided elsewhere. Initial estimates suggest that 55% will come from Dartford/Gravesham, including 73% of these from the riverside strip from LB of Bexley through to Medway. External effects could result in another 10,465 jobs. The Dartford/Gravesham total being in the order of 14,000 jobs. This scale of employment implies significant commuting movements in the local area, with a preference for encouraging as many as possible on to public transport.

Taken together the above emphasises the need for enhanced public transport of which bus, including Fastrack C and the surrounding local bus network, will be a key component. This is confirmed by a case study undertaken by the Fastrack team of KCC in 2010, which through transport & land use modelling and regeneration impact assessment concluded that around 30 to 40% of the proposed homes and some 15 - 35% of jobs in the area were directly dependent on the proposed Fastrack BRT network being provided in full. The case study also notes that, based on a 2008 review of house prices along the operational BRT route, there is evidence to suggest a 11% 'price premium' will be generated.



The diagram at **Error! Reference source not found.** below (showing the autumn 2015, off peak, service patterns for the area) provides a good guide to the bus services that can be expected and emphasises the growing importance of Gravesend as a hub serving the Northfleet / Gravesend urban area and links out into the rural area. Development in the Ebbsfleet area will add to the demand for a regional transport hub in that location, but Gravesend at the 'east end' of the Corridor will be a key access point for those from the town and Northfleet Embankment needing to travel to Ebbsfleet and beyond.

Seamless integration between the bus network, Gravesend station and walking and cycling routes into the town therefore remains a key objective to accommodate the development and this will only be brought about if the RRL is progressed. Similarly, completing the proposed Fastrack Route C to join Northfleet Embankment into the overall Fastrack Network and enhancing the integrated public transport network across Kent Thameside as a whole will enable the Gravesend link to the other Kent Thameside nodes of Dartford, Bluewater and Ebbsfleet and the jobs and homes to be created around these.





Figure 16: Local Bus Network for Gravesend (including proposed Fastrack Route C)

## 2.4.5 Public transport - Gravesend station

Gravesend railway station serves the town of Gravesend in Kent Thameside with train services operated by South Eastern. High speed HS1 services to London St Pancras International were introduced in December 2009 and have proved highly successful with significant customer patronage for high speed services to St Pancras from Gravesend, due (in part) to the sizeable London-bound commuter population in and around Gravesham.



#### Figure 17: Gravesend Station

The station is at the heart of the £75 million Gravesend Transport Quarter development and key to the transport hub and interchange sought within this. In 2013 a £19 million overhaul of the station, platforms and lines involved the installation of a new lift/stair bridge complex towards the western end of the station, the removal of the early 20th century footbridge that spanned the lines close to the ticket halls and a major remodelling of the lines and platforms. This changed the four line, two platform layout into a three line, three platform layout enabling the station to accommodate 12 coach trains as opposed to the previous 10 coach limit. Other works included enlarged ticket halls, new baby changing facilities, refurbishment and reopening of the Gents WC on Platform 2, new indicator screens and additional space for retail opportunities.

Typically rail services currently include:

- 2tph (trains per hour) to London St Pancras via Ebbsfleet International;
- 2tph to London Charing Cross via Dartford and Sidcup;
- 2tph to London Charing Cross via Dartford, Woolwich Arsenal and Lewisham;
- 2tph to Gillingham (Kent);
- 2tph to Faversham; and
- 4tpd to St Pancras and Maidstone West via Strood

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Locally, mainline services serve stations at Northfleet, Swanscombe, Greenhithe (for Bluewater, Stone Crossing and Dartford to the West and Higham and Strood to the East. HS1 serves Ebbsfleet International, Strood, Rochester, Chatham, Gillingham, Rainham, Sittingbourne and Faversham.

Gravesend has a densely populated town centre and many existing and proposed housing developments within cycling and walking distance of the station. In 2015/16 a successful bid to SELEP for support for LSTF capital measures (Kent Thameside – Integrated Door to Door Journeys) enabled South Eastern to build on the recent improvements to the Station by establishing a Gravesend Station Cycle Hub. The key objective of this project is to increase the volume of passengers travelling to Gravesend station by bicycle, having the confidence to leave their bicycles in the new storage available and being positive about the station facilities.

In addition the bid to SELEP supported a number of other measures to improve cycle and pedestrian access between the rail station and both the foot ferry, across the Thames, between Gravesend and Tilbury and the local charity Cyclopark Trust located in Watling Street close to the A2, to the south of Gravesend. The former include a bespoke on road cycle route to the ferry access in the Heritage Quarter of Gravesend where further improvements are to be made to the entry door to the corridor leading to the pontoons, to the walk way between the 2 pontoons, to increase security and to improve access for the disabled/those with push chairs. Cyclopark aims to encourage people to get active by offering a range of cycling and sporting facilities to improve the general health and fitness of people in the community. This will also be linked to the station by a bespoke cycle and pedestrian route. The appraisal of all station improvements, including the link to Cyclopark produced a BCR of 3.02 in the original SELEP bid, whilst the appraisal of the link to the ferry identified a BCR of 6.82.

There are currently 90 cycle parking spaces at Gravesend Station. The Hub will significantly enhance the cycle facilities at the station by installing secure storage (accessed by a fob) for at least 220 cycles. The secure compound will also include up to 60 kit lockers, a maintenance stand and bike pump and charging points for electric bikes. In addition there will be a bespoke building provided from which cycle maintenance, safety checks; free cycle training and general advice will be offered by expert staff. On a lower deck a further 60 cycle storage spaces will be provided along with a maintenance stand and bike pump which will not require a fob for access.



#### 2.5 Planning Considerations

#### 2.5.1 Construction & Maintenance

All Gravesend town centre one way ring road traffic currently uses Clive Road. Clive Road is a largely historic town centre road and any significant routine or capital maintenance would have a major effect on the operation of the town centre in both traffic and economic terms. Significant maintenance has currently been avoided, minimised or deferred in anticipation of the new Link Road. There are no obvious diversion routes other than narrow residential streets.

In this context, construction of Rathmore Road Link will provide four major benefits:

- A purpose made two way road to modern standards to carry the ring road traffic. Significant maintenance will not be required for many years;
- The road has sufficient width to allow maintenance to be carried out safely under traffic management;
- Clive Road still remains available to provide flexibility of traffic management if required; and
- Clive Road will be improved which will again mean significant maintenance is avoided for many years.

The existing Rathmore Road is narrow and of poor quality and will become subsumed within the new Link Road scheme and hence both routine and capital maintenance avoided.

## 2.5.2 Planning and Statutory Orders

The Link Road scheme is specifically identified in the Kent Local Transport Plan (2011-2016) April 2011 as one of the (STIP) Strategic Transport Investment Package Schemes. Further support to the aims and objectives is provided by Policies CS05 (Gravesend Town Centre Opportunity Area) and CS11 (Transport) of the Gravesham Local Plan Core Strategy. The scheme and the wider town centre were discussed at the Public Examination in 2013/14.



The Link Road scheme is a standalone project but the next deliverable phase of a wider project within an earlier Gravesend Transport Quarter Master Plan. The outline planning permission for the Master Plan was allowed to lapse because some changes were made to the Link Road scheme and with it being delivered by the County Council, as Highway Authority, the planning application was determined by the County Planning Authority.

The underlying principles of the Master Plan relating to a town centre transport hub, improved accessibility, reduced severance and quality public realm remain as objectives for the Borough Council and are all included within the policies of the adopted Gravesham Local Plan Core Strategy. The first phase provided the improvement of the Civic Square with some highway improvements and was completed in 2011. Future phases proposed include the upgrade and expansion of the station car park and an enhanced bus interchange. The Link Road scheme will enable this to be delivered effectively by removing traffic from Barrack Row.

Planning permission for the Link Road was approved under Regulation 3 of the Town & Country Planning General Regulations 1992 in November 2014. Submissions to discharge planning conditions are underway. The Report by the Council's Head of Planning Application Group to the Planning Applications Committee in October 2014 provides a comprehensive description of the scheme and issues that were considered.

All land has been secured for the scheme by voluntary acquisition and hence no Compulsory Purchase Order was required. A Side Roads Order was published to cover the minor changes to the highway network and private means of access. No objections were received and the Secretary of State for Transport confirmed the Side Roads Order on 24 November 2015. The decision to publish and implement a Side Roads Order is given in Record of Decision 14/000094(b) taken by the Council's Cabinet Member for Environment & Transport on 24 July 2015.

The new Link Road is the Classified Road and the Side Roads Order refers to the changes to the existing roads and private means of accesses - the "side roads". While reference is made to "stopping up" the overall situation is that, what is public highway now will remain as public highway and private means of access will be maintained. The details of the side roads order are:



*Rathmore Road between Darnley Road and the Station* - This section will be incorporated into the new Link Road and as a "side road" existing highway rights will be "Stopped Up" but the area will remain as public highway incorporated within the new Link Road.

*Rathmore Road in front of the Station* - This section of highway will be "Improved" as part of the creation of the new station forecourt area.

*Rathmore Road between the Station and Stone Street* - This section will be for use by pedestrians and cyclists but with the need to accommodate occasional vehicles servicing the station yard area and No 24 Stone Street. Existing highway rights will be "Stopped Up" and then new "Highway" created to reflect the use by cyclists and pedestrians together with a "Private Means of Access" for the use by service vehicles.

*Car Park accesses* - The existing western entry and eastern exit private means of access to the car park will be "Stopped Up" and then a new "Private Means of Access" for both entry and exit to the retained car park will be created from the new Link Road in the area of the existing western entry. Access to the retained car park will be more convenient as the Link Road will be a two- way road with entry and exit available from either the Darnley Road or Wrotham Road direction.

*Side Roads Order Implementation* - The Link Road will take approximately 1 year to construct. Rathmore Road is currently mainly used by vehicles having the car park and station as a destination. The car park will be closed for the duration of the construction works until the retained car park comes into use on completion of the Link Road. Pedestrian and vehicular access to the station will be maintained from either Darnley Road or Stone Street at all times - probably under a "cul de sac" arrangement. Pedestrian access is also available between the south and north station entrances via the station bridge and lifts, within the station curtilage, connecting the platforms.

## 2.5.3 Land Aspects

All land has been secured for the scheme. Most of the land is owned by Gravesham Borough Council and terms have been agreed and transfer documents are ready for completion. The Transfer will include No 13 Darnley Road and The Lodge both of which were acquired several years ago for the scheme using STPP funding. The only third party land required is from No 15 Darnley Road and this property was acquired for the scheme in June 2015 by the County Council.



Article 6 and Article 1 of the First Schedule of the European Commission on Human Rights has been considered. The scheme has been widely publicised and the opportunity given to comment. All those affected by the Order will be informed by press, public notices and letter as appropriate and will have the right to make representations to the Secretary of State. No person will be deprived of their property or legal right of access. Residential home owners who consider that the value of their property has been affected by physical factors, such as traffic noise, arising from use of the Link Road may be able to make a valid claim under Part 1 of the Land Compensation Act 1973.

## 2.5.4 Stakeholder Awareness

The draft Transport Quarter Master Plan of which the Link Road is a key element was widely consulted upon by Gravesham Borough Council. Exhibitions were held at Towncentric, St Georges Shopping Centre for two weeks and at the Civic Centre for two weeks in June and July 2009 together with specific stakeholder workshops. Analysis of the questionnaires indicates that the proposals were well supported.

The Council also held an exhibition of the Link Road proposals at Towncentric and in the Civic Centre in May 2012 to accompany the submission of the planning application. Leaflets were distributed to local residents and businesses, and details were placed on the Council's website. Comments were considered as part of the determination of the planning application.

The following documents have also been made available for public inspection at KCC and GBC main reception:

- The Order and accompanying plan;
- The Statement of Reasons;
- Record of Decision 14/000094(b) 24 July 2015;
- Planning permission GR/12/441 14 November 2014;
- Scheme plan Drawing No. 4300253/000/10 Rev2;
- Report by the Council's Head of Planning Application Group to the Planning Applications Committee 22 October 2014; and
- Equalities Impact Assessment 18 May 2015.



## 2.6 Further Considerations

#### 2.6.1 Constraints

There are no known constraints that will prevent the RRL proceeding. The scheme has a clear aim and objectives and meets the objectives of a number of policy and strategy documents for Gravesend, Gravesham, Thameside, Kent as a whole, the SE region and nationally. Planning permission is in place, the land required is available and all background checks have been undertaken. There is complimentary funding available and guaranteed to add to the funds sought from LGF and together these funds will meet the total costs of delivering the scheme. The designs for the scheme have been drawn up and these have been shared with and approved by all stakeholders, including statutory authorities, transport operators, users and residents. Tender documents have been issued, governance is in place and preparatory work to be able to commence work on the RRL in April 2016 has been or is in the process of being completed.

#### 2.6.2 Dependencies

The RRL is an enabling scheme for a number of further infrastructure improvements required to accommodate the regeneration and development of Gravesend, Gravesham and the wider Thameside area. However, itself it is not dependent on any other schemes proceeding before it can go ahead.

## 2.6.3 Key Risks

A number of risks are identified in the sections of this report outlining the financial case, the commercial case and the management case for the scheme. Amongst these only the accuracy of utility cost estimates and utility plant records are considered a high risk to progressing the scheme within the timeframe envisaged. This is currently being addressed through discussions with utility companies on site to clarify and challenge (if appropriate) works proposed. Cost estimates of any works required are also currently being sought.



#### 2.6.4 Consequences of scheme not proceeding

Were the RRL not to proceed, the benefits to traffic flow around the ring road and to the regeneration of Gravesend and the wider area will no longer be obtained. In addition there are some specific issues that arise that will require addressing by some other means, although what this may be is not certain at this time. If these are not addressed over time there is the potential for safety to be compromised and it is possible accident rates may increase.

These issues are outlined below:

- Because of its age, a number of the links and junctions that make up the current ring road, in particular in the area of Clive Road/Barrack row, do not meet current standards and guidelines. If the RRL were not to proceed some other means of improving these would need to be sought as traffic levels increase beyond that they can safely accommodate;
- Junction controls in the area are not ideal and will need to be looked at to ensure the continued flow of traffic and other movements in the area;
- Current severance and the layout of road junctions in the area create a barrier to access and social distribution. Solutions, including for example additional controlled crossing points and junction controls, will be required to ensure pedestrians and cyclists can safely access the town centre;
- Road maintenance in Clive Road, Barrack row and Rathmore Road has been deferred in the expectation that the RRL will proceed. If this is not the case that maintenance will need to be undertaken;
- The capacity of the current ring road in the area is limited. Whilst it is not currently at capacity it is not far from this, especially in the peak and as traffic increases over time it will struggle to accommodate this;

As well as the safety and traffic issues that may arise it is likely that without the RRL the opportunities to encourage greater take up of active travel, to achieve greater use of sustainable modes such as bus and rail, to improve access to car parks or to increase use of the town centre will be limited. There will also not be the opportunity to establish the transport interchange and the transport hub this would form with the rail station in Gravesend, further limiting use of these modes and leading to greater congestion on surrounding roads.



# 2.7 Scheme Options Considered

Whilst the economic appraisal will be limited to the 'preferred' option this section gives an overview of the sifting of options.

## **Option 1: Do Nothing**

This option would see increased congestion on the existing one-way system leading to the further severance of the railway station from the town centre. The benefits of the newly created Civic Square would be eroded through the increased traffic and congestion along Stone Street. There would be limited opportunities to provide an enhanced environment around the railway station entrances and the ability to create a new public transport interchange in the Barrack Row/Garrick Street area would be severely limited whilst having to maintain highway capacity for through vehicles.

## **Option 2: Do Minimum**

This option would involve creating a public transport interchange in the Barrack Row/Garrick Street area whilst maintaining the existing one-way system. The option would see increased congestion on the existing one-way system leading to the further severance of the railway station from the town centre. Creating the public transport interchange would also remove some highway capacity that would exacerbate the congestion. The benefits of the newly created Civic Square would be eroded through the increased traffic and congestion along Stone Street. There would be limited opportunities to provide an enhanced environment around the railway station entrances.

## **Option 3A: Do Something**

This option would involve reversing the one-way traffic along the existing Rathmore Road, restricting access to Barrack Row to buses only and making Clive Road two-way. The option would require the demolition of a listed building on the corner of Rathmore Road/Stone Street and the demolition of No.13 Darnley. Traffic flows on Clive Road would be reduced reducing the severance effect between the railway station and the town centre and the public transport interchange could be created at Barrack Row/Garrick Street.



There would, however, be no access to the railway station from Darnley Road increasing the likelihood that traffic would rat-run along residential streets between Darnley Road and Wrotham Road. There would also be limited scope to enhance the station entrance on Rathmore Road.

## Option 3B: Do Something (Optimum)

This option is as the described scheme.

## **Option 4: Do Maximum**

This option would involve the re-alignment of Rathmore Road which would also be made two-way but with the Clive Road and Barrack Row restricted to buses only. The option would remove virtually all traffic from Clive Road enabling this to be pedestriansed or made shared use. The public interchange at Barrack Row/Garrick Street could be created and major enhancement could be made to both of the station entrances. The removal of traffic from Cliver Road could encourage partial redevelopment of the Thamesgate Shopping Centre taking advantage of new frontage opportunities. There would be no access to the existing station car park and Thamesgate multi-storey car park which would predicate the need for alternative provision to be made potentially through a new multi-storey car park above the public transport interchange. An alternative means of servicing the Thamesgate Shopping Centre would also need to be provided.

## **Preferred Option**

The Do Something (Optimum) option was chosen as the preferred option on the basis that this provided the opportunity to create the public transport interchange, reduce the severance effect and allow enhancement of the station entrances. The option also maintained the current access requirements of Clive Road meaning that the scheme was not reliant on alternative provision being made. Property demolition was also kept to a minimum.



## 2.8 Summary

As a STIP scheme the RRL is critical to the strategic development of Gravesend, Gravesham and the wider Thameside area. All the requirements to commence work on the scheme in April 2016 are in place and no significant issues have been identified that will prevent it from being successfully delivered. The scheme has the full support of Kent County Council, Gravesham Borough Council and other stakeholders and is included in all relevant local policy and strategy documents.

The RRL offers only limited benefit as a stand-alone traffic scheme, primarily in terms of easing traffic flows, improving air quality, noise and reduced maintenance costs around the Ring Road. However, it offers some significant direct benefits in terms of improvements to the public realm in areas encompassed by the scheme and improvements to station forecourt infrastructure on both sides of Gravesend rail station.

Its benefits as an enabling scheme are also substantial. They include benefits to the regeneration of Gravesend town centre and benefits to the wider development and regeneration of Gravesham and Thameside, as a whole. In particular the RRL enables the Gravesend Transport Hub to be established by facilitating the creation of a transport interchange adjacent to the rail station, that segregates buses/taxis from other traffic and provides the capacity needed to accommodate the aspired Fastrack C service, linking Northfleet embankment to the hub.

As a result the RRL is identified (In Going for Growth) as one of the Kent Thameside strategic improvement schemes (known as STIPS). It is possible and in a number of cases highly likely, the development proposals intended for Gravesend and the wider area will not be able to proceed or will be curtailed, unless the RRL goes ahaead.

For Gravesend the RRL will:

- Enable station forecourt improvements to be provided to both the North and South side of Gravesend Rail Station;
- Facilitate provision of the proposed Gravesend transport hub by enabling construction of the proposed transport interchange to proceed;
- Enable dedicated bus stops, for Fastrack and local buses, to be located within the transport interchange, including a stop to accommodate the proposed Fastrack Route C;



- Enable Clive Road to be designated for access only with a turning circle, including HGV loading area, at the top and traffic using the road to be significantly reduced;
- Enable public realm improvements to be implemented in the town centre, including increased pedestrianisation and improvements to public space;
- Enable severance within the town centre to be eliminated;
- Open up opportunities to improve pedestrian and cycle access to/from the transport hub and town centre in general;
- Facilitate construction of a footbridge, across rail lines, between Rathmore Road and the station;
- Enable additional employment and housing sites to be developed in the town;
- Enable Gravesend residents sustainable transport access to jobs in the town and via the transport hub in locations beyond;
- Enable those living outside the town sustainable transport access to jobs in the town; and
- Address issues of air quality, noise and road maintenance in the town.

For Gravesham and Thameside the RRL will:

- Enable Fastrack Route C (also listed in STIPS) to be implemented, completing the Fastrack Network sought to mitigate traffic congestion resulting from development in the area as a whole;
- Enable improvements to be made to the local bus network throughout Gravesham and Thameside;
- As a result of Fastrack C being implemented, provide a high quality bus link between Gravesend and development (jobs and housing) proposed for Northfleet Embankment, Swanscombe Penninsula, Ebbsfleet, etc;
- Enable sustainable transport (bus and rail) access between Gravesend and key locations throughout Gravesham and Thameside, including:
  - Ebbsfleet International, the regional transport hub for the area;



- Bluewater the major retail centre in the area;
- Dartford Town Centre;
- The proposed London Paramount visitor attraction, on Swanscombe Penninsula; and
- Jobs and homes at all new development sites proposed for Gravesham and Thameside;
- Enable improved rail access between Gravesend and locations beyond Kent, including London.



# 3 Economic Case

## 3.1 Introduction

The Economic Case for the A226 Rathmore Road Link (RRL) represents the core appraisal process and evidence base, used to predict the scheme's likely performance, economic worth and sound value for money. It defines the net economic outcomes likely to be achieved by the scheme intervention, by means of the following tasks:

- Identifying the groups potentially impacted by RRL, the streams of economic benefits and costs arising from RRL and the volumes of current and future transport users affected;
- Undertaking appropriate modelling and impact appraisal calculations and sensitivity tests;
- Comparing and valuing the scheme's monetised costs and benefits across alternative layout options; and
- Assessing the scheme's Value for Money (VfM), if appropriate, across other qualitative and quantitative outcomes, defined in the 'Appraisal Summary Table' (AST).

This section gives an objective interpretation of the scheme's economic outcomes for the transport business case. It largely follows appraisal advice contained in DfT Transport Analysis Guidance (WebTAG).

## 3.2 Rationale for Predicting Economic Worth of Rathmore Road Link

An overarching argument has been developed for why the RRL scheme could deliver a positive economic outcome. This sees the RRL as a fully functioning highway intervention, in its own right, but also as an essential part of and an enabler for, the implementation of linked initiatives, specifically:

- Further phases of the Gravesend Transport Quarter Masterplan (GTQMP, 2010), which are now subsumed within the Gravesham BC Local Plan Core Strategy (GLPCS, Adopted September 2014); and
- The Kent Thameside Strategic Transport Programme (KTSTP, 2014).



At the same time, it is acknowledged that the RRL scheme is unlikely to deliver a positive economic case, solely in terms of conventional DfT WebTAG economic criteria (i.e. Transport Economic Efficiency – TEE; Public Accounts – PA; Analysis of Monetised Costs and Benefits – AMCB; and Appraisal Summary Table – AST; components).

## 3.2.1 Reasons for Claiming Economic Benefit

The main reasons for arguing that RRL will enable linked economic benefits, at a modest level, are as follows:

- Remaining phases of the GTQMP (now GLPCS) cannot proceed, or achieve their aims, without RRL in place to channel traffic away from Clive Road and the Gravesend town centre bus and rail hub;
- New Fastrack Route 'C' will not be likely to operate via the Northfleet Embankment East and West planned land-use development sites and through the Gravesend bus interchange at Garrick Street and Barrack Row, unless RRL is in place to ease bus movements in Gravesend, increase bus service capacity and facilitate bus / rail interchange;
- Fastrack 'C' will encourage a shift in the use of travel modes, from car to bus and rail, for journeys to and from the Northfleet Embankment area, thereby providing road traffic decongestion benefits;
- By channelling traffic away from Clive Road, RRL will encourage greater pedestrian and cyclist activity between Gravesend rail station, the bus hub and town centre land-uses to the north, thereby justifying urban realm enhancements and increased property values in the town centre;
- The resulting increased pedestrian and cyclist activity in Gravesend town centre will promote a number of 'active mode' user benefits; and
- RRL will assist in realising the GLPCS homes and jobs increases in the Gravesend Town Centre and the Northfleet Embankment and Swanscombe Peninsula East Opportunity Areas.

## 3.2.2 Reasons for not Undertaking Conventional WebTAG Appraisal

As noted above, the RRL scheme is unlikely to represent good value for money (VfM), solely in terms of conventional WebTAG criteria. Reasons for making this judgement are outlined below:



- The RRL scheme will displace some traffic movements from their currently shorter routes in Gravesend town centre, hence the scheme is unlikely to give road user travel time and distance savings;
- Road junctions adjoining the RRL scheme will be upgraded with traffic signal control, which will provide reduced traffic delays under congested conditions, but they will also include new pedestrian crossing facilities, which will, conversely, create traffic delays; and
- There is not known to be a significant safety problem on the current road layout, so although the RRL represents an upgrade to carriageway alignment, junction and crossing standards, it would be difficult to predict a significant scheme injury accident saving;

Given the above issues, it does not seem sensible to waste resources framing the RRL transport business case around conventional WebTAG scheme economic impacts.

# 3.3 Choice of Economic Appraisal Aspects for Rathmore Road link

Given the arguments above, some potential aspects of the RRL scheme have been included in the economic appraisal, whilst others have been omitted. Reasoned justifications for selecting the economic elements to be included in and excluded from the appraisal are as follows:

Elements Included:

- *Enhanced streetscape and urban realm impacts*, for pedestrian users, property values and public accounts, within the limits of the RRL scheme;
  - Justified by RRL encouraging more walking movements within immediate surrounds of the scheme improvement;
- *Pedestrian and cyclist active mode impacts*, for movements between Gravesend town centre, railway station and bus hub;
  - Justified by RRL enabling safer and healthier walk and cycle activity;
- Traffic decongestion impacts, of travel mode shift from car to bus (Fastrack 'C') and rail, at Gravesend town centre and Northfleet Embankment and Swanscombe Peninsula East Opportunity Areas;
  - Justified by RRL freeing up bus capacity at the Gravesend Hub, to access new land uses in the development areas not served directly by a rail station; and
- Public accounts impacts, of RRL scheme capital cost;



- Justified by SELEP and HCA contributions of public funds to finance RRL;

#### Elements Excluded:

- RRL scheme traffic user impacts
  - Justified by likelihood that scheme will not provide a positive economic case, in conventional terms, (i.e. DfT WebTAG Transport Economic Efficiency and Appraisal Summary Table (AST) criteria), retaining, instead, the assessed outcomes from Rathmore Road Transport Assessment (June 2013);
- Fastrack 'C' bus scheme capital and operating costs and fare revenues
  - Justified by likelihood of financially viable route having a balanced, longer term, offset of revenue against costs, giving zero net overall impact;
- Fastrack 'C' bus passenger user benefits -
  - Justified by Fastrack 'C' being likely to go ahead without RRL, but probably not serving Gravesend bus hub, or Northfleet Embankment and Swanscombe Peninsula East Opportunity Areas;
- Regeneration and wider economic impacts
  - Justified by RRL being unlikely, in its own right, to -
    - Induce any regeneration impacts of:
    - Business access to markets and suppliers; access for employers to workforce and workers to jobs; or attractiveness to visitors;
    - Induce any wider impacts of:
    - Business agglomeration and interaction; more profitable production; or increased Government tax revenues from workers;
- Dependent housing development impacts
  - Justified by RRL not being a necessary requirement for new homes to be developed under local planning initiatives;
- Construction costs of Gravesend Transport Quarter Masterplan urban realm improvements (now included in GLPCS) –
  - Justified by exclusion from the appraisal of urban realm benefits outside the limits of the RRL scheme and also by the assumption that costs would be covered by developer contributions, not public accounts;
- Construction costs of Gravesend rail station cycle hub provision -
  - Justified by accounting for user benefits and capital costs elsewhere, within Kent Thameside LSTF package funding bids;
- RRL scheme other qualitative impacts, on social and distributional outcomes –



- Justified by likely effect of RRL being small but negligible.

Table 1 gives a summary of how the RRL scheme impacts have been appraised, using different methods, guidelines and tools.



## Table 1 – RRL Scheme Appraisal Methods, Guidelines and Tools

			Quant Quali App unde for	itative / itative raisal rtaken RRL?	Web	TAG Aţ	opraisa	al Refer Lates	ence & st Upda	k Unit ( ate)	(Noven	nber 20	014			Me	ethods of	Impact /	Appraisal	/ Asse	ssmen	t Tools	Applie	d to RRL	
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	СОВАЦТ	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
Travel Congestion and Modal Shift Imp	pacts				_														1						
User Travel Time (congestion and delay)	М																							TEE / AMCB / TUBA / TAG Data Book	
User Travel Distance (operating cost and charges)	М		~					~								~	~							TEE / AMCB / TUBA / TAG Data	~



			Quanti Quali App unde for	itative / itative raisal rtaken RRL?	Web <sup>-</sup>	TAG Ap	opraisa	l Refer Lates	ence & t Upda	Unit ( te)	Noven	ıber 20	)14			Me	thods of	Impact A	oppraisal	/ Asses	sment	Tools	Applied	d to RRL	
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	СОВАГТ	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
																								Book	
Modal Shift to Save Car Travel Cost	м		✓													~	✓			~				×	✓
Indirect Tax Revenue	М		✓													✓	~							PA / AMCB	$\checkmark$
Public Accounts Cost	м		~		~																			PA / AMCB	$\checkmark$
'External' impacts of traffic de- congestion	м		✓					✓								~	~							TAG Data Book	~



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Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
Environmental Impacts					-																				
Noise	м		~					~								~	~							TAG Noise / AMCB / TAG Data Book	~
Air Quality	м		~					~								~	~							TAG Local Air Quality / AMCB / TAG Data Book	~
Greenhouse Gas	М		~					~								~	✓							TAG Greenhouse Gases / AMCB /	<b>√</b>



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Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
																								TAG Data Book	
Landscape	NM			~									~											TAG Landscape	
Townscape	NM			~									~											TAG Townscape	
Heritage (Historic Environment)	NM			~									~											TAG Historic Environment	
Biodiversity	NM																							TAG Biodiversity	
Water Environment	NM																							TAG Water	



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Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
																								Environment	
Environmental Capital (Incorporated in above Environmental Appraisal Items)																									
Social / Distributional impacts										I															·
Journey Quality	М		✓					~									~	~		~				TAG Journey Quality / AMCB / TAG Data Book	~



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Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
Physical Activity	М		~					~									✓	~						TAG Physical Activity / AMCB	~
Accidents	М		~					~								~	✓							COBALT / AMCB / TAG Data Book	~
Journey Reliability (travel time variability)	NM																							TAG A1.3 App C / HA Journey Time Variability / INCA / Net Rail PDFH	
Non-User Option / Non-Use Value	NM																							🛎 / TAG Data	



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Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
																								Book	
Security	NM			✓		√	~																	TAG Security	
Accessibility of Services / Opportunities	NM			~		~	~																	TAG Strategic Accessibility	
Personal Affordability	NM																							TAG Example only in A4.2	
Severance	NM			✓		✓	~																	TAG Severance	



			Quanti Quali Appr under for I	itative / itative raisal rtaken RRL?	Web	TAG Ap	opraisa	l Refer Lates	ence & t Upda	Unit (l te)	Novem	nber 20	)14			Me	thods of	Impact A	ppraisal	/ Asses	sment	Tools .	Applie	d to RRL	
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
Absenteeism (Employer Benefit)	NM		~					~									✓							×	✓
Wider Impacts																									
Regeneration – – Impacts on business activity in terms of ease of access to markets and suppliers	M & I	NM		~							~													TAG Regeneration	
Regeneration – – Impacts on the labour	M & I	NM		~							~													TAG Regeneration	



			Quanti Quali App unde for	itative / itative raisal rtaken RRL?	Web <sup>-</sup>	TAG Ap	opraisa	l Refer Lates	ence & t Upda	Unit (I te)	Noven	ıber 20	)14			Me	thods of	Impact A	Appraisal	/ Asses	sment	Tools	Applied	d to RRL	
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
market, in terms of ease of access of employers to workforce pool and workers to range of job opportunities																									
Regeneration – – Impacts on an area's attractiveness to visitors and resulting expenditure	M &	NM		~							✓													TAG Regeneration	
Wider Economy																									



			Quant Quali App unde for	itative / itative raisal rtaken RRL?	Web <sup>-</sup>	TAG Ap	opraisa	l Refer Lates	ence & t Upda	Unit ( te)	Noverr	iber 20	)14			Me	thods of	Impact A	Appraisal	/ Asses	sment	: Tools	Applie	d to RRL	
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
Agglomeration Economies Impact – Business success from agglomeration and easier interaction	M &	NM		~						~														TAG Wider Impacts	
Output in Imperfect Markets Impact <ul> <li>Scale of profitable</li> <li>business production of</li> <li>goods and services</li> </ul>	M &	NM		~						~														TAG Wider Impacts	
Labour Market Tax Revenue Impact																								TAG Wider	



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increased number of people working (i.e. Government tax revenues)	M & I	NM		~						~														Impacts	
Housing and Property Impact of change in 'streetscape quality' for pedestrians – – Residential property value – Retail rateable value	M		✓ ✓	× ×																<b>~</b>				× ×	✓ ✓
Housing Property Impact on transport user economics –																									



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Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
<ul> <li>Non-dependent housing development with / without scheme</li> </ul>	М																							TAG Valuing Housing Impacts	
Housing Property Impact on Value for Money (Adjusted BCR) – – Dependent housing development with scheme – <b>'Net Social Value</b> ' i.e. ['Net Private Benefit] – ['Net Social Cost']	М																							TAG Valuing Housing Impacts	
# **Project Name** Rathmore Road Link

**Document Title** LGF Transport Business Case Report



		Quant Quali App unde for	itative / itative raisal rtaken RRL?	Web <sup>.</sup>	WebTAG Appraisal Reference & Unit (November 2014 Latest Update) Methods of Impact Appraisal /								/ Asses	essment Tools Applied to RRL											
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
<ul> <li>Dependent housing development with scheme</li> <li>'Transport External Cost' i.e. Marginal External Cost of additional congestion</li> </ul>	М																							TAG Valuing Housing Impacts	
Door to Door Strategy for Sustainable	Franspo	ort																							
Accurate, Accessible and Reliable Information on Transport Options for a Journey	NM																							×	
Convenient and Affordable Ticketing	NM																							×	

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	Quan Qua Ap und fo		itative / itative raisal rtaken RRL?	WebTAG Appraisal Reference & Unit (November 2014 Latest Update)								)14	Methods of Impact Appraisal / Assessment Tools Applied to RRL												
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
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for an Entire Journey																									
Regular and Straightforward Transport Connections at All Journey Stages and Travel Modes	NM																							×	
Safe and Comfortable Transport Facilities	NM																							×	
Influencing Travel Demand: Work/school/personal travel plans; awareness; information; car sharing; tele-working/conferencing; home	NM																							★ / TAG Data Book	

# **Project Name** Rathmore Road Link

**Document Title** LGF Transport Business Case Report



		Quanti Quali Appr under for F	Quantitative / Qualitative Appraisal undertaken for RRL? WebTAG Appraisal Reference & Unit (November 2014 Latest Update) Methods of Impact Appraisal / Assessment Tools Applied to								i to RRL														
Scheme Impact	Impact Usually Monetised (M), or	Non-Monetised (NM)?	Quantitative	Qualitative	Economic Efficiency (Cost/Benefit; Scheme Cost; User & Provider)	Social	Distributional	Active Mode	Smarter Choices	Wider Economy	Regeneration	Dependent Development	Environment	Multi-Modal Transport Model (Incl. Logit)	User Economics (TUBA/COBA/QUADRO)	Marginal External Cost Calculation (i.e. unperceived costs)	DfT Active Mode Appraisal Toolkit Mar2015	WHO HEAT for Walking & Cycling	DfT Carbon Tool	TfL Valuing Urban Realm Toolkit	COBALT	DfT Wider Impacts in Transport Appraisal Tool	DfT Value for Money Assessment Dec2013	TAG Worksheet / Data Book	Manual Calculation / Case Study & Research Evidence
					Units A1.1, 1.2, 1.3	Unit A4.1	Unit A4.2	Unit A5.1	Unit A5.2	Unit A2.1	Unit A2.2	Unit A2.3	Unit A3.0			Unit A5.4									
shopping																									
Urban Streetscape and Urban Realm				<u>ı</u>	<u> </u>										1	ı	1	1	1	1					·
Pedestrian User Benefit and Property Value Increase	М		✓																	✓				×	~
Effective Scheme Design	8			L								I			1	<u>ı</u>	1	1	1	1					<u>.</u>
Fitness for Purpose / Successful Operation	NM			~																				*	×



# 3.4 Approach Applied for Economic Appraisal of RRL Scheme

This section describes the common appraisal criteria and assumptions used to determine the RRL scheme's economic worth and value for money (VfM). It also outlines the different methods used to derive economic outcomes for those scheme aspects that have been included in the appraisal.

#### 3.4.1 Scheme Options Assessed

Appraisal of RRL has been undertaken for two scenarios: first, without the scheme ('do minimum' – DM) and second, with the scheme ('do something' – DS).

Alternative with-scheme options have not been assessed in this later stage of the transport business case, because a single, proposed design layout for the RRL scheme has already been granted planning approval by Kent County Council (KCC). This is also the layout for which land acquisition has been finalised and side roads orders approved by KCC. Furthermore, a funding contribution has been allocated by the Homes and Communities Agency (HCA) for this scheme configuration.

In view of the confirmations already secured for the with-scheme design, there are not considered to be any scheme alternatives to this proposed 'do something' layout, which need to be assessed, except for a 'do minimum' (without-scheme) option.

The economic appraisal has been prepared for the proposed RRL scheme option.

### Do Minimum

This option, without the RRL scheme, would not entail any changes to the existing transport network in Gravesend town centre, in respect of:

- Highway layout, capacity, traffic routing and management, junction controls, or facilities for pedestrians, cyclists, and bus and rail passengers; or
- Bus hub arrangements at Garrick Street and Barrack Row.

Committed transport changes to the existing network would be included, if relevant, but none have been identified within the area of RRL impact.

### Do Something

The proposed A226 Rathmore Road Link scheme would entail widening, re-aligning and re-configuring Rathmore Road, between Darnley Road and Stone Street, from oneway eastbound to two-way single carriageway.



The upgraded road would have a more southerly alignment through part of the existing GBC surface off-street car park. It would have traffic signal controlled junctions, including pedestrian 'puffin' crossings, at either end. It would also have a pedestrian 'puffin/toucan' crossing midway, to connect the south side of the new Rathmore Road with a pedestrian route and the rail station on its north side, on the old the old Rathmore Road.

There would be an eastbound vehicle layby on the north side of Rathmore Road to serve the railway station, with full turning movement junctions at each end. There would also be a replacement surface off-street car park on the south side of Rathmore Road with a single two-way access junction. The new car park would contain 120 spaces (60 visitors and 60 residents) to replace the existing 225 commuter parking spaces in the old car park. Buses would be routed westbound along the new RRL.

The junction of RRL and Darnley Road would provide for northbound ahead and right in turns and westbound left out and right out turns, but no southbound left in turn.

The junction of RRL and Stone Street would provide for northbound ahead and left in turns and eastbound left out turns.

### 3.4.2 Cost and Benefit Analysis against Do-Minimum

Essentially, the economic appraisal for RRL comprises an assessment of the overall, net, monetised, economic worth of the scheme, in which the following two calculations are made:

- [Net value of scheme option = (benefit cost)]; calculated for each of the Do Minimum and Do Something scenarios (above); and
- [Net RRL scheme worth = (Do Min net value Do Som net value)].

These calculations are summed across each of the strands of assessed economic impact, which are considered to be significant and quantifiable for the RRL scheme. This gives an overall scheme economic outcome, which is summarised in the final, Analysis of Monetised Costs and Benefits (AMCB) table.

### 3.4.3 Economic Appraisal Parameters

The strands of economic impact that have been assessed for Rathmore Road Link have been combined over an appraisal period of 20 years and discounted to 2010 present values and market prices.



The proposed opening year (first scheme year) for RRL is 2017 and the final economic appraisal year is 2036.

### 3.4.4 Outline Methods Used to Determine Economic Outcomes of RRL

A broad outline is given below for each of the methods used to assess the aspects of the RRL scheme that are included in the economic appraisal. The strands of quantified impact assessment that have been included in the economic appraisal are as follows:

- *Enhanced streetscape and urban realm impacts*, for pedestrian users, property values and public accounts, within the limits of the RRL scheme;
- *Pedestrian and cyclist active mode impacts*, for movements between Gravesend town centre, railway station and bus hub;
- Traffic decongestion impacts, of travel mode shift from car to bus (Fastrack 'C') and rail, at Gravesend town centre and Northfleet Embankment and Swanscombe Peninsula East Opportunity Areas; and
- *Public accounts impacts,* of RRL scheme capital cost.

Note that impacts on traffic users have not been quantified in the economic appraisal, although the effects are referred to from a previous transport assessment of RRL.

#### 3.4.5 Streetscape and Urban Realm Enhancement

It is anticipated that the RRL scheme will support and contribute to the enhancement of 'streetscape' and 'urban realm' in Gravesend town centre, envisaged as part of the GTQMP and GLPCS. This enhancement will provide certain benefits to pedestrian users and property providers. The quantified economic impact of this enhancement has been assessed, directly, for the immediate area of the RRL scheme and, indirectly, for the areas of anticipated improvement to streetscape quality in the town centre, to the north.

The economic impact has been assessed using the TfL 'Valuing the Urban Realm Toolkit' (VURT).

### Valuing The Urban realm Toolkit Approach

This Toolkit (VURT) enables assessment of the following aspects of public realm, where improved streetscape encourages greater pedestrian activity in the urban area:

User Benefits – Increases in the value of streetscape, improvements to which
pedestrian users attach a 'willingness to pay', associated with their greater use of the
higher quality public space and urban realm; and



 Property Benefits – Increases in residential and retail property values, following the implementation of a public realm improvement scheme, which attracts greater pedestrian use.

The above aspects represent 'less tangible' benefits of better streets and spaces, which can be monetised, to produce values based on user and property benefits. These benefits are considered on equal terms with conventional time-saving, safety and other economic impacts of a transport scheme.

The Toolkit uses quantifiable evidence from an audit survey of the current pedestrian environment and streetscape quality in Gravesend. This audit is guided by the TRL 'Pedestrian Environment Review System' (PERS). A prediction is then made of potential improvement to the current streetscape quality that would arise in future with the RRL scheme scenario. The predicted change in streetscape quality is then used in two ways, as follows:

- First, it is used to estimate user benefits that would result from an increased number of pedestrians spending more time in the improved environment; and
- Second, it is used to estimate a proportionate uplift in residential property prices and retail rateable values that would result from the improvement in the quality of the urban realm.

The pedestrian user and property impacts, at current year, are then projected over the scheme lifespan of 20 years and collated together in an AMCB table to produce an overall BCR for the scheme improvement.

In line with PERS principles, VURT assigns 'Willingness-to-Pay' values to two types of pedestrian environment, Links and Public Spaces and to the detailed aspects that constitute each of these environments, as summarised in Table 2.



#### Table 2 - PERS Parameters

PERS Audit											
	Impa	acts Considered	in VURT Appraisal	for RRL							
	Property	Impacts	Pedestrian L	lser Impacts							
Type of Pedestrian Environment	Residential	Retail	Quantitatively Assessed	Qualitatively Assessed							
	L	inks									
Effective width			✓								
Dropped kerbs / gradient			$\checkmark$								
Obstructions			$\checkmark$								
Permeability			$\checkmark$								
Legibility			$\checkmark$								
Lighting	$\checkmark$	$\checkmark$	$\checkmark$								
Personal security	$\checkmark$	$\checkmark$	$\checkmark$								
Surface quality			$\checkmark$								
Tactile Information			$\checkmark$								
Colour Contrast			✓								
User Conflict			$\checkmark$								
Quality of environment	$\checkmark$	$\checkmark$	$\checkmark$								
Maintenance	$\checkmark$	$\checkmark$	✓								
	Publi	c Space									
Moving in the space			$\checkmark$								
Interpreting the space			$\checkmark$								
Personal safety			✓								
Feeling comfortable			✓								
Sense of place			✓								
Opportunity for activity			$\checkmark$								

A PERS audit allows for qualitative scores to be attached to the baseline and scheme scenario situations, where the outputs are not directly quantified or monetised. The environment is evaluated by the reviewer and ranked according to Table 3, whereby scores reflect the quality of each parameter.



#### Table 3 - PERS Audit Scoring and Quality of Streetscape Attributes

		Quality of Streetscape Attribute											
	Very Po	oor		Poor	Average	Good		Ve	ry Good				
Score Attached	-3	-2	2	-1	0	+1	+	2	+3				

Key scoring descriptions are given below, to indicate the likely range of outcomes for quality of streetscape:

#### Overall Score: +3

 A score of +3 should be given when the environment is positive. This can be achieved through being aesthetically pleasing, achieving a sense of place, the use of high quality materials to create high quality frontages and environments.

#### Overall Score: 0

 An overall score of 0 will be achieved for an environment which is deemed to be of reasonable standards. While the environment is not considered to be outstanding in quality of material, design or upkeep it is not deemed to be negative.

### Overall Score: -3

 A negative score of -3 would be given where the criteria is considered to be of poor quality. Contributing factors might include excessive noise or spray, poor quality or damaged materials and little or no upkeep. A score of -3 is given to a location where it is unpleasant for a pedestrian to be for an extended length of time.

A PERS-type audit has been performed for the RRL appraisal. This enables evaluation of PERS environmental parameters based on a number of sub characteristics (Appendix C), from which, an average PERS score has been derived and applied within VURT.

The PERS-type audit has been monetised for links and public spaces, in line with research by TfL, which includes coherent values of pence per person, per minute, for various parameters. There are two types of pedestrian environments that are specifically quantified in VURT, which are considered to be the most appropriate for assessing public realm improvements. The greatest benefits are associated with pedestrian movement through the area (Link impact) and resting/spending time within the environment (Public Space impact).



Appendix A shows willingness-to-pay values, for each PERS characteristic incorporated within VURT, that are associated with user journey ambience benefits. Appendix B lists property value uplift associated with improvements in the PERS link characteristics.

## **VURT Input Parameters**

Calculation of monetised VURT benefits for the RRL scheme has been achieved by assessing the current baseline and future situations, according to the input parameters in Table 4.

VURT Toolkit									
	Total Number of Residential Properties Fronting the								
<b>Residential Property Benefits</b>	Scheme								
Property Sale Value and Year of Data	Land Registry								
Year of Data	Land Registry								
RPI (Evaluation Base Year & Year of Data)	WebTAG Data Book (CPI)								
PERS Link Attributes	Reviewed on Site								
Retail Property Benefits	Total Number of Retail Properties Fronting the								
	Scheme								
Rateable Value and Year of Data	Valuation Office Agency								
Year of Data	Valuation Office Agency								
RPI (Evaluation Base Year & Year of Data)	WebTAG Data Book (CPI)								
PERS Link Attributes	Reviewed on Site								
Pedestrian User Benefits									
Day Long Pedestrian Count	Reviewed on Site								
Average Walk Distance	Based on length of scheme area								
Static User Counts	Reviewed on Site								
Weekday and Annual Scaling Factors	Provided in the VURT Toolkit								
Pictures of existing situation	Reviewed on Site								
PERS Audit of both Baseline and Scenario	Reviewed on Site								

#### **Table 4- Input Parameters and Data Required for VURT**



## Time Periods for Accumulating Monetised Benefits from VURT

It is envisaged that the urban realm improvements associated with the RRL scheme are only likely to have a 20-year lifespan, for the purpose of the economic appraisal. The associated user and property benefits from VURT have been judged as likely to accumulate, either for a single year, or multiple years, within this 20-year period, as follows:

- User benefits –
- Pedestrian user benefits are assumed to accumulate year-on-year over the full, 20year period, because there will be constant pedestrian activity, throughout;
- Property benefits -
- Privately owner-occupied, residential property value uplift is assumed to accrue for only a single year of the 20-year period, because the urban realm improvement will give a 'one-off' impact;
- Privately rented, residential property value uplift is assumed to accumulate year-onyear over the full, 20-year period, because there will be annual payments by tenants, throughout;
- Rented, retail property value uplift is also assumed to accumulate year-on-year over the full, 20-year period, because there will be annual payments by tenants, throughout;

### Pedestrian Movement Surveys

Full-weekday pedestrian counts were completed, prior to the PERS baseline and scenario audit, so as to establish weekday pedestrian activity. The data was collected at the southern entrance of Gravesend Station, on Rathmore Road and the westerly end of Clive Road, between Garrick Street, the Town Centre and Gravesend station. Figure 18 shows the location of each pedestrian survey.





### Figure 18: Location of Pedestrian Counts

The surveys of existing pedestrian activity provided daily peak and profile flows, which are required as a baseline in a PERS-type audit, to score the quality of the pedestrian environment. Figure 19 and Figure 20 reveal the profile of recorded, daily weekday pedestrian flows, where pedestrian activity is greatest between 07:00 – 08:00 and 16:00 – 17:00. These peak flows have been used in the PERS-type audit.















#### Sub-Division of the Scheme Area

VURT requires numerous data inputs and is based on an underlying PERS-type audit of the scheme area. From the wider PERS-type audit, two types of pedestrian environment have been selected and assessed for VURT, by ranking against the score chart along a -3 to +3 scale.

The following PERS audit items and types of pedestrian environment have been used in VURT for RRL:

- Links –
- Sections of a footway, footpath or highway where is very long can be divided into sections if the quality of the environment is seen to vary across the route.
- Public Spaces –
- Used as part of the pedestrian route they vary in size from small plazas or parks however may not be a definable area. These areas allow the public to enjoy, rest and experience the surrounding environment. Although it is not a space specifically defined for pedestrian through fare they may use all or most of the space.

Remaining PERS items are not required for VURT, namely:

- Crossings –
- A signalised or unsignalised crossing point where a pedestrian route intersects a highway. These can also include informal desire lines where the desire to cross in a particular location has not been met with formal infrastructure.
- Routes –
- Comprising both links and crossings that link a trip origin and a trip destination.
- Public Transport Waiting Areas -
- Designated for public transport, such as bus and train stops. Larger public transport waiting areas may be considered as interchange spaces.
- Interchange Spaces -
- The areas around and between public transport stops or termini. These spaces allow travellers to change between transport services or modes. They act as gateways to the wider geographical area. The incorporation of the new FastTrack interchange at Gravesend falls within this category.



## PERS Audit Items used to derive Direct Scheme Benefit in VURT

One link (Link 1) has been identified as the main route associated with pedestrian activity at the southern entrance of the station. This link has been used to derive direct economic outcomes for the RRL economic appraisal, because it falls within the boundaries of the RRL scheme layout. A PERS-type audit has been conducted at the identified link to assess the current environmental quality.

## PERS Audit Items used to derive Indirect Scheme Benefit in VURT

A total of 5 links and 3 public spaces have been identified as the main areas of pedestrian activity at the northern entrance of the station. These areas have been used to derive indirect economic outcomes for the RRL, which are not included in the main economic appraisal, because they fall outside the boundaries of the RRL scheme layout.

Table 5 shows the detail and the location of each type of pedestrian environment assessed for direct and indirect outcomes.

Used in VURT for Direct / Indirect Benefit?		PERS Urban Environment Component
		Links
Direct	Link 1	Gravesend station S entrance and forecourt, Rathmore Road
Indirect	Link 2	W side of Garrick Street between New Road and Barrack Row
Indirect	Link 3	N side of Barrack Row between Darnley Road and Garrick Street
Indirect	Link 4	S side of Barrack Row between Darnley Road and Garrick Street adjoining station forecourt and Herts Garage
Indirect	Link 5	S side of New Road connecting N end of Garrick Street with town centre
Indirect	Link 6	S side of New Road at the W end adjoining Darnley Road
		Public Space
Indirect	Public space 1	E side of Garrick Street, large wide street
Indirect	Public space 2	Area to S of Garrick Street at Railway Bell Public House
Indirect	Public space 3	Area linking SW corner of Garrick Street and NE corner of Barrack Row

### Table 5 - Breakdown and Description of PERS Environments



A PERS-type audit of each pedestrian environment highlighted in Table 5 has been completed. For these environments, the PERS parameters identified in Table 4 have been scored against selected sub characteristics in Appendix C, to produce an average weighted score from -3 to +3.

## Calculation of Pedestrian User Benefits

The streetscape baseline situation has been assessed and scored, in line with PERS, for the links and public spaces identified in **Table 5**. A comparative with-scheme situation has been assessed and scored, on the basis of the proposed new public realm designs from the RRL scheme the GTQMP and associated improvements to environmental quality and journey ambience. 'Direct' and 'Indirect' journey ambience uplift, associated with the proposed public realm improvements, has been calculated as a result of the PERStype audit. Appendix D summarises the total PERS scores.

#### Existing Situation

In addition to the PERS-type audit, other variables were collected in relation to each VURT input. These included:

- Average walk distance (m) which was categorised by the length of each parameter (126m);
- Pedestrian count for the peak hour (07:00 08:00) established from an initial count and assuming that all pedestrians will be travelling through the newly improved public realm;
- The VURT Toolkit applies a default average walk speed assigned to each user assumed to be 1.33 m/s;
- The number of static users and the average dwell time (minutes) observed across the peak hour. For the purpose of this study no uplift for the future situation has been applied although it would be expected that people will want to spend more time within the improved environment; and
- Scaling factors have been applied to the hourly peak results to generate annual monetised benefits for the VURT 2010 base year. A weekday scaling factor of 28.9 and an annualisation scaling factor of 9,595 have been used in line with the VURT Toolkit.



## Future Situation

The rule of half is applied to all new beneficiaries attracted to the area by the scheme. For the purpose of this study no uplift from base has been accounted for in the withscheme situation. It is assumed that existing station usage will remain the same.

Whilst it is likely that future demand will increase in the with-scheme situation, as a result of population growth and public transport enhancements, such as implementation of Fast Track 'C' and improved Southeastern train services, this demand increase is not clearly defined and so has not been assessed.

Both direct and indirect user benefits are summarised in

	Benefit from Property \	Increase in /alue (£)	Benefit from Improved User Ambience (£)	Total Combined User and Property Benefit £						
Direct Benefit – From RRL and Gravesend Station South Forecourt Improvement										
	Year 1	Years 2-20	Years 1-20	20 Years						
Total Annual Benefit (based on 2010 present values & prices)	£2,181,464 pa	£0 pa	£55,963 pa							
Total 20-year Lifetime Benefit 2017-2036 (based on 2010 present values & prices)	£2,181	,464	£964,196	£3,145,660						
Indirect Be	nefit – From GTQMF	P Urban Realm im	provement							
	Year 1	Years 2-20	Years 1-20	20 Years						
Total Annual Benefit (based on 2010 present values & prices)	£202,077 pa	£64,662 pa	£53,496 pa							
Total 20-year Lifetime Benefit 2017-2036 (based on 2010 present values & prices)	£1,251	.,475	£921,697	£2,173,172						

. The total annual benefit assumed by both existing and new users has been discounted

to 2010 values, adjusted for work Value of Time (VoT) growth and forecast over a 20-

year appraisal period based on the likely lifespan of the scheme.



For the direct user benefit appraisal on Rathmore Road Link itself, there was calculated to be an annual pedestrian benefit of  $\pounds 63,718$  (at 2010 PV market prices) and  $\pounds 55,963$  after adjustment for increase in value of work time. This gives a 20-year accumulated direct economic benefit of  $\pounds 964,196$  (2010 PV market prices).

For the indirect user benefit appraisal on New Road, Garrick Street and Barrack Row, in the GTQMP, there was calculated to be an annual pedestrian benefit of £60,909 (at 2010 PV market prices) and £53,496 after adjustment for increase in value of work time. This gives a 20-year accumulated indirect economic benefit of £921,697 (2010 PV market prices).

## Calculation of Property Value Benefits

Property benefits are defined by increases in residential sales values and retail rents. Both retail and residential properties have been identified as potential beneficiaries of the scheme. The property assessment identifies percentage uplift in value, for properties that front the scheme area (**Appendix B**). Uplift values have only been assigned to four link attributes, according to perceptions of quality and personal comfort.

### Residential Property Value Benefit

Details of any residential property sales fronting the scheme area have been selected using the Land Registry. Average residential property price is calculated based on property sale value, year of data and Retail Price Index (RPI) values for the evaluation base year and the year of data. RPI data has been extracted from the WebTAG Data Book (December 2015), although in 2012 the PRI value was altered to the Consumer Price Index (CPI) in WebTAG and has therefore been used in the VURT Toolkit.

The PERS-type audit of link attributes has predicted the total percentage uplift in value, which is then applied to the average residential property price to generate a monetised increase in residential values.



For the direct residential property appraisal, homes adjoining Rathmore Road on Cobham Street are assumed to accumulate uplifts in value based on the improved urban realm. A total of 70, owner-occupied, residential properties have been counted of which an average residential property price of £177,586 has been calculated based on recent sales in the Land Registry. The PERS link audit for Link 1 on Rathmore Road has been input to VURT. This has calculated an increase in average residential property value of 19.98 % (or £35,482), based on PERS link improvements with the scheme. This has produced a total annual benefit of property value increase (2010 PV Market Prices) amounting to £2,483,718 and £2,181,464, after adjustment for increases in work VoT. This benefit is assumed to be a single-year increase and has not been aggregated, yearon-year, over the 20 year appraisal period.

For the indirect residential property appraisal, benefits have been assessed for the GTQMP areas on New Road, Garrick Street and Barrack Row. A total of 4 residential properties have been identified within the scheme vicinity of which an average residential property price of £185,724 has been calculated based on recent sales in the Land Registry. The results of the PERS link audits for Links 2-6, on New Road, Garrick Street and Barrack Row have been input to VURT giving a total annual benefit of increased property value amounting to £156,454 (2010 Present Value Market Prices) and £137,415, after adjustment for increases in work VoT. This was derived from an average 21.06% (£39,113) increase in residential value. This benefit is assumed to be a single-year increase and has not been aggregated, year-on-year, over the 20 year appraisal period.

### Retail Property Value Benefit

The rateable value and year of data was sourced from the Valuation Office Agency, for all retail properties facing onto the scheme.

For the direct retail property appraisal, comprising the Rathmore Road link improvement only, no retail properties face the scheme and have therefore none have been assessed.



For the indirect retail property appraisal, the GTQMP Public Realm Improvement Scheme has been assessed on its strategic location next to existing shops and services. A total of 10 retail premises have been identified along Garrick Street, Barrack Row and New Street that face directly onto the proposed scheme. The average rateable value of these properties is £46,419. Uplift in average rateable value of 15.86% (£7,362) has been identified from the PERS changes in link attributes associated with the scheme. A total annual increase in rateable values of  $\pounds$ 73,621 (2010 Present Value Market Prices) and  $\pounds$ 64,662 after adjustment for increases in work VoT, has been calculated and projected, year-on-year, across the 20 year appraisal period.

### Outcomes from the RRL VURT Economic Appraisal

A summary of the calculated economic benefits from the VURT assessment is given in **Table 6**.

Combining the 20-year accumulated benefits of improved urban realm, from pedestrian users and property values, at 2010 present value, gives a direct monetised benefit of the Rathmore Road Link of £3.146m. This benefit is included in the overall quantified scheme economic appraisal.

Indirect benefits associated with the GTQMP elements of the urban realm improvements would provide an additional £2.173m of benefit at 2010 present value. This value has not been included in the overall quantified economic appraisal, as it would not be derived from the RRL scheme itself, but from associated and enabled town centre improvements.

There are no scheme capital economic costs of the RRL scheme included for this strand of assessment, because these costs are included in the overall analysis of scheme present value cost at the end of the appraisal.

### Table 6 Summary of Direct and Indirect VURT Benefits

	Benefit from Increase in Property Value (£)	Benefit from Improved User Ambience (£)	Total Combined User and Property Benefit £
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**Document Title** LGF Transport Business Case Report



Direct Benefit – From RRL and Gravesend Station South Forecourt Improvement											
	Year 1	Years 2-20	Years 1-20	20 Years							
Total Annual Benefit (based on 2010 present values & prices)	£2,181,464 pa	£0 pa	£55,963 pa								
Total 20-year Lifetime Benefit 2017-2036 (based on 2010 present values & prices)	£2,181	.,464	£964,196	£3,145,660							
Indirect Ber	nefit – From GTQMF	9 Urban Realm imp	provement								
	Year 1	Years 2-20	Years 1-20	20 Years							
Total Annual Benefit (based on 2010 present values & prices)	£202,077 pa	£64,662 pa	£53,496 pa								
Total 20-year Lifetime Benefit 2017-2036 (based on 2010 present values & prices)	£1,251	.,475	£921,697	£2,173,172							

# 3.4.6 Active Mode Appraisal

It is envisaged that the RRL scheme will encourage greater movement activity amongst pedestrians and cyclists between Gravesend town centre, the railway station and the bus hub, as a consequence of channelling traffic away from Clive Road / Barrack Row. An economic appraisal of likely impacts on pedestrians and cyclists has been undertaken, in line with guidance from DfT (March 2015), in 'Investing in Cycling and Walking: The Economic Case for Action' and using the associated spread sheet 'Toolkit'.

### Appraisal Period and Future Years

The economic appraisal period is assumed to be 20 years, which is based on the expected lifespan of the scheme and its measures.

It is possible that the expected benefits of the scheme will continue beyond the appraisal horizon, however these additional benefits have not been quantified as part of this particular appraisal.



Active Mode Appraisal Toolkit, has been used to assess the following scheme impacts: health benefits for active mode users, through encouraged activity; reductions in absenteeism; journey ambience and external costs borne by others including; decongestion savings for society; journey time reliability improvements for users; accident savings; air pollution; noise and the capital cost to public accounts of preparing and constructing the scheme.

## Estimating Current Demand

The range of benefits of increased walking and cycle use generated by creating environments to encourage interchange and new cycling and walk routes is extensive and far-reaching. In order to determine the actual value of benefits from increased levels of active travel it was necessary to estimate the number of users who would benefit. For this purpose, two scenarios were considered i.e. one without the improvements provided by the Rathmore Road link and one with the scheme improvements.

For station and interchange improvements associated with The Rathmore Road Link the baseline situation is calculated from an annual footfall figure of 2,772,440 for 2014/2015<sup>1</sup> at Gravesend Station. Annual footfall is divided by 365 and has then been apportioned by mode, based on a Customer Satisfaction Survey (Jul 2014-Aug 2015) conducted at Gravesend Station. The results suggested 2% of passengers used a bike and 52% walked before alighting at the station.

# Forecast Demand With and Without RRL Scheme

The demand impact of the proposed RRL scheme has been estimated using evidence from comparable studies, as outlined in WebTAG A5.1 (Active Mode Appraisal – January 2014). The with-scheme increase in demand is based on user counts and surveys before and after each completed scheme, which shows an increase in usage following the upgrades proposed. The case studies selected as being the most representative for the current assessment in terms of the measures implemented are listed in the Table 7 below. These provide the percentage uplift to apply to the user counts in order to establish the 'with scheme' impact on demand as a result the improvements made.

<sup>&</sup>lt;sup>1</sup> Office of Rail and Road – Estimates of station usage



#### Table 7 Representative Case Studies for Uplifting Travel Mode Share

Rathmore Road Link and Gravesend Station Improvement											
Impact on Travel Demand, by Mode	Case Study Source										
Cycle + 14%	Bike 'n' Ride, Programme Evaluation, ATOC, 2011 (MVA)										
Walk + 11%	Impacts of Station Accessibility Improvements, SDG/PB/WSP, 2015										

The number of new active mode users generated by the RRL scheme, by way of associated improvements at Gravesend Station, has been calculated as the 'without scheme' forecast demand subtracted from the 'with scheme' demand. The numbers of 'individual' users is calculated on the basis that 90% of 'trips' are part of a 2-way return journey using the same route. This conversion avoids double counting the number of individuals affected.

The forecast 2017 walk and cycle demand includes NTEM background growth from 2015 to 2017 (Scheme opening year), for each mode of travel and the predicted user uplift sourced from each representative case study. A summary of predicted with and without scheme demand from pedestrians and cyclists is given in Table 8.



# Table 8 Base and Future Cycle, Bus and Walk Demand at Gravesend Station

Cyclist,	Pedestrian and Bus User demand with and Gravesend annual station f	without RRL Sche footfall)	eme (based on
nge e		Walkers	Cyclists
rcha	2014/2015 (usage	per day)	
Inte L sch	Trips	3950	152
and / RR	Individuals	2172	84
ed by	2017 (usage per day) Includes 2 yea	rs growth from 201	5-2017
oreco	Without scheme (trips)	4001	153
on Fc S, et	With scheme (trips)	4441	175
tatic nent	Usage difference (trips)	440	21
nd S over	Without scheme (individuals)	2200	84
vese	With scheme (individuals)	2442	96
Grav I	Usage difference (individuals)	242	12

## Outcomes from Active Mode Appraisal

The results of the RRL active mode economic appraisal are summarised in

Active Mode Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)						
	Walk	Cycle				
Economic Impact	Present Values in 2010 market prices and values (£000's)	Present Values in 2010 market prices and values (£000's)				
	<b>PV Economic Benefits</b>					
	Decongestion impacts					
Reduced Vehicle Kilometres Travelled	208.104	41.256				
Accident	50.457	10.007				
Local Air Quality	0	0				
Noise	3.368	0.668				
Greenhouse Gases	11.003	2.183				
Indirect Taxation	-58.397	-11.595				
Overall Decongestion Benefit	214.535	42.519				

## **Document Title** LGF Transport Business Case Report



Active Mode User Impacts						
Reduced risk of premature death	1866.069	116.514				
Absenteeism	123.108	6.095				
Journey Ambience	0	0				
Overall Activity Benefit	1989.177	122.609				
	Overall Impact					
PVB 2203.712		165.128				
PV Economic Costs						
Infrastructure	-1.695	-0.336				
Government	0	0				
Private contribution	0	0				

. Journey ambience benefits have been removed from the active mode outcomes, because they have already been assessed, more accurately, in the VURT appraisal.

The combined decongestion impact from active mode improvements, gives a benefit of  $\pm 0.215$ m for pedestrians and  $\pm 0.042$ m for cyclists, at 2010 present value. This amounts to an overall combined benefit of  $\pm 0.257$ m from reduced traffic congestion.

The combined activity impact, gives a benefit of  $\pounds$ 1.989m for pedestrians and  $\pounds$ 0.123m for cyclists, at 2010 present value. This amounts to an overall combined benefit of  $\pounds$ 2.112m from increased walking and cycling activity.

In total, the 2010 present value benefits associated with active modes, amount to  $\pounds$ 2.204m for pedestrians,  $\pounds$ 0.165m for cyclists and  $\pounds$ 2.369m in total.

This is set against a very small reduction in cost to public accounts, associated with decongestion infrastructure maintenance saving of  $-\pounds1,695$  for pedestrians,  $-\pounds336$  for cyclists and  $-\pounds2,031$  in total.

Active Mode Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)				
Economic Impact	Walk	Cycle		
	Present Values in 2010 market prices and values (£000's)	Present Values in 2010 market prices and values (£000's)		

# Table 9 Economic Outcomes from RRL Active Mode Appraisal



	<b>PV Economic Benefits</b>		
	Decongestion impacts		
Reduced Vehicle Kilometres Travelled	208.104	41.256	
Accident	50.457	10.007	
Local Air Quality	0	0	
Noise	3.368	0.668	
Greenhouse Gases	11.003	2.183	
Indirect Taxation	-58.397	-11.595	
Overall Decongestion Benefit	214.535	42.519	
	Active Mode User Impacts		
Reduced risk of premature death	1866.069	116.514	
Absenteeism	123.108	6.095	
Journey Ambience	0	0	
Overall Activity Benefit	1989.177	122.609	
·	Overall Impact		
PVB	2203.712	165.128	
	PV Economic Costs		
Infrastructure	-1.695	-0.336	
Government	0	0	
Private contribution	0	0	

## Economic Outcome from Active Mode Appraisal

It can be seen from the results of the active mode economic appraisal that the RRL scheme will provide modest benefits from increased activity amongst pedestrians and cyclists and a reduction in vehicle kilometres travelled by road. There are no scheme capital economic costs of the RRL scheme included for this strand of assessment, because these costs are included in the overall analysis of scheme present value cost at the end of the appraisal.

Overall net benefits from active mode traffic decongestion, for pedestrians and cyclists combined, will amount to £0.257m at 2010 present value market prices.



Overall net benefits from increased walk and cycle activity, for pedestrians and cyclists combined, will amount to £2.112m at 2010 present value market prices.

Taking all benefits together, the active mode appraisal indicates that RRL will enable overall net benefits, for pedestrians and cyclists combined, of £2.369m at 2010 present value market prices.

# 3.4.7 Traffic Decongestion Impacts of Fastrack 'C'

### Introduction

It is considered that prospective improvements to bus service quality, capacity and facilities, especially provision of a new Fastrack Route 'C' (FTC), at Gravesend bus station hub, could not proceed without RRL first channelling traffic away from Clive Road / Barrack Row. It is argued that RRL will enable Fastrack 'C' to serve Gravesend town centre and new land-use developments at Northfleet Embankment and Swanscombe Peninsula East Opportunity Areas.

Fastrack 'C' is a bus rapid transit service, which would operate between Gravesend and Dartford, via Northfleet Embankment, Ebbsfleet and Bluewater, on an alternative route to existing Fastrack 'B'. Existing Fastrack 'A' operates between Dartford and Bluewater, via Greenhithe.

Assuming that RRL will enable introduction of Fastrack 'C', an economic assessment has been made of potential traffic decongestion impacts, through reduced vehicle kilometres, which could result from transport users switching travel mode from car to bus and rail.

The aim is to assess the economic benefit that could be achieved, if RRL encourages a shift of trips from road and road/rail travel modes, to bus and bus/rail modes, as a result of RRL allowing Arriva Fastrack Route 'C' to be implemented, serving Gravesend town centre and the railway station.



## Rationale for FTC Decongestion Impact

Mode shift to Fastrack 'C', caused by RRL, would only occur for trips to and from the Northfleet Embankment and Swanscombe Peninsula East areas west of Gravesend. Furthermore, it would only arise for PT trips that would not otherwise use existing rail stations at Northfleet, Ebbsfleet International or Swanscombe. Mode shift would also only arise for car trips that could reduce their overall generalised travel cost, (i.e. time, distance, and parking charges), by using Fastrack 'C'. The mode shift to Fastrack 'C' would enable marginal external cost (MEC) savings, as a consequence of prompting vehicle kilometre savings by car. These can be appraised in line with DfT WebTAG advice (Unit A5.4).

## **Outline Method**

The main assumptions made and method stages undertaken to develop the Fastrack 'C' decongestion appraisal are set out below.

- Establish research evidence for likely travel mode shift from car to bus, in response to improvements to bus service attributes (i.e. TRL568, 2003);
- Plot potential route for Fastrack C (based on operator and land use plans) and associated passenger catchment within 400m of route – i.e. 5<sup>1</sup>/<sub>2</sub> minute walk time;
- Identify possible trip origin to destination (O-D) movements that could be affected by introduction of FTC, along its potential Northfleet Embankment section, (broadly between Gravesend rail station and Northfleet rail station);
- Obtain quantified evidence of existing car traffic flows making the above trip O-D movements, from Census 2011 journey to work (JTW) data;
- Expand Census JTW trips to cover return trips and all journey purposes, at a daily level, using NTEM 6.2 and TEMPRO data;
- Project existing daily car trips to future level, using NTEM growth forecasts, to 2028 (horizon year for Gravesham Local Plan Core Strategy, 2014);
- Add new car trips likely to arise with planned land-use development at Northfleet Embankment East and West, as envisaged by GLPCS and Ebbsfleet Development Corporation;
- Calculate average travel distance between trip O-D affected by FTC and convert quantified car person demand to car person kilometres;
- Apply modal shift evidence, to predict trips that would switch from car to bus in response to new FTC route and service improvements, using TR568;



- Calculate car person vehicle km (CPKM) saved by mode shift of car trips to Fastrack 'C' bus;
- Assume that entirety (100%) of predicted mode shift CPKM savings are attributable to RRL, because without the RRL scheme, Fastrack 'C' is unlikely to be implemented (owing to lack of PT interchange facility in Gravesend town centre);
- Apply WebTAG MEC decongestion parameters to predicted CPKM savings, (using TAG Data Book, autumn 2015), to give monetised, traffic decongestion benefits;
- Expand monetised decongestion benefits over all years in economic appraisal period (assume 20 years, for consistency with other RRL appraisal strands); and
- Convert life-term decongestion monetised savings to 2010 present values and prices, discounted.

## Method Details

Key details associated with some of the above method stages are set out below.

## Trip Movements Available to Fastrack C

The potential travel movements that could be subject to mode shift from car to Fastrack 'C' are judged to be in two categories, as follows:

- Trips that would otherwise use car to and from Northfleet Embankment, which would switch to Fastrack 'C' for the full trip.
- Trips that would otherwise use car, or car and train, between Northfleet
   Embankment and areas outside Gravesham and Dartford Boroughs (in either direction), which would switch to Fastrack 'C' and train (via Gravesend or Northfleet stations), for the full trip.



Car trip O-D movements available to switch to Fastrack C have been assessed according to four categories, in line with the level of coarseness of the Census output area zones used in the appraisal, as follows:

- Internal to Internal trips these are journeys wholly within Gravesham and Dartford Boroughs (at census output area level);
- Internal to External and External to Internal trips these are journeys between detailed output areas in Gravesham and Dartford and coarser, middle super output areas, local authorities and regions, further afield; and
- External to External trips these are trips that have been excluded from the appraisal, as they are not available for switching to Fastrack C.

## Land Use Development Trips at Northfleet Embankment

Prospective land-use developments that could arise inside the FTC Northfleet Embankment catchment have been identified as allocations within Gravesham LPCS 'Opportunity Areas' (Tables 5 and 6), i.e. at Northfleet Embankment and Swanscombe Peninsula East, which are now retained within plans from the Ebbsfleet Development Corporation. A breakdown of these land-use types and magnitudes of development are summarised below:

- Northfleet Embankment West (OA 1.3) 200 new homes (at land E of Grove Rd and Robins Creek)
- Northfleet Embankment West (OA 1.4) 530 new homes (at old Northfleet residential extension)
- Northfleet Embankment East (OA 1.8) 575 new homes (mid-range uplift from LPCS 250 homes to 450-700 homes, in line with Ebbsfleet Development Corporation latest plans)
- Northfleet Embankment West (OA 1.5) 1,330 new jobs (at cement works site)
- Northfleet Embankment East (OA 1.8) 940 new jobs (at regeneration site)
- Overall total new homes 1,305
- Overall total new jobs 2,270

For the FTC decongestion appraisal, representative trip rates have been applied to the above estimates of new homes and jobs (e.g. from TRICS), to give total car trips.

Trip O-D distribution for new land-use trips has been estimated on the basis of existing Census 2011 JTW O-D movements, for all purposes combined.



## Modal Shift from Car to Bus with Fastrack C

Likely mode shift from car to Fastrack 'C' bus services has been based on TRL Report TRL568 'Factors Influencing Trip Mode Choice' (2003). Table 10 shows how research evidence on car cross elasticity of demand, in response to changes in bus attributes, has been calculated and applied to predicted attributes of Fastrack C, in order to generate a likely percentage mode shift from car to FTC.

TRL568 Evidence			RRL & Fastrack 'C' (FTC) Appraisal Calculations			
Bus Service Attribute	TRL568 [% Change in Car Demand] / [% Change in PT Attribute]	Cross Elasticity of Car Demand Calculated from TRL568	Predicted Change in Thameside Bus Service/FTC Attribute as a Result of RRL	Rationale for RRL/FTC Bus Service Assumptions	% Change in Car Demand for RRL/FTC Bus Service Improvements (cross elasticity of car demand applied to bus attributes)	
Bus Frequency Increase	-0.9% / 100%	-0.009	25.00%	Increase frequency from 8 to 10/hr each way	-0.23%	
Bus Interchange Time Decrease	-1.8% / -100%	0.018	-13.50%	Decrease interchange time from 15 to 13 min in Gravesend	-0.24%	
Bus Reliability Increase	-4.5% / 100%	-0.045	5.00%	Increase in on-time running for 1/20 buses	-0.23%	
Bus Route Access Time Decrease	-8.8% / -100%	0.088	-5.00%	Decrease boarding time of -30 sec in 10 min route access time	-0.44%	
Bus Fare Decrease	-3.6% / -50%	0.072	0.00%	No change likely	0.00%	
Bus Travel Time Decrease	-7.4% / -25%	0.296	-5.00%	Decrease travel time of -1.5 min in 30 min bus trip	-1.48%	
Bus Information Increase	-9.2% / 100%	-0.092	5.00%	Increase in bus knowledge for 1/20 passengers	-0.46%	
Combined Attributes					-3.07%	

### Table 10 Calculation of Car Mode Shift to Fastrack C, based on TRL568

From the items in the above table, it is predicted that, under modest FTC service assumptions, the bus route improvement associated with Rathmore Road Link could attract a 3.1% shift of available car person kilometres from car to bus. This mode shift has been applied in the FTC decongestion appraisal.



## Marginal External Cost Saving from Traffic Decongestion

Marginal External Cost principles have been used to calculate the monetary impacts of a reduction in traffic demand and car person kilometres associated with FTC. The assessment follows guidance in TAG Unit A5.4. Items that could be impacted by traffic decongestion are as follows:

- Decongestion (efficiency saving for traffic movements, after change in vehicle kilometres);
- Infrastructure (capital cost saving on highway maintenance);
- Accidents (saving on road injuries);
- Local Air Quality (reduction in air pollution);
- Noise (reduction in traffic noise);
- Greenhouse Gases (reduction in carbon emissions); and
- Indirect Taxation (loss of fuel tax revenue for Government).

MEC benefits have been calculated by applying TAG Data Book valuations of pence per vehicle kilometre saved, averaged across different road types and congestion conditions.

### Outcomes from Fastrack C Marginal External Cost Decongestion Appraisal

Outcomes from the economic appraisal have been calculated according to the method described and then converted to 2010 present value, as summarised in Table 11.



			-	-
Marginal External Costs	Internal to Internal Movements	Internal to External Movements	Internal toExternal toExternalInternalMovementsMovements	
Decongestion	£220,934	£9,885,858	£7,881,379	£17,988,171
Infrastructure	£1,251	£56,026	£56,026 £44,622	
Accident	£21,193	£951,722	£754,393	£1,727,308
Local Air Quality	£60	£2,804	£2,060	£4,924
Noise	£1,441	£64,441	£51,439	£117,321
Greenhouse Gases	£7,807	£350,717	£277,867	£636,391
Indirect Taxation	-£39,466	-£1,781,935	-£1,400,321	-£3,221,722
PVC	-£1,251	-£56,026	-£44,622	-£101,899
PVB	£211,969	£9,473,607	£7,566,817	£17,252,393

#### Table 11 Economic Valuation of FTC Decongestion at 2010 Present Value

The results from the appraisal show that, by enabling traffic decongestion through shift of car trips to FTC, the Rathmore Road Link scheme would provide a benefit (at 2010 present value, discounted over 20 years) of £17.252m.

Almost all of these benefits would accrue to trips to and from areas outside Gravesham and Dartford, whereby their longer trip length would enable a greater saving in car person kilometres, by switching from car to Fastrack C and rail, through Gravesend and Northfleet.

### 3.4.8 Public Accounts Impacts of Rathmore Road Link

A scheme construction cost estimate has been prepared for RRL by Kent CC, as outlined in the financial Case. For the economic appraisal, this cost breakdown has been adjusted as follows:

- Overall 2015 Q4 cost components have been re-allocated to construction years in which they will occur, for 2016 and 2017;
- The 2016 and 2017 costs have been converted to a Base Cost equivalent, with adjustment for –
- Real construction cost increase i.e. relative change of (RCTPI) / (Real GDP from TAG Data Book Autumn 2015);



- Re-basing to 2010 price-base, undiscounted, i.e. allowing for deflation (CPI-based GDP from TAG Data Book Autumn 2015);
- As shown in Table 12.

## Table 12 RRL Scheme Cost for Economic Appraisal

Project Cost Components		Costs by year (£)			
	Detailed Capital Cost Items	Allocated Proportions of Initial Cost Estimate @ 2015 Q4 Construction Start: June 2016 Construction End: November 2017 Construction Duration: 1.5 Years		Base Cost Estimate Adjusted for Real Construction Cost Increase & Re-Based to 2010 Price-Base at Factor Cost Undiscounted	
		2016	2017	2016	2017
	Preliminaries	£430,000.00	£0.00	£393,433.71	£0.00
	Main Works	£3,024,000.00	£1,296,000.00	£2,766,845.43	£1,200,678.68
	Ancillary Works	£32,500.00	£207,500.00	£29,736.27	£192,238.29
Construction	Work by Other Authorities (e.g. SU)	£30,000.00	£20,000.00	£27,448.86	£18,528.99
	On-Site Supervision & testing	£0.00	£0.00	£0.00	£0.00
	Acquisition	£980,000.00	£0.00	£896,662.87	£0.00
	Legal Process	£12,500.00	£12,500.00	£11,437.03	£11,580.62
Land & Property	Property Management	£0.00	-£200,000.00	£0.00	-£185,289.92
	Compensation	£0.00	£0.00	£0.00	£0.00
	Surveys and Data Collection	£20,000.00	£0.00	£18,299.24	£0.00
	Option Development & Appraisal	£915,000.00	£25,000.00	£837,190.33	£23,161.24
	Scheme Design	£252,000.00	£63,000.00	£230,570.45	£58,366.32
Preparation, Administration & Supervision	Project Management & Procurement	£112,000.00	£48,000.00	£102,475.76	£44,469.58
	Public Consultation	£0.00	£0.00	£0.00	£0.00
	Public Inquiry	£0.00	£0.00	£0.00	£0.00
	Statutory Process & Approvals	£90,000.00	£0.00	£82,346.59	£0.00
	Compensation	£90,000.00	£90,000.00	£82,346.59	£83,380.46
	On-Site Supervision & testing	£455,000.00	£195,000.00	£416,307.76	£180,657.67
	Consultant & Agent Fees	£30,000.00	£30,000.00	£27,448.86	£27,793.49
Traffic-Related	Non-Routine Re-construction	£0.00	£0.00	£0.00	£0.00

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		Costs by year (£)			
Project Cost Components	Detailed Capital Cost Items	Allocated Proportions of Initial Cost Estimate @ 2015 Q4 Construction Start: June 2016 Construction End: November 2017 Construction Duration: 1.5 Years		Base Cost Estimate Adjusted for Real Construction Cost Increase & Re-Based to 2010 Price-Base at Factor Cost Undiscounted	
		2016	2017	2016	2017
Maintenance	Re-Surfacing	£0.00	£0.00	£0.00	£0.00
	Surface Dressing	£0.00	£0.00	£0.00	£0.00
Scheme Operation	Routine & Non-Traffic- Related Maintenance	£0.00	£0.00	£0.00	£0.00
Indirect Tax	Non-Recoverable VAT (if applicable)	£0.00	£0.00	£0.00	£0.00
Contingency	KCC Inflation Element	£28,000.00	£12,000.00	£25,618.94	£11,117.40
	Risks from Policy Change	£0.00	£0.00	£0.00	£0.00
	Risks of Scheme Delivery	£0.00	£0.00	£0.00	£0.00
	Risks of Scheme Operation	£0.00	£0.00	£0.00	£0.00
Quantified Risk Adjustment	Risks from Unexpected User Demand & Operator Revenue Outcomes	£0.00	£0.00	£0.00	£0.00
	Overall Risk Adjustment - Assume Quantified Risk Assessment	£630,000.00	£270,000.00	£576,426.13	£250,141.39
Indirect Tax	Non-Recoverable VAT (if applicable)				
Optimism Bias (Contingency)	At 3% (for local road scheme at full transport business case stage 3)	£213,930.00	£62,070.00	£195,737.84	£57,504.73
Total Cost	Incl. Risk Excl. Optimism Bias	£7,131,000.00	£2,069,000.00	£6,524,594.82	£1,916,824.22

The total Base Costs of £6,524,594.82 (at 2016) and £1,916,824.22 (at 2017) have been discounted to 2010 present value and converted from factor cost to market prices, for inclusion in the Public Accounts summary and Analysis of Monetised Costs and Benefits.

# Public Accounts Summary

After discounting the scheme base cost to 2010 present value and prices, the total scheme cost amounts to £6,814,368.60.

This cost has been converted from factor cost to market prices, by applying indirect tax correction of +19%. The scheme cost at market prices amounts to £8,109,098.63.



The above scheme cost is further adjusted, to subtract the saving to public accounts from reduced infrastructure maintenance, as calculated in the active mode appraisal and the Fastrack C decongestion appraisal, as follows:

- Scheme Construction Cost = £8.109m;
- Active Mode Infrastructure Saving = -£0.002m;
- Fastrack C Decongestion Infrastructure Saving = -£0.102m;
- Overall Public Accounts PVC = £8.005m.

# 3.5 Overall Quantified Economic Worth of RRL Scheme

This section pulls together the various strands of quantified economic assessment for the RRL, as discussed above and then gives an overall summary of the combined outcomes, giving an overall economic worth for the proposed scheme.

The 2010 present value benefits and costs, at market prices, from each of the appraisal strands, are as follows:

- *Enhanced streetscape and urban realm impacts*, for pedestrian users, property values and public accounts, within the limits of the RRL scheme
  - PVB = £3.146m
  - PVC = zero
- *Pedestrian and cyclist active mode impacts,* for movements between Gravesend town centre, railway station and bus hub;
  - PVB = £2.369m
  - $PVC = -\pounds 0.002m$  (public accounts saving)
- *Traffic decongestion impacts,* of travel mode shift from car to bus (Fastrack 'C') and rail, at Gravesend town centre and Northfleet Embankment and Swanscombe Peninsula East Opportunity Areas; and
  - PVB = £17.252m
  - PVC = -£0.102m (public accounts saving)
- *Public accounts impacts,* of RRL scheme capital cost.
  - PVB = zero


- PVC = -£8.109m

#### АМСВ

The results from the above economic appraisal strands have been combined in the final economic summary table of Analysis of Monetised Costs and Benefits (AMCB) in Table 13.

#### Table 13 RRL Scheme AMCB Table

Economic Appraisal Item	Quantified Economic Worth, at 2010 PV & Market Prices, Discounted (£m)
Present Value of Benefits (PVB)	£22.767m
Present Value of Costs (PVC)	£8.005m
Net Present Value (NPV): PVB – PVC	£14.762m
Benefit to Cost Ratio (BCR): PVB/PVC	2.8

Overall, the RRL scheme economic appraisal indicates that the RRL scheme will be economically worthwhile in broader impact terms and will show a positive present value benefit, of £22.767m, which significantly outweighs its present value cost, of £8.005m.

This means that the RRL scheme will give a net present value of £14.762m and a strong benefit to cost ratio of 2.8.

#### 3.6 Traffic User Impacts of Rathmore Road Link

The likely effects of RRL on road vehicle users within the area of scheme impact, in Gravesend town centre, have been interpreted from a previous transport assessment, which was undertaken for the scheme (Rathmore Road Transport Assessment Report, PBA, June 2013; Project Ref: 26058-002; Doc Ref: 3651).

The assessment used the Gravesend Transport Model (PARAMICS, base year 2007), to predict likely effects of the RRL, when compared with the no-scheme alternative, at future years 2014 and 2029. This model incorporated forecast trip matrices for the appropriate years, taken from the strategic multi-modal Kent Thameside Model (SATURN / TRIPS, base year 2005).



Results from the assessment were extracted in terms of changes in link flows, journey times, queue lengths and A2 junction operation, compared with the do minimum.

#### **RRL Traffic Flow Impacts**

In broad terms, the RRL scheme was predicted to cause a reduction in weekday peak 2way traffic flows on the main radial access roads connecting with Gravesend town centre, amounting to -15% in the AM and -12% in the PM, at 2029. There would be a similar reduction on an east/west screen-line, comprising Rathmore Road, Clive Road, Darnley Road and Cobham Street amounting to -25% in the AM and -4% in the PM, at 2029.

The predicted traffic reduction caused by RRL suggests that the scheme could displace significant vehicle flows on to roads avoiding the town centre, which would be expected to result in:

- Overall road user travel time and distance dis-benefits, in an economic appraisal; but
- Improvements in environment, noise, air quality, safety and accessibility for non-car users in the town centre.

#### **RRL Journey Time Impacts**

It was found from the assessment that RRL would cause some changes in journey times eastbound and westbound through Gravesend town centre. It was predicted that at 2029 in the AM, there would be no change in travel time eastbound (at around 4 minutes), but an increase westbound (of around 5 minutes). In the PM, there would be no change in travel time eastbound (at around 10 minutes).

The predicted travel time changes with RRL would be expected to cause travel time disbenefits for road users in an economic appraisal.

#### **Overall RRL Scheme Effect on Traffic Users**

The overall impact of RRL on traffic on the road network cannot be quantified, in economic terms, from the transport assessment. However, an economic appraisal of the highway scheme in isolation is not considered to be a representative assessment of its overall value in broader transport terms.



It is clear that the highway scheme, in isolation, would generally have an expected negative impact in cost/benefit terms, because it will tend to displace traffic from their current optimum routes, in terms of travel time, delay and journey distance.

## 3.7 Value for Money Statement

In a conventional transport scheme impact appraisal, adjustments may be made to the narrow cost and benefit outcomes from the economic case, to derive an adjusted overall value for money (VfM) statement. This adjustment can reflect such aspects as:

- Non-monetised and qualitatively-assessed impacts of the scheme;
- 'Dependent Development' issues, when planned housing can only be approved if the with-scheme capacity and access improvements are in place;
- Resulting in an adjusted scheme Benefit to Cost Ratio (BCR).

However, since unconventional techniques have not been used to assess the Rathmore Road Link, no VfM adjustments have been made to the quantified economic appraisal outcome.

#### 3.7.1 Road Works during Construction / On-Going Maintenance

It is accepted that road works during construction, and on-going maintenance liabilities, should be considered as part of appraisal. This could either be by use of QUADRO, more historically or for the SRN; or the 'active' congested assignment package. However for this scheme the large proportion of the construction works will be offline to the existing network. Furthermore the ongoing maintenance will be absorbed into KCC's on-going asset management.

For this scheme it has been deemed reasonable to not undertake any quantitative assessment and make a small adjustment in the BCR. KCC understands the importance of minimising the delay, and particularly need to consider the strategy for the 'tieing-in' the ends of Rathmore Road when traffic flows will be disrupted. They also need to work with Arriva to ensure smooth running of bus services, with the adjustments to Barrack Row.

#### 3.8 Qualitative Benefits

There are a number of further potential benefits of the RRL scheme, which have not been monetised. The most important of these are summarised below.

Policy/Strategy



The scheme will meet specific objectives of Going for Growth, the Local Transport Plan 3, including STIP, Gravesham Local Plan, Gravesend Transport Quarter Master Plan and the Gravesend Heritage Quarter.

#### Economy – Regeneration

The scheme will support the sustainable development of employment, housing and retail throughout Thameside and specifically within Gravesend Town Centre.

#### Economy – Congestion

The scheme will ease traffic flow on the Gravesend Ring Road. It will also facilitate the establishment of Gravesend Transport hub and as a result increase options for sustainable access to and from the town, including implementation of Fastrack C, mitigating traffic growth generated by development there and in the surrounding area.

#### Economy – Financial

There are significant benefits available to the local economy from the scheme. These include:

- Benefits to retailers from improved access to their facilities;
- Benefits to operators of sustainable modes from increased patronage;
- Benefits to employers from improved punctuality, attendance at work and productivity;
- Benefits to KCC and Gravesham Borough Council from reduced road maintenance costs.

#### Environmental – Air Quality

The scheme will contribute to improvements to the AQMA in Gravesend, in turn improving the air to breathe for the general public and those undertaking active travel.

#### Social – Health

The active travel measures in the scheme will assist in improving the general health of all those that take these up, including:

- Help to lower blood pressure and improve heart health;
- Help with weight loss and improved fitness;
- In congested areas cyclists and pedestrians breathe in less fumes than drivers;



#### • Help reduce the number of days of illness/absenteeism each year.

#### Social - Well Being

The scheme will reduce traffic and traffic noise, improving the environment around the locations it affects for those living in close proximity to these and those travelling through them. The active travel measures will also enhance the well being of those that use them. Together this will lead to benefits of:

- Improved mental health; and
- Reduced stress.

#### Social – Quality of Life

Increasing the transport options available for accessing Gravesend will help to extend the journey opportunities of residents and visitors, increasing access to A greater range of facilities and in the process improving their sustainability. The stress free nature of sustainable travel will also enhance the journey quality of users, relative to car use.

#### Social – Accessibility

Involving users in the design and implementation of measures will help to ensure they are appropriate and accessible to all. Increasing the sustainable transport options available in Gravesend will also help to extend travel horizons and opportunities for those without access to a car, commonly including the more vulnerable and socially excluded members of the community; i.e. older people, young people, disabled people, job seekers, low income families, etc.

#### Social – Door to Door

The aim to integrate all elements of the scheme with each other, complimentary schemes and the wider transport network will increase opportunities for seamless door to door journeys to be undertaken by sustainable modes, encouraging greater use of all sustainable modes. It will also improve the safety, security and reliability of journeys made this way and increased usage will enhance this further.

#### Social – Safety

Reduced congestion at key locations and pinch points in the road network will improve road safety for both those living close to these and road users.

#### Social – Access for Disabled People



All infrastructure components will be constructed to comply with current legislation and guidance to ensure it is accessible for disabled people.

#### 3.9 Economic Case Appraisal Evidence – Sensitivity Analysis

#### 3.9.1 Overview and Rationale for Analysis of Sensitivity

The Rathmore Road Link (RRL) economic case has been structured to be proportionate to the scope and scale of the scheme and the likely magnitude of its various economic impacts. It also aims to be transparent in its reasoning and presentation of appraisal evidence underpinning the quoted economic worth of the scheme. The approach has been framed around being neither exaggerated nor dismissive of the scheme's economic value, but modestly conservative in its judgement.

There is potential for the RRL's economic outcomes to be substantially different from those set out in the TBC, if the following aspects of the economic case are changed:

- Certain types of scheme impact are included or excluded in the economic case (which currently considers urban realm, activity, decongestion and accounts);
- Economic parameter values are changed for the quantified assessment; and
- Detailed elements of the scheme impact modelling and economic appraisal methods are revisited and adjusted.

The above aspects of the economic case will vary greatly in their comparative effects on the scheme's economic outcomes, in terms of their magnitude of change to the economic benefits and costs.

Considering sensitivity, it is neither rational nor meaningful to undertake a detailed quantification of multiple permutations of changes to the RRL core economic appraisal aspects, because so many of the aspects are uncertain and one set of assumptions may be just as valid as another. The submitted TBC just contains, at its core, an objective best-judgement, as regards the appropriate economic assumptions to be used to justify the scheme. Instead of undertaking a detailed sensitivity analysis, there is provided below a qualitative view of how sensitive the scheme could be to various changes to the economic appraisal aspects.

#### 3.9.2 Qualitative Sensitivity Analysis

This sensitivity analysis is based around a tabular cross-referencing of:



- The RRL economic appraisal aspect; and the scope of the assumed change to it; against
- The strength of justification for assuming a change; and the magnitude of the resulting impact on the scheme's economic outcome.

The analysis entails a Red / Amber / Green (RAG) grading of the strength of justification for the change; and the magnitude of likely impacts, in accordance with the following qualitative scale:

- Red Weak justification for change; or severe-negative impact on RRL economic worth;
- Amber Neutral justification for change; or neutral impact on RRL economic worth; and
- Green Strong justification for change; or substantial-positive impact on RRL economic worth.

From the RAG assessment, it can be judged that if a sensitivity test shows a strong justification (green) for changing an aspect of the submitted RRL economic appraisal and either a strong positive impact (green), or a severe negative impact (red), on the likely economic outcome, then that sensitivity test should probably be undertaken. Otherwise, the sensitivity test is probably not necessary.

Table 1 summarises the findings from the RRL qualitative economic sensitivity analysis.



## Table 14 A226 Rathmore Road Link Economic Appraisal Sensitivity Analysis

Scheme	Scope of Assumed Change	Stren Justif Assur to ecc Appra	gth of fication ming Ch onomic aisal	for nange	Likely Magnitude of Impact of Assumed Change upon Economic Appraisal Outcome				
Economic					tive				
Appraisal					osit		tive		
Aspect		Strong	Neutral	Weak	Substantial P	Neutral	Severe Nega		
Economic	Increase from 20-year, to 60-year conventional period								
Appraisal Period									
Fastrack 'C'	Change assumptions controlling vehicle kilometres potentially saved by								
Traffic	Fastrack C:								
Decongestion	– Uplift VehKm saved:								
	<ul> <li>Modal shift from car to bus – (increase from 3%);</li> </ul>								
	Extent of catchment for trips to/from Northfleet Embankment, which								
	are accessible to Fastrack C – (increase from 400m);								
	Rate of forecast car trip growth for movements available for switching								
	to Fastrack C – (increase growth rate to 2028 and increase volume of								
	localised development trips).								
Fastrack 'C'	Change assumptions controlling vehicle kilometres potentially saved by								
Traffic	Fastrack C:								
Decongestion	– Dampen Down VehKm saved:								
	• Modal shift from car to bus – (decrease from 3%);								
	• Extent of catchment for trips to/from Northfleet Embankment, which								
	are accessible to Fastrack C – (decrease from 400m);								
	• Rate of forecast car trip growth for movements available for switching								
	to Fastrack C – (decrease growth rate to 2028 and decrease volume of								
	localised development trips).								
Fastrack 'C'	Include quantified assessment of BRT-user transport economic efficiency								
Passenger User	(TEE) impacts, for Northfleet Embankment section of Fastrack C.								
Appraisal									
Fastrack 'C'	Include quantified assessment of BRT construction and operating cost (TEE								
Capital and	and/or Public Accounts – PA) impacts , for Northfleet Embankment section of								
Revenue Cost	Fastrack C.								
Appraisal									
Urban Realm	Change evidence regarding likely future pedestrian movements, which would								
Appraisal	be affected by RRL and Fastrack C:								
Pedestrian Users	• Uplift forecast pedestrian volumes, on basis of greater trip growth and						1		
	modal share, encouraged by RRL / GTQMP.								



Scheme	Scone of Assumed Change	Stren Justif Assur to ecc Appra	gth of ication ning Ch onomic nisal	for ange	Likely Magnitude of Impact of Assumed Change upon Economic Appraisal Outcome			
Economic Appraisal Aspect		Strong	Neutral	Weak	Substantial Positive	Neutral	Severe Negative	
Urban Realm	Include quantified assessment of Gravesend Transport Quarter Masterplan							
Capital Cost Appraisal	GTQMP (now Gravesham Local Plan Core Strategy) Urban Realm and Streetscape scheme construction and operating cost (TEE and/or PA) impacts, for area of interaction with RRL.							
Active Mode	Change evidence regarding likely future pedestrian and cyclist movements,							
Appraisal	which would be affected by RRL, Gravesend rail station enhancement and							
Pedestrian and	Fastrack C:							
Cyclist Users	Uplift forecast pedestrian and cyclist volumes, on basis of greater trip							
DDL Dood Lloor	growth and modal share, encouraged by RRL / GTQMP.							
RRL ROdu User	(TEE) impacts for highway patwork mayaments affected by DD							
Appraisal	(TLL) impacts, for highway network movements affected by KKL.							
RRL wider	Include quantified assessment of impacts upon:							
impacts on local economy and regeneration areas Dependent Housing Development	<ul> <li>Regeneration – Business activity, in terms of ease of access to markets and suppliers;</li> <li>Regeneration – Labour market, in terms of ease of access of employers to workforce pool and workers to range of job opportunities;</li> <li>Regeneration – Area's attractiveness to visitors and resulting expenditure.</li> <li>Agglomeration Economies – Business success from agglomeration and easier interaction;</li> <li>Output in Imperfect Markets – Scale of profitable business production of goods and services;</li> <li>Labour Market Tax Revenue – Economic effect of increased number of people working (i.e. Government tax revenues);</li> <li>Include assessment to determine if RRL is a necessary requirement for new homes to be developed under local planning initiatives.</li> </ul>							
considerations								
Gravesend Railway Station Cycle Hub	Include quantified assessment of cycle hub construction and operating cost (TEE and/or PA) impacts.							



#### 3.9.3 Conclusions from Sensitivity Analysis

By considering the qualitative outcomes that have been interpreted in Table 1, from the RRL economic case sensitivity analysis, the following conclusions can be drawn:

- None of the above sensitivity test changes to the economic appraisal has a strong justification for needing to be undertaken.
- All of the sensitivity tests showing at least a neutral justification are predicted to have a strong positive impact on the RRL economic outcome, indicating that the core economic appraisal for RRL has not overestimated the value of the scheme.
- If further changes are made to the RRL economic appraisal for those aspects which are predicted to have at least a neutral justification, then all of the sensitivity outcomes will raise the RRL scheme's positive economic worth (BCR), above the value shown in the TBC.

On the basis of the above sensitivity analysis for RRL, it is judged that the economic appraisal method and quantified scheme value, which have been set out in the TBC, are sensible, proportionate and transparent (PVB £22.767m; PVC £8.005m; NPV £14.762m; BCR 2.8).

There is no clear imperative to amend the economic appraisal scope and assumptions, because none of the above sensitivity tests have shown a strong justification for change, together with a substantial-positive, or severe-negative, impact.



# 4 Financial Case

## 4.1 Introduction

This section of the report presents the Financial Case for the Rathmore Road Link. It concentrates on the affordability of the proposal, its funding arrangements and technical accounting issues. The total outturn costs and expenditure profile are presented, along with an assessment of the impact on public accounts.

The Financial Case for the Rathmore Road Link is based on significant scheme development and the identification and costing of the preferred option which has planning approval. The proposed funding arrangements are set out and described, including the substantial contribution committed by the Homes and Communities Agency (HCA) and the Local Growth Fund allocations.

The full scheme cost was last updated in December 2015 and will be updated further as the scheme design progresses.

#### 4.2 Base Costs

Table 15 shows that the base cost estimate for the scheme is £8,260,000. The cost estimate was last reviewed by KCC in December 2015 and is considered by KCC to be robust. The estimates were undertaken by cost consultants Allen Dadswell who are experienced in highway scheme cost estimation. A detailed breakdown is included in **Appendix E**.

#### Table 15:Components of Investment Cost (2014/Q2)

Cost Category	£
Construction Costs	5,040,000
Land and Property	780,000
Preparation, Supervision and Administration	2,440,000
Total	8,260,000



#### 4.3 Inflation

Inflation has been applied to construction costs at 0.8% per quarter, based upon the Royal Institute of Chartered Surveyors (RICS) Public Sector Price and Cost Indices. The total allowance for inflation is estimated to be £40,000.

#### 4.4 Risk Budget

A Quantified Risk Assessment (QRA) has been undertaken by Allen Dadswell Consultants for Rathmore Road Link. A total of £900,000 has been identified as the anticipated QRA.

#### 4.5 **Optimism Bias**

Optimism bias refers to the tendency for scheme promoters to be overly optimistic about scheme costs. DfT WebTAG unit A1.2 sets out the recommended contingency which should be added to the scheme costs. However, in line with HM Treasury guidance document "Early financial cost estimates of infrastructure programmes and projects and the treatment of uncertainty and risk- March 2015" optimism bias should not be included in project funding. The risk-adjusted scheme cost estimate is therefore considered robust but will be reviewed as the scheme proceeds.

#### 4.6 Final Scheme Costs

Table 16 below indicates the costs associated with the proposed scheme including inflation and risk allowance.

 Table 16:
 Summary of Final Scheme Costs (2015/Q4 prices)

Cost Type	£
Scheme Cost	8,260,000
Inflation	40,000
Risk Allowance	900,000
Total	9,200,000

#### 4.7 Funding Arrangements

The Rathmore Road Link is one of a number of pipeline schemes planned to be delivered by KCC as part of the South East Local Enterprise Partnership (SELEP) Growth Deal



agreed between SELEP and Government in July 2014. This included an allocation of £4.2 million for the Rathmore Road Link Scheme.

The HCA will provide the balance of  $\pm 5m$  of funding towards the Scheme. KCC will pay any costs in excess of the total  $\pm 9.2m$  scheme budget. The spend profile is shown below in Table 17.

£m					
Funding Source	Total	14/15	15/16	16/17	17/18
Local Growth Fund	4.20	0.00	3.26	1.12	0.00
HCA	5.00	0.00	3.88	0.94	0.00
All Funding Sources	9.20	0.00	7.14	2.06	0.00

#### Table 17: Outturn Spend Profile

#### 4.8 Whole Life Costs

Future maintenance works associated with the scheme will be added to the maintenance inventory and funded from KCC's maintenance budgets. It is anticipated that the provision of new or upgraded assets (such as drainage system, street lighting, signing and pavement/footways) will reduce future maintenance liabilities on KCC.

#### 4.9 Section 151 Officer Letter

A signed letter from KCC's Section 151 Officer is attached (**Appendix F**) to confirm KCC's financial commitment and ability to fund the scheme.

#### 4.10 Accounting Implications

The following implications on public accounts are expected:

- Devolved LEP funding of £4.2m (46%) of the scheme costs is requested, with expenditure starting in the 2015/16 financial year;
- A HCA contribution of £5.0 million (54%) of the scheme cost is committed with expenditure starting in the 2015/16 financial year; and
- Maintenance costs will be added to the maintenance inventory and funded from KCC's maintenance budgets.



# 5 Commercial Case

#### 5.1 Commercial Issues

KCC have established a procurement strategy for the scheme based on good practice and existing in house procedures.

The outcomes the procurement strategy will deliver will:

- Achieve cost certainty, or certainty that the scheme can be delivered within the available funding constraints;
- Minimise further preparation costs with respect to scheme design by ensuring best value, and appropriate quality;
- Obtain contractor experience and input to the construction programme to ensure the implementation programme is robust and achievable; and
- Obtain contractor input to risk management and appraisals, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk and improve out-turn certainty thereby reducing risks to a level that is As Low As Reasonably Practicable.

#### 5.2 Scheme Procurement Strategy

#### 5.2.1 Procurement Options

KCC have identified two procurement options for the delivery of their LEP funded schemes. The alternative options are:

#### Full OJEU tender

This option is required for schemes with an estimated value of over  $\pounds 4,322,012$ .

KCC will then need to opt for an 'open' tender, where anyone may submit a tender, or a 'restricted' tender, where a Pre-Qualification is used to whittle down the open market to a pre-determined number of suppliers. This process takes approximately one month and the first part is a 47 day minimum period for KCC to publish a contract notice on the OJEU website.



The minimum tender period is 6 weeks but could be longer for larger schemes. Once the tenders are received they must be assessed and a preferred supplier identified. There is a mandatory 10 day 'standstill' period, during which unsuccessful applicants may challenge the intention to award to the preferred contractor.

Delivery through existing Amey Highways Term Maintenance Contract (HTMC)

This option is strictly not procurement as the Amey HTMC is an existing contract. The HTMC is based on a Schedule of Rates agreed at the inception of the contract. The price for each individual scheme is determined by identifying the quantities of each required item into a Bill of Quantities. Amey may price 'star' items if no rate already exists for the required item. If the scope of a specific scheme is different from the item coverage within the HTMC contract a new rate can be negotiated.

#### 5.2.2 Preferred Procurement Option

The estimated contract cost is above the EU threshold and procurement will therefore being undertaken in accordance with EU legislation and process. The procurement strategy for the scheme has been approved by the County Council's Procurement Board.

Firms invited to tender have been selected on the basis of commercial, experience and quality considerations. Six firms have been invited to submit tenders. Construction tenders have been invited for a fully designed and specified scheme under the New Engineering Contract (Option B Bill of Quantities) form of contract which is appropriate for this type of scheme and the County Council has considerable experience of its use on previous major projects.

Tenders are being invited on the basis of both price and quality submissions - 60% price and 40% quality. Tenders are due to be returned on 18 January 2016. Tenders will be independently assessed and scored by members of the project team and scores moderated by a member of the County Council's corporate Procurement Team.

The County Council will be the employer to the contract and it will be actively managed by a knowledgeable and experienced client project manager from the Highways Major Projects Team. The County Council's term consultant Amey will provide the formal Project Manager and Site Supervisor roles under the contract. The County Council has appointed independent cost consultants to manage the commercial aspects.



#### 5.3 Potential for Risk Transfer

Many of the design risks can only be resolved through a rigorous design and review processes, once the design options are clear and the scope of land acquisition, planning requirements and environmental requirements are fully identified. It is envisaged that the primary risks will be related to construction. There is potential for transferring these risks through the construction procurement process. This will be explored fully as the design and procurement process progresses.

#### 5.4 Commercial Risk Assessment

The Commercial Case for the Rathmore Road Link provides evidence that the proposed investment can be procured, implemented and operated in a viable and sustainable way. The aim is to achieve best value during the procurement process, by engaging with the commercial market. Table 18 below outlines the commercial risk assessment.

Qualitative Commercial Risk Assessment													
Scheme Commercial Risk Item	Likelih Arising	nood of g (√)	F Risk	Impa (√)	ct Sev	verity	Predi on Procu Delive Opera	cted Sc Sc Iremen ery ation (1	Effect heme ht, & ()	Suggested Mitigation			
	Low	Medium	High	Slight	Moderate	Severe	Slight	Moderate	Severe				
Procurement													
Delay to tendering process		*		*			*			Securefunding(currentlyreliantonLEPfundingrequiringsuccessfulbusinesscase), securelandandavoid SRO.secure			
Construction													
Scope for advanced works	✓			1			1			KCC/Amey to identify potential advanced work items.			
Road Space Bookings		*		~			~			Advance Road Space booking applied for.			

Table 18: Scheme Commercial Risk Assessment



# 6 Management Case

#### 6.1 Overview

The Management Case outlines how the proposed scheme and its intended outcomes will be delivered successfully. It gives assurances that the scheme content, programme, resources, impacts, problems, affected groups and decision makers, will all be handled appropriately, to ensure that the scheme is ultimately successful. It also covers monitoring of the scheme.

#### 6.2 Evidence of Previously Successful Scheme Management Strategy

KCC have a successful track record of delivering major transport schemes within the county. Two recent examples are the East Kent Access Phase 2 (EKA2) and Sittingbourne Northern Relief Road schemes (SNRR).

The EKA2 scheme, completed in May 2012, was designed to support economic development, job creation and social regeneration, improving access with high quality connections between the urban centres, transport hubs and development sites in East Kent. The overall objectives of the scheme were to unlock the development potential of the area, attract inward investment and maximise job opportunities for local people. The extent of the scheme is shown in figure 20 below.

The scheme was successfully delivered within budget and ahead of programme through the adoption of a robust management approach similar to that set out above to deliver the ROWIP scheme. The total value of the scheme was £87.0m of which £81.25m was funded by Central Government.

The intended scheme outcomes are currently being monitored but the intended benefits of the scheme are anticipated to be realised. **Error! Reference source not found.** indicates the scheme extent and layout.





Figure 21: EKA2 Scheme Layout

The SNRR scheme, completed in December 2011, was designed to remove the severance caused by Milton Creek and give direct access to the A249 trunk road for existing and new development areas, thereby relieving Sittingbourne town centre.

The delivered scheme is shown in Figure 22 below:





#### Figure 22: SNRR Scheme Layout

The project is an excellent example of multi agencies working towards a common aim. The scheme was funded by the Homes & Communities Agency in its Kent Thameside regeneration role, by the Department of Transport in its support of local major schemes and by private sector S106 contributions. The scheme was delivered under budget and to programme.

Both the EKA2 and SNRR schemes have since been awarded regional Institute of Civil Engineers (ICE) Excellence Awards.

#### 6.3 **Project Governance, Organisation Structure, Roles and Assurance**

Although not fully defined at this stage, it is expected that the project will be managed in house by PRINCE2 trained and experienced Kent County Council staff, using a wellestablished governance structure, which has been successfully applied to deliver many other transport improvement schemes.

Table 19 below identifies the key staff engaged on the scheme and their responsibilities:



Name	Role
Mary Gillett	KCC Project Manager for SELEP Schemes
John Farmer	KCC Officer for Specific Scheme (Project Sponsor)
Stephen Whittaker	Amey Project Manager for SELEP Schemes
Mick Mortley	Amey Highway Design Lead
Jen Taylor	Amey Environmental Lead

#### Table 19: Key Staff Roles and Responsibilities

KCC have set up a clear and robust structure to provide accountability and an effectual decision making process for the management of the LEP funded schemes. Each scheme will have a designated project manager who will be an appropriately trained and experienced member of KCC staff.

Figure 23 below provides an outline of the overall governance structure established to manage the delivery of each scheme.

A detailed breakdown of the meetings (along with the attendees, scope and output of each) which make up the established governance process is set out below.

#### Project Steering Group (PSG) Meetings

PSG meetings are held fortnightly to discuss individual progress on each scheme and are chaired by KCC Project Managers (PMs). Attendees include representatives from each stage of the LEP scheme (i.e. KCC Bid Team, KCC sponsor, KCC PMs, Amey design team and construction manager). Progress is discussed in technical detail raising any issues or concerns for all to action. A progress report, minutes of meeting and an update on programme dates are provided ahead of the Programme Board (PB) meeting for collation and production of the Highlight Report.



#### Highlight Report

The Progress Reports sent by the KCC PMs comprise of the following updates; general progress, project finances, issues, risks and governance meeting dates. The Highlight Report identifies any areas of concern or where decisions are required by the PB meeting or higher to the KCC LEP Programme Manager. An agreed version of the Highlight Report is issued to the PB meeting attendees during the meeting.

#### Programme Board (PB) Meeting

The PB meeting is held monthly and is chaired by the KCC LEP Programme Manager. Attendees include representatives from all three stages of the schemes (i.e. KCC LEP Management, KCC LEP Bidding, KCC Sponsors, KCC PMs, Amey Account Manager, Amey Technical Advisors, Amey Construction representatives). This meeting discusses project progress to date, drilling into detail if there is an issue or action (as identified in the PSG meeting), financial progress, next steps and actions. Outputs of this meeting are the Highlight Report and the minutes of meeting.

#### Escalation Report

A list of actions and decisions that the PB meeting was unable to resolve is prepared ready for the Sponsoring Group (SG) meeting to discuss and ultimately resolve.

#### Sponsoring Group (SG) Meeting

The SG is held monthly and will be chaired by Tim Read (KCC Head of Transportation). Attendees are Barbara Cooper (Corporate Director), Roger Wilkin (Director of Highways, Transportation and Waste), Tim Read and Mary Gillett (KCC Major Projects Planning Manager). This meeting discusses high-level programme progress to date, financial progress, next steps and closes out any actions from the escalation report. Output is sent to Mary Gillett for distribution. Technical advisors are invited if necessary to expand upon an issue. All actions from the start of this meeting cycle are to be closed out by the SG when they meet (i.e. no actions roll over to subsequent meetings).

#### Document Title LGF Transport Business Case Report







Ust of initials:

BC Barbara Coope r

RW Roger Wikin TR Tim Reed

MG Mary Gilett

AQ Andrew Quilter

RC Richard Cowling

SW Steve Whittaker

PC Paul Couchman

JW Joanne Whittaker

#### **Document Title** LGF Transport Business Case Report



# Figure 24: RRL Project Plan

ID	Task Name	Durat	ion	Start	Finish			2016												2017										
						Nov	De	c Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	Rathmore Road Link, Graves	end 480 c	lays	Mon 28/12/1	SFri 27/10/17			-																						
2	Land	20 da	iys	Mon 04/01/1	(Fri 29/01/16				•																				┙	
3	Complete Land Transfer Gravesham BC	rs from 4 wks	5	Mon 04/01/16	Fri 29/01/16			C 2	1																					
4	Planning	40 da	iys	Mon 04/01/1	(Fri 26/02/16																									
5	Pre-construction Plannir	ng 8 wks	5	Mon	Fri 26/02/16			C		1																				
	<b>Conditions</b> Approved			04/01/16																										
6	Site Compound Planning	g Approval 8 wks	5	Mon 04/01/1	EFri 26/02/16			C		1																				
7	Statutory Orders	10 da	iys	Mon 04/01/1	(Fri 15/01/16			<b>.</b>																						
8	Complete SRO Statutory Period	/ Challenge 2 wks	5	Mon 04/01/16	Fri 15/01/16																									
9	Funding Confirmation	70 da	iys	Mon 28/12/1	SFri 01/04/16			-			÷																			
10	LEP Business Case Subm	ission 2 wks	5	Mon 28/12/1	5 Fri 08/01/16			<b>—</b>																						
11	ITE Assessment and LEP	6 wk	5	Mon	Fri 19/02/16			C	2																					
	Recommendation			11/01/16																										
12	LEP Accountability Board	d Approval 0 wks	5	Fri 12/02/16	Fri 12/02/16				•	12/02																				
13	LEP Accountability Board Confirmation	d Approval 2 wks	5	Mon 15/02/16	Fri 26/02/16					1																				
14	STPP Steering Group Ap	proval 0 wks	5	Fri 25/03/16	Fri 25/03/16						25/03																			
15	STPP Steering Group Co	nfirmation 1 wk		Mon 28/03/1	EFri 01/04/16						•																			
16	Contract Procurement	110 c	lays	Tue 29/12/15	Mon 30/05/1			-					ł																	
17	Complete Tender Period	d 3 wks	5	Tue 29/12/15	Mon 18/01/16			¢ 3																						
18	Tender Period Extensior Contingency	n 2 wks	5	Mon 18/01/16	Fri 29/01/16				1																					
19	Quality Assessment	3 wks	5	Mon 01/02/1	EFri 19/02/16				C 3																					
20	Commercial Assessment	t 3 wks	5	Mon 01/02/1	EFri 19/02/16				C 3																					
21	Moderation	1 wk		Mon 22/02/1	EFri 26/02/16				1	1																				
22	Tender ClarificationMee	etings 1 wk		Mon 29/02/1	EFri 04/03/16					•																				
23	Approval to Award	1 wk		Mon 07/03/1	EFri 11/03/16																									
24	Preferred Contractor Inf	formed 1 wk		Mon 07/03/1	EFri 11/03/16																								, U	
25	Alcatel Standstill/Briefin	g Period 2 wks	5	Mon 14/03/1	EFri 25/03/16																									
26	Formal Contract award	1 wk		Mon 28/03/1	EFri 01/04/16						•																			
27	Complete Contract Und	er Seal 4 wks	5	Mon 07/03/1	EFri 01/04/16					C	2																			
28	Mobilisation	8 wk	5	Mon 04/04/1	EFri 27/05/16						C	<b>_</b>																		
29	Contract Start Date	0 day	s	Mon 30/05/1	6 Mon 30/05/16							•	\$ 30/0	15														$\square$	ļ	
30	Construction Period	370 c	lays	Mon 30/05/1	(Fri 27/10/17			_		-				1				-	1				1	Ì	1	<u> </u>			<b>_</b>	
31	Public Information durin Construction Period	ng 72 w	ks	Mon 30/05/16	Fri 13/10/17																									
32	Rathmore Road Link	52 w	ks	Mon 30/05/1	EFri 26/05/17								¢											3						
33	Clive Road Improvemen	t 20 w	ks	Mon 29/05/1	7Fri 13/10/17																			I	¢					
34	Landscaping	4 wks	5	Mon 02/10/1	7Fri 27/10/17																								<b></b> ]	
35	Completion	0 day	s	Mon 16/10/1	7Mon 16/10/17																								🔷 11	s/10
36	Monitoring & Evaluation	0 day	s	Mon 16/10/1	Mon 16/10/1																								• 4	s/10
37	Commence Monitoring	0 wk	5	Mon 16/10/1	7Mon 16/10/17																								↓	5/10
		Task			Project Sur	nmary		-			Inactive	e Milest	one	$\Phi$			Man	ual Sur	nmary F	lollup 🕯			(	Deadline	е		+			
Dr-	act: Pathmara Road I ED Durin	Split			External Ta	isks					Inactive	Summ	arv	<u>_</u>			Man	ual Sur	nmary		_		- P	rogress						
Dat	e: Thu 17/12/15	Milostopo		•	Extornal M	iloctor		A			Manua	Tack	.,	-			Ctore	only						-0.033						
		willestone		•	External IV	ilestone	9	×			wanua	i i ask		-			Start	-oniy			-									
		Summary		-	<ul> <li>Inactive Ta</li> </ul>	sk					Duratio	n-only					Finis	h-only												



# 6.4 Project Plan

The project timetable will run on an annual cycle with preparatory work continuing from January 2016, the scheme commencing in April 2016 and works continuing through to completion, planned for mid-October 2017. The detailed programme for delivery of the Rathmore Road Link is shown in the Project Plan in Figure 24 above.

# 6.5 Key Project Work Stages and Tasks

The key work stages identified for the project are:

- Initial scheme design / Outline Business Case;
- Feasibility work;
- Land Acquisition;
- Consultation;
- Committee Approval;
- Detailed design / Full Business Case;
- Acquisition of statutory powers;
- Procurement;
- Environmental surveys;
- Start/end of construction; and
- Monitoring.

#### 6.6 Project delivery and Approvals Programme

The scheme will be delivered using a collaborative approach between KCC staff and their appointed support organisation Amey. KCC have identified appropriately trained and experienced staff who will be responsible for the delivery of the scheme. The identified staff fulfilling the Project Sponsor role for the scheme have been ring-fenced to support the scheme throughout its duration and will have additional junior staff available to support them.



Furthermore, the Project Sponsor and Project Manager will utilise appropriate staff from two existing contracts with Amey. Design and technical services support will be provided through the Technical and Environmental Services Contract (TESC) which is active until at least 2018. Amey have a dedicated multi-discipline team located in Maidstone to support the LGF funded schemes. KCC will also utilise dedicated Amey resource through the existing HTMC contract to support the construction of the scheme and also to provide early contractor involvement (ECI), where appropriate, to the design process to ensure best value.

#### 6.7 Communication and Stakeholder Management Strategy

Key stakeholders who will play a key role in ensuring that the scheme can not only be delivered successfully but also operated and maintained in the future have been identified by KCC. The list of stakeholders is neither definitive or exhaustive and may well be added to as the scheme is progressed. At this stage the following have been identified:

- Gravesham Borough Council (promoter of GTQMP and Local Plan Core Strategy);
- Network Rail (responsible for railway infrastructure and owner of adjacent land);
- South Eastern (operator of rail services from Gravesend Station);
- Arriva (operator of local bus and Fastrack services);
- Homes and Communities Agency (scheme funder);
- SELEP (scheme funder);
- Local Businesses;
- Local Residents; and
- Regular users of affected transport facilities (road, rail, bus, walk and cycle).

Figure 25 below shows the engagement approach to be used for the various different stakeholders and interest groups. As mentioned above consultation is a key milestone in the programme.



#### Figure 25: Stakeholder Management Plan

Stakeholders to be	Handled in Accordance with Interest ,	/ Influence Matrix
High	<u>To be Passively Monitored:</u> Regular users	<u>To be Actively Engaged and Managed:</u> Gravesham Borough Council SELEP / Homes & Communities Agency Network Rail South Eastern
Stakeholder Influence	<u>To be Passively Conciliated:</u> Local residents	<u>To be Actively Informed:</u> Local businesses Bus Operators (Arriva)
Low	Low Stakeholder	► Interest High

#### 6.8 **Project Assurance**

A signed letter by KCC's Section 151 officer providing appropriate project assurances is provided as **Appendix F**.

#### 6.9 Project Risk Management and Contingency Plan

A Risk Register has been maintained and reviewed on a monthly basis during the development of the scheme. With statutory approvals and land secured and the scheme out to tender the Risk Register will be developed in conjunction with the contractor to cover the construction and delivery phase.

Funding risks are outlined in section 4 and commercial risks in section 5.



Project risk is managed as an on-going process as part of the scheme governance structure, as set out above. The scheme risk register is maintained and updated at each of the two-weekly Project Steering Group meetings. Responsibility for the risk register being maintained is held by the KCC Project Manager and is reported as part of the monthly Progress Reports.

Any high residual impact risks are identified on the highlight report for discussion at the Programme Board (PB) meeting. Required mitigation measures are discussed and agreed at the PB meeting and actioned by the KCC Project Manager as appropriate.

An example of the scheme risk register used is shown Figure 26 below:

RISK RE	GISTER														
Project	Title: Example 1				854A							Hiel			
Project	Manager: Mr Smith			•	H. 6.		N Holina							Total Risk Allowance	
Bata of	Last Banisas 21/12/2014			x.	L						x.	L		•	Rick Clared
Rick Number 1	Risk Description	Date Legged	Included in the second	Producting	Piccing and	Noture of Impact (Connercial/Programme/HkS)	Action to be taken (Mitigation)	07 Vice	0y Vista	Resident	Resident Production,	Resident Princip	Program	Resident Cost Allowance in Project Estimate	Rick tenceded this review?
#1	En angle: Plancin parmiarian for nonartic functonet abising Michael	олизин	ų.	ų,	×.	Exemple: Delay to project as timp extan contract decomentation.	Econario: Econo that it is in project programma with a logarity Vina Mant provided.	Amay 9000		ų.	¥.	×.			



#### 6.10 Scheme Risks

Earlier in this section of the report, the experience of KCC's staff has been highlighted in terms of delivering major transport schemes effectively and with little adverse effect. In order to achieve successful delivery of major schemes, management policies, processes and procedures are required to be followed accurately. An important aspect of the management process is identifying risks associated with scheme delivery and funding early in the process to allow mitigation to be identified.

**Appendix G** indicates the risks associated with the Rathmore Road Link scheme from a project delivery and project funding perspective.

#### 6.11 Scheme Monitoring

Tracking of the scheme benefits will be a key element in understanding the success of a specific intervention. The realisation of benefits is intrinsically linked to the Monitoring and Evaluation plan.



The scheme objectives have been used to develop the desired outputs and outcomes for the scheme. The desired outputs are the actual benefits that are expected to be derived from the scheme and are directly linked to the original set of objectives. The definition of outputs and outcomes are:

**Outputs** – tangible effects that are funded and produced directly as a result of the scheme; and

**Outcomes** – final impacts brought about by the scheme in the short and medium/long term.

Monitoring will be undertaken to track the benefits of the RRL in terms of:

- Traffic using the RRL;
- Use of the public realm;
- Use of the station; and
- Use of Fastrack and local bus services.

Figure 27 below identifies the measures that will be used to monitor overall progress with the scheme and each of the above, specifically:

Figure 27:	Scheme Monitoring,	<b>Evaluation and</b>	d Benefits R	Realisation F	Plan

Expected Benefit	Indicator	Owner	Measure	Review timescale	
Delivery on time	Project delivery plan on Target	КСС	Contract management	Monthly	
Delivery on Budget	Project budget on target	КСС	Budget management	Monthly	
Delivery of safe and attractive facilities	Majority of users satisfied Accidents reduced	КСС	User satisfaction survey Accident counts	On completion Annual	
Travel-time reliability	Journey-time reliability	КСС	Average speed	Annual	
Improved Air Quality	Emissions	КСС	Nitrogen Dioxide (NO2) measured at AQMA	Annual	

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Expected Benefit	Indicator	Owner	Measure	Review timescale	
			monitoring station		
Increased use of the Town	Town centre footfall	КСС	Pedestrian footfall counts	Annual (PERS)	
Town centre regeneration	Offices and residential stock	КСС	Offices and homes provided & values	Annual (VURT)	
Increased use of the station	Station usage	South Eastern	Pedestrian footfall counts	Annual	
Increased sustainable transport access to/from the station	Mode split at station	South Eastern	Passenger surveys at station	Annual	
Increased use of transport interchange	Interchange usage	КСС	Pedestrian footfall counts	Annual	
Increased use of Fastrack/ local bus	Bus patronage	Arriva	Ticket sales	Monthly	
Mode shift from car to Fastrack	Fastrack usage	Arriva	Passenger surveys	Annual	



# Appendix A Willingness-to-Pay Values associated with PERS

Links (pence per minute) 2009 prices													
Characteristic in PERS	-3	-2.5	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2	2.5	3
Effective width	0.000	0.003	0.005	0.008	0.010	0.013	0.015	0.018	0.021	0.023	0.026	0.028	0.031
Dropped kerbs / gradient	0.000	0.007	0.013	0.020	0.026	0.033	0.039	0.041	0.042	0.044	0.045	0.047	0.049
Obstructions	0.000	0.003	0.006	0.008	0.011	0.014	0.017	0.020	0.022	0.025	0.028	0.031	0.034
Permeability	0.000	0.017	0.035	0.052	0.069	0.087	0.104	0.110	0.117	0.123	0.130	0.136	0.143
Legibility	0.000	0.005	0.010	0.015	0.020	0.025	0.030	0.035	0.041	0.046	0.051	0.056	0.061
Lighting	0.000	0.010	0.019	0.029	0.039	0.049	0.058	0.064	0.069	0.074	0.080	0.085	0.090
Personal security	0.000	0.015	0.031	0.046	0.062	0.077	0.093	0.105	0.118	0.129	0.141	0.152	0.164
Surface quality	0.000	0.014	0.027	0.041	0.055	0.069	0.082	0.096	0.110	0.112	0.115	0.118	0.121
User Conflict	0.000	0.015	0.030	0.044	0.059	0.074	0.089	0.098	0.107	0.115	0.124	0.133	0.142
Quality of environment	0.000	0.032	0.065	0.097	0.130	0.162	0.195	0.216	0.232	0.249	0.266	0.282	0.299
Maintenance	0.000	0.011	0.023	0.034	0.046	0.057	0.069	0.075	0.082	0.089	0.096	0.103	0.110



Spaces (pence per minute) 2009 prices								
Characteristic in PERS	-3	-2	-1	0	1	2	3	
Moving in the space	0.00	0.05	0.10	0.15	0.16	0.18	0.20	
Interpreting the space	0.00	0.01	0.02	0.03	0.04	0.05	0.07	
Personal safety	0.00	0.05	0.09	0.14	0.19	0.23	0.27	
Feeling comfortable	0.00	0.03	0.05	0.08	0.10	0.13	0.16	
Sense of place	0.00	0.01	0.03	0.04	0.05	0.06	0.06	
Opportunity for activity	0.00	0.08	0.16	0.24	0.27	0.30	0.34	



# Appendix B PERS Property Uplift (% per PERS point)

Links		
PERS Attribute	Retail	Residential
Effective width	0.00%	0.00%
Dropped kerbs	0.00%	0.00%
Obstructions	0.00%	0.00%
Permeability	0.00%	0.00%
Legibility	0.00%	0.00%
Lighting	1.22%	1.62%
Personal security	1.22%	1.62%
Surface quality	0.00%	0.00%
User Conflict	0.00%	0.00%
Quality of environment	1.22%	1.62%
Maintenance	1.22%	1.62%



# Appendix C PERS Link Audit Sub Characteristics

Effective Width	Personal Security
Width for pedestrian flow	Perceived/ Sense of Crime
Wheelchair accessibility	Activity on the Street
Separation from traffic	Lighting
Allowance for obstructions	Police Presence
Pedestrian congestion	ССТУ
	Visual Appeal
Dropped Kerbs	Surface Quality
Located on Desire Lines	Smoothness/ Trip Hazards
Adequate Capacity	Surface Friction
Level Dropped/ Flush	Slippery Surfaces
Gradient of Drop	UKPMS CVI Hierarchy
Consistency	Maintenance
Frequency of Dropped Kerbs	Context Suitability
Obstructions	User Conflict
Presence of Obstructions	Conflicting Movements
Location/ Alignment	User Flows
Overhead Obstructions	Encroachment on Pedestrian Space
Tapering/ Opaque Obstructions	Segregation form Cyclists
Tactile Warnings	Bus Queues an Obstruction
Sightline Reduction	Adequate Space Provision
Permeability	Quality of Environment
Frequency of Crossing Points	Traffic/Noise
Parked Cars/ Physical Barriers	Aesthetics
Traffic Flow	Soft Landscaping
Dropped Kerbs	Quality of Materials
Pedestrian Barriers	Quality of Private Frontages
Sightlines	Sense of Place
Legibility	Maintenance
Signage Provision	Cleanliness
Signage Clarity	Drainage
Information Boards-Distances Given on Signs	Evidence of Neglect
Sightlines	Seasonal Foliage
Built form Aids Navigation	Graffiti
Lighting	
Intensity/ Frequency - Definition/ Colour - Maintenance	
Context Suitability	
After Dark	
Obstructions	





Appendix D Total PERS Score - Rathmore Road



# Appendix E Rathmore Road Link Scheme Cost Estimate



Appendix F Section 151 Officer Letter


## Appendix G Rathmore Road Scheme Risk Register