Transport for London

River Crossings Consultation

Submission from Sustrans

February 2012
Sustrans is the UK’s leading sustainable transport charity.

Sustrans is the charity that’s enabling people to travel by foot, bike or public transport for more of the journeys we make every day. Our work makes it possible for people to choose healthier, cleaner and cheaper journeys, with better places and spaces to move through and live in.

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1. Introduction

1.1 Sustrans is the charity that’s enabling people to travel by foot, bike or public transport for more of the journeys we make every day. Our work makes it possible for people to choose healthier, cleaner and cheaper journeys, with better places and spaces to move through and live in.¹

1.2 Sustrans acts simultaneously on the delivery of practical projects which help people to choose more active and sustainable modes of transport and to encourage local, regional and national government to improve the conditions for those people who have managed to leave the car behind.

1.3 Sustrans wholeheartedly acknowledges the need for more river crossings East of Tower Bridge and is fully aware of the difficulties people face daily when trying to get across the river in the East/South East of London. But there is absolutely no reason for the Mayor or Transport for London (TfL) to propose any increase in road capacity for motorised vehicular traffic. Increasing road capacity for motorised vehicles will increase not alleviate the number of trips and the level of congestion in the area and as a result will impact negatively on the health and quality of life of Londoners.

1.4 As such, we have significant concerns about both proposals being consulted on by TfL and will be using this response to outline our opposition to the new ferry crossing proposal (the Gallions Reach ferry) and the new river tunnel proposal (the Silvertown Tunnel).

1.5 In addition, this response will provide a clear argument in favour of an alternative river crossing proposal, the Thames Bridge. Sustrans and partners worked in depth to scope a walking and cycling bridge in East London. The proposals for the Thames Bridge were finalised and presented in 2008 following a lengthy scoping process. We argue here that the need for more river crossings in East/South East London would be far better served by the Thames Bridge than by either or both of the proposals currently being consulted on by TfL for a wide range of economic, social, environmental and health reasons.

River crossings in East/South East London

2.1 Recent and forecast population growth in East London has been bolstered by developments such as Canary Wharf, the O2 and the London 2012 Games. This expansion is set to continue with the area forecast to host nearly 50 per cent of the Capital’s population growth and approximately 25 per cent of employment growth over the next 20 years.

2.2 There is no doubt that the lack of north/south access across the Thames in the east could prevent the maximisation of potential in the developing east. There is already a pressing need to improve access across the river for people living in, working in or visiting the local area.

The argument against increased road capacity for vehicular traffic

3.1 Sustrans’ arguments in opposition to both river crossing proposals are centred on the argument that road building generates traffic. As such, this section will explain the evidence which clearly states this relationship before then going into specific details for each crossing proposal in later sections.

INDUCED TRAFFIC

3.2 When a new road is built, new traffic will divert onto it. Many people may make new trips they would otherwise not make, and will travel longer distances just because of the presence of the new road. This effect is known as ‘induced traffic’.

3.3 Induced traffic means that the predicted congestion benefits of a new road are often quickly eroded. Traffic levels on bypassed roads can also rise faster than expected due to induced traffic, all of which means the hoped-for benefits of a new road can evaporate very quickly.
3.4 The phenomenon of induced traffic has been observed by transport professionals repeatedly since 1925 and recent authoritative reviews have confirmed that induced traffic is still beating forecasts on new roads across the country. The Campaign for Better Transport has a significant amount of information detailing the cause and impact of induced traffic.

3.5 The most authoritative studies into induced traffic are the 1994 SACTRA report 'Trunk Roads and the Generation of Traffic', and the 2006 report 'Beyond Transport Infrastructure' by independent consultants for the Countryside Agency and CPRE.

3.6 SACTRA was an independent panel of experts set up to advise the Department for Transport on the impacts of road building. Professor Phil Goodwin, one of the lead authors of the report, said:

"The average traffic flow on 151 improved roads was 10.4% higher than forecasts that omitted induced traffic and 16.4% higher than forecast on 85 alternative routes that improvements had been intended to relieve. In a dozen more detailed case studies the measured increase in traffic ranged from 9% to 44% in the short run and 20% to 178% in the longer run. This fitted in with other evidence on elasticities and aggregate data."

3.7 The conclusion of the report was:

"An average road improvement, for which traffic growth due to all other factors is forecast correctly, will see an additional [i.e. induced] 10% of base traffic in the short term and 20% in the long term."

3.8 In 'Beyond Transport Infrastructure', consultants Lilli Matson, Ian Taylor, Lynn Sloman and John Elliott examined three major road schemes in detail for an important report for the Countryside Agency and CPRE.

3.9 The schemes included the infamous A34 Newbury Bypass which attracted mass protests in 1996. They also examined 10 other schemes built since the publication of the 1994 SACTRA report and used data supplied by the Highways Agency’s own Post Opening Project Evaluation (POPE) studies.

3.10 In the case of Newbury, the report showed that traffic levels predicted for 2010 in Newbury were already reached by 2003 – and that traffic had increased by almost 50% in that period. New development around the road was partially to blame for the increases. In the other case studies the report concluded that:

"Traffic growth on the routes considered was higher than forecast, sometimes quite dramatically so."

THE IMPACT OF INDUCED TRAFFIC

3.11 Traffic congestion tends to maintain equilibrium. Congestion reaches a point at which it constrains further growth in peak-period trips. If road capacity increases, the number of peak-period trips also increases until congestion again limits further traffic growth. The additional traffic is called “generated traffic.” Generated traffic consists of diverted traffic (trips shifted in time, route and destination), and induced vehicle travel (shifts from other modes, longer trips and new vehicle trips). Research indicates that generated traffic often fills a significant portion of capacity added to congested urban road.

3.12 Generated traffic has three implications for transport planning. First, it reduces the congestion reduction benefits of road capacity expansion. Second, it increases many external costs. Third, it provides relatively small user benefits because it consists of vehicle travel that consumers are most willing to forego when their costs increase. It is important to account for these factors in analysis.

INDUCED TRAFFIC AND PUBLIC HEALTH

3.13 But generated traffic doesn’t only bring economic disbenefits, the wider case is extremely clear. By increasing rather than decreasing the level of congestion on roads around East/South East London, the proposed schemes would also have a detrimental impact on the air quality of the local area and thus on the health of those both local to the proposed schemes and across London.

3.14 Air pollution has an impact on everyone living and working in London. However, it is the most vulnerable people in our city such as children, older people and those with heart and respiratory
conditions, who feel the effects most. People living in deprived areas are also more affected by poor air quality, in part because these areas are often near busy roads, which tend to have higher levels of road traffic pollution.

3.15 A House of Commons Committee recently heard evidence that poor air quality could contribute to 50,000 premature deaths per year across the UK. This is in line with GLA commissioned research, which suggests that pollution contributed to an equivalent of 4,267 premature deaths in London in 2008.

3.16 The proposed river crossings are in both cases located in some of the most deprived areas of London. The map below shows the Index of Multiple Deprivation (IMD) by super output area across London. It shows the very high level of deprivation around the location of the proposed river crossings.

3.17 Given the research noted above which indicates positive correlation between deprivation and poor health as a result of air pollution, it is vital that any development in these areas acts to improve not to reduce the health of local residents.

AIR QUALITY AND THE LONDON PLAN

3.18 As per policies outlined in the London Plan, the Mayor insists that all development plans should “be at least ‘air quality neutral’ and not lead to further deterioration of existing poor air quality”. As such, any development such as river crossings would have to prove air quality neutrality at the very least.

3.19 As detailed below, the creation of additional road capacity for motorised vehicles will significantly increase air pollution and therefore Sustrans vehemently opposes both proposed schemes.

Opposition to the Gallions Reach Ferry

4.1 The London Plan outlines the Mayor’s intention to develop a programme of river crossings in East London. One of the plans mentioned in the London Plan is the Gallion’s Reach Ferry which is now being consulted on by TfL. In the London Plan, the Gallions Reach scheme is proposed as a new vehicle ferry between Gallions Reach and Thamesmead “To be implemented in advance of a potential fixed link”.
4.2 The ferry proposal must therefore be viewed within the longer term plan for the crossing which is expected to include the building of additional road capacity, most likely in the form of a road bridge. This is the main reason for Sustrans’ opposition to the proposed scheme.

4.3 As additional reinforcement for our opposition, it seems likely that (as a result of the location and the implied increased capacity for additional queuing for the ferry) this scheme is simply a re-skinned version of the Thames Gateway Bridge proposal that was scrapped in 2008. The majority of arguments used to oppose the 6 lane Thames Gateway Bridge will therefore be relevant here.

4.4 In 2002, the Simon Wolf Foundation commissioned Professor Whitelegg to write an analysis of the potential impact which the Thames Gateway Bridge would have had. Thames Gateway River Crossing: a social, economic and environmental assessment and “A Solution looking for a Problem - a review of Transport for London’s proposals for river crossings in East London and their traffic impact” by John Elliot for Transport 2000, March 2003 found that

- The main claims for economic benefit of the scheme are based on savings to the motorist, and that claims for improved access to employment by car are based on flawed congestion analysis;
- Even though 2 lanes on the bridge are proposed for use by buses, access to employment by public transport would be barely improved;
- The scheme would do little or nothing to relieve unemployment in local boroughs and would make it easier for other people from outside the area to access employment opportunities that are created, also encouraging longer-distance commuting by car;
- There are better and cheaper ways to regenerate the area and to improve local transport;
- Spending should be directed to public transport because car ownership is low in the immediately affected boroughs (Greenwich 40.8%; Newham 48.9%) already over-polluted areas are most likely to suffer the effects of extra road traffic and pollution;
- The scheme’s backers have greatly underestimated the increase in traffic flows – Transport for London’s 2-way figure of 4,400 vehicles in the morning peak hour is in fact likely to be 6,000 to 8,000 vehicles. This could be up to 12,000 vehicles if proposed bus lanes were scrapped.
- Therefore there has also been an underestimation of the extra traffic chaos and pollution caused by the bridge (for instance as traffic tried to cut through to the A2 to the south).
- The promotion and public consultation on the scheme to date has been ‘fraudulent’ (John Whitelegg report) offering no public transport alternatives. The money could be spent on public transport north and south of the river and dedicated public transport crossings could be explored instead.

Opposition to the Silvertown Tunnel

5.2 The TfL consultation on the proposed river crossings is extremely brief and offers no detail about either of the scheme proposals. As such, many of the details must be assumed. As such, it is assumed that the proposed Silvertown Tunnel will be a four if not six lane road and will therefore be a huge new road scheme thus subject to our opposition as per the arguments raised in the second section of this response.

5.3 In addition, although the tunnel is not depicted in full, it is unlikely that either cycling or walking will be accommodated in a safe or pleasant manner. As such, the Mayor, in these proposals, fails to work towards his own policy objectives. Walking and cycling contribute in a significant way towards major policy objectives for the region.

5.4 London is a world class city and has a great deal to offer in terms of good practice examples, particularly where transport is concerned. However, there are a considerable number of growing concerns for policy makers in the capital which can be positively impacted upon by changes to the way we think about movement and space.

5.5 Health: Obesity is now a serious public health concern in London, with over 20 per cent of adults and 17 per cent of children being classified as obese. Obesity is having an increasingly detrimental impact on Londoner’s quality of life and is a significant drain on the economy. London
suffers from significant inequalities in terms of health and levels of physical activity within the population. This is reflected in a difference of almost seven years between London boroughs with the highest and lowest life expectancies. Improving opportunities and conditions for walking and cycling across the capital, particularly in areas of high ill health, can help address these inequalities.

5.6 Climate Change and Energy Security: London is responsible for eight per cent of UK carbon dioxide emissions, producing 44 million tonnes of CO2 each year, with a substantial proportion of this (22 per cent) coming from road transport. Unless action is taken, London’s overall emissions are projected to increase substantially, by 15 per cent to 51 million tonnes by 2025. Swift and decisive action to reduce greenhouse gas emissions globally is now needed to prevent catastrophic climate change. London is acutely vulnerable to the dangers of climate change, particularly in the medium and longer term.

This is anticipated to include an increasing risk of flooding – both tidal and fluvial - droughts and more frequent, severe and damaging heat waves. A transport system that is more energy efficient and less dependent on fossil fuels is less exposed to rises and volatility in global oil prices. In this respect London can make its transport system – and thus its economy – more energy secure and resilient.

5.7 Equality and Social Justice: whilst there has been a significant and welcome growth in cycling trips in London over recent years (cycling has increased by 107 per cent on London’s major roads between 2000 and 2008 - an estimated 545,000 cycle journeys are now made everyday across London measures to facilitate cycling have not benefitted all Londoners equally. In 2006/07, the number of cycle trips made by men aged 25 – 44 was roughly equivalent to the total number of cycle trips made by men and women (and boys and girls) in all other age groups combined. Fear of traffic and road danger is the main reason cited for the continuing low cycling levels among these groups.

5.8 Developing a transport system that is available to all, as well as streets and public spaces that are not dominated by private motor traffic to the exclusion of people who would like to travel by other modes, is especially important in London, where a significant proportion of the population do not have access to a car. One third of London households do not own a car and the proportion of children and young people who are reliant on others to access cars is already above the national average and is projected to grow further in the next decade.

5.9 Population Growth and Travel Demand: London is the United Kingdom’s only city region. Its population of 7.75 million is 12.5 per cent of the UK population living on just 0.6 per cent of the land area. London’s average population density is over 4,900 persons per square kilometre, this is ten times that of the second most densely populated region. Between 2001 and 2009 London’s population grew by over 430 thousand, more than any other region, accounting for over 16 per cent of the UK increase. Unless something happens to reverse the trend, population projections suggest that London will see growth from the present level of 7.63 million to 8.63 million by 2026.

5.10 Total travel demand in London is projected to increase by four million journeys a day by 2025. Planning for and accommodating these journeys on a public transport and street network that are already stretched represents a significant transport challenge for London, a challenge compounded by the need to limit road congestion, reduce transport emissions and enhance London’s public realm and the ‘liveability’ of a world city. Given that London’s road space is a limited and much demanded public resource, prioritising walking, cycling and public transport all of which account for more individual journeys within the same space, is a sensible priority.

5.11 Facilitating more walking and cycling is particularly relevant since this is likely to be the most cost-effective means of adding to London’s overall transport capacity. Recent analysis comparing the cost-benefit ratio of walking and cycling schemes with road or rail projects showed that walking and cycling is typically six or seven times more cost effective than other transport schemes. The increasing size and the changing demographic of London’s population will not only increase pressure on the already strained transport system but could also see an increase in inequality and further polarisation of the societal challenges outlined above.

5.12 As the case for walking is so clear across so many key policy areas for London, Sustrans raises additional opposition to the proposed Silvertown Tunnel.
The Thames Bridge – a solution

6.1 In 2008, Sustrans worked with a range of partners including TfL to scope plans for a walking and cycling bridge to cross the Thames in east London. Though the scheme was dropped, it gained a great deal of traction and would answer the policy demands within which the current proposals are being framed. The proposals, demand forecasting and technical feasibility reports regarding the Thames Bridge proposal as it is named, are attached to this response.

6.2 Please see appendices A and B of this document for detail regarding the Sustrans Thames Bridge Proposal.

Conclusion

7.1 Whilst Sustrans acknowledges the need for more river crossing capacity in east/south east London, we oppose both river crossing proposals being consulted on primarily because they both imply road building and additional capacity for motorised vehicular transport. The potential impact of induced traffic which both schemes would create includes increased congestion, deterioration in air quality, negative impacts on health and discouragement of walking and cycling. All of these things work against, not towards the Mayor’s wider policy context.

7.2 In addition, Sustrans calls on TfL and the Mayor to reconsider the Thames Bridge proposal promoted and scoped by Sustrans and others in 2008. The Thames Bridge offers real solutions to London’s problems and would be a significant step towards achieving a wide range of policy objectives for London.

1 www.sustrans.org.uk
2 http://www.bettertransport.org.uk/campaigns/roads-to-nowhere/induced-traffic
5 http://www.vtpi.org/gentraf.pdf
7 http://www.londonprofile.org/
8 http://www.london.gov.uk/priorities/planning/londonplan
9 http://www.persona.co.uk/thamesgateway/TFL_docs/Add_core_docs/Add-004.pdf
10 http://www.foe.co.uk/resource/briefings/thames_gateway_bridge.pdf
Thames Pedestrian and Cycle Bridge

Updated economic appraisal

Sustrans / Transport for London
September 2008
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Summary

Colin Buchanan (CB) were commissioned by Sustrans to conduct an economic appraisal of the proposed Thames Pedestrian and Cycle Bridge linking the Isle of Dogs and the Rotherhithe peninsula. This builds upon a preliminary economic assessment completed by CB in February 2007.

The Canary Wharf Travel Survey 2006 has been employed to generate an up-to-date model of journey to work patterns into the Isle of Dogs and future pedestrian and cycle demand for bridge has been forecast. It is estimated that by 2020, the bridge will be carrying 1m pedestrians and 1.6m cyclists annually.

The appraisal of the bridge has been conducted over a 60-year appraisal period and has been prepared using Transport for London's Business Case Development Manual.

Costs

Ramboll Whitbybird completed a feasibility report in March 2008, including an updated proposal for the structure and location of the bridge, as well as a revised capital cost estimate. The total cost estimate is £171m (2007 prices):

- Capital cost: £107m
- Operating and maintenance cost: £69m
- Operating cost saving (ferry): -£6m

Benefits

Benefits of the bridge have been calculated from journey time savings, health benefits, congestion relief, environmental factors and regeneration impacts. Total benefits (low case) have been calculated to be £236m. This results in a net present value of the bridge of £66m and a benefit-cost ratio of 1.4:1. The high case net present value is £123m, resulting in a benefit-cost ratio of 1.7:1. Yet the current maintenance costs of the bridge are relatively uncertain and are subject to further reassurances. As a result, the BCR is likely to fall within a range from 1.2:1 to 2.0:1.

Overall sensitivity testing has shown that the benefit-cost ratio is relatively robust as far as the benefits are concerned. A large proportion of the benefits accrue to existing pedestrians, ferry passengers and cyclists.

Overall assessment

The bridge creates a significant reduction in journey times between Canary Wharf and the Rotherhithe peninsula and beyond. By reducing journey times, improving access and journey experience, the introduction of the bridge will lead to a significant mode shift to walking and cycling, increasing sustainable travel and reducing congestion on the public transport and road networks. Therefore it is concluded that the bridge is in line with TfL's Strategic Objectives and represents value for money.
1 Introduction

1.1 Background

1.1.1 Colin Buchanan (CB) were commissioned by Sustrans to conduct an economic appraisal of the proposed Thames Pedestrian and Cycle Bridge linking the Isle of Dogs and the Rotherhithe peninsula. This builds upon a preliminary economic assessment completed by CB in February 2007.

1.1.2 The economic appraisal is being revised to take account of a number of factors:

- The feasibility report completed by Ramboll Whitbybird in March 2008 contains an updated proposal for the structure and location of the bridge, as well as a revised cost estimate;
- The latest Canary Wharf employee travel survey (June 2006) provides a much more up-to-date forecasting base than the census 2001 data available for the original appraisal. Walking and cycling growth to Canary Wharf has been strong in the years since 2001. The two-yearly Canary Wharf cordon counts highlight a 100% increase in walking and a 60% increase in cycling demand for the period between 2005 and 2007 alone;
- The annualisation factors employed have been validated using the route user survey data collected by Sustrans for LB Southwark;
- There have been major changes to a number of external factors (confirmation of Crossrail, revised population projections and more ambitious employment growth aspirations for Canary Wharf); and
- Appraisal guidelines for walking and cycling have been updated (e.g. inclusion of walking / cycling ambience values in TfL’s Business Case Development Manual), and the World Health Organisation has published its HEAT tool strengthening the case for better consideration of physical activity benefits.

1.1.3 The March 2008 feasibility report recommends further work towards the case for the bridge. This review of the economic appraisal represents a key step in this process.

1.2 Report structure

1.2.1 The remainder of this report is structured in the following manner:

- Section 2 lays out the scope and objectives of the proposed bridge;
- Section 3 describes the options considered;
- Section 4 describes the method used for forecasting demand;
- Section 5 lays out the capital and revenue costs;
- Section 6 describes the benefits of the bridge;
- Section 7 presents the key appraisal assumptions;
- Section 8 presents the outcome of the quantified appraisal;
- Section 9 discusses project risk; and
- Section 10 makes an overall assessment of the bridge.
2 Scope and objectives

2.1 Scope of scheme

2.1.1 This scheme includes the construction and operation of a Thames bridge for pedestrians and cyclists between the Isle of Dogs and the Rotherhithe peninsula. The proposed location for the bridge is shown in Figure 2.1.

Figure 2.1: Proposed bridge location

2.1.2 Included within the scope of the scheme is the construction of the bridge, operation and maintenance of the bridge over the appraisal period, and provision for junction re-design and landscaping measures at the approaches to the bridge.

2.1.3 A number of factors combine to make this scheme a timely and relevant proposal:

- London has been experiencing unprecedented levels of cycle growth. Planned measures are set to continue to boost growth and new infrastructure is required to provide the river crossing capacity for cyclists in East London;
- The Olympics have provided the impetus for the development of a set of greenways linking up communities in East London;
- Canary Wharf employment growth projections are ambitious and encouraging, walking / cycling is an essential part of achieving this growth;
- A number of current initiatives on the Rotherhithe peninsula are increasing residential densities, and improving connectivity for walking and cycling.

2.1.4

2.1.5 Figure 2.2 shows the proposed bridge design with a vertically lifting central section.
2.2 Scheme objectives

2.2.1 The Thames bridge is seen as a measure that contributes to several TfL Strategic Objectives:

- The bridge would significantly reduce journey times for people travelling between the Rotherhithe peninsula and the Isle of Dogs, and increase local area connectivity.
- The bridge will provide a superior journey experience to many pedestrians and cyclists who currently have to use unwelcoming tunnel crossings.
- By encouraging significant mode shift to walking / cycling and promoting shorter trip lengths, the bridge promotes a large net reduction in CO₂ emissions from travel. The bridge itself aims to be carbon-neutral over its life through maximum longevity of materials and the exploitation of its potential for renewable energy generation on its structure.
- The bridge generates significant mode shift to sustainable travel from motorised modes to walking and cycling.
- The bridge underpins the growth and regeneration foreseen in the London Plan in Inner East and South East London by providing increased capacity, connectivity and an image boost.
The bridge, which is located in proximity to some of London’s most deprived communities, provides a vital link that is accessible, secure and affordable for all. Therefore it plays a role in further promoting social inclusion and access to employment.

The unique bridge design constitutes a positive intervention to the urban realm in the area by encouraging local area movement, and legible, high quality public spaces.

2.2.2 Further key objectives include:

- The bridge will remove some peak demand from crowded sections of the TfL Underground and road networks.
- The bridge encourages physical activity and contributes to the network of Greenways that the 2012 Olympics will leave as a legacy to East London to promote active travel and leisure.
3 Options

Preferred Option

3.1.1 The principal option tested includes the construction of the bridge and associated amendments to the street layout at its entry points. This option also assumes the removal of the current ferry shuttle service between the Hilton and Canary Wharf piers.

Base Case

3.1.2 The preferred option is compared to the base option where no bridge is built and the current ferry is assumed to operate at the current frequency into the future.

Alternatives

3.1.3 A further option worth testing will be the impact of enhanced bus transit through the Rotherhithe peninsula and to the bridge. The forecast impacts of this option on demand for the bridge are discussed in section 4.
4 Demand forecasting

4.1 Overview

4.1.1 The forecasting for the earlier economic appraisal was undertaken using census 2001 journey to work data. However, the Canary Wharf Travel Survey 2006 provides a more up-to-date insight into Canary Wharf journey to work patterns. This is due to the fact that employment at Canary Wharf has more than doubled since 2001 and patterns of cycle commuting have changed considerably in recent years.

4.1.2 A journey to work base model has been generated using the Canary Wharf Travel Survey data. On this basis the elasticity of walking and cycling trips to changes in generalised journey time have been calculated, and the relative changes in mode share forecast.

4.2 Current journey to work patterns

4.2.1 The Canary Wharf Travel Survey 2006 was completed in June 2006 with a sample size of 10,951, of which 8,803 respondents provided their post code at sector level. These trips have been weighted to represent the 90,300 total employees at the time of the survey. The sample size is large enough to allow a robust analysis of the overall geographical distribution of trips or of the overall modal split. At the level of individual post code sectors the samples are very small. Yet through the aggregation of trip rates to larger zones, most of this local variation is dealt with.

4.2.2 Figure 4.1 overleaf shows the distribution of total employees in Canary Wharf by postcode sector, along with 1, 2, 3, 5, and 8km buffers. The geographical distribution shows clearly that there are high numbers of commuting trips from very close to Canary Wharf. There are strong commuting corridors from south of the river in Greenwich, Lewisham and Southwark, as well as further west in Lambeth and Wandsworth. 35% of journey to work tips originate from outside Greater London.

Figure 4.1: Base commute journeys per sq km to Canary Wharf (2006)
4.2.3 Figure 4.2 shows the equivalent pattern of walking commute trips. Of the trips from inside Greater London, the walking mode share is 7%. The vast majority of these originate from within the 2km radius buffer.

**Figure 4.2:** Commuting trips per sq km to Canary Wharf (2006) – walking

![Walking Commute Trips Map](image)

4.2.4 Figure 4.3 shows the equivalent pattern for cycling commute trips. Of the trips from inside Greater London, the cycling mode share is 4%. There is no clear pattern linked to the distance employees live from Canary Wharf. Instead there is a more disparate pattern of origins with some clear clusters, for example around Hackney, Islington or New Cross.

**Figure 4.3:** Commuting trips per sq km to Canary Wharf (2006) – cycling

![Cycling Commute Trips Map](image)
4.2.5 The impact of the low sample sizes per individual postcode sector means that there are clearly limitations in that the zoning system suitably detailed to deal with local level walking demand in the 2.5km buffer will contain high variation in cycling demand at this level. On the other hand, the forecasting outcomes are not sensitive to this since the 2.5km buffer accounts for only a tiny proportion of total cycling demand, and has been excluded.

**Cycle growth**

4.2.6 London has recently experienced sustained year-on-year growth in cycle usage, and if growth were to continue at a similar rate the forecast cycle user numbers could almost double prior to the completion of the bridge. Given this growth in cycle usage, the cycling mode share was increased from the 2006 mode share to reflect the higher proportion of journeys expected to be made by cycle by the time the bridge opens.

4.2.7 In line with TfL targets (that are somewhat more conservative than the growth experienced in the last years) it has been assumed that between 2006 and 2020 cycling would grow at the same rate each year, with cycling in 2020 200% higher than 2000 levels. Hence it has been assumed that there will be 37.4% growth in cycle trips between 2006 and 2014, with annual growth of 4.1% between 2014 and 2020. This results in a higher cycling base before the bridge opens than at present.

### 4.3 Generalised journey time

4.3.1 To assess the change in generalised journey time with and without the bridge, the areas around the bridge and Canary Wharf were split into zones, usually along ward boundaries for zones within 3 km of Canary Wharf with wards grouped together into larger zones for those further away.

4.3.2 The central point of each zone was used to represent the zone area, and the current journey time from the central point to Canary Wharf was calculated. Journey times for walk, cycle and public transport trips were calculated separately using the TfL Journey Planner. Generalised journey costs for all trips by each mode were calculated, with penalties derived from WebTag. These are given in Table 4.1 and Table 4.2.

**Table 4.1: Values of time**

<table>
<thead>
<tr>
<th>Mode</th>
<th>Values of time (£ per hour, 2007 prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>£6.15</td>
</tr>
<tr>
<td>Cycle</td>
<td>£6.17</td>
</tr>
<tr>
<td>Ferry</td>
<td>£6.34</td>
</tr>
<tr>
<td>Bus</td>
<td>£6.34</td>
</tr>
<tr>
<td>Rail</td>
<td>£8.17</td>
</tr>
<tr>
<td>Car</td>
<td>£7.01</td>
</tr>
</tbody>
</table>

* Source: TfL Business Case Development Manual

**Table 4.2: Penalties**

<table>
<thead>
<tr>
<th>Penalty</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of walk time (as part of a PT journey)</td>
<td>2 (multiplier)</td>
</tr>
<tr>
<td>Value of wait time</td>
<td>2.5 (multiplier)</td>
</tr>
<tr>
<td>Interchange penalty</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Penalty for walking through Greenwich foot tunnel</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Penalty for cyclists using Greenwich foot tunnel</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Penalty for cyclists using Woolwich ferry</td>
<td>10 minutes</td>
</tr>
</tbody>
</table>

** Value of walk time, value of wait time and interchange penalty sourced from WebTag
4.3.3 In the base case, cyclists crossing the Thames through the Greenwich foot tunnel face a serious journey time penalty due to the stairs and the fact that cycling is banned in the tunnel itself and they must therefore walk.

4.3.4 For those zones south of the river, a new journey time for walkers and cyclists to Canary Wharf was calculated, assuming the bridge was in place. This was done by using Journey Planner to calculate the journey time to the start of the bridge and from the end of the bridge to Canary Wharf, with an assumption made for the distance required to cross the bridge. These were again used to calculate generalised journey costs for journeys using the bridge.

4.4 Elasticity and mode shift

Walking

4.4.1 Using a simple least squares analysis, the elasticity of walking mode share to distance and the ratio of walking to public transport generalised journey time was estimated. As the walking mode share to Canary Wharf is negligible beyond a 2.5 km radius, this estimation was calibrated against all zones within this radius. However, the zones on the Rotherhithe peninsula were excluded from the walking baseline calibration since a separate generalised journey time was calculated for walking trips using the ferry.

4.4.2 The walking mode share for these zones can be explained as a function of distance and the relative utility of walking versus public transport:

\[ P_{\text{walk}} = C + aD + b(U_{\text{pt}} / U_{\text{walk}}) \]

where:
\[ C = \text{constant} \]
\[ D = \text{crow-fly distance between origin and destination} \]
\[ U_{\text{pt}} = \text{public transport generalised journey time} \]
\[ U_{\text{walk}} = \text{walking generalised journey time} \]

4.4.3 Within this model, the walking mode share to Canary Wharf is relatively elastic to the relative utility of walking versus public transport (0.23) within a 1.25 km buffer. Within the rest of the 2.5 km buffer this elasticity drops (0.05) and demand becomes more elastic to the crow-fly distance factor.

4.4.4 The bridge generates a large improvement in generalised journey time for the zones on the Rotherhithe peninsula, where a substantial proportion of commuters already walk but either in combination with the ferry or using Greenwich foot tunnel. Given the relative attractiveness of the bridge (no waiting time and free of charge), it is assumed that the shuttle ferry service between the Hilton pier and Canary Wharf will go out of service and that the pedestrians currently using it will use the bridge.

Cycling

4.4.5 The cycling mode share cannot be explained as easily as the walking mode share in terms of distance. Instead it was found that certain geographic locations generate higher levels of cycle commuting than others, and that applies to Canary Wharf as much as to Central London regardless of distance. This may be due to a mix of population demographics, provision of cycle routes and other local environmental factors in these areas. Although the absolute mode shares have risen substantially since 2001, the London borough cycle mode shares from the 2001 census correlate well with the Canary Wharf cycle commuting patterns.
4.4.6 The cycling mode share for these zones can be explained as a function of the following factors:

\[ P_{cycle} = C + a \left( \frac{U_{pt}}{U_{cycle}} \right) + bX \]

where:

- \( C \) = constant
- \( U_{pt} \) = public transport generalised journey time
- \( U_{cycle} \) = cycling generalised journey time
- \( X \) = cycling journey to work mode share of origin borough

4.4.7 Within this model, the cycling mode share to Canary Wharf is relatively inelastic to the relative utility of cycling versus public transport (0.01). Due to the sampling issues outlined in 4.2.5, the model does not include zones with a 2.5km buffer.

4.5 Summary of usage forecast

4.5.1 The model forecast predicts that on a weekday nearly 900 Canary Wharf employees will use the bridge to walk to work in 2014. This contributes to approximately 700,000 walking trips per year over the bridge in 2014. Figure 4.4 shows the forecast distribution of walking trips to Canary Wharf in 2014.

Figure 4.4: Commute trips per km to Canary Wharf with bridge (2014) – walking

4.5.2 Table 4.3 shows that by 2020 usage is forecast to grow to over 1 million walking trips per year. Mode shift and generated trips account for 11% of this demand.
16

Table 4.3: Estimated annual walking trips over the bridge (2020)

<table>
<thead>
<tr>
<th>User groups</th>
<th>Estimated annual walk trips (‘000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing walk trips / ferry users</td>
<td>505</td>
</tr>
<tr>
<td>Baseline growth in walk / ferry users between 2006 and 2020 (82% increase as a result of local employment and population growth)</td>
<td>412</td>
</tr>
<tr>
<td>Mode shift / trip generation</td>
<td>114</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,032</strong></td>
</tr>
</tbody>
</table>

4.5.3 Similarly, the model forecast predicts that on a weekday over 2,300 Canary Wharf employees will use the bridge to cycle to work in 2014, contributing to around 1.1m cycle journeys in 2014. Figure 4.5 shows the forecast distribution of cycling trips to Canary Wharf in 2014.

Figure 4.5: Commute journeys to Canary Wharf with bridge (2014) – cycling

Table 4.4 shows that cycle demand is set to grow to 1.6 million trips per year in 2020. Cycle trips are set to almost double in this period as a result of population and employment growth alone. The forecast increase in mode share accounts for a further 0.5m annual cycle trips. Mode shift and trip generation as a result of the bridge only account for 5% of demand in 2020.

Table 4.4: Estimated annual cycling trips over the bridge (2020)

<table>
<thead>
<tr>
<th>User groups</th>
<th>Estimated annual cycle trips (‘000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing cycle trips</td>
<td>507</td>
</tr>
<tr>
<td>Baseline growth in cycle users between 2006 and 2020 (91% increase as a result of local employment and population growth)</td>
<td>496</td>
</tr>
<tr>
<td>Estimated baseline growth in cycling mode share between 2006 and 2020</td>
<td>535</td>
</tr>
<tr>
<td>Mode shift / trip generation</td>
<td>81</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,620</strong></td>
</tr>
</tbody>
</table>
4.6 Population density

4.6.1 Rotherhithe peninsula contains large areas of housing developments from the 1980s that are of relatively low density. In particular, the Surrey Docks ward that is ‘at the end of the peninsula’ has a very low density compared to nearby Inner London sites. As can be seen from Table 4.5, the other wards on the peninsula that are set to benefit from the East London Line have much greater population density forecasts than Surrey Docks.

4.6.2 It can also be seen from Table 4.5 that some of the areas immediately to the north of the Isle of Dogs in particular are set to see densities reach around 20,000 persons per sq km by 2031.

Table 4.5: Population density around the Isle of Dogs

<table>
<thead>
<tr>
<th>Distance from Canary Wharf (km)</th>
<th>2006 population density (‘000s per sq km)</th>
<th>2031 PLP high population density (‘000s per sq km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limehouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isle of Dogs</td>
<td>0.8</td>
<td>12.3</td>
</tr>
<tr>
<td>and areas to its north</td>
<td></td>
<td>21.0</td>
</tr>
<tr>
<td>Blackwall</td>
<td>1.3</td>
<td>9.0</td>
</tr>
<tr>
<td>Cubitt Town Outer</td>
<td>1.4</td>
<td>5.8</td>
</tr>
<tr>
<td>Millwall Outer</td>
<td>1.5</td>
<td>9.1</td>
</tr>
<tr>
<td>East India &amp; Lansbury</td>
<td>1.6</td>
<td>10.5</td>
</tr>
<tr>
<td>Mile End East</td>
<td>1.9</td>
<td>11.3</td>
</tr>
<tr>
<td>Surrey Docks</td>
<td>1.4</td>
<td>6.6</td>
</tr>
<tr>
<td>Rotherhithe</td>
<td></td>
<td>6.7</td>
</tr>
<tr>
<td>Evelyn</td>
<td>2.3</td>
<td>8.3</td>
</tr>
<tr>
<td>Rotherhithe peninsula</td>
<td>2.4</td>
<td>8.9</td>
</tr>
<tr>
<td>Evelyn</td>
<td></td>
<td>14.0</td>
</tr>
</tbody>
</table>

4.6.3 There is obviously potential for a large increase in population density in the Surrey Docks ward area if the bridge were to be built. Therefore the Surrey Docks population growth assumptions have been revised to reflect this. It is assumed that population density in the 50% of Surrey Docks nearest to the bridge will eventually rise to the same level as that in the Cubitt Town Outer zone. This area provides a relatively robust comparison to Surrey Docks since it contains similar types of housing as well as space devoted to parks and retail surfaces. Although developers might in reality pre-empt the building of the bridge, the increase in population density is assumed to grow in a linear fashion between 2014 and 2029.

4.6.4 It is not expected that a similar change in population density will be caused by improved cycle access to Canary Wharf. This is because the cycling catchment is much wider than the walking catchment. Furthermore the socio-economic background of the key cycling groups consists generally of relatively high income groups who can afford to pay for high public transport accessibility regardless of whether they use the service on a daily basis or not.

4.7 Potential Rotherhithe bus transit option

4.7.1 As mentioned in section 3, an improved bus transit link to the Rotherhithe side of the bridge has been proposed as a way of encouraging usage of the bridge. Routes C10 and 381 currently serve Rotherhithe Street and Salter Road respectively. Figure 4.6 overleaf shows the areas currently within 400m of a direct bus link to the bridge. The yellow areas have a direct route to the bridge (using bus C10), whilst the orange areas have a link that involves a short walk to the bridge (using bus 381).
4.7.2 It is clear that there is potential to link the bridge to areas to the south and east of the peninsula that do not currently have a direct link. Rationalisation of existing routes could also create more frequent, faster bus transit links. Therefore a series of tests on the generalised journey time assumptions in the model were undertaken.

4.7.3 Despite the interchange penalty from bus to tube at Canada Water, the generalised journey time using a bus-tube-walk combination from areas to the east of Canada Water is still considerably better than that for a bus-walk combination. Therefore, although there might be a case for creating more direct bus transit links to the Rotherhithe Peninsula from areas such as Nunhead and Peckham, only the users with a very low price elasticity are likely to consider the bus-walk combination as a means of accessing Canary Wharf.

4.7.4 With regards to routes from the south, there is no obvious routeing to the bridge as Greenland Dock presents a barrier. Therefore all routes would be required to pass so close to Canada Water bus station that it seems highly unlikely that an option not serving the interchange opportunities presented by the bus station would be seriously considered.

4.7.5 Therefore it is not considered that this option will significantly alter the case for the Thames bridge. However, there are clearly opportunities to improve bus links to and around the Rotherhithe peninsula. Any increase in population density generated by the bridge will add to the case for frequency enhancements, journey time improvements and more direct routeings in the area.
5 Costs

5.1 Capital costs

5.1.1 As part of the feasibility report, Davis Langdon were commissioned to carry out a cost appraisal of the bridge based on the project criteria and outline design. Table 5.1 summarises the construction costs identified in this report and additional cost assumptions. For a detailed summary of the construction cost elements, please refer to the feasibility report.

Table 5.1: Capital costs summary

<table>
<thead>
<tr>
<th>Cost element</th>
<th>Cost</th>
<th>Source / comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction costs sub-total (includes main contractor prelims @ 14%)</td>
<td>£60m</td>
<td>Davis Langdon cost appraisal</td>
</tr>
<tr>
<td>Contingency allowance @ 10%</td>
<td>£6m</td>
<td></td>
</tr>
<tr>
<td>Construction costs sub-total</td>
<td>£66m</td>
<td></td>
</tr>
<tr>
<td>Allowance for fees (Port of London, LA's) @ 10%</td>
<td>£6.6m</td>
<td>See below</td>
</tr>
<tr>
<td>Approach junction works / landscaping</td>
<td>£2m</td>
<td></td>
</tr>
<tr>
<td><strong>Total cost</strong></td>
<td><strong>£74.6m</strong></td>
<td></td>
</tr>
</tbody>
</table>

5.1.2 The cost estimate produced by Davis Langdon includes main contractor preliminary works and a contingency allowance of 10%. An additional allowance has been made for fees of a further 10%. This reflects the fact that legal costs, consultation and project management fees are likely to be extensive.

5.1.3 An allowance of £2m has been made for landscaping and junction works on the bridge approaches. It is assumed that the junctions will need to be re-designed to ensure that there is adequate capacity and safe crossing opportunities for pedestrians and cyclists accessing the bridge.

5.1.4 No additional allowance has been made for construction industry inflation in London.

5.2 Maintenance / operating costs

5.2.1 The bridge is designed to have a life of 125 years and its design includes a number of innovative features to reduce maintenance costs over its life. For example, the polysiloxane paint finish on the main deck is designed to last 60 years before re-painting is required. The overall palette of materials are designed to be self-finished with extremely long lives.

5.2.2 However, some maintenance of the bridge will still be required, including visual inspections (tensioning components, lifting apparatus), and replacement of parts. There are also operating costs linked to the day-to-day management and operation of the bridge.

5.2.3 Based on evidence from the Gateshead Millenium bridge, it is estimated that the operating and inspection costs will be just over £0.5m annually. A budget of just under £0.8m annually would be required for general maintenance. This equates to 0.74% of the estimated capital cost and is based on figures from Gateshead.
5.2.4 Additionally, periodic replacement of some assets will be required over the life of the bridge. Table 5.2 shows the periodic asset replacement assumption employed.

<table>
<thead>
<tr>
<th>Element</th>
<th>Cost (2007 prices incl. optimism bias)</th>
<th>Frequency of replacement (yrs)</th>
<th>Replacement as % of capital cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control and movement mechanisms</td>
<td>£11.6m</td>
<td>25</td>
<td>100%</td>
</tr>
<tr>
<td>Paintwork and surfacing</td>
<td>£4.7m</td>
<td>40</td>
<td>100%</td>
</tr>
<tr>
<td>Structural elements / joints</td>
<td>£21m</td>
<td>30</td>
<td>25%</td>
</tr>
</tbody>
</table>

5.3 Costs avoided

5.3.1 It is reasonable to assume the bridge would alleviate the need for the current ferry between Rotherhithe and the Isle of Dogs. This equates to a saving in operating costs of the ferry, which is estimated at £150,000 per annum. It should be noted that the loss of fares to the ferry operator is balanced out by the savings accrued by the former ferry passengers who switch mode, therefore leaving the saving in operating costs as an economic gain.

5.3.2 It is possible that the proposed bridge might remove the need for other transport infrastructure to the Isle of Dogs in the future, whether it be in the form of bus, rail or highway infrastructure. No such allowance has been included within the analysis, but this could be a major benefit in the long term.

5.4 Optimism bias

5.4.1 Optimism bias of 55% has been employed. This figure has been taken from the DfT’s Procedures for dealing with optimism bias in transport planning and represents the recommended optimism bias for bridges with less than 20% risk of cost overrun. Although the feasibility report presents clear evidence that many of the engineering challenges can be overcome, a small number of elements require non-standard solutions and therefore a high optimism bias has been selected to err on the side of caution.
6 Explanation of benefits

6.1 User benefits

Journey time savings

6.1.1 The bridge produces significant journey time savings for a number of users:
- Current cyclists whose journey time is reduced because they can take a shorter route and, in many cases, avoid Greenwich Foot tunnel which slows down cyclists due to the stairs and requirement for bicycles to be pushed;
- Users of the current ferry service who no longer have to wait to cross the river;
- New pedestrians and cyclists shifting from public or private transport.

Ambience

6.1.2 Despite its importance as a walking and cycling link, Greenwich Foot tunnel is not an inviting route for cyclists. Apart from the long journey time, the tunnel is narrow, damp and generally unattractive. In contrast, the new bridge will offer more space, more light and vistas of the river. Therefore the benefit for cycling ‘attractiveness of route’ from table E4.11 of the BCDM has been applied.

6.1.3 No ambience benefits have been applied to current pedestrians and ferry users since the ferry is assumed to offer a relatively similar level of attractiveness of route as the proposed bridge.

6.1.4 New pedestrian users will, however, experience a major improvement in journey ambience due to the high quality riverside walking environment and the attractive views from the bridge. The attraction of the bridge itself is hard to measure but the only quality of environment category within Table E4.10 of the BCDM – relating to areas at the side of the road or pedestrian route where there are no buildings – has been applied as a proxy value.

6.2 Wider benefits

Health and absenteeism

6.2.1 Mode shift to walking and cycling generate increased levels of physical activity. This produces wider social benefits in terms of reduced mortality and absenteeism.

6.2.2 Table 6.1 shows the values applied to new walking and cycling trips. These ‘per trip’ values have been calculated based on observed walk, cycle and overall physical activity patterns for London as a whole. In each case, the benefit from exceeding the 3 x 30 minutes moderate physical activity threshold is calculated from an annual reduced mortality benefit and an associated annual absenteeism benefit of £32.53 (using the rule of half) prior to the ‘per trip’ calculation.

Table 6.1: Health (and absenteeism) benefits

<table>
<thead>
<tr>
<th>Trip type</th>
<th>Value (£ per trip)</th>
<th>Calculated from</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per new cycling trip</td>
<td>£0.65</td>
<td>DfT (annual value of £140)</td>
</tr>
<tr>
<td>Per new A-B walking trip</td>
<td>£0.36</td>
<td></td>
</tr>
<tr>
<td>Per new walk to public transport trip</td>
<td>£0.08</td>
<td></td>
</tr>
</tbody>
</table>
**Congestion relief**

6.2.3 Mode shift to walking and cycling has benefits in terms of congestion relief on other modes. Table 6.2 shows the values that have been applied. The LUL peak value has been taken from the Crossrail appraisal. The motorised vehicle value is assumed to be slightly lower than the 47p per km recommended by TfL for Inner London since a portion of the congestion relief will occur on Outer London roads in SE London.

Table 6.2: Congestion relief benefits

<table>
<thead>
<tr>
<th>Mode shift</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>From LUL (peak trip only)</td>
<td>£0.19</td>
</tr>
<tr>
<td>From private motorised vehicle (per km)</td>
<td>£0.40</td>
</tr>
</tbody>
</table>

**Emissions reduction**

6.2.4 Walking and cycling are zero-emission modes. Therefore all mode shift to walking and cycling generates a net emissions reduction. In this appraisal, a 1.6p per km benefit has been applied to all car trips that shift to walking and cycling.

**Regeneration benefits**

6.2.5 The introduction of the bridge will improve access from the Rotherhithe peninsula to Canary Wharf and hence will become more attractive for employees to locate there. As a result, it is expected that there will be an increase in housing development on the peninsula in response to this rise in demand for living there. Since the population density in Rotherhithe is currently relatively low (see section 4.6), it is assumed that there is scope for intensification on the peninsula.

6.2.6 As the population in this area increases, the number of jobs in the area will also increase. This is because as the population rises, a number of services are required to support the population, such as health and leisure services. This increase in the number of jobs will support the renewal of nearby regeneration areas such as Deptford and Peckham. These are deprived areas with high unemployment and providing greater employment within easy access of these areas will bring great benefits to these areas.

6.2.7 A rise in population density and service jobs has been calculated for the Surrey Docks ward. The population density in the half Surrey Docks closest to the bridge has been assumed to grow to the level of the Cubitt Town ward which is a similar distance from Canary Wharf (see 4.6.3). This results in a predicted population of 15,500 in Surrey Docks in 2031, 2,800 higher than current predictions.

6.2.8 Due to the higher population in Surrey Docks, employment in the local area will increase. The level of employment has been assumed to grow by the same proportion as population, i.e. the ratio between population and employment in Surrey Docks has been kept constant. Therefore, by 2031, there will almost 200 extra jobs in Surrey Docks due to the rise in population from the opening of the bridge. By looking at the profile of employment in Surrey Docks and other similar areas, the profile of jobs created was determined and an estimate of jobs likely to go to local residents was made. This estimate and current median London salaries for each job sector (shown in Table 6.3 overleaf) were used to calculate the overall benefits to local residents, approximately £7.3m (2007 prices) over a period of 30 years.
Table 6.3: 2007 median annual London salaries

<table>
<thead>
<tr>
<th>Sector</th>
<th>Salary (£ 2007 prices)</th>
<th>% of jobs going to local residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>10,938</td>
<td>50%</td>
</tr>
<tr>
<td>Leisure</td>
<td>19,960</td>
<td>50%</td>
</tr>
<tr>
<td>Education</td>
<td>32,329</td>
<td>5%</td>
</tr>
<tr>
<td>Health</td>
<td>38,253</td>
<td>5%</td>
</tr>
</tbody>
</table>

**Wider economic benefits**

6.2.9 The bridge potentially has a large positive impact on Canary Wharf by freeing up peak-time LUL and DLR capacity. This is of particular relevance to the eastbound Jubilee Line and the northbound DLR in the AM peak. Additional public transport capacity may in turn have agglomeration benefits if it can be translated into additional office development. These impacts have not been quantified or monetised as part of this appraisal.

**Other benefits**

6.2.10 No impact on the operating costs or the revenue of LUL or TfL buses have been included in the appraisal.
7 Key assumptions

7.1 Basic appraisal parameters
7.1.1 The main appraisal parameters are:
- All values in 2007 prices
- Planning and construction to take 5 years (2009-2013) with a spend profile of construction costs of 2009 – 2%, 2010 – 4%, 2011 – 9%, 2012 – 40%, and 2013 – 45%
- Appraisal period of 60 years (benefits and revenue costs commence in year 2014)

7.2 Annualisation
7.2.1 Demand has been forecast on the basis of a journey to work model into Canary Wharf. Commuting in the reverse direction from the model, i.e. from the Isle of Dogs to an employment destination in the Rotherhithe peninsula, is comparatively small but not negligible. To take account of this a factor of 6.2% (calculated from the 2001 census journey to work data) has been applied.

7.2.2 Morning peak-to-annual annualisation factors of 479 for cyclists and 820 for pedestrians were applied in the original economic appraisal. These are calculated based on user counts on comparable river crossings in London with a mix of commuting and leisure users (Greenwich foot tunnel, Hungerford bridges, Vauxhall bridge and the Millennium bridge). The cycle annualisation factor is relatively low but also reflects the observed seasonality of this mode.

7.2.3 In order to validate these annualisation factors, further analysis of the ratio of commuting and leisure users from Sustrans route user monitoring surveys was undertaken. In these surveys, cyclist and pedestrian journey purpose data is collected on weekdays and at the weekend during both the school term and holiday periods. It is therefore a good source for testing annualisation factors. Analysis of data from London Bridge and Portland Street - sites in Southwark with greater than 75% commuting / business / education usage on term-time weekdays - produces an annualisation factor of 858. This factor of 858 has been selected as a revised pedestrian annualisation factor.

7.3 Impact on Thames river traffic and commit times
7.3.1 The Thames bridge has been designed to allow the passage of smaller vessels so that only vessels of 15m height or above will require the bridge to be raised. Therefore the bridge will have to be raised for some yachts to pass. However, LB Southwark have identified a site for a holding marina to the south of the bridge. In comparison to the access arrangements for private vessels in other cities, it would not be unreasonably strict to allow only one brief daily passage window for such yachts and to plan this at a very quiet time.

7.3.2 Additionally, the Port of London suggest that longer raising of the bridge will be required around 30 times a year to allow large cruise vessels to access the Tower Bridge Lower mooring near St Katherine’s Dock. The ‘commit time’, i.e. the total time for which the bridge needs to be in its raised position, could be around 45 minutes each time. These vessels would always occur at high tide. Advance notice from cruise ships is generally provided up to two years in advance, and is therefore largely predictable.

7.3.3 In the business case, no additional unreliability factor has been included to account for these closures. It is regarded that short closures in the night as well as 30 commit times annually at predictable times do not constitute a less reliable service than other equivalent transport infrastructure. If maintenance down-time is planned to coincide with
the necessary commit times, this would reduce the closures to a level comparable to other transport modes. It is assumed that advance notice could be provided to users through the existing media channels used by TfL for all other transport systems.

7.4 Population and employment growth

7.4.1 GLA population forecasts by ward have been employed. The ‘PLP high’ scenario as laid out in the recent DMAG 2008-07 briefing *GLA 2007 Round Demographic Projections* is used as the base.

7.4.2 Recent employment forecasts by ward were obtained from the GLA economics group. The forecasts for Canary Wharf have been adjusted to reflect the Canary Wharf Group target of 200,000 jobs by 2026. In light of the Crossrail decision, this target is regarded as achievable.
8 Quantified analysis

8.1.1 The appraisal of the bridge produces a benefit to cost ratio (BCR) of 1.4:1.

8.1.2 Table 8.1 summarises the present value of the costs and benefits.

**Table 8.1: Present value costs and benefits (2007 prices)**

<table>
<thead>
<tr>
<th>Present value (£m)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital costs</td>
<td>107</td>
</tr>
<tr>
<td>Operating / maintenance costs</td>
<td>69</td>
</tr>
<tr>
<td>Ongoing cost savings</td>
<td>-6</td>
</tr>
<tr>
<td>Secondary income</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>171</strong></td>
</tr>
<tr>
<td>Journey time saving to existing users</td>
<td>126</td>
</tr>
<tr>
<td>Journey time savings to new users</td>
<td>82</td>
</tr>
<tr>
<td>Ambience benefits to existing users</td>
<td>5</td>
</tr>
<tr>
<td>Ambience benefits to new users</td>
<td>0.2</td>
</tr>
<tr>
<td>Health / absenteeism benefits</td>
<td>15</td>
</tr>
<tr>
<td>Congestion relief and environmental benefits</td>
<td>2</td>
</tr>
<tr>
<td>Regeneration benefits</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total benefits</strong></td>
<td><strong>236</strong></td>
</tr>
</tbody>
</table>

**Net Present Value** 66  
**BCR** 1.4:1

8.1.3 Currently no third party contributions have yet been sought. In the absence of any contributions, the net financial effect to Transport for London would equate to £176m. However, a private sector contribution of £15m would generate a public sector BCR of 1.5:1.

8.1.4 Table 8.2 shows the distribution of benefits from the bridge in 2020 between the different users of the bridge. The largest benefits accrue to new pedestrian trips and existing cyclists.

**Table 8.2: Distribution of benefits (2020)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>Existing pedestrians / ferry users</td>
<td>£1,068,008</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>New users (trip generation)</td>
<td>£1,451,256</td>
<td>£232,228</td>
</tr>
<tr>
<td>Cycling</td>
<td>Existing cyclists</td>
<td>£1,226,179</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Existing cyclists (growth between 2006 and 2020)</td>
<td>£330,176</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>New users (trip generation)</td>
<td>£62,774</td>
<td>£56,250</td>
</tr>
</tbody>
</table>

8.1.5 The quantitative analysis provides a robust case for the bridge assuming the currently forecast distribution of population and employment. Yet given the levels of redevelopment still occurring in the area, the real benefit of the bridge could be significantly higher depending on potential development scenarios. A number of scenarios could occur in response to the creation of a linear link between Canary Wharf and Canada Water, yet
both higher densities and a better mix of residential and commercial uses along the corridor would both increase the predicted benefits by a substantial margin.
9 Feasibility and risk

9.1 Risks

Financial

9.1.1 The technical feasibility report acknowledges that some elements of the bridge present an engineering challenge and may require non-standard solutions. Therefore the capital cost estimate includes a considerable contingency element. For this reason, the estimate is considerably more expensive than other comparable pedestrian / cycle bridges constructed in recent years. An optimism bias of 55% has also been applied in this appraisal to reflect this.

9.1.2 Importantly, forecasts of maintenance and operating costs are extremely difficult to prepare. Therefore sensitivity testing is required to assess the potential impact of different scenarios.

Third party / statutory

9.1.3 The bridge impacts on a number of third parties including the Port of London authority. Legal and statutory matters pose a significant risk to the implementation timetable.

9.1.4 In the appraisal it is assumed that the need to raise the bridge is minimised by the provision of a holding marina to the south of the bridge. If it is not possible to create such a marina, the attractiveness of the bridge would suffer due to the increased frequency of bridge closures.

9.1.5 If the number of cruise ships entering London were to increase significantly, this would also affect the perceived reliability of the bridge link. Yet this scenario is highly unlikely.

Public / political

9.1.6 The bridge has political support within the adjacent boroughs. However, public consultation will be necessary before the bridge can be signed off. Although it is unlikely that there will be broad public opposition to the project, opposition by a small but vocal group could feasibly delay the sign-off process.

9.2 Sensitivity testing

9.2.1 Based on the risks identified above, a series of sensitivity tests have been carried out. These test the effect of unplanned occurrences touched on above may have on the net present value (NPV), and hence the BCR, of the bridge. An explanation of each of the sensitivity tests is provided below, while a summary of the results of these tests is provided in Table 9.1. Other tests look at potential costs/benefits of the bridge, such as potential revenue generation and congestion relief.

66% optimism bias

9.2.2 TfL’s Business Case Development Manual provides a range of optimism bias for non-standard civil engineering projects of 6-66% (also referred to in DfT’s Procedures for dealing with optimism bias in transport planning). The optimism bias is currently 55% to reflect the type of project and the potential risk in costs rising due to non-standard solutions being required. If the optimism bias was raised to 66% to further mitigate this risk, the total cost would rise to £178m. This would lead to the NPV of the bridge falling to £58m, with the BCR at 1.3:1.
44% optimism bias

9.2.3 TFL’s Business Case Development Manual provides a range of optimism bias for standard civil engineering projects of 3-44% (also referred to in DfT’s Procedures for dealing with optimism bias in transport planning). If the bridge does not heavily rely on non-standard solutions then the risk of costs rising are reduced. Using the maximum of this range, the total cost would fall to £163m, with an NPV of £73m and a BCR of 1.4:1.

Annual operating/maintenance costs increase by 50%

9.2.4 A test was carried out to assess the impact of the annual operating and maintenance costs increased by 50% from the base. This cost increase would include the cost of an extra six members of staff in addition to the 12 staff assumed in the base. This results in a rise in the total cost to £196m, with the NPV falling to £40m. The BCR would therefore be 1.2:1.

Annual operating/maintenance costs decrease by 50%

9.2.5 Similarly, if the annual operating and maintenance costs of the bridge fell by 50% from the base, the total cost would fall to £145m. This would lead to a NPV of £91m and a BCR of 1.6:1.

Replacements costs increase

9.2.6 If the cost of replacing parts on the bridge increased by 50% from the base, the total cost would rise to £180m, giving a NPV of £56m and a BCR of 1.3:1.

Frequency of replacing parts increase

9.2.7 In the base it was assumed that control and movement mechanisms were replaced every 25 years, paintwork and surfacing replaced every 40 years and structural elements and joints being replaced every 30 years (see Table 5.2). A test was carried out with the frequency of these replacements being increased to every 20 years for the control and movement mechanisms, every 30 years for paintwork and surfacing and every 25 years for structural elements and joints. This resulted in the total cost rising to £174m, with the NPV falling to £62m. The BCR remains at 1.4:1

Construction industry inflation

9.2.8 No allowance has been made for construction industry inflation being higher than economy-wide inflation. The 2005 – 2015 Construction Demand / Capacity Study published by the Office of Government Commerce in 2006 suggests that industry-wide new work inflation for 2005-2015 is expected to be about one percentage point above underlying inflation. With rising oil prices and the falling value of the pound, construction inflation is likely to be even higher in the next few years compared to CPI inflation.

9.2.9 A sensitivity test has been carried out which assumes construction inflation being three percentage points higher than inflation. With this higher inflation, total costs rise to £189m. The NPV would therefore fall to £48m, with the BCR at 1.3:1.

2 year delay in bridge implementation

9.2.10 This test was designed to examine the effect of a 2 year delay in the completion of the bridge. This assumes a more spread out spend profile, with the bridge ready for use in 2016 rather than 2014. If the bridge opened in 2016, the NPV falls to £63m, with a BCR of 1.4:1. This, however, does not take into account any rise in the actual cost of
construction due to the delay (such as the construction industry inflation referred to above), which would potentially reduce the NPV and BCR further.

**Secondary income**

9.2.11 The bridge presents a number of opportunities to generate a small amount of regular secondary income:

- The feasibility report proposes that the bridge’s structure be used to showcase innovative technologies for renewable power generation (tidal, wind and solar). Besides its symbolic importance (and potential for attracting funding), this measure would provide electricity for the bridge operation and lighting. Any surplus could also be sold to the grid.
- Bridges provide the opportunity to carry cables (e.g. fibre optics etc) for utility companies. If a suitable technical solution for dealing with the lifting of the main span can be found, this would present a reliable, long-term income stream.
- Given that the bridge is sure to become quite an attraction in its own right, further possibilities should be explored to capture further revenue through advertising opportunities, corporate events and services to tourists (souvenirs and catering outlets).

9.2.12 The impact of an estimate of potential secondary revenue generation at £500k (2007 prices) annually would bring in total benefits of £19m (2007 prices) over the appraisal period. This would lead to a rise in the NPV to £85m and a BCR of 1.6:1.

**Growth in cycling by 250% of 2000 levels by 2020**

9.2.13 Due to the high growth in cycling over the past decade, it is possible growth will surpass TfL’s target of 200% growth between 2000 and 2020. The 80% target planned for 2010 was met several years earlier than forecast. A test was therefore carried out with cycling growth of 250% on 2000 levels by 2020, again with a constant annual growth rate from 2006 to 2020. This higher growth in cycling lead benefits to rise to £248m, with the NPV of the bridge increasing to £78m. As a result, the BCR would rise to 1.5:1.

**Reduction in cycling mode share to 2006 levels**

9.2.14 Another test was conducted to examine the effect of cycle levels falling back to 2006 levels before 2014 with no growth thereafter. This results in a fall in the NPV to £35m, with a BCR of 1.2:1.

**Use of WHO health benefits for cyclists**

9.2.15 The DfT value used for health benefits from physical activity is only calculated on the basis of the link to mortality from colon cancer, strokes and coronary heart disease. It is acknowledged that this is only a partial figure since sufficient evidence to link mortality rates to other conditions such as obesity and type 2 diabetes was not yet available at the time of estimation. In developing its HEAT tool, the World Health Organisation (WHO) conducted a controlled survey of cyclists and non-cyclists in Copenhagen, taking into account a full range of possible conditions and determined the physical activity benefit of cyclists compared to non-cyclists.

9.2.16 The impact of assuming health benefits of £2.61 per new cycle trip (calculated using the WHO HEAT tool) instead of £0.65 per trip was therefore tested as this takes into account wider range of health conditions. This results in a rise in the NPV of the bridge to £73m, with a BCR of 1.4:1.
Without health/absenteeism benefits

9.2.17 A further test was carried out to assess the impact on the benefits of the bridge if health and absenteeism benefits were not included. If these were not taken into account, the NPV would fall to £50m. This would result in a BCR of 1.3:1.

‘PLP low’ population growth

9.2.18 A test of the impact of lower population growth on the benefit of the bridge was conducted using the GLA DMAG group’s ‘PLP low’ population growth forecast. This resulted in no significant change in the cost/benefit of the bridge, with the NPV remaining at around £66m and the BCR at 1.4:1.

Reduction in usage forecast

9.2.19 It has already been mentioned that the usage forecast depends on London-wide population growth and cycling mode share assumptions. Moreover, if the planned holding marina to the south of the bridge cannot be built, the improved journey times upon which the forecasting are based will suffer an unreliability penalty in off-peak periods. A reduction in usage of 25% drops the NPV to £46m and the BCR to 1.3:1.

Further 10,000 increase in population in Surrey Docks

9.2.20 Currently the population of Surrey Docks is predicted to grow by less than 3,000 people above the PLP forecasts. If the population grew by a further 10,000 people above the PLP forecasts over the same time period as assumed previously (increasing the population density to that of the southern part of Millwall ward), this would increase journey time savings by £21m, health benefits by £2m and regeneration benefits from service jobs by £14m. This would result in a NPV of £103m and a BCR of 1.6:1.

Further 15,000 increase in population in Surrey Docks

9.2.21 If the population of Surrey Docks grew by 15,000 people above the base by 2029 prediction then the NPV would rise to £122m, with the BCR rising to 1.7:1.
9.2.22 Table 9.1 summarises the effects of the sensitivity tests above on the NPV and BCR of the bridge.

<table>
<thead>
<tr>
<th>Description</th>
<th>NPV (£m)</th>
<th>BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>66% optimism bias</td>
<td>58</td>
<td>1.3:1</td>
</tr>
<tr>
<td>44% optimism bias</td>
<td>73</td>
<td>1.4:1</td>
</tr>
<tr>
<td>Annual operating/maintenance costs increase by 50%</td>
<td>40</td>
<td>1.2:1</td>
</tr>
<tr>
<td>Annual operating/maintenance costs decrease by 50%</td>
<td>91</td>
<td>1.6:1</td>
</tr>
<tr>
<td>Replacements costs increase</td>
<td>56</td>
<td>1.3:1</td>
</tr>
<tr>
<td>Frequency of replacing parts increase</td>
<td>62</td>
<td>1.4:1</td>
</tr>
<tr>
<td>Construction industry inflation</td>
<td>48</td>
<td>1.3:1</td>
</tr>
<tr>
<td>2 year delay in bridge implementation</td>
<td>63</td>
<td>1.4:1</td>
</tr>
<tr>
<td>Secondary income</td>
<td>85</td>
<td>1.6:1</td>
</tr>
<tr>
<td>Growth in cycling by 250% of 2000 levels by 2020</td>
<td>78</td>
<td>1.5:1</td>
</tr>
<tr>
<td>Reduction in cycling mode share to 2006 levels</td>
<td>35</td>
<td>1.2:1</td>
</tr>
<tr>
<td>Use of WHO health benefits for cyclists</td>
<td>73</td>
<td>1.4:1</td>
</tr>
<tr>
<td>Without health/absenteeism benefits</td>
<td>50</td>
<td>1.3:1</td>
</tr>
<tr>
<td>“PLP low” population growth</td>
<td>66</td>
<td>1.4:1</td>
</tr>
<tr>
<td>25% reduction in usage forecast</td>
<td>46</td>
<td>1.3:1</td>
</tr>
<tr>
<td>Further 10,000 increase in population in Surrey Docks</td>
<td>103</td>
<td>1.6:1</td>
</tr>
<tr>
<td>Further 15,000 increase in population in Surrey Docks</td>
<td>122</td>
<td>1.7:1</td>
</tr>
</tbody>
</table>

9.2.23 The basic ‘with bridge’ scenario includes a series of very conservative assumptions. It is clearly prudent to present the economic appraisal in this manner. However, if this represents a likely ‘low case’ scenario, what would be the equivalent likely ‘high case’ scenario? The following elements of the business case are treated in a very conservative manner and high case likely scenarios are identified:

- **Population increase in Surrey Docks** – The assumption included in the low case scenario is very conservative and does not reflect the potential for density increases on the Rotherhithe peninsula. The recent super-densities sought by developers on the Isle of Dogs itself (e.g. Ontario Tower, Wood Wharf) are on development sites within a similar walking distance of Canary Wharf as Surrey Docks with the bridge. Therefore the further 10,000 population increase scenario is considered realistic.

- **Use of WHO health benefits for cyclists** – Robust research on the effects of physical activity on health is slowly becoming available. The values adopted in the DfT draft guidance on the appraisal of walking and cycling are acknowledged to be only partial as they only relate to CHD, strokes and colon cancer. The WHO physical activity values are not yet formally adopted in the UK but it is considered highly probable that they come closer to representing the full economic benefit of increased physical activity.

- **Cycling growth rates** – A number of factors suggest it is relatively likely that London’s cycling mode share will grow above the 200% predicted between 2000 and 2020. Investment in both hard and ‘soft’ infrastructure for cycling continues to grow, and growth in the last five years has exceeded forecasts. Likely scenarios for a variety of external factors continue to favour an increase in cycling (e.g. fuel prices, fare prices, crowding on public transport). Therefore the 250% increase on 2000 levels appears a realistic forecast.

9.2.24 As shown in Table 9.2, the benefit-to-cost ratio rises to 1.7:1 under the high scenario.
Table 9.2: Low and high case scenarios

<table>
<thead>
<tr>
<th></th>
<th>NPV (£m)</th>
<th>BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low case</td>
<td>66</td>
<td>1.4:1</td>
</tr>
<tr>
<td>High case</td>
<td>123</td>
<td>1.7:1</td>
</tr>
</tbody>
</table>

9.2.25 The BCR’s given above are based on uncertain assumptions regarding the annual maintenance costs and periodic replacement costs of the bridge. An initial estimate has been used but this is subject to engineering reassurances. Sensitivity testing shows that the BCR is very sensitive to these assumptions and as a result, alternative scenarios should be considered on top of the low and high cases. If annual and periodic maintenance costs increased by 50% on top of the low case scenario, the BCR would fall to 1.2:1. However, if these costs decreased by 50% on top of the high case, the BCR would increase to 2.0:1. Therefore, subject to further design and assessment of costs, a BCR range of between 1.2:1 and 2.0:1 is considered likely.
10 Overall assessment

10.1.1 CB were commissioned by Sustrans to conduct an economic appraisal of the proposed Thames Pedestrian and Cycle Bridge linking the Isle of Dogs and the Rotherhithe. CB conducted a preliminary economic assessment completed in February 2007, and this has been updated with up-to-date appraisal guidelines and changes in external factors, as well as the latest Canary Wharf travel survey.

10.1.2 This appraisal has been conducted using a 63-year appraisal period. This is on the basis of a 3-year build time, with the bridge opening in 2014, and benefits calculated for the first 60 years after opening. Benefits of the bridge have been calculated from journey time savings, health benefits, congestion relief, environmental factors and regeneration impacts. Costs have been taken from Davis Langdon’s cost forecast with additional provision for fees and associated works. A 55% optimism bias has been added to the total cost of the bridge in line with DfT guidelines.

10.1.3 The total cost of the bridge (including optimism bias) is £171m. Total benefits (low case) have been calculated to be £236m. This results in a net present value of the bridge of £66m and a benefit-cost ratio of 1.4:1. The high case net present value is £123m resulting in a benefit-cost ratio of 1.7:1. Yet the current maintenance costs of the bridge are relatively uncertain and are subject to further reassurances. As a result, the BCR is likely to fall within a range from 1.2:1 to 2.0:1.

10.1.4 A number of sensitivity tests have been carried out to test the robustness of assumptions used in the appraisal. The BCR is more sensitive to changes in operating / maintenance costs than to the optimism bias selected. In terms of benefits, the BCR is sensitive to the overall growth rate of cycling in London. Similarly, the level of health benefits assumed has a large impact.

10.1.5 The bridge creates a significant reduction in journey times between Canary Wharf and the Rotherhithe peninsula and beyond. By reducing journey times, improving access and journey experience, the introduction of the bridge will lead to a significant mode shift to walking and cycling, increasing sustainable travel and reducing congestion on the public transport and road networks. Therefore it is concluded that the bridge is in line with TfL’s Strategic Objectives and represents value for money.

The way forward

10.1.6 As mentioned in section 5.2, there is a need for clarity as to both the management structure under which the bridge would operate and the estimated annual operating and maintenance costs. This process should take on board the comments of key stakeholders such as the Port of London Authority.

10.1.7 If funding for the bridge is likely to be forthcoming, it is recommended that a review of planned developments in the vicinity of the bridge is undertaken as early as possible. Developers will want to review the layout planned for nearby plots and the mix of land uses, in particular at the ground floor level, to maximise their benefit from the bridge. These changes can also be used to maximise the potential benefits of the bridge to local communities.
Thames Cycle and Pedestrian Bridge
Thames Cycle and Pedestrian Bridge

Project No: 124361
March 2007

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Status: Final Report issue no: 1 Date: 15 March 2007

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Executive Summary

This report presents an economic appraisal of the proposed pedestrian and cycle bridge over the River Thames linking Rotherhithe Peninsula to the Isle of Dogs.

The costs of the bridge are estimated to be £30M. The appraisal has allowed for 2% maintenance costs per annum and 44% optimism bias.

The demand forecast for the bridge is based on the current observed mode shares for London commuters by journey length. This is a robust approach that is used to forecast base demand. The results suggest 1.17 million trips per year split between the primary and secondary catchments areas of this analysis as shown in the table below. (Please refer to figure 3.1 for details on the bridge’s assumed catchment’s areas).

<table>
<thead>
<tr>
<th>Demand (Trips)</th>
<th>Cycle</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>48%</td>
<td>85%</td>
</tr>
<tr>
<td>Secondary</td>
<td>22%</td>
<td>15%</td>
</tr>
<tr>
<td>Tertiary</td>
<td>31%</td>
<td>0%</td>
</tr>
<tr>
<td>Total Trips</td>
<td>585</td>
<td>1082</td>
</tr>
</tbody>
</table>

The benefits are predominantly time savings and include an allowance for the quality of journey compared to current alternatives.

Also included were health benefits valued at £5.04 per trip for new walk/cycle user in line with the forthcoming DfT guidance.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>£Million PV (60 Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Savings</td>
<td>46.8</td>
</tr>
<tr>
<td>Ferry Operating Costs Savings</td>
<td>6.2</td>
</tr>
<tr>
<td>Health Benefits</td>
<td>31.7</td>
</tr>
<tr>
<td>Total User Benefits</td>
<td>84.7</td>
</tr>
</tbody>
</table>

Benefits currently don’t allow for wider economic impacts on the Isle of Dogs and Rotherhithe Peninsula developments. Even so, user benefits are sufficient to generate a Benefit Cost Ratio of 1.3, which represents a positive finding. The appraisal results suggest that the scheme is worth progressing further by reassessing the costs and mechanisms for raising finance.
1. Introduction

1.1.1 This report presents an initial assessment of the economic case for a proposed foot and cycle bridge across the River Thames between the Isle of Dogs and the Rotherhithe Peninsula.

1.1.2 The following sections consider the proposed bridge’s location, its costs, demand and benefits and conclude with some sensitivity tests. The remainder of this introduction describes the bridge’s catchment area travel patterns and travel to work mode shares.

1.1.3 The proposed cycle and pedestrian bridge would form a local link between Rotherhithe Peninsula and Canary Wharf at Limehouse Reach. It would provide well segregated cycle and pedestrian paths with the design and form to be determined by a combination of aesthetic, physical and economic constraints of the area.

1.1.4 The bridge would provide an opportunity for those on the south bank to access the Isle of Dogs and beyond by walk and cycle modes. At present access is either via the existing ferry (which is unable to operate at very low tides) or via the Jubilee Line Extension (JLE) which is very crowded approaching the Isle of Dogs.

1.1.5 At present, the South bank comprises a combination of established residential communities, physical dereliction and economic deprivation as well as significant new riverfront developments. Thus the proposed bridge will link a residential area with great potential for growth to Canary Wharf, the second largest financial district in Europe with employment estimates of 200,000 jobs by 2021.

1.1.6 The construction of the bridge could contribute to the improvement of the area’s transport network and environmental condition in a number of ways, including:

- Better access to the Isle of Dogs;
- Reduction in road congestion and car dependency;
- Improvement in air quality and residents’ health;
- Relieving congestion on the JLE and DLR lines towards Canary Wharf at peak hours;
- Enabling higher intensity development at key sites on the south bank at Rotherhithe and surrounding Canada Water, Evelyn and Deptford areas; and
- Create a new landmark in East London in the areas north and south of the river.
2. The Proposed bridge’s location and costs

2.1.1 The bridge's exact location has yet to be determined, but it will connect the tip of Rotherhithe Peninsula to the northern bank between Limehouse Dock and Westferry Circus.

![Proposed Bridge’s Night View](image)

2.1.2 The bridge will thus cross the Thames at the level of Limehouse Reach. This crossing location offers the flexibility of 250 m of open public space on both banks with a well-used public route between Canary Wharf Pier to the north and the much quieter walk at Columbia Wharf to the South.

![Proposed Bridge’s View from the West](image)

2.2 Construction and Maintenance Costs

2.2.1 For this assessment, the construction costs were estimated to be in the region of £30m due to the bridge needing a lifting or swing element (Reference: Final Report - New Pedestrian and Cycle Bridge over the River Thames - Whitbybird 10-Nov-06). This is in line with other recent foot bridges as shown below.
Table 2.1: Recent Bridge Construction Costs

<table>
<thead>
<tr>
<th>Name</th>
<th>Construction Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millennium Bridge</td>
<td>£18m + £5m for modifications</td>
</tr>
<tr>
<td>Gateshead Bridge</td>
<td>£22m</td>
</tr>
<tr>
<td>Hungerford Bridges (2)</td>
<td>£50m</td>
</tr>
</tbody>
</table>

2.2.2 The bridge’s maintenance costs include regular inspections to monitor the condition of the structure and to replace major elements such as waterproofing of bridge decks and expansion joints. Annual maintenance costs are estimated to be in the order of 2% of construction costs. The above construction costs are un-discounted and based on resource prices and do not include allowance for “optimism bias”. Given that little work has been done on assessing the physical work required, it is recommended that the upper range for standard civil engineering is used which is 44% over the scheme costs.
3. **Population And Employment**

3.1.1 The bridge’s primary catchment consists of the area to the north of the Rotherhithe Peninsula. This area includes the three wards of Surrey Docks, Rotherhithe and Evelyn. This is the area where the bridge would have the most significant impact on pedestrians and cyclists.

![Figure 3.1: Project's Catchment Areas](image)

3.1.2 Beyond this distance the attraction of the bridge will decrease as the time saving benefits decline as a proportion of total journey costs.

3.1.3 The following table from the London Area Travel Survey illustrates this pattern of travel to work mode share for London according to distance.
Table 3.1: LATS 2001 Household Survey

<table>
<thead>
<tr>
<th>Distance Of Trip (Banded, Km)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2km&lt;5km</td>
</tr>
<tr>
<td>Hierarchical main mode</td>
<td></td>
</tr>
<tr>
<td>National rail</td>
<td>0.1%</td>
</tr>
<tr>
<td>Underground/MDLR</td>
<td>0.7%</td>
</tr>
<tr>
<td>Bus (bus/coach/tram)</td>
<td>8.8%</td>
</tr>
<tr>
<td>Taxi</td>
<td>0.9%</td>
</tr>
<tr>
<td>Other</td>
<td>0.1%</td>
</tr>
<tr>
<td>Car driver</td>
<td>26.2%</td>
</tr>
<tr>
<td>Car passenger</td>
<td>12.0%</td>
</tr>
<tr>
<td>Van/Lorry</td>
<td>0.5%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0.2%</td>
</tr>
<tr>
<td>Cycle</td>
<td>1.9%</td>
</tr>
<tr>
<td>Walk</td>
<td>48.5%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

3.1.4 Of note is the fact that almost half of commuters travelling less than 2 km walk to work declining rapidly to 1.3% for journeys to work between 5 and 8 km. The longer the distance the less likely one is to walk to work. The walking environment is another feature that can potentially change the proportion of walkers, but distance is probably key.

3.1.5 The table below illustrates the current and projected population growth within the primary catchment area. Levels of growth could be increased if the proposed bridge is built due to the improvement in accessibility to employment opportunities. The table below reflects observed population growth to 2007 and 1.9% per annum growth rate is assumed to 2021 (in line with LB Southwark growth to 2012 and extrapolated for a further nine years).

Table 3.2: Primary Catchment Area Population Growth (2001-2021)

<table>
<thead>
<tr>
<th>Population Growth ('000s)</th>
<th>2001</th>
<th>2007</th>
<th>2012</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surrey Docks</td>
<td>11,346</td>
<td>12,702</td>
<td>13,956</td>
<td>16,532</td>
</tr>
<tr>
<td>Rotherhithe</td>
<td>11,395</td>
<td>12,757</td>
<td>14,016</td>
<td>16,603</td>
</tr>
<tr>
<td>Evelyn</td>
<td>14,151</td>
<td>15,842</td>
<td>17,406</td>
<td>20,619</td>
</tr>
</tbody>
</table>

3.1.6 Estimates of employment growth in the Isle of Dogs (from Canary Wharf Group) indicate an annual growth rate of 9.25% from 2001 to 2012. This growth will increase demand for housing in locations accessible to the Isle of Dogs.

Table 3.3: Assumed Employment Growth at the Isle of Dogs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>44,000</td>
<td>90,000</td>
<td>117,000</td>
<td>144,000</td>
<td>200,000</td>
<td></td>
</tr>
</tbody>
</table>
4. Current Demand And Mode Share

4.1.1 Existing mode shares from the primary catchment area to the Isle of Dogs consist of 66% via LUL, 13% for car/taxi and just 1.4% cycle and 2% walking. The existing ferry from the Hilton Hotel to the Isle of Dogs accounts for a 12.5% share from the primary catchment area. The 87 referred to by “Other” relate to the existing ferry users working at the Isle of Dogs.

Table 4.1: Existing Mode Share and Demand

<table>
<thead>
<tr>
<th>Primary Catchment Area - Mode Shares For Isle Of Dogs Employees 2001</th>
<th>Primary Catchment areas &lt; 2km</th>
<th>Secondary Catchment (Areas &gt;2&lt;5km)</th>
<th>Tertiary Catchment (All Areas &gt;5&lt;8km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car/taxi</td>
<td>91</td>
<td>13.1%</td>
<td>289</td>
</tr>
<tr>
<td>LUL</td>
<td>461</td>
<td>66.2%</td>
<td>590</td>
</tr>
<tr>
<td>Bus</td>
<td>24</td>
<td>3.4%</td>
<td>44</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>9</td>
<td>1.3%</td>
<td>32</td>
</tr>
<tr>
<td>Walk</td>
<td>14</td>
<td>2.0%</td>
<td>3</td>
</tr>
<tr>
<td>Cycle</td>
<td>10</td>
<td>1.4%</td>
<td>32</td>
</tr>
<tr>
<td>Other</td>
<td>87</td>
<td>12.5%</td>
<td>8</td>
</tr>
<tr>
<td>Employed At IoD</td>
<td>696</td>
<td>100%</td>
<td>940</td>
</tr>
</tbody>
</table>

4.1.2 A similar pattern is also evident within the bridge’s wider catchment. Travel to work to the Isle of Dogs from key Southern Boroughs shows high percentage reliance on the rail network and surprisingly high use of private car.

Table 4.2: Catchment Area Borough Mode Shares

<table>
<thead>
<tr>
<th>Catchment Area Mode Share</th>
<th>Lewisham</th>
<th>Greenwich</th>
<th>Lambeth</th>
<th>Southwark</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUL – Tram</td>
<td>57%</td>
<td>41%</td>
<td>65%</td>
<td>58%</td>
</tr>
<tr>
<td>Train</td>
<td>15%</td>
<td>18%</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>Bus - Minibus – Coach</td>
<td>4%</td>
<td>8%</td>
<td>2%</td>
<td>7%</td>
</tr>
<tr>
<td>Taxi</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Car - driver</td>
<td>16%</td>
<td>24%</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>Car - passenger</td>
<td>2%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>1%</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>3.46%</td>
<td>3%</td>
<td>2.36%</td>
<td>1.67%</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>0.46%</td>
<td>1%</td>
<td>0.35%</td>
<td>1.43%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>0%</td>
<td>0.0%</td>
<td>4%</td>
</tr>
</tbody>
</table>
5. **Forecast Demand And Mode Shares**

5.1.1 With the bridge in place, the current mode share pattern, especially within the primary catchment area will shift towards cycling and walking to take advantage of the new bridge.

5.1.2 Using changes in generalised costs it is estimated that walking would increase from 2% to 43% with the share of cycling increasing from 1.4% to 16% within the primary catchment area (for trips to the Isle of Dogs).

5.1.3 The effect of the bridge in place is to reduce the perceived and real distance from Rotherhithe Peninsula to the Isle of Dogs.

Table 5.1: Primary Catchments Demand Travel Pattern – Base Year 2007

<table>
<thead>
<tr>
<th></th>
<th>Primary Catchment</th>
<th>2ndary Catchment (Areas &gt;2&lt;5km)</th>
<th>3rd Catchment (Areas &gt;5&lt;8km)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;2km</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Car/taxi</td>
<td>190</td>
<td>734</td>
<td>1753</td>
</tr>
<tr>
<td>LUL</td>
<td>507</td>
<td>1149</td>
<td>4154</td>
</tr>
<tr>
<td>Bus</td>
<td>0</td>
<td>279</td>
<td>1091</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>36</td>
<td>32</td>
<td>95</td>
</tr>
<tr>
<td>Walk</td>
<td>779</td>
<td>122</td>
<td>95</td>
</tr>
<tr>
<td>Cycle</td>
<td>300</td>
<td>73</td>
<td>180</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>32</td>
<td>0</td>
</tr>
<tr>
<td>Employed At IofD</td>
<td>1811</td>
<td>2445</td>
<td>7273</td>
</tr>
</tbody>
</table>

Table 5.2: Secondary Catchment's Demand – Base Year 2007

<table>
<thead>
<tr>
<th>Secondary Catchment</th>
<th>Walk</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Demand</td>
<td>12</td>
<td>82</td>
</tr>
<tr>
<td>Mode Transfer</td>
<td>120</td>
<td>23</td>
</tr>
<tr>
<td>New Trip</td>
<td>26</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 5.3: Tertiary Catchment's Demand – Base Year 2007

<table>
<thead>
<tr>
<th>Tertiary Catchment</th>
<th>Walk</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Demand</td>
<td>0</td>
<td>146</td>
</tr>
<tr>
<td>Mode Transfer</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>New Trip</td>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

5.1.4 The growth applied to the base 2007 year demand forecasts takes account of:
- The impact of the forecast population growth shown in Table 3.2; and
- Isle of Dogs employment growth shown in Table 3.3

5.1.5 Those two annual percentage rates are combined to determine the annual growth in demand. The base forecasts don’t allow for any change in the proportion of Rotherhithe residents that choose to work on Isle of Dogs.
6. Transport Benefits

6.1.1 The assessment of benefits is based on the comparison between the “with” and “without” bridge situations. That shows the benefits from introducing the bridge. Tables 6.1 to 6.3 describe the time savings produced (for the morning peak period) by comparing the “Do-minimum” scenario and the introduction of the bridge.

6.1.2 From Surrey Docks to the Isle of Dogs, average existing trips by JLE, the Ferry or through Rotherhithe Tunnel for pedestrians and cyclists take 28.6 minutes, 27.7 minutes, 45 minutes and 25 minutes respectively.

6.1.3 With the bridge, these journeys were timed at 23.4 minutes and 15.3 minutes for pedestrians and cyclists at an average walk time of 80 and 166 meters/minute respectively.

6.1.4 The resulting Time Savings were annualised and used to extract potential annual time savings benefits. We have assumed a non-work value of £5 per hour for all users.

6.1.5 For the secondary and tertiary catchment’s areas the same average benefits for pedestrians and cyclists have been used as for the primary catchment.

6.1.6 For the secondary and tertiary catchment’s areas the same average benefits for pedestrians and cyclists have been used as for the primary catchment.

6.1.7 Since analysis is carried out only for the morning peak period, it is necessary to annualize the results to generate values for the entire year.
6.1.8 The annualisation factors are 479 cyclists and 820 for pedestrians. The above factors represent the annual-to-peak period ratios for cyclists and pedestrian crossings on comparable bridges across the River Thames (Greenwich, Hungerford (North and South), Vauxhall and Millennium Bridges). The annualisation factors therefore change the focus from morning peak commuting trips to encompass leisure trips outside the peak periods.

6.1.9 In addition to the transport user benefits it is assumed that the bridge would eliminate the need for the current ferry services between Rotherhithe and the Isle of Dogs. That would result in an economic gain equivalent to the current operating costs of the ferry. It has not been possible to determine an accurate figure for this but a modest assumed saving of £150,000 per annum has been included in the benefits. It should be noted that the loss of fares to the ferry operator is balanced out by the savings to the former ferry passengers leaving only the operating cost saving as an economic gain.
7. **Appraisal**

7.1.1 The appraisal is based on comparing the benefits of the scheme to the costs. The changes in revenues have been ignored in this simple appraisal. Fare savings are assumed to be offset by reductions in operating costs in the case of the ferry (the ferry would almost certainly close when faced with competition from a free bridge). Revenue losses to LUL are assumed to be replaced fairly quickly given excess demand to use JLE to Canary Wharf from the west.

7.1.2 The Value of Time used is £5 per hour in 2007. This is consistent with the DfT national value of time for commuters (£5.04) higher than the leisure value of time (£4.50) and lower than the In Work Time value of (£35). This is a factor cost value of time. The Value of Time increases over time as earnings increase and for the purpose of this analysis we have assumed this growth to be at 1.75% per annum for 2007-2068.

7.1.3 Within standard transport appraisals the value of walk time is doubled, our opinion is that this is appropriate for walking elements of public transport trips but less so for a project looking at wholly walk/cycle trips. For many leisure walkers the walk is the point, not a cost that has to be borne to get somewhere else. Chapter 8 shows the effect of doubling the value of time.

7.1.4 Discount rates of 3.5% for the first 30 years and 3% for the next years have been used. This is standard practice based on DfT’s guidance for transport projects appraisal.

Table 7.1: Demand and Annualised Benefits

<table>
<thead>
<tr>
<th>Catchments</th>
<th>Demand (Trips/AM Peak)</th>
<th>Annualised Monetised Benefits (£’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Users</td>
<td>Cyclists</td>
</tr>
<tr>
<td>Primary</td>
<td>1202</td>
<td>278</td>
</tr>
<tr>
<td>Secondary</td>
<td>286</td>
<td>127</td>
</tr>
<tr>
<td>Tertiary</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>1,668</td>
<td>585</td>
</tr>
</tbody>
</table>

Table 7.2: Assumptions and Growth Factors

<table>
<thead>
<tr>
<th>V0fT Growth</th>
<th>Discount factor</th>
<th>Time Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.75%</td>
<td>3.5% from Year 1 to Year 30</td>
<td>60 Years</td>
</tr>
<tr>
<td></td>
<td>3.0% from Year 31 to Year 60</td>
<td></td>
</tr>
</tbody>
</table>

7.1.5 Mode share changes for car were used to determine the potential reduction in total car passenger kilometres within the primary catchments area. This gave the impact of the bridge on pollution reduction. A summary table of the total reduction in pollutants is given for reference.
Table 7.3: Reduction in Pollutants per Year

<table>
<thead>
<tr>
<th>Pollutants</th>
<th>Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide</td>
<td>0.35</td>
</tr>
<tr>
<td>NO's</td>
<td>0.06</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>0.06</td>
</tr>
<tr>
<td>Particulates</td>
<td>0.00</td>
</tr>
<tr>
<td>CO₂</td>
<td>10.90</td>
</tr>
</tbody>
</table>

7.1.6 It should be noted that this report looks only at the transport appraisal; it specifically does not include the impacts of the bridge on the wider benefits of:
- Integration;
- Safety;
- Accessibility; and
- Regeneration

7.1.7 Modest positive impacts on integration, accessibility and regeneration would be expected. The effect of shifting people away from the safer modes of public transport and cars onto the more dangerous walk and cycle modes would however be expected to increase accidents from a simple comparison of accident rates per kilometre. There are complications, depending on the extent of segregation from traffic of the walk and cycle routes to and from the bridge and the amount of walking involved in previous public transport trips, but overall the balance is still likely to be an increase in accidents.

7.1.8 This appraisal does not include valuations from public realm improvements. There would be public realm improvements derived from the project, but proposals have not been developed to an appropriate level of detail yet. It is very clear that the bridge would be a much more attractive route to use than either of the two existing tunnels. That gain is valued within the 5 minute penalty assigned to use of either of the existing tunnels by pedestrians and/or cyclists.

7.1.9 Judged on time savings, health benefits and ferry operating costs savings, the bridge shows a Benefit Cost Ratio of 1.3

Table 7.4: Project Standard Appraisal Results – Base Case

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Time Savings</th>
<th>Boat O/C Savings</th>
<th>Health Benefits</th>
<th>Total Benefits</th>
<th>Construction Costs (+44% Opt. bias)</th>
<th>Maintenance Costs (2%)</th>
<th>BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46.8</td>
<td>6.21</td>
<td>31.7</td>
<td>84.7</td>
<td>43.2</td>
<td>20.5</td>
<td>1.3</td>
</tr>
</tbody>
</table>

7.1.10 The above scenario reflects the present value of time saving benefits expected from the bridge on a 60-year service. The time savings are derived from the assumed 1668 trips (base year) including 585 cycle and 1083 pedestrian journeys during the morning peak period.
8. Sensitivity Test

8.1 Introduction
8.1.1 A number of alternative scenarios have been considered. These comprise:
1. A sensitivity test of optimism bias at 15% and 66% of scheme costs
2. Inclusion of the Sustrans amenity and absenteeism benefits and removal of the health benefits entirely
3. Double the value of time in line with standard transport appraisal guidance

8.2 Optimism Bias
8.2.1 This test considers the effect of a 15% increase in the capital costs on the economic appraisal. Result decreases the costs from £63.7M (£50.5M +£13.2M) to £55M (£50.5M + £4.5) and increases the BCR from 1.3 to 1.54.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Time Savings</th>
<th>Boat Op Costs Savings</th>
<th>Health Benefits</th>
<th>Total User Benefits</th>
<th>Construction Costs (+15% Optimism bias)</th>
<th>Maintenance Costs</th>
<th>BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46.8</td>
<td>6.21</td>
<td>31.7</td>
<td>84.7</td>
<td>34.5</td>
<td>20.5</td>
<td>1.54</td>
</tr>
</tbody>
</table>

8.2.2 This test considers the effect of a 65% increase in the capital costs on the economic appraisal. Result increases the costs from £63.7M to £70M (£50.5M +£19.5M) and decreases the BCR from 1.3 to 1.2.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Time Savings</th>
<th>Ferry Operating Costs Savings</th>
<th>Health Benefits</th>
<th>Total User Benefits</th>
<th>Construction Costs (+66% Optimism bias)</th>
<th>Maintenance Costs</th>
<th>BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46.8</td>
<td>6.21</td>
<td>31.7</td>
<td>84.7</td>
<td>49.8</td>
<td>20.5</td>
<td>1.2</td>
</tr>
</tbody>
</table>

8.3 Sustrans Benefits
8.3.1 Values used under this scenario are taken from the Sustrans document Economic Appraisal of Local Walking and Cycling Routes – Methodology. This defines average benefits per user for reduced absenteeism, improvements in journey ambience and changes in accidents level. It should be noted that at the time of the writing of this report, these values were not part of any official appraisal guidelines from DfT or TfL.
### Table 8.3: Other Sustrans Benefits

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Absenteeism (£/Trip)</th>
<th>Journey Ambience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustrans Benefits</td>
<td>0.0328</td>
<td>0.91</td>
</tr>
</tbody>
</table>

### Table 8.4: Sensitivity Test: Standard Transport + Sustrans Benefits

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Benefits</th>
<th>Construction Costs</th>
<th>Maintenance Costs</th>
<th>BCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>With all Sustrans Benefits</td>
<td>145.2</td>
<td>£43.2M</td>
<td>£20.5M</td>
<td>2.3</td>
</tr>
<tr>
<td>Excluding Health Benefits</td>
<td>£53M</td>
<td>£43.2M</td>
<td>£20.5M</td>
<td>0.8</td>
</tr>
</tbody>
</table>

8.3.2 With consideration of all Sustrans benefits, the scheme shows a higher BCR of 2.3

8.3.3 A sensitivity test that excludes health benefits from the base case decreases the BCR from 1.3 to 0.8.

8.4 **Doubling the Value of Time**

8.4.1 Increases the benefits from £84.7M to £131.5M and the BCR from 1.3 to 2.1.
9. **Conclusions**

9.1.1 This study was intended to prepare an outline economic appraisal of the proposed bridge in order to determine whether the scheme was worth pursuing further. That further work would need to encompass an engineering review of the scheme costs and a more detailed transport planning and demand forecasting study.

9.1.2 The following conclusions can be drawn from this work:

- Demand forecasting for a new bridge is difficult and uncertain. CB has presented a central case but it is recognised that there is a wide range around that central case. The key drivers of demand include: employment growth on the Isle of Dogs, population growth on the Rotherhithe Peninsula, the proportion of people living in Rotherhithe and working on the Isle of Dogs and the impact of the bridge on development rates and densities.

- On the narrow measure of transport user benefits against scheme costs the scheme has a BCR of more than one. That is a very positive finding given that many of the benefits of the bridge are difficult to place monetary values on.

- There are credible alternative assumptions which would significantly increase the BCR. These relate largely to the demand forecasts and development assumptions, to doubling the value of time for walk and cycle trips and to the additional or wider benefits which the bridge would be expected to deliver.

9.1.3 The initial priority should be a review of the costs, understanding the potential for lower cost alternatives and exploring the potential for private sector contributions towards the project.

9.1.4 The case for the proposed bridge would be enhanced by an understanding of its wider benefits. The bridge has the potential to increase local development both on Rotherhithe and on the Isle of Dogs as well as delivering environmental and health benefits.