THE MERSEY GATEWAY – A NEW MERSEY CROSSING

MAJOR SCHEME APPRAISAL
VOLUME 1
# THE MERSEY GATEWAY – A NEW MERSEY CROSSING

## MAJOR SCHEME APPRAISAL

### VOLUME 1

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**EXECUTIVE SUMMARY**

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EXECUTIVE SUMMARY

This Major Scheme Appraisal Report supersedes the previous report (B4027/MSA/01) submitted in July 2003. Following the announcement by the DfT in December 2003 that the project had been afforded “Super Work in Progress” status, further work has been carried out to address those issues that the DfT specifically requested additional information on, namely:

- Traffic impacts over the wider road network
- Economic Impacts
- Hydrodynamic Modelling
- Statutory Procedures and Procurement
- Consideration of tolling as a means to fund the new crossing

The scheme title has recently been changed from the “New Mersey Crossing” to the “Mersey Gateway” (most of the reports accompanying this submission still refer to the New Mersey Crossing)

Traffic Modelling

A very substantial piece of work has been carried out to extend the traffic model to encompass the existing alternative crossings of the River Mersey at Liverpool (the Mersey Tunnels), in Warrington and the M6 (Thelwall Viaduct). The SATURN model has been populated from ITIS data (GPS records of vehicle trips), ATC counts, and a number of other sources.

The model has generally confirmed the results produced by the previous local traffic model, and has indicated that the impact that a new crossing in Halton would have on the wider road network in the north-west region is not significant. The results are presented in four new reports: Transport Assessment; Traffic Survey; Model Validation; and Traffic Forecasting (including Induced Traffic).

An assessment of Transport Economic benefits has also been carried out using TUBA, and the proposed Mersey Gateway is forecast to realise over £1.4 billion NPV.

Economic Impact Assessment

The Economic Impacts have been reassessed in accordance with the revised DfT guidance. The assessment indicates that the following benefits will be realised if a new crossing of the River Mersey is constructed in Halton:

- 6,920 gross additional new jobs created
- 4,195 gross (3,315 net) new and existing jobs benefiting unemployed RA residents
- 95,360 sq m of additional new commercial floorspace
- 9.5 hectares of additional employment land uptake
- Benefits extend beyond Halton to the Mersey Belt, Cheshire and North Wales

The results of the assessment are presented in a new Economic Impact Report.
It should be noted that these results are not directly comparable to the 2003 Stage 1 results because of the differences in method used, the wider geographical area, and the different forecasting period.

Hydrodynamic Modelling

A second stage of more detailed hydrodynamic and morphological modelling has been carried out to address the concerns of the Acting Mersey Conservator, Environment Agency and English Nature regarding potential adverse changes to the hydrodynamic regime of the Mersey estuary which could arise as a result of the presence of piers within the tidal/intertidal estuary. The new mathematical model is much more refined in the region of the new crossing, dividing the flow into 10 layers (rather than 3) and reducing the mesh widths to approximately 5m (rather than 80m). The modelling is predicting significantly less change than was previously predicted by the coarse model for a bridge with 2 or 3 piers in the main estuary, and confirms that, in the operational phase, such an option would not have a significant impact on the existing regime. The modelling also confirms that a shorter span option with 10 or 11 piers in the main estuary would have a significant impact on the estuarine processes.

Further modelling is underway to assess the likely impacts during the construction phase. Meetings will be held early in the new year to discuss the modelling results with the consultees.

The results of the modelling are presented in a new Hydrodynamic Modelling Report. In addition, a Case Study report has been produced which considers other schemes across the world which have been constructed in tidal estuaries. The reports previously submitted have also been updated.

Statutory Procedures and Procurement

As requested, further work has been carried out to determine appropriate Statutory Procedures and Procurement options for this scheme. Discussions have been held with the relevant departments of the DfT and contacts from the Highways Agency.

The outcome of these discussions is that most appropriate procedures are considered to be the Transport and Works Act 1992 (TWA) for the main estuary crossing, the Highways Act 1980 for highways work outside the scope of the TWA, and a Road User Charging scheme if the crossing is required to be tolled.

An effective procurement strategy will be developed to ensure value for money to the public purse, and an equitable allocation of risk. The current proposed procurement process is traditional in the sense that it would follow on consecutively after the procedural stage. However, opportunities for innovation in this process will be taken where this can be justified and benefits obtained.

Financial Modelling and Tolling

Options for the procurement of the scheme have been assessed in accordance with the latest Treasury Value for Money guidance. The analysis shows that the scheme is viable, desirable and achievable as a PFI procurement, and offers quantitative value for money of £20m, or 13%, compared to the appropriate Public Sector Comparator.

Financial analysis indicates that a free-to-user bridge, which remains Halton’s preference and offers the best Net Present Value of benefits over costs, would require PFI Credit support of
some £512m, whilst a tolled scheme, structured as Halton propose so as to protect the interests of local residents dependent on the existing free-to-user Silver Jubilee Bridge, would require PFI Credit support of some £68m. In both cases Halton also require £64m to cover the nominal cost of land purchase, demolition and decontamination.

An approach and timetable for a PFI procurement has been developed by Halton. On the basis of the Secretary of States decision following statutory procedures being made in the third quarter of 2006, Financial Close is forecast for late 2008 and opening of the Mersey Gateway in Spring 2012.

**Route Development**

In addition to the above, further work has been carried out on the development of the preferred route alignment and design. The impact of these changes on the work previously submitted has been assessed and is summarised in this submission.

**Environmental Impact**

It has been recognised that some amendments are required to the Technical Reports previously submitted, and these changes are summarised in a new report “Amendments to Technical Reports”.

**Appraisal Summary**

The need for a new crossing of the River Mersey at Halton has been identified through the numerous studies that have taken place over the years. The latest tranche of assessments has identified the most suitable solution as being a new bridge on a route linking the Central Expressway to the south of the river, with the Ditton Road interchange to the north. The estimated cost of this project is approximately £250 million at 2002 prices (excluding risk and optimism bias) but including a provision for tolling facilities, and it is estimated that this will realise over £1.4 billion of net present value.

Current problems in Halton, which the Mersey Gateway will address, can be categorised into four broad headings:

- **Economics and Regeneration** - businesses suffer from a loss of trade, delayed business trips, deliveries to be held up, and there are reduced incentives for investment in the area.

- **Social Impact** – the area suffers from severe deprivation and is amongst the worst deprived in the UK.

- **Traffic** – The Silver Jubilee Bridge carries in excess of 90,000 vehicles per day. Only 20% of those are local traffic movements with origins and destinations inside the borough. Only one third of those trips are made by residents of Halton

- **Transportation** – the congestion on the bridge makes public transport unreliable, and walking and cycling provision is very poor and often dangerous.

Alternatives to the crossing have been assessed: park and ride, rail, light rail, High Occupancy Vehicles (HOV) lanes and buses have been examined closely to assess whether there is a real
need for a new crossing. None were found to perform adequately enough to make a positive contribution to overcoming the accessibility and socio-economic issues identified in Halton.

The Silver Jubilee Bridge (so named in 1977) carries in excess of 90,000 vehicles a day, of which only 20% is purely local, on 4 sub-standard lanes and demand outstrips capacity for large parts of the day. The bridge has poor facilities for pedestrians, no safe provision for cyclists and no segregated or priority provision for public transport on the bridge itself. This therefore severely restricts the development of integrated and sustainable transport strategies.

This constraint is likely to hamper the growth of major development areas, such as Speke/Garston, Omega, Daresbury and Widnes Waterfront.

One key issue that the Mersey Gateway must address is the promotion of an integrated transport strategy. The most attractive corridor for cycling and walking is the route of the Silver Jubilee Bridge as this links local destinations, which in turn have evolved around this crossing point. It is an essential requirement of the new crossing that it attracts enough strategic traffic from the Silver Jubilee Bridge to permit it to be reduced to two lanes of vehicular traffic. Only by doing this will it be possible to reallocate some of the deck space to a dedicated facility for pedestrians and cyclists. The use of public transport can be encouraged by giving such services priority access to the traffic carriageway.

The Mersey Estuary is tidal and, downstream of the Runcorn Gap, it is a site of international importance ecologically, being designated as a Site of Special Scientific Interest (SSSI) by English Nature, a Ramsar Site, a Special Protection Area for Birds (SPA) and a European Marine Site. In general, the area has an industrial history, with the potential for, or with evidence of, contamination. Site investigations have found contamination in made ground and in natural sediments of the saltmarshes. The estuary has also suffered from a legacy of water pollution over the last century.

The new crossing proposals conform with national and regional planning objectives. Locally, the crossing has been identified as one of Halton’s key strategic policies and is a prime objective of the Local Transport Plan (LTP). The crossing will also aid the strategic policies of the “Building a Better Future” corporate plan for the Borough of Halton.

In total, seven crossing routes have been considered, including a tunnel. Following a high level consideration of the key issues, strategic traffic transfer and environmental effects, the remaining options have been assessed in accordance with the Government’s New Approach to Appraisal (NATA) and Appraisal Summary Tables (AST) produced for each.

Some assessments do not fit well within the ASTs, and have been considered separately. The Social Impact Assessment clearly emphasises that the crossing is essential to help resolve the social deprivation experienced by this region. The Economic Impact Assessment has shown clear benefits and the regeneration potential that the Mersey Gateway will spark.

Wide-ranging consultations have been carried out with residents, employees and businesses and travellers. Public opinion is firmly on the side of the new crossing, with over 97% of those questioned agreeing that there is a need for this project to go ahead. Consultations with English Nature, the Environment Agency, the Countryside Agency, the Acting Mersey Conservator, and English Heritage have also been carried out.
The outcome of the assessment is the realisation of the preferred route. The preferred route links the Central Expressway in Runcorn via a free flow grade separated junction, across the Mersey in a generally north westerly direction, passing west of the Rhodia works, and via a short link road to Speke Road at Ditton Roundabout in Widnes.

The project has been the subject of a quantified risk assessment exercise, and the costs have been developed in accordance with the Government’s new criteria on Optimism Bias. Sensitivity testing has also been carried out.

A lower cost alternative has also been assessed and an AST provided: In determining the preferred route, two alternative span options have been considered. The more expensive longer span option has been selected as the preferred option, and the short span option as a lower cost alternative as the assessment shows that the shorter spans result in greater environmental impact with a higher financial risk. The assessment shows that the lower cost proposal would not realise the benefits of the preferred scheme.

The new crossing will be the subject of ongoing monitoring through both informal means and through the points indicated in a formal monitoring register.

Conclusion

The Mersey Gateway will bring substantial benefits to the north-west region, will meet all the required national, regional and local objectives, and will kick-start the regeneration that the area so desperately requires.
MAJOR SCHEME APPRAISAL CHECKLIST

The checklist below is extracted from the Transport Analysis Guidance TAG Unit 1.4, which indicates the required documentation that should be submitted with this Major Scheme Appraisal.

A list of all the reports which form this Major Scheme Appraisal submission is included in Appendix C. Column 2 of the checklist below indicates the report number in which the relevant information can be found.

**Scheme Description:**

<table>
<thead>
<tr>
<th>Clear description of all the scheme options which have been assessed</th>
<th>TR27/01</th>
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</thead>
<tbody>
<tr>
<td>Evidence that a number of realistic alternative options have been seriously considered</td>
<td>TR27/01 and Volume 1 of MSA Report</td>
</tr>
</tbody>
</table>

A fully worked up credible lower cost alternative:

| With a comprehensive AST, TEE tables, and AMCB table | Volume 1 of MSA/02t |
| With scenario and sensitivity testing | |
| With supporting analyses | |

Breakdown of the cost estimate

| TR17/01 and TR17/02 |

Costs in expected values (or include an allowance for risk)

| TR17/01 and TR17/03 |

Cost profile of the anticipated out-turn costs

| Volume 2 of MSA/02t |

**NATA Assessment:**

<table>
<thead>
<tr>
<th>The following Statutory Bodies consulted: (And their responses included)</th>
<th>TR16/01 and TR16/02</th>
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<tbody>
<tr>
<td>English Nature</td>
<td></td>
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<tr>
<td>The Environment Agency</td>
<td></td>
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<tr>
<td>English Heritage</td>
<td></td>
</tr>
<tr>
<td>The Countryside Agency</td>
<td></td>
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</tbody>
</table>

Assessment of Environmental impacts

| EIA/01 to EIA/06 and Technical Reports |

Assessment of Safety impacts and the assumed accident rates presented

| TR26/01 |

Assessment of Economic impacts

| TR13/01 and TR13/02 |

Assessment of Accessibility impacts

| Volumes 1 and 3 of MSA/02 |

Assessment of Integration impacts

| Volumes 1 and 3 of MSA/02 |

A comprehensive Appraisal Summary Table

| Volume 1 of MSA/02 |

The following supporting analyses:

<p>| Volume 1 of MSA/02 |
| --- | --- |
| Distribution and Equity | |
| Affordability and Financial Sustainability | |</p>
<table>
<thead>
<tr>
<th>Practicality and Public Acceptability (Evidence of public consultation supplied)</th>
<th>Volume 1 of MSA/02, TR16/01 and TR16/02</th>
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<tbody>
<tr>
<td>Contribution to 10 year plan targets</td>
<td>Volume 1 of MSA/02</td>
</tr>
<tr>
<td>GOMMMS worksheets</td>
<td>Volume 3 of MSA/02</td>
</tr>
</tbody>
</table>

**Risk:**

- A Risk Register
- A full risk assessment

**Cost Benefit Analysis:**

- A clear explanation of the underlying assumptions used in the Cost Benefit Analysis (TR25/02)
- A full description of the do-minimum (TR23/02)
- Information on local factors used. For example the derivation of growth factors, M factors in COBA and annualisation factors in TUBA (TR23/02)
- A diagram of forecast traffic flows for the do-minimum and scheme options, for affected corridors (TR23/02)
- A diagram of network (COBA) or zone plan (TUBA) (TR25/02)
- Information on the number of junctions modelled if COBA used for both the do-minimum and do-something (COBA not used)
- Information on the split of the travel time benefits between junctions and links (TR23/02 and TR25/02)
- Information on the level of journey time saving by modelled period (flow group in COBA) (TR25/02)
- Details of maintenance delay costs/savings (TR25/02)
- Details of delays during construction (TR25/02)
- If the model includes very slow speeds or high junction delays evidence of their plausibility (TR22/02)
- An explanation of any high forecasts of flows above road capacity, especially for the do-minimum, and how these are accounted for in appraisal (TR22/02)
- An assessment of induced traffic, as per DMRB 12.2.2. If a variable matrix has not been used, full justification will be needed (TR22/02)
- A spreadsheet showing how the TEE table was derived and/or TUBA/COBA inputs/outputs (TR25/02)

**Modelling:**

- A local model validation report including:
  - An existing data and traffic surveys report (TR21/02)
  - A diagram of the traffic model network and zone plan (TR22/02)
<table>
<thead>
<tr>
<th>Network validation information including range checks, link lengths, route checking, and journey times for critical movements</th>
<th>TR22/02</th>
</tr>
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<tbody>
<tr>
<td>Trip matrix validation</td>
<td>TR22/02</td>
</tr>
<tr>
<td>Present year validation if the model is more than 5 years old</td>
<td>N/A</td>
</tr>
<tr>
<td>A diagram of existing traffic flows, both in the immediate corridor and other relevant corridors</td>
<td>TR22/02 and TR23/02</td>
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</table>

**Scenarios/Sensitivity Testing:**

<table>
<thead>
<tr>
<th>Optimistic and Pessimistic scenarios</th>
<th>Volume 1 of MSA/02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate sensitivity testing (as outlined in the Appraisal Guidance)</td>
<td>Volume 1 of MSA/02</td>
</tr>
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</table>

**Monitoring and Evaluation:**

| Plans for Monitoring and Evaluation have been outlined / considered | Volume 1 of MSA/02 |
1. INTRODUCTION

1.1 Scheme Title

The scheme is known as the “Mersey Gateway – A New Mersey Crossing”

1.2 Scheme Location

The scheme is located in the Borough of Halton in the North West of England as shown in Figures 1.1a/b/c. The National Grid Reference is Easting 352629, Northing 384210.

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**Figure 1.1a Halton Borough in the UK**

**Figure 1.1b Halton Borough in the North West**

**Figure 1.1c Map of Halton Borough**
1.3 Scheme Promoter

The scheme promoter is Halton Borough Council, acting on behalf of the Mersey Crossing Group. The Mersey Crossing Group is a consortium of:

- Halton Borough Council
- Liverpool City Council
- Knowsley MBC
- St Helens MBC
- Sefton Council
- Wirral MBC
- Warrington Borough Council
- Cheshire County Council
- Merseytravel
- English Partnerships
- Halton Chamber of Commerce & Enterprise
- Liverpool Chamber of Commerce and Industry
- Peel Holdings
- Highways Agency
- Northwest Development Agency
- North West Regional Assembly
- The Mersey Partnership

1.4 Background

A number of studies on the feasibility of a new crossing of the river Mersey in Halton have been undertaken since 1978. In July 2001, Halton BC appointed Gifford and Partners as Project Manager and Lead Consultant to undertake the further studies necessary to take the project forward.

A substantial body of work has been undertaken since 2001 on the project, including design, investigation of funding options and environmental studies. The work has culminated in the production of a series of reports, which are listed below.

The work undertaken to March 2003 focused on comparing potential options for a new crossing. In March 2003, Halton Borough Council and the Mersey Crossing Group voted unanimously for a preferred route upstream of the existing Silver Jubilee Bridge as shown in Figure 1.2.
A Major Scheme Appraisal (MSA) for the preferred scheme was submitted to the Department for Transport (DfT) in July 2003 with Halton Borough Council’s Local Transport Plan APR to apply for Central Government funding. In December 2003, the DfT responded by awarding the scheme “Super Work in Progress” status and requesting further information on the following issues:

- Traffic impact over the wider road network
- Hydrodynamic modelling
- Economic Impacts
- Statutory Procedures and Procurement
- Funding Options – consideration of tolling as a means to fund the new crossing

In addition, consultants Arups were commissioned by the DfT to carry out a review of the MSA and comments were received in Arups Report “Review of Economic Appraisal of the New Mersey Crossing”, March 2004.

In January 2004 the project team was strengthened by the addition of KPMG (financial advisors) and Herbert Smith (legal advisors).

Since December 2003, work has been carried out to address the additional information required by the DfT and the comments from Arups culminating in the production of a number of additional reports as indicated below.
1.5 This Report

This report comprises Volume 1 of 3 of the Major Scheme Appraisal. This report supersedes Report No B4027/MSA/01 Volumes 1 and 2, July 2003. Volume 2 of this report contains the commercial submission produced by KPMG, and Volume 3 contains the worksheets.

Section 2 introduces the policy context for any scheme and sets out the accessibility and socio-economic issues identified in Halton. It also shows how these issues are having a significant impact on the regeneration of the area and the quality of life of the local community.

In Section 3 broad concepts are considered and the provision of a new additional fixed link in the form of a new bridge, was considered the best solution in order to contribute to resolving the accessibility and socio-economic issues identified in Halton, and to present an opportunity to improve local transport integration and sustainability.

Section 4 then assesses potential route options for a new bridge against scheme and national objectives. From this assessment a preferred route (Route 3A) was identified, which provided the best balance between environmental impact, transport economic benefit and cost.

In Section 5 the scheme is developed further in terms of fine tuning its alignment and further definition on the design. This developed preferred option is then re-appraised against DfT criteria.

Based on the preferred route developed in Section 5, a lower cost option was defined and is assessed in Section 6, then compared with the preferred route option.

Based on the preferred route developed in Section 5, the potential for the introduction of tolling is considered in Section 7, and compared with the preferred route option un-tolled.
2. CONTEXT

2.1 Objectives

2.1.1 Government Objectives

It is considered that any scheme proposed must meet the five key objectives as laid down by the Department for Transport in A New Deal for Transport. These are:

- Integration – proposal must be part of an integrated transport policy
- Safety – to improve safety for all road users
- Economy – supporting sustainable economic activity in appropriate locations and getting good value for money
- Environmental Impact – protecting the built and natural environment
- Accessibility – improving access to everyday facilities for those without a car and reducing community severance

These key criteria will form the basis for the assessment of any measures proposed to resolve the issues Halton faces, as defined below.

2.1.2 Regional/Local Objectives

It is recognised that whilst the Department for Transport’s criteria form the necessary framework for appraisal, there is also a need to translate these criteria into objectives which, whilst clearly nested within the Department for Transport criteria, provide the necessary local/regional focus against which any proposals can be assessed.

Halton Borough Council, in consultation with the Mersey Crossing Group, has defined the following objectives for any scheme proposed:

- To relieve the Silver Jubilee Bridge, thereby removing the constraint on local and regional development and better provide for local traffic needs.
- To maximise development opportunities.
- To improve public transport links across the river.
- To encourage the increased use of cycling and walking.

For any scheme to be successful it must:

- Fulfil each of the above Mersey Crossing Group objectives;
- Fit its environment and;
- Be economically viable

Clearly these objectives fit within the Department for Transport key criteria, and if met, will contribute to the attainment of the Department for Transport criteria within the local, regional and national contexts.
2.2 Current Socio-Economic Issues in Halton

2.2.1 Social Overview of Halton

In 1974, Runcorn and Widnes, located either side of the River Mersey, were united under Halton Borough, which then became a Unitary Authority in 1998. Prior to that, the Borough had been a District within Cheshire. The opening of the Silver Jubilee Bridge in 1961 and the combination of these two communities under Halton Borough Council was intended to remove the physical and social divide created by the Mersey.

The 2001 Census showed that the borough has a population of 118,200.

The 2004 update of the *Index of Multiple Deprivation 2000* revealed that Halton was ranked as the 21st most deprived local authority in England and 5th in the North West for its average of Strategic Output Area (SOA) Ranks. 39 of Halton’s 59 SOAs are included in the top 20% most deprived SOAs in England, which represents 50% of Halton’s total population. This suggests that deprivation is widespread across the whole of Halton, rather than being concentrated within small pockets.

Traffic flows on the Silver Jubilee Bridge are shown to exceed capacity at peak times, which is thought to be a constraint on the development of the local and sub-regional economy. Businesses suffer from congestion associated with the current bridge, which can often cause:

- a loss of trade
- delayed business trips
- employees to arrive to work late
- employees to return home late
- deliveries to be held up
- reduced incentives for investment in the area
- difficulties in cross-river staff recruitment

The net effect of this is that businesses are not likely to be attracted to Halton and employment rates are likely to remain low.

Halton has identified key areas for the focus of regeneration in the future, which include Ditton Rail Freight Village, Widnes Waterfront and Castlefields.

Further information on the Social characteristics of Halton can be found in Technical Reports B4027/TR12/01 – Social Impacts and B4027/TR12/02 – Social Impacts of Tolling.
2.2.2 Economic Overview of Halton

An Economic Impact Assessment has been undertaken and is presented as Technical Reports B4027/TR13/01 and B4027/TR13/02 – Economic Impacts.

Economically, Halton is deprived. Within the sub-regional area, are parts of the North West region exhibiting some of the most acute levels of social and economic deprivation in England. The updated IMD puts the Merseyside districts of Liverpool and Knowsley in the top three of the most deprived local authorities.

As a consequence of this, work is underway to regenerate this region. Below is a summary of the key projects currently being undertaken, with Figure 2.1.

![Regeneration sites in and around Halton Borough](image)

**Figure 2.1 Regeneration sites in and around Halton Borough**

a) **Widnes Waterfront**

The New Widnes Waterfront Vision will become part of the North West’s most strategically important “Metropolitan Axis” along the M62 Corridor with the “Southern Crescent” along the M56. Sites that have been unused for years will be regenerated into a major regional development of commercial offices, tourist and leisure facilities and industrial developments.

Improvements to public transport together with new cycleways and pedestrian routes around the New Widnes Waterfront Vision area will be at the heart of the new developments, opening up new opportunities as the area is developed.
As it is developed over the next six years the Halton Partnership will utilise £8m of European Regional Development Funds to lever a further £70m of investment into the project. The project will create over 2700 new jobs in Widnes.

b) Ditton Freight Terminal

In 1999, the Merseyside Freight Study was commissioned. The study examined ways to add to economic growth for Merseyside through the freight industry. It examined more than 50 sites potentially suitable for freight-related developments, including the emerging concept of “freight villages”, significant clusters of distribution uses making particular use of rail/water connections.

The strategy selected 4 of the 50 sites, and included Ditton. They saw potential at Ditton for the development of a major freight village incorporating the two existing inter-modal users, bringing redundant land into play and creating a new road link to the A5300 Knowsley Expressway. This recommendation was followed up by a preliminary approach from potential developers to explore the prospects for this kind of development. It appears from the market perspective that the Ditton location is highly suited to the freight village concept, with ultimate potential for as much as 300,000sq m of floor space, linked to substantial new sidings capable of handling European “trainload” volumes of freight.

c) Speke/Garston

Speke Garston Development Company is a joint venture established by English Partnerships and Liverpool City Council in 1996 to assemble land and create a portfolio of sites for modern industrial and service industry use. It is a specialist urban regeneration delivery vehicle working in partnership with other specialist organisations to bring about the comprehensive economic, social and physical regeneration of the Speke Garston area.

As a result, Speke Garston is one of the most exciting regeneration areas in the UK. A massive capital programme and significant inward investment is supported by an innovative approach to Community Engagement, Educational Achievement and Cultural Development.

The Speke Garston area suffers from high levels of social exclusion due to above average occurrence of poverty, unemployment, ill-health and educational under attainment.

d) Omega

Omega is a commercial business park development opportunity of international significance. The 226-hectare (558-acre) site will have direct motorway access, and has the potential to accommodate some 650,000 sq m of development space and more than 12,000 jobs.

The master plan allows for a high quality business park, primarily offices, with some allowance for distribution on the area of the site to the north side of the M62. Building and infrastructure costs of the development will amount to around £600m, in addition to the estimated £28m cost of the new M62 Junction 8.

The site is owned by English Partnerships and development is likely to continue over the next 20 years.
Target sectors for Omega include pharmaceutical/medical, IT/data sciences, biotechnology, telecoms and advanced automotive.

e) Daresbury

Daresbury is vital to the future economic prosperity of the Northwest region and Merseyside. There are three sites at Daresbury, which collectively represent a massive existing investment in scientific research and high technology, and great potential, alongside the development of production capability at Speke Garston, for leading the region into the further development of knowledge based industries. The three sites are:

- The existing Daresbury Laboratory in which the Government has agreed a substantial investment in the CASIM project (Centre for Accelerator Science, Imaging and Medicine) – a partnership between Daresbury, North West Universities and the Health sector, which will ensure Daresbury provides a next generation research capability.

- Immediately adjacent to the laboratory is the Daresbury Science Park, a 13-acre greenfield site, acquired by North West Development Agency, and currently under development which will exclusively provide incubator units for spin out businesses from the laboratory. The potential is for 72,000 m² of premises and 750 jobs.

- Daresbury Park is one of North West Development Agency designated strategic sites immediately adjacent to junction 11 of the M56 motorway. This private sector development of a high quality office park is already well underway. Three buildings are already built and occupied and a further two are under construction, totalling over 80,000m². The plan for Halton's prestigious Daresbury Park development envisages around £220 million of investment over the next fifteen years and the creation of 1.6 million square feet of new office space. This will potentially result in 12,000 new jobs.

2.3 Current Transport & Other Policies


This ground-breaking strategy document details the actions required by key northern stakeholders, including the three Northern RDAs, to reduce the £29m output gap between the three Northern regions and the rest of the UK. The document was submitted to ODPM in September and within its detailed recommendations includes a recognition of the strategic importance of the Mersey Gateway project, see extract below:

C8 Create Premier Transit Systems In Each City Region And Stronger Linkages Between City Regions

The North is at the heart of Northern Europe; it stands at the national crossroads of the UK strategic road and rail routes, both North-South and East-West. The future prosperity of the North depends on continued investment in improving our road and rail connections with our customers and our suppliers; and between and within our city regions. We will therefore seek to develop a prioritised network of reliable and fast rail and road links between all our
city regions, in partnership with Government. In addition to the linkages detailed below, we will be pursuing and prioritising other key projects such as the Second Mersey Crossing.

2.3.2 Liverpool John Lennon Airport

The Airport’s Surface Access Strategy updated in April 2004 continues to identify the issues of congestion on the Silver Jubilee Bridge and support the Mersey Gateway project as follows:

“The Airport Company supports the proposal for the New Mersey crossing at Runcorn and recognises the need for improved public transport links to/from the Airport using this corridor.”

2.3.3 A New Deal for Transport: Better for Everyone; Transport 2010: The 10 Year Plan

The Government’s White Paper of July 1998 and the subsequent 10 Year Transport Plan of July 2000 set out a strategic vision for transport against a background of Government long term commitment to increasing transport expenditure. The proposal for Mersey Gateway is set firmly in the context of the Government’s integrated transport policies. Traffic congestion is tackled through an integrated approach of new infrastructure that will provide improvements for cars, HGVs, buses, cyclists and pedestrians. Future demand will be managed through Road User Charging leading in the longer term to new routes for both heavy and light rail.

2.3.4 The Future of Transport

This White Paper published in July 2004 updates The 10 Year Plan building on the earlier themes and continues to fit with the Council’s strategy for the Mersey Gateway.

2.3.5 Regional Planning Guidance and the North West Regional Transport Strategy

Regional Planning Guidance for the North West was published in March 2003. It contained the Regional Transport Strategy that identified the route across the Silver Jubilee Bridge from M56 to Liverpool John Lennon Airport as a Strategic Access Route. It also identified the Mersey Crossing Study as Regionally Significant. A draft Partial Review of RPG was published in March 2004. This had included a review of the Transport Strategy in which the crossings of the Mersey continued to be identified as Transport Issues of Regional Significance. The transport partial review is now to be subsumed into the drafting of a North West Regional Spatial Strategy that is planned to be available during 2005.

2.3.6 Mersey Belt Study – North West Development Agency (May 2002)

Chapter 4, Transport Priorities to Support the Target Sectors includes a number of references to the Mersey crossings issue:

“There are road links to the M56 across the Runcorn Bridge and to the M62 at Tarbock. Both suffer from peak period congestion.” “It is clear that additional river crossing capacity at or near Runcorn would significantly improve the connection between the Southern Crescent, Speke Garston and Liverpool City Centre. We also support the proposed highway improvements and recommend that the development potential of Speke Garston be given due weight in the assessment of options for a Second Mersey Crossing.” We have mentioned the severance effects of the River Mersey and Manchester Ship Canal crossings.
in Warrington and have referred to the transport benefit of a Second Mersey Crossing to the Speke Garston area.

2.3.7 Halton Unitary Development Plan

Strategic Policy S14 A New Crossing of the River Mersey:
A scheme for a new crossing of the River Mersey, east of the existing Silver Jubilee Bridge will be promoted to relieve congestion on the existing bridge as part of an integrated transport system for Halton and the wider regional transport network.

2.3.8 Local Transport Plans

The crossing of the Mersey between Runcorn and Widnes is identified as the single biggest transport issue facing the Borough in Halton’s Local Transport Plan 2001/02-2005/06. The issue is the major theme of the LTP and the major scheme for a new crossing is proposed. The LTP sets the scheme firmly in the context of Halton’s integrated transport policies. Traffic congestion is tackled through an integrated approach of new infrastructure that will provide improvements for cars, HGVs, buses, cyclists and pedestrians. This theme continues to be the dominant issue in the subsequent Annual Progress Reports. Support for the project features strongly in the LTPs and APRs of the neighbouring authorities i.e. Merseyside, Warrington and Cheshire.

2.3.9 Liverpool City of Culture

In 2008 Liverpool will be the European Capital of Culture. Employment in the sectors of culture, tourism, sport, heritage and creative industries within the region, is expected to grow by at least 14,000 jobs. In addition, there would be an extra £220 million of expenditure by tourists up to and beyond 2008. The Mersey Gateway, which could be under construction by 2009, will provide an important gateway to Liverpool and will support and complement the growth and regeneration expected from the initiatives that have been organised for the Capital of Culture year and beyond.

2.4 Opportunities & Constraints

2.4.1 Physical Issues

The key physical constraint is the River Mersey, which forms a natural barrier to north-south land movements, both within the Halton area and for wider regional and national trips. There are limited crossing points over the Mersey, resulting in focussed demand for the use of these crossings. In Halton the barrier effect of the river is further increased by the adjacent man-made water course in the form of the Manchester Ship Canal.

The landscape either side of the Mersey within the Halton area is a mixture of undulating hills and flat low lying floodplain areas. Land use is mixed, but predominately built-up especially along the banks of the river. The main foci for activity in the Halton area are the towns of Runcorn and Widnes, located either side of the Mersey, connected by the Silver Jubilee Bridge.

These towns and associated industrial areas do not have any unusual land-use patterns as such, albeit land-use is strongly influenced by the presence of the river.
Figure 2.2 provides an overall view of the Halton area, with respect to physical form and land-use patterns.

Figure 2.2 Detailed map of Halton Borough area

2.4.2 Institutional or Legal Constraints

With regard to transport related activities, there are few specific institutional or legal constraints acting within the Halton area beyond the normal bounds of:

- Interface between publicly maintained highway and private interests/operators
- Private and public land ownership
- Private public transport provision with public support
- Integration between transport, economic and environmental policies

2.4.3 Environmental Constraints

a) Hydrology

The Upper Mersey Estuary is characterised by a series of channels, which show lateral movement, and sand banks which are exposed twice daily by the tidal rhythm, and which are sometimes never covered by the tides. In the study area, the sub-tidal channels have decreased in depth and width, whilst the intertidal/supratidal areas have accreted vertically.

In common with many other UK estuaries, the Mersey Estuary has been infilling over time. Over the last several hundred years the estuary has been subject to substantial anthropogenic modification. As a whole, the estuary has not reached an equilibrium form. In the future, the general trend for siltation in the study area is likely to continue, with the rate of siltation dependent on the balance of marine to fluvial sediment supply.
b) Terrestrial Ecology and Birds

The Mersey Estuary to the west of the existing bridge is of national and international nature conservation importance for its estuarine habitats and associated birds and other wildlife. It is designated as a Site of Special Scientific Interest (SSSI) by English Nature, Ramsar Site, Special Protection Area for Birds (SPA) and European Marine Site.

The Mersey Estuary is important for seven regularly occurring species of wintering wildfowl and wading birds. The Estuary also contains large areas of salt-marsh with extensive sand-flats and mud-flats, which are important for feeding and roosting wildfowl and waders. The intertidal areas are Priority Habitats in the UK Biodiversity Action Plan. In addition, the power station lagoons, adjacent to the estuary at Fiddler’s Ferry, attract many maritime and other bird species including large numbers of wildfowl and waders associated with the estuary.

Other important habitats and sites in the area of the proposed Mersey Gateway are as summarised below:

- The Manchester Ship Canal Bank at Astmoor Site of Importance for Nature Conservation (SINC) is important for its colonies of orchid species, including Bee Orchid, and other unusual plants of lime-rich soils such as Grass Vetchling, and butterflies.
- Haystack Lodge SINC is an area of grassland, tall-herb vegetation, scrub and copses, which is of particular importance for its plants, butterflies and moths.
- The Disused St Helens Canal Grade SINC is of county importance for its reedbeds and aquatic wildlife that includes Water Voles, birds, fish, dragonflies and other invertebrates. The reedbed is a Priority Habitat and protected species are present.
- Norbury Wood and Marsh SINC is valuable for its wetland vegetation, plants, Water Voles, breeding birds including a heronry, and butterflies. Associated with this urban fringe site is Oxmoor Nature Reserve that includes open water habitats and reedbeds.
- Lodge Plantation SINC is a broadleaf plantation woodland that is important in an urban context for its developing Bluebell colonies and ponds that support Great Crested Newts.

c) Aquatic Ecology

Generally, low numbers and few species of invertebrates have been found living in the estuarine sediment. However, high numbers of shrimps and juvenile fish were recorded living on the sediment surface. These animals move with the tides and are thought to provide food for larger fish including flounder, herring, sand goby and pipefish. The upper Mersey Estuary acts as a nursery for estuarine fish with different species inhabiting the area at different times of the year. Furthermore, the small shallow depressions on Astmoor Saltmarsh hold water at low tide and contain large numbers of small fish including sand goby and sea bass.
d) Soils, Geology, Groundwater and Contamination

The geology in the study area consists of made ground overlying glacial deposits that have formed across the study area, except parts of Wigg Island & Astmoor Salt Marsh, the Mersey Estuary (and at the existing Silver Jubilee Bridge) and parts of Runcorn (close to the Manchester Ship Canal). These glacial deposits comprise of glacial till (boulder clay) and sands & gravels. Alluvial material, associated with the River Mersey, is present on the salt marshes and the sand banks. Bedrock in the area is comprised of red sandstone.

In general the study area has an industrial history with the potential for, or with evidence of, contamination. Site investigations found contamination in made ground and in natural sediments of the saltmarshes.

On the northern side of the river, the part of Widnes covered by the study area was historically used predominantly for heavy industry, with numerous chemical works noted on historical maps prior to the 1960’s.

To the south of the river, in Runcorn, there is evidence of industrial development with chemical and other industrial land uses around the southern end of the existing crossing and along the northern side of the Manchester Ship Canal.

Analysis of soil samples from the study area indicates elevated concentrations of contaminants in the made ground in Widnes and Wigg Island (Runcorn). A broad range of contaminants were noted, which appear to be related to historical activities including the following:

- Numerous alkali works – contaminants may include sulphides, metals (e.g. arsenic, copper and zinc) and extreme pH values
- Other chemical works – covering a wide range of potential contaminants depending on processes and quantities of waste, but includes chlorides, metals, organic solvents, cyanides, phosphates and pesticides
- Gas works – metals, cyanides, sulphur compounds, ammonium salts, phenols, benzene, PAHs, alkaline/acidic wastes, and ground gas (methane, carbon dioxide, hydrogen sulphide, hydrocarbons, hydrogen cyanide and ammonia)
- Railway land – this includes existing land and numerous railway lines shown on historical OS maps, where contaminants may include metals, creosote, petroleum hydrocarbons, solvents, pesticides and asbestos
- Demolition (all sites) – potentially wide range of contaminants dependent on site use
- Landfills – there are a number of areas where land-filling and land-raising has been identified on, or adjacent to the proposed routes. This includes the Johnsons Lane Tips on the northern shore of the Mersey and historical tipping on Wigg Island in Runcorn.
e) **Surface Water Quality**

The Mersey Estuary has suffered from a legacy of water pollution over the last century. This legacy is attributed to inadequate sewage treatment facilities, poor storm water retention resulting in frequent sewage discharges from combined sewer overflows, industrial discharges and runoff from agriculture and contaminated land. As a result of these factors the Mersey estuary has obtained a reputation of being one of the most polluted waterways in Europe.

However, since the mid 1980’s the water quality within the estuary has been slowly improving as a result of improved sewage treatment facilities, a reduction in industrial discharges, changes in permissible discharges and also as a result of the Mersey Basin Campaign (launched in 1985).

f) **Air Quality and Climate**

No Air Quality Management Areas have been designated in Halton as it is thought that air quality objectives, specified in the Air Quality Strategy (2000) and Amended Air Quality Regulations (2002), are likely to be achieved. Past studies carried out by Halton Borough Council suggested the possibility of some localised elevated levels of NO₂ and PM₁₀. Following *A Review and Assessment of Air Quality* in November 1999 and air quality monitoring in 2000 and 2001, it was shown that objectives for NO₂ and PM₁₀ would also be achieved. If local air pollution were to exceed the air quality objectives it is likely that the human health of individuals and families in surrounding areas would be at risk. Of particular concern would be vulnerable members of the surrounding population such as the elderly and those of poor health.

g) **Landscape and Visual Amenity**

The landscape of the study area has not been formally classified as being of either national or regional significance but is nonetheless of considerable importance on a local and probably sub-regional context. Within the study area the following four distinct landscapes have been identified:

- The expanse of salt marsh, mudflats, sand banks and tidal channels which characterise the area between the Silver Jubilee Bridge and Fiddlers Ferry Power Station.

- The degraded industrialised margins of the estuary containing the Manchester Ship Canal, St Helens Canal, road and rail corridors and industrial units of varying scales.

- The north facing slopes of Runcorn and Halton containing mixed urban development which overlook the estuary and culminate in the focal / vantage point of Halton Castle.

- The townscape communities of Runcorn Old Town and West Bank, Widnes (part of which is a Conservation Area) which, in contrast to the expansive estuary are small scale, intimate and insular.
Within the region, the Strategic Views of the Mersey initiative has identified main vantage points overlooking the Mersey with an aim of protecting the views. These considerations will be taken into account in formulating a landscape and townscape management plan.

h) Cultural Heritage

The following aspects of cultural heritage have been identified within the Mersey Gateway study area:

- A crossing point of the Mersey at Runcorn Gap is documented in the medieval period, but such a crossing may have been used from the Roman period. There is a possibility of retrieving Roman evidence in the Runcorn Gap area related to ferries and riverside/port activities along the foreshore (through ground disturbance works).

- A Saxon burh (fortified stronghold) was established at Runcorn in 915 AD and whilst much of the burh has been removed by later settlement, industrial activity and previous bridge construction, some remains of heritage interest could survive below ground in that area.

- The flourishing industrial development in the late-eighteenth and nineteenth centuries within the Runcorn and Widnes area has left a high potential for the recovery of evidence related to a wide range of industrial sites and associated infrastructure. The two existing bridges between Runcorn and Widnes are listed and so any development in their vicinity must take account of their setting, as well as any direct effect on the fabric of the structures.

- Within the estuary there is also a potential for uncovering sunken boats, especially Mersey Flats (some of which were abandoned and subsequently sank, or have been deliberately sunk to control riverbank erosion). Whilst there are no records of wrecks in the general area, this does not preclude the finding of sunken boats.

i) Noise

There is no background data on noise pollution for Halton and it is not part of any noise reduction strategy. However, there are numerous residential areas located close to the Silver Jubilee Bridge and other busy road links in Halton, which are likely to experience traffic-related noise pollution.

2.5 Current Travel Demands and Levels of Service

2.5.1 The Role of the Runcorn Gap

Historically there has been demand for crossing the Mersey River between Runcorn and Widnes. In essence, the facilitation of this movement is a key function of the sections of the transport network within the Halton area, and has a significant influence on the levels and types of demand for travel recorded in Halton.

There were probably crossings of the Mersey between Runcorn and Widnes in Roman times, but there is recorded evidence that the Runcorn Ferry operated across the Mersey between Runcorn and Widnes (the so-called “Runcorn Gap”) from 1189.
The Ferry had been in operation for over 600 years before the development of engineering skills gave rise to thought about the practicality of building a bridge to enable people, animals and goods to cross the river without being subject to the vagaries of the weather or tide. Various ideas were put forward over the years although none of them were realised. The first fixed crossing was the Aethelfleda Railway Bridge, constructed in 1868.

The Manchester Ship Canal was promoted by the Manchester Ship Canal Act 1885. Construction started in November 1887 and the canal was opened on 1 January 1894.

In 1905 the Transporter Bridge - a tolled crossing - opened that allowed road vehicles to cross the Runcorn Gap but the rapid increase in traffic soon exceeded the bridge’s capacity.

In April 1956, construction began on the Runcorn-Widnes Bridge at a cost of nearly £3m, and was opened on July 21st 1961 by HRH Princess Alexandra of Kent. The Transporter Bridge closed in 1961, the day after the new bridge was opened.

The Runcorn-Widnes Bridge was completed in 1961 but by 1975, traffic growth had once again outstripped the capacity of the bridge and work was put underway to widen the deck to provide four lanes of traffic. The Bridge was renamed the Silver Jubilee Bridge in 1977.

Currently Halton stands at a strategic crossing point of the Mersey estuary. It provides the main rail connection on the West Coast Main Line (Liverpool Branch) and the A533 road link between the M62 and the M56, via the Silver Jubilee Bridge.

2.5.2 Current Levels of Demand

The key indicator of demand with reference to the Halton study area, and the socio-economic issues identified, is the level of demand for use of the Silver Jubilee Bridge.

As presented in Appendix A, an assessment of the Congestion Reference Flow (CRF) of the Silver Jubilee Bridge in accordance with Annex D of TA46/97 has been undertaken. The CRF of a link is an estimate of the Annual Average Daily Traffic (AADT) flow at which the carriageway is likely to be congested in the peak periods of an average day. Congestion is defined as the point at which the hourly traffic demand exceeds the maximum sustainable hourly throughput of the link.

The CRF for the Silver Jubilee Bridge at present is calculated as 64,700 vehicles per day. Consequently, it can be clearly seen, with daily weekday flows on the Silver Jubilee Bridge in the region of 90,000 vehicles per day, that the demands on the bridge far exceed its capacity. This heavy demand is manifested in long queues on the approaches to the Silver Jubilee Bridge.
2.5.3 Current Levels of Service

a) Highway Network

Figure 2.3 provides an overview of the regional and national highway network.

Figure 2.3 – Halton Borough located on the national motorway network

The M56 to the south of the Borough links West Cheshire and North Wales with Manchester. The M62 to the north links Merseyside to Manchester and to Yorkshire. The M53 to the west links North Wales and Cheshire to the Wirral and Liverpool City Centre via the Mersey Tunnels. The M6 to the east is the main arterial route between the north-west region and the rest of the country. The major movement across the Silver Jubilee Bridge is in and out of Liverpool from Runcorn, Vale Royal, Chester and North Wales.

The expressway network in Runcorn provides fast links from the M56 via the Silver Jubilee Bridge to the M62 via the Widnes Eastern By-pass, providing an important diversionary route for the M6 particularly at the Thelwall Viaduct. The Silver Jubilee Bridge is a key point of access to the motorway network for the Speke/Garston development area and is an important strategic gateway into south Merseyside. This is reflected in a recent paper to the North West Regional Assembly Regional Transport Advisory Group “Functional road hierarchy – identifying routes of national and regional significance”, 10th November 2004, where the Silver Jubilee Bridge is identified as providing an alternative to the Therwell Viaduct on the M6.

The A533, carried by the Silver Jubilee Bridge, is a principal road maintained by Halton Borough Council, which through links with the A562 and A557 provides Halton with links to south Liverpool and the M62. This degree of linkage defines the regional and national importance of the Silver Jubilee Bridge.
b) Mersey River Crossings & the Silver Jubilee Bridge

The River Mersey is crossed in four locations (as shown by Figure 2.4) at or to the west of the M6 presently:

- Thelwall Viaduct (M6),
- Small local bridges in Warrington
- Mersey Tunnels, Liverpool
- Silver Jubilee Bridge

![Figure 2.4 – River Mersey crossings west of the M6](image)

Of specific interest to the Halton study area is the Silver Jubilee Bridge, as this crossing is considered both as a constraint and an opportunity for resolving the current socio-economic issues identified in Halton.

The Silver Jubilee Bridge has four sub-standard lanes, of total width 12.2 metres. These lanes have at times carried over 90,000 vehicles per day. The bridge has poor facilities for pedestrians, no safe provision for cyclists and therefore severely restricts the development of integrated and sustainable transport strategies, since high levels of congestion affect the reliability of public transport. It has been observed that the bridge can carry more than the theoretical design capacity of 5,000 vehicles per hour, and in some cases will free flow with in excess of 5,000 vehicles per hour.

The constrained capacity of the Silver Jubilee Bridge is a key influence on the performance of the local highway network. Large queues develop in the AM and PM peaks as a result of this limitation.
c) Shipping Networks

Using the Manchester Ship Canal, the Mersey Estuary supports docks at Runcorn and Weston Point.

The Manchester Ship Canal passes along the south side of the estuary and, although not as frequently used as it once was, still provides passage for sea-going vessels requiring significant headroom.

The Bridgewater Canal, a popular leisure facility for boat users, commences near the centre of Runcorn Old Town and runs eastwards alongside the Bridgewater and Daresbury Expressways.

The St Helens Canal commencing near West Bank runs eastwards on the north side of the estuary. This canal is currently used as a small marina at Spike Island but is only accessible for a short length due to the presence of a wooden footbridge just upstream of Spike Island. It also retains a significant leisure role, with the towpath providing the route for the Trans-Pennine Trail for walkers and cyclists.

d) Rail Network

The Liverpool to London Euston railway line provides travel between Runcorn and London in less than two-and-a-half hours, and there are regular services to Cardiff and the south coast of England. Locally, Hough Green Station in Widnes is linked via Hunts Cross to the Merseyrail system, while the station at Runcorn East is on the main rail line connecting Chester with Warrington, Manchester, Leeds and the North East of England.

e) Urban Transport Networks – Runcorn and Widnes

The road system in Runcorn is based around an expressway and busway system, with employment areas on the outside of this network, residential areas in the inside and the new town centre (Halton Lea) in the middle. In each of the New Town housing areas there is a local centre. This layout is a classic form of the “Buchanan Model”.

The busway does not run within some of the Old Town areas or to some of the newer employment and residential areas such as Manor Park or Sandymoor. Initially it was proposed that each New Town neighbourhood would be distinct without road links to other areas, other than via the busway and expressway.

Temporary links made during construction were not removed in some cases. Consequently, the ability to drive between neighbourhoods in the private car is easier than anticipated. There is a network of cycleways and footpaths throughout Runcorn which are separate from the road system.

Runcorn has two railway stations, a main line station on the Liverpool to London line and a further station on the Manchester to Chester line. There are various rail sidings for freight within the Docks areas to the west of Runcorn. This area is also alongside the Manchester Ship Canal with its associated docking facilities.

Generally, new development land in Runcorn is now concentrated towards the eastern edge of the town away from public transport nodes including the busway.
Widnes has developed as a traditional manufacturing town with the main industry being to the south along the River Mersey, and housing and the town centre towards the north.

As with the Runcorn New Town there are local centres within the residential areas, but these have been developed over the years rather than being planned centres. The road system has also developed in this way.

In Widnes, there has been incremental infrastructure growth with roads and other transport modes being planned as individual developments. The latest of these schemes was the development of the A557 Widnes Eastern Relief Road running from the M62 to the Silver Jubilee Bridge. This has freed up the internal road network for more local traffic, but funnels traffic towards the bridge.

Over the current Local Transport Plan period there has been a significant increase in cycle lane provision in Widnes. Over 7km of new on and off highway Greenways and shared footway/cycleway have been provided together with cycle provision included in the Peel House Lane Link Road scheme. Pedestrianisation has taken place within the town centre and a variety of pedestrian routes exist throughout the area.

There are two railway stations in Widnes, both on the Liverpool to Manchester line. There has been no rail link between Widnes and Runcorn due to the closure of Ditton Station in Widnes. Several freight lines into employment areas exist, particularly into the West Bank Dock estate and into the south-east Widnes employment area.

2.5.4 Existing Travel Patterns

31% of Halton residents work outside the Borough. This is relatively low compared with the County average of 34%. The current modal split of travel is as indicated in Table 2.1

<table>
<thead>
<tr>
<th></th>
<th>Residents</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Car</td>
<td>67%</td>
<td>71%</td>
</tr>
<tr>
<td>Public Transport</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
<td>8%</td>
</tr>
</tbody>
</table>

*Table 2.1 Modal Split of travel for journeys to work by residents and employees of Halton*

In terms of journey length, Table 2.2 indicates typical length of trips to work:
### Table 2.1 Trip length for journeys to work by residents and employees of Halton

<table>
<thead>
<tr>
<th></th>
<th>Residents</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5km (including working from/near home)</td>
<td>56%</td>
<td>56%</td>
</tr>
<tr>
<td>5km – 10km</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>Greater than 10km</td>
<td>25%</td>
<td>28%</td>
</tr>
<tr>
<td>No fixed place of work</td>
<td>3%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Data Source: 2001 Census (Neighbourhood Stats)

It can be seen from the foregoing that although the majority of journeys are less than 5km, most journeys are undertaken by private car. Therefore, there appears to be a scope for a modal shift away from the private car and towards other, more sustainable forms of transport.

#### 2.5.5 Accident Analysis

Halton’s Local Transport Plan identifies the road safety problems of the Borough. At 0.128% of the population, the number killed or seriously injured (KSI) on Halton’s roads is around twice the national average.

Table 2.3 indicates the accident figures quoted in Halton’s Local Transport Plan and also includes data for 2003, the latest year for which data is fully available.

<table>
<thead>
<tr>
<th>Year</th>
<th>KSI – all ages (No.)</th>
<th>KSI – children (No.)</th>
<th>Slight casualties (Rate per 100 million vehicle-kilometres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994 – 1998 average</td>
<td>157</td>
<td>33</td>
<td>86</td>
</tr>
<tr>
<td>2003</td>
<td>74</td>
<td>17</td>
<td>69</td>
</tr>
<tr>
<td>2010 residual target</td>
<td>60% (94)</td>
<td>50% (16)</td>
<td>90% (77)</td>
</tr>
</tbody>
</table>

Table 2.2 Accident analysis for Halton Borough

The LTP recognises that the casualty reduction targets are challenging. Nevertheless, the 2001 data shows significant improvement in KSI accidents, particularly in the “all ages” category.

The European Road Assessment Programme (EuroRAP) graded major UK roads according to their safety record. The A533 from Widnes to the A56 was ranked as the 7th most dangerous road in the UK.

A full monetised accident analysis has been undertaken and is reported in the Accidents Technical Report TR26/01.
2.6 Current Transport Related Problems

Halton suffers from issues which are all related to the impact of transportation – namely the imbalance between demand to make highway cross river movements and the capacity of existing links. Issues in Halton can be categorised into four broad headings.

- Economics and Regeneration
- Social Impact
- Traffic
- Transportation

Within each of these headings, there are a number of sub-problems, and specific mitigation measures that can be identified.

These problems have been identified after close consultation with the local residents, businesses, interest groups and transport operators.

2.6.1 Economics and Regeneration

The Silver Jubilee Bridge has an impact on the local economies of Runcorn and Widnes, the Merseyside Objective 1 area, a major part of the North Cheshire designated Objective 2 area and on North Wales. It is a constraint on the economic development of the sub-region and severely restricts the development of integrated transport strategies.

There is a need to resolve the constraint of the Silver Jubilee Bridge in order to:

- Relieve current congestion impact;
- Encourage development and bring about regeneration of the area.

Improved communication will:

- Encourage existing businesses to expand;
- Encourage new businesses to set up;
- Bring new jobs and generate wealth.
- Make it easier to travel to work.

2.6.2 Social Impact

The Social Exclusion Unit (SEU) was set up in 1997. It works with departments throughout the Government to find solutions to some of the many social problems in England and acts as a catalyst for change at the heart of Government. The work of the SEU forms part of the Government's strategic approach to tackling social exclusion including all Whitehall departments and many external partners.

The New Commitment to Neighbourhood Renewal: National Strategy Action Plan (2002) was produced by the SEU to address neighbourhood deprivation problems. It identified that a major cause of the spiralling decline in many neighbourhoods across England were
created by the decline of old industries, which lead to mass unemployment greatly affecting vulnerable communities. The two main goals of the SEU’s Neighbourhood strategy are:

- In all the poorest neighbourhoods, to have common goals of lower worklessness and crime, and better health, skills, housing and physical environment
- To narrow the gap on these measures between the most deprived neighbourhoods and the rest of the country

The SEU is particularly relevant to Halton given that there are a number of highly deprived areas within the borough, and the new bridge will act as a catalyst to stimulate a renaissance on those neighbourhoods.

From the social impact assessment, it is clear that doing nothing, although having the benefit of not disrupting to communities, does not solve the problems of increasing congestion and will limit the community regeneration potential of the area. Improving connectivity within Halton, across the River Mersey will go towards improving the long-term quality of life experienced by many residents.

2.6.3 Traffic

a) Personal Injury Accidents

Personal Injury Accidents have been assessed in a previous report by Mott Macdonald Review of Existing Network (200519/04/A). This report describes studies that have been undertaken to review the existing road network as part of the Local Transport Plan Framework with Halton Borough Council.

The report investigates accidents on the Silver Jubilee Bridge and on both the northbound and southbound approaches and found that the majority of accidents involved rear end shunts of vehicles held up on the bridge. Many of these accidents may have been caused by excessive speed and the misjudgement of speed or distance, another significant factor was vehicles colliding whilst changing lanes.

The report also considers the impact of the traffic flows on the accident record of the Silver Jubilee Bridge. The report considers that, in general terms, capacity reduction could be a way of reducing accidents. However it recognizes that flows across the Silver Jubilee Bridge are high, and capacity reduction by any significant amount through local initiatives designed to influence modal choice may be limited.

b) Access for Emergency Vehicles

Access on and across the Silver Jubilee Bridge for emergency vehicles has been identified as a concern of the public and of the services themselves.

- Access to incidents on the Silver Jubilee Bridge such as collisions, dropped loads and potential suicides is very difficult.
- Access to incidents across the Silver Jubilee Bridge is hindered by congestion, and on occasions, threats have been made to blockade the bridge e.g. during the recent Foot and Mouth outbreak and fuel protests.
• There is a lack of alternative routes and insufficient public warning of congestion and the narrow lanes and the volume of traffic on the Silver Jubilee Bridge exacerbate the problem.

• The proximity of chemical plants to the Silver Jubilee Bridge means that if there are incidents e.g. leakages, spillages etc. the bridge can be threatened with closure.

• If the Silver Jubilee Bridge is closed the approach roads also suffer blockages which increase attendance times for the emergency services to many areas of Runcorn and Widnes, particularly as there is a lack of alternative routes to bypass any congestion.

c) Strategic Traffic Movement

Of the current traffic flow on the Bridge, which can exceed 90,000 vehicles each weekday, about 20% of all traffic movements across the Bridge are purely internal, i.e. between Runcorn and Widnes. 40% are trips across the region but with either their origin or destination in the Borough of Halton, and 40% are using the Bridge purely as a through route.

The impact of the use of the crossing by strategic and cross-region traffic is a major problem to the regeneration of the area.

d) Congestion

Congestion, due to the capacity limit of the Silver Jubilee Bridge, seriously impacts on transport movement and accessibility and potentially inhibits future development.

The highest traffic flow ever recorded of 92,889 vehicles crossed the Silver Jubilee Bridge in a 24-hour period on Friday 18th July 2003. Major structural maintenance works on the Silver Jubilee Bridge continued through much of 2004 with weekend and overnight lane closures. During these works, temporary bridging units were in place over the main expansion joints for 3 months and a 24 hour 20mph speed limit applied. The resulting extensive delays and congestion brought a 10% reduction in average traffic flows (i.e. traffic was diverted or journeys were not undertaken) but flows are now growing to the previous high levels. As the bridge gets older and traffic levels continue to rise, congestion will worsen, structural deterioration on the bridge will increase, and essential maintenance will become more and more disruptive.

The current daily flows are nearly 50% higher than the design capacity for the four sub-standard 3.05m wide lanes. The Silver Jubilee Bridge is seriously congested and there is evidence of peak hour spreading as shown in the Figure 2.5 below – these peaks now cover a three-hour period for both the morning and evening periods. Facilities are poor for pedestrians and there are no safe facilities for cyclists.
It can be seen that over the past few years for which data is available, there has been a constant flow of traffic in the main peak hours. It is the shoulders of the peak hours that have experienced the largest traffic growth – clear evidence of peak hour spreading in Halton.

Future growth in traffic flows across the Mersey which would otherwise seek to cross the Silver Jubilee Bridge would force trips on to alternative routes, impacting on the Mersey Tunnels and the M6 motorway, particularly at the Thelwall Viaduct.

For example around 10,000 vehicle trips a day [12.5%] are currently being made across the Silver Jubilee Bridge to or from Greater Manchester and points further to the north and south. These trips currently choose the Bridge in Halton rather than the M6 across the Thelwall Viaduct, which may be a more obvious alternative route.

There is a need to:

- Increase cross-river capacity and therefore reduce congestion and delays;
- Reduce journey times and fuel costs;
- Provide an alternative crossing capable of operating during future planned maintenance on the Silver Jubilee Bridge.
2.6.4 Transportation

a) Availability of Public Transport

There is a lack of viable alternative modes of transport that can be used apart from the car. With only one in five vehicles making trips across the Bridge that are purely internal to the Borough, the potential impact of Halton’s strategies encouraging the use of alternative modes is limited. The Borough’s strategies contained in the Halton Local Transport Plan do give high priority to alternative modes with, for example, bus lanes with availability for cycle use on the approaches to the Bridge. However, it is clear that only with a second crossing can real changes to modal choice be made.

There is a need to:

• Improve the reliability of existing bus routes
• Provide priority measures for buses where needed
• Open up opportunities for new bus routes
• Facilitate other forms of transport in the future

b) Pedestrian and Cyclist facilities

There are presently no dedicated cycleway facilities between Runcorn and Widnes, hindering Halton’s aims to reduce dependency on the private car for cross-river traffic.

There is a need to:

• Provide facilities for cyclists on the existing Silver Jubilee Bridge, with enhanced facilities for pedestrians.
• Establish links to existing cycling and pedestrian facilities.
• Improve pedestrian links to public transport routes across the Silver Jubilee Bridge.

2.7 Understanding the Future Situation

Without resolution of the underlying issue of crossing capacity, it is likely that the current problems described above will continue to develop. Clearly if the current situation is not resolved then the on-going development of Halton and any improvements to the community’s quality of life will be severely constrained.
3. HIGH LEVEL CONCEPT ASSESSMENT

3.1 Introduction

This section will assess potential solutions to solve the accessibility and socio-economic issues identified in Section 1.

In summary, accessibility issues relate to:

- the mismatch between the disproportionately high demand for cross river trips through Halton compared with the available crossing capacity (Congestion Reference Flow of 65,000 vpd) provided by the Silver Jubilee Bridge
- the difficulty for public transport to provide a reliable service due to frequent delays and disruption on the Silver Jubilee Bridge approaches
- the significant barrier to cross-river transit either on foot or by bicycle due to the perceived and actual dangers of using the Silver Jubilee Bridge under current circumstances

In summary, socio-economic issues relate to:

- Halton being the 21st most deprived local authority in England. 39 of the 59 Strategic Output Areas (SOAs) in Halton (representing 50% of the Halton population) are included in the top 20% most deprived SOAs in England.
- Regeneration being constrained by access. The inability of the local highway and public transport networks to perform reliably is a critical factor in businesses not locating in Halton.

Potential solutions to the problems described above are:

1. To increase capacity to enable the current demand and potential future growth in demand for highway cross river trips to be accommodated or;
2. To maintain current capacity and constrain demand by effectively reallocating excess highway cross river trips to other crossing points through demand management measures or;
3. To increase capacity for highway cross river trips and implement measures to provide capacity for cross river trips for all available modes.

The ‘do nothing’ scenario was not considered further for these purposes as it does not address any of the accessibility or socio-economic issues listed above.

In terms of high level concepts which might achieve the solutions, they can be broadly split between policy and infrastructure. Clearly, any final proposal may be a combination of policy instruments and infrastructure improvements. The following assessment will deal with each concept separately before seeking to draw any conclusion on possible combinations of solutions.

The following are intended to be broad concepts only, with no attempt to define or assess these concepts technically at this stage. These concepts are presented with the sole purpose of introducing the options as potential solutions to overcoming the identified problems relating to accessibility and local socio-economics.
3.2 Policy Instruments

When considering policy instruments, it is assumed that the existing infrastructure and capacity provided by the Silver Jubilee Bridge will be retained, and policies defined to better manage these existing facilities and the demand for use of these facilities for highway cross river trips.

3.2.1 Halton Travel Plan Network

The Travel Plan concept is based upon the principles of destination led modal choice decision making, where a person’s destination e.g. workplace, sets up initiatives to help encourage modal shift to more sustainable modes and travel behaviour. Such initiatives include car sharing schemes, provision of cycle facilities, public transport information and support and actions to reduce trip demand through home working and remote site access to services.

The effectiveness of travel plans in terms of reducing the level of highway vehicle trip demand will depend upon the complex inter-relationship between travel plan take up by the individuals concerned, viability of the local transport networks to accommodate travel by sustainable modes, and the level of inter-travel plan synergy to realise an area wide travel plan network.

An effective critical mass of travel plan initiatives that was sufficiently widespread could in theory bring about a change in travel behaviour and demand. Evidence so far suggests that the impact of travel plans tends to be highly localised and that they do not easily achieve a substantive reduction in travel demand for highway trips. However, it is difficult to impose travel plans, which can be costly, upon organisations unless they perceive real benefits.

A potential concept could be a Halton Area Travel Plan Network, formed of a partnership including the local authority, local employers, schools, hospitals, and public transport service providers, to drive forward an integrated package of measures designed to reduce car trip demand, enable modal shift and potentially to change travel behaviour in the locality.

Halton Borough Council, the largest single employer in the borough, has adopted its own staff Travel Plan and is promoting the roll out of travel plans to all local employers. The Local Transport Plan has a target of 40% of all local firms (of more than 100 employees) to have Travel Plans in place by 2010/2011. Travel Plans are also being promoted in schools and here the target is 100% of local schools to have travel plans in place by 2008/09.

3.2.2 Charging for Using Existing Bridge or other Roads

The use of road pricing as a means to manage demand has many different forms of delivery. The theory behind pricing as a means to reduce highway vehicle trip demand is that a proportion of users will be deterred from making trips by having to pay a stated level of charge for access to the road network generally or a specific section of the road network.

In practice the success of road pricing in managing demand is unclear. On the one hand it appears that users are becoming increasingly price insensitive; an illustration of this is that
increases in petrol prices or rail fares having little impact on travel demand. On the other hand, recent experience in London with the introduction of the congestion charge indicates that road user charging has reduced travel demand for trips by private car within the relevant zone.

A potential concept, subject to promotion of suitable orders, could be the introduction of a road user charge on the Silver Jubilee Bridge in order to reduce demand for cross river travel via the bridge.

3.2.3 Dynamic Lane Management

A number of schemes have been introduced on busy sections of dual carriageway which exhibit a strong peak direction bias, in order to utilise under used contra-peak direction capacity. Traffic management systems are introduced to allow specified lengths of individual lanes to become reversible. This enables additional lanes to be made available for peak traffic by allocating contra-flow lanes to the peak flow direction, which are also closed to contra-peak traffic.

The viability and effectiveness of such a lane management scheme is dependant upon the operation and capacity of the adjoining local highway network. Such a scheme requires an identified peak direction, and sufficient spare capacity in the contra-peak direction. and the scheme must ensure that the lane management scheme does not just set up an inconsistency in the local network which in itself causes congestion. There also needs to be sufficient space laterally in order to accommodate the traffic and such separations as required for safety reasons.

A potential concept could be the introduction of lane management systems on the Silver Jubilee Bridge in order to alleviate peak demand congestion and queuing. However, there is little evidence of tidal flows in the peaks on the Silver Jubilee Bridge and lengthy queues develop on all approaches in both morning and afternoon peaks. Lane management systems would therefore not have any impact on peak congestion.

3.2.4 Selective Access by Vehicle Tagging

Based on vehicle number plate recognition technology or vehicle tagging systems, access to infrastructure can be regulated to specified time periods for groups of vehicles, with a back-up system of deterrent fines and enforcement, thereby reducing demand for highway access at any given time.

There are limitations to the effectiveness of this type of concept in terms of how to deal with non-local vehicles, growth in multi-vehicle ownership, and wider practicalities where non-car access choice is limited.

A potential concept could be the introduction of selective vehicle access through vehicle recognition systems on the approaches to the Silver Jubilee Bridge. However, with only 20% of current traffic on the Silver Jubilee Bridge making local trips within the Borough, and alternative routes being over 10 miles away, the potential for this approach in Halton is very limited.
3.3 Infrastructure Instruments – Utilising Existing Silver Jubilee Bridge

3.3.1 Road Space Re-allocation

A key objective of the scheme is to improve public transport provision (see Section 2). A major constraint upon public transport is the current level of congestion on the approaches and across the existing bridge. The concept of road space re-allocation is to dedicate lanes on the highway for specific modes of travel such as buses, taxis, high occupancy vehicles and possibly other forms of public transport such as light rail.

The performance of allocated lanes is dependent upon the frequency of use of the allocated lane, and level of enforcement against unauthorised use.

In the case of the Silver Jubilee Bridge, the introduction and effectiveness of any allocated lanes will depend upon opportunities to implement such measures both on the bridge but also on the approaches to the bridge, where congestion is also present. Runcorn is identified as having established bus priority measures through its busway network, so any allocated lanes for public transport routes across the Silver Jubilee Bridge, should ideally seek to integrate with this busway network and any bus priority measures on the north bank, in order to maximise benefit.

Bus/Taxi lanes have been provided on both the Widnes and Runcorn approaches to the Silver Jubilee Bridge. However, there is no capacity on the bridge deck to allocate road space other than for all-purpose traffic. Last year, overnight maintenance works overran into the morning peak on one occasion resulting in only one lane in each direction being available until 10am. This resulted in widespread congestion with queues on both sides of the bridge stretching back onto the motorway network.

3.3.2 Park & Ride

Park & Ride has the potential to divert some travellers from the use of the private car to public transport and has been suggested as a way of relieving congestion on the Silver Jubilee Bridge. Studies carried out in the early 1990s have shown that for a successful scheme, several key factors are vitally important, such as the car parking policy at the destination, the location of the car park site and the frequency of service. The Park and Ride site must be as close as possible to the ultimate destination to enable a high frequency of service, keep fares low and minimise the non-car journey time.

In order for Park & Ride to be effective it needs a focussed demand for trips to a central point. In the case of Silver Jubilee Bridge this could be, for example, Liverpool City Centre, but even then surveys indicate the trip ends are too dispersed for this to be viable. Also the proportion of local trips using the Silver Jubilee Bridge is low at 20%, the journey times are long and with a Park & Ride site in Runcorn, the bus service would encounter the existing congestion on the Silver Jubilee Bridge and approaches.

A potential concept could be the introduction of Park & Ride Services across the Silver Jubilee Bridge from Runcorn to key destinations.

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1 Capturing the Car User – The Potential of Park & Ride, PTRC 20th Summer Annual Meeting (1992)
3.3.3 Rail Service Improvements

In considering rail service improvements, the key issue is co-incidence of demand in terms of origin and destination of trips between current car trips and rail service availability, and the likely levels of modal shift from the car to the train to make these trips.

The largest single movement across the river is between Runcorn and Widnes. Unfortunately, the rail network is unable to have any impact on these trips, as there is no station in Widnes.

The greatest focus for destinations is Liverpool City Centre, yet the dispersion of destinations across the city centre and the distribution of origin points would have the effect of significantly reducing the potential for rail to be a viable mode for most of these trips. For rail to be effective the access and egress points to the rail network need to correlate closely with the origin/destination/nodes of the trips being undertaken. Local access to the rail network is limited, and the level of service to Liverpool is relatively low, but this is a secondary matter compared to the wide dispersion of trip origin/destination points.

A potential concept could be improvements to rail station access and service characteristics to enable rail to become more viable for a greater number of cross-river trips currently undertaken by road.

Halton BC is working closely with Merseytravel to promote the reinstatement of local rail services on the Halton Curve, a rarely used link that would enable services to be run between South Liverpool to Chester and North Wales vis Runcorn. This would provide a rail alternative for a proportion of the current cross river traffic using the Silver Jubilee Bridge. It would also strengthen the case for additional local stations in Halton i.e. at Beechwood, Runcorn and Ditton, Widnes. A scheme for the necessary infrastructure improvement is being considered for inclusion in Halton’s next 5 year LTP.

3.4 Infrastructure Improvements – New Fixed Links

Here the context is an approach to resolve the accessibility issues through the introduction of a new fixed link across the Mersey, in order to relieve the congestion and accommodate demand for cross river travel both now and into the future. It is anticipated that any new fixed link would be highway based, as it is the demand for highway cross river trips and the impact of this demand that is considered to be a key contributor to the accessibility and socio-economic issues identified in Halton.

A key reference is technical report TR27/01 which describes potential routes for an infrastructure based solution. This report explains why any tunnel would need to be constructed to the west of the Silver Jubilee Bridge whilst any bridge would have to be to the east of the Silver Jubilee Bridge.

3.4.1 New Tunnel to the West of Silver Jubilee Bridge

A tunnel could provide additional crossing capacity. The ability to tunnel under the Mersey is constrained primarily by the topography and geology of the locality. Evidence suggests that there is a potential location to the west of the Silver Jubilee Bridge for a tunnel, but the options are very limited.
A potential concept could be a route from the A557 near Weston Point, via tunnel to Pickering’s Pasture then rising to a junction with the A562.

3.4.2 New Bridge Adjacent to or East of Silver Jubilee Bridge

Mimicking the current approach to fixed link crossings over the Mersey within the locality of Halton, a new bridge could provide additional crossing capacity. If a new fixed link is the preferred approach, based on collected evidence, there are a number of potential sites for a new bridge, although any routes to the west of the Silver Jubilee Bridge would pass directly over the Mersey Estuary Special Protection Area.

Any new bridge would need to fit within the existing highway network and be designed to minimise impact to the river environment and to the local community.

3.5 Previous Concepts

It is appropriate to also consider what has been proposed in the past to resolve the long standing accessibility and socio-economic issues identified in Halton. There have been a number of previous studies and proposals which can be summarised as follows:

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Date</th>
<th>Client</th>
<th>Consultant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed Second Runcorn- Widnes Bridge – Initial Feasibility Report</td>
<td>Feb ‘78</td>
<td>Cheshire CC</td>
<td>Mott, Hay Anderson</td>
</tr>
<tr>
<td>Concluded that a bridge alongside the existing structure in the Runcorn Gap is feasible.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mersey Crossing Study Survey Report</td>
<td>April ‘92</td>
<td>Dept of Transport</td>
<td>Transport Planning Associates</td>
</tr>
<tr>
<td>Mersey Crossing Study – Final Summary Report</td>
<td>Sept. ‘93</td>
<td>Dept. of Transport</td>
<td>Oscar Faber TPA</td>
</tr>
<tr>
<td>Looked at a wide range of options within a 3km corridor either side of the Jubilee Bridge but although the COBA analysis was positive, the Government concluded that the high cost and environmental issues could not justify a new strategic trunk road crossing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mersey Crossing Study – Stage 1 Report</td>
<td>June ‘97</td>
<td>Mersey Crossing Group</td>
<td>Oscar Faber TPA</td>
</tr>
<tr>
<td>On the advice of Minister this looked at local options and identified three routes for further study that would meet transport objectives: on-line, eastern and western.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage 2 Environmental Assessment for New Mersey Crossing</td>
<td>March ‘98</td>
<td>Mersey Crossing Group</td>
<td>RPS (for Oscar Faber)</td>
</tr>
<tr>
<td>Looked at environmental impact of all local routes. Effectively ruled out all western routes, preferred the on-line route but recommended more work on the eastern option.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic Impact of New Mersey Crossing</td>
<td>March ‘98</td>
<td>Mersey Crossing Group</td>
<td>DTZ Pieda (for Oscar Faber)</td>
</tr>
</tbody>
</table>
### Study Title | Date | Client | Consultant
---|---|---|---
Confirmed economic benefits arising from a new crossing could lead indirectly to the creation of up to 17,000 new jobs.

<table>
<thead>
<tr>
<th>Economic Impact of Second Runcorn Bridge</th>
<th>Sept. ‘98</th>
<th>Mersey Crossing Group</th>
<th>Liverpool Macroeconomic Research</th>
</tr>
</thead>
</table>

Concluded that an eastern alignment would yield the most benefits quantified at over 5,500 jobs.

<table>
<thead>
<tr>
<th>New Mersey Crossing Study – Stage 2</th>
<th>March ‘99</th>
<th>Mersey Crossing Group</th>
<th>Oscar Faber</th>
</tr>
</thead>
</table>

The study recommended a central route threaded between the existing road and rail bridges as the cheapest option that would provide relief to the Silver Jubilee.

<table>
<thead>
<tr>
<th>Second Mersey Crossing at Runcorn – Review of Options</th>
<th>June ‘99</th>
<th>Halton Borough Council</th>
<th>Mott MacDonald</th>
</tr>
</thead>
</table>

Confirmed the feasibility of a low-level eastern alignment.

<table>
<thead>
<tr>
<th>Mersey Crossing Study – Integrated Transport Solution Volumes One, Two and Three</th>
<th>May ‘00</th>
<th>Mersey Crossing Group</th>
<th>WS Atkins</th>
</tr>
</thead>
</table>

Full Origin & Destination survey and traffic model predicted that daily flows across the river would grow to 101,000 vehicles a day by year 2025. Would result in increasingly unstable flow conditions, congestion, accidents and regular gridlock. With a second bridge, unconstrained flows were predicted to rise to 112,000 vehicles a day. (Current average daily flows on M6 between West Midlands and the North West are 115,000).

Concluded that low level crossings in a 2km corridor east of the existing bridge are technically feasible and provide good value for money. The cost of the crossing would fall within a viable PFI range and would perform well in terms of traffic operation and economic development aims. The study highlighted that a crossing could have potentially adverse environmental impacts on the river and estuary and recommended further technical investigations.

<table>
<thead>
<tr>
<th>Mersey Crossing</th>
<th>Sept. ‘00</th>
<th>Halton Borough Council</th>
<th>KPMG</th>
</tr>
</thead>
</table>

Confirmed viability of a PFI funded scheme.

The previous assessment work undertaken suggests that a new fixed link in the form of a bridge is considered the most suitable solution.

### 3.6 Testing & Appraisal

All the concepts presented above have the potential to contribute to Government objectives as well as to the scheme objectives as defined by Halton Borough Council.

In order to test these concepts, first, each one is assessed against the specific objectives of the scheme (Table 3.1) in order to present any transport assessment results or environmental impact results derived from preliminary work.
Then, in order to compare each concept systematically, an Appraisal Summary Table (AST) has been completed in qualitative terms for each one (Table 3.2). At this stage in the appraisal, and level of detail, it is not considered necessary to provide supporting worksheets.

The AST is intended to give an indicative assessment. Therefore the following points should be noted:

- It is not able to deal with issues such as latent demand for use of the highway network. Tables 3.1 and 3.2 below therefore assumes the current level of highway trip demand is fixed and that any transfer of trips to other modes could produce a benefit. Clearly this is a simplification, reflecting the indicative function of the table.

- It should be noted that for those policy/management style concepts, the Silver Jubilee Bridge remains the only local crossing point, so this key network constraint remains.

The value of this qualitative AST is to provide a consistent assessment between each concept, which could help resolve the accessibility and therefore socio-economic issues identified in Halton.

3.7 Distillation & Comparison

From the assessment against local objectives (Table 3.1) and the qualitative AST (Table 3.2) for each of the concepts, the following comments can be made.

In overall terms it is indicated that, in terms of improving accessibility and promoting an environment conducive to regeneration:

- public transport related concepts perform least well
- traffic/lane management concepts have a marginally better potential, but still fail to meet key scheme objectives
- schemes which introduce additional crossing capacity performed best

The key constraint is the magnitude of demand for cross river highway trips using the existing bridge. Whilst the principles of modal shift to more sustainable modes are entirely supported, the existing infrastructure does not provide viable opportunities to make this happen. Public transport modes rely on robust flows along defined corridors. Trip data indicates that although trips focus on the Silver Jubilee Bridge, the origin and destination points are widely dispersed and this in itself is a barrier to public transport making any meaningful impact on transferring existing demand to the bus or train.

Managing demand through differentiated capacity utilisation, either by restrictive access or reducing capacity is applicable where a choice of route or mode is available. Currently for Halton, neither of these criteria applies. Any attempt to restrict demand through some form of demand management tool is likely to meet with significant public protest, reflecting the lack of choice of mode, lack of spare capacity, current travel behaviour and lack of alternative crossing point.

It is considered that, in order to provide an opportunity to achieve modal shift and to improve access and therefore to stimulate regeneration, there is a need to provide additional crossing capacity. Such a scheme should have the following characteristics:
• Provision of an additional fixed link located to strike a balance between environmental and community impact, transference of trips from the existing bridge, correlation with planned/developing regeneration areas, integration with existing highway and public transport networks, and engineering and economic viability.

• The existing bridge and any new fixed crossing should work together as an integrated system designed to meet the needs all trip types, modes and wider policy objectives.

• Any new fixed link crossing be set within the context of integrated transport planning policy, and appropriate measures as represented by the above identified broad options introduced, to ensure that each piece of infrastructure fulfils its role within the network.

From the assessment of the proposed concepts, two were identified for the provision of any fixed crossing; a tunnel or a bridge. Considering the results of the assessment against scheme objectives and the qualitative AST, the following points influencing choice of infrastructure type for a new fixed link are noted:

• With respect to the AST objectives, a tunnel or a bridge appear comparable in terms of performance at this stage in scheme development.

• When the key scheme specific objectives are considered, network models suggest that the level of trip transfer from the Silver Jubilee Bridge to a tunnel would be less than for a new bridge. This is attributed to a journey time penalty.

• The level of relief to the Silver Jubilee Bridge by a tunnel would not be sufficient to allow any measures to be introduced to restrict access to the Silver Jubilee Bridge in order to enable any form of bus priority, road space reallocation or other form of demand management.

• The potential relief of the Silver Jubilee Bridge by a new bridge would allow the Silver Jubilee Bridge to be redefined as a local link with bus priority and other demand management initiatives applied.
### Table 3.1 - Assessment of High Level Concepts against Local Objectives and Key Issues

<table>
<thead>
<tr>
<th>Option High Level Concepts</th>
<th>Halton Travel Plan Network</th>
<th>Charging for Using Existing Bridge</th>
<th>Dynamic Lane Management</th>
<th>Selective Access by Vehicle Tagging</th>
<th>Road Space Reallocation</th>
<th>Park &amp; Ride</th>
<th>Rail Service Improvements</th>
<th>New tunnel west of SJJB</th>
<th>New bridge adjacent to or east of SJJB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LOCAL OBJECTIVES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relieve Silver Jubilee Bridge</td>
<td>No relief due to no scope to improve conditions on SJJB for pedestrian or bicycle crossing trips</td>
<td>Could provide limited relief to SJJB due to toll deterring some trips being made, but SJJB will only be crossing so relief will be minimal.</td>
<td>Could provide limited relief to SJJB but is reliant upon a peak flow being sufficiently uni-directional, which is not the case for the SJJB.</td>
<td>Could provide limited relief to SJJB due to regulating flow to better fit the bridge capacity.</td>
<td>Is likely to make the congestion worse due to reducing capacity when SJJB is the only local crossing point.</td>
<td>No relief to SJJB due to limited uptake and viability. Due to no bus priority on SJJB and dispersed trip origin &amp; destination points.</td>
<td>No relief to SJJB due to limited uptake in reflection of the limited rail network and dispersed trip origin &amp; destination points.</td>
<td>Traffic models indicate that a tunnel in this location would attract little traffic from SJJB due to travel time penalty.</td>
<td>Traffic models indicate that a bridge could attract significant traffic from the SJJB.</td>
</tr>
<tr>
<td>Maximize Development Opportunities</td>
<td>No direct impact on this objective.</td>
<td>Limited relief to SJJB means limited access to development sites.</td>
<td>Restricting directional flow will in itself restrict access to development sites.</td>
<td>Restricting access to SJJB will in itself restrict access to development sites.</td>
<td>Any increase in congestion will further restrict access to development sites.</td>
<td>Will make no difference to current access potential to development sites.</td>
<td>Will make no difference to current access potential to development sites, as access from stations will remain poor.</td>
<td>Minimal SJJB relief will not improve development site access in Halton</td>
<td>SJJB relief plus the location of development sites to the east of SJJB, mean a bridge could improve access to these sites.</td>
</tr>
<tr>
<td>Improve Public Transport</td>
<td>No improvement due to no change in conditions on SJJB for public transport.</td>
<td>Possible limited improvement in terms of reliability and journey times.</td>
<td>Possible limited improvement in terms of reliability and journey times.</td>
<td>Possible limited improvement in terms of reliability and journey times.</td>
<td>Likely to significantly improve journey times and reliability.</td>
<td>Could provide a new higher quality service, but no real improvements due to lack of priority on SJJB.</td>
<td>Improvements would be restricted to “rail-side” elements only. Access to stations remains poor.</td>
<td>New routes could open up public transport. Due to minimal SJJB relief, no significant improvement possible.</td>
<td>If SJJB relief sufficient, SJJB could become bus friendly. New bridge would open up new routes.</td>
</tr>
<tr>
<td>Encourage Walking &amp; Cycling</td>
<td>For SJJB trips, unable to encourage, due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>No contribution due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>No contribution due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>No contribution due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>No contribution due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>No contribution due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>No contribution due to no change in conditions for pedestrians or cyclists on SJJB.</td>
<td>If SJJB relief sufficient, SJJB could become pedestrian and bicycle friendly.</td>
<td></td>
</tr>
<tr>
<td><strong>KEY ISSUES</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main Environmental Concerns</td>
<td>No concerns. Concept is environment focussed.</td>
<td>Potential for increased noise and congestion on tolling plaza.</td>
<td>Possible limited noise reduction due to reduced queuing.</td>
<td>Possible limited noise reduction due to reduced queuing.</td>
<td>Increased noise and reduced air quality.</td>
<td>No contribution to environmental impact due to limited uptake and viability.</td>
<td>Minimal contribution due to level of SJJB relief.</td>
<td>Limited SJJB relief will minimise any mitigation of existing environmental impact.</td>
<td>Dependant upon location and design, a new bridge could help mitigate SJJB impacts, but will need to consider estuary habitats and hydrodynamics.</td>
</tr>
<tr>
<td>Development &amp; Regeneration</td>
<td>No direct impact on this issue.</td>
<td>Some congestion relief, but fails to unlock sites.</td>
<td>Some congestion relief, but fails to unlock sites.</td>
<td>Some congestion relief, but fails to unlock sites.</td>
<td>No congestion relief and fails to unlock sites.</td>
<td>No congestion relief and fails to unlock sites except where rail freight access is key.</td>
<td>Development sites to benefit from any reduction in congestion.</td>
<td>Development sites would benefit from congestion relief.</td>
<td></td>
</tr>
<tr>
<td>Main Delivery/Construction Issues</td>
<td>Travel Plan actions/targets regarding cross river trips would be constrained by lack of improvement in conditions for pedestrians, bicycles and public transport on the SJJB.</td>
<td>Public acceptance of a toll where there is no real choice of route for local trips.</td>
<td>Identification of a sufficient bias in peak hour flows. Attainment of a consistent network capacity on the bridge and approaches, so queues are not merely relocated.</td>
<td>Public acceptance of a system which will restrict access. Also issues such as enforcement of any system, allocation criteria, and any exemptions.</td>
<td>Public acceptance of reduced capacity, and potentially greater queue impact. Also enforcement issues.</td>
<td>Viability of such a service is doubtful. Location of required car park. Service quality and reliability issues.</td>
<td>Rail service improvements have a very long lead time. Lack of priority within SRA/Department for Transport plans. Effect of such measures on congestion is questionable.</td>
<td>Further detailed studies of potential tunnel sites/ routes required. Size of congestion relief is considered too small to warrant cost of scheme.</td>
<td>Further detailed studies of potential bridge sites/ routes required. Balance to be stuck between bridge location and congestion relief.</td>
</tr>
</tbody>
</table>
## Table 3.2 - High Level Concepts Qualitative Appraisal Summary Table

<table>
<thead>
<tr>
<th>Option High Level Concepts</th>
<th>Halton Travel Plan Network</th>
<th>Charging for Using Existing Bridge</th>
<th>Dynamic Lane Management</th>
<th>Selective Vehicle Access</th>
<th>Road Space Re-allocation</th>
<th>Park &amp; Ride</th>
<th>Rail Service Improvements</th>
<th>New tunnel west of Silver Jubilee Bridge</th>
<th>New bridge adjacent to or east of Silver Jubilee Bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUB-OBJECTIVE</strong></td>
<td><strong>QUALITATIVE IMPACTS</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OBJECTIVE</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ENVIRONMENT</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise</td>
<td>Possible minor reduction to tolling plaza</td>
<td>Possible minor reduction</td>
<td>Possible minor reduction</td>
<td>Possible increase due to further constrained capacity and queuing</td>
<td>Possible increase close to any Park &amp; Ride car park site</td>
<td>Likely to be neutral due to low potential for trip transfer</td>
<td>Possible reduction near Silver Jubilee Bridge but increase on tunnel approach routes</td>
<td>Possible reduction near Silver Jubilee Bridge but increase on new bridge routes</td>
<td></td>
</tr>
<tr>
<td>Local Air Quality</td>
<td>Possible minor improvement</td>
<td>Possible minor improvement</td>
<td>Possible minor improvement</td>
<td>Possible reduction due to queuing traffic</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
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</tr>
<tr>
<td>Greenhouse Gases</td>
<td>Possible minor reduction</td>
<td>Possible minor improvement</td>
<td>Possible minor improvement</td>
<td>Possible increase due to queuing traffic</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
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<tr>
<td>Landscape</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Park &amp; Ride site may have a local impact</td>
<td>Neutral</td>
<td>Tunnel and approaches may have local impact</td>
<td>Bridge and approaches may have local impact</td>
</tr>
<tr>
<td>Townscape</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>Heritage of Historic Resources</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
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</tr>
<tr>
<td>Biodiversity</td>
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<td>Neutral</td>
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<td>Neutral</td>
<td>Neutral</td>
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<tr>
<td>Water Environment</td>
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<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>Physical Fitness</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>Journey Ambience</td>
<td>Possible minor increase due to walking &amp; cycling promotion</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>Safety</td>
<td>Possible minor increase due to conflict on tolling plaza</td>
<td>Possible reduction due to reduced conflict</td>
<td>Possible reduction due to reduced conflict</td>
<td>Possible increase as drivers take risks to avoid queues</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Potential for more reliable trips by rail for passenger and freight</td>
<td>Greater highway efficiency due to increased capacity and reduced delays</td>
<td>Greater highway efficiency due to increased capacity and reduced delays</td>
</tr>
<tr>
<td>ECONOMY</td>
<td>Generates revenue from bridge. Increase in business costs. Greater highway efficiency</td>
<td>Greater highway efficiency due to reduced delays for peak traffic.</td>
<td>Greater highway efficiency due to reduced delays for peak traffic.</td>
<td>Reduced Highway efficiency due to increased delay</td>
<td>Generates revenue from car park. No real change in highway efficiency.</td>
<td>Potential for more reliable trips by rail for passenger and freight</td>
<td>Greater highway efficiency due to increased capacity and reduced delays</td>
<td>Greater highway efficiency due to increased capacity and reduced delays</td>
<td></td>
</tr>
<tr>
<td>Public Accounts</td>
<td>Potential for reduced health costs, improved productivity and lower energy consumption</td>
<td>Increased access to the transport system</td>
<td>Increased access to the transport system</td>
<td>Improved accessibility</td>
<td>Generates revenue from bus services</td>
<td>Improved accessibility</td>
<td>Improved accessibility</td>
<td>Improved accessibility</td>
<td></td>
</tr>
<tr>
<td>Business Users &amp; Providers</td>
<td>Generates revenue from bridge. Increase in business costs. Greater highway efficiency</td>
<td>Greater highway efficiency due to reduced delays for peak traffic.</td>
<td>Greater highway efficiency due to reduced delays for peak traffic.</td>
<td>Reduced Highway efficiency due to increased delay</td>
<td>Generates revenue from car park. No real change in highway efficiency.</td>
<td>Potential for more reliable trips by rail for passenger and freight</td>
<td>Greater highway efficiency due to increased capacity and reduced delays</td>
<td>Greater highway efficiency due to increased capacity and reduced delays</td>
<td></td>
</tr>
<tr>
<td>Consumer Users</td>
<td>Improved health, social community cohesion and individual well-being</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>Possible minor increase for car and bus trips</td>
<td>Possible increase for car and bus trips</td>
<td>Possible increase for car and bus trips</td>
<td>Reduction for car trips, increase for bus trips</td>
<td>No improvement for either bus or car users</td>
<td>Possible improvement for those using rail</td>
<td>Possible improvement for those using rail</td>
<td>Possible increase for highway trips</td>
<td></td>
</tr>
<tr>
<td>Wider Economic Impacts</td>
<td>Improved health, social community cohesion and individual well-being</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td>Improved reliability will contribute to local regeneration</td>
<td></td>
</tr>
<tr>
<td>Option values</td>
<td>Could increase value for non-car modes</td>
<td>Could increase option value of bus services</td>
<td>Could increase option value of bus services</td>
<td>Could increase option value of bus services</td>
<td>Could increase option value of bus services</td>
<td>Could increase option value of bus services</td>
<td>Could increase option value of bus services</td>
<td>Could increase option value of bus services</td>
<td></td>
</tr>
<tr>
<td>Severance</td>
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<td>Neutral</td>
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<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>Access to the Transport System</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>INTEGRATION</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
</tbody>
</table>

**Notes:**
- High Level Concepts include Other Government Policies, Health, education, environment, employment, traffic, and other relevant factors.
- Table entries indicate potential impacts, such as "neutral," "improved," or "reduced."
3.8 Summary of High Level Concept Assessment

This section has sought to identify various possible solutions defined as high level concepts. These are aimed at overcoming the access issues and regeneration related constraint which contributes to the socio-economic concerns identified in Halton.

Through the assessment of the possible solutions against the specific scheme objectives and the wider objectives as defined by the AST, it is concluded that there is no opportunity to promote sustainable modes for cross river trips due to the excessive use of existing capacity for highway based travel by non-public transport modes.

Therefore, in order to provide such an opportunity, and to meet the clear demand for cross river trips, it is proposed that additional infrastructure to the Silver Jubilee Bridge is provided in the form of a new fixed link. This could be provided by either a tunnel to the west or a bridge to the east of the Silver Jubilee Bridge. It is considered that a bridge provides greater benefits at a reduced cost when compared to a tunnel.

It is concluded as a result of this high level assessment of potential solutions that a new fixed link in the form of a bridge either adjacent to or east of, the existing Silver Jubilee Bridge would be the most effective way forward in terms of making a significant contribution to overcoming the accessibility, regeneration and socio-economic issues identified in Halton.

3.9 Assessment of Bridge Option against National/Regional Planning Objectives

A new bridge would accord with both national and regional objectives, as indicated by the qualitative AST (Table 2.2) above and described in greater detail below.

3.9.1 A New Deal for Transport: Better for Everyone

The new crossing falls squarely within the policies outlined in the New Deal for Transport:

a) Integration between different modes of transport

A new bridge would enable the active promotion of walking and cycling between Runcorn and Widnes as a safe and viable alternative to the private car. This would be achieved by relieving congestion on the Silver Jubilee Bridge and providing facilities for public transport, walking and cycling. The culture of multi-modal travel between the communities would be enhanced.

b) Integration with policies for the environment

The Environmental Impact Assessment will identify the mitigation required to ensure that any detrimental impact to the natural and built environment is properly considered and addressed.

c) Integration with land use planning

A new bridge is a key inclusion in local and regional planning policy.
d) **Integration with policies for health**

Halton has a very poor health record and the social impact assessment shows that a new river crossing is essential to improve the poor health and deprivation experienced in Halton. The lack of facilities provided on the Silver Jubilee Bridge for cyclists and pedestrians, contributes to the poor level of physical fitness in Halton. A new bridge will promote alternative forms of travel, thereby improving fitness.

By relieving congestion on the Silver Jubilee Bridge, response times for emergency services will improve.

e) **Integration with policies for social inclusion**

The existing congestion on the Silver Jubilee Bridge provides a barrier to social inclusion by compounding the natural severance between Runcorn and Widnes.

From a brief examination of the social problems in Halton, it is clear that issues of equity, health, social cohesion, support for the disabled and underprivileged, learning and skills, and employment are high on the agenda for Halton. It is clear that a new bridge would make a positive contribution to this agenda.

3.9.2 **Transport 2010: The 10-Year Plan**

At the core of Halton’s Local Transport Plan is the provision of a new bridge. Travel by all modes throughout the Borough is hindered by the congestion on the Silver Jubilee Bridge.

Facilities on the Silver Jubilee Bridge for cyclists are extremely poor, and the alternative cantilever footway is intimidating to pedestrians. The provision of an efficient public transport system is particularly important in this area given the low car ownership rates.

A new bridge will relieve many of these difficulties by allowing improvement of facilities for the non-motorised modes of travel. It will also relieve congestion allowing travel by bus, or by car for those for whom this represents the only realistic means of travel.

3.9.3 **Our Towns and Cities: The Future - Delivering an Urban Renaissance**

Local feeling in Halton is that historically the communities of Runcorn and Widnes have evolved separately. Severance is compounded by the single crossing and due to high levels of congestion, which makes journeys physically difficult.

Halton Borough Council has adopted a positive and inclusive approach in the process towards the development of a solution to help meet the accessibility and socio-economic issues in Halton. Local landowners, businesses, neighbouring authorities and residents have been engaged in consultation as part of this process.

As the White Paper itself states:

“This urban renaissance will benefit everyone, making towns and cities vibrant and successful, and protecting the countryside from development pressure.”
3.9.4 Regional Planning Guidance for the North West (RPG 13)

The RPG for the North West covers Cheshire, Cumbria, Lancashire, Greater Manchester and Merseyside (including the unitary authorities of Blackburn with Darwen, Blackpool, Halton and Warrington).

A new bridge across the Mersey is a requirement of policy T10 of the RPG.

3.9.5 North West Development Agency

A new bridge is a major factor in the strategy of the NWDA.

The NWDA's Mersey Belt Study states:

“... it is clear that additional river crossing capacity at or near Runcorn would significantly improve the connection between the Southern Crescent, Speke Garston and Liverpool City Centre. It was identified as a problem in the Regional Strategy and is a priority in the North West’s Regional Transport Priorities report.”

The North West’s Strategic Transport Priorities document includes the aim:

“...by 2010 [to] implement an agreed integrated access plan shifting the emphasis toward public transport, including solutions to the Mersey crossing issue at Runcorn”

3.9.6 Code of Practice on Access and Mobility

The Code of Practice was originally compiled and produced by MerseyTravel and the five Merseyside Metropolitan Councils of Knowsley, Liverpool, St. Helens, Sefton and Wirral in February 1999 and was subsequently updated in 2001 and 2002.

The Code of Practice seeks to ensure that special consideration is given to ensure ease of access and movement for disabled people between and within public areas by the careful provision, siting and design of parking areas, paths, dropped kerbs, pedestrian crossings, street furniture and open space.

These criteria will be taken into account in the detailed design criteria of any new bridge and its approaches as well as any improved pedestrian/cycle links using the Silver Jubilee Bridge.

3.9.7 Merseyside Local Transport Plan

The local councils of Knowsley, Liverpool, Sefton, St. Helens and Wirral, in partnership with MerseyTravel, submitted their 5-year Local Transport Plan for Merseyside in July 2000.

The Regional Strategy Proposals includes

"Pressing for action to improve access to the Mersey Crossing at Runcorn and Liverpool Docks and City Centre from the M62 (including any necessary capacity improvements to Junction 6)."
3.9.8 Liverpool Airport

The Liverpool Airport Surface Access strategy states:

“The Airport Company supports the proposal for an additional crossing at Runcorn and recognises the need for improved public transport links to and from the airport using this corridor.”

3.9.9 Liverpool City of Culture 2008

On 4th June 2003, the Culture Secretary, Tessa Jowell, announced that Liverpool had been chosen as the European City of Culture for 2008.

The successful bid will have a dramatic impact on the city and will bring a positive shift in the national and international profile of the city.

A year long programme of cultural and community based festivals and events will be held in 2008, extending and broadening existing plans to celebrate the city's 800th birthday in 2007.

The award will bring about a £35 million investment in the city's cultural offer as well as permanent and world-class new cultural features worth at least £380 million.

Glasgow was the last British City to be European Capital of Culture in 1990. Glasgow saw the creation of thousands of jobs and more than £1bn worth of public and private investment.

A new crossing will allow communication links to be greatly improved to Liverpool, particularly from the European mainland.

3.10 Assessment Against Local Planning Objectives

3.10.1 Halton Borough Council Unitary Development Plan (UDP)

A new bridge across the Mersey is one of Halton’s Strategic Policies included in the UDP. Policy S14 states:

“A scheme for a new crossing of the River Mersey, east of the Silver Jubilee Bridge will be promoted to relieve congestion on the existing bridge as part of an integrated transport system for Halton and the wider transport network.”

3.10.2 Halton Borough Council Local Transport Plan

The Silver Jubilee Bridge presents a unique challenge to the Council in maintaining a highway structure of such magnitude that carries over 80,000 vehicles each weekday. The Silver Jubilee Bridge has been acknowledged to have regional economic importance but the limit on capacity constrains economic growth and regeneration the sub-region and in the Borough. It also creates a barrier to the development of community interaction between Runcorn and Widnes
The Local Transport Plan recognises that a new bridge across the River Mersey is needed to enable fully integrated solutions to be pursued. Good public transport links over the River Mersey are necessary and whilst bus lanes are being provided on the approaches to the Silver Jubilee Bridge, the bridge itself cannot accommodate bus priority lanes under current conditions.

A new bridge could provide or allow/enable enhanced reliability for buses, dedicated facilities for pedestrians and a focal crossing point for primarily sub-regional and strategic traffic movements. This would provide relief for the existing Silver Jubilee Bridge, which could then carry local traffic.

3.10.3 Mersey Crossing Group Scheme Objectives

In response to the problems outlined in Section 1 above, Halton Borough Council and the Mersey Crossing Group have defined the objectives that they expect any new Mersey crossing to fulfil.

The main objectives of such a scheme would be:

- To relieve the Silver Jubilee Bridge, thereby removing the constraint on local and regional development and better provide for local traffic needs. (The new crossing must provide a viable alternative route to the Silver Jubilee Bridge).
- To maximise development opportunities.
- To improve public transport links across the river.
- To encourage the increased use of cycling and walking.

For the new crossing to be successful:

- It must fulfil each of the above objectives.
- It must fit its environment
- It must be economically viable

The success of the scheme will be measured by the benefits it brings to users of the crossing and to the wider community.

3.10.4 Key Scheme Criteria

In order for any crossing scheme to meet the above local and therefore national objectives, the scheme must enable travel by sustainable modes, and actively contribute to the regeneration of the Halton area.

a) Encourage Sustainable Travel

It is a key objective of the project that any new bridge improves public transport links across the river, and encourages the increased use of cycling and walking.

Forecast demand for traffic crossing the Mersey between Runcorn and Widnes is 106,029 AADT by 2027. Government guidelines require that provision must also be made for public transport plus cycling and walking. For those alternative modes of transport to be meaningful, this requires an attractive provision. In the case of public transport, the provision must permit the establishment of a reliable and efficient service. In the case of
walking and cycling, the provision must be convenient and offer user safety. This implies physical access from the centres of Runcorn and Widnes at acceptable distances.

The most attractive corridor for cycling and walking is the route of the Silver Jubilee Bridge. Historically, the centres of leisure, employment and retail have evolved around this route as the primary route for travel. Hence, the route serves destinations well.

Consequently, in order to achieve this objective, it will be necessary to provide enhanced public transport, walking and cycling facilities on the Silver Jubilee Bridge. The existing road network and current facilities for these road users, together with the length of any other route, means that the number of walking and cycling journeys across any new route would be negligible.

The two crossings would be viewed as a single transport corridor. On the existing Silver Jubilee Bridge, provision would be made for two lanes of local traffic, and the remaining roadspace would be devoted to pedestrians and cycles.

Strategic traffic, identified as a problem in Halton, would be encouraged through the design of the approaches onto the new crossing. There would be no time saved by choosing the Silver Jubilee Bridge.

The resulting spare capacity on the Silver Jubilee Bridge would enable buses to be included within the normal carriageways. Segregated bus lanes would continue on the approaches but would not be required on the bridge deck, as there would be improved reliability resulting from lower traffic flows.

It is therefore an essential requirement of the new crossing, that it transfers enough strategic traffic from the Silver Jubilee Bridge to allow it to be reduced to two lanes of vehicular traffic.

A suggested typical cross section for these facilities on the Silver Jubilee Bridge is shown in Figure 3.1 below:
b) Building a Better Future

Halton Borough Council recently produced its corporate plan entitled Building a Better Future. This plan recognises that the Borough has inherited many problems, due in the main to the area’s industrial past.

This plan outlines the processes required to improve quality of life for the residents of Halton against five strategic priorities, as follows:

- Improving health standards
- Promoting urban renewal
- Enhancing life chances and employment
- Increasing Prosperity and Equality
- Ensuring safe and attractive neighbourhoods.

A new bridge would make a positive contribution to the attainment of these priorities through providing an opportunity to encourage healthy local travel through increased walking/cycling, enabling regeneration and improving social and economic cohesion throughout Halton.
4. ROUTE OPTION ASSESSMENT

4.1 Identification of Route Options

In order to identify and select routes for inclusion in this assessment, a full and detailed audit of all possible routes for a new bridge crossing has been completed. Please see Technical Report TR 27/01 which describes the alternative route options for a new bridge.

Figure 4.1 below illustrates the routes under consideration for the proposed Mersey Gateway.

![Proposed Routes for the Mersey Gateway](image)

Figure 4.1 Proposed Routes for the Mersey Gateway

Each of these routes is considered in detail in the following sections.

Initially, a brief overview of the route under consideration is made. Further information on and drawings of these routes can be found in the various technical reports accompanying this appraisal, specifically TR 27/01.

The routes are then considered against the scheme objectives and other selection criteria in determining which to take forward to a full detailed NATA assessment.
4.1.1 Route 1 - Close to the Existing Silver Jubilee Bridge

Route 1 occupies the historical transportation corridor across the Mersey at the Runcorn Gap. This natural narrowing of the estuary provides the shortest physical crossing within the study area and is superficially the most obvious choice for a new crossing.

Existing structures occupy the site. The first, built in 1868, is the viaduct that carries the main railway line between London and Liverpool. This structure has intermediate piers within the navigable waterway.

The proximity of a new crossing to the Silver Jubilee Bridge and the Railway Bridge, both of which are listed structures, also means that interaction between the new bridge and the Silver Jubilee Bridge needs to be considered carefully, particularly with respect to visual impact.

The constriction at the Runcorn Gap results in extreme tidal currents in excess of 2m/sec through the gap. Any marine operation necessary for the construction of a new bridge will be operating in extremely dangerous conditions. The risk to the existing structures from such an activity is obvious and effectively rules out anything other than a clear span structure with a span of approximately 400 metres. Structural choices in such circumstances are limited.

The area adjacent to this route corridor is heavily urbanised with a high proportion of residential properties and is close to the urban centres of Runcorn and Widnes. The construction of a new crossing in this area would cause significant disruption to local residents and businesses.

At the Weston Point Expressway Interchange, a further 6 viaducts would be needed and a 5m high retaining wall; at the Speke Road interchange, two viaducts and two bridges would be required.

The possibility of constructing a new crossing between the Silver Jubilee Bridge and the railway bridge has been suggested in the past. However the narrow distance between the two existing bridges makes construction of such a bridge extraordinarily difficult.

Operating the two bridges together to adequately serve both local and through traffic presents its own difficulties. The demands of each are different. The predicted traffic flows would require modification of the links with the highway network. It is clear there are significant advantages to dedicating Silver Jubilee Bridge to public transport and local traffic and to arrange for the new bridge to take all the through/strategic traffic. The additional structural cost of the bridge would be offset by the simplification of the arrangement of the bridge approaches.

4.1.2 Route 2 - Route Overview

Route 2 is approximately 1 kilometre upstream from the Silver Jubilee Bridge. It starts on the south side of the river at the junction between Astmoor Lane and the Bridgewater Expressway, crosses the ship canal and the edges of the salt marshes before crossing the estuary. On the north bank, it crosses the salt marshes, St. Helens Canal and railway line before joining Ashley Way to the west of Rhodia.
The approach spans for each option would be the same type of construction as the short span option, thus providing a continuous viaduct in each case. Spans would be chosen to tie in with the main river structure, the ship canal crossing and the position of the structures at the Astmoor Interchange.

Works at Astmoor Interchange would carry a requirement for 3 bridges and 5 retaining walls; whilst Speke Road Interchange would require 6 bridges and 2 retaining walls.

4.1.3 Route 2A - Route Overview

Route 2A is approximately 1.25 km upstream from the Silver Jubilee Bridge. It starts on the south side of the river at the junction between Astmoor Lane and the Bridgewater Expressway, crosses the ship canal and the edges of the salt marshes before crossing the estuary. On the north bank, it crosses the salt marshes, St. Helens Canal and railway line before joining Ashley Way to the east of Rhodia at Bowers Business Park Roundabout. The Runcorn terminal junction at Astmoor and the Widnes terminal junction at Widnes will be as defined in Routes 2 and 3 respectively.

As with Route 2, there are a number of structure options with this route: short spans and medium spans. The approach spans for each option would be the same type of construction as the short span option, thus providing a continuous viaduct in each case. Spans will be chosen to tie in with the main river structure, the ship canal crossing and the position of the structures at the Astmoor Interchange.

Works at Astmoor Interchange would carry a requirement for 3 bridges and 5 retaining walls; whilst the Bowers Roundabout would require 2 new retaining walls.

4.1.4 Route 3 - Route Overview

Route 3 is approximately 1.8 km upstream from the Silver Jubilee Bridge. It starts on the south side of the river at the junction of the Daresbury, Bridgewater and Central Expressways, crosses Astmoor Industrial Estate, the ship canal and the edges of the salt marshes before crossing the estuary. On the north bank, it crosses the salt marshes, St. Helens Canal and railway line before joining Ashley Way to the east of Rhodia.

As with Route 2, there are a number of structure options with this route: short spans and medium spans. The approach spans for each option would be the same type of construction as the short span option, thus providing a continuous viaduct in each case. Spans will be chosen to tie in with the main river structure, the ship canal crossing and the position of the structures at the terminal interchange.

At present, there is no proposal for grade separation of the junction on the north bank as this would have significant cost implications, although it would add operational value.
4.1.5 Route 3A – Between Central Expressway and Ashley Way

Route 3A is approximately 1.6 km upstream from the Silver Jubilee Bridge. It starts on the south side of the river at the junction of the Daresbury and Central Expressways, crosses Astmoor Industrial Estate, the ship canal and the edges of the salt marshes before crossing the estuary. On the north bank, it crosses the salt marshes, St. Helens Canal and railway line before joining Ashley Way to the west of Rhodia.

As with Route 2, there are a number of structure options with this route: short spans and medium spans. The approach spans for each option would be the same type of construction as the short span option, thus providing a continuous viaduct in each case. Spans would be chosen to tie in with the main river structure, the ship canal crossing and the position of the structures at the terminal interchange.

4.1.6 Route 4 – Narrowest local point east of existing bridge

Route 4 is approximately 4.5 km upstream of the Silver Jubilee Bridge. It starts from Daresbury Expressway at Manor Park and heads northwards to the river crossing at Fiddler’s Ferry. Once across the river it skirts the edge of the Fiddler’s Ferry power station lagoons on embankment before crossing the salt marshes, St. Helens canal and the railway line on a separate structure and joining Fiddler’s Ferry Road west of the power station.

Route 4 is considered to favour sub-regional traffic and likely to demonstrate additional benefits to St Helens and Warrington, although it is still considered to increase local accessibility.

4.2 Route Assessment

In considering the identified potential routes, it is clear there are a number of route options. The route options considered broadly fit into 3 groups as follows:

- Adjacent to Silver Jubilee Bridge – Route 1
- East of Silver Jubilee Bridge – Routes 2, 2A, 3 & 3A
- Far East of Silver Jubilee Bridge – Route 4

In section 3.2.1, all of these routes are assessed against the scheme objectives. Those route options meeting the scheme objectives are then considered in more detail in section 3.2.2 to determine which options should be taken forward for detailed appraisal using the NATA methodology.

4.2.1 Assessment against Scheme Objectives

In Table 3.1, an assessment is made of whether the route under consideration meets the scheme objectives. If these criteria (outlined in Section 2 above) are not met, then the scheme would not be progressed even if funding were available. The assessment revealed the following:
a) **Routes Adjacent to SJB**

Route 1 performs very well with regard to SJB relief and would provide opportunities to improve public transport provision and facilities for pedestrians and cyclists. Route 1 is a distinct option – no other viable route options adjacent to the SJB have been identified.

b) **Routes East of SJB**

Routes 3 and 3A perform well against all objectives. Although there is less transfer from the SJB than Route 1, the level of relief is still sufficient to reduce the SJB to two lanes and hence provide opportunities to improve public transport provision and facilities for pedestrians and cyclists.

Routes 2 and 2A do not perform as well as 3 and 3A against the scheme objectives due to significantly less traffic transfer from the SJB to the new crossing. Route 2 could be made to meet the scheme objectives by delinking direct access routes to the SJB and/or restricting traffic using the SJB. However, this would result in a reduction in transport economic benefits. Route 2A performs less well than Route 2 and does not have any additional benefits over the other routes in this group.

c) **Routes Far East of SJB**

Route 4 does not meet the key scheme objectives of SJB relief and access to economic regeneration sites. The lack of relief to the SJB means that public transport provision cannot be improved significantly and no improvements should be made to the cycling and pedestrian facilities. For Route 4 to meet the scheme objectives traffic would have to be forced to use the new crossing in preference to the SJB. It is believed that this could only be achieved by severely restricting traffic on the SJB e.g. to public transport, pedestrians, cyclists and motor bikes. However, this would significantly increase journey times for most traffic resulting in a negative Net Present Value for the scheme.

Route options considered to meet the scheme objectives are:

- Adjacent to Silver Jubilee Bridge - Route 1
- East of Silver Jubilee Bridge - Routes 3 & 3A

4.2.2 Pre AST Route Selection

In Table 4.2, those routes meeting the scheme objectives are considered alongside other issues, such as structural options, construction impacts, costs and main environmental and socio-economic concerns. These criteria do not fit well within the AST and so are used as a selection tool for which routes should be taken forward for detailed appraisal. The cost breakdown for these routes can be found in Technical Report B4027/TR16/01 – Cost Report.

a) **Routes Adjacent to SJB**

Only one route is being considered within this group. Although Route 1 performs well against the scheme objectives, the impacts of the construction of this scheme on the communities of Runcorn Old Town and Widnes West Bank are considered to be unacceptable. In addition, there are major concerns over the visual impact of a new bridge.
in this location with respect to the impact on the setting of the SJB and Railway bridge which are both listed structures. The impact of a multispans structure in this location on the hydrodynamics of the river is also considered to be unacceptable.

Despite the concerns expressed above, it is recommended that Route 1 Single Span is taken forward for more detailed appraisal for comparison with other options.

b) Routes East of SJB

The next best performing route, with regard to meeting the scheme objectives, to Route 3A is Route 3. However, Route 3A is crucially different to Route 3 because it requires no land take from the Widnes Waterfront Economic Development Zone and better integration with existing highway networks. Therefore it provides a more integrated option for all local transport networks due to greater relief of the SJB and the potential for grade separated junctions reducing congestion and delay for public transport services. It is on this basis that Route 3 is not progressed to full appraisal.

As noted above, Routes 2 and 2A perform less well than 3 and 3A against the scheme objectives. In addition, neither of these routes has any significant benefits over 3 and 3A when assessed against other issues.

It is recommended that Route 3A is taken forward for more detailed appraisal as the preferred route from this group.

4.2.3 Assessment against Central Government Objectives

Appraisal Summary Tables are provided for the following options (Table 4.3 and 4.4). AST worksheets are provided in Volume 3 of this Major Scheme Appraisal.

<table>
<thead>
<tr>
<th>Route</th>
<th>Span Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 1</td>
<td>Single Span</td>
</tr>
<tr>
<td>Route 3A</td>
<td>Medium Spans</td>
</tr>
<tr>
<td>Route</td>
<td>Relieve Silver Jubilee Bridge</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Route 1</td>
<td>The provision of a new bridge upstream of Silver Jubilee Bridge works well and fully satisfies the criteria of increased capacity and facilitating public transport and cycling and walking.</td>
</tr>
<tr>
<td>Route 2</td>
<td>The traffic modelling exercise shows that approximately 38% of traffic was attracted to the existing Silver Jubilee Bridge, and 62% of crossing traffic, went towards the Mersey Gateway. This route does not have the potential to reduce the Silver Jubilee Bridge to two lanes unless additional measures are taken to divert more traffic onto the new crossing e.g. by delinking approach roads to the SJB.</td>
</tr>
<tr>
<td>Route 3</td>
<td>Although the bridge has no greater benefits than Route 2, it attracts significantly less traffic than Route 2 due to the configuration of the junctions and the alignment of the route. It is doubtful whether the shift of strategic traffic would to such an extent that the Silver Jubilee Bridge could be downgraded to two lanes. Consequently, the objectives of the crossing would not be met and the route should therefore be rejected.</td>
</tr>
<tr>
<td>Route 3A</td>
<td>The analysis and modeling of the traffic for this option showed that the existing Silver Jubilee Bridge would attract approximately 21% of traffic, in the design year (2022). Route 3 demonstrates a good potential to transfer strategic traffic onto the new crossing and is therefore considered to comply with this test.</td>
</tr>
<tr>
<td>Route 4</td>
<td>The traffic model shows that existing Silver Jubilee Bridge would attract 26% of traffic, and there would be a diversion of about 74% of traffic with a peak flow of 3789 vehicle per hour unto the new crossing, by the design year (2022). Route 3 demonstrates a good potential to transfer strategic traffic onto the new crossing and is therefore considered to comply with this test.</td>
</tr>
<tr>
<td>Tunnel</td>
<td>The tunnel would attract little traffic from the Silver Jubilee Bridge and would not be of a sufficient level to allow the Silver Jubilee Bridge to be reduced to two lanes. Consequently, this route would not meet the objectives of the new crossing.</td>
</tr>
</tbody>
</table>

Table 4.1 Route assessment against scheme objectives
<table>
<thead>
<tr>
<th>Route</th>
<th>Main Span Options</th>
<th>Main Span Length</th>
<th>Socio-economic Issues</th>
<th>Construction Issues</th>
<th>Main Environmental Concerns</th>
<th>Estimated Cost (*)</th>
<th>Scheme Taken Forward to AST?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The health and safety concerns associated with the construction new piers in the</td>
<td>Impact on residents and businesses in Runcorn Old Town and Widnes West Bank are considered</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Runcorn Gap and risk to existing structures for a multi-span option is considered</td>
<td>to be unacceptable. Visual impact of cable-stayed option on existing listed bridges is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Route 1</td>
<td>Cable-stayed</td>
<td>435m</td>
<td>This route has a significant adverse impact on the communities of Runcorn Old Town and</td>
<td>unacceptable</td>
<td>considered unacceptable. Impact of multi-span option on hydrodynamics is considered</td>
<td>£235m</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Widnes West Bank as detailed in Technical Report TR12/01. A significant number of</td>
<td>For the cable-stayed option the main tower would be constructed from bank to</td>
<td>unacceptable.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>residential properties and community buildings will require demolition, including a</td>
<td>minimise health and safety risks and hydrodynamic impacts</td>
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<td></td>
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<td></td>
<td>school in Runcorn.</td>
<td>Traffic management during construction is likely to be extremely disruptive.</td>
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<tr>
<td>Route 3</td>
<td>Short Spans (Viaduct)</td>
<td>100m</td>
<td>Impact on the west end of the Widnes Waterfront Economic Development Zone. Impact on</td>
<td>Construction over saltmarsh and estuary will present some difficulties due to nature of</td>
<td>Measures to minimise impact on saltmarsh and intertidal habitats and birds will need to be</td>
<td>£316m</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Astmoor Industrial Estate</td>
<td>ground and tides but methods are available to overcome these difficulties</td>
<td>taken. Short spans have greater impact on hydrodynamics. There are no significant</td>
<td></td>
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<tr>
<td></td>
<td>Medium Spans (Cable Stayed)</td>
<td>3x320m</td>
<td></td>
<td></td>
<td>environmental impacts that could not be mitigated</td>
<td>£359m</td>
<td>No</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>£366m</td>
<td>No</td>
</tr>
<tr>
<td>Route 3A</td>
<td>Short Spans (Viaduct)</td>
<td>100m</td>
<td>Impact on Astmoor Industrial Estate and Catalyst Business Park.</td>
<td>Construction over saltmarsh and estuary will present some difficulties due to nature of</td>
<td></td>
<td>£344m</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Medium Spans (Cable Stayed)</td>
<td>3x360m</td>
<td></td>
<td>ground and tides but methods are available to overcome these difficulties</td>
<td></td>
<td>£400m</td>
<td>Yes</td>
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</tbody>
</table>

Table 4.2 Assessment of Routes meeting the Scheme Objectives

(*) Cost estimates as included in Technical Report TR17/01 (July 2003) includes upper limit optimism bias for non-standard projects at 66%.
### Table 4.3 - Route 1 Single Span (Route as developed in July 2003)

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Problems</th>
<th>Present Value Costs to Public Accounts</th>
<th>Qualitative Impacts</th>
<th>Quantitative Measure</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 1 Cable Stayed Bridge</td>
<td>New single-span crossing alongside the existing Silver Jubilee Bridge. The new crossing will work in tandem with the Silver Jubilee Bridge to carry both strategic and local traffic.</td>
<td>Silver Jubilee Bridge acts as a control to the road network capacity.</td>
<td>£295.7m</td>
<td>ENVIRONMENT</td>
<td>Noise: Route 1 would result in 10 additional people being annoyed in the future compared to do minimum. The nature of this annoyance is very low. The number of properties to be demolished reduces the impact of this option.</td>
<td>Net Population affected: +10</td>
</tr>
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<td></td>
<td>Local Air Quality: The proposal does not lead to an increase in PM10 levels by over 2ng/m³ or NOx levels by over 4ug/m³. The proposal does not exceed the AQGI NOx objective of 40ug/m³.</td>
<td>A total of 318 properties are likely to be affected. (2007)</td>
</tr>
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<td>Greenhouse Gases: The do something scenario will have a positive impact as it reduces carbon dioxide emissions when compared to the do nothing scenario. The rail emissions not taken into account.</td>
<td>NOx -83.34 (2007) PM10 0 (2007)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Landscape: Route of new crossing has a negligible effect on landscape.</td>
<td>2792.6 tonnes of CO2 (2007)</td>
</tr>
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<td></td>
<td>Townscape: Effects on locally distinctive features of West Bank Meadows and Runcorn Old Town which have developed to North and South Banks of Runcorn Gap. Crossing 1 bridge point and nine form part of setting of Grade II Listed Silver Jubilee Bridge.</td>
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<td>Heritage of Historic Resources: Substantial adverse effect on setting and visual impact of listed bridges, particularly the Silver Jubilee Bridge, a landmark feature of iconic status in the urban area, that cannot be mitigated. Views of and from the Silver Jubilee Bridge, the railway bridge and Waterloo Bridge would be blocked by the close proximity of this route. Mitigation by means of recording/excavation and viewing brief reduces the adverse impact on the potential buried heritage resource and the historical industrial zones of Runcorn and Widnes and the Conservation Areas to slight adverse effect. Whilst the construction ground disturbance works within the estuary equals to a potential of recovery of buried boats/orbels and associated finds this potential is unknown, possibly low, given the lack of previous finds and that recovery would be limited to the locations of the preconstruction groundworks. The ground disturbance works in the estuary therefore are regarded as of slight adverse affect and adequate mitigation works can be undertaken to address any potential uncertainty. Again the potential for recovery of features/finds related to the site of the transporter bridge, Seacom bnh and possible Roman crossing point at Runcorn Gap is also unknown, possibly low given the lack of previously recovered evidence in those areas. Adequate mitigation works can be undertaken to address any features/finds uncovered in those areas and so the overall effect is given as slight adverse.</td>
<td>LARGE ADVERSE</td>
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<td>Biodiversity: Importance: SPA &amp; RAMSAR sites (located east of Silver Jubilee Bridge) are of International Importance; SSSI (located west of Silver Jubilee Bridge) is of National Importance; Saltmarsh habitats and vegetation (located east of Silver Jubilee Bridge) is of Regional Importance; Fiddlers Ferry Power Station Lagoons (located west of Silver Jubilee Bridge) is of Regional Importance. The following sites are considered to be of Local Importance: Manchester Ship Canal Bank; St Helens Canal, wider habitats and vegetation in Widnes and Runcorn, intertidal aquatic ecology, subtidal aquatic ecology. Significance: Assessments undertaken considering mitigation. The results from the hydrodynamics modelling indicate that route 1 could result in morphological changes to the estuary downstream of the Runcorn Gap. Changes in the morphology of this area have the potential to impact on the ecosystem within the designated sites.</td>
<td>LARGE ADVERSE</td>
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<td>Water Environment: Incorporation of design features to EA requirements to mitigate potential impact on water quality on the Mersey Estuary including sensitive species at the construction stage recognising seasonal constraints. Mitigation: Incorporation of statutory requirements (EAENV) to mitigate potential impact on ecology of the Mersey Estuary including sensitive species at the construction stage recognising seasonal constraints.</td>
<td>LARGE BENEFICIAL</td>
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<td>Physical Fitness: The New Crossing will increase walking and cycling for approximately 2400 people. This will be predominantly home to work shopping trips. As a result, physical fitness in excess of 30 minutes is low, but below 30 minutes is very high.</td>
<td>Pedestrians + 87 Cyclists + 10 Score +97</td>
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<td>Journey Ambience: Significant reductions in travel stress and improvements in travel views.</td>
<td>LARGE BENEFICIAL</td>
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<td></td>
<td>SAFETY</td>
<td>Accidents: The new crossing will result in a small decrease in serious and slight accidents.</td>
</tr>
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<td></td>
<td>Security: Security for all road users will increase traffic including pedestrians and cyclists.</td>
<td>LARGE BENEFICIAL</td>
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<td>ECONOMY</td>
<td>Public Accounts: The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the relief of the delay, rather than by providing alternative route choices. The traffic figures are based on a variable demand, providing some measure of both suppressed and released / induced traffic within the analysis. Analysis results in a Net Present Value of £1246m.</td>
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<td>Business Users &amp; Providers: The NMC is expected to contribute significantly to the growth of the wider NW economy and to regeneration of the Mersey Basin Primary Area through enhancement of the image of the area, increased attractiveness to inward investment, and strengthening and deepening of the economic base of the area.</td>
<td>Large Beneficial</td>
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<td>Reliability: A stress based approach considers stress as the ratio of daily traffic to the congestion reference flow. Impact is the change in stress x daily flow (AADT)</td>
<td>Large Beneficial</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Wider Economic Impacts: The NMC is expected to contribute significantly to the growth of the wider NW economy and to regeneration of the Mersey Basin Primary Area through enhancement of the image of the area, increased attractiveness to inward investment, and strengthening and deepening of the economic base of the area.</td>
<td>Large Beneficial</td>
</tr>
<tr>
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<td></td>
<td>ACCESSIBILITY</td>
<td>Option values: The crossing will provide value to more than 100,000 residents and workers in Halton</td>
</tr>
<tr>
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<td>Severance: All routes subject to increased traffic flows are provided with existing grade separated crossings.</td>
<td>NONE</td>
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<td>Access to the Transport System: Most properties are Halton are within 250m of a daily hour bus service. The new crossing will have no impact.</td>
<td>NEUTRAL</td>
</tr>
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<td></td>
<td>Transport Interchange: Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Territorial Use Policy: Not applicable</td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Other Government Policies: Not applicable</td>
<td>MODERATE BENEFICIAL</td>
</tr>
</tbody>
</table>

**The Mersey Gateway – A New Mersey Crossing**

**Major Scheme Appraisal – Volume 1**

**Grifford and Partners**

**Report No. B4027/MSA/02**

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### Table 4.4 - Route 3A Medium Spans (Route as developed in July 2003)

<table>
<thead>
<tr>
<th>Objective</th>
<th>Sub-Objective</th>
<th>Qualitative Impacts</th>
<th>Quantitative Measure</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENVIRONMENT</strong></td>
<td>Noise</td>
<td>Route 3A results in an additional 20 people being annoyed with most of them being in the higher noise exposure categories.</td>
<td>Do-Minimum (2022)</td>
<td>Not Population affected -50</td>
</tr>
<tr>
<td></td>
<td>Local Air Quality</td>
<td>The proposal does not lead to an increase in PM10 levels by over 2mg/m³ or NOx levels by over 4mg/m³. The proposal does not exceed the AQS NOx objective of 40mg/m³.</td>
<td>Do-something (2023)</td>
<td>Slight - Moderate Adverse</td>
</tr>
<tr>
<td></td>
<td>Greenhouse Gases</td>
<td>The do nothing scenario will have a positive impact as it reduces carbon dioxide emissions when compared to the do nothing scenario. It will therefore go towards achieving national targets.</td>
<td>A level of 0.08% is likely to be affected. (2007)</td>
<td>Slight - Moderate Adverse</td>
</tr>
<tr>
<td></td>
<td>Landscape</td>
<td>The proposed development will have a moderate impact on the local landscape.</td>
<td>NO2 - 416.75 (2007) PM -36.38 (2007)</td>
<td>Slight - Moderate Adverse</td>
</tr>
<tr>
<td></td>
<td>Townscape</td>
<td>Route of new crossing has a negligible effect on townscape.</td>
<td>Not applicable</td>
<td>Neutral - Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Heritage of Historic Resources</td>
<td>A minor effect on existing and value impact of listed bridges, particularly the Silver Jubilee Bridge, a landmark feature of iconic status in the region, that cannot be mitigated. However distance from the Listed bridges means that this route has a slight adverse effect. Mitigation by means of recording/excavation and watching brief reduce the adverse impact on the industrial heritage resource to slight adverse effect. Whilst the construction ground disturbance works within the estuary equate to a potential of recovery of buried boats/wharves and associated finds, this potential is low, given the lack of previous finds and that recovery would be limited to the locations of pier/construction works. The ground disturbance works within the estuary therefore are regarded as slight adverse effect and adequate mitigation works can be undertaken to address any potential uncovered. Medium number of piers-ground works within the estuary equates to slightly higher potential for recovery of undiscovered buried remains within estuary.</td>
<td>Net Population affected</td>
<td>Neutral - Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Biodiversity</td>
<td>Mitigation: Incorporation of statutory requirements (BAEEN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.</td>
<td>Complies with policies of DEFRA, Cabinet Office, DCMS, DfEE, Department for Transport, FCO, Department for Work &amp; Pensions, Treasury MODERATE BENEFICIAL</td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Water Environment</td>
<td>Mitigation: Incorporation of design features to EA requirements to mitigate potential impact on water quality on the Mersey Estuary including sensitive procedures at the construction stage. With regards to run-off and flood risk in the operation phase the drainage will be designed to ensure that there is no additional flood risk towards achieving national targets. Rail emissions not taken into account.</td>
<td>Construction stage recognising seasonal constraints.</td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Physical Fitness</td>
<td>The New Crossing will increase walking and cycling for approximately 2400 people. This will predominantly home to work shopping trips. As a result, physical fitness in excess of 30 minutes is low, but below 30 minutes is very high.</td>
<td>Construction stage recognising seasonal constraints.</td>
<td>Slight Adverse</td>
</tr>
<tr>
<td></td>
<td>Journey Ambience</td>
<td>Benefits in Traveller views and environment are offset by a potential deterioration caused by an excess of information at the terminal junctions.</td>
<td>Not applicable</td>
<td>Neutral</td>
</tr>
<tr>
<td><strong>SAFETY</strong></td>
<td>Accidents</td>
<td>The new crossing will result in a small decrease in serious and slight accidents.</td>
<td>Reduction in annual accidents: Fatal: 0 Serious: 3 Slight: 16</td>
<td>PVB £19.9m</td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>Security for all road users will increase including pedestrians and cyclists.</td>
<td></td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td><strong>ECONOMY</strong></td>
<td>Public Accounts</td>
<td>The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the relief of the delay, rather than by providing alternative route choices. The traffic figures are based on a variable demand, providing some measure of both suppressed and released route traffic within the analysis. Analysis results in a Net Present Value of £141m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
<td>Central Govt PVB £399.7m</td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td></td>
<td>Business Users &amp; Providers</td>
<td>The new crossing will result in a small decrease in serious and slight accidents.</td>
<td>Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td></td>
<td>Consumer Users</td>
<td>The new crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the relief of the delay, rather than by providing alternative route choices. The traffic figures are based on a variable demand, providing some measure of both suppressed and released route traffic within the analysis. Analysis results in a Net Present Value of £141m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
<td>Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
<td>The new crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the relief of the delay, rather than by providing alternative route choices. The traffic figures are based on a variable demand, providing some measure of both suppressed and released route traffic within the analysis. Analysis results in a Net Present Value of £141m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
<td>Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td><strong>ACCESSIBILITY</strong></td>
<td>Option values</td>
<td>The crossing will provide value to more than 100,000 residents and workers in Halton</td>
<td>Not applicable</td>
<td>Neutral</td>
</tr>
<tr>
<td></td>
<td>Severance</td>
<td>All routes subject to increased traffic flows are provided with existing grade separated crossings.</td>
<td>Neutrality: Assessments undertaken considering mitigation.</td>
<td>Slight Positive</td>
</tr>
<tr>
<td></td>
<td>Access to the Transport System</td>
<td>Most properties in Halton are within 250m of a daily hourly bus service. The new crossing will have no impact.</td>
<td>Neutrality: Assessments undertaken considering mitigation.</td>
<td>Neutral</td>
</tr>
<tr>
<td><strong>INTEGRATION</strong></td>
<td>Transport Interchange</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Land-Use Policy</td>
<td>Compliance fully with many national, regional and local land use and planning policies.</td>
<td>Complies with policies of DEFRA, Cabinet Office, DCMS, DfEE, Department for Transport, FCO, DoH, Home Office, DWP, Treasury</td>
<td>LARGE BENEFICIAL</td>
</tr>
<tr>
<td></td>
<td>Other Government Policies</td>
<td>Compliance with policies of DEFRA, Cabinet Office, DCMS, DfEE, Department for Transport, FCO, DoH, Home Office, DWP, Treasury</td>
<td></td>
<td>MODERATE BENEFICIAL</td>
</tr>
</tbody>
</table>
4.3 SUPPORTING ANALYSIS

These supporting analyses are considered an integral part of the decision making process and analysis of any proposed scheme. The four topics covered which do not easily fit within an AST are:

- Distribution and equality
- Affordability and financial sustainability
- Practicality and public acceptability
- Contribution to 10 year plan targets

4.3.1 Distribution and Equity

A Social Impact Assessment for the project has been provided in Technical Reports B4027/TR12/01 – Social Impacts and B4027/TR12/02 – Social Impacts of Tolling.

In 2000, a comprehensive survey of deprivation was undertaken by the Department for the Environment, Transport and the Regions, who commissioned a team at the University of Oxford to produce an Index of Multiple Deprivation (IMD) for each ward within England. They updated and enhanced work relating to the 1991 National Census data and 1998 Indices of Local Deprivation. This IMD was used to assess the sensitivity of wards within Halton and therefore the likely significance of impact on individuals and families of the alternatives for the Mersey Gateway.

The Index of Multiple Deprivation Survey showed that 10 of Halton’s 21 wards are included in the top 10% of the most deprived wards in England, representing 54% of Halton’s total population (Halton Borough Council: IMD A Halton Perspective report 2000). This suggests that residents in Halton may be sensitive to both the positive and negative effects created by the construction of a new crossing of the Mersey in the Borough.

From the social assessment, the Do-Nothing option, although having the benefit of not disrupting communities, does not solve the problems of increasing congestion and could limit the community regeneration potential of the area. The construction of a second road crossing in Halton should contribute toward improving the long-term quality of life experienced by many residents because of the opportunities likely to result.

However, construction of Route 1 would have a severe and significant social impact on individuals and families in the surrounding areas of West Bank and Runcorn and in Halton in general. The construction of this route would result in the demolition of a number of residential properties and community facilities and this would have significant social implications.

Disruption during construction would be a further major impact associated with Route 1 due to its location next to the Silver Jubilee Bridge and within residential areas. Disruption would therefore be experienced by not only local residents but by people wishing to travel across the Mersey via existing routes crossing the Silver Jubilee Bridge. In the short term, congestion effects would be exacerbated. Air quality, health and safety issues are associated with the construction phase and possible increased traffic to the area. These are likely to mainly affect individuals and families in surrounding areas, who are sensitive and vulnerable to such impacts.

Health impacts have also been considered with regard to air quality and noise implications. However, there are a number of less easily defined health implications such as that of community
stress. A detailed Health Impact Assessment is to be carried out in the near future for the preferred route.

Further development of mitigation measures specific to the chosen option will need to be undertaken. Finally suitable indicators will also need to be identified in against which actual impacts of the chosen Route can be monitored.

4.3.2 Affordability and Financial Sustainability

Please refer to Volume 2 of this Major Scheme Appraisal.

4.3.3 Practicality and Public Acceptability

a) Public Consultation

Throughout the lifetime of the project, consultation with the general public, local businesses and interest groups has been extensively carried out. The Consultation Technical Reports are included as B4027/TR16/01 and B4027/TR16/02.

There have been three distinct consultation phases to inform different stages within the project’s development as follows:

Stage 1, carried out between September and November 2002, focused on current perceptions of the Silver Jubilee Bridge and travel needs. This stage of consultation included details of: current use of the bridge; problems using the bridge and their impacts; suggested improvements to the bridge; support for a new crossing; and expectations and potential impacts of a new crossing.

The Stage 1 public consultation also included initial perceptions on a number of possible crossing options although the selection of a preferred route option was not an objective at this stage.

Since the completion of Stage 1, research has provided an assessment of the impact of each of the options. Stage 2 has therefore concentrated on detailed discussions of the route options, including: probable impacts; advantages; disadvantages and preferred options.

Stage 2, carried out between February and April 2003, again included the identified stakeholder groups: residents of Halton; businesses in the region; and local interest groups.

Stage 3 of the consultation is on-going. This is to focus on the details of the preferred route and any concerns of residents and businesses affected by the preferred route.

The assessment contained in this report will concentrate on the first two phases of the consultation.

b) Public Opinion

The local population of Runcorn and Widnes are almost unanimous in their support for a new crossing of the river.

During extensive consultations, over 1200 people were questioned and 97.4% of those agreed that there was a need for a new bridge across the river.
On the more general question of the importance of good links between Runcorn and Widnes, 97.1% of those questioned felt that good links were either important or very important.

Business representatives agreed with the need for a new crossing to solve congestion problems. It was emphasised that a new bridge is very important to large companies such as Jaguar and Liverpool John Lennon Airport who have invested heavily and made a commitment to Merseyside over the last 3-5 years and who are forecasting substantial future growth.

Over three quarters of travellers resident in other areas agreed that a new crossing is required.

On the more specific question of route preference the following preferences (total responses 1484) were identified:

<table>
<thead>
<tr>
<th>Route Crossing Preference</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 1</td>
<td>32%</td>
</tr>
<tr>
<td>Route 2</td>
<td>4%</td>
</tr>
<tr>
<td>Route 3</td>
<td>8%</td>
</tr>
<tr>
<td>Route 3A</td>
<td>11%</td>
</tr>
<tr>
<td>Other</td>
<td>45%</td>
</tr>
</tbody>
</table>

Reasons for preference stated were dependent on route, with respondents that selected Route 3 or 3A stating traffic flow, good road links and avoiding residential areas as their main reasons.

Initial analysis seems to indicate that Route 3 was selected over Route 3A due to concerns about congestion at Ditton Roundabout with Route 3A. However, it is believed that this is due to the lack of detail in the map shown on the leaflet rather than any difference of opinion with the qualitative work conducted.

During the Stage 2 consultations, all focus groups and workshops decided that Route 3A was the preferred option.
c) Statutory Consultation

In accordance with Government guidance, the views of the following statutory bodies have been obtained:

- English Nature
- Environment Agency
- Countryside Agency
- English Heritage
- Mersey Conservancy

A copy of their responses is shown in Technical Reports B4027/TR/16/01 and B4027/TR16/02.

d) Wider Consultation

In addition to the consultees and Mersey Crossing Group, a number of other stakeholders have been consulted with and their views sought in the preparation of this project. All the responses have been collated as stated above and a list of consultees and is provided in Technical Reports B4027/TR16/01 and TR16/02.

e) Supporters

A list of supporters for a new crossing in Halton is provided in Appendix B.

4.4 Preferred Route 3A

On the basis of the foregoing appraisal, the in July 2003 the Mersey Crossing Group and Halton Borough Council unanimously selected Route 3A as their preferred choice for The Mersey Gateway in March 2003. The route alignment is given in Figure 1.3 in Section 1.

Route 3A has been selected as providing the best means for satisfying the key objectives of a new crossing of the River Mersey.

Route 3A runs from the junction between the Central Expressway with the Bridgewater and Daresbury Expressways on the south bank of the Mersey. A fully grade separated junction will be formed extending the Central Expressway over the other Expressways and by viaduct over the Astmoor Industrial Estate. The elevated structure continues over the Manchester Ship Canal at a level sufficient to provide the necessary navigation clearance before swinging west over Wigg Island and the southern Salt marshes. It crosses the Upper Mersey Estuary gradually reducing in elevation to cross the salt marshes of Widnes Warth. A bridge will be provided over the St Helens (Sankey) canal and a grade separated junction provided with the A568 to the west of the Rhodia Plant. The route is then continued to link with the A562 Liverpool Road.

The reasons for preferring route 3A can be summarised as follows:

- The main community centres within the area are Runcorn on the south bank and Widnes on the north. The shortest route between those two centres is at the Runcorn Gap using the existing Silver Jubilee Bridge. The problem is that the existing bridge is dominated by traffic crossing the river from north of Widnes and south of Runcorn. Provision for this traffic (4 narrow lanes within a single carriageway) is resulting in severe congestion that produces intimidating conditions for pedestrians and cyclists.
For public transport to be effective it must offer a regular and reliable service. To enable that to occur, it must have a corridor through which it has some form of priority and preferred access. It is perfectly possible to provide such a service for buses over Silver Jubilee Bridge and to provide a much-improved provision for cyclists and walkers but to do that requires the removal of over 80% of the traffic currently using the bridge.

A new bridge parallel to the Silver Jubilee Bridge (Route 1) brings a proportionally much larger impact on Runcorn and Widnes West Bank involving substantial demolition of property and perpetuating the adverse effect of noise and poor air quality on those residents that remain. The tie-ins with the existing network, particularly with the expressways on the south bank, would require a complex of elevated viaducts dominating the residential area.

Route 3A lies naturally on the desire line for traffic passing through Halton. As a result, it attracts 90% of traffic currently using Silver Jubilee Bridge. This satisfactorily relieves the Silver Jubilee Bridge and permits its return to local use.

Route 3A avoids residential areas and has a minimal impact on industrial areas. Its elevation on the southern bank provides a real opportunity for exploiting the area under the bridge within the Astmoor estate for commercial use.

Route 3A involves the least impact on the existing highway network requiring a minimum of disruption to traffic and the local economy during construction.

4.4.1 Span Option

The tidal estuary of the River Mersey is a complex feature. The natural fluvial flows of the rivers feeding into the estuary (even in times of flood) provide only a minor proportion of water movement within the Mersey basin. It is the ebb and flow of the tide that is the major factor.

The estuary extends from its bar in the Irish Sea off Bootle and New Brighton in the Wirral to its upstream limit at Howley Weir in Warrington. The estuary is divided into the upper section and lower section by the narrowing at the Runcorn Gap. This narrowing has a dominating influence on the form of the tide in the upper estuary. The restriction at the Gap holds back the incoming tide steepening the flood portion of the normal tidal sine curve and producing strong currents through the Gap. The ebb is a more leisurely process.

These differences in flow patterns result in a very changeable structure to sediment movements within the Mersey basin. The sand banks are in continual flux and the main river channel varies between the north and south banks of the estuary. Levels within the sand banks can alter by 2 metres or more. It is this process of change that is viewed as a desirable feature and of environmental benefit. Additionally, the extensive salt marshes within the Mersey Estuary which are only flooded on the very highest of storm tides, provide a valuable habitat for wading birds and other species.

The most economic structure for the Mersey Gateway would be to construct a viaduct across the estuary on a series of relatively short spans of approximately 100 metres. This results in 11 piers within the tidal estuary and which inevitably has an impact on the way the estuary performs hydrologically and morphologically. A large number of piers within the tidal estuary would have
an impact on the existing tidal regime: local velocities will be changed and erosion and accretion patterns altered.

Reducing the number of piers within the estuary has obvious environmental benefits. As an alternative to 100 metre spans, alternatives have been considered involving much longer span structures. A single span crossing the 1000 metre estuary is technically possible, but would be very expensive and could conflict with the approach flight paths to Liverpool John Lennon Airport.

An acceptable compromise is believed to be provided by a cable stayed crossing of the tidal estuary with maximum clear spans of approximately 360 metres. This would require between two and four supporting towers to be constructed within the sand banks. Modelling shows that there will still be some erosion and accretion changes relative to the do nothing scenario but that these are small within the context of natural movements in the estuary. The large openings provided by the increased spans would also interfere very much less with the small number of small boat movements navigating the river. The “larger” bridging option also permits a more dramatic structural form providing a distinctive signature for the new crossing and one more likely to contribute to the built environment. However, such a solution, is more expensive in capital terms than the “short span” option.

There is a cost saving in providing short spans (a saving of approximately £25 million), but this is offset by disbenefits to the environment (large adverse reactions in respect of biodiversity).

Although the medium span option still offers some slightly adverse reactions in terms of biodiversity, landscape, and water quality, the quantified risk assessment (Report B4027/TR16/03) indicates that the quantified mean risk for the medium span option is £40 million less than that for the short span option.

It is therefore considered that the medium span option be selected as the preferred span option.

4.4.2 Traffic and Transportation

Traffic modelling has been undertaken throughout the development of this assessment. The Traffic Forecasting Technical Report TR23/02, demonstrates that the route will transfer approximately 80% of the total traffic flow from the Silver Jubilee Bridge to the new crossing.

This will allow the Silver Jubilee Bridge to be remodelled and roadspace reallocated. It is proposed that the Silver Jubilee Bridge will be reduced from 4 to 2 lanes and there will be dedicated provision for pedestrians and cyclists. Increased walking and cycling is likely to ensue – the towns of Runcorn and Widnes have historically developed around the Silver Jubilee Bridge, as the only crossing point between the two, and many of the main destinations of travel are located near to the bridge.

Furthermore, this route will allow the realisation of the Borough’s integrated transport policy.

Buses will not be given their own dedicated lanes on the Silver Jubilee Bridge, but the significant reductions in traffic flow will allow reliability to increase substantially.

The Silver Jubilee Bridge will be viewed fundamentally as a local bridge. The alignment of junctions on the routes to the Silver Jubilee Bridge will deter strategic traffic. Consequently, there will be no timesavings to be made from using this crossing as an alternative to the new bridge.
The Net Present Value of Transport economic benefits is estimated at over £1.4 billion (Report B4027/TR25/02 – Transport Economic Efficiency).

4.4.3 Problem Resolution

The following were identified as the specific problems of the region that this route would help resolve:

a) Economics and Regeneration

The assessment in Volume 2 of this Major Scheme Appraisal Report demonstrates that the Mersey Gateway will bring substantial benefits to Halton the region.

b) Social Impact

Without a new crossing, the area will continue to suffer from deprivation, and problems will be likely to worsen. The Mersey Gateway is an essential ingredient in bringing about the urban renaissance needed in the area.

c) Personal Injury Accidents

The accident analysis prepared as part of the Accidents Technical Report (TR26/01) finds that accident rates in Halton as a whole are less than as predicted by COBA. However, the average rate of accidents in the vicinity of the bridge is higher than the average rate on the network. This is perhaps not unsurprising given the degree of separation provided by the expressway system, bus ways, etc. Equally, because of the degree of disruption which even a minor accident on the Silver Jubilee Bridge can cause at peak times, the accident record is perhaps perceived to be worse than the reality. Records are not available of damage only accidents, which nevertheless can incur significant delay and disruption to Silver Jubilee Bridge traffic.

It has also shown that the average rate of accident per kilometre is higher for the section of the network covering the Silver Jubilee Bridge and its approaches, when compared to the average accident rate for the entire network.

It is evident that the new bridge will serve a dual purpose, not only would it relieve traffic on the existing bridge, but should also achieve a reduction in accidents due to improved alignment standard and reduced congestion on both Silver Jubilee Bridge and the new bridge.
\textbf{d) Access for Emergency Vehicles}

Emergency vehicles will have a choice of routes by which to cross the Mersey. This will significantly improve response times, and aid in emergency planning.

\textbf{e) Strategic Traffic Movement}

The provision of this route will transfer 80\% of the traffic from the Silver Jubilee Bridge allowing it to be dedicated solely as a local crossing point.

\textbf{f) Congestion}

Appendix A, presents the Congestion Reference Flow (CRF) for the revised cross section of the Silver Jubilee Bridge. Following construction of the new bridge, the CRF is forecast to be 24,216 Annual Average Daily Traffic flow (AADT). The actual traffic that is predicted to use this bridge, from the Traffic Forecasting Technical Report TR23/01 is of the order of 20,467 per day. Clearly, therefore, congestion is not likely to be an issue on the Silver Jubilee Bridge once the new bridge is in operation.

\textbf{g) Availability of Public Transport}

The majority of properties in Halton are within 250m of an hourly bus service. This is a key indicator of network coverage by the local public transport operators and also a primary Government statistic.

The new bridge will reduce congestion on the Silver Jubilee Bridge to such an extent that buses will travel within standard carriageway lanes, without the need for formal segregation, and allow reliability to be greatly increased.

\textbf{h) Pedestrian and Cyclist facilities}

The level of strategic traffic transfer resulting from the provision of the new bridge will result in a reallocation of roadspace on the Silver Jubilee Bridge, meaning that dedicated pedestrian and cyclist facilities will be able to be provided on the Silver Jubilee Bridge.

\subsection*{4.4.4 Economic Impact}

The assessment of economic and regeneration impacts of the preferred route has identified that the project would generate substantial additional quantifiable and wider benefits. It would contribute significantly to the economic regeneration of Halton and the surrounding districts. The new bridge fits very well within national, regional, sub-regional and local policy objectives. It would result in significant travel timesavings and as such would be expected to generate significant economic development in the Halton area.

The net additional employment generated has the potential to make a significant impact on the relatively high unemployment levels in local areas, provided that local residents are trained and assisted to access the emerging opportunities. The new bridge will enhance accessibility to Liverpool John Lennon Airport, the Runcorn and Weston Point ports, Widnes town centre and the district centre at Halton Lea. It will also generate opportunities and facilities that are accessible to residents of wards identified in the Social Impact Assessment as suffering from acute levels of
deprivation. The new bridge will also complement a number of area-based regeneration projects that are underway in the area.

The new bridge will provide significant economic benefits as indicated in the Economic Impact Assessment. It is considered that there will also be added benefits to Widnes and some effects also on Liverpool, Ditton, Runcorn and Speke.

The current unemployment rates within Liverpool and Halton are around 5.8% at worst. The route proposals will have a demonstrable but modest effect on unemployment, although the effects of other initiatives on factors such as skill levels, would be expected to increase the access rates of residents of these wards into employment created as a result of the new bridge.

This route would also be expected to have benefits for the Port of Liverpool and the Port of Garston, as well as Liverpool John Lennon Airport.

The new bridge will enhance the accessibility to Widnes and Halton Lea district centres and it is anticipated that there will be an increase in sales generated as a result. It is estimated that as a result of additional employment generated by the new bridge, additional disposable income will be spent in retail centres within the region, including Widnes town centre and Halton Lea district centre.

4.4.5 Social Impact

Unemployment across Halton is high (4.5% compared to 3.3% for England) and if, as predicted in the Economic Assessment (Report B4027/TR13/02), a new bridge in Halton has the potential to improve employment opportunities these rates will be reduced. Particularly sensitive receptors are likely to be the communities in Riverside and Castlefield close to the bridge nodes of the preferred route, where unemployment rates are high and therefore improvements will be most readily felt.

Particular impacts may be the disruption the construction phase may cause for the daily movement of individuals around Halton and disruption to social networks in these areas.

However, following initial construction impacts, a new bridge following the preferred route (Route 3A) will have a number of positive social impacts on these communities, strengthening social links across the Mersey, providing good access to community infrastructure, attracting people to Halton and people to stay in Halton that might otherwise have left.
5. DEVELOPMENT OF PREFERRED ROUTE

5.1 Scheme Changes Outline

As a result of further work in relation to the preferred route, alignment 3A, since July 2003 and comment from the Department for Transport on the previous MSA submission for a proposed new bridge, the following changes have been made to the preferred route.

There have been a number of changes to the scheme design since the MSA submission in July 2003 including:

- Altered vertical and horizontal alignment over the Mersey Estuary;
- Alteration of tower location and number of piers and towers along the crossing;
- Modification of the North Junction from a roundabout to a high level grade separated junction;
- Amendments to the South junction with the Central Expressway to improve traffic flows from slip roads on the Expressway to the south of the main junction;
- Modifications to the Silver Jubilee Bridge;
- Modifications to remote Junctions on the Central Expressways now included; and
- Potential installation of tolling infrastructure.

Details of changes that have been made are provided below.

5.2 Guidance Changes

In addition to design changes, DfT Webtag guidance for some elements of the environmental assessment work has been updated since July 2003, which requires an update of some of the assessments previously carried out:

- September 2003 – update of guidance on preparing an Economic Impact Report;
- February 2004 – update of Local Air Quality assessment procedure;
- May 2004 – update of guidance on Cost Benefit Analysis & Values of Time and Operating Costs; and
- June 2004 - update of data used for Values of Time and Operating Costs.

5.3 Further Modelling Work

In addition to the design and guidance changes, further work on hydrodynamic and traffic modelling has been undertaken which will require an update of some of the other environmental impact reports. Details of the further modelling work undertaken are contained in the following Reports:

- B4027/TR03/04 Hydrodynamics Case Study Report
- B4027/TR03/05 Hydrodynamics – Fine Model
- B4027/TR09/02 Transport Impact Assessment
- B4027/TR21/02 Traffic Survey
5.4 Design Changes to the Scheme

The design changes that have been made to the scheme since July 2003 as a result of the development of the preferred route are summarised below. Details of these changes are described in Technical Report No B4027/TR27/01 – Description of Route Alternatives and can be seen by reference to the following Drawings:


- B4027/H/R/503 – Route 3A Horizontal and Vertical Alignments
- B4027/2/B/361 – Route 3A Medium Spans General Arrangement (Sheet 1 of 2)
- B4027/2/B/362 – Route 3A Medium Spans General Arrangement (Sheet 2 of 2)

Preferred Route Drawings November 2004 (in Technical Report 27/01)

- B4027/3/H/100/01 Key Plan
- B4027/3/H/101/02 Untolled Option General Layout Chainage 1000 - 3000
- B4027/3/H/101/03 General Layout Chainage 3000 - 4500
- B4027/3/H/101/04 General Layout Chainage 4500 - 6000
- B4027/3/H/100/25 Silver Jubilee De -Linking Widnes Junction General Layout
- B4027/3/H/100/26 Silver Jubilee De -Linking Runcorn Junction General Layout
- B4027/3/H/100/53 Tolled Option General Layout Chainage 1000 - 3000
- B4027/3/H/100/75 Central Expressway Layout
- B4027/3/B/300 Medium Span General Arrangement
- B4027/3/B/320 Medium Span General Arrangement Sheet 2

5.5 Alignment over the Upper Mersey Estuary

The alignment of the new bridge has moved slightly further to the east over part of the estuary as indicated in Figure 5.1. The new alignment now crosses the river at a narrower point, which has enabled a reduction in the number of towers within the river. It should also be noted that the carriageway over the main river crossing has been modified from dual 2 with hard shoulders to dual 3.
5.6 Change to Piers and Towers

The bridge alignment proposed in July 2003 required the placement of 10 piers within the saltmarsh of the Upper Mersey Estuary and 4 towers within the River Mersey. The modified alignment of the new bridge involves an increase to 16 piers on the saltmarsh and decrease to 3 towers within the River Mersey. The Piers over the saltmarsh have also been located to avoid the most ecologically sensitive areas of saltmarsh.

5.7 Changes to North Junction

In July 2003, the north junction of the new bridge consisted of an at grade roundabout junction to the west of the Rhodia works. The revised alignment between Widnes Warth and the land west of the Rhodia factory, has offered the required distances necessary to accommodate the level change for the vertical alignment of free flow links between the new crossing and the North Junction. It is considered that the revised North Junction provides an improved junction with free flow links and is better able to accommodate future Light Rail Transport links on the new bridge.

5.8 Changes to South Junction

As in July 2003, in Runcorn, the new dual 3 link on the new bridge, will tie-in directly with the Central expressway. The existing Central expressway will be made continuous with the new link, two lanes crossing the Daresbury Expressway on a new high-level flyover. Connection between Central, Bridgewater and Daresbury Expressways will be via a new grade separated roundabout that will be constructed at the middle level with the existing Daresbury expressway passing beneath at a lower level. The alignment of this junction has been slight modified since July 2003, and further modifications have been made to the slip roads onto the Central Expressway from Halton Brow.
5.9 Silver Jubilee Bridge Modifications

The provision of a new bridge would enable the existing Silver Jubilee Bridge to be modified to accommodate cycling and pedestrian facilities within the bridge itself (Figure 3.1). The modified Silver Jubilee Bridge would comprise standard single carriageway with a combined footway and cycleway.

In Widnes the existing direct links between Speke road, Widnes Eastern bypass and the Silver Jubilee Bridge would no longer be required and the structures could be demolished.

The Silver Jubilee Bridge would retain links with Waterloo road, Victoria road and the Queensway off-slip to Ditton roundabout. The Silver Jubilee Bridge off-slip to the Widnes Eastern bypass would be remodelled to form a two-way standard single carriageway link with Waterloo road and Victoria road. The Queensway off-slip to Ditton roundabout would also be remodelled to form a two-way standard single carriageway link. A roundabout would be provided at the junction with Desoto road to form a two way link with Macdermot road and West Bank industrial estate.

In Runcorn, the existing on-slip from Weston Point expressway will be made redundant. It is anticipated that this slip road would be retained to preserve the link for use in case of an emergency.

A four-arm signalised junction would be provided at the junction of Bridgewater expressway and Silver Jubilee Bridge northbound and southbound slip roads. The existing southbound slip road to Runcorn town centre and Bridgewater expressway would be remodelled to form a two way standard single carriageway link with footpath and cycleway facilities linking Runcorn Old Town with the remodelled Silver Jubilee Bridge. The existing northbound slip road and the Silver Jubilee Bridge Weston Point expressway link would be retained to form links with Greenway Road at the junction.

5.10 Remote Junctions on Central Expressway

The A533 runs to the east and north of Runcorn where it joins the A557 and crosses the River Mersey via the Silver Jubilee Bridge linking Runcorn and Widnes on the south bank and north bank respectively.

The proposed new bridge over the River Mersey, located to the east of the existing crossing will require amendments to be made to the existing junctions at Hallwood Park and Rocksavage on the Central Expressway, in order to change traffic priorities along the A533. Currently, the priority of the two junctions directs traffic from the Central Expressway. It is proposed to change the traffic priority to direct main traffic flows through the junctions.

Groundworks associated with the junction amendments will be contained within the boundaries of the existing road.
5.11 Costs and Risk Assessment

The cost assessment for the preferred route was updated to take account of design changes and comments received in the Arup Report. The costs are detailed in Report No B4027/TR16/02 – Costs. The risk assessment was also updated and this is detailed in Report B4027/TR16/03.

The revised capital cost estimate for the preferred route is £247 million.

The revised mean quantified risk for the preferred route is £126 million (95%ile risk is £226 million).

5.12 Appraisal Summary Table

The changes to the preferred route both in terms of alignment, design and cost updates are reflected in a new AST for route 3A, as presented in Table 5.1 below.
### Table 5.1 - Route 3A Developed Medium Spans

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Problems</th>
<th>Present Value Costs to Public Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 3A Medium Span Bridge</td>
<td>A new route to link the Central Expressway in Runcorn via the Ditton Road link to the A562, approximately 2km upstream of the Silver Jubilee Bridge.</td>
<td>Silver Jubilee Bridge acts as a control to the road network capacity.</td>
<td>£399.7m</td>
</tr>
</tbody>
</table>

#### Qualitative Impact

<table>
<thead>
<tr>
<th>Sub-Objective</th>
<th>Objective</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment</strong></td>
<td>Noise</td>
<td>Route 3A results in an additional 20 people being annoyed with most of them being in the higher noise exposure categories.</td>
</tr>
<tr>
<td></td>
<td>Local Air Quality</td>
<td>The proposal does not lead to an increase in PM10 levels by over 2mg/m³ or NO2 levels by over 4mg/m³. The proposal does not exceed the AQ6 NO2 objective of 40mg/m³.</td>
</tr>
<tr>
<td></td>
<td>Greenhouse Gases</td>
<td>The do nothing scenario will have a positive impact as it reduces carbon dioxide emissions when compared to the do nothing scenario. It will therefore gain towards achieving national targets. Red emissions not taken into account.</td>
</tr>
<tr>
<td></td>
<td>Landscape</td>
<td>Effects of distinctive estuary landscape of local to sub-regional importance and its development, sometimes degraded margins.</td>
</tr>
<tr>
<td></td>
<td>Heritage of Historic Resources</td>
<td>Adverse affect on existing and visual impact of listed bridges, the Silver Jubilee Bridge, a landmark feature of iconic status in the region, that cannot be mitigated. However distance from the listed bridges means that this route has a slight adverse effect. Mitigation by means of recording/excavation and watching brief reduces the adverse impact on the industrial heritage resource to slight adverse effect. Whilst the construction ground disturbance works will limit the recovery to a potential of recovery of buried boats/wharfs and associated finds, this potential is low, given the lack of previous finds and that recovery would be limited to the locations of piers/construction groundworks. The ground disturbance works within the estuary therefore are regarded as slight adverse effect – and adequate mitigation works can be undertaken to address any potential uncovered. Medium number of piers/construction ground works within the estuary equates to slightly higher potential for recovery of undiscovered buried remains within estuary.</td>
</tr>
<tr>
<td></td>
<td>Biodiversity</td>
<td>The construction stage recognising seasonal constraints.</td>
</tr>
<tr>
<td></td>
<td>Water Environment</td>
<td>Incorporation of design features in EA requirements to mitigate potential impact on water quality on the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.</td>
</tr>
<tr>
<td></td>
<td>Physical Fitness</td>
<td>The new crossing will increase walking and cycling for approximately 2400 people. This will be predominantly home to work shopping trips. As a result, physical fitness in excess of 30 minutes is low, but below 30 minutes is very high.</td>
</tr>
<tr>
<td></td>
<td>Journey Ambience</td>
<td>Benefits in Traveller views and environment are offset by a potential deterioration caused by an excess of information at the terminal junctions.</td>
</tr>
<tr>
<td></td>
<td>SAFETY</td>
<td>The new crossing will result in a small decrease in serious and slight accidents.</td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>Security for all road users will increase including pedestrians and cyclists.</td>
</tr>
<tr>
<td><strong>ECONOMY</strong></td>
<td>Public Accounts</td>
<td>The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the delay of the delay, rather than by providing alternative route choice. The traffic figures are based on a variable demand, providing some measure of both suppressed and released / induced traffic within the analysis. Analysis results in a Net Present Value of £919m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
</tr>
<tr>
<td></td>
<td>Business Users &amp; Providers</td>
<td>The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the delay of the delay, rather than by providing alternative route choice. The traffic figures are based on a variable demand, providing some measure of both suppressed and released / induced traffic within the analysis. Analysis results in a Net Present Value of £919m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
</tr>
<tr>
<td></td>
<td>Consumer Users</td>
<td>The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the delay of the delay, rather than by providing alternative route choice. The traffic figures are based on a variable demand, providing some measure of both suppressed and released / induced traffic within the analysis. Analysis results in a Net Present Value of £919m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices).</td>
</tr>
<tr>
<td></td>
<td>Reliability</td>
<td>A stress based approach considers stress as the ratio of daily traffic to the congestion reference flow. Impact is the change in stress x daily flow (AADT) Large Beneficial</td>
</tr>
<tr>
<td></td>
<td>Wider Economic Impacts</td>
<td>The NRM is expected to contribute significantly to the growth of the wider NW economy and to regeneration of the Mersey Basin Priority Area through enhancement of the image of the area, increased attractiveness to inward investment, and strengthening and deepening of the economic base of the area.</td>
</tr>
<tr>
<td></td>
<td>Option values</td>
<td>The crossing will provide value to more than 100,000 residents and workers in Halton</td>
</tr>
<tr>
<td></td>
<td>Severance</td>
<td>All routes subject to increased traffic flows are provided with existing grade separated crossings.</td>
</tr>
<tr>
<td></td>
<td>Access to the Transport System</td>
<td>Most properties in Halton are within 250m of a daily hourly bus service. The new crossing will have no impact.</td>
</tr>
<tr>
<td><strong>INTEGRATION</strong></td>
<td>Transport Interchange</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Land-Use Policy</td>
<td>Complies fully with many national, regional and local land use and planning policies.</td>
</tr>
<tr>
<td></td>
<td>Other Government Policies</td>
<td>Complies with policies of DEFRA, Cabinet Office, DCMS, DfE, Department for Transport, FCO, DoH, Home Office, DWP, Treasury</td>
</tr>
</tbody>
</table>
6. LOWER COST OPTION

In accordance with DfT guidance, a fully worked-up lower cost alternative scheme has been developed, to enable a comprehensive comparison with the Preferred Option for the proposed new bridge.

6.1 Scheme Outline

The discussions above show that there is an undeniable and urgent need for a new crossing.

Consequently, it is considered that the lower cost option, in order to meet the requirement that it is “a credible scheme in its own right”, should be identified as the scheme that best appears to meet the appraisal criteria, but with some modifications.

A major part of the cost of the new scheme will be the cost of the new bridge. In general, the longer the spans, the greater the cost of the bridge. Route 3A with medium spans (up to approx 360m) has been identified as the preferred option. However, it would be possible to follow the same route but with shorter spans (approx 100m). This will reduce the overall cost of the bridge, but the increased number of piers in the tidal estuary will have a greater environmental impact.

An Appraisal Summary Table for this option has been prepared and is presented below in Table 6.3.

6.2 Comparison with Preferred Route Option

Both the preferred option and the lower cost option exhibit environmental impact. However the impacts with the shorter span lower cost option are, as should be expected, greater.

The differences between the lower cost option and the preferred option is summarised in Table 6.1 below:

<table>
<thead>
<tr>
<th>Span Option</th>
<th>Water Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Option</td>
<td>Medium Spans (360m)</td>
</tr>
<tr>
<td>Lower Cost option</td>
<td>Short Spans 100m</td>
</tr>
</tbody>
</table>

Table 6.1 Comparison of impacts of preferred route and lower cost option
Table 6.2 is a comparison of the cost and risk of the preferred and lower cost options:

<table>
<thead>
<tr>
<th>Span Option</th>
<th>Cost (*)</th>
<th>Mean Risk</th>
<th>Cost + Mean Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred Option</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Spans (360m)</td>
<td>£247m</td>
<td>£126m</td>
<td>£373m</td>
</tr>
<tr>
<td>Lower Cost option</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Spans 100m</td>
<td>£222m</td>
<td>£166m</td>
<td>£388m</td>
</tr>
</tbody>
</table>

(* Cost excludes Optimism Bias

The monetary economic benefits are identical for both the preferred option and the lower cost option, but the Benefit to Cost Ratio (BCR) varies because of the difference in cost. The BCR, based on risk adjusted costs, for the lower cost option ill therefore be higher than for the preferred option.

It is considered that the additional environmental risk that would result from the provision of additional piers in the estuary does not warrant the selection of the lower cost option as the preferred option.
Table 5.3 - Route 3A Developed Short Span Bridge – Lower Cost Option

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Problems</th>
<th>Present Value Costs to Public Accounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 3A Medium Span Bridge</td>
<td>A new route to link the Central Expressway in Runcorn via the Ditton Road link to the A562, approximately 2km upstream of the Silver Jubilee Bridge.</td>
<td>Silver Jubilee Bridge acts as a control to the road network capacity.</td>
<td>£4.996 m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>SUB-OBJECTIVE</th>
<th>QUALITATIVE IMPACTS</th>
<th>QUANTITATIVE MEASURE</th>
<th>ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVIRONMENT</td>
<td>Noise</td>
<td>Route 3A results in an additional 20 people being annoyed with most of them being in the higher noise exposure categories.</td>
<td>De-Minimum (2022) 32/2</td>
<td>Not Population affected -50</td>
</tr>
<tr>
<td></td>
<td>Local Air Quality</td>
<td>The proposal does not lead to an increase in PM10 levels by over 2mg/m3 or NOx levels by over 4mg/m3. The proposal does not exceed the AAS NOx objective of 0.06mg/m3.</td>
<td>a total of 936 properties are likely to be affected (2007)</td>
<td>NOx G+16.75 (2002) PM-36.38 (2007)</td>
</tr>
<tr>
<td></td>
<td>Greenhouse Gases</td>
<td>The do nothing scenario will have a positive impact as it reduces carbon dioxide emissions when compared to the do nothing scenario. It will therefore get towards achieving national targets.</td>
<td>Rand emissions not taken into account</td>
<td>410/40.5 and 102/2007</td>
</tr>
<tr>
<td></td>
<td>Landscape</td>
<td>Effects on distinctive sessile landscape of local/sub-regional importance and its developed, sometimes degraded margin.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Townscape</td>
<td>Effects of new crossing has a negligible effect on townscapes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Heritage of Historic Resources</td>
<td>Adverse effect on sitting and visual impact of Listed Bridges, particularly the Silver Jubilee Bridge, a landmark feature of iconic status in the region, that cannot be mitigated. However distance from the listed bridges means that this route has a slight adverse effect. Mitigation by means of re-routing/evacuation and watching brief reduces the adverse impact on the industrial heritage resource to slight adverse effect.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biodiversity</td>
<td>Mitigation - Incorporation of statutory requirements (EA/EN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Environment</td>
<td>Mitigation - Incorporation of design features to EA requirements to mitigate potential impact on water quality on the Mersey Estuary including sensitive procedures at the construction stage. With regards to run-off and flood risk in the operation phase the drainage will be designed to ensure that there is no additional flood risk from surface water run-off. Groundwater impacts from deep piling are considered to be mitigable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical Fitness</td>
<td>The new crossing will increase walking and cycling for approximately 2400 people. This will be predominantly home to work shopping trips. As a result, physical fitness in excess of 30 minutes is low, but below 30 minutes is very high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Journey Ambience</td>
<td>Benefits for Traveller views and environment are offset by a potential deterioration caused by an excess of information at the terminal junctions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SAFETY</td>
<td>Accidents</td>
<td>The new crossing will result in a small decrease in serious and slight accidents.</td>
<td>Reduction in annual accidents: Fatal: 0 Serious: 3 Slight: 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>Security for all road users will increase including pedestrians and cyclists</td>
<td>PVB £11.9m</td>
<td></td>
</tr>
<tr>
<td>ECONOMY</td>
<td>Public Accounts</td>
<td>The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the relief of the delay, rather than by providing alternative route choices. The traffic figures are based on a variable demand, providing some measure of both suppressed and released / induced traffic within the analysis. Analysis results in a Net Present Value of £919m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices)</td>
<td>Central Govt PVC £599.7m Local Govt PVC £40</td>
<td>PVB £609.7m</td>
</tr>
<tr>
<td></td>
<td>Business Users &amp; Providers</td>
<td>The crossing will provide relief, allowing traffic to flow more freely. The benefits shown are generated primarily by the relief of the delay, rather than by providing alternative route choices. The traffic figures are based on a variable demand, providing some measure of both suppressed and released / induced traffic within the analysis. Analysis results in a Net Present Value of £919m and a Benefit to Cost Ratio (BCR) of 3.299 over the appraisal period 2007 to 2036 (discounted to 1998 prices)</td>
<td>Business Users PVB £609.7m Private Sector Providers PVB £0 Other PVB £0</td>
<td>PVB £59.7m</td>
</tr>
<tr>
<td></td>
<td>Consumer Users</td>
<td>The new crossing will increase walking and cycling for approximately 2400 people. This will be predominantly home to work shopping trips. As a result, physical fitness in excess of 30 minutes is low, but below 30 minutes is very high</td>
<td>Consumer Users PVB £755.7m</td>
<td>PVB £470.7m</td>
</tr>
<tr>
<td>Reliability</td>
<td>A stress based approach considers stress as the ratio of daily traffic to the congestion reference flow. Impact is the change in stress x daily flow (ADT)</td>
<td></td>
<td>Large Beneficial</td>
<td>Score 3,633,000</td>
</tr>
<tr>
<td>Wider Economic Impacts</td>
<td>Large Beneficial</td>
<td>The Mersey Gateway is expected to contribute significantly to the growth of the wider Mersey economy and in regeneration of the Mersey Basin Area. Strong enhancement of the area, increased attractiveness to inward investment, and strengthening and deepening of the economic base of the area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCESSIBILITY</td>
<td>Option values</td>
<td>The crossing will provide service to more than 100,000 residents and workers in Halton</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severance</td>
<td>All routes subject to increased traffic flows are provided with existing grade separated crossings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access to the Transport System</td>
<td>Most properties in Halton are within 250m of a daily hourly bus service. The new crossing will have no impact.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transport Interchange</td>
<td>Most properties in Halton are within 250m of a daily hourly bus service. The new crossing will have no impact.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land-Use Policy</td>
<td>Complex fully with many national, regional and local land use and planning policies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other Government Policies</td>
<td>Complex with policies of DEFRA, Cabinet Office, DCMS, DfEE, Department for Transport, FCO, DfT, Home Office, DWP, Treasury</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. PREFERRED ROUTE OPTION WITH TOLLING

7.1 Scheme Outline

This specific iteration concerns the proposal to toll the new bridge. The rationale behind this proposal is to improve the business case and therefore viability of the proposed bridge.

In considering the introduction of tolling there are a number of options concerning:

- Tolling of both bridges or just the new bridge
- Charging levels

At this stage in scheme development it is considered that both bridges should be tolled and that the level of toll should be similar to that prevailing at the Mersey Tunnels. This is entirely consistent with the principles of operating both bridges together as part of an integrated transport system and ensuring sufficient transfer of traffic from the existing Silver Jubilee Bridge to the new bridge, in order to achieve improvements to local public transport, walking and cycling links via the Silver Jubilee Bridge.

In reflection of this tolling option, an additional AST has been prepared, as presented in Table 7.1 below.

7.2 Tolling Infrastructure

There are a number of tolling possibilities for the new bridge. The optimum solution will be based on financial and technical assessments and the output of a number of environmental studies (which are summarised in this report). The main tolling options considered are as follows:

- New bridge tolled, Silver Jubilee Bridge untolled with no restrictions;
- New bridge tolled, Silver Jubilee Bridge untolled with restrictions; and
- Both bridges tolled;

It is also possible that restrictions to vehicles such as heavy goods and special loads may apply to the Silver Jubilee Bridge. Each of these scenarios would result in a different traffic flow across the Mersey and composition of traffic on the local and regional transport network.

The new bridge would be tolled in both directions from the Widnes side of the Mersey Estuary with no tolls on the southern, Runcorn side. There would be six to eight lanes in each direction on the Liverpool approach roads (A562) each of which would be elevated above ground level. There would be a further four or five tolled lanes in each direction on the proposed Eastern By-Pass (A557) approach road, which would be slightly elevated, but below the level of the existing railway. Administration buildings would need to be located close to the tollbooths with a view over the crossing. All tollbooths would be lit at night. Facilities for toll operators such as toilets, emergency access routes and car parks would be located beneath the new bridge and toll plazas.
The Silver Jubilee Bridge would be tolled from booths constructed on the existing infrastructure. These tollbooths would also be lit at night and facilities provided in the vicinity for toll operators.

The environmental impacts of these changes are detailed in Report No B4027/EIA/05 (EIA Supplementary Report for MSA, November 2004).

7.3 Public Acceptability

Clearly the introduction of a charge to access infrastructure could have an impact on how the public consider the proposed scheme. In order to access this, a stated preference survey and report has been undertaken to test public acceptability and tolerance to tolling levels.

For full details please see Technical Report B4027/TR12/02 Social Assessment of Tolling. In summary the results of this report, which considered both local residents and businesses, indicated that:

- Where neither bridge is tolled this would have the least negative impact on individuals and families in Halton. This should enable the realisation of the positive social impacts associated with the building of the new bridge.
- Tolling one bridge with restrictions on the other would allow individuals to experience the positive impact associated with the new bridge, but a scenario with no restrictions would create negative social impacts due to maintained congestion on the Silver Jubilee Bridge.
- Where both bridges are tolled would have a large detrimental impact on individuals and families by socially excluding vulnerable groups within Halton.

Mitigation measures such as providing local concessions and exceptions to tolls would reduce the negative social impacts associated with tolling and allow vulnerable individuals to benefit from a Mersey Gateway.

The results of this report have informed the definition of the preferred route to include tolling, and are reflected in the AST presented below.
7.4 **Comparison with the Preferred Route Option Un-tolled**

In comparing the option to toll or not to toll the crossings, set within the context of the assessment of the social impact of tolling, it is considered that to toll, in conjunction with the introduction of mitigation measures to help off-set any social impact derived by tolling, would represent the next best way forward. This comparison is based upon the following points:

- Not tolling either bridge remains Halton's preferred option but would lead to reduced business case viability for the scheme
- Only tolling the new bridge would set up an anomaly with the local highway network and reduce or remove the ability to re-designate the Silver Jubilee Bridge as a local bridge with enhanced walking/cycling facilities and enabling better bus service reliability
- Only tolling the Silver Jubilee Bridge, would most likely encourage greater use of the new bridge. Considering the roles of the bridges; Silver Jubilee Bridge for local trips, new bridge for strategic trips, such a tolling framework would be seen as potentially discriminating against the local community
- Tolling both bridges introduces consistency in the provision of local Mersey crossing points, and enables the management of both bridges as a single integrated service. Introducing tolling will improve the business case for the implementation of the new bridge, and the consequential improvement to the accessibility and socio-economic issues identified in Halton.

In relation to realizing the social benefits of the new bridge, it is considered potentially appropriate to introduce mitigation measures in line with the principles as outlined in Technical Report B4027/TR12/02. Such measures may include concessionary charges or exemptions in accordance with a defined framework. Clearly, any mitigation measures would have to be drawn-up in accordance with wider considerations of a legal, and regulatory kind, including and any guidance regarding anti-competition or discriminative practices. This is discussed further in Volume 2 of this Major Scheme Appraisal Report.

For further information on the business case for tolling the new bridge please see the commercial submission in Volume 2 of this Major Scheme Appraisal Report.
Table 7.1 - Route 3A Developed Medium Spans Tolled

<table>
<thead>
<tr>
<th>Option</th>
<th>Route 3A Medium Span Bridge</th>
<th>Description</th>
<th>Problems Silver Jubilee Bridge acts as a control to the road network capacity.</th>
<th>Present Value Costs to Public Accounts £399.7m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A new route to link the Central Expressway in Runcorn via the Ditton Road link to the A562, approximately 2km upstream of the Silver Jubilee Bridge.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>SUB-OBJECTIVE</th>
<th>QUALITATIVE IMPACTS</th>
<th>QUANTITATIVE MEASURE</th>
<th>ASSESSMENT</th>
</tr>
</thead>
</table>

**ENVIRONMENT**
- **Noise**
  - Route 3A results in an additional 20 people being annoyed with most of them being in the higher noise exposure categories.
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.
  - Importance: SPA & RAMSAR sites (located west of Silver Jubilee Bridge) are of International Importance; SSSI (located west of Silver Jubilee Bridge) is of National Importance; Saltmarsh habitats and vegetation (located east of Silver Jubilee Bridge) is of Regional Importance; Fiddlers Ferry Power Station Lagoons located east of Silver Jubilee Bridge is of Regional Importance. The following sites are considered to be of Local Importance: Manchester Ship Canal Basin, Silver Springs, Widnes and Runcorn, intertidal aquatic ecology, submerged aquatic ecology.
  - Significance: Assessments undertaken considering mitigation. The tolled option is not considered to result in any significantly different impacts to the no toll option.

- **Local Air Quality**
  - The proposal does not lead to an increase in PM10 levels by over 2mg/m3 or NO2 levels by over 4mg/m3. The proposal does not exceed the AQ6 NO2 objective of 40mg/m3.
  - A total of 638 properties are likely to be affected (2007)
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

- **Greenhouse Gases**
  - The do something scenario will have a positive impact as it reduces carbon dioxide emissions when compared to the do nothing scenario; it will therefore all impacts not being national in nature. Road emissions are not taken into account.
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

- **Landscape**
  - Effects on distinctive estuary landscape of local / sub-regional importance and its developed, sometimes degraded margins.
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

- **Water Environment**
  - Incorporation of design features to ES4 requirements to mitigate potential impact on water quality on the Mersey Estuary including sensitive procedures at the construction stage. With regards to run-off and flood risk in the operation phase the drainage will be designed to ensure that there is no additional flood risk from surface water run-off. Groundwater impacts from society water run-off are mitigated by design.
  - Importance: The Mersey Estuary and Manchester Ship Canal in particular are well known national features. The Mersey is of a local scale with a high rarity; the Manchester Ship Canal is of regional importance with a moderate and occasional significance.
  - Significance: Assessments undertaken considering mitigation.

**ECONOMY**
- **Public Accounts**
  - The crossing will provide value to more than 100,000 residents and workers in Halton.
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

**SAFETY**
- **Accidents**
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

**SOCIETY**
- **Public Accounts**
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

**ACCESSIBILITY**
- **Wider Economic Impacts**
  - The NRM is expected to contribute significantly to the growth of the local Mersey economy and to regeneration of the Mersey and Wirral property area.

**INTEGRATION**
- **Road Transport Interchange**
  - Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.

**Other Government Policies**
- Mitigation: Incorporation of statutory requirements (EA/EFN) to mitigate potential impact on ecology of the Mersey Estuary including sensitive procedures at the construction stage recognising seasonal constraints.
8. SCHEME APPRAISAL CONCLUSION

8.1 Scheme Context

Halton is a borough which suffers from the impact of excessive demand for highway cross river highway trips when compared to the capacity provided. Such impacts include congestion, pollution and inability to take forward regeneration and economic development initiatives, due to the resultant poor access to Halton. The saturation of capacity on the existing bridge and access links representing the current situation, not only prevents economic development but also inhibits the promotion of sustainable modes of travel for cross river trips.

8.2 Scheme Assessment Process

In Section 3 broad concepts were considered and the provision of a new additional fixed link in the form of a new bridge, was considered the best solution in order to contribute to resolving the accessibility and socio-economic issues identified in Halton, and to present an opportunity to improve local transport integration and sustainability.

Section 4 then assessed potential route options for a new bridge against scheme and national objectives. From this assessment a preferred route (Route 3A) was identified, which provided the best balance between environmental impact, transport economic benefit and cost.

Once the preferred route was identified, in Section 5 the scheme was developed further in terms of fine tuning its alignment and further definition on the design. This developed preferred option was then re-appraised against DfT criteria.

Based on the preferred route developed in Section 5, a lower cost option was defined and assessed in Section 5, then compared with the preferred route option. This comparison revealed that whilst the lower cost option had a better benefit cost ratio, the environmental implications were too severe to recommend the lower cost option as a better option.

Based on the preferred route developed in Section 5, the potential for the introduction of tolling was considered in Section 7, and compared with the preferred route option un-tolled. This section concluded that an untolled crossing is Halton’s preferred solution. However, whilst tolling could have socio-economic implications with regard to social exclusion issues, tolling with mitigation measures, was considered to be the next best approach. This is in order to achieve a better business case, consistency in service delivery and an integrated transport network. Tolling also provides the scheme with the enhanced ability to manage demand and therefore achieve scheme objectives regarding the promotion of walking/cycling/buses and differentiated functions between the two bridges in terms of local and strategic traffic.

8.3 Scheme Assessment Conclusion

The above scheme assessment concludes that an untolled fixed link bridge crossing the Mersey approximately 1.6km upstream of the Silver Jubilee Bridge, together with modifications on the existing Silver Jubilee Bridge and modifications to the Silver Jubilee Bridge approaches and local highway junctions is Halton’s preferred solution to the
accessibility and socio-economic issues identified in Halton. The next best solution is considered to be the same fixed link bridge crossing but with Road User Charging introduced on both the new and existing bridges. The preferred charging scheme would include discounts for Halton residents and for HGVs (refer to Volume 2 of this Major Scheme Appraisal for details).

The scheme name is The Mersey Gateway. With the exclusion of optimism bias and risk, the capital cost of the preferred option is put at £247 million for an untolled scheme and £253.5 for a scheme with Road User Charging.

A full physical description of the proposed scheme is given in the Technical Report B4027/TR27/01 – Description of Alternatives. This sets out the junctions, alterations, link standards and option proposals for the scheme.

Capital cost reports are provided as Technical Reports B4027/TR17/01 – Cost Report and B4027/TR17/02 – Costs – Preferred Route. A full risk assessment is included in Reports B4027/TR17/01 and B4027/TR17/03 – Risk Assessment – Preferred Route.

A detailed financial assessment of the preferred scheme has been carried out by KPMG and this is presented in Volume 2 of this Major Scheme Appraisal Report.

A plan of the preferred scheme is shown in Figure 8.1.
Figure 8.1 – Mersey Gateway Scheme Plan
9. SCENARIO AND SENSITIVITY TESTING

9.1 Preferred Option

The key identifiers in which to test for sensitivity are:

- Level of cost overruns at which the net benefits of the scheme are zero
- The level of time savings at which the net benefits of the scheme are zero

In the case of the Mersey Gateway, the benefits of the scheme compared to the cost are such, that the project would need to substantially increase in price before the cost overruns negated the net benefits of the project. This is an extremely unlikely situation and it is not considered necessary to carry out further substantial examination of this criterion.

A full assessment of the sensitivity of timesavings has been provided in the Transport Economic Efficiency Technical Report (TR25/02).

The economic benefit of the scheme is generated principally from travel time savings on the crossings, as a result of reduced congestion and delays.

Scenario and sensitivity testing has also been carried out on the financial modeling and this is detailed in Volume 2 of this Major Scheme Appraisal Report.

9.2 Lower Cost Option

The scenario and sensitivity testing required for the lower cost option is the same as for the preferred option. Therefore, no additional sensitivity or scenario testing has been carried out specifically for the Lower Cost option.
10. MONITORING AND EVALUATION

10.1 Overview

The monitoring process will focus on actual strategy performance against broad objectives and against other strategy objectives (if these are different) and involves collecting a series of snapshots of performance over time.

Identifying appropriate indicators will reflect the priorities for Halton. Wherever possible, such indicators should make use of available data, and should be relatively easy to collect. However it is important to recognise that, for the purposes of strategy monitoring and the later stage of evaluation, an indicator is only appropriate if it genuinely links to the intended purpose of the objective.

One indicator will be chosen for each target in order to make the data collection and handling manageable. Too many indicators pursued with insufficient clarity about what they actually reveal will tend to lead to a reduction in the perceived value of the monitoring process.

The evaluation process requires a review of desired objectives to assess whether they have been achieved. Evaluation is complex and expensive and is therefore performed infrequently related to appropriate stages in the planning process. The performance will be evaluated against the main objectives of the Mersey Crossing Group.

10.2 Environmental Management Plan

An Environmental Management Plan (EMP) describes the management systems and monitoring and auditing arrangements required to ensure the proper implementation of agreed mitigation measures and the verification of predicted environmental impacts for the proposed Mersey Gateway, particularly during construction.

The overall purpose of an EMP is to deliver the mitigation shown to be necessary in the Environmental Impact Assessment process by providing a systematic and explicit approach for the specification, approval and implementation of environmental mitigation measures.

The EMP for the Mersey Gateway will be issued in four parts to cover the various stages of the project:

Part 1 - Investigations and Surveys
Part 2 – Detailed Design
Part 3 - Construction
Part 4 – Operation

Identification of environmental issues requiring monitoring and evaluation will be an on-going process throughout the life of the project. Some issues that may require mitigation and/or monitoring have been identified in the environmental assessments and these will be discussed further with the relevant consultees prior to completing the Environmental Statement. Three such issues are:
10.2.1 Ecology

Halton Borough Council have produced a Draft Saltmarsh Management Plan to address a number of concerns regarding the impact of the new crossing on the ecology of the area. The Management Plan has been discussed with English Nature and the Environment Agency. Details of the plan can be seen in Technical Report B4027/TR16/01 – Consultations.

10.2.2 Hydrodynamics

The Acting Mersey Conservator and Manchester Ship Canal Company have been consulted in relation to the impact of the new crossing on the hydrodynamics of the Mersey estuary (for details see Hydrodynamics Technical Reports B4027/TR03/01 to 05). Detailed modelling of the Mersey Estuary has already been undertaken. This exercise will be carried out in sufficient detail to allow an environmental impact assessment to be undertaken in relation to the Mersey Gateway. Further modelling will be needed to ensure that the detailed design conforms to that which was the subject of the environmental assessment. Long term monitoring would be carried out by comparing aerial photographs, bathymetric surveys and information obtained from the tide gauges installed in the estuary for this project.

10.2.3 Transport

Traffic flows on the existing crossing with the Mersey Gateway, together with the main feeder roads will be monitored to observe changes in transport patterns resulting from the construction of the new crossing. This will be done both through data collected as part of the operation of the bridges and through integration with wider traffic survey programmes as undertaken by Halton BC, County Councils, the Highways Agency and Merseyside Passenger Transport Executive. Data will also be sought from other transport operators and stakeholders, collected as part of the on-going management and performance monitoring of their individual transport networks and modes.

10.3 Informal Monitoring

Of no less importance to the formal monitoring process identified above, the project will be subject to extensive informal monitoring.

The impact of the crossing will undoubtedly be monitored by local interest groups and the point at which impacts are perceived will inevitably be notified to the Borough Council.
11. PROJECT DELIVERY

The proposed Mersey Gateway is a major civil engineering project of exceptional size, cost and complexity. Delivery of the project will be a serious challenge for the promoting authority. The Borough Council is fully committed to the delivery of the project and has prepared this outline strategy in order to demonstrate the steps it has taken to place itself in a position to confidently meet the challenge.

11.1 Background

The management of this project has been an excellent example of partnership working. In 1995, the Mersey Crossing Group was established to pursue a new crossing of the Mersey. It is chaired by Halton Borough Council and comprises the five Merseyside local authorities of Knowsley, Liverpool, Sefton, St Helens and Wirral together with Warrington Borough, Merseytravel, Cheshire County, the local Chambers of Commerce, English Partnerships and Peel Holdings.

The full Mersey Crossing Group is an informed and committed partnership acting as a Steering Group where all local authority partners are represented at senior member level. Gifford and Partners undertake day-to-day project management reporting to a core officer team made up of senior managers from Halton, Knowsley, Liverpool and Warrington councils.

The full Mersey Crossing Group receives regular progress reports and takes decisions on the direction of the project.

In total Halton has spent over £3m on the Mersey Gateway since 2001, as set out in Table 11.1:

<table>
<thead>
<tr>
<th>Year</th>
<th>2001/02</th>
<th>2002/03</th>
<th>2003/04</th>
<th>2004/05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expenditure £m:</td>
<td>0.2</td>
<td>1.1</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Table 11.1 – Preparatory Costs

Funding for this expenditure has come from a variety of sources, including special DfT LTP allocations and contributions from neighbouring local authorities, MerseyTravel and English Partnerships. However the largest single contribution, amounting to over £1m, has been from Halton itself, out of its capital programme.

Expenditure has continued through 2004/05 on project management, preparation of the Major Scheme Appraisal, preparation of the Environmental Impact Statement, hydrodynamic study of the preferred option, continuing consultation, continuing environmental monitoring, detailed design and preliminary consideration of statutory procedures.

A team of specialist legal and financial advisors has been brought together to assist the Mersey Crossing Group take the scheme forward to full acceptance. The cost of the preparatory work is expected to exceed £1 million in 2004/05. Funding is being provided by Halton and its Mersey Crossing Group partners but elements of the work are being deferred pending the Department for Transport decision letter expected early in 2005.
11.2 Delivery Strategy

The project will be delivered by a team of senior managers led by the Chief Executive and supported by specialists from the engineering, legal and financial professions. The team is already in place under the title the Mersey Gateway Procurement Group. The membership of the Group is as follows:

- Chief Executive
- Executive Director – Environment and Development
- Executive Director – Resources and Corporate Services
- Executive Director – Regeneration and Neighbourhood Services
- Operational Director – Highways and Transportation
- Operational Director – Planning
- Council Solicitor
- Head of PR

This group will be strengthened by the introduction of a dedicated “Mersey Gateway Director” who will manage the delivery team. Such an individual will have previous experience of controlling a PFI scheme through the enabling process. He/she will manage and coordinate the input from the various specialists and Halton’s own departments, to ensure timely delivery and accurate monitoring/reporting. An effective procurement strategy will be developed to ensure value for money to the public purse, and an equitable allocation of risk. Opportunities for innovation in this process will be taken where this can be justified and benefits obtained.

Specialist input is provided to the Group by a team of experienced practitioners in key disciplines:

- Gifford and Partners – their current provision of lead consultant and project management services will continue as representatives of the client.

- KPMG – have been on board with the project since 2000 and will continue to provide specialist financial services through the procurement process particularly if a PFI Business Case is required.

- Herbert Smith – this City law firm has been appointed to provide specialist legal advice on the procedural and financial procurement processes. They have extensive experience of transport infrastructure projects, of PFI/PPP schemes and of the Transport and Works Act 1992 procedures together with a variety of other applications. Herbert Smith are now briefing Counsel to ensure consistency throughout all the regulatory processes.

Herbert Smith have provided early advice that has enabled the Project Group to decide that the Transport and Works Act provides the most appropriate procedural route for the Council to pursue the Mersey Gateway project.

The proposed Statutory Procedures are presented in Section 12.

An indicative timetable for delivery is included in Volume 2 of this Report. Assuming a PFI funding route, it is expected that the TWA and procurement procedures would take four years to complete. This would mean that construction could start in early 2009 with completion by 2012.
The relative advantages of procurement options are under active consideration including early contractor involvement and design, build, operate arrangements.

The Group provides regular progress reports to the Mersey Crossing Group.

11.3 Preparatory Costs

The costs of the statutory procedures are expected to be considerable and will severely stretch the resources of Halton and its partners. A discussion on the affordability of these preparatory costs is included in Volume 2 of this report.

11.4 Proven Delivery Capability

Since 1974 and more particularly since achieving Unitary status in 1998, Halton Borough Council has a proven track record of delivering a wide range of major capital projects. The Council has been instrumental in delivering major town centre regeneration schemes in both Widnes and Runcorn. Partnership working with both Peel Holdings (which owns the Manchester Ship Canal Company) in Runcorn and with St. Modwen in Widnes has been an important feature of these regeneration schemes.

Major works recently completed include an Arts Centre (The Brindley) in Runcorn and two major retail / leisure developments in Widnes. The Economic Development Zone on Widnes Waterfront and the Castlefields Regeneration are at the Master Planning stage, with some significant construction work already completed in Castlefields. In addition, proposals for the new Ditton Strategic Rail Freight Facility supported by the Strategic Rail Authority were the subject of detailed discussion during the UDP public inquiry in 2003 and attention is now being turned towards the delivery of this major scheme.

The Council also has a long and successful record of implementing major and complex brownfield regeneration schemes and is currently engaged in the remediation of Wigg Island (Runcorn) and the former Coal Stockyard (Widnes) whilst negotiations with English Partnerships about the regeneration of the West Bank Dock Estate are proceeding.

In summary, over a period of 30 years, Halton Borough Council has promoted and delivered a range of major development and infrastructure improvements. The phrase "on-time and on budget" is built into the culture of those tasked with delivering major schemes. Engagement with experienced, competent, responsible and committed partners enables the Borough Council to promote the Mersey Gateway with a confidence that it will be able to deliver this vital scheme following support in principle from the Secretary of State.
12. STATUTORY PROCEDURES

12.1 Introduction

This section considers the likely statutory procedures required to promote the Mersey Gateway. The Mersey Gateway, its need, form and justification are set out in detail elsewhere in this report. Halton Borough Council (the “Borough Council”) would make the applications and promote the orders explained below. However, because the exact nature of the Mersey Gateway remains the subject of consultation, assessments (including environmental, transport and ecological assessments) the exact form and content of the various applications and orders remains subject to study and possible change.

This section reflects discussions with the TWA Orders Unit of the Department for Transport and Halton Borough Council as local panning authority. Needless to say, all decision makers will consider any application made to them on the merits of that application, including whether the application itself is within the scope of the powers used.

12.2 Background

The Mersey Gateway will include the construction of a bridge across at least four watercourses that are or may be navigable by the public. These are (from south to north) the Bridgewater Canal, the Manchester ship Canal, the tidal upper estuary of the River Mersey and the St Helen’s Canal. Works that interfere with navigation require specific statutory authorisation.

A variety of procedures were initially considered as offering possible routes for the promotion of powers to interfere with navigation for the Mersey Gateway. These were: a private or hybrid bill laid before Parliament; an order or scheme under Section 106 Highways Act 1980; and an order under the Transport and Works Act 1992.

A private bill is only available if other means of achieving the same end are not possible. Further it requires the organisation of business in Parliament in order to secure its passage through both houses. The recent experience of the Mersey Tunnels Act 200[4] has shown that even with much support from local members this is not necessarily a matter that is easily or straightforwardly achieved. Based upon that case, at the very least the timing for the procedure cannot be certain. This affects the certainty that can be given to costings and the assessment of the viability of the project.

A hybrid bill is a bill for works promoted by the Government. This would require the Government to make legislative time available in their programme. At present no indication has been given that this is likely to be possible. On this basis, it was felt safest to assume that this would not be forthcoming and alternative routes to promote the Mersey Gateway were sought.

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2 The petition for the Mersey Tunnels Bill was laid before Parliament in several years ago. The Bill has only been enacted relatively recently. The Mersey Gateway would be a much more complicated proposal, particularly if a requirement for tolls was included.
An order or scheme under Section 106 of the Highways Act 1980 can be used to promote works that interfere with navigation. However, the procedure requires the acquiescence of those with statutory responsibility and/or powers for a navigable waterway. In this case this would include the acquiescence of at least the owners of the Bridgewater Canal and the Manchester Ship Canal, which cannot be assumed for now. Also, the Section 106 procedure does not allow procedures to be assimilated or for statutory provisions to be amended or disapplied. This will be important in relation to the powers of the various canal companies and also the powers of the Secretary of State as Mersey Conservator.

This leaves the procedure under the Transport and Works Act 1992 (the “1992 Act”). This would allow the promotion of an order to authorise the interference with navigation by the construction of the Mersey Gateway. The 1992 Act envisages its use to authorise interference with navigation. Secondary legislation under the 1992 Act specifically contemplates its use to authorise construction of a bridge, making the procedure apt for the Mersey Gateway. The 1992 Act also allows other legislation to be applied, modified or excluded, amendments and repeals to be made, etc., which covers items not available under the Section 106 procedure. This also assists in fulfilling the requirement for the Secretary of State to use his discretion under the 1992 Act to conclude that the works cannot be promoted by another means as the full range of powers required cannot be secured in this manner.

Based upon the above, the 1992 Act appears to offer the most appropriate means for the Borough Council to secure powers to interfere with navigation. However, the scope of the 1992 Act is also limited. It has been suggested that it is not possible to use the procedure to promote works or matters that are not strictly ancillary to the works interfering with navigation. As such, works remote from the Mersey estuary or the navigable watercourses may need to be promoted separately. However, in this respect the 1992 Act is also of assistance. Where the 1992 Act itself is not being used to promote works or measures for part of a project or proposal, the 1992 Act specifically provides for other procedures to be assimilated within the 1992 procedure. Therefore, the same inquiry can be used to consider a number of matters, including those that may be too remote to be the subject of an application under the 1992 Act.

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3 On 30th July 1842 an Act for better preserving the Navigation of the River Mersey received Royal Assent. This imposes certain requirements upon those proposing works in the River Mersey. To give procedural certainty and to ensure all orders and applications could be considered at the same time these provisions would need to be disapplied in relation to the Mersey Gateway. It is anticipated that a more up-to-date relationship would be put in place in relation to the Mersey Gateway and its construction.

4 Section 3(1)(b)


6 Section 5(3) To give procedural certainty and to ensure all orders and applications could be considered at the same time these provisions would need to be disapplied in relation to the Mersey Gateway. It is anticipated that a more up-to-date power of approval would be substituted instead, probably by way of protected provisions.

7 This report proceeds on the assumption that it will be necessary to use other procedures for other elements of the Mersey Gateway proposals.

8 Section 15.
itself. Thus, planning, highways, compulsory purchase and (if required) tolling powers can be addressed simultaneously.

The rest of this report considers the approach to the various powers required for the Mersey Gateway and how they are likely to be promoted.

12.3 Transport and Works Act 1992

It is anticipated that the 1992 Act will be used to promote the works and matters relating to interference with navigation. The relevant section of the Mersey Gateway begins at the proposed A533 Bridgewater Expressway/A533 Central Expressway/A558 Daresbury Expressway/Mersey Gateway Interchange. The Mersey Gateway would be commenced on the south side of the Bridgewater Canal, then be launched northwards across the area of Astmoor, before crossing the Manchester Ship Canal, Wigg Island, the Mersey Estuary and Widnes Warth.

This part of the Mersey Gateway requires the use of the 1992 Act to disapply any legislation relating to the two canals and to secure powers to interfere with navigation by obstructing the air draft of each waterway. As both canals are in operation it is also likely to be necessary to provide protective provisions for the statutory undertaker in respect of each.

The crossing of the Mersey Estuary likewise requires an application for powers necessary to interfere with navigation. It will be necessary for piers to be constructed within the estuary and the deck and superstructure of the Mersey Gateway will interfere with the air draft of the waterway. As discussed above the powers of the Mersey Conservator will need to be disapplied and/or varied.

12.4 St Helens Canal

Having crossed the Mersey Estuary, the Mersey Gateway then curves to the West to cross Widnes Warth. North of Widnes Warth lies the St Helens Canal. This waterway is navigable along at least part of its length and remains filled with water. However, a wooden bridge, a temporary structure built to replace a swing bridge in the 1980s, currently prevents navigation from a point just downstream of where the Mersey Gateway would cross this canal.

It is only possible to close a navigable waterway or to extinguish rights of navigation with statutory authority. It appears that the temporary bridge may not have been constructed with statutory authority. Accordingly, it is safest to assume that a right of navigation currently exists along the St Helen’s Canal, albeit unexercised at present. Furthermore, where an obstruction to a right of navigation is removed, the pre-existing right resumes.

For the reasons set out above, it would be sensible to apply for powers to interfere with rights of navigation over the St Helen’s Canal as well as the other watercourses to be crossed by the Mersey Gateway. If this is not necessary, more straightforward powers could be used as discussed in the section immediately below.
12.5 Highway Works – St Helens Canal to Railway

Continuing in a westerly direction the Mersey Gateway would require the construction of an embanked section of road. If tolling was pursued, this is the area in which toll booths could be located. This area crosses several highways and the creation of new roads. To the extent that this section of the Mersey Gateway could not be promoted under the 1992 Act, it is anticipated that orders under the Highways Act 1980 would be used. These would be used by virtue of the powers of the Borough Council as local highway authority to construct new highways.

12.6 Railway Works

To the west of the above section is the point at which the proposed Mersey Gateway would cross the Garston to Timperley Freight Railway Line. This constitutes part of Network Rail’s railway network.

The works in question are likely to be as described below:

The railway will be crossed by a portal structure with the deck cast integral with the reinforced concrete abutment walls. A square span of 14 metres is proposed to ensure the minimum deck thickness. Due to the new highway crossing the railway at an extreme skew, the new structure will appear to rail users as a short tunnel. The deck will be formed using precast beams placed under possessions of the track. Pad foundations are proposed for the abutment walls and the flanking embankment retaining walls.

Effectively, the existing railway, which runs atop an embankment, will be enclosed within the structure of the embankment for the Mersey Gateway. This will require powers to interfere with Network Rail’s railway network.

This would best be achieved using the 1992 Act. This provides for the making of orders relating to or to matters ancillary to, the construction or operation of a railway. Such an order could be conjoined with the order for the works interfering with navigation because the 1992 Act provides that an order under its terms may make provision for more than one scheme, system or mode of transport. In this case, the intervening section of embankment could be included in an application for an order under the 1992 Act or alternatively pursued separately.

12.7 A562 Speke Road/Mersey Gateway Junction

Like the section of the Mersey Gateway between the St Helen’s Canal and the Railway this set of works can be promoted by means of the powers of the Borough Council as local highway authority. This would also include powers to stop up highway links (such as those serving the Silver Jubilee Bridge) and construct new structures.

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9 Section 24 Highways Act 1980.
10 Section 1(a).
11 Section 5(2).
12.8 Silver Jubilee Bridge/Other Interchanges

As the Mersey Gateway would relieve the Silver Jubilee Bridge it is proposed that changes be made to that structure and the highway links that serve the bridge. These would be promoted by the Borough Council using its powers under the highways Act 1980. The works would include the closure of links and the remodeling of the North and south Junctions currently leading to the Silver Jubilee Bridge.

The changes to traffic flows to be achieved by the Mersey Gateway will also necessitate changes to the Central Expressway/Weston Point Expressway interchange and the Central Expressway/Southern Expressway interchange. The same approach will apply to these works, all of which are anticipated to fall within the existing highway boundary.

12.9 Planning Permission

As well as the need for certain statutory powers in respect of the Mersey Gateway it will also be necessary to secure planning permission for the works. This is because the works constitute development as this is defined in the Town and country Planning Act 1990 (the “1990 Act”).

Under the 1990 Act works within the boundaries of a road carried out by a local highway authority for the maintenance or improvement of that road would not constitute development or require planning permission, provided that they are not anticipated to have significant adverse effects on the environment. Here, the works (including the remote works referred to at paragraph 8.2 above) form part of a wider scheme that is both outside the boundary of a road and also likely to have significant adverse environmental effects per se.

Accordingly, it is anticipated that planning permission will be needed for at least the following, whether encompassed in a single application or a series of applications:

a) The construction of the Mersey Gateway, its approaches, viaducts and junctions on either side of the Mersey Estuary;

b) Works of alteration to the Silver Jubilee Bridge; and

c) Works to the Central Expressway/Weston Point Expressway interchange and the Central Expressway/Southern Expressway interchange.

Subject to what is set out below in relation to tolling, it may also be necessary to apply for planning permission for the construction of toll booths and plazas on the Mersey Gateway and possibly on the Silver Jubilee Bridge.

12.10 Compulsory Acquisition

As noted above, the Mersey Gateway will not be constructed solely on land within the boundary of a road, and hence the highway boundary. Also, not all land (including land covered by water) is otherwise in the ownership of the Borough Council. Therefore, the Borough Council proposes to make orders in accordance with its powers under Section 239 Highways Act 1980, which will be subject to confirmation by the Secretary of State.
Orders under this provision would be used wherever powers under the Highways Act 1980 were deployed for the promotion of the Mersey Gateway.

In respect of other areas it would also be possible for the Borough Council to apply for powers using either the 1992 Act or the Town and Country Planning Act 1990. This could be used, for example, where the 1992 Act was used to promote works.

Whichever procedure is used, the timing effects are very similar and the various orders could be considered at the same public inquiry, if need be.

12.11 Tolling

Whilst it remains the view of the Borough Council that the Mersey Gateway and the Silver Jubilee Bridge should be free-to-use, the Department for Transport has requested that the possibility of levying tolls for their use should be investigated. The Silver Jubilee Bridge is a highway maintainable at the public expense and it is intended that the Mersey Gateway will have the same status. As a matter of legal principle the public has a right to pass and repass on a public highway. Therefore, if a toll or other charge for the use of any highway is to be imposed, specific statutory powers would be required.

There are a number of avenues by which tolls or charges for the use of roads may be applied in the case of the Mersey Gateway and the Silver Jubilee Bridge:

Private/Hybrid Bill – this has been discounted for the same reasons as were set out above in relation to the promotion of works that would interfere with navigation;

a) New Roads and Streetworks Act 1991 – this procedure allows tolls to be applied in relation to designated “special roads”. These are roads which are only available to certain classes of traffic and typically include motorways and dual carriageways. The Silver Jubilee Bridge is currently a special road and the Mersey Gateway would be a special road. However, the Silver Jubilee Bridge would almost certainly cease to be a special road in the sense required by the legislation at the time the Mersey Gateway was opened to traffic. Therefore, the use of this procedure would only be possible in relation to the Mersey Gateway. Should there be a requirement to impose tolls other considerations, explained in the commercial submission (Volume 2 of this Major Scheme Appraisal Report), indicate that the Silver Jubilee Bridge would need to be subject to tolls. Hence, this option is not appropriate as a uniform regime could not be imposed by its use.

b) Transport and Works Act 1992 – the 1992 Act makes specific provision for the imposition of tolls or other charges. However, for the reasons explained above in relation to the use of such a procedure to authorize works, the Silver Jubilee Bridge may be too remote. Therefore, procedural risks may attach to such a method.

12 Schedule 1 Transport and Works Act 1992, paragraph 12.
c) Road User Charging – under the Transport Act 2000 a power has been given to local highway authorities to impose charges (commonly known as congestion charges) for the use of certain roads. In this case, the relevant roads would be specified to include the Silver Jubilee Bridge and the Mersey Gateway, when opened to traffic. The procedure is available if the relevant scheme would be “desirable for the purpose of directly or indirectly facilitating the achievement of policies in the Borough Council’s local transport plan.”\footnote{13} As the Local Transport Plan for Halton addresses congestion on the Silver Jubilee Bridge and the role of the Mersey Gateway in resolving such effects, the Mersey Gateway should fall within its scope. The provisions of the Transport Act 2000 also require that the proceeds of a charging scheme, such as that proposed, should be applied to achieve policies in the local transport plan for at least ten years. Again, this could be achieved in the case of the Mersey Gateway, not least by the use of funds for the construction, operation and maintenance of the Mersey Gateway, which would operate to alleviate congestion.

For these reasons it is proposed that (if required) a road user charge should be used to impose a charge for use of the Silver Jubilee Bridge and the Mersey Gateway. As explained above, the use of the provisions under the 1992 Act to assimilate procedures would allow the promotion of a road user Charging scheme/order to be undertaken and considered at the same time as other statutory procedures were undergone. The matter could be considered before the same public inquiry as all other applications and orders.

12.12 Procedures

The principal consent referred to above is the application for powers under the Transport and Works Act 1992. The likely timescales for this therefore govern the application dates and the likely duration of the process. These dates are set out in Volume 2 of this report.

\footnote{13 Section 164 (2) Transport Act 2000.}
APPENDIX A

CONGESTION REFERENCE FLOWS
<table>
<thead>
<tr>
<th>Traffic Flows</th>
<th>Am</th>
<th>Route 1</th>
<th>Route 2</th>
<th>Route 3</th>
<th>Route 3A</th>
<th>Route 4</th>
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<tbody>
<tr>
<td>SILVER JUBILE E BRIDGE</td>
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<td>585</td>
<td>2320</td>
<td>2005</td>
<td>1238</td>
</tr>
<tr>
<td>pm</td>
<td>3911</td>
<td>250</td>
<td>1645</td>
<td>1325</td>
<td>527</td>
<td>2046</td>
</tr>
<tr>
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<td>3281</td>
<td>24395</td>
<td>23363</td>
<td>12345</td>
<td>31247</td>
</tr>
<tr>
<td>daily</td>
<td>46517</td>
<td>2435</td>
<td>18671</td>
<td>14975</td>
<td>5546</td>
<td>24483</td>
</tr>
<tr>
<td>NMC</td>
<td>Am</td>
<td>3946</td>
<td>2344</td>
<td>2481</td>
<td>3382</td>
<td>1841</td>
</tr>
<tr>
<td>pm</td>
<td>3741</td>
<td>2476</td>
<td>2617</td>
<td>3553</td>
<td>1948</td>
<td></td>
</tr>
<tr>
<td>daily</td>
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<td>26507</td>
<td>25919</td>
<td>37876</td>
<td>17586</td>
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</tr>
<tr>
<td>daily</td>
<td>45405</td>
<td>30488</td>
<td>32848</td>
<td>43168</td>
<td>22695</td>
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### MERSEY GATEWAY

#### CONGESTION REFERENCE FLOWS / RELIABILITY

**Congestion Reference Flows to TA46/97 Annex D**

<table>
<thead>
<tr>
<th>Road</th>
<th>Silver Jubilee Bridge</th>
</tr>
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<tbody>
<tr>
<td>Do Minimum Route 1 Route 2 Route 3 Route 3A Route 4</td>
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</tr>
<tr>
<td>Road Standard (or capacity as value) Enter value or S,D,M</td>
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</tr>
<tr>
<td>%HGV</td>
<td>12% 5% 5% 5% 5% 12%</td>
</tr>
<tr>
<td>Percentage HGV</td>
<td></td>
</tr>
<tr>
<td>Maximum hourly lane throughput CAPACITY</td>
<td>1860 1305 1305 1305 1305 1860</td>
</tr>
<tr>
<td>Traffic Peak Hour Flow</td>
<td>8371 835 3965 3330 1765 4736</td>
</tr>
<tr>
<td>Daily Flow</td>
<td>94813 5716 43066 38338 17891 55730</td>
</tr>
<tr>
<td>%Kf</td>
<td>8.8% 14.6% 9.2% 8.7% 9.9% 8.5%</td>
</tr>
<tr>
<td>Daily Traffic 0.9 7day AADT</td>
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</tr>
<tr>
<td>Weekday Traffic 5 day AAWT</td>
<td>94813 5716 43066 38338 17891 55730</td>
</tr>
<tr>
<td>%Kd</td>
<td>53% 70% 59% 60% 70% 57%</td>
</tr>
<tr>
<td>Carriageway Carriageway Width (per direction)</td>
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</tr>
<tr>
<td>Number of lanes (per direction) NL</td>
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</tr>
<tr>
<td>*If more than one lane - assumes dual Width Factor Wf</td>
<td>0.82 0.50 0.50 0.50</td>
</tr>
<tr>
<td>Congestion Reference Flow</td>
<td>58,499 11,475 21,802 22,458 16,931 57,010</td>
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<tr>
<td>Road</td>
<td>Mersey Gateway</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Road Standard (or capacity as value)</td>
<td>D D D D D</td>
</tr>
<tr>
<td>Percentage HGV %HGV</td>
<td>12% 12% 12% 12% 12%</td>
</tr>
<tr>
<td>Maximum hourly lane throughput CAPACITY</td>
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<tr>
<td>Traffic Peak Hour Flow</td>
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<tr>
<td>Daily Flow</td>
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<tr>
<td>Pkf</td>
<td>#DIV/0! 8.4% 8.6% 8.7% 8.6% 9.4%</td>
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<tr>
<td>Daily Traffic AADT</td>
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<tr>
<td>Weekday Traffic AAWT</td>
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<tr>
<td>Carriageway</td>
<td>11.000 7.300 7.300 7.300 7.300</td>
</tr>
<tr>
<td>Number of lanes (per direction) NL</td>
<td>3 2 2 2 2</td>
</tr>
<tr>
<td>Width Factor Wf</td>
<td>-0.25 1.00 1.00 1.00 1.00</td>
</tr>
<tr>
<td>Congestion Reference Flow</td>
<td>#N/A 120,197 78,013 77,188 70,716 71,186</td>
</tr>
</tbody>
</table>
APPENDIX B

SUPPORT FOR A NEW CROSSING
The following groups have all expressed support for the project:

- AHC Warehousing
- AMEC Developments Limited
- Anthony's Travel
- Arriva North West
- BBC Radio Merseyside
- Biffa Waste Limited
- CB Hillier Parker
- Cheshire Constabulary
- Cheshire Fire Brigade
- Chester & North Wales Chamber of Commerce
- Confederation of Passenger Transport
  - UK
- DATS (Holdings) Limited
- Ellesmere Port & Neston Council
- EVC
- Express Travel (Holdings) Limited
- Freight Transport Association
- Granox Ltd.,
- Greater Manchester Joint Transport Policy Team
- Greater Merseyside Enterprises
- Halton College
- Halton Constituency Labour Party
- Ineos
- Jaguar
- Learning & Skills Council
- Liverpool Chamber of Commerce
- Liverpool Echo
- Liverpool John Lennon Airport
- Liverpool Housing Trust
- Liverpool Land Development Company
- Liverpool Walton
- Manchester Chamber of Commerce
- Maple Grove Developments
- Merseyside Ambulance Service
- Merseyside Constabulary
- Merseyside Fire Service
- Morbaine
- Network Strategy North
- NHS Logistics Authority
- North West Business Leadership Team
- Norwest Holst
- NWRA Key Priority Group
- O'Connors Transport
- RAC
- Road Haulage Association
- Runcorn Probus Club
- Speke Garston Partnership
- St. Helens Chamber of Commerce
- St. Helens RLFC
- Tarmac
- The Mersey Partnership
- Tibbett & Britten
- Towngate plc
- Vale Royal Borough Council
- Weekly News Group
- Widnes Vikings RLFC
- Wire FM
- Wm Morrison
- World Group Newspapers
APPENDIX C

LIST OF REPORTS INCLUDED IN MAJOR SCHEME APPRAISAL SUBMISSION