

# Integration: Transport Interchange

## 1.1 Background

Improving interchange is identified in the Government's white paper A New Deal for Transport (DETR, 1998) as a key factor in achieving truly integrated transport.

Furthermore to assist the process of urban renewal and make towns and cities more pedestrian-friendly, there is a greater emphasis on integrated transport strategies to provide a choice of different means of travel, with purpose-built interchanges that ensure the transfer from one mode to another is achieved quickly, conveniently, reliably and cost-effectively.

The background to effective transport integration is based on the premise that the promotion of public transport services that offer direct, reliable and effective through routes is seen as beneficial in encouraging modal shift from car to public transport. There are however instances where public transport services cannot always offer a direct route to passengers and they have to change and connect to another service or modes to reach their destination. As a result an interchange penalty is incurred on the passenger in respect of time or money.

In recent years diverse travel patterns and lifestyles have developed. This has meant that we travel further, more often and at different times of day to access services in various locations, such as employment, education, health and leisure activities.

A challenge for the strategy is making sure that where 'indirect' routes exist, passengers can connect and change to other services or modes to reach their destination with ease, in comfort, and in safety; ultimately aiming to minimise the "penalty" that is incurred on the passenger.

Key to promoting good interchange is the development of a public transport network that provides a choice of travel destination and suitable connections to make a particular journey.

An important part of the development of a public transport network is integration, between modes, for example, the co-ordination of bus and rail services timetables to enable a 'seamless' journey. The concept of the 'seamless' journey aims to make journeys by public transport as smooth as possible so as to provide an attractive alternative to the car.

To achieve these aims we need to develop a way of allowing people to be able to make the right connections with confidence. To this end, the strategy will aim to deliver measures and schemes to develop interchanges and promote other initiatives, for example, multi-modal through ticketing and the provision of better passenger information.

## 1.2 WebTAG Assessment

Under WebTAG Unit 3.7.1, this is assessed in terms of both freight and passenger interchanges, however for the purpose of this assessment the freight assessment is deemed unnecessary.

The aim of the passenger interchange assessment is to identify in broad terms the extent to which particular indicators would change following implementation of a particular strategy or plan together, with the number of passengers affected.

The first stage is to assess the level on each indicator both prior to and following the strategy or plan. This involves the scheme assessment relating to the following factors:

PASSENGER INDICATOR	CONSIDERATION WITHIN SCHEME
Waiting Environment	The provision of waiting facilities for passengers. In respect to the scheme, this relates to on-street shelters, off highway facilities and P&R buildings or structures.
Level of Facilities	Availability of key passenger facilities such as food / drink provision. There is limited potential for on-street provision except with independent shops. Possibility of food / drink machines at P&R buildings.
Level of Information	Availability of on-stop information in either printed or electronic form. RTPI is deemed to provide the best information form for passenger guidance. Current bus stops generally provide printed material at present.
Visible Staff Presence	Minimal opportunity for staff presence on-street. NGT vehicles may consist of key customer care staff, but standard services will be limited to single driver. P&R sites may incorporate on-site staff provision
Physical linkage for next stage of journey	Because of the limited potential for a dedicated interchange site, the physical linkage will be assessed on access at P&R sites and on-street. Improvements to highways such as crossings, addition of dropped kerbs and tactiles will be assessed as part of this.
Reliability of connection	Potential of services to be co-ordinated at key interchange locations. Lack of service punctuality will reduce the potential of services to coordinate although Real Time Passenger Information may assist in minimising the overall effect of delay. Punctuality may be improved through dedicated lanes and signal priority. The preferred scheme is deemed to offer maximum priority with a reduced level for the next best and low cost options.

This is then followed by a qualitative description of the ways in which passenger interchange would be improved by the strategy or plan in the study area.

### 1.3 Approximate Number of Users Affected

<b>Preferred Option</b>	<p><b>2016:</b> Approximately 8.8mn user boarding's per annum</p> <p><b>2031:</b> Approximately 9.5mn user boarding's per annum</p> <p><b>NB:</b></p> <p><i>This relates solely to the NGT development which is deemed to be mutually exclusive from current services.</i></p>
<b>Next Best Option</b>	<p><b>2016:</b> Approximately 5.75mn user boarding's per annum</p> <p><b>2031:</b> Approximately 7.18mn user boarding's per annum</p> <p><b>NB:</b></p> <p><i>This incorporates High Quality improvements to vehicles, service corridor, infrastructure and priority measures with the main base utilising current service network.</i></p>
<b>Lower Cost Option</b>	<p><b>2016:</b> Approximately 0.44mn user boarding's per annum</p> <p><b>2031:</b> Approximately 0.58mn user boarding's per annum</p> <p><b>NB:</b></p> <p><i>This incorporates limited improvements to service corridor, infrastructure and priority measures with the main base utilising current service network.</i></p>
<p><b>ASSUMPTIONS</b></p> <ul style="list-style-type: none"> <li>• No data is available for Weekends and Early AM / Late PM journeys</li> <li>• Annualisation factors used and supplied by SDG: <ul style="list-style-type: none"> <li>    A AM &amp; PM Peak Time – 551</li> <li>    A IP Peak Time – 2001</li> </ul> </li> <li>• Trip Data supplied from SDG (07/10/09 – NGT Forecasting) and supplied as boarding figures which have been used in the assessment. It is assumed that users are assumed to make 2 trips (equivalent to 2 boardings) and where trips in AM Peak return in PM Peak and IP period incorporates return trips. Although this is simplified no further assessment has been possible and therefore boardings have been used instead of users. In reality; trips would not be as balanced across the time periods with some users making 1 single trip while others returning between time periods.</li> </ul>	

### 1.4 Reference Sources

- Mott MacDonald (2008), NGT Route Development: DF1 Option Review & Appraisal, 236834/RPT03 Rev. B
- Mott MacDonald (2009), NGT Project Preferred Route, Drawing nos. 236834/PRF/001 and 236834/PRF/002.
- Mott MacDonald (2009), NGT Project Next Best Alternative (NBA), Drawing nos. 236834/NB/001 and 236834/NB/002.
- Mott MacDonald (2009), NGT Project Lower Cost Alternative (LCA), Drawing nos. 236834/LC/001 and 236834/LC/002.
- Mott MacDonald (2009), NGT Technical Development Plans:
  - Drawing nos. 236834/CH/BASE/001 to 007
  - Drawing nos. 236834/N/BASE/001 to 020
  - Drawing nos. 236834/N/ BASE/P&R/001 & 002

- Drawing nos. 236834/N/BASE/022 to 030
- Drawing nos. 236834/S/BASE/001 to 011
- Drawing nos. 236834/S/BASE/P&R/001
- Drawing nos. 236834/E/BASE/001 to 05
- Google Earth.

## 1.5 Interchange Worksheet 1: Preferred Route

FACTOR	DEVELOPMENT	WITHOUT OPTION	WITH OPTION
Waiting Environment	<p>The option proposes high quality stops and shelters that offer greater comfort, improved lighting and help point facilities (NGT key proposals). It is assumed however that the waiting environment will be a significant improvement over current bus stop facilities. At key locations bespoke facilities such as large canopies and waiting areas are likely to be provided. At P&amp;R sites there is potential for a building or structure to be provided with additional facilities such as for food &amp; drink.</p> <p>The option proposes two key P&amp;R facilities at the ends of the North and South corridors. P&amp;R sites propose to offer improved and high quality waiting facilities for interchanging passengers.</p>	POOR	HIGH
Levels of Facilities	All NGT stops will provide additional facilities to the current or standard Metro bus stops. There is potential for drinks / snack machine at P&R sites and a buffet / café within the undercroft structure at the Bodington site.	POOR	MODERATE
Level of Information	<p>Improved information provision through the use of Real Time Passenger Information and printed media as identified within NGT proposals and key development plans.</p> <p>It is also envisaged that general travel information including PA announcements would be provided on-board the NGT vehicle.</p>	MODERATE	HIGH
Visible Staff Presence	All NGT stops and Park and Ride sites are deemed to be unstaffed; although there is potential at the Bodington site.	POOR	POOR
Physical linkage for next stage of journey	<p>Main interchange is deemed to be on street or at P&amp;R. However, the preferred route will include new stops adjacent to or close to the main Leeds rail and bus stations, a new link between North and East Leeds and the provision of a direct link between Leeds General Infirmary and St James Hospital thus avoiding the need for interchange. Infrastructure at NGT stops aims to be improved to current DDA standards where access between modes. P&amp;R provision aims to be developed to provide effective access to NGT system.</p> <p>It is assumed that modern user-friendly route signs and network maps would be made easily accessible pre-journey and en-route at stops and within the vehicles. This is hoped to provide greater passenger awareness for interchange</p>	POOR	MODERATE
Reliability of Connection	<p>Current comparable services have poor reliability and punctuality when compared to the proposed option. Minimising interaction with traffic is seen to improve service reliability and punctuality as identified through other similar based schemes.</p> <p>The project aims to provide measures such as bus priority and dedicated lanes which will enable improved timekeeping through unrestricted flows and provide more reliable connections at the principal city rail and bus stations. The inclusion of a direct route between North and East and between key locations i.e. hospitals, will avoid the need to interchange and increase service reliability.</p>	POOR	HIGH

## Summary Assessment Score

### LARGE POSITIVE

The development of the NGT in respect of levels of information and priority measures is deemed to provide the greatest benefit for the scheme over and above the current situation.

### Qualitative Comments

The trolleybus transit mode, designated lanes and associated infrastructure would provide a high quality aspirational system that is deemed to be perceived as providing a far superior quality of service than the current bus services on the routes. The planned route corridors run along or follow the existing bus service corridors in the majority of cases, except in respect to the Southern route which generally forms its own alignment from Stourton (P&R) into the city centre.

As such this southern route could benefit from a significantly different demand pattern from that currently being achieved by the bus services operating into the city. The North East link will avoid the need to interchange and provide an improvement in service reliability.

The perceived “permanency” of this preferred option in respect to its route and overhead line equipment would contribute to greater benefits in integration especially in respect to knowledge of routes and interchange potential, especially as a result of the P&R provision. The development of dedicated lanes and priority measures would add to the overall attraction of the mode for passengers.

## 1.6 Interchange Worksheet 2: Next Best Alternative

FACTOR	DEVELOPMENT	WITHOUT OPTION	WITH OPTION
Waiting Environment	<p>It is proposed that upgrades will be undertaken on key waiting facilities along the corridor as a pre-requisite to underpin the Quality Partnership Scheme.</p> <p>The option proposes two key P&amp;R facilities at the ends of the North and South corridors but which are 80% the size of the initial preferred option. The P&amp;R sites propose to offer improved and high quality waiting facilities for interchanging passengers.</p>	POOR	MODERATE
Levels of Facilities	<p>There is no information regarding the provision of any proposed facilities to be located at P&amp;R sites or on street NGT stops.</p> <p>There is potential for drinks / snack machine at P&amp;R sites but deemed to be limited potential for buffet / café.</p>	POOR	POOR
Level of Information	Real Time information will be made available as part of this option; improved information either electronic or in printed form will be provided.	MODERATE	MODERATE
Visible Staff Presence	All NGT stops and Park and Ride sties are deemed to be unstaffed.	POOR	POOR
Physical linkage for next stage of journey	<p>Limited restrictions to access on street. Improvements to crossings at stops is to be considered as required. There will be some integration improvements between services.</p> <p>P&amp;R sites will be developed to provide effective transfer to dedicated P&amp;R services.</p>	POOR	MODERATE
Reliability of Connection	<p>Current comparable services have poor reliability and punctuality when compared to proposed option. Minimising interaction with traffic is seen to improve service reliability and punctuality as identified through other similar based schemes.</p> <p>The project aims to provide measures such as limited bus priority and dedicated lanes which will enable improved timekeeping through unrestricted flow; but these are less than would be developed through the Preferred Option.</p>	POOR	MODERATE

## Summary Assessment Score

MODERATE POSITIVE

## Qualitative Comments

The Next Best Alternative offering single articulated hybrid buses and significant upgrades to the provision of bus lanes and limited priority on certain routes is deemed to be better than the current situation; but assessed to be less than the preferred option in respect to level of information and reliability of connection.

## 1.7 Interchange Worksheet 3: Lower Cost Alternative

FACTOR	DEVELOPMENT	WITHOUT OPTION	WITH OPTION
Waiting Environment	<p>Like the Next Best option, it is proposed that upgrades will be undertaken on key waiting facilities along the corridor as a pre-requisite to underpin the Quality Partnership Scheme.</p> <p>The option proposes two key P&amp;R facilities at the ends of the North and South corridors which are 50% the size of the initial preferred option.</p>	POOR	MODERATE
Levels of Facilities	No information relating to any proposed facilities to be located at P&R sites or on street NGT stops. Potential for drinks / snack machine at P&R sites but there is deemed to be limited potential for buffet / café.	POOR	POOR
Level of Information	As part of the proposed Quality Partnership Scheme, it is expected that on-street stops would benefit from improved information provision; however no information is currently available as to whether such information improvements will incorporate Real Time information in this option.	MODERATE	MODERATE
Visible Staff Presence	All stops and Park and Ride sites are deemed to be unstaffed.	POOR	POOR
Physical linkage for next stage of journey	Infrastructure around NGT stops aims to be improved to current DDA standards where required, and as such should assist in improved connection and especially access between modes.	POOR	MODERATE
Reliability of Connection	<p>Current comparable services have poor reliability and punctuality when compared to the proposed option. Minimising interaction with traffic is seen to improve service reliability and punctuality as identified through other similar based schemes.</p> <p>The project aims to provide measures such as very limited (existing) bus priority and existing dedicated lanes which will enable improved timekeeping through unrestricted flow; but these are deemed to be less than would be developed through the Next Best Case. However, there will be some integration improvements through a new interchange at City Square, although not via direct links.</p>	POOR	POOR

## Summary Assessment Score

MODERATE POSITIVE

## Qualitative Comments

The Lower Cost Alternative offering single articulated diesel buses with improvements to the provision of bus lanes is deemed to be better than the current situation but assessed to be less than next best option in respect to its overall effectiveness.

Reduced levels of dedicated bus lanes as per the preferred option is expected to have less benefit but generally localised improvements to existing bus lanes should provide an increase in benefits over the existing situation. There will also be some integration improvement between services travelling between North and East Leeds and a new interchange at City Square.