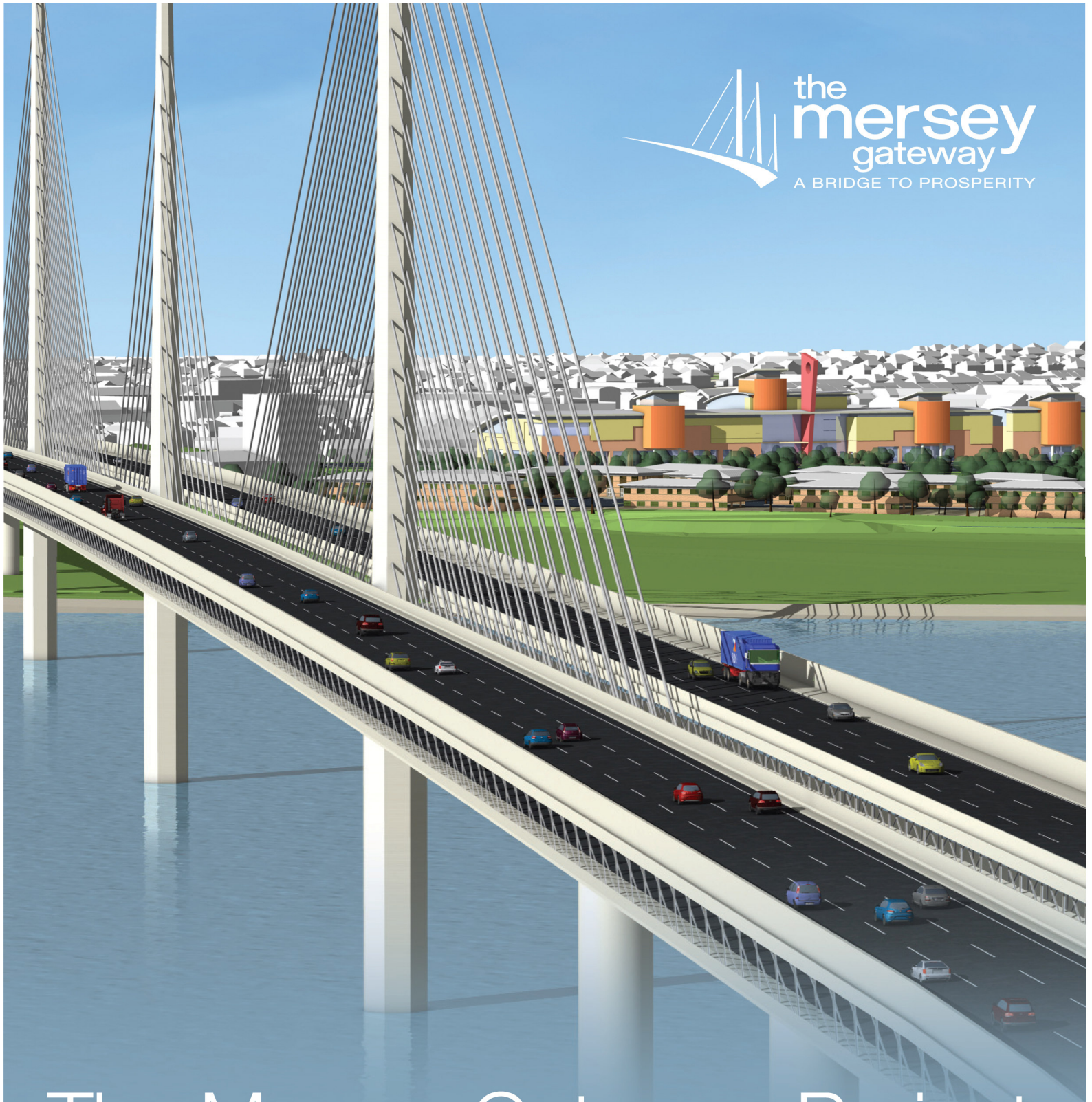


The Mersey Gateway Project

NON TECHNICAL SUMMARY

March 2008

NON TECHNICAL SUMMARY

C O N T E N T S

FIGURES

1. INTRODUCTION

1.1 Purpose of Document

1.1.1 Halton Borough Council (the "Council") is promoting a new road crossing of the Mersey Estuary (the "Estuary") in the Borough of Halton (the "Borough") and associated works to incorporate it into the existing road network. Collectively the works required are known as the Mersey Gateway Project (hereafter referred to as the "Project"). The Project is shown on Figure 1.1 (Appendix A).

1.1.2 This document is a Non Technical Summary (NTS) of the Environmental Statement (ES) that accompanies certain applications and orders that are required to authorise the construction of the Project. The applications and orders to which this ES relates include:

a. Applications for planning permission in respect of certain works to the highway network in the Borough;
b. An application for an order under Section 3 of the Transport and Works Act 1992 authorising the construction of works that interfere with navigation of the River Mersey (the "River") and other waterways;
c. Application for listed building consent for the effect of the Project upon listed structures including the existing Silver Jubilee Bridge ("SJB");
d. An order conferring powers to levy charges for the use of the SJB; and
e. Other works and applications conferring powers (amongst other things) to acquire land compulsorily and interfere with public rights of way ("PRoW").

1.1.3 In accordance with European and UK law certain projects must be the subject of a particular process of assessment due to their size, nature and the likelihood that they will have significant effects upon the environment. This assessment process is known as environmental impact assessment ("EIA").

1.1.4 Due to the size and nature of the Project it has been assumed that an EIA is required in line with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (the "EIA Regulations").

1.1.5 The ES has been prepared to summarise the outcome of the EIA process. It enables anyone with an interest in the Project, including the general public, to understand how the Project will affect them and the environment in which they live in order for them to express their views on the effects of the Project.

1.1.6 This NTS provides an overview, in non-technical language, of the main findings of the ES. It is important to note that this NTS does not, and is not intended to, convey *all* of the information relating to the Project and its potential effects on the environment. By necessity, the text provided herein is a summary of the detailed assessments discussed in the ES.

1.1.7 Therefore, for fully detailed information pertaining to any part of this NTS, please refer to the ES, which is available at locations in Section 6 and via the Mersey Gateway website (http://www.merseygateway.co.uk). The NTS is available free from any of the locations listed. A charge is made for the purchase of the ES, to cover the cost of printing and presentation.

1.2 Need for the Project

1.2.1 The Borough is located in the North West of England[1] (as shown in Figure 1.2), at a strategic crossing point of the Estuary.

Figure 1.2 - Location of Halton in the UK

1.2.2 The Borough comprises two principal towns of Runcorn and Widnes located either side of the Estuary, together with the four parishes of Daresbury, Hale, Moore and Preston Brook. At one point, known as the "Runcorn Gap", the Estuary narrows significantly and provides a long-used crossing point. This is now spanned by the main rail connection between Liverpool and the West Coast Main Line (via the Aethelfleda railway bridge) and the A557 road link between the M62 and the M56, via the A533 SJB.

1.2.3 The M62 and M56 motorways pass to the north and south of the Borough respectively with connections via the A562/A5300 and A557 to the M62, and via the A558 and the A56 to the M56. To the west of Widnes the A562, Speke Road, links Widnes and the SJB crossing point to south Liverpool. This provides a connection to nationally significant ports and Liverpool John Lennon Airport. The M62 to the north of the Borough links the Liverpool City Region[2] to Manchester and thereafter crosses the Pennines to the Yorkshire conurbations. To the south, the M56 links North Wales and Cheshire[3] to Manchester.

[1] The North West of England is comprised of five sub regions including Cheshire, Cumbria, Greater Manchester, Merseyside and Lancashire.
[2] The Liverpool City Region comprises the Core City of Liverpool and local authority districts of St Helens, Wirral, Knowsley, Sefton, and Halton plus the adjacent areas of Warrington, Chester, Ellesmere Port and Neston (West Cheshire), North Wales and West Lancashire.
[3] Cheshire is split into 6 administrative regions: Crewe and Nantwich, Chester, Congleton, Macclesfield, Vale Royal and Ellesmere Port and Neston.

1.2.4 The Borough is therefore located at the convergence of a number of strategic transport links in the North West of England, a number of which rely upon the Estuary crossings at this point. Chief among these converging routes is the A533 crossing the SJB.

1.2.5 The SJB was opened in 1961 with two lanes of traffic and an opening year flow of less than 10,000 vehicles per day (vpd). When it was widened to four sub-standard lanes in 1977, the design capacity (measured using current maximum throughput standards) was increased to approximately 65,000 vpd. At present it regularly carries in excess of 80,000 vpd on weekdays and a figure in excess of 91,000 vpd was recorded in 2007. These traffic flows, combined with the four now sub-standard lanes and absence of any hard shoulder on the bridge, have inevitably led to regular service breakdowns on the SJB. These include:

a. Routine Congestion during peak travel periods;
b. Delays to local connecting roads due to queuing;
c. Safety hazards;
d. Poor regional road resilience to accidents and other incidents;
e. Difficulties in maintenance; and
f. Unreliable journey times.

1.2.6 These service failings have a negative effect on travel within the Borough, undermine the Liverpool City Region's connectivity with the rest of the United Kingdom's (UK) road transport links, and the local community surrounding the SJB suffers a degraded environment and quality of life. The breakdown in transport connectivity and access is widely accepted as a threat to the economic prosperity of the sub-region. This is demonstrated by the Project being identified as a key 'Transformational Project' in the North West Regional Economic Strategy (RES) by the Northwest Regional Development Agency.

1.2.7 Table 1.1 below provides a summary of the key issues currently experienced in the Borough.

Table 1.1 - Summary of Current Issues within Halton

Issue	Description
Accessibility	High demand for cross-Estuary trips through the Borough compared with the available crossing capacity provided on the SJB (design capacity is currently 65,000 vpd, however flows regularly exceed 80,000 vpd on weekdays).
	Unreliable public transport and road traffic service due to the frequent delays and disruption on the SJB.
	Perceived and actual dangers associated with cross River pedestrian and cycle access.
Socio-economic	High levels of deprivation within the Borough.
	Regeneration being constrained by access. The inability of the local highway and public transport networks to perform reliably is affecting economic development and investment in the Borough.

Network Resilience	The SJB is a source of network weakness – it has a considerable on-going maintenance programme to ensure that it can remain operational and its peak-hour capacity has been exceeded with resultant "peak spreading" i.e. people travelling off peak to avoid delay. 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 SJB, lying centrally on the A533, linking the M56 and the M62 is a key component of the strategic highway network. Whilst not part of the trunk road network it serves to provide a degree of network resilience when other River crossings experience incidents and has local and regional significance but is not, in itself, resilient.

1.2.8 The Project aims to provide effective road connections to the Liverpool City Region from north Cheshire in the south, thereby improving connections in the sub-region and removing congestion from the Borough. The new road capacity in Halton will provide an opportunity to improve sustainable transport links and catalyse local and regional economic development.

2. THE MERSEY GATEWAY PROJECT

2.1 Overview

2.1.1 The Project will include the following works:

a. A new road crossing of the River in Halton, known as the Mersey Gateway Bridge (the "New Bridge");
b. Incorporation of the New Bridge in the existing road network;
c. Changes to the SJB to allow it to be used for local traffic and improved pedestrian and cycle facilities to be provided;
d. Integration of the Project with public transport, cycle and pedestrian links across the Borough;
e. Landscaping around the New Bridge and other works; and
f. Implementation of tolling and development of associated infrastructure.

Route of the Project

2.1.2 The works that comprise the Project run from the North West of Widnes to a junction with the M56 to the South of Runcorn. They also include changes to the SJB. The Project is described below from north to south of the Estuary and shown on Figure 1.1 (Appendix A). An illustration of the New Bridge is shown in Figure 2.1 below.

Figure 2.1 – Illustration of the New Bridge

North of the Estuary

2.1.3 The western extent of the proposed main alignment will be located in Widnes, along the A562 Speke Road to Liverpool, to the west of the existing Ditton Roundabout Junction (Junction of A562 and A533). The alignment will then head eastwards along the line of, and to the south of, Speke Road towards the Ditton Junction. It will then progress, via an embankment, across land currently occupied by industrial units along Ditton Road and over the Garston to Timperley rail freight line, before crossing the alignment of the existing A557 Widnes Eastern Bypass (via a multi-span viaduct), the Catalyst Trade Park and the western corner of the ThermPhos Chemical Works. A new junction (the "Widnes Loops Junction") will be formed with the A557 at this location.

Estuary and Canals

2.1.4 The alignment will then continue south eastward over the St Helens Canal, Widnes Warth Saltmarsh, the River, Astmoor Saltmarsh and Wigg Island, before turning south over the Manchester Ship Canal and Astmoor Industrial Estate.

South of the Estuary

2.1.5 The alignment will then connect into the existing road network in Runcorn at the Junction of the A533 Bridgewater and Central Expressways with the A558 Daresbury Expressway (the Bridgewater Junction). The route will continue south along the Central Expressway (A533) towards the junctions of the Central/Southern Expressways and the Weston Point Expressway/Weston Link (known respectively as the Lodge Lane Junction and Weston Link Junction). The alignment will finally join the M56 Motorway at Junction 12.

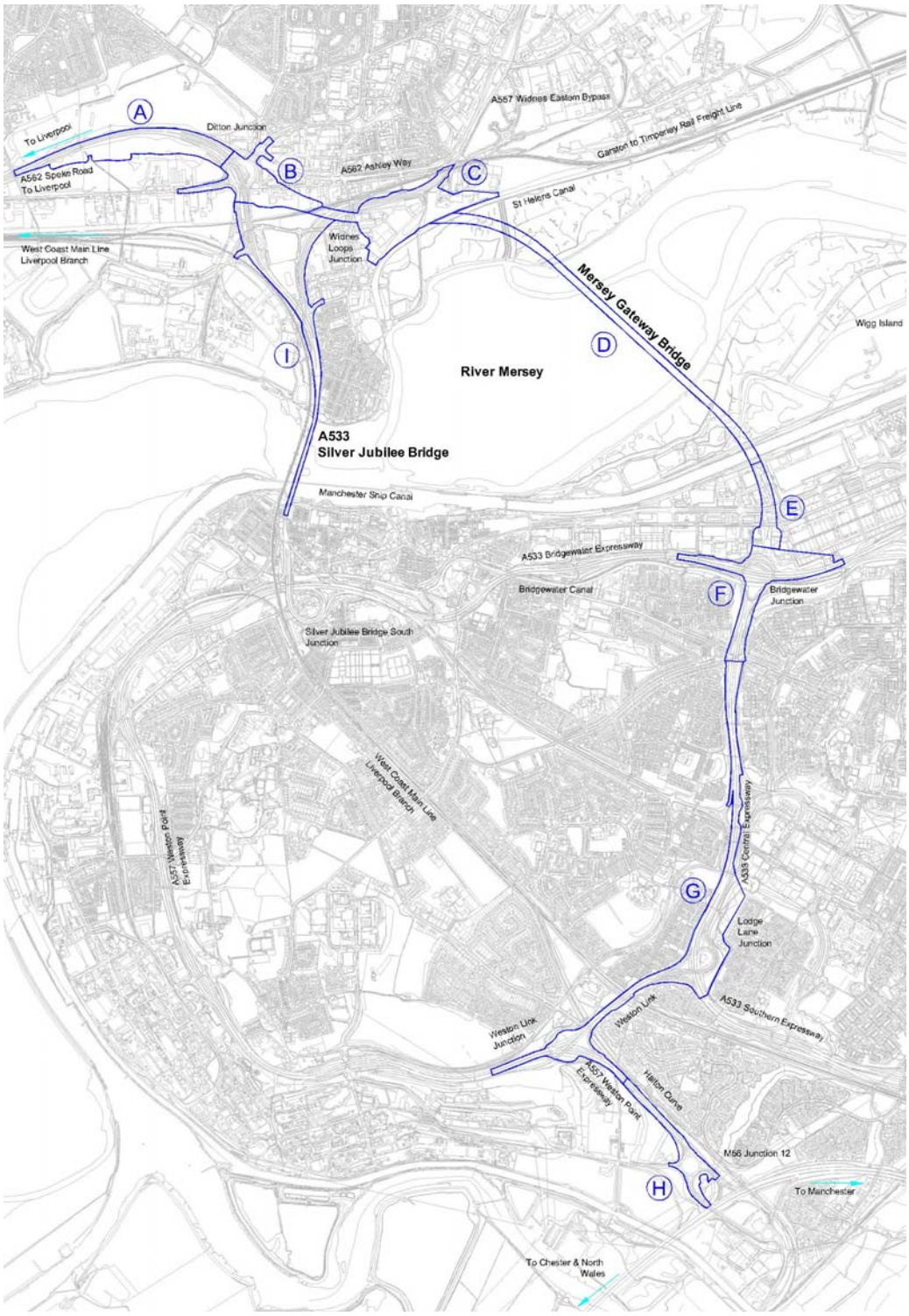
2.2 Construction of the Project

2.2.1 For the purposes of understanding and describing how the Project will be constructed and how the assessment has been undertaken for the EIA, the Project has been split into a number of parts (known as "Construction Areas") (A to I as shown below on Figure 2.2).

2.2.2 These areas reflect the individual construction areas which are described in the Construction Method Report (CMR) which has been prepared for the Project to describe how it is likely to be constructed. These construction areas include the following:

a. Area A – Main Toll Plazas;
b. Area B – Ditton Junction to Freight Line;
c. Area C – Freight Line to St Helens Canal including Widnes Loops Junction;
d. Area D – New Bridge;
e. Area E – Astmoor Viaduct;
f. Area F – Bridgewater Junction;
g. Area G – Central Expressway, Lodge Lane Junction and Weston Link Junction;
h. Area H – M56 Junction 12; and
i. Area I – SJB and Widnes De-linking.

Figure 2.2 - Project Construction Areas



2.2.3 A summary of construction methods in each of these areas is provided in Table 2.1 below. More detailed information is contained within the CMR which is located at Appendix 2.1 of Chapter 2 of the ES.

Table 2.1 - Description of Construction Works

Construction Area	Description of Construction Works
Area A – Main Toll Plazas	Works in this area would include the construction of the main toll plazas and associated structures. Existing infrastructure would be incorporated into toll requirements. Culverts which contain Stewards Brook and public footpaths would be extended to accommodate the increased carriageway width. Balancing ponds would be provided to the south of the new carriageway on either side of Stewards Brook.
Area B – Ditton Junction to Freight Line	Ditton Junction would be converted from a roundabout to a signal controlled junction. Toll facilities would be constructed on approach roads. Services along Ditton Road would be diverted.
Area C – Freight Line to St Helens Canal including Widnes Loops Junction	The following new structures and earth works would be required in this section of the works: a. The Freight Line Bridge - a single-span bridge over the Garston to Timperley Rail Freight Line. b. Victoria Road Viaduct - a high level, multi-span viaduct connecting the Freight Line Bridge to the edge of the Widnes Loops Junction including the crossing of Victoria Road. c. Two bridges carrying the main carriageway over the new Widnes Loops Junction carriageways. d. Embankments carrying the new carriageway at high level. e. A bridge to carry the Widnes Loops Junction southbound on-slip over itself. f. Toll plazas connecting the Project to the Widnes Eastern Bypass. g. The St Helens Canal Bridge - the high level bridge crossing the potential development corridor to the north of the St Helens Canal and the crossing of the St Helens Canal itself, which would then land on the north abutment of the New Bridge. The St Helens Canal would be temporarily filled at one location during construction.
Area D – New Bridge	The New Bridge would be constructed in this area, of total length of 2.13km, along with its associated structures. The section of the New Bridge crossing the Estuary would be a new bridge with three towers in the Estuary. Approach viaducts would be supported by 30 piers. Foundations would be piled throughout the bridge deck. Construction access over the saltmarsh would be obtained via stone haul road. Access into the intertidal zone would be obtained via piled jetties and air cushioned plant.
Area E – Astmoor Viaduct	The new carriageway would cross the Astmoor Industrial Estate at height requiring demolition of existing light industrial buildings. The area below the viaduct would be capable of use following construction. Infrastructure would be modified to tie in with the Bridgewater Junction. The New Bridge would remain at height. The viaduct would be 340m long and comprise 12 spans.
Area F – Bridgewater Junction	Bridgewater Junction is a complex of structures and slip roads that provide grade separation and access to and from the Central Expressway (running north-south) and the Daresbury/Bridgewater Expressways (running east-

Construction Area	Description of Construction Works
	west). The existing through Daresbury/Bridgewater Expressway would be closed and brought into the new roundabout. A two-level interchange is proposed with east-west movements at the lower level and the new road linking to the Central Expressway at the higher level. Existing bridges over the Bridgewater Canal would be removed.
Area G – Central Expressway, Lodge Lane Junction and Weston Link Junction	Improvements would be required to the alignment of the Central Expressway to link with the requirements of the New Bridge. These should not involve significant earthworks and would be undertaken generally within the existing highway boundary. An existing footbridge and busway bridge would be replaced. Lodge Lane and Weston Link junctions would be modified to change traffic priorities.
Area H – M56 Junction 12	The existing roundabout to the north of the M56 Junction 12 would be modified to include a signal controlled link directly across the centre of the existing roundabout for the main line of the new highway, leaving the outer roundabout segments for local turning traffic and for eastbound access to the M56 Junction 12. The works would comprise carriageway realignment and the installation of new traffic signals. A new retaining wall would be required to support the carriageway realignment on the south side of the roundabout.
Area I – SJB and Widnes De-linking	Reduced traffic flows would allow a downgrade of carriageways from two lanes to one lane in each direction. This would provide space on the bridge deck to re-introduce footpaths and provide a cycle path. The bridge deck would be modified. A toll plaza would be constructed to the north of the SJB on the existing carriageway of Queensway. Links to the SJB would be modified and new signal controlled junctions provided on slip roads.

2.3 Operation of the Project

Tolling and Road User Charging

2.3.1 The Project will be procured as a Design Build Finance and Operate (DBFO) scheme. This means that one organisation, known as a concessionaire, will be responsible for the detailed design, maintenance, construction and operation of the Project. It will then operate the Project for a period until it has recovered its expenses and made a suitable return on its investment. For schemes of this nature the concession contract period is typically 30 to 40 years. Although the Department for Transport (DfT) is contributing around 25 percent of the funding required, the Project will be funded mainly through the toll revenue. The concessionaire will obtain financial loans from banks or other lending institutions, secured against the expected toll revenues received over the concession contract period. This will allow the concessionaire to construct, operate and maintain the scheme for a defined concession contract period. The funding from central government, currently proposed in the form of PFI Credits, will act as a subsidy towards the revenue required to support the private finance arrangement. This will assist in keeping toll charges to the minimum required to fund the project. The concessionaire will repay the finance that they have raised to construct the scheme over the period of the concession contract.

2.3.2 The finance for the Project is therefore reliant on revenue recovered from users of the Project through tolling and/or road user charging. To sustain revenue and to also ensure that the Project will ease local congestion it is proposed that tolls/charges will be levied for use of both the New Bridge and the SJB.

2.3.3 The tolling/charging regimes will also provide a mechanism to manage demand, so that free flow traffic conditions are maintained on the New Bridge and SJB. Influencing future traffic demand through toll and road user charging is intended to achieve service reliability and standards and to deliver the environmental benefits throughout the foreseeable future.

2.3.4 The removal of non-local traffic from the SJB will provide an opportunity for the SJB to be dedicated to local transport use. The reconfigured SJB will provide enhanced facilities for public transport, cyclists and pedestrians. If the SJB remained in use at a heightened flow delivering these objectives would not be possible. Therefore, tolling/charging for use of the SJB would protect these local transport priorities against future congestion on the local road network connecting to the SJB. This is particularly important because the New Bridge will not contain facilities for cyclists and pedestrians.

Tolling Infrastructure

2.3.5 The current design assumes that the technology used to collect toll / charge payments from drivers is similar to that currently used on the Mersey Tunnels and elsewhere on the UK road network i.e. a combination of manned toll booths and unmanned tag systems located at appropriately positioned “toll plazas”.

2.3.6 The main toll plazas for the New Bridge will be located to the north west of the current Ditton Roundabout at or close to existing ground level. They will comprise eight tolling lanes on each carriageway and the width of each toll plaza will be about 40m. Tolled slip roads will also be provided from the New Bridge onto Ditton Junction for local traffic, on the A557 Widnes Eastern Bypass that connects with Junction 7 of the M62 to the north and on the Queensway approach to the SJB.

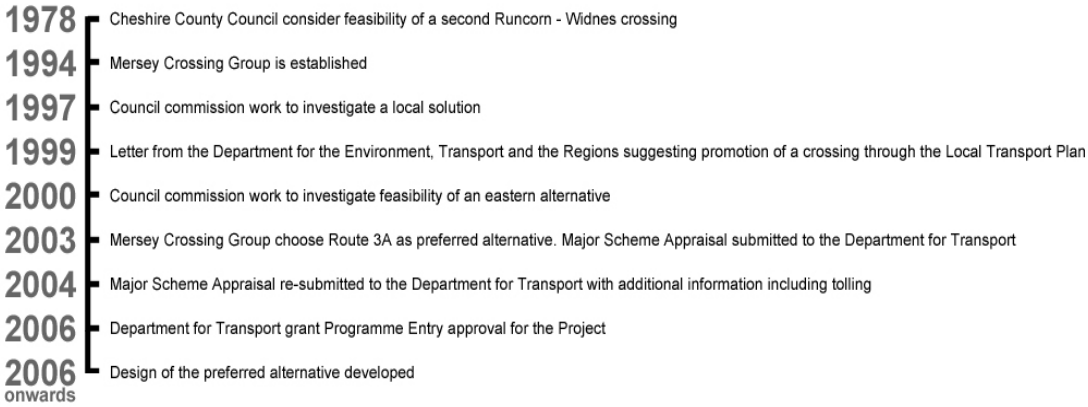
2.3.7 In addition to the tolling booths, administration and staff welfare facilities will be provided. It is likely that these will be located adjacent to the main tolling facilities to the west of Ditton Junction. Welfare facilities will also be provided at the tolling area for the A557.

2.3.8 The SJB will be tolled from booths constructed on the existing infrastructure. Welfare facilities will be provided in the vicinity for the toll operator staff.

2.4 Appraisal of Alternatives to the Project

2.4.1 Since 1978 a number of strategic and detailed alternatives have been considered to solve issues in the Borough (Figure 2.3) associated with congestion at the SJB as summarised in Table 1.1. Chapter 5 of the ES identifies all options considered since 1978, describes the assessment undertaken and provides reasons as to why the Project presented in the ES is the most favourable.

Figure 2.3 - Alternatives Considered Throughout the Development of the Project



Proposed Second Runcorn-Widnes Bridge – Initial Feasibility Report

2.4.2 In 1978 Cheshire County Council commissioned a survey to determine the feasibility for a second crossing of the Estuary. The alignment considered by Cheshire County Council at this time was for new a crossing to be constructed between the SJB and railway bridges. At the time it was concluded that a bridge alongside the existing structure in the Runcorn Gap was feasible. However, for the purposes of the Project the principle of a second crossing was established, albeit that other alternatives were subsequently re-examined as set out below.

Department of Transport Studies

2.4.3 In 1991 the then Department of Transport (DOT) undertook the Mersey Crossing Study to identify whether, and if so where, there was a need to provide an additional strategic crossing of the Estuary to the west of the M6.

2.4.4 This study considered 12 possible route alternatives, three of which were considered to be the most favourable. These included two strategic options to the east and one parallel to the existing SJB.

2.4.5 In 1994, based on the results of these findings the DOT ruled out these strategic alternatives for a new crossing on environmental grounds which were considered to out-weigh economic benefits and subsequently a crossing, promoted on a national level by the DOT was not considered appropriate.

Mersey Crossing Group Studies

2.4.6 In 1994 the Council took on the task to solve congestion issues associated with the sub-standard SJB crossing at a local level. The Mersey Crossing Group was established in 1994, comprising local and regional stakeholder groups. Following ministerial approval in 1995, the Mersey Crossing Group commissioned investigations into the feasibility of a new crossing within the vicinity of the SJB.

2.4.7 These studies examined the feasibility of nine alternative local crossings and concluded that an on-line option (between the SJB and the railway bridge) was the most cost effective and deliverable alternative and also met the objectives set for the study.

Second Mersey Crossing at Runcorn – Review of Options

2.4.8 A study was commissioned by the Council in 1999 ‘Second Mersey Crossing at Runcorn – Review of Options’ to explore in more detail the feasibility of alternatives to the east of the SJB which were outlined by the Mersey Crossing Group’s assessments.

2.4.9 This study examined five options for a crossing to the east of the SJB and concluded that an option for a crossing to the east of the SJB was feasible.

Mersey Crossing Study – Integrated Transport Solutions

2.4.10 A letter from the Department of the Environment, Transport and the Regions (DETR) was issued to the Council on 24th May 1999 and indicated that a scheme to promote a crossing of the Estuary would have to be included and justified within the Regional Transport Strategy and implemented at a local level through the Local Transport Plan (LTP). The DETR emphasised the importance of considering alternative solutions to relieve traffic congestion in the Borough.

2.4.11 Based on the review of options undertaken in 1999, the Council commissioned further work (undertaken in 2000) to determine the effectiveness of a new crossing to the east of the SJB in attracting local traffic (and whether attempting to separate 'local' from 'sub-regional' traffic would be appropriate) and to consider connections to the highway network for all modes of transport. This study also took into account the effect on economic regeneration, environmental, engineering and finance issues.

2.4.12 Based on a review of planning policy, economic initiatives, public transport, highway infrastructure, environmental, engineering and physical constraints the study identified four alternatives for a new crossing to the east of the SJB.

2.4.13 This study concluded that options to the east, west and parallel to the SJB could not be ruled out and that further investigation, in particular relating to environmental issues, was required to further investigate their feasibility.

Major Scheme Appraisal Alternatives

2.4.14 Between 2001 and 2003 additional, more detailed, work was therefore undertaken to focus on comparing potential detailed alternatives to address problems associated with congestion in the Borough. These included transport planning and transport infrastructure alternatives. The outcome of this work was summarised within a document known as a Major Scheme Appraisal (MSA) which was submitted first to the Department for Transport (DfT) in 2003 and then resubmitted, accompanied by additional data sought by the DfT in 2004.

2.4.15 Based on detailed environmental, transport and economic studies, Route 3A (which is now the alignment adopted for the Project) was considered to be the preferred alternative to mitigate those issues currently experienced within the Borough.

Tolling Options

2.4.16 Original proposals for the preferred alternative, Route 3A, involved the development of an un-tolled scheme. Therefore, all assessment work undertaken, as summarised above proceeded on this basis. Following the submission of the MSA in 2003 the DfT requested additional information on a number of issues including the consideration of funding proposals by means of tolling. Studies undertaken concluded that without the tolling of both bridges (i.e. both the SJB and the New Bridge) transport distribution would be distorted and benefits associated with congestion relief not realised. It was therefore concluded that both bridges should be tolled. The MSA was re-submitted in 2004 providing detail of a tolled option for Route 3A. In March 2006 the DfT granted Programme Entry approval for the Project, along with conditions which were based on a tolled scheme. From this point onwards all further studies considered tolling.

Design Alternatives

2.4.17 From 2004 onwards the preferred alternative underwent a number of design iterations to ensure that the optimum span and arrangement options for the New Bridge and designs for associated infrastructure works were taken forward.

2.4.18 In addition, the environmental effects of a number of methods for its construction were examined in detail to ensure that the final scheme has minimal effects on the environment during both its construction and operation.

2.4.19 The final preferred alternative is presented in the ES as the Project and summarised above.

3. ENVIRONMENTAL IMPACT ASSESSMENT – THE PROCESS

3.1 What is Environmental Impact Assessment?

3.1.1 EIA is a process carried out prior to submission of a planning application during which potential 'significant' environmental effects from a proposed development are identified and assessed, and measures are implemented to reduce those negative effects whilst enhancing those positive effects. These measures are known as 'mitigation measures'. The purpose of this process is to provide evidence to the authority assessing the planning application that the applicant has considered the main environmental effects and where these are likely to be negative, has considered ways to reduce the impacts. The effects must be controlled to the levels identified during the EIA process, and the planning process provides mechanisms for ensuring that this is the case.

3.1.2 The EIA process is undertaken by firstly establishing an environmental 'baseline' for a number of environmental disciplines which could have the potential to be affected by the construction and operation of a development. Environmental disciplines which may be affected could include people, plants and animals, soil, water, climatic factors, architectural and archaeological heritage, landscape and the inter-relationship between these factors. The baseline is an assessment of existing conditions which then provides a fixed point from which any changes due to the development in question can be assessed.

3.1.3 Methodologies and frameworks set out in technical guidance, national policy and other appropriate documentation are then followed to allow the assessment to be made regarding the importance of each effect by comparing the effects with the proposed development against the baseline situation. This judgement is based on the sensitivity of those receptors affected and the nature of the effect (e.g. positive or negative / temporary or permanent). Where appropriate, professional judgement is also applied. The EIA is completed by technical experts in each field.

3.1.4 This section of the NTS provides a summary of how this process has been followed for this Project.

3.1.5 The findings of the EIA process are written up and presented in a document known as the ES.

3.2 Scope of the EIA

Technical Scope

3.2.1 The technical scope of the EIA was determined through a 'Scoping Exercise' which was reported upon in a 'Scoping Report[4]'. This aimed to identify those environmental disciplines which had the potential to be affected by the Project, and which therefore needed consideration in the EIA.

3.2.2 Following extensive consultation with a wide range of interest groups and stakeholders those environmental disciplines which were studied as part of the EIA for the Project were determined. These are shown below in Box 3.1.

[4] Mersey Gateway Project Orders and Applications Environmental Impact Assessment Scoping Report, 2007

Box 3.1 - Environmental Disciplines / Receptors

Hydrodynamics	Contamination
Surface Water Quality	Waste
Land Use	Transport
Terrestrial Ecology and Birds	Noise
Aquatic Ecology	Navigation
Landscape and Visual	Air Quality
Cultural Heritage	Socio-Economics

3.2.3 Consideration was given to the potential effects of the entire lifecycle of the project – that is, the construction and operation phases. This ensured that both temporary and permanent effects of the Project were taken into consideration throughout the EIA. This approach was adopted systematically for each of the disciplines listed above.

Geographical Scope

3.2.4 The geographical scope of the EIA for the Project, or the area considered in the EIA was based on the extent to which environmental effects were anticipated to be experienced and the nature of the environmental discipline being assessed. Because each discipline is different, the influences of the Project (i.e. the area over which effects may occur) is also different for each one. For example effects on features of archaeological interests were anticipated to be localised to the route of the Project, whilst effects on the road network were anticipated to be experienced across the Borough and wider region, and on views to and from the site of the Project from around, from even further away.

Timescales

3.2.5 The EIA needs to take account of timescales in order to ensure that effects are correctly reported. This is important because the baseline may alter between now and the time immediately before work starts on the Project. This is particularly true in the case of road traffic, for example, which varies from year to year. Consideration must be given to this in the EIA, and where appropriate, predictions made as to what the baseline will be in the year during which the Project commences, so that changes can be assessed from that point. The timescales upon which this EIA is based are determined by the current programme for the Project's construction and its proposed opening year, or year of operation (2015). It was anticipated that required construction activities would be undertaken over 4 years.

3.2.6 For certain environmental disciplines, mainly those related to traffic forecasts, a year in the future life of the Project, known as the 'design year' was also taken into consideration (in accordance with current technical guidance, the year selected was 15 years following opening of the Project i.e. 2030) in the impact assessment. This also allowed consideration to be given to mitigation which it was anticipated would take time to establish, such as tree planting schemes.

3.3 Baseline Studies

3.3.1 Baseline information was collected for each of these those environmental disciplines likely to be affected by the construction and operation of the Project (Box 3.1).

3.3.2 The baseline information was collected through a variety of methods, including collation of existing third party data, field surveys and investigations, consultations and desk based assessments.

3.4 What is a 'Significant' Environmental Effect?

3.4.1 Section 3.1 describes the EIA process, and introduces the idea of 'significant' effects. A significant environmental effect was determined by estimating the change that is predicted to take place as a result of the construction and operation of the Project in comparison to the baseline situation. In order for the assessment process to be meaningful, the term 'significant' needs to be defined.

3.4.2 For the purposes of this Project, the significance of effects was determined by establishing the sensitivity of the 'receptors'. Receptors are specific locations or groups of locations that will experience effects. Receptors may also be specific features such as parks, footpaths, waterways, canals, etc. The effect predicted to occur is the change from the baseline situation. A receptor is a general term used in EIA to describe any of the above features that will experience an effect. It might be a person, group of people, public place, building, pathway or other feature, depending on the effect being described and the topic being assessed. Each environmental subject covered in the ES explains what the particular receptors relevant to its own assessment are, and how they have been identified.

3.4.3 The sensitivity of any given receptor was determined through analysis of the baseline data collected. A measure of sensitivity, again from low to high, was allocated to each receptor.

3.4.4 The nature of an effect can be positive or negative; and temporary or permanent. There can also be direct effects arising from the activities comprising the Project or indirect effects arising from activities not directly related to the Project. For each effect, based on analysis of the nature of effect, a magnitude from low to high was allocated.

3.4.5 In addition, the effects of the Project could cause cumulative effects as a result of interactions with other proposed developments in the area.

3.4.6 There is no one defined method that must be followed to determine significance of effects for each environmental discipline. The effects considered in this ES have been described both qualitatively and quantitatively based on the relevant methodologies followed for that particular discipline.

3.4.7 In summary the EIA undertaken for the Project considered the significance of an effect to be a function of; the sensitivity of the receptor and the magnitude of the effect.

3.4.8 The outcome of this process is a scale of significance (low, moderate or high) which is assigned to each of the effects identified, depending upon the outcomes of this assessment process. Because of the differences between receptors, study areas and sensitivities between each environmental discipline, there is no standard way to assign this scale of significance, so the introduction to each assessment sets out the approach it has taken.

3.5 Mitigation and Enhancement

3.5.1 The EIA Regulations require the ES to provide 'a description of measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment'.

3.5.2 Therefore, for each significant negative effect associated with the Project (whether of low, medium or high significance), mitigation measures were set out where it was technically and environmentally possible to deliver reliable and effective mitigation. Following the inclusion of mitigation measures against each effect, a further appraisal of the effect remaining after the mitigation measures were applied, called the 'residual effect' was carried out (see 3.6 below).

3.5.3 The mitigation measures considered followed the Mitigation Hierarchy, shown below. This hierarchy is designed to ensure that as far as possible, the Project has been designed to minimise its effect on the environment. Emphasis should be made on focussing on the top of this list and avoiding the effects in the first place.

Box 3.2 - The Mitigation Hierarchy

Mitigation Hierarchy
Avoidance – making changes to the project's design (or potential location) to avoid adverse effects on an environmental feature. This is considered to be the most acceptable form of mitigation.
Reduction – where avoidance is not possible, adverse effects can be reduced through sensitive environmental treatments/design.
Compensation – where avoidance or reduction measures are not available, it may be appropriate to provide compensatory measures. It should be noted that compensatory measures do not eliminate the original adverse effect, they merely seek to offset it with a comparable positive one.
Remediation – where adverse effects are unavoidable management measures can be introduced to limit their influence.
Enhancement – projects can have positive effects as well as negative ones, and the project preparation stage presents an opportunity to enhance these positive features through innovative design.

3.5.4 Options for mitigation from as high up the hierarchy as possibly (i.e. avoidance) were first considered, working down the hierarchy (to enhancement) until some form of successful mitigation was achieved. This was undertaken for effects created during all stages of the project development (construction and operation). In some cases mitigation measures themselves were found to create effects, which were assessed in the EIA and are reported in this ES.

3.5.5 Several documents forming part of the planning application set out the way in which the Project has been designed to take account of its environment. The most important of these is the Design and Access Statement.

3.5.6 As part of the way that the Project will be managed, an Environment Management Plan (EMP) will be prepared by the concessionaire. An EMP is a set of documents relating to a particular project, operation or plan, designed to ensure that negative environmental effects are mitigated and managed during its detailed design, construction and operation.

3.6 Residual Effect Assessment

3.6.1 Residual effects that are likely to occur, or remain, following mitigation were also assessed, and it is these residual effects, both positive and negative, which represent the changes likely to result from the Project, for each of the receptors assessed. A level of significance from low to moderate to high was provided for each predicted residual effect.

3.6.2 This process allows the ES to report the significance of each residual effect to the decision maker. This allows them to make a balanced and informed opinion based on the predicted effects, both positive and negative, likely to be experienced as a result of the Project following mitigation.

3.7 Consultation

3.7.1 A vital part of the EIA process was consultation. This ensured that the technical information necessary for a comprehensive EIA was obtained and allowed consultees (both statutory and non statutory) to express their opinions on the content of the EIA and details relating to the Project.

3.7.2 Environmental consultation was undertaken through publication of the Scoping Report. This allowed organisations and the public to consult on the scope and methodologies described for the EIA process. The principle concerns raised through this consultation exercise were taken into consideration throughout the EIA process.

3.7.3 Detailed consultation with organisations with particular responsibilities for certain parts of the environment (e.g. the Environment Agency (EA)), was undertaken as part of individual environmental discipline effect assessments through meetings, telephone conferences, letters and emails.

3.7.4 In addition, the wider community was also consulted as part of the socio-economic assessment. This consultation exercise targeted key, vulnerable groups and individuals likely to be particularly affected by social factors associated with the construction and operation of the Project. This consultation involved a number of different consultation techniques including focus groups and face to face interviews.

4. BASELINE AND LIKELY SIGNIFICANT ENVIRONMENTAL EFFECTS

4.1 Introduction

4.1.1 This section of the NTS sets out construction and operation effects which are likely to arise from the Project, for each of the environmental disciplines listed in Box 3.1. In setting out these effects, an overview of the relevant baseline environment is also described.

4.2 Baseline and Construction Phase Effects

Hydrodynamics and Estuarine Process

4.2.1 The New Bridge will span the Estuary and will require the placement of a number of structures within the Estuary. The movement of sands, silts and water within the Estuary is known as hydrodynamics and estuarine processes.

4.2.2 Within the Estuary the sand and silts that form the bed are constantly moved around by the flow of water from the River, the other streams and rivers joining the Estuary and the tide coming in and out. Building a New Bridge has the potential to cause some changes in this movement, because of the structures it will introduce to the Estuary.

4.2.3 If there are significant changes to the movements of sands, silts and water within the Estuary as a result of the construction and operation of the Project, this could have a knock-on effect on other environmental disciplines, for example the ecology in the Estuary. Therefore, as part of the EIA is was necessary to consider the effects on the movement of sands, silts and water within the Estuary that may result from the Project.

4.2.4 At present the Estuary, where it is proposed that the New Bridge will be built, is an expanse of moving channels and sand/mudflats. This area is bordered on both sides by saltmarsh. Downstream of the New Bridge the Estuary narrows to pass through the Runcorn Gap.

4.2.5 Within the Estuary near the site of the proposed New Bridge, the River is very dynamic with a fairly chaotic pattern of movement, which means it alters a lot, but not in a consistent way. Sometimes a channel will stay in a given place for a long time and then it will move to a new location on a single tide. The same applies to the edge of the saltmarsh, which can also move position unpredictably. This is the normal behaviour of the bed material in this part of the Estuary.

4.2.6 While the New Bridge is being built access to construction areas within the Estuary may be obtained via a temporary jetty. In addition, other construction facilities will be placed in the Estuary. These will have a minor effect on the movement of sand and silt around the Estuary. The amount of movement of material will still be small when compared with the changes that occur naturally in the Estuary. Once the temporary jetty and other temporary structures are removed from the Estuary following construction, the effect of the tides will rapidly remove any changes in the sand and silt locations resulting from the construction work.

4.2.7 As the predicted effects are so small no mitigation measures are needed. However, the Estuary will continue to be monitored for a period after construction for any unusual movement of the bed material or change to the saltmarsh edge. If necessary appropriate measures to monitor and manage any changes would have to be agreed with the relevant authorities.

Surface Water Quality

4.2.8 The Project is located close to a number of watercourses, including the River itself. In fact, there are nine such water courses (including the Estuary itself) that are either crossed by, or located in the vicinity of the proposed works. These include canals, rivers, streams and brooks. The Project has the potential to affect the quality of water within these watercourses. This effect may be via direct or indirect discharge of substances as a result of its construction (for instance spillage of chemicals) or its operation (for instance run off of oil from road surfaces). The watercourses with the potential to be affected are listed below. These were considered in the surface water quality study and therefore comprise the study area for this chapter.

a. Stewards Brook;
b. Bowers Brook;
c. St Helens Canal;
d. The Estuary;
e. Runcorn to Latchford Canal (the "Latchford Canal");
f. Manchester Ship Canal;
g. Halton Brook;
h. Bridgewater Canal; and
i. Flood Brook.

4.2.9 The Estuary and those watercourses listed above have suffered from water pollution over the last century. This is a result of 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. However, since the mid 1980's the water quality within these watercourses 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).

4.2.10 Water quality can be measured through testing samples taken from the watercourse being assessed, and comparing the results of these tests against criteria set out by the EA, the organisation responsible for protecting and maintaining water quality and controlling pollution. The EA's criteria measure a number of factors in the water to provide a rating of general quality ranging from 'bad' quality to 'very good' quality. This exercise has been undertaken for each watercourse in the surface water quality study area to determine the current status of water quality. This is shown in Table 4.1 below.

Table 4.1- Watercourse Surface Water Quality

Watercourse	Quality when compared to EA criteria
Stewards Brook	Fairly Good
Bowers Brook	Bad to Fairly Good
St Helens Canal	Fair
The Estuary	Fair to Fairly Good
Latchford Canal	Poor
Manchester Ship Canal	Poor
Halton Brook	Watercourse is dry and therefore is not considered further
Bridgewater Canal	Fair
Flood Brook	Good

4.2.11 The assessment of effects on surface water quality has taken into consideration the existing quality of each watercourse i.e. it was considered that, if it were necessary to

assess the effect of a pollution incident on two watercourses, one of 'good' quality and one of 'bad' water quality, the effect would be greater on the watercourse of good water quality, compared with the watercourse of bad water quality.

4.2.12 During construction of the Project there is the potential for substances (such as oils, chemicals and fuels) to be accidentally spilt either directly into a watercourses or spilt onto the land and then washed into a watercourse during rainfall events.

4.2.13 It is also possible that pollutants contained within the sediments of the Estuary may be released due to disturbance of the Estuary bed by construction activities resulting in a reduction in water quality. As noted above in the hydrodynamics section, studies have indicated that such changes are expected to be so small that water quality within the Estuary will not be affected.

4.2.14 It is anticipated that the St Helens Canal would be infilled with stone (but maintaining its drainage ability) during the construction phase to provide a working area. It is anticipated that this infilling could result in fine materials being released into the water column.

4.2.15 Mitigation measures are required to reduce the significance of such effects on surface water quality. Measures should include the preparation of specialised management plans which are designed to inform the methods by which the Project will be constructed. Such plans are implemented through an overall EMP for the Project.

4.2.16 The plans contain a series of management and practical measures that must be adopted during the construction and operation of the Project, to guard against accidental spills, ensure that effective management measures are in place to deal with spills and set out requirements for clean up and disposal of spill control equipment. Management measures may include procedures setting out the action that must be taken if a large volume of chemical is spilt into a water feature. Practical techniques could include details to ensure environmental best practice is adopted such as the safe storage of fuel on site.

4.2.17 It is recommended that stone which contains properties to prevent the release of fine pieces of material into the water column be used for the temporary infilling of the St Helens Canal, such as granite or slate. To reduce the release of fine material further, it is recommended that the infill material is thoroughly washed to remove all loose pieces.

4.2.18 Following the implementation of such mitigation measures it is considered that there will be no significant effect on the water quality of watercourses within the study area during construction.

Land Use

4.2.19 It is anticipated that existing land uses along a defined corridor (500m either side of the proposed works, known as the "Project corridor" hereafter) are likely to change as a result of the construction and operation of the Project. A land use assessment was therefore undertaken as part of the EIA to further define and establish potential changes and determine the effects of such a change.

4.2.20 Existing land uses within the Project corridor can be divided into a number of categories as listed below.

a. Residential Areas;
b. Community Resources / Open Spaces / Greenspaces;
c. Commercial / Industrial Land / Development Land;

d. Agricultural Land; and
e. Roads and Footpaths.

4.2.21 A discussion of the effects of the Project on each of these categories is provided below.

4.2.22 The Project passes close to areas of housing in Riverside, Castlefields, Halton Brook, Grange, Halton Lea, Beechwood and Heath. The routes of the New Bridge and access roads have been chosen in order to reuse as much of the existing highway network as possible. For this reason, there will be no houses lost as a result of the construction or operation of the Project and therefore no significant effects on residential areas.

4.2.23 The Borough has over 810 hectares of open space, which includes parks and gardens, countryside, woodland, recreational sites and children's play areas. The open space is located across the Borough at sites such as St Michaels Golf Course, Wigg Island and Widnes Warth.

4.2.24 The construction of the Project will result in the loss of open space land at St Michaels Golf Course, Wigg Island (also designated as green belt), Widnes Warth, and land south of the Garston to Timperley Railway Line. The amount of open space / greenspace lost will be approximately 26 hectares (or about 6% of the total open space / greenspace which is located within the Project corridor). This loss will be temporary in some instances, such as the provision of construction access on Wigg Island, and permanent in other instances, such as the provision of toll plazas on St Michael's Golf Course. However, the Project will have a permanent significant effect on the green belt on Wigg Island.

4.2.25 The largest loss of open space / greenspace will be at the former St Michaels Golf Course. Due to the degree of change to land use at the Golf Course it is considered that there will be a high negative significant effect. Change in open space / greenspace land use at all other affected areas detailed above is considered to be of moderate negative effect.

4.2.26 In addition, an element of some smaller parcels of land designated as open space / greenspace within the Project corridor will also be lost during the Project's construction. Due to the small size of these land parcels it is considered that this effect will be of low negative significance.

4.2.27 Approximately 20 hectares of commercial and industrial land will be lost as a result of the construction of the Project (this represents 8.5% of this total land use type within the Project corridor). This loss will primarily affect Astmoor Industrial Estate and the Catalyst Trade Park. Due to the extent and nature of this change in land use it is considered that this will be of high negative significance.

4.2.28 In addition the construction of the Project will affect land use located within a number of areas designated as Regeneration Action Areas (RAAs) in Halton's Unitary Development Plan (UDP) (approximately 34 hectares being affected). In particular there will be a change in land use at the Southern Widnes RAA, and to a lesser extent at Central Widnes and Widnes Waterfront RAAs. Such a loss is contrary to Council policies for regeneration. However, it is considered that the Project will improve transport connections to these areas and contribute to their successful regeneration having an overall high positive significant effect.

4.2.29 The majority of agricultural land in the Borough is located to the west and north of the Project corridor in Hale and Daresbury. However, two small areas of land designated as agricultural use are situated within the Project corridor. These areas are located adjacent to the M56, Junction 12 and adjacent to the Estuary where the saltmarshes are classed as agricultural land. Both are of poor agricultural quality. The plot adjacent to the motorway is used for grazing and the saltmarshes are not used at all for agriculture.

4.2.30 Approximately 7 hectares of agricultural land adjacent to the Estuary will be temporarily lost during construction of the Project. In addition, approximately 1.5 hectares of grazing land will be needed near to the M56, Junction 12, and will be permanently lost Although of poor quality, it is considered that such a loss of land use will be of moderate negative significance.

4.2.31 There is a well established network of roads, footpaths, bridleways, cyclepaths and other paths in the Borough, some of which cross the Project corridor.

4.2.32 There will be no change in land use terms in relation to roads located in the Project corridor as a result of the construction of the Project.

4.2.33 A number of footpaths will be affected by the construction of the Project. Where these are affected local closures and diversions will be put in place in order to maintain pedestrian access. Although there will be no long term change in land use, there will be a short term low negative effect as a result of the diversions and closures.

4.2.34 A number of informal footpaths which currently cross St Michael's Golf Course will be lost during the construction of the Project resulting in a low significant negative effect in terms of change to land use.

Terrestrial Ecology and Birds

4.2.35 There are a number of features of ecological importance located within close proximity to the Project. These include habitats, birds, animals and invertebrates some of which are protected by international and national legislation.

4.2.36 Several of the habitats which are within the area where the Project will be located are protected by local planning policy. These are known as Local Wildlife Sites (LWS) and Local Nature Reserves (LNR). These sites are designated mainly for the important birds that use them but also as a consequence of the habitats which are present.

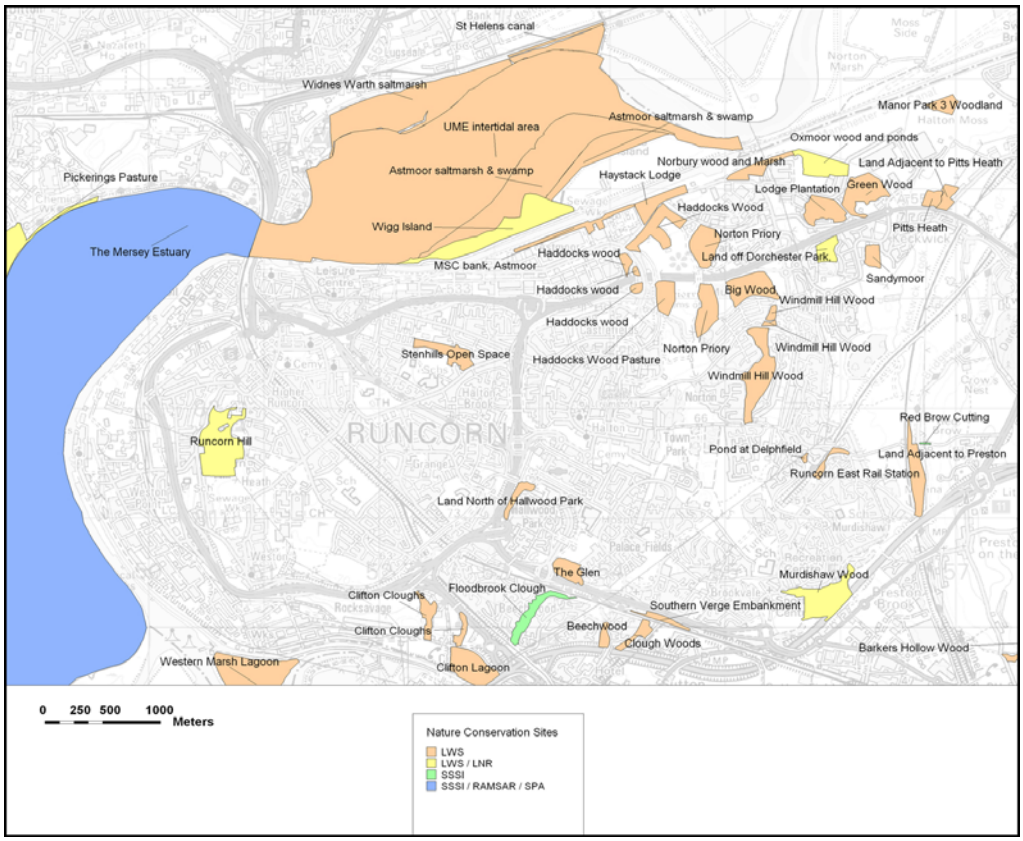
4.2.37 Immediately downstream of the Runcorn Gap, the Estuary is of international and national importance due to the habitats present and the wild birds, most notably wildfowl and waders, which they support. This area includes the following designations:

a. The Mersey Estuary Site of Special Scientific Interest (SSSI);
b. The Mersey Estuary Ramsar Site;
c. The Mersey Estuary Special Protection Area (SPA) for Birds; and
d. The Mersey Estuary European Marine Site.

4.2.38 The three international designations (Ramsar, SPA and European Marine Site) are collectively known as the European Site.

4.2.39 Figure 4.1 shows the location of all ecological designations located within the terrestrial ecology study area.

Figure 4.1 - Designated Sites within the Terrestrial Ecology Study Area



4.2.40 Due to the sensitive location of the Project close to important ecological features the EIA included a detailed assessment of the effects on ecology.

4.2.41 For the purposes of the ecology assessment the study area was divided into a number of areas including:

a. The Upper Mersey Estuary (known hereafter as the "Upper Estuary"): This is the part of the Estuary where the New Bridge will be located and is situated between Runcorn Gap and Fiddler's Ferry;
b. The Middle Mersey Estuary (known hereafter as the "Middle Estuary"): This is the Estuary downstream of the SJB where the European Site is located; and
c. Habitats (both water and land based, designated and undesignated) which are located close to the Project alignment and support protected species of animals and birds.

4.2.42 During construction of the Project it is recognised that ecological receptors may be negatively affected by activities which are required to build the Project.

Upper Mersey Estuary

4.2.43 The Upper Estuary comprises river and saltmarsh habitats and supports estuarine and saltmarsh birds, with some of them breeding on the saltmarshes. The saltmarshes in this area are also visited by rare and important birds. However, when compared to the European Site this area is considered to contain much smaller, separate populations of birds. This is mainly due to the poor food supplies in the Upper Estuary sediments.

4.2.44 For the purposes of the assessment of ecological effects the Upper Estuary has been treated as if it enjoys the same conservation status as the SPA even though this is not the case. This approach ensures that mitigation measures are applied with a sufficiently high level of rigor to categorically address negative effects. Ultimately however the Upper Estuary is designated at a local level and nothing more.

4.2.45 The baseline surveys undertaken show that there are few movements of birds between the European Site and the Upper Estuary. The large and important populations of birds in the European Site do not use the Upper Estuary to any significant extent and the much smaller bird populations of the Upper Estuary do not depend on the European Site habitats for roosting and feeding. It is therefore considered that birds from these two areas are separate populations.

4.2.46 Construction of the Project will cause losses of relatively small areas of saltmarsh and other habitats in the Upper Estuary due to the presence of the New Bridge piers and towers. There will also be some shading of the saltmarshes by the decks of the New Bridge but this will be limited because of the height of the New Bridge over much of the saltmarsh. It is anticipated that there may also be damage to the vegetation and soils as a result of access road construction and use, access by machinery, temporary structures, construction materials and personnel. However, it is considered that there are methods by which losses or damage can be avoided, reduced or restored such as the construction of temporary access tracks designed to protect the saltmarsh habitat from damage. Other possibilities include temporary removal of vegetation and revegetation to encourage vegetation to grow back following construction, and restrictions on the movement of people and machinery.

4.2.47 Scheduling of works will be undertaken to avoid the bird breeding season. Where this is not possible mitigation is recommended to reduce effects on birds such as restricted access to certain areas and ecological monitoring.

4.2.48 The release of contaminants from construction activities is mitigated through management procedures set out above in the surface water quality section to protect water quality. In addition lighting used to illuminate construction areas should be restricted and of a design specifically intended to reduce unnecessary light spill. Adoption of such measures will go towards ensuring that there are no negative effects on habitats in the Upper Estuary and low negative effects on bird populations.

Middle Mersey Estuary

4.2.49 The Middle Estuary, which is a European site, supports a good food source for birds to feed on, in contrast to the Upper Estuary.

4.2.50 The ecological assessment indicates that the European Site has the potential to be negatively affected by construction phase activities with the potential to cause the release of pollutants and sediments. Studies undertaken as part of the EIA have indicated that release of pollutants from Estuary sediments would be low to negligible and therefore it is not anticipated that this would affect the downstream European Site or birds which live here. As discussed in the surface water quality section, the release of pollutants from construction works would be controlled through management procedures recommended to protect water quality and therefore this effect is not considered to be significant.

4.2.51 It is possible that birds which rely on the European Site may be temporarily disturbed by construction activities and that there may be a risk of collision with structures. Following adoption of similar mitigation measures to those detailed above in respect of the protection of birds it is not anticipated that there will be a significant effect on birds in the European Site.

Other Habitats Close to the Project

4.2.52 Other ecologically designated habitats, such as LWSs, within the ecology study area also have the potential to be affected by construction activities through temporary / permanent shading of vegetation, direct disturbance / loss of vegetation, disturbance to birds and other fauna and fragmentation. A range of mitigation measures were therefore developed to address these effects as set out above, such as temporary removal of sensitive plants and sensitive scheduling of works. As a result of these measures combined with the proposed landscape planting for the Project it is considered that the effects will range from low negative significance to not significant at these habitats and for the species which they support.

4.2.53 Where construction of the Project has the potential to affect habitats used by water vole, bats and great crested newts for feeding, nesting and hibernating, appropriate licences will be obtained from Natural England and suitable mitigation agreed and implemented. As a consequence it is considered that there will be no significant effect on protected species of animal during construction of the Project.

Aquatic Ecology

4.2.54 As noted above there are ecologically important habitats located both where the Project crosses the Estuary and downstream of the SJB. Many of these important habitats are designated as they support a variety of important birds. Several of these birds can feed on aquatic (water based) species found living within on or above the sediments. It is therefore important that the construction and operation of the Project does not result in any significant negative effect on the aquatic species on which these birds rely. In addition the Estuary is home to several protected fish species. As such an assessment of the aquatic environment of the Estuary, and associated watercourses, was undertaken.

4.2.55 The area sampled for the aquatic ecology survey encompassed an area from Hale Head downstream of the SJB to upstream of Fiddlers Ferry where the Sankey and Whittle Brooks enter the Mersey. In addition to the Estuary channel, a number of freshwater watercourses are present within the study area including the St. Helen's Canal, Bridgewater Canal, Latchford Canal, Stewards Brook and Bowers Brook.

4.2.56 Surveys were undertaken between 2002 and 2007 to identify the number and type of aquatic species within these waterbodies. Species identified included the following some of which were considered to be of international and national importance.

a. Invertebrates (animals without backbones which are greater than 0.125mm in size);
b. Algae (simple water based plants);
c. Macrophytes (water plants); and
d. Fish.

4.2.57 The abundance of invertebrates was found to vary naturally across the study area and across different seasons of the year. Their greatest numbers were found downstream of where the New Bridge will be located and the SJB i.e. in the Middle Estuary. Overall the numbers of invertebrates found were low throughout the study area.

4.2.58 During the construction phase, without mitigation, it is anticipated that three effects could potentially affect aquatic species as listed below:

a. Underwater noise created by construction activities;
b. Release of pollutants and disturbance of Estuary sediment due to the construction process; and
c. Habitat loss/disturbance due to the presence of construction access routes, construction areas and the New Bridge towers and piers.

4.2.59 It is considered likely that the most important potential effect of the Project on aquatic species will be the creation of underwater noise. This is of particular importance for some species of fish (such as salmon and lamprey and eel) which move both up and down the Estuary at certain times of year. In addition, sightings of marine mammals (mainly bottlenose dolphin, harbour porpoise and grey seal) have increased in the area over recent years and effects on these species are also of some concern. It is therefore considered that mitigation should be implemented during noise generating activities. A piling method statement would be prepared and agreed with appropriate agencies to ensure sensitive pilling in the Estuary is undertaken to minimise effects on migrating fish and marine mammals. Following the implementation of such mitigation it is anticipated that this effect would be of low negative significance.

4.2.60 Increases in sediment levels in the Estuary and the release of potential pollutants in both the Estuary and fresh watercourses during construction are considered likely to have a negative effect. However, following mitigation as set out above to protect surface water quality features, all potential effects in the Estuary associated with pollution release and spillages are considered to be of low negative significance and, in the canals and brooks, not significant. All effects relating to increases in sediment levels from construction activities are, following mitigation, deemed to be not significant.

4.2.61 The effect associated with habitat loss / disturbance related mainly to the loss of habitat on which the New Bridge towers will be located and areas where access to the Estuary and canals will be obtained. Such effects are considered to be of low negative significance and due to the type of disturbance involved could not be mitigated against.

Landscape and Visual Amenity

4.2.62 This part of the Estuary is one of the most distinctive landscapes in the Mersey Valley. Whilst no part of the landscape of the study area has been formally classified as being of either of national or regional significance aspects of it are nonetheless of considerable importance on a local and sub-regional context.

4.2.63 In contrast to the expansive Estuary, Runcorn Old Town and West Bank (part of which is designated as a Conservation Area) are small in scale. Evolving around the original ferry crossing and as the natural bridging point over the Estuary these community townscapes now lie in the shadow of the SJB. This Grade II Listed Bridge dominates and, to an extent, defines these communities without being unduly visually intrusive.

4.2.64 The Estuary, classified of Special Landscape Value (SLV) in Halton, dominates the landscape of this area. On its margins are two areas of open land, Spike Island to the north and Wigg Island to its south both designated as Important Landscape Features (ILF). The Trans Pennine Trail follows the waters edge around West Bank and Spike Island before occupying the towpath of the St Helens Canal to Fiddlers Ferry Power Station where it is also known as the Mersey Way.

4.2.65 Due to the scale of the Project and its location within the Estuary and upstream of the SJB the effects on landscape and visual receptors have been taken into consideration as part of the EIA.

4.2.66 Landscape and visual effects have been assessed for three distinct areas as listed below:

a. In South Widnes, where the Project would pass through the predominantly older industrial areas between the town centre and West Bank;
b. The crossing point of the Estuary where, as with the SJB, (which can be seen from the Pennines), the New Bridge would be visible from a considerable area; and
c. From the Bridgewater Junction to the M56 at Junction 12 where the Project would pass through Runcorn along the route of the existing expressways.

South Widnes

4.2.67 The area between the town centre and the northern fringes of the Estuary is a degraded landscape of industrial areas, transportation routes (road and rail) interspersed with areas of open space, most of which is former industrial land. The largest of these areas, St Michaels Golf Course, is disused. Other than around the golf course and alongside the principal roads, there is little tree cover.

The Crossing Point of the Estuary

4.2.68 Around the crossing point of the Estuary the landscape is of variable quality. In places the Estuary margins are degraded by former industrial uses and the visual quality of the Estuary can be affected by its tides. Nevertheless the Upper Mersey, at this point, is regarded as one of the most visually appealing parts of the Mersey Valley.

The Expressway Corridor

4.2.69 The existing expressway corridor is located in the dip between the high points of Runcorn Hill and Halton Castle. The landscape of the expressway corridor has, to a large extent, been purposely designed around the expressway network when Runcorn New Town was created.

4.2.70 The construction of the New Bridge would be a memorable spectacle visible over a wider area but, particularly when viewed from close quarters, could also be increasingly visually intrusive as work progresses.

4.2.71 In South Widnes the removal of part of the Widnes Eastern Bypass, much of which is elevated, the changes to the Ditton Junction and the demolition of a number of, mostly industrial buildings, would transform the appearance of the area. Construction works would take place within this cleared corridor and the visual effects of the construction process would largely be confined to the immediate locality.

4.2.72 In the expressway corridor construction works would take place within the existing highway corridor. In places there would be a loss of visual amenity and an increase in the intrusiveness of the highway due to the removal of existing trees and shrubs.

Cultural Heritage

4.2.73 Cultural heritage is a collective term used to describe archaeological remains and historic buildings. The Project area contains a number of features of cultural heritage importance including a variety of known archaeological sites and historic buildings which are located on land to be affected by the Project and within the Estuary.

4.2.74 Features of cultural heritage importance include one Scheduled Ancient Monument (Halton Castle) which will be directly affected by the Project by reason of effects upon its setting. There are also 47 Listed Buildings, four Conservation Areas and a further 125 sites and buildings of heritage interest within the Project area.

4.2.75 In addition it is considered that there may be potential for as yet unknown buried archaeological remains within the Cultural Heritage Study Area.

4.2.76 During construction of the Project it is possible that features of cultural heritage importance, both above and below ground, may be directly affected by construction activities. For example disturbance of potential or known buried archaeological remains during digging. Construction effects may also be indirect - for instance a temporary effect of construction activities on the setting of Listed Buildings and Conservation Areas.

4.2.77 The cultural heritage assessment undertaken for the EIA shows that very few features of cultural heritage importance will be affected by the construction of the Project.

4.2.78 Mitigation proposals for direct effects on cultural heritage receptors include a programme of archaeological field work, recording and reporting to ensure that any archaeological remains, disturbance to which cannot be avoided, are investigated satisfactorily and information on the results of the investigations is made available to the public and the relevant authorities.

4.2.79 There is also scope for the significance of some of the indirect effects on the settings of cultural heritage features to be diminished. This would be achieved by undertaking the construction activities in clearly defined work area.

4.2.80 The majority of the residual effects of the Project on cultural heritage features, assuming that all the recommended mitigation measures are applied and that the Project advances in accordance with historic environment and archaeological policies, are assessed as not significant, or as of low negative significance.

Contamination of Soils, Sediments and Groundwater

4.2.81 Past and existing land uses in the Borough have left a legacy of contaminated land. The potential effects of the Project both on and from such contamination have been considered in the EIA. Historical and current land uses with the potential to have resulted in soil and groundwater contamination were identified within parts of the Project area, in particular in Widnes and at Wigg Island in Runcorn. These land uses include waste deposition and the sites of former industrial activities, in particular chemical works.

4.2.82 Site investigations were undertaken to assess the ground conditions and to recover samples of the soil, groundwater and surface water to identify whether contamination was present. The ground conditions identified from the site investigations comprised:

a. Made ground - material deposited or re-worked by man;
b. Alluvial deposits - soils deposited by rivers and other watercourses comprising clays, silts, sands and peat;
c. Glacial deposits – clay with interbedded layers of sand and gravel; and
d. Sandstone and mudstone bedrock.

4.2.83 Extensive deposits of made ground were encountered across the Project area with the exception of the Estuary and saltmarshes. The made ground was found to be very variable ranging from historic industrial waste to re-worked natural soils. Alluvium was only identified in the Estuary, at the saltmarshes, and between St Michaels Golf Course and the Thermphos site in Widnes. This alluvium in Widnes relates to a previous course of the River which flowed to the north of West Bank. The alluvium is a minor aquifer. An aquifer is a water bearing layer of soil or rock. The glacial deposits were present beneath all of the Project area with the exception of the Estuary and some areas of Astmoor Saltmarsh and Wigg Island.

4.2.84 The depth to bedrock generally increased northwards away from the River reaching over 40m beneath Widnes. This increase in depth relates to a buried channel which dates from a previous glacial period. Depths to bedrock were much shallower in Runcorn. The sandstone bedrock is a major aquifer.

4.2.85 The northern part of the Project area in Widnes is located over a groundwater source protection zone associated with abstraction of water from the major aquifer. This is present at depths of 40m or more in this area and separated from the made ground by the glacial deposits.

4.2.86 The site investigations confirmed the widespread presence of soil contamination in the made ground and alluvium at shallow depth in Widnes and at Wigg Island.

4.2.87 Contaminated groundwater was identified in these areas in the made ground, the alluvium, and, rarely, in the glacial deposits and the bedrock. In two areas in Widnes contamination was found to be present in a separate liquid phase or 'free phase' in the ground, known as Non Aqueous Phase Liquids. In one case this was found to be floating on top of the groundwater, in the other case the contaminants were denser than water and these had migrated down into the soils beneath this part of the site. In some cases the existing areas of soil and groundwater contamination extended beyond the Project area.

4.2.88 In Widnes the glacial deposits are considered to be preventing the contamination from affecting the major aquifer, however, groundwater was noted to have been affected by saline intrusion from the Estuary in northern Runcorn and southern Widnes.

4.2.89 Only localised areas of low levels of contamination were identified to the south of Manchester Ship Canal in Runcorn.

4.2.90 Elevated levels of contamination were identified in shallow sediments on Widnes Warth and Astmoor Saltmarsh and in the Estuary sediments, although the latter were significantly lower than in the shallow saltmarsh sediments.

4.2.91 A risk assessment was undertaken to determine the risks from contamination to sensitive receptors during the construction and operation phases along with those likely to exist at present (baseline). This assessment included human health, groundwater and surface water, plants in areas of landscaping, buildings and services. The results of the risk assessment were used to identify significant effects that could be introduced as part of the project for which mitigation measures would be required.

4.2.92 The construction works will lead to contaminated material being exposed and mitigation measures will be required to ensure this does not represent a risk to construction workers, site visitors, trespassers or local residents and workers. Mitigation measures will be required to protect surface watercourses during construction.

4.2.93 Given the extent of the contamination encountered in the Estuary scouring around the proposed bridge towers in the Estuary is unlikely to increase the levels of contamination in the Estuary.

4.2.94 Mitigation measures will be required on the saltmarshes and other areas near to watercourses to ensure that contaminated run-off does not enter these features during the construction works.

4.2.95 Although not considered to be significant effects, mitigation measures will be required for receptors such as buried concrete, buried water supply pipes and plants in areas of soft landscaping.

4.2.96 Mitigation measures have been identified for the potential effects during construction of the Project. Existing areas of soil and groundwater contamination have been identified which extend beyond the boundaries of the Project.

4.2.97 It is considered that the proposed works would not increase the potential for contaminant movement off-site during construction. A detailed remediation strategy will need to be developed.

4.2.98 Consideration will need to be given to the benefits in terms of wider groundwater remediation as part of any remediation strategy. Where the Project covers areas of 'free phase' contamination in groundwater then mitigation measures have been proposed.

Waste

4.2.99 In common with all major construction projects of any sort, the Project has the potential to generate waste material during its construction and operation, which will require special handling, storage, treatment, transportation and disposal. These activities have the potential to affect people living close to and working on the Project as well as the waste management industry whose capacity to accept waste would be required.

4.2.100 In addition, due to historical industrial land uses within the Borough, a large proportion of the soil is polluted with products used within and created as a by product of these industries. The generation of such waste could be considered to be hazardous and therefore would need to be treated differently.

4.2.101 During construction of the Project a large volume of waste will be produced. This will be as a result of soil removal for the required works. As discussed above, due to past industrial land uses, a percentage of the soil removed will be contaminated.

4.2.102 The design of the Project has taken the issue of waste management very seriously, and has sought to reduce the amount of waste that the project will produce to a minimum. For instance the amount of digging required has been minimised where possible through the use of existing roads and designing roads above current ground level to reduce the need to remove soil. In addition, large volumes of material excavated will be reused in the Project to build embankments. This will significantly reduce the amount of waste produced.

4.2.103 Despite this, approximately 153,620m^3 of material will be produced during construction which cannot be re-used on the site, and so will become waste material. This might seem a large amount of waste, but is actually quite small for a project of this scale. Of this material approximately 104,120m^3 will be un-contaminated waste (so called "non-hazardous" waste). For the purposes of this assessment it has been assumed that this would be deposited in landfills across the North West Region (the "Region"). The waste assessment undertaken as part of the EIA has shown that there is space for this material to be deposited in the Regions' landfills.

4.2.104 The waste assessment has concluded that the remaining volume of waste produced, approximately 49,500m^3, will be contaminated with chemicals resulting from the previous industrial use of the land (so called "hazardous" waste) and will subsequently need to be treated differently from the non-hazardous waste as described above. For the purposes of this assessment, it has been assumed that such waste will be transferred to a suitably licensed landfill in the Region for disposal. Analysis has shown that there is enough space within these landfills for this disposal.

4.2.105 It is anticipated that during the construction of the Project wastes will be produced and result in the need for the following activities to be undertaken:

a. Transport of materials from soil removal to the site construction areas (known as "compounds" hereafter);
b. Separation of different wastes at the compounds;
c. Storage of wastes;
d. Sampling and analysis to confirm whether the waste is hazardous of not; and
e. Transfer of waste off-site for disposal or to other parts of the site for reuse.

4.2.106 These activities have the potential to affect local residents and businesses, as well as other users of the road network in the Borough and the wider Region. Possible effects identified in the waste assessment include noise and dust emissions, effects on water quality, reduction in the capacity of the Region's landfills and disruption to traffic as waste is moved around.

4.2.107 The assessment identified that effects from these activities are likely to be small, but they could be further reduced through the adoption of mitigation measures.

4.2.108 Current Government policy notes that landfilling is not the best option for certain wastes, especially wastes which are described as non-hazardous – the majority of the waste expected to be generated by the Project. All levels of Government (central, regional and local) note that reuse and recycling is preferred to the disposal of waste. As set out above, the Project already takes this approach where possible, and has therefore minimised the amount of waste produced, and maximised the reuse of material where possible. The final arrangements for waste disposal during construction will be decided by the concessionaire. However, this study has identified the opportunity for the concessionaire to work with local recycling companies to take some of the non-hazardous waste and recycle it for construction projects elsewhere in the Region. This will reduce the amount of landfill space needed, and the use of "virgin" materials used by other projects in the area. The actual amount of material which can be recycled will depend on demand.

4.2.109 For hazardous wastes the situation is somewhat different because of the nature of the material. However, a number of local options have been identified which could either reduce the volume or the contaminated nature of such wastes. The concessionaire will be encouraged by the Council to investigate and use these facilities where possible.

4.2.110 In line with Government requirements and best practice techniques a number of management plans will be produced and followed during the construction and operation of the Project. These will show how the concessionaire has arrived at options for waste management, how these options compare against best practice, relevant Policy from central, regional, and local Government, what emergency procedures are in place, the measures the concessionaire is going to use to reduce effects from waste management and who is responsible for waste matters and how they link with the management of the Project.

4.2.111 In addition to the adoption of management plans, a number of "physical" measures will be used to minimise the effect of waste handling, and storage on local residents and businesses. These will include:

a. Use of specially constructed waste management areas on the compounds which have dust and water control measures;
b. Dust suppression measures;
c. Use of wheel washes on site;
d. Covering of waste vehicles with tarpaulins;
e. Regular monitoring of the operations, with measures available to put right problems found;
f. Training of on-site staff in waste matters;
g. Invitation to inspect the works to the EA and the Council; and
h. Regular reporting of progress against agreed waste management targets.

4.2.112 Following mitigation the waste assessment indicated that effects within the Project corridor will remain small and not be significant.

4.2.113 The effect on reducing the amount of waste sent directly for landfill disposal could not be quantified at the time of the assessment, as this will be undertaken by the chosen concessionaire. However, it is predicted that this would further reduce the amount of wastes needing disposal, and would slightly extend the lifetime of local landfills.

Transportation

4.2.114 A detailed traffic model (the "Mersey Gateway Model" or the MGM) was constructed to analyse the effects of the Project upon the highway network. The traffic model enables behavioural changes in demand i.e. travel mode and destination for travel, as well as choice of route resulting from changes in travel costs to be modelled. The MGM incorporates highway and public transport components to allow the modelling of travel behaviour when faced with congestion and the prospect of paying tolls.

4.2.115 The SJB plays a strategic role as a crossing of the Estuary carrying levels of peak hour traffic surpassed only by the M6 at Thelwall to the east. The percentage of daily traffic that it carries in the morning and evening peak hours is almost twice that of any of the Mersey Tunnels or Warrington crossings. It experiences regular congestion now and, between peak periods, operates at nearly three quarters of its capacity. Its age, the traffic loads it carries and its on-going maintenance programme mean that it has insufficient resilience to perform a long term reliable role providing for strategic cross-Mersey traffic now or in the future.

4.2.116 The majority of the additional traffic growth across the Estuary between 2006 and 2015 (the opening year of the Project) is predicted to occur on the M6 at Thelwall followed by the Kingsway Tunnel in Liverpool. The increase in the volume of traffic on the SJB will be small at just 2%. This is a minimal increase reflecting the fact that peak hour capacity on the SJB has already been reached, so there is no more 'room' for growth. As daily traffic volumes increase, the length of the morning and evening peak periods will increase with consequent effects on journey-time reliability, and the extension of periods of severe congestion around the bridge, with the resulting adverse effects on the local environment.

4.2.117 The local expressway network within the Borough is, with the exception of the SJB and its associated approach roads, of high capacity. However, there are areas where peak hour congestion already happen, particularly associated with Junction 12 of the M56. In addition, the local highway network providing access to the expressway system is vulnerable to incidents on that system. Queues building on the approaches to the SJB have knock-on effects to access points at Halton Brow and Astmoor, for example. Regeneration and committed developments (developments which have been granted planning consent) in the area will continue to add pressure to the network as they will all generate traffic and influence patterns of traffic flow to some degree.

4.2.118 The bus network generally provides good accessibility for most of the Borough's residents (i.e. there is usually a bus stop within 400m) but there are areas where development and regeneration has occurred, with reduced accessibility. This will reduce further unless extensions and improvements to routes are made. Cross-River bus services are subject to delay and congestion as they also use the SJB.

4.2.119 The effects of increasing delays, reductions in journey time reliability for cars, heavy goods vehicles and buses, both local and longer distance, range from moderate to high negative significance.

4.2.120 Current cross-River walking and cycling facilities are poor with limited safe access to the SJB. There is no cycle path on the SJB and cyclists share sub-standard traffic lanes with cars, HGVs and buses. Pedestrians have the use of a sub-standard pathway attached to the eastern side of the SJB. Linkages from the SJB into existing walking and cycling networks are limited. The baseline situation for these users is considered to be of high negative significance.

4.2.121 During construction there will be interruptions to traffic flow at key locations in Runcorn and Widnes. These will be temporary, location specific and subject to traffic management measures and access controls as part of an agreed management plan which will be implemented during construction as part of the overarching EMP. Whilst there will be a large number of construction vehicles these will form only a small percentage of the total traffic on key routes.

4.2.122 The temporary, localised effects of construction work required for the Project range from low to high negative significance depending on the location of works.

Noise

4.2.123 Due to the sensitive location of the Project, close to residential properties and social facilities (e.g. schools), potential effects associated with changes in noise and vibration as a result of the construction and operation of the Project were considered as part of the EIA. It was anticipated that changes in noise and vibration levels would be as a result of construction activities and related traffic movements traffic and future changes in traffic levels across the road network.

4.2.124 An assessment of current noise levels indicates that areas adjacent to the current primary road network, the SJB and the Weston Point Expressway, experience moderate to high noise levels. Two schools located with the study area for the noise assessment were noted to experience relatively high levels of noise. In all instances, the primary source of this noise is existing road traffic on the surrounding network, particularly the Expressways. However currently areas such as those around the St Helens Canal, the New Bridge alignment over the Estuary, Wigg Island and the Manchester Ship Canal, were noted to be relatively quiet – a reflection of their location some distance away from the busiest parts of the current road network.

4.2.125 Reconfigured slip roads are to be constructed near Wigg Island Community Park and on the Central Expressway. During their construction it is expected that there will be a high negative effect at the Wigg Island Community Park together with a moderate negative effect on housing near the Central Expressway as far as the Lodge Lane Junction due to construction activities and the subsequent generation of noise and vibration.

4.2.126 During construction a management plan will be put in place as part of the EMP to set out measures to ensure noise and vibration levels are minimised and best practise is achieved. Such measures may include restriction on working hours to periods with minimum disruption for local residents, as well as systems and mechanisms for conveying information to the local community relating to the construction process. .

4.2.127 Following mitigation it is considered that the Wigg Island Community Park will continue to suffer from high negative effects throughout the construction phase.

Navigation

4.2.128 The construction of a New Bridge across the Estuary will result in the placement of structures in and over a number of navigable waterways which are listed below:

a. The St Helens Canal;
b. The River Mersey;
c. The Manchester Ship Canal;
d. The Latchford Canal; and
e. The Bridgewater Canal.

4.2.129 In addition, the Project is located within airspace which is controlled by Liverpool John Lennon Airport. This includes all airspace from ground level to 2500 feet (762m).

4.2.130 The EIA therefore considered the effects of the Project's construction and operation on navigable waterways and controlled airspace.

4.2.131 Navigation and aviation receptors (specifically boats of all types and aeroplanes, both commercial and private), likely to be affected by the construction and operation of the Project, were identified through a review of specific Project design and construction method details in combination with an examination of relevant literature and Ordnance Survey (OS) mapping data for the local area. In addition, a comprehensive consultation exercise was undertaken with navigation and aviation stakeholders to determine specific requirements within the navigation study area.

The St Helens Canal

4.2.132 The St Helens Canal cannot currently be navigated by boats due to the presence of a series of low fixed bridges which span its width and the presence of dense vegetation and siltation. Therefore there will be no construction phase effects.

The River Mersey (the "River")

4.2.133 The River is currently navigated by pleasure boats. However, due to the dynamic nature of the Estuary, such navigation is dependent on tidal conditions and the location of the navigable channels. Two sailing clubs are located in the area of the Estuary where the Project will be located; Fiddlers Ferry Sailing Club and West Bank Boat Club. The vessels operated from both these clubs include dinghies and yachts.

4.2.134 The Railway Bridge, which is located at the Runcorn Gap, currently restricts the clearance provided on the River for navigation. Consultation with Fiddlers Ferry Sailing Club has shown that the club would require a vertical clearance for the New Bridge no less than that of the current Railway Bridge and to accomotate a vessel of a typical dimensions (12m from keel to the top of mast and have a keel draft of 1.9m). Therefore, based on this vessel specification Fiddlers Ferry Sailing Club has requested maintenance of a vertical clearance of 10.1m above Mean High Water Springs (MHWS).

4.2.135 The Mersey Docks and Harbour Company (MDHC) are the Local Lighthouse Authority and act as agents for Trinity House for the requirements for navigation aids. They have stated that the towers of the New Bridge should be floodlit in accordance with the International Association of Lighthouse Authorities (IALA) requirements.

4.2.136 The construction of the New Bridge across the River will require the placement of equipment below the level of the New Bridge. This will temporarily reduce the clearance currently provided for navigation on the River. In addition temporary structures will be placed across the Estuary to provide access to and around construction areas. Piled jetties and air cushioned plant (a type of hovering platform) will be required to access construction areas within the intertidal area, and cofferdams will be created within the Estuary in order to construct the New Bridge towers. Although a navigation channel will be maintained during the period of construction and IALA lighting requirements will be met, these structures will present an obstruction to navigation along the River resulting in a low significant negative effect to users.

4.2.137 Before construction equipment and / or temporary structures are placed in the Estuary, advanced warning will be provided to users of the River and signage installed around temporary structures to alert users to potential navigation risks. This will allow sailors to plan a route which safely navigates the River. However, as an obstruction to navigation will still remain this effect will be of low negative significance.

The Manchester Ship Canal

4.2.138 The Manchester Ship Canal is operated by the Manchester Ship Canal Company (MSCC) which is a subsidiary of Peel Holdings plc. The Manchester Ship Canal can accommodate sea-going vessels (subject to certain size restrictions) up to Salford Quays in Manchester.

4.2.139 Navigation on the Manchester Ship Canal is currently restricted by the Railway Bridge at the Runcorn Gap. The MSCC requires that the New Bridge provide the same navigational clearance to allow continued navigation.

4.2.140 The MSCC stated that temporary structures (such as mobile gantries for construction and maintenance purposes) would be allowed within the canal between the 1 November and 28 February subject to the following criteria (during the remainder of the year closures would be limited to two hours):

a. Specified navigation clearance;

b. Appropriate permission has been granted by the Deputy Harbourmaster; and
c. Structures are capable of being moved within a short period of time (e.g. 30 minutes) to allow the safe movement of shipping.

4.2.141 All construction activities that take place below the soffit level of the New Bridge or the Railway Bridge will be undertaken in line with the criteria listed above in order to prevent any significant negative effects for users of the Manchester Ship Canal.

The Latchford Canal

4.2.142 A small section of the Latchford Canal is located to the north of the Manchester Ship Canal and is considered to be of such a short length (approximately 400m) that it is not feasible to be used for navigation and therefore it is considered that there will be no effects associated with the construction of the Project.

The Bridgewater Canal

4.2.143 The Bridgewater Canal is currently used by both recreational craft and a maintenance craft which belongs to the MSCC. This maintenance boat is the largest boat using this canal for navigation and the MSCC requested that a navigational clearance of 5m be maintained to allow the continued operation of this boat.

4.2.144 The MSCC stated during consultation that temporary closures of the canal could be undertaken by prior arrangement between the 1 November and 28 February which corresponds to their winter maintenance period. Outside of this period temporary closures would be limited to a maximum of two hours per day. This requirement will be complied with during the construction phase and therefore there will be no significant construction phase effects on users of the Bridgewater Canal.

Controlled Airspace

4.2.145 The Project is located close to Liverpool John Lennon Airport and within its controlled airspace. Following discussions with Liverpool John Lennon Airport they confirmed that the maximum height of any obstruction during the construction and operation of the Project would need to be restricted to no more than 150m Above Ordnance Datum (AOD). Above this height the Airport considered that physical obstructions would pose a risk to aviation and / or interfere with navigation radar. The working height for construction methods, in particular the use of cranes, will be limited to a maximum of 150m AOD.

4.2.146 In accordance with Airport requirements, aircraft warning lights will also be incorporated on cranes which are used for the construction of the New Bridge towers.

4.2.147 The Airport confirmed that there would be no effect on Airport navigational equipment.

4.2.148 It is considered that the construction of the Project will not have an effect on the use of controlled airspace.

Air Quality and Climate

4.2.149 The study area for the air quality assessment was determined based on the expected changes in traffic flows as a result of the construction and operation of the Project. Those roads with predicted changes in traffic flows of greater than 10% were included in the assessment. Using this criterion, a study area that encompassed Widnes, Runcorn and sections of the M56 south of Runcorn was looked at in the air quality assessment.

4.2.150 Local air quality effects were assessed at 568 receptors within Runcorn and Widnes, which represents the current baseline conditions for 2006. Air quality objectives for two pollutants were predicted to be exceeded at a number of locations in 2006. There were no exceedences of any of the relevant air quality objectives in a scenario without the Project in place in 2015.

4.2.151 Potential effects during construction of the Project in 2011 were considered. Construction activities have the potential to reduce the quality of local air through the generation of dusts as a result of certain construction processes or through the production of pollutants from construction vehicles.

4.2.152 Construction activities associated with the Project have the potential to generate dust and therefore lead to poor air quality on a temporary basis (i.e. for the duration of the construction process). Significant effects from airborne particles and deposited dust are most likely to be experienced within 200m of a construction activity. Any dust incidents would be highly dependent on the weather, requiring dry conditions and winds blowing towards a receptor. Such conditions would also need to coincide with any dust generating activities in order for a potential dust nuisance to occur.

4.2.153 Standard mitigation measures are recommended as part of the overarching EMP to minimise dust soiling (e.g. on cars and windows), the effect to vegetation and local designated sites, and harm to human health arising from increased exposure to particles. Following the adoption of such measures it is considered that effects associated with the emission of construction phase dust into the atmosphere would be of low negative significance.

4.2.154 Based on a maximum of 250 construction traffic movements per day for each construction area (Figure 2.2), it was predicted that concentrations of local air pollutants which would be emitted from construction vehicles would not exceed any of the relevant government objectives for air quality. It is recommended that detailed mitigation measures be adopted as part of the EMP to minimise emissions from construction traffic. Such measures may include the regular maintenance of construction vehicles. Following mitigation it is anticipated that use of construction vehicles will have an effect of low negative significance on local air quality.

4.2.155 For each construction area (Figure 2.2) the possible disruption effect on existing traffic flows were identified and the potential effect on local air quality determined within a 200m radius. It was anticipated that such effects would be short term and temporary in nature and could be mitigated again through the implementation of an EMP. Mitigation measures which may be included in this could include scheduling of construction works outside peak traffic flow hours. Following mitigation it is considered that this effect would be of moderate negative significance.

Socio-Economics

4.2.156 The Borough has been designated within the worst 12% of boroughs in England for deprivation. Deprivation levels are based on a measure of health, employment, income, education, housing and services. Generally, wards within the Borough are ranked above the regional and national averages for health, income and employment deprivation, with very high levels of poor health noted across the Borough.

4.2.157 Despite a recent increase of 1,292 people from 2001 to 2006, the population within the Borough has been in decline from a peak of 124,000 in 1991 to the mid year estimate in 2006 of 119,500 individuals.

4.2.158 There are several primary and secondary schools within the Borough; however, there are relatively few places of further education and no universities. The number of individuals educated to NVQ level 4 and above in 2006 was below the national average, which has also been reflected in the fact that unemployment amongst those aged under 25 is relatively high and that due to a lack of existing skills many businesses within the Borough currently recruit from outside the Borough.

4.2.159 The Borough is currently implementing a number of regeneration and redevelopment schemes to improve the quality of life through provision of residential and employment areas.

4.2.160 There are several facilities to provide walking and cycling opportunities for individuals within the Borough. However, little facility is currently provided for access across the River. Many individuals currently perceive the existing pedestrian pathway across the SJB as unsafe and cycle lanes are not provided. Therefore facilities are underutilised and walking and cycling trips are currently suppressed.

4.2.161 The EIA has looked at socio-economic effects of the Project on people within the Borough, and specifically those within the wards which are located in close proximity to the Project. However, consideration has also been given to the economic effects of the Project within the wider Region.

4.2.162 Construction of the Project has the potential to provide employment opportunities relating to construction activities for individuals in the Borough with subsequent positive effects. These opportunities can be enhanced through provision of appropriately targeted training initiatives for residents to optimise the skills base within the Borough resulting in high positive effects.

4.2.163 Construction activities will result in some disruption in access to places of employment, services and facilities from the local road network, footpaths and cycleways around the Borough. The implementation of traffic management, awareness and appropriate route diversion will reduce this effect to one of low negative significance or not significant.

4.2.164 It is considered that an influx of workers to the Borough during construction has the potential to increase pressure on essential services and facilities and increase residents' perception of insecurity in close proximity to the construction areas. Where necessary, methods should be adopted to reduce pressure on services and facilities, through such methods as targeted financial contributions. In addition, a community liaison officer should be available to safeguard relationships between construction works and local residents and emergency contact details provided. The degree of such effects is dependent upon the location of people in relation to the Project. It is considered that there will be a low negative significant effect on people living in close proximity to the Project but no effect on individuals living further away.

4.2.165 Construction of the Project will require land take and consequently displacement of a number of businesses because they are located on land which will be required for the project and will therefore be purchased through compulsory purchase orders. The Council is providing a relocation strategy for these businesses, to minimise negative effects of displacement to one of low negative significance.

4.2.166 Construction effects on health will be short term in nature and primarily related to a change in local air quality as a result of the generation of dust and change in vehicle emissions. However, it is anticipated that following mitigation such effects will mainly be of low negative significance. As noted in the contamination and surface water quality sections above, following the implementation of mitigation measures during construction, there will be no significant negative effect due to the release of contaminants on the health of individuals in the Borough. In addition, through the implementation of required health and safety considerations during the construction phase, it is considered that construction activities will not negatively affect the safety of individuals within the surrounding area.

4.3 Operational Phase and Permanent Effects

Hydrodynamics

4.3.1 The design of the Project has been developed to minimise effects on the Estuary. The three towers that support the New Bridge will provide a small disturbance to the flow of water around the Estuary and this may also cause the sand and silt to move a little differently to its current movements. This will cause a very small change to the water level immediately next to the towers but will not change the water level across the Estuary as a whole. Most of the changes will be immediately next to the New Bridge and the overall effect is much less than the changes that occur naturally at present from tides and river flow.

4.3.2 As the predicted effects are so small no mitigation measures are needed. However the Estuary will continue to be monitored for a period after the bridge has been constructed and during its operation for any unusual movement of the bed material or change to the saltmarsh edge. If necessary, appropriate measures will be agreed with the relevant authorities to monitor and manage any changes, and these would be incorporated into the EMP for the Project.

Surface Water Quality

4.3.3 Effects on surface water quality during the operation of the Project would be limited to the three receiving watercourses where road runoff will be discharged as part of the Project design; Stewards Brook, St Helens Canal and Flood Brook.

4.3.4 The Project has been designed to minimise effects on these watercourses during the operation phase. A drainage strategy has been prepared as part of the Project design to improve the standard of highway drainage. Measures to prevent possibly polluted, run off from roads entering these watercourses and to control the flow to mitigate flooding have been used as part of the drainage strategy. Examples include the use of interceptors and filters on drains. The drainage strategy and Flood Risk Assessment (FRA) form an appendix to the Surface Water Quality Chapter of the ES (Chapter 8). The measures set out in the drainage strategy apply to existing and new roads. Based on measures incorporated as part of the drainage strategy, the FRA shows that the Project does not change flood risk.

4.3.5 Specific measures have also been incorporated into the Project design to target particular pollutants which are known to be a cause of current poor water quality. Again it is considered that this will have a positive effect on surface water quality.

4.3.6 Following the application of mitigation measures it is not considered that there will be any significant negative effects on surface water quality.

Land Use

4.3.7 Following the construction of the Project a large area of land will be returned to its original designated use. This will include areas on Wigg Island (including saltmarsh, open space and Community Park land uses) and Widnes Warth. During the operation of the Project in these areas, only 0.26 hectares of designated land use will be lost due to the presence of the New Bridge piers.

4.3.8 During the operation of the Project approximately 0.26 hectares of agricultural land use will be permanently lost due to the presence of the New Bridge piers.

4.3.9 All diversions and closures which are put in place on roads and footpaths during the construction of the Project will be removed during its operation. There will be a number of small modifications to some routes; however it is considered that this will have a positive effect on land use.

4.3.10 Once the Project is in operation, much of the land take at Astmoor Industrial Estate could be returned to its original land use of commercial/industrial in order to mitigate negative effects in this area. This could be achieved by allowing the construction of buildings to accommodate businesses / industries below the Astmoor viaduct. This will reduce effects associated with such a change of land use from high to moderate negative significance.

Terrestrial Ecology and Birds

Upper Mersey Estuary

4.3.11 During the operation of the Project the permanent presence of the New Bridge towers, piers and structure itself has the potential to affect bird life, habitats, and other animals, such as bats, in the Upper Estuary. As such an extensive mitigation strategy has been developed in order to enhance areas of Astmoor and Widnes Warth saltmarsh in order to offset negative effects associated with the Project. Such measures will result in no effects on the habitats or birdlife of the Upper Estuary.

4.3.12 Through enhancement and improvements to existing and proposed habitats the overall effects of the Project will be to deliver substantive benefits to nature conservation in the areas of Wigg Island Community Park / LNR, and the Upper Estuary, both of which provide major potential for wildlife conservation and enhancement to attract wild birds and other important flora and fauna. The realisation of these objectives, in conjunction with the Project, are in accord with UK Government objectives to promote biodiversity and nature conservation as part of land-use change and development.

Middle Mersey Estuary

4.3.13 It was considered possible that the operation of the Project could potentially disturb birds from the downstream European Site and obstruct their movement. In addition it was considered possible that sediments could be disturbed due to the presence of the New Bridge towers affecting the European Site. However, as noted above studies indicate that the release of pollutants from silts of the Estuary will be low to negligible during operation and therefore it is considered that there will be no operational phase effect on the European Site.

4.3.14 In addition, baseline surveys undertaken for the ecology assessment have shown that there are very few movements of commuting and migratory birds across the Project alignment, and therefore no significant movements of birds between the Upper Mersey Estuary and the European Site.

4.3.15 It has been important to ensure that the conservation objectives for the European Site interest habitats are properly accounted for. Therefore the proposed mitigation has been designed to maintain these habitats for the internationally important populations birds which use them.

4.3.16 It is concluded that the Project does not result in any significant effects on the bird populations of the European Site.

Other Habitats Close to the Project

4.3.17 Effects on other ecologically important habitats close to the Project are not anticipated to be significant as a result of enhancement habitat provided through the landscaping scheme.

Aquatic Ecology

4.3.18 During operation of the Project it was considered that the greatest potential for effects on aquatic species would be associated with the release of pollution to the Estuary, canals and brooks through processes such as accidental spillages and run off from road surfaces during rainfall. In addition the presence of a large numbers of birds above the canals and brooks (for example roosting birds on the bridge structure) could, as a result of their droppings (known as "guano"), lead to an increase in nutrients in the water. As discussed in the surface water quality section, the Project has been designed to incorporate methods such as drain filters and interceptors to prevent normal operational release of pollutants into the watercourses. Following mitigation, effects associated with the release of pollutants were considered to not be significant. It is however not considered possible to prevent bird activity around the New Bridge and thus guano from entering watercourses below it. However, such an effect is considered to be of low negative significance.

4.3.19 The aquatic ecology assessment recommends a long term programme of monitoring before, during and after construction to ensure that aquatic species are not negatively affected by any unforeseen processes associated with the Project.

Landscape and Visual Amenity

4.3.20 In each area, the effects of the Project's operation and the traffic upon it have been considered for both day time and night time situations and assessed as to whether they would be positive or negative.

South Widnes

4.3.21 Key effects in South Widnes to be addressed are listed below:

a. Integrating the scale and geometry of the route with the surrounding urban environment;
b. Maintaining and if possible improving acceptable visual and physical links between Widnes Town Centre and West Bank;
c. Absorbing the scale of the junctions into the surrounding landscape;
d. Screening views of traffic from the surrounding neighbourhood and screening views of the more degraded elements of the urban environment from the road;
e. To mitigate the visual effect with screen planting whilst permitting selected views from the highway into the surroundings; and
f. The effects of lighting.

4.3.22 The landscape proposals for the Project will provide new planting along its alignment in certain areas. This will screen negative effects associated with light spill from the Project. This will benefit the landscape in areas such as those along St Michaels Golf Course, Victoria Road and Widnes Loops. It is considered that the incorporation of a lighting scheme at Ditton Junction will enhance this area as a 'Gateway' to Widnes with positive effects.

4.3.23 The visual and landscape effects of the Project on these areas have therefore been assessed as of mostly high positive significance.

4.3.24 It is considered that negative residual lighting effects associated with the Project will be experienced in areas of the alignment where it is not possible to screen new lighting. However, against the existing background of lighting in urban South Widnes this effect is considered to be of low negative significance.

4.3.25 The landscape scheme would provide a setting for the Project, link with areas of existing tree cover, help to screen views of the highway alignment and traffic and filter out views of lighting.

4.3.26 Ditton Junction would be enhanced by amenity planting as befits this new 'Gateway' to Widnes and the crossing of Victoria Road by a viaduct, would permit a broad thoroughfare to be created, at the crossing point.

4.3.27 Features such as the toll plaza, and Widnes Loops junction would be absorbed into the new landscape which would also accommodate improved access route to the Estuary for pedestrians.

4.3.28 Following mitigation the residual effects have been assessed as low negative significance.

The Crossing Point of the Estuary

4.3.29 Key landscape effects at the crossing point of the Estuary to be addressed are listed below:

a. Maintaining an open aspect from the St Helens Canal and the adjacent Trans-Pennine Trail;
b. The effect on the Spike Island leisure activities and environmental qualities;
c. The effect on West Bank;
d. The effects on Wigg Island Community Park; and
e. The effects of lighting.

4.3.30 Introducing the New Bridge into the open aspect of the Estuary landscape would be an imposition but the scale of the landscape can absorb large structures, as the existing SJB demonstrates.

4.3.31 The New Bridge is designed to permit views under and through it and a sense of openness would be retained. The New Bridge itself would be an 'eye-catcher' visible over considerable distances and could become an iconic symbol of Halton and the North West much as the SJB has become.

4.3.32 When the Project is viewed from the wider area, as noted above, it is considered that it will be thought of as an iconic symbol and therefore have a high positive significant effects on views. However, it is recognised that the view of the New Bridge at a local level may be considered to be an intrusion into the Estuary landscape and therefore at these locations of moderate negative significance. The effect of lighting has been assessed as moderate negative.

4.3.33 The effects of the New Bridge approaches on the landscape of the Estuary margins is considered to be of moderate negative significance due to the physical presence of required structures. Where these structures take the form of viaducts, e.g. at Astmoor, due to the open nature of such structures, it is considered that effects on landscape will be less adverse and of low negative significance. For both visual intrusion and the effect on landscape at Wigg Island (including the Community Park and Green Belt) have been assessed as high negative significance.

4.3.34 The New Bridge would have a detrimental effect on the landscape and visual amenity of the St Helens Canal, Ship Canal and Wigg Island Community Park. It would also intrude upon some views from Spike Island and West Bank and the lighting on the bridge deck would be a notable change to the night time scene.

4.3.35 The towers and viaduct piers would enable the New Bridge to cross the Estuary with a small 'footprint' relative to its size and at the points of landfall the highway would be absorbed into the new landscape scheme.

4.3.36 Following mitigation residual effects have been assessed as mostly moderate negative significance. Effects on users of Wigg Island Community Park, and associated Green Belt in this area, are considered to be more adverse, high negative significance, due to the nature of the use of this area as a community facility.

The Expressway Corridor

4.3.37 Key landscape effects at the Expressway Corridor are listed below:

a. The effects of proposed alignment improvements within the existing highway corridor;
b. Changes to the environmental quality of the highway corridor;
c. The effects of busway / footbridge improvements;
d. The scale and geometry of the new junctions with the surrounding landscape and urban / light industrial development;
e. The effect on residents in properties which overlook the Junctions;
f. The effect on existing visual and physical aspects of the Manchester Ship Canal and the Bridgewater Canal corridors; and
g. The effects of lighting.

4.3.38 Proposed highway improvements within the existing expressway corridor would result in the loss of some, but not all, tree cover which provides screening. The corridor would be replanted and the new planting would, in association with the retained existing planting, mitigate the negative visual effects of junction amendments, busway and footbridge improvements and lighting.

4.3.39 To the north of Lodge Lane Junction, where the road corridor is narrower, it will not be possible to replace all vegetation removed to allow construction of the Project due to space constraints. Therefore it is considered that in places there will be an effect of moderate negative significance due to the physical presence of the Project and loss of vegetation and hence visual screening. In some areas however greater space availability will allow the planting of screens which will reduce the effects on landscape to one of low negative significance.

4.3.40 Between the Bridgewater Junction and the New Bridge there would be an opportunity to reconstruct industrial units or other development under the Astmoor Viaduct.

4.3.41 As detailed above certain areas along the Project's alignment will suffer loss of existing screening vegetation which cannot be replaced due to space constraints with negative effects. Lighting associated with the Project has been assessed against the backdrop of existing lighting in this urban area. The proposed landscaping for the Project will allow an element of new lighting to be screened through the planting of vegetation. It is anticipated that the degree of negative effects will range from low to moderate negaitive significance dependent on the amount of screening achieved.

4.3.42 Following mitigation, residual effects have been assessed as part low negative part moderate positive.

4.3.43 Residual adverse effects would predominantly be associated with views of the New Bridge from the surrounding area, particularly where it would be viewed from close quarters.

4.3.44 It would be difficult, if not impossible, to mitigate these changes to views of the existing scene and effects would be highest for residents overlooking the Estuary, visitors to Wigg Island Community Park and users of the Trans-Pennine Trail.

Cultural Heritage

4.3.45 It is anticipated that the operation of the Project will have a positive effect on the SJB (a protected building) due to the reduction of the carriageway on the bridge from two lanes in each direction to one in each direction allowing the reintroduction of a footpath onto the deck and the establishment of a dedicated cycle path. The overall effect would be to increase accessibility to the bridge, reduce traffic flow and allow it to function as originally designed.

4.3.46 It is considered that the operation of the Project may have a negative effect on the settings of some of the Listed Buildings and Conservation Areas in the Borough.

4.3.47 It is not considered possible to mitigate indirect effects of the New Bridge on the setting of certain Listed Buildings and Conservation Areas as it is impossible to screen the New Bridge from view or blend it into the landscape. This is because of the proximity of the New Bridge to these cultural heritage features and direct line of sight between them.

4.3.48 Following the implementation of mitigation set out above to protect features of cultural heritage importance, it is anticipated that the majority of the residual effects of the Project on cultural heritage features will be of no significance or of low negative significance.

Contamination of Soils, Sediments and Groundwater

4.3.49 Existing areas of soil and groundwater contamination were identified which extend beyond the boundaries of the Project. It is considered that the proposed works would not increase the potential for contaminant movement off-site following construction.

4.3.50 As the Project area would cover existing areas of contamination, this should reduce the potential risk to future site users and local residents from contamination during the operation stage. Mitigation measures will be required for future maintenance workers who may be exposed to contaminated ground.

4.3.51 With regards to the existing effects, it is considered that these can be addressed through the implementation of the mitigation measures and the detailed remediation strategy.

Waste

4.3.52 During operation, it is anticipated that there will be very little waste generated from the Project. The toll booths and welfare facilities will generate less that one refuse collection vehicle per week, and the maintenance of structures, lights, highway and plants less than four vehicle movements per year. These movements are not predicted to be noticeable above the other vehicles using the New Bridge and associated roads.

4.3.53 Operational effects of waste generation are not anticipated to be significant and therefore no mitigation measures are recommended.

Transportation

4.3.54 The New Bridge will reduce traffic on the SJB in both 2015 (known as the "opening year" for the purposes of the traffic assessment) and 2030 (which is 15 years following the opening year and known as the "design year" for the purposes of the traffic assessment). In 2015 traffic on the SJB will reduce from a predicted 94,000 vpd without the Project to 13,000 vpd with the Project; and in 2030 from 97,000 vpd to 16,000 vpd. The Project will therefore be highly successful in the removal of strategic traffic and allowing for the re-allocation of road space on the SJB to be directed towards sustainable modes.

4.3.55 The effects of the Project do not extend across the wider study area. It might be initially expected that the Project, with three lanes in each direction, representing an increase in road space for traffic across the Estuary, might have a wide effect. However, the Project includes reductions in the number of lanes on the SJB and both the SJB and the New Bridge will be tolled. The resulting effect will be a re-allocation of available road space from the SJB to the New Bridge.

4.3.56 The effects of the Project will be greater within the Borough but largely restricted to the Expressway road network. Savings in the time it takes to make journeys across the River as a result of the Project are shown to be positive (i.e. reduced) and significant for both 2015 and 2030, for cross-River journeys within the Borough. With improved journey reliability and the removal of congestion at the SJB, non cross-River routes will also experience benefits from less congestion associated with being caught up in cross-River traffic. It is considered that the effect of the Project on car, heavy goods vehicles and bus users will range between moderate to high positive significance.

4.3.57 The number of pedestrians and cyclists using the SJB and its improved facilities and linkages is likely to increase as a result of the Project. Improvements for cross-River trips and their access to local networks have been accorded a high positive significance.

4.3.58 All existing PRoWs, footways, cycleways and bridleways will be retained, subject to minor diversions. These will have minimal effect.

4.3.59 The Mersey Gateway Sustainable Transport Study has begun considering more detailed alternative changes that will deliver the required improvements to bus services, and cycling and walking facilities. This takes advantage of the capacity created on the SJB for this very purpose, as a result of the New Bridge. It is aimed at delivering service improvements in 2015. A series of draft strategy elements have been developed from which specific proposals will emerge and be evaluated. The strategies have considerable potential to increase travel choices and to reduce the effect of tolls for local trips. In addition, around thirty percent of residents in the Borough do not have access to a car or van. Many of these are in deprived social and economic groups and will therefore experience the greatest benefits from improvements to public transport.

4.3.60 The Project presents a step change in the prospects for delivering sustainable transport options for residents in the Borough. The proposed concession arrangements include provisions for the Council to share in the toll revenue, where the revenue passed to the Council will be used to support toll discount schemes and would also provide funding for the preferred sustainable transport programme.

4.3.61 There will be no significant negative residual effects following the opening of the Project and mitigation.

Noise

4.3.62 During operation of the Project the level of traffic on the road network in the Borough will change when compared to the current situation or a future scenario with no Project. This will subsequently lead to changes in the production of noise and vibration from traffic sources.

4.3.63 It is anticipated that there will be less people affected by the generation of road traffic noise when compared to a scenario with no Project in place. However, it is anticipated that there will be no real change in the number of people affected by levels of vibration and, if anything, a few additional people will be bothered by traffic related vibration levels.

4.3.64 It is anticipated that there will be a moderate to high positive effect associated with road traffic generated noise for areas adjacent to the SJB and Weston Point Expressway during the operation of the Project. However, it is considered that there will be a high negative effect at Wigg Island and a moderate negative effect for housing adjacent to the Central Expressway as a result of changes in the generation of road traffic noise between a with Project and without Project future scenario. In addition it is anticipated that two schools will experience high positive effects associated with a reduction in traffic related noise production and one a high negative effect due to increased noise levels as a result of the Project.

4.3.65 During operation of the Project, mitigation measures such as acoustically designed road barriers will be provided alongside the Central Expressway to reduce effects associated with increased noise levels from traffic. This will reduce noise effects in this area to one of low negative significance.

4.3.66 Overall it is considered that there will be a moderate positive effect in terms of the total number of people likely to be affected by road traffic noise from the operation of the Project.

Navigation

The St Helens Canal

4.3.67 There are no known plans to restore this section of the canal so that it can be navigated in the future. However, The Sankey Canal Restoration Society (known as “SCARS”) have requested the maintenance of a navigational clearance at 5m to allow the passage of sailing vessels under the New Bridge, should the canal reopen in the future. This clearance for navigation has also been sought by British Waterways and therefore provided in the design of the New Bridge. During normal operation there will therefore be no effects on potential future users of the St Helens Canal.

The River

4.3.68 The navigational clearance sought by Fiddlers Ferry Sailing Club to allow a 'typical' vessel to pass up the River has been retained (i.e. a clearance of 10.1m). As such users will not be affected by the operation of the New Bridge in relation to changes in navigational clearances.

4.3.69 Regular maintenance of the underside of the New Bridge will result in a reduction of navigation clearance for short periods of time. In order to prevent any effect on users, sailors will be notified prior to scheduled maintenance works to allow navigation routes to be planned accordingly.

4.3.70 The New Bridge towers within the Estuary will present a permanent obstruction to navigation and, during certain weather conditions, localised high winds will be magnified in their vicinity which will present a risk to navigation close to the towers.

4.3.71 The MDHC have stated that the towers of the New Bridge should be floodlit in accordance with the IALA a requirement which will be incorporated into the design of the Project. In addition it is recommended that signage be provided around the New Bridge towers to alert boats to their presence and the potential risks associated within increased wind speeds in their locality. This will allow a safe navigation route to be taken along the River reducing effects on navigation.

4.3.72 The presence of permanent towers within the Estuary is considered to present an obstruction to users, which even following mitigation, is considered to be of low negative significance.

The Manchester Ship Canal

4.3.73 In line with the MSCC requirements navigational clearance at the New Bridge will be maintained to allow continued navigation. Therefore there will be no operational effects associated with normal operation.

4.3.74 Regular maintenance of the underside of the New Bridge will result in a reduction of navigation clearance for short periods of time. Such activities will comply with the MSCC criteria and will coincide with annual winter maintenance and therefore not have a significant effect on users.

4.3.75 Compliant with the MSCC requirements, navigation lighting and signage will be placed on the New Bridge.

The Latchford Canal

4.3.76 As this canal is not currently navigable there will be no operational phase effects.

The Bridgewater Canal

4.3.77 In line with the MSCC requirements a navigational clearance at the New Bridge will be maintained to allow continued navigation by maintenance boats. There will therefore be no operational phase effects associated with normal operation.

4.3.78 Regular maintenance of the underside of the New Bridge will result in a reduction of navigation clearance for short periods of time. Such activities will comply with the MSCC criteria and will coincide with annual winter maintenance and therefore not have a significant effect on users.

Controlled Airspace

4.3.79 The design of the New Bridge towers has been restricted to a maximum height of 150m AOD and aircraft warning lighting has been incorporated on the towers to avoid negative effects on users of Liverpool John Lennon Airport's controlled airspace.

Air Quality and Climate

4.3.80 Overall, the difference in local air quality between a 'with Project' and 'without Project' scenario was considered to not be significant.

4.3.81 Areas where it was anticipated that local air quality would be most affected by the Project included the SJB and the A557 Weston Point Expressway where positive effects on local air quality were predicted and the A533 Central Expressway in Runcorn and Wigg Island, where negative effects on local air quality were predicted.

4.3.82 The air quality assessment indicated that there would be no exceedence of the relevant Government objectives for local air quality in 2015 as a result of the Project. The assessment also indicated that, in a scenario with the Project, emissions from vehicles effecting regional air quality would decrease. This was considered to be of low positive significance.

4.3.83 As a result of tighter emission standards and more efficient combustion engines in the future, no mitigation measures relating directly to emissions of air pollutants from traffic using the New Bridge or associated infrastructure are recommended.

4.3.84 The effect of the Project on climate change was determined through an assessment of changes in carbon dioxide levels on regional air quality. This assessment indicated that levels of carbon dioxide are anticipated to decrease overall with the Project in place, mainly as a result of changes to traffic flow patterns that are anticipated across the New Bridge. It is considered that this reduction in levels of carbon dioxide as a result of the Project will have an effect of low positive significance.

Socio-Economics

4.3.85 The operation of the Project will provide approximately 98 jobs, the majority of which will be available to local residents providing employment opportunities and having a moderate positive effect on local employment.

4.3.86 Once operational it is considered that the Project will support redevelopment and regeneration through improved transportation links within and across the Borough. It is anticipated that such regeneration will provide approximately 3,600 additional jobs within the Borough and the surrounding area. Employment associated with regeneration will provide positive effects to the local economy and help improve quality of life of individuals. An improved quality of life is also often associated with health benefits to individuals.

4.3.87 In summary it is considered that regeneration will attract people to the Borough and also provide additional employment opportunities both creating high positive effects for local people.

4.3.88 The Project will provide new dedicated walking and cycling facilities across the SJB. These facilities will provide residents with the opportunity to walk or cycle within a safer environment across the River. The Project has the potential to improve health within the Borough due to increased opportunities for uptake in exercise from waking and cycling trips across the SJB. Any improvement to human health would be particularly significant given the poor baseline health statistics for Halton. In addition the air quality assessment has indicated that there will be high positive benefits to local air quality close to the SJB and low to moderate positive effects for the wider area. Furthermore, the Project will improve accessibility and traffic congestion within the Borough, which is likely to result in a decrease in driver stress and improvements in journey ambience. The extent of this effect will depend on the location of people in relation to the Project. For those living close to the Project, it is anticipated that there will be a high positive health benefit, for those people living in the more peripheral wards there will be a positive effect of moderate significance.

4.3.89 The contamination assessment has indicated that, following remediation and implementation of mitigation measures, that there will be no significant effects on human health as a result of the Project.

4.3.90 As noted above, overall it is considered that there will be a moderate positive effect in terms of the total number of people likely to be affected by road traffic noise from the operation of the Project. This will have a positive effect on the quality of life for individuals, specifically those residing close to the SJB.

4.3.91 Tolling of the SJB and the New Bridge is likely to result in negative effects to some individuals within the Borough through financial exclusion of those on lower incomes, or those who do not wish to pay tolls where previously travel by private vehicle was free. Tolling may result in a reduction in access to employment opportunities, services, facilities and social networks. However, public research undertaken in Halton has identified that, overall, the majority of individuals would prefer to have both bridges tolled in preference to no new bridge at all.

4.3.92 A Sustainable Transport Study (STS) has developed to a point where the interventions required to deliver improvements to bus services, cycling and walking facilities are now considered. This Study aims to relieve congestion on the SJB and around the Borough by promoting an integrated transport system for Halton through provision of new and improved public transport services and opportunities for walking and cycling. Provision of new and improved facilities will reduce the reliance of local residents on private vehicles and where possible provide local residents with another option of crossing the River, which does not involve paying the toll.

4.3.93 The Council has also made a commitment to certain classes of disabled individuals being exempt from the tolls. However, beneficial effects resulting from tolling exemptions and the STS are currently unquantifiable as a definitive tolling strategy and commitment to specific STS measures to be implemented are yet to be published. Consequently, although it is acknowledged that these measures will reduce the effects of tolling on certain groups, they have not been considered within the effects assessment and prior to these measures being defined, tolls will be of high negative significance to individuals undertaking cross river trips by private vehicle.

4.4 Cumulative Effects

4.4.1 If the construction and operation of other major projects were underway in the Region at the same time as the Project there would be potential for cumulative environmental effects to occur. Therefore the EIA provides an assessment of cumulative effects.

4.4.2 The transport assessment undertaken for the Project identified and took into consideration 100 proposed developments which are planned to be constructed over the next 30 years and are likely to have significant effects within the transport study area. These proposed developments were therefore considered in the assessment of cumulative effects.

4.4.3 In summary the cumulative effects that are anticipated to occur due to the construction and operation of other projects are discussed below.

Surface Water Quality

4.4.4 No cumulative effects were identified as a result of other developments.

Land Use

4.4.5 A temporary cumulative effect, which could occur during the construction phase involving disruption to PRoW across the Borough, was identified.

Terrestrial Ecology and Birds

4.4.6 The 'in-combination effects' of the Project with other proposed developments in the area which could affect either the European Site or the Upper Estuary LWS, or both, were assessed. The Project does not result in any significant effects on the bird populations of the European Site and therefore the Project will not result in any 'in-combination' effects on the European Site.

Aquatic Ecology

4.4.7 A temporary cumulative effect could occur during the construction phase involving a potential decrease in water quality damaging to aquatic organisms.

Landscape and Visual Amenity

4.4.8 A potential negative cumulative effect of increased visual intrusion could occur if construction of proposed developments near to the Project, coincided with that of the Project. Positive cumulative operational effects include improvement to the poor quality landscape, and to the visual amenity of the area. Lighting from proposed developments will reduce the effect of lighting from the Project but not enough to alter the significance classification.

Cultural Heritage

4.4.9 Construction works could affect the quality of the setting of certain Listed Buildings in both the construction phase and operation phase, and the operation of the Project could affect the setting of a Conservation Areas in both the construction phase and operation phase.

Contamination of Soils, Sediments and Groundwater

4.4.10 No cumulative effects were identified as a result of other developments.

Waste and Materials

4.4.11 If construction from other nearby developments occurs at the same time as construction of the Project more dust generated from movement of waste could affect the same receptors. A cumulative permanent reduction in available landfill and treatment capacity in the Region is considered to be unavoidable.

Transport

4.4.12 Negative cumulative effects as a result of disruption to infrastructure during the construction phase are likely to occur. However operational phase effects are positive and include a long term effect of improved bus journey times and an increase in journey ambience for cross-River trips was identified.

Noise and Vibration

4.4.13 Positive and negative cumulative effects in both the construction and operation phase were identified. It was considered that the majority of operational effects would be positive, resulting from a reduction in road traffic noise levels

Navigation

4.4.14 Partial obstruction to navigation is likely to occur during the construction phase of the Project due to the presence of temporary structures in the Estuary. Partial obstruction to navigation may also result from other proposed developments which intrude into the Estuary and combine with this effect to create a temporary negative cumulative effect.

Air Quality

4.4.15 Although negative cumulative effects were identified for the construction phase, the significance of these effects is unlikely to be increased provided appropriate mitigation is employed. For the operational phase, modelled traffic data has included traffic flows from other developments. As such, the significance of cumulative effects remains unchanged from those previously described above.

Socio Economic

4.4.16 In the construction phase temporary negative cumulative effects, such as disruptions to access of facilities and social networks were identified. Positive effects of increased expenditure and an increase in job opportunities were also identified. In the operation phase a potential increase of pressure on public services was identified, this would be caused by the cumulative regeneration effect creating a number of positive long term effects, including job creation, which may increase the population.

Conclusion

4.4.17 It can be concluded that the majority of cumulative effects are anticipated to occur during the construction phase and whilst these are mostly negative, the long term and permanent cumulative effects for the operation of the Project are considered to result in mostly positive effects including increased regeneration of the area, and improvements in health.

5. DOCUMENT LOCATIONS

5.1.1 Further copies of the ES (and associated documents) can be obtained on line at http://www.merseygateway.co.uk or from the Mersey Gateway Team at the details below:

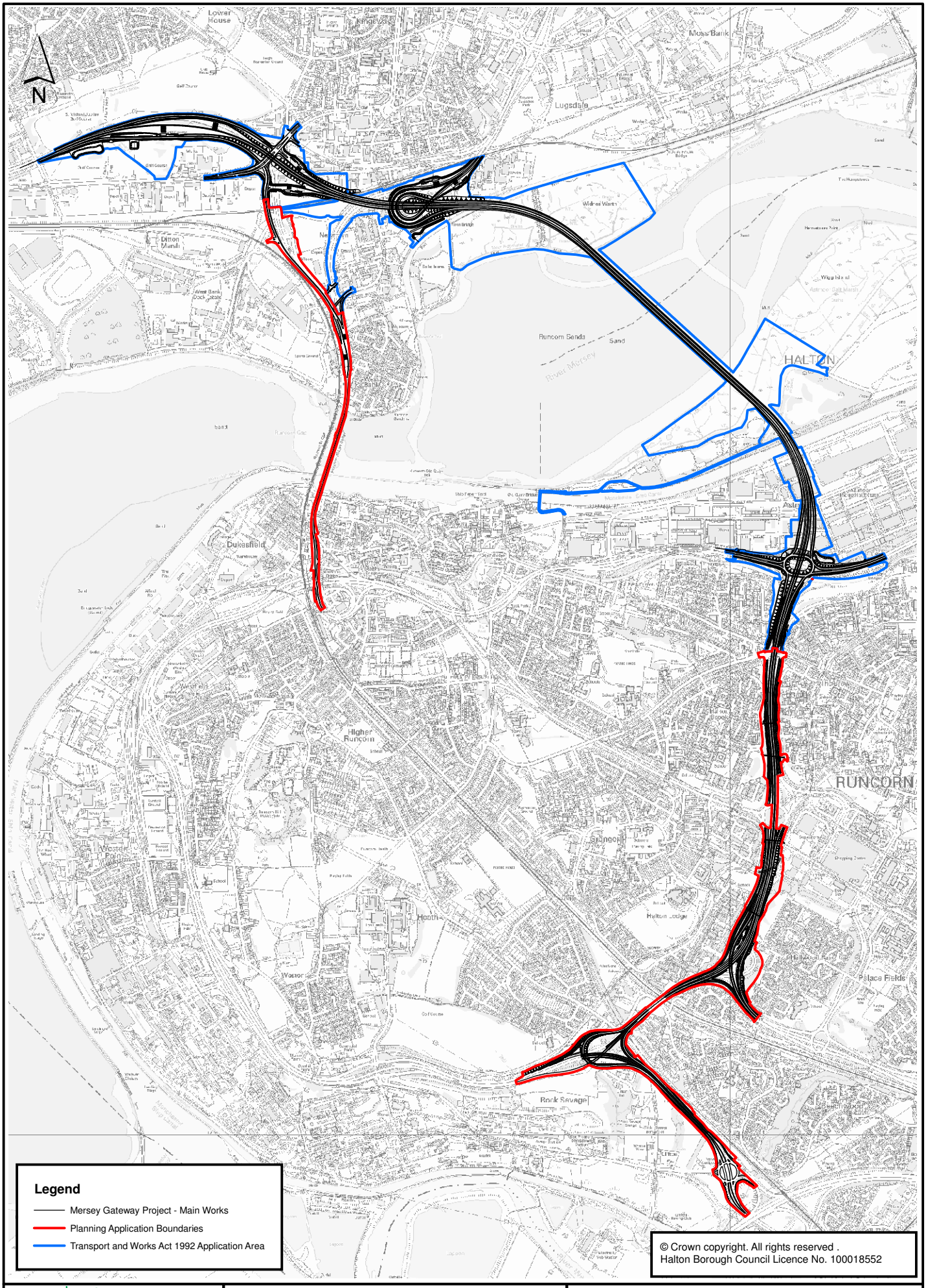
The Mersey Gateway Team
Halton Borough Council
Rutland House
3rd Floor
Rutland House
Runcorn
WA7 2GW

Tel: 0151 9078300
mersey.gateway@halton.gov.uk

5.1.2 Copies of the ES (and associated documents) will also be displayed at the following location in the Borough:

a. Halton Direct Link, Church Street, Runcorn;
b. Halton Lea Library, Runcorn;
c. Halton Direct Link, Widnes Town Centre;
d. Halton Direct Link, Ditton;
e. Kingsway Learning Centre;
f. Halton Lea Library;
g. Runcorn Library, Edgeton Street, Runcorn Old Town;
h. Members Room Municipal Building;
i. Members Room Runcorn Town Hall; and
j. Members Room, Rutland House.

APPENDIX A
FIGURES



the mersey gateway
A BRIDGE TO PROSPERITY

Northwest
REGIONAL DEVELOPMENT AGENCY

Report Title	Figure Title
ENVIRONMENTAL STATEMENT NON TECHNICAL SUMMARY	THE MERSEY GATEWAY PROJECT
Report Number	**Figure Number**
MG_REP_EIA_008	1.1