

# HULL EAST-WEST CORRIDOR MULTI-MODAL STUDY

EXECUTIVE SUMMARY

# Hull East-West Corridor Multi-Modal Study

## Executive Summary

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## INTRODUCTION

A New Deal for Trunk Roads in England (DETR July 1998) proposed a number of studies to address problems on the trunk road network. There were two types of study proposed; roads based studies to examine localised problems on particular routes and multi-modal studies where there was a requirement to examine potential solutions across all modes of travel.

One of the multi-modal studies was: '*A study of congestion problems and possible solutions on route to the Port of Hull*', known as the Hull East-West Corridor Multi-Modal study, or HUMMS for short. The output from the study is a plan of interventions across all modes to solve existing and predicted future transport related problems within the corridor, with a specific requirement to address problems on the A63 Castle Street, after omission of an earlier improvement scheme from the Government's Roads Programme following the 1998 review.

The area of study includes the area to the north of the River Humber encompassing the whole of the administrative area of Kingston upon Hull together with surrounding villages and transport links in the East Riding of Yorkshire.

The study was started in the autumn of 2000 and completed in the spring of 2002. The client for the study was the Government Office for Yorkshire and the Humber (GOYH) and it has been managed by a Steering Group representing, in addition to GOYH, Kingston upon Hull City Council (HCC), the East Riding of Yorkshire Council (ERYC), the Yorkshire and Humber Assembly, the Highways Agency, the Strategic Rail Authority (SRA), Yorkshire Forward, Associated British Ports (ABP), City of Hull Environment Forum, Hull Cycle Campaign, Hull and Humber Chamber of Commerce, Industry and Shipping and Hull CityVision.

## OBJECTIVES

The study objectives were agreed with the Steering Group at an early stage of the study. They were developed from an examination of the problems, issues and opportunities that needed to be addressed across the east-west transport corridor. They were to:

- reduce congestion on the A63/A1033;
- make the best use of alternative modes of travel;
- improve the economic viability of the Port of Hull;
- facilitate economic growth and regeneration;
- reduce severance and safety problems; and
- reduce environmental problems.

Whilst proposals for improvement were measured against these objectives the study also needed to take account of the objectives of

HCC, encapsulated within their Local Transport Plan (LTP). These are to:

- reduce personal injury accidents by 40% by 2010;
- reduce car flows in the city by 1% per annum;
- increase cycling use by 1.7% per annum;
- increase public transport usage by 1.5% per annum;
- increase walking commuters by 10% by 2011; and
- meet National Air Quality Strategy targets.

Finally, the five overarching Government objectives against which transport investment priorities are judged are to:

- protect and enhance the built environment;
- improve safety for all travellers;
- contribute to an efficient economy;
- promote accessibility to everyday facilities for all, especially those without a car; and
- promote the integration of all forms of transport and land use planning leading to a better, more efficient transport system.

## Overview of Approach

The study was divided into seven linked phases:

- Phase 1: **inception** – confirmation of approach, methods and programme;
- Phase 2: **consultation and public participation** – ensuring contribution and participation by relevant organisations and members of the public throughout the study;
- Phase 3: **collation of existing data and collection of new data** – bringing together, either from existing sources or from dedicated surveys, all the quantitative information required to complete the study;
- Phase 4: **analysis of problems** – utilising available data, expert opinion and consultation responses to highlight current and potential future problems relating to economy, safety, environment, accessibility and integration;
- Phase 5: **development of planning models** – to represent current transport in the area and to provide a tool for forecasting future conditions for alternative economic, demographic and transport investment scenarios;
- Phase 6: **plan development** – examination of a range of options and strategies to address the problems and meet the objectives of the study; and
- Phase 7: **recommendations and handover** – bringing together the recommended plan of interventions.

## Review of Current Travel

On a typical weekday approximately 250,000 people travel into and through the central part of the City of Hull across a cordon defined loosely by the high-level railway line which runs around

the city and into the Port of Hull. Of these people 75% are travelling in cars or commercial vehicles, 13% in buses, 8% are walking, 2% are cycling, 1% are on trains and 1% on motorcycles.

During the same period approximately 54,000 vehicles travel along the central section of Castle Street, between Mytongate and Market Place of which about one quarter are heavy commercial vehicles. 30,000 of this total have both an origin and a destination outside the central part of Hull, for example from the M62 to the docks, and therefore can be defined as 'through' traffic with no business in the city centre.

Within the administrative area of the city much successful work has been done in tackling road safety problems and reducing casualties. This is reflected in personal injury accident rates that are lower in Hull than the national average. Nevertheless there are still major areas of concern with over 40% of road traffic accident casualties being pedestrians or cyclists and an accident rate on Castle Street which is about four times higher than the average for the A63/A1033 between the M62 and Hedon.

The Port of Hull has a very strong influence on transport within the study area. Annually over 1 million passengers and 10 million tonnes of freight pass through the Port to or from overseas destinations. The vast majority of passengers and freight arrive at or leave from the port by road, the only exceptions being relatively small volumes of bulk movements which use rail or inland waterway. 65% of freight which comes into the port and is brought inland by road has a destination within the Yorkshire and Humber region. The only other destination which accounts for more than 10% is the North West. As a result the vast majority, 80%, of commercial trips to or from the port arrive or leave via the A63 and Castle Street.

Levels of walking and cycling are relatively high in the study area, reflecting lower than average car ownership, higher than average unemployment, a dense urban fabric and a flat topography. Typically 25% of people walk or cycle to work in Hull compared to only 15% nationally.

#### **Issues and Problems**

Reviews and consultations during the study have highlighted and confirmed a series of issues and problems relating to transport and travel within the HUMMS study area and which are relevant in the context of considering multi-modal solutions. Whilst some cross the boundaries between transport modes it is useful to consider them under modal headings.

#### **Road**

- Delay, congestion and unreliable journey times on A63/A1033.
- Poor image of E20 Corridor 'Gateway'.
- High proportion of heavy vehicles on major routes through the city.
- Disruption to traffic flow caused by opening of Myton Bridge for River Hull access.
- Conflict between strategic and local traffic on A63.

#### **Rail**

- Poor access into the Port of Hull.
- Gauge and capacity constraints on trans-Pennine and East Coast Main Line routes.
- Poor local and inter-city connections from Hull.
- High proportion of unitised loads through port not suited to transfer to rail.
- Poor perception of service offered by Railtrack and railfreight providers.

#### **Bus**

- Current lack of a high quality public transport interchange in the city.
- Requirement for Park & Ride facilities around the city.
- Perception of low quality of service and vehicles.
- Poor links between the city centre and waterfront.

#### **Walking and Cycling**

- Severance created by Castle Street compounded by poor crossing facilities.
- Road safety concerns.
- Degraded physical environment.
- Poor access to city centre from public transport stops.

#### **Water**

- Uncertainty in future strategic UK port planning.
- Interrelationships with South Bank of the Humber.
- Potential for inland waterway transport not fully developed.
- Timing of the passenger ferry services coinciding with peak periods for road traffic.

#### **Economic and Development Issues**

- Out-migration from the City of Hull into the East Riding.
- The additional traffic generation pressures arising from new development.
- The isolation of potential development areas on the waterfront created by the barrier of Castle Street.

#### **Forecasting the Future**

HUMMS was required to look at short, medium and long-term interventions to deal with problems that exist now or will develop over the next 30 years. As a result the study has looked to the future and predicted what changes there are likely to be to the local population and

economy and in turn what the consequences are for transport and travel if nothing significant is done.

To supplement an examination of conditions now, analytical tools have been developed to look at two future time horizons, 2016 and 2031. Factors which will have the most influence on travel in the future within the HUMMS study area include changes in population, the number of households, jobs and car ownership levels. For the City of Hull and surrounding areas of the East Riding the consultants' economists and planners have predicted the most likely outcome.

	2000	2016	2031
Population	587,200	633,000	664,100
Households	247,200	283,000	306,800
Jobs	229,700	244,900	263,200
Cars per household	0.98	1.17	1.27

As a consequence of increasing population, jobs and prosperity, and the focus on urban renaissance in the city centre, there is going to be an increasing demand for travel. If nothing significant is done to improve transport in the area between now and 2016, other than initiatives that are already committed, then significant changes are predicted:

	2000	2016	% Change
Veh kms travelled (per day)	950,800	1,131,400	+1 9%
Public Transport passengers (per day)	58,800	57,000	-3%
Public Transport share of total travel	18%	16%	-11%
Traffic Flow on Castle Street (per day)	54,000	61,000	+13%
Average peak hour journey time – Humber Bridge to the Docks	14 mins	22 mins	+50%

Without intervention the trend is forecast to be one of increases in traffic, congestion and delay and declining numbers of people using public transport services.

### Consultation and Participation

Effective consultation and participation has been key, not only to problem identification and plan development, but also to the aspiration for long term acceptability and overall success of the resulting plan. The team's approach was built upon developing, at each stage, the trust, understanding, and co-operation of key stakeholders and the wider public.

Consultation activities were divided into information provision and public consultation.

Information provision has comprised:

- **press releases** - to cover major milestones within the project;
- **newsletters** - production and distribution of four editions of a newsletter to raise the profile of the study and inform the debate;
- **a web site** - set up to provide an additional channel of communication and information, to include regularly updated key information and feedback facilities;
- **media liaison** - the media were provided with information early in the study and invited to attend appropriate meetings and exhibitions;
- **consultation with a wider reference group** - including three presentations/seminars with a wider reference group of key businesses, interest groups, transport providers and other stakeholders; and
- **other meetings** - including a requirement to meet separately with key stakeholder groups including local council members.

The overriding aim of the public interface was to engage local people so that the final options and proposals put forward meet with the widest possible public acceptance. This was achieved through a planned, sustained and consistent programme of public information and consultation. In addition to the information provision identified above this comprised:

- **a questionnaire** - circulated with the first newsletter to establish a base of local opinion and to encourage public participation in the study; and
- **two public exhibitions** - held in central Hull, the first to gauge opinion about issues, problems and potential solutions and a second to present the alternative strategies being considered.

### Potential Solutions

Drawing on the results of the various consultations, quantitative analysis of travel indicators and observations of transport networks in operation, a long list of options to address existing and predicted future problems was drawn up. These are listed below under five broad category headings.

**Public Transport:**

- reinstated or new rail services and stations;
- bus-based Park & Ride on key radial routes into Hull;
- Light Rapid Transit (LRT) on radial corridors;
- guided bus on radial corridors;
- bus priority measures;
- public transport quality partnerships;
- improved public transport interchange facilities;
- ticketing initiatives;
- improved frequency and speed for local bus services; and
- community transport initiatives.

**Demand Management:**

- road-user charging;
- workplace car parking charges;
- reduced numbers of long-stay parking spaces;
- extended and improved parking enforcement;
- improved traffic flow;
- better journey information;
- company travel plans; and
- improved management of heavy goods vehicles (HGV's).

**Highway Improvement Options:**

- original Castle Street on-line improvement scheme;
- Castle Street on-line tunnel or viaduct;
- A63 dockside tunnel or viaduct;
- a northern ring road for Hull on an inner, intermediate or outer alignment;
- a new cross-Humber link road; and
- upgraded existing roads including junction improvements.

**Initiatives to assist freight movements:**

- upgraded rail infrastructure, including the line to and within the port;
- improved transshipment facilities;
- increased use of the River Hull for local movements;
- increased use of the Aire and Calder Navigation and River Ouse for longer distance movements;
- quality freight partnerships; and
- reduced levels of HGV empty running.

**Initiatives to assist pedestrians and cyclists:**

- improved cycleways and footways;
- extended network of safer routes to schools;
- improved public cycle parking facilities;
- enhanced and extended local traffic calming; and
- improved priority and safety at road crossings.

**Water based initiatives:**

- commuter ferry services;
- retiming the arrival and departure times of passenger ferry services;

- a new higher Myton Bridge which need not open to permit the passage of vessels into the River Hull;
- reduced or eliminated number of Myton Bridge openings through bridge management; and
- relocated port activities.

All options were assessed using a combination of qualitative and, where appropriate, quantitative measures. To determine whether or not an option was worthy of further consideration, objective-based criteria were adopted which combined study specific, local and national objectives. This allowed the rejection of particular initiatives and refinement of others. An option was rejected if:

- physical or other insurmountable constraints made an option undeliverable;
- an option did not to a significant degree meet any of the objectives of the study;
- an option whilst meeting one or more of the study objectives had such a negative impact on one or more of the other objectives as to make it unsupportable;
- an option while having merits and offering some benefits was, by its scale or location, not relevant in the context of such a strategic study;
- an option would only be successful if some other initiative, outwith the remit of this study to deliver, was forthcoming; or
- an option was prohibitively expensive and had no prospect of producing a scale of benefits to cover its cost.

The outcome of this sifting process was the development of five strategies for more comprehensive evaluation.

**Major Public Transport Investment -**

consisting of significant improvements to public transport to encourage a shift away from car use. It comprised of extended bus priority linked to Park & Ride (at Priory Park, Kingswood and Bilton), LRT, new rail halts and service and quality enhancements.

**Managing Travel Demand -** consisting of pricing and parking control measures to reduce traffic levels and encourage alternative ways of travelling. Measures included charges to enter a city centre zone, charging for workplace parking which might currently be free and reducing the number of all-day public parking spaces in the city centre. Under current legislation urban area road user charging could only be introduced by the appropriate local authority, in this case Hull.

**Original Castle Street Scheme -** based upon the original Castle Street scheme shelved in the late 1990's. This would upgrade Castle Street and provide local access from a parallel side road, include a new grade separated Mytongate

junction, and a new pedestrian footbridge to replace the two existing crossings.

**Castle Street Tunnel** - a new road tunnel between Daltry Street flyover and Great Union Street as an alternative to the original scheme above. This would have the added potential to improve the environment of the existing Castle Street, by switching space from cars to other users and providing new public spaces.

**Northern Ring Road** - a new road around the northern side of the city running between the Humber Bridge and Salt End to the north of the urban area. Being a combination of new and existing roads it would connect with principal routes into the city.

Underpinning all five strategies are **Common Elements**, which are more local and less strategic in nature. These would assist in maximising the benefits generated by the core measures. These include:

- extended bus priority linked to Park & Ride at Priory Park, Kingswood and Bilton (already included in major public transport investment strategy);
- a new rail station to serve the Infirmary and community stadium;
- improved railfreight connections to the port (track, signalling and operations);
- enhanced transshipment facilities within the port;
- management of Myton Bridge operations;
- promotion of walking and cycling;
- quality freight partnerships;
- travel planning for schools and businesses; and
- management of traffic and parking in the central area.

#### Evaluating the Strategies

Each of the five strategies has been subject to a comprehensive evaluation utilising, where appropriate, transport models developed specifically for the study. The key criteria used are the Government's five over-arching objectives for transport, related to environment, safety, economy, accessibility and integration, linked to the local objectives which the strategies are designed to meet.

This process allowed the relative merits of the strategies to be understood and also enhancements and refinements to be introduced. In respect of the five strategies the consultants concluded:

- **Major Public Transport Investment** on its own would not meet the core objectives of the study in relation to Castle Street but certain elements, by virtue of their ability to encourage a modal transfer, should form part of a composite, multi-modal strategy. Comparisons of LRT with an alternative guided bus system demonstrated that almost

the same level of benefit could be achieved with guided bus at much reduced cost.

- **Demand Management** interventions including traffic management and parking control in the central area and charging for road use, are predicted to produce significant benefits in terms of reduction of city centre congestion and encouragement to use alternative transport modes. However, without significant investment in alternatives to the car, demand management alone could have a detrimental impact on the economy of Hull. Whilst traffic management and controls on parking are likely to be an important element of any plan, road user charging is not recommended for introduction in isolation in Hull.
- The **Original Castle Street Scheme** whilst meeting many of the local and national objectives has serious shortcomings in its original design in respect of severance and degradation of the local environment. These shortcomings could be largely overcome by designing in additional features to promote safe, efficient and attractive crossings of Castle Street for pedestrians and cyclists.
- A **Castle Street Tunnel** whilst having many positive traffic and environmental attributes would, due to the poor ground conditions in Hull, be very difficult to construct and as a consequence would have a very high cost, and high risk of cost escalation. It would be so expensive that it could never hope to generate sufficient benefits to justify its construction.
- A **Northern Ring Road** by virtue of its length, over twice as far end-to-end as the A63 direct route, would only attract relatively local traffic. As a result it would have no significant impact on reducing traffic flow, congestion or delay on Castle Street and would therefore fail the first objective of the study. In addition adverse environmental impact would be felt in those rural areas where the new road is constructed.

#### The Recommended Plan

The best components that emerged from the testing of options and then strategies have been combined into an optimum plan of interventions that addresses the key objectives and provides value for money. The recommended plan comprises:

- The common components which enhance facilities for freight operators, users of public transport and walkers and cyclists. They would also include demand management in the form of traffic management and parking controls in the central area. Road user charging is not recommended.
- Major public transport in the form of guided bus on four corridors; Hessle Road, Beverley Road, Bransholme and Holderness Roads, linked to Park & Ride. LRT could, subject to detailed investigation, provide a viable if

more expensive alternative with attributes that include improved public perception and a potentially greater contribution to development and regeneration objectives.

- An on-line scheme to improve Castle Street, with removal of congestion points at Mytongate and Market Place, and high quality, safe pedestrian and cycle connections from the city centre to the waterfront.

A combination of priority, complexity, sources of funding and the need to go through particular statutory processes will determine timing of individual components of the plan, as illustrated in Table A.

It is likely that the common components would be funded locally, in the form of LTP schemes and through contributions from public transport operators, and nationally by appropriate bodies such as the SRA.

The guided bus or LRT schemes would be funded through a combination of monies from central government, local authorities and public transport operators.

The Castle Street improvement would be funded by Central Government through the Highways Agency as a scheme in the Government's targeted programme of improvements.

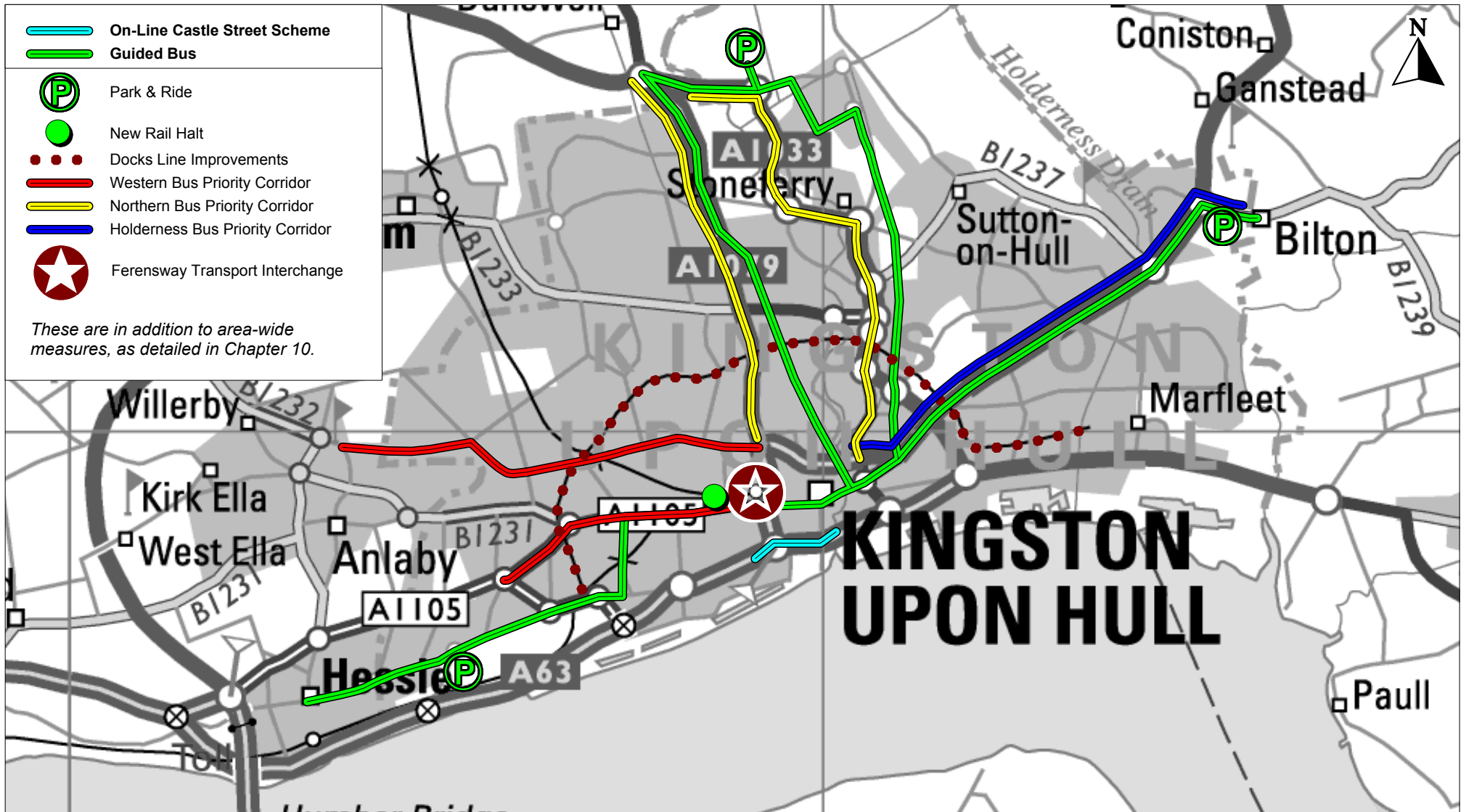
**Table A - Recommended Plan Components**

Scheme/Intervention	Delivery Agency	Cost	Timescale
Park & Ride (Priory Park/Bilton/Kingswood)	HCC & ERYC	£4.2m	2003-2007
Quality bus corridors (Bus Priority)	HCC	£6.0m	2003-2007
Quality bus corridors (New Buses and Services)	Operators	£6.0m	2003-2007
Interim Junction Improvements on Castle Street	Highways Agency & Developers	£1.0m*	2003-2007
Interim Pedestrian Crossing Improvements on Castle Street	Highways Agency & Developers	£0.5m*	2003-2007
Promotion of Walking and Cycling	HCC & ERYC	£0.5m*	2003-2007
Travel Planning for Schools and Businesses	HCC & ERYC	£0.3m	2003-2007
Quality freight partnerships	HCC and Operators	£0.3m	2003-2007
Management of Traffic and Parking in the Central Area	HCC	£0.5m*	2003-2007
A New Rail Station to serve the Infirmary and Community Stadium	HCC, SRA, Railtrack and Operators	£1.5m	2007-2011
Improved Railfreight Connections to the Port: Operations	SRA, Railtrack and Operators	£1.2m	2007-2011
Improved Railfreight Connections to the Port: Track and Signalling	SRA, Railtrack and Operators	£13.0m*	2007-2011
Restrictive Management of Myton Bridge openings	Highways Agency	-	2007-2011
Upgraded Local and Long Distance Rail Services	SRA, Railtrack and Operators	**	2007-2011
Enhanced Transshipment Facilities within the Port	ABP	£1.0m*	2007-2011
Guided bus	HCC and Operators	£119.5m	2007-2011
Castle Street Highway Scheme	Highways Agency	£44.0m	2007-2011

**Notes**

\* Initial estimate only; not included in economic calculations

\*\* The upgrading of local and long distance rail services is a recommendation of this study, however the actual implementation can only be undertaken as part of a much larger scale upgrade of the rail network covering a significant part of the Yorkshire and Humber region and beyond. A thorough examination and estimation of the costs for the improvements needs to be undertaken before a cost estimate can be made of the contribution required from HUMMS. For this reason a cost estimate has been excluded from the above table at this time.



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**Figure 12.1: Recommended Strategy**