Measure title: **Rail station interchange**

City: **Norwich** *Project:* **SMILE** *Measure number:* **8.4**

A Introduction

Norwich railway station is located over 1 km from the commercial and retail centre of the city. The lack of easy access from the station to connecting bus services was seen as a deterrent to the use of local rail services for travel to work, shopping and leisure activities.

Public consultation carried out by Norwich City Council and Norfolk County Council on transport issues within the city centre had consistently demonstrated the public's desire for better linkage between the railway station and the city centre, and for opportunities for bus interchange to be made clearer.

The measure sought to address the current inadequacy of services, facilities and information provision for transfer passengers between rail and bus at this key interchange node in the city's public transport network. Its implementation would ensure easy access to frequent connecting bus services, thus reducing a barrier to the increased use of heavy rail for local journeys into Norwich.

A1 Objectives

The overarching objective of the measure was to enhance the integration of public transport by improving the effective frequency of bus services from the station forecourt to the city centre. It was hoped that this would enable public transport to increase its modal share, particularly through increasing the use of heavy rail for local journeys into Norwich.

The following specific individual measure objectives were set:

- **Objective 1 -** Double the effective frequency of bus services from the station forecourt to the city centre from 6 to 12 buses per hour (Monday to Saturday daytime)
- **Objective 2 -** Provide high quality waiting facilities and real-time passenger information on the station forecourt
- **Objective 3 -** Provide convenient pedestrian links between the station building, the waiting facility and the bus stops both on the forecourt and on the adjacent highway
- **Objective 4 -** Increase public transport modal share, particularly through the increased use of heavy rail for local journeys into Norwich

A2 Description

The measure has been implemented by working in partnership with railway industry stakeholders to:

- Redesign the space outside the railway station to improve the location of the bus stop on the station forecourt
- Improve the access arrangements for buses stopping on the adjacent highway so that these stops could be located closer to that within the railway station forecourt

- Provide high quality waiting facilities and real-time passenger information on the station forecourt with convenient pedestrian links between the station building, the waiting facility and the bus stops on the forecourt and the adjacent highway

The existing bus stops at the railway station have been moved together, making it easy to catch any bus to the city centre whether it runs from the station forecourt or passes the station on Thorpe Road. Prior to the measure passengers were unsure where to wait for the next bus service to the city centre and there was a possibility of them missing a bus due to waiting at the wrong stop. The alteration to the bus stops has involved the relocation of part of the existing taxi rank.

A new bus stop lay-by has been built on the south side of Thorpe Road and a large sheltered and well-lit waiting area provided between the bus stops on the station forecourt and Thorpe Road. Within the waiting area there is seating for 15 people plus a dedicated wheelchair space, a ticket vending machine for pre-purchase of bus tickets and an electronic sign displaying real-time information on bus arrival and departure times.

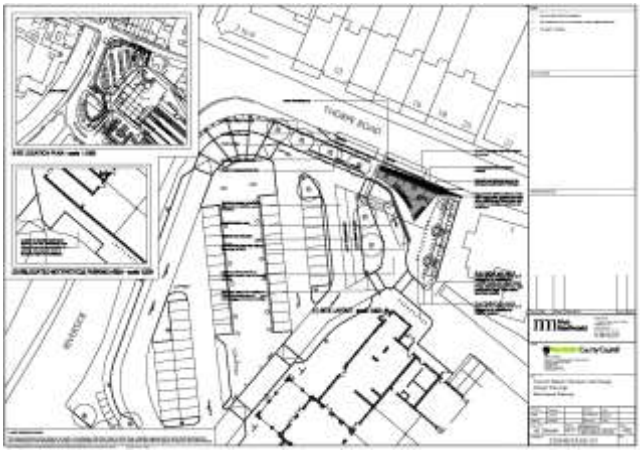
There is a raised boarding area at each bus stop allowing wheelchair users to board low-floor buses without a ramp.

A new cycle shelter with 20 covered 'Sheffield' cycle stands has been installed in the existing cycle parking area on the station forecourt.

The attached plans show the site layouts before and after implementation of the measure.

Due to the station operator's desire to maximise parking space it has not been possible to achieve the original aspiration of increasing the space allocated to buses within the station forecourt to provide future capacity for additional services. This is explained in greater detail in section B4.

Site Layout before Measure



Site Layout after Measure

Site Layout Before Measure.pdf

Site Layout After Measure.pdf

B Measure implementation

B1 Innovative aspects

The innovative aspects of the measure are:

- **New organisational arrangement, regionally** – Traditionally rail and road passenger transport in Norwich have been treated in isolation, with services operated by separate companies and the railway and bus stations situated at opposite ends of the city centre. The measure has provided a focus for partnership working with the railway industry and bus operators to improve integration between rail and bus services.
- **New physical infrastructure solution, locally -** The design of the waiting area is innovative in form and careful selection of materials has created a high quality contemporary structure successfully integrated into the setting of the listed 19th Century station building.

B2 Situation before CIVITAS

Prior to the implementation of the measure, most of the space on the station forecourt was used for long-stay car parking and a taxi rank with only a small part designated for bus use. The bus bay provided space for only one vehicle and was remote from the station entrance. Passenger facilities at the bus stop were limited to a small cantilever-type shelter with seats for three people and a basic timetable display.

Before Measure - Station Forecourt Bus Stop

Before Measure - Thorpe Road Bus Stops

Other buses providing a service between the station and the city centre passed the station on the main road approximately 100m away, stopping almost out of sight of the station entrance. This created the perception amongst those unfamiliar with the locality that very few buses served the railway station. The commercial and retail centre of the city is over 1 km uphill from the railway station and the lack of easy access to connecting bus services and comprehensive information about these services were particular deterrents to the use of rail for travel to work, shopping and leisure activities.

B3 Actual implementation of the measure

The measure was implemented in the following stages:

Stage 1: Preliminary Design *(July to September 2004) – A preliminary design was developed from the preferred option identified following consultation with key stakeholders by a feasibility study undertaken by Norfolk County Council in 2003. At this stage it was decided that the area of the station forecourt used for long-stay parking would remain unchanged, as would the main 'pedestrian boulevard' running across the centre of the station forecourt. The design work involved the use of CAD software to produce architectural drawings and 3D perspective images.*

Stage 2: Public Consultation *(October 2004 to January 2005) – The outputs from the preliminary design stage were used in a consultation leaflet and questionnaire to inform the public about the proposals and obtain views on the importance of each of the proposed features of the interchange. The consultation materials were also posted on the Norwich Area Transport website. A public exhibition of the proposals was held on the station concourse. The results of the consultation were reported to the Norwich Highways Agency Joint Committee of Norfolk County Council and Norwich City Council, with a recommendation for the adoption of a preferred design for the measure.*

Stage 3: Railway Industry Consents *(April 2005 to October 2006) – The design adopted following public consultation required formal approval by the landowner, Network Rail and the station operator, 'one' Railway. The approval process consisted of two stages:*

- *Approval in principle (Network Rail Form A)*
- *Detailed design approval (Network Rail Form B)*

At each stage the process required the initial submission of the application for approval to the station operator for review, with the station operator forwarding the application to Network Rail once satisfied with the proposals.

Stage 4: Planning Consent *(July to December 2005) – The measure is located within a designated Conservation Area and affected the setting of the Grade II Listed station building. Conservation area and listed building consents were therefore required for the measure in addition to planning consent. Obtaining these consents involved consultation with English Heritage and the Conservation Officer at Norwich City Council prior to the submission of a formal planning application to the City Council as local planning authority.*

Stage 5: Detailed Design *(January to July 2006) – The detailed design stage involved the use of CAD software to produce detailed design drawings and included the following sub-tasks:*

- *Structural design of the waiting area and retaining walls*
- *Urban design of the space affected by the measure including hard and soft landscaping*
- *Electrical design for the supply of power and lighting to the waiting area*
- *Specification of the electronic sign for display of real time passenger information*
- *Specification of materials, finishes and quantities*

Stage 6: Pricing *(October 2006 to January 2007) – A target construction price for the measure was agreed under the Early Contractor Involvement (ECI) process applied within Norfolk County Council's strategic partnership with Mott MacDonald (consultant partner) and May Gurney (contractor partner). This was an iterative process including the use of value engineering techniques to enhance the value of the project by systematically evaluating the functions of the measure and ways to achieve these at the lowest total cost.*

Stage 7: Construction *(January to April 2007) – Construction of the measure was undertaken by Norfolk County Council's contractor partner May Gurney. Accounting was on an open book basis with variations from the target price covered by the 'pain and gain' arrangements within the strategic partnership contracts. These arrangements incentivise the construction contractor to deliver the measure within the target price.*

During Construction – Thorpe Road

B4 Deviations from the original plan

The deviations from the original plan comprised:

- **Use of space within the railway station forecourt** – During the preliminary design stage it became apparent that it would not be possible to achieve the original aspiration of increasing the space allocated to buses **within** the station forecourt to provide future capacity for additional services. This was because of the adverse impact of the loss of long stay parking spaces on the station forecourt on revenue for the station operator and potentially on rental income for the landowner.
- **Cycle Facilities** – The original plan for the measure did not specifically seek to improve cycle facilities at the railway station. Covered cycle parking was included within the preferred design for the measure in response to aspirations for improved cycle facilities expressed during the public consultation stage.
- **Implementation Programme** – Other deviations from the original plan involved the timescale for implementation rather than the scope of the measure. The main factor that delayed progress of the measure relative to the original plan was the length of time required to obtain the necessary railway industry consents. This was highlighted as a significant risk in the Detailed Measure Plan. These delays arose despite the preparation of comprehensive documentation and the eventual approval of the scheme as submitted without substantive modification. The main reason for the delays was that key staff within the other organisations involved in the railway industry approval process appeared to have different priorities such that the approval of a scheme being promoted by others was treated as a low priority (see D1.1 'Barriers' for more on this). Greater engagement of stakeholders at a senior level might have mitigated this issue, and we would recommend that this approach is pursued by others in a similar situation.

B5 Inter-relationships with other measures

The measure is related to other measures as follows:

- **Measure 8.5** – On street ticket vending machines

One of the ticket vending machines installed as part of Measure 8.5 is located within the interchange waiting area. The ticket vending machines were procured prior to the detailed design of the interchange being finalised. The footprint of the machine and power and communications requirements were known and reflected in the final design. Sales data for this machine is reported in C2 'Measure Results'.

C Evaluation – methodology and results

C1 Measurement methodology

C1.1 Impacts and Indicators

The following indicators were originally proposed in the Detailed Measure Plan (DMP) and Evaluation Plan:

Table of Indicators - As Originally Proposed

No.	Indicator Name	Possible Description	Data/Units
1/2	Operating revenues	Net change in revenues per PT passenger km	%, quantitative, derived
13	Awareness level	Awareness of the implementation of measures to improve ease of interchange between modes at Norwich railway station	Index, qualitative, collected, survey
14	Acceptance level	Attitude survey of satisfaction with the measure amongst regular users of Norwich railway station	Index, qualitative, collected, survey
17	Perception of PT security	Survey of perception of security when using PT options at Norwich railway station	Index, qualitative, collected, survey
19	Quality of PT service	Perception of quality of bus services between Norwich railway station and city centre	Index, qualitative, collected, survey
26	Average modal split-PAX	Percentage of passenger km for each mode	%, quantitative, derived

The proposed methodology for **Indicator 1/2** (*Operating revenues*) was to use bus revenue data for routes serving the railway station but this could not be obtained due to the commercial sensitivity of the data. A new indicator (*Bus service patronage*) was therefore adopted in its place.

Evaluation against **Indicator 15** (*Perception of PT accessibility*) was not proposed in the DMP and Evaluation Plan, but given the availability of relevant data this has been added to the indicators used in the evaluation.

The proposed methodology for **Indicator 26** (*Average modal split-PAX*) was to make use of the annual modal share monitoring surveys used until recently by Norfolk County Council to collect data for the Local Transport Plan. However, these surveys have now been discontinued and the baseline data is unsuitable for use as the surveys only provide aggregate data for the Norwich City Council area as a whole and the impact of the measure on modal split is not expected to be identifiable at this level. The availability of modal split data from alternative sources including the station operator and Passenger Focus has been investigated, but no suitable data has been identified. It has therefore been concluded that it is not practicable to pursue evaluation of the measure against this indicator.

Table of Indicators - As Adopted

No.	Indicator Name	Possible Description	Data/Units
New	Bus service patronage	Net change in patronage levels on relevant services accessing the site	%, quantitative, derived
13	Awareness level	Awareness of the implementation of measures to improve ease of interchange between modes at Norwich railway station	Index, qualitative, collected, survey
14	Acceptance level	Attitude survey of satisfaction with the measure amongst regular users of Norwich railway station	Index, qualitative, collected, survey
15	Perception of PT accessibility	Survey of perception of physical access to bus stops	Index, qualitative, collected, survey
17	Perception of PT security	Survey of perception of security when using PT options at Norwich railway station	Index, qualitative, collected, survey

No.	Indicator Name	Possible Description	Data/Units
19	Quality of PT service	Perception of quality of bus services between Norwich railway station and city centre	Index, qualitative, collected, survey

Detailed description of the indicator methodologies:

- **New Indicator** (*Bus service patronage*) – This indicator was adopted in place of operating revenues and in order to eliminate the impact of significant changes to the level of local bus fares during the period over which the measure has been developed and implemented. Contact was made with bus operators serving the railway station to seek annual patronage data by route relative to a base year of 2006. Operators with concerns about the disclosure of absolute passenger numbers by route due to the commercial sensitivity of this data were invited to supply data on an indexed basis. Not all operators have responded, but it is felt that the figures supplied by First Eastern Counties Buses for their services are sufficiently representative to indicate the overall trend in patronage. We will continue to seek data from Anglian Bus as the other significant operator serving the railway station. Additionally, sales data from the ticket vending machine installed at the site has been included in the evaluation and compared to sales from similar machines in other parts of the city.
- **Indicator 13** (*Awareness level*) – Data on awareness of the implementation of the measure was collected through an interview survey conducted outside the railway station in October 2007 (Question 1). 400 valid interview responses were obtained, giving a sampling error of less than +/-5% for all questions.
- **Indicator 14** (*Acceptance level*) – Data on acceptance of the measure at the public consultation stage (November/December 2004) was collected through the consultation questionnaire. 161 completed questionnaires were received. Data on acceptance of the measure following its implementation was collected through an interview survey conducted outside the railway station in October 2007 (Question 11). 400 valid interview responses were obtained, giving a sampling error of less than +/-5% for all questions.
- **Indicator 15** (*Perception of PT accessibility*) – A question about physical access to bus stops was included in the interview survey conducted outside the railway station in October 2007 (Question 5). 400 valid interview responses were obtained, giving a sampling error of less than +/-5% for all questions. The survey results have provided useful feedback on perceptions of physical access to bus stops and have been included in the evaluation to demonstrate the success of the measure in improving the physical accessibility of public transport.
- **Indicator 17** (*Perception of PT security*) – Data on public perception of safety and security when using the new interchange facilities was collected through an interview survey conducted outside the railway station in October 2007 (Question 7). 400 valid interview responses were obtained, giving a sampling error of less than +/-5% for all questions.
- **Indicator 19** (*Quality of PT service*) – Data on public perception of the frequency of bus services from the railway station to the city centre following the implementation of the measure was collected through an interview survey conducted outside the railway station in October 2007 (Question 9). 400 valid interview responses were obtained, giving a sampling error of less than +/-5% for all questions. Details of actual changes in the frequency of bus services have also been collected for comparison with the perceived improvements.

C1.2 Establishing a baseline

Bus routes serving the railway station

The baseline (2006) position in terms of bus routes serving the railway station forecourt and the adjacent stops on Thorpe Road and their frequency is set out in the table below:

Operator	Service No.	Route	Daytime Frequency	Stop Served
First	14	Dussindale Park – City – Silfield	4 per hour	Thorpe Road
First	17/17A	Blofield Heath/Lingwood – City – South Tuckswood	2 per hour	Thorpe Road
First	25	Riverside – City – University	6 per hour	Station Forecourt
First	57A	Rail Station – City – Easton	1 per day	Station Forecourt
Norfolk County Services	605	Postwick Park & Ride – City	6 per hour	Thorpe Road

Bus patronage data

The base period for bus patronage data is November 2006. Major operator First Eastern Counties Buses has provided data from ticket machines specifically for passengers boarding and alighting at the new interchange and the adjacent bus stop for outbound services in Thorpe Road (see C2.1).

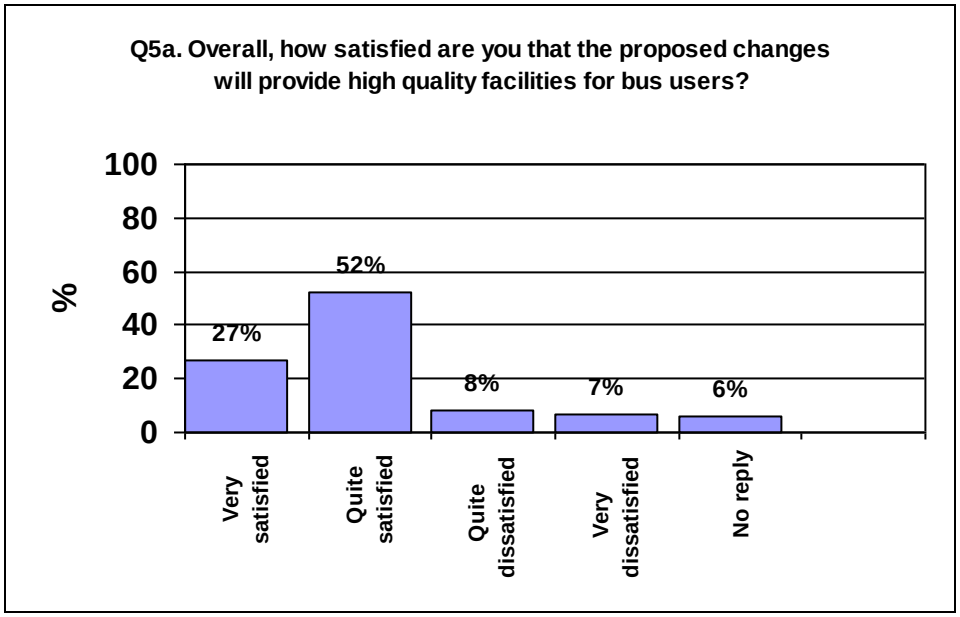
The baseline position for ticket sales from the ticket vending machine on site is nil as there was no such machine in place prior to the implementation of the measure.

Acceptance of the measure

The baseline for acceptance of the measure is the level of satisfaction with the measure in its proposed form expressed by the 161 members of the public who completed the questionnaire issued during the public consultation undertaken in late 2004. This questionnaire captured the current usage of public transport to and from the station and opinions on what would constitute useful and practical new facilities for station users. The consultation questionnaire is embedded here for reference.

Consultation Questionnaire.doc

Acceptance of the Measure - Baseline from 2004 Consultation Questionnaire



C1.3 Building the business-as-usual scenario

Bus operators have introduced new routes serving the railway station and extended existing services to the railway station following the implementation of the measure. Structured interviews have been conducted with operators on a one to one basis to determine the extent, if any, to which the measure has influenced these changes to the local bus network and what would have happened without the measure. Details of these findings are included in section C3.

The possibility of comparing indexed passenger data for bus routes serving the railway station interchange with data for control routes run by the same operator was considered, but we could not identify a route that we could use as a control with any confidence. Passenger trends on individual routes are subject to a wide range of local factors outside the direct control of operators or local authorities.

C2 Measure Results

The complete data for the qualitative survey undertaken in October 2007 is shown in the embedded file below. A total of 400 people were surveyed outside the railway station.

Survey Frequency Tables.pdf

The results are presented under sub headings corresponding to the indicators as outlined in C1.1 – economy, energy, environment, transport and society.

C2.1 Economy

Indicator – Bus Service Patronage

The measure has proven successful in increasing the number of bus passenger journeys to and from Norwich railway station.

First Eastern Counties Buses, the primary operator of bus services to and from the railway station, have provided baseline figures for the month of November 2006 and post-measure figures for the month of November 2007 for passenger movements at the station and Thorpe Road stops.

Services 17 (Blofield Heath – City – South Tuckswood), 17A (Lingwood – City – South Tuckswood) and 25 (Riverside and Rail Station – University) have operated to the same route and frequency throughout the evaluation period. Service 12 (Dussindale Park – City – Norfolk & Norwich Hospital) has replaced services 14 and 15 (Dussindale Park – City – Wymondham) in the November 2007 data.

We have included the data for service 12 in the table below but it cannot be considered comparable to services 14 and 15 due to the major change in route west of the city centre. The before and after data excluding these services shows overall growth of 9.2% in the number of boarding passengers and 20.2% in the number of alighting passengers on the directly comparable routes following the implementation of the measure.

Service No.	Data type	Before Measure November 2006	After Measure November 2007	% change
12/14/15	Boarding	2,961	2,207	-25.5%
	Alighting	3,295	2,493	-24.3%
17/17A	Boarding	1,961	2,098	+7.0%
	Alighting	1,356	1,995	+47.1%
25	Boarding	32,415	35,424	+9.3%
	Alighting	24,733	29,365	+18.7%
All	Boarding	37,337	39,729	+6.4%
	Alighting	29,384	33,853	+15.2%

17/17A and 25	Boarding	34,376	37,522	+9.2%
	Alighting	26,089	31,360	+20.2%

Data from the ticket vending machine (TVM) installed within the interchange waiting area provides a further indicator of increasing patronage. Total monthly ticket sales over a four month period are shown below. Sales from two 'control' ticket vending machines located at Norwich Bus Station are also included for comparison. The Bus Station is the main transport hub for the city and this is reflected in the greater sales observed.

TVM Location	Ticket Sales			
	August 2007	September 2007	October 2007	November 2007
Rail Station	169	199	191	257
Norwich Bus Station 1	1245	1155	1008	955
Norwich Bus Station 2	16	0	118	288

For sales in November 2007 the ticket vending machines at the bus station accounted for 35% of the total sales from machines in Norwich, and the unit at the railway station interchange 7%.

C2.2 Energy

There are no evaluation indicators for the measure in this category.

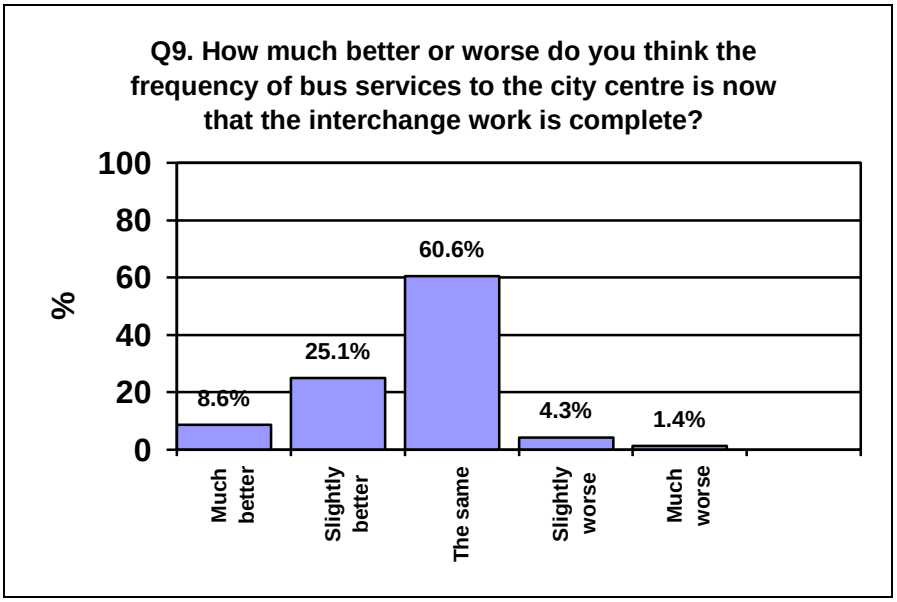
C2.3 Environment

There are no evaluation indicators for the measure in this category.

C2.4 Transport

Indicator 19 – Quality of public transport service

The results of the interview survey conducted outside the railway station in October 2007 indicate that 33.7% of all respondents thought that the frequency of bus services to the city centre had improved following the implementation of the measure, while 60.6% perceived no change in the frequency of services and 5.7% thought that service frequency had worsened.



Amongst respondents in the 60+ age group, these figures rise to 10.7% 'much better' and 69.6% 'the same' but there is a reduction in 'slightly better' to 16.1% When negative responses are considered the figure for the 60+ age group is 3.6% 'slightly' or 'much worse' compared to 6.3% for other age groups. Although the sample levels are fairly low, it could be concluded that respondents in the 60+ age group experience greater levels of satisfaction with the frequency of buses from the interchange to the city centre.

The above results can be compared with the **actual changes in the frequency of bus services** to the city centre following the implementation of the measure. Since the introduction of the

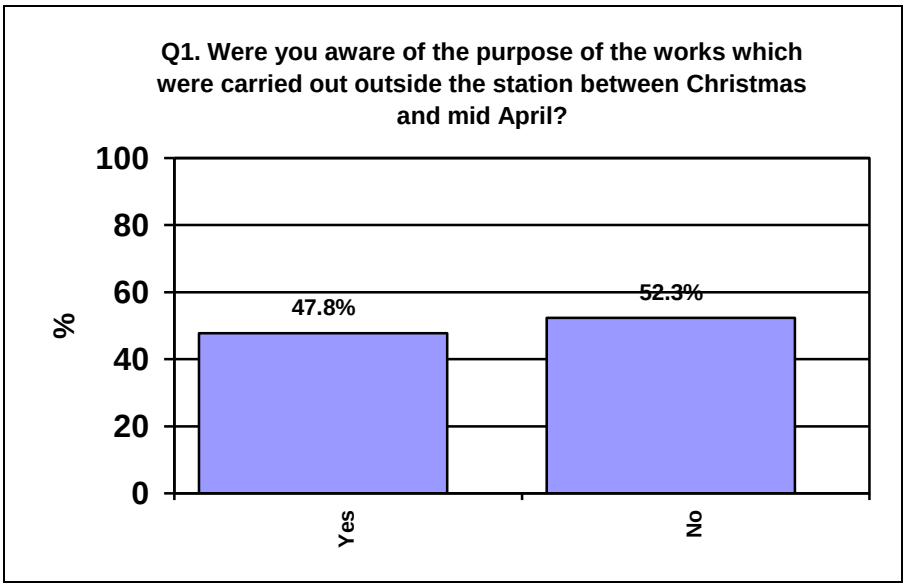
measure there has been an increase of approximately seven departures per hour; from 18 per hour pre measure to 25 per hour post measure. A summary of bus routes serving the railway station forecourt and the adjacent stops on Thorpe Road as at November 2007 and their frequency is set out in the table below. Services introduced or extended to the railway station following the implementation of the measure are shaded.

Operator	Service No.	Route	Daytime Frequency	Stop Served
Anglian	121	Rail Station – City – Eaton	1 per hour	Thorpe Road
Anglian	122	Rail Station – City – Cringleford	1 per hour	Thorpe Road
Anglian	123	Rackheath – City – Hospital	2 per hour	Thorpe Road
Anglian	124	North Thorpe – City – Hospital	2 per hour	Thorpe Road
First	12	Dussindale Park – City – Hospital	4 per hour	Thorpe Road
First	17/17A	Blofield Heath/Lingwood – City – South Tuckswood	2 per hour	Thorpe Road
First	25	Riverside – City – University	6 per hour	Station Forecourt
First	57A	Rail Station – City – Easton	1 per day	Station Forecourt
Norfolk County Services	605	Postwick Park & Ride – City	6 per hour	Thorpe Road
Simonds	1	Diss – Long Stratton – Norwich	6 per day	Thorpe Road
Simonds	2	Diss – Long Stratton – Norwich	8 per day	Thorpe Road
Swift Taxis	900	Gorleston – Norwich	2 per day	Thorpe Road

C2.5 Society

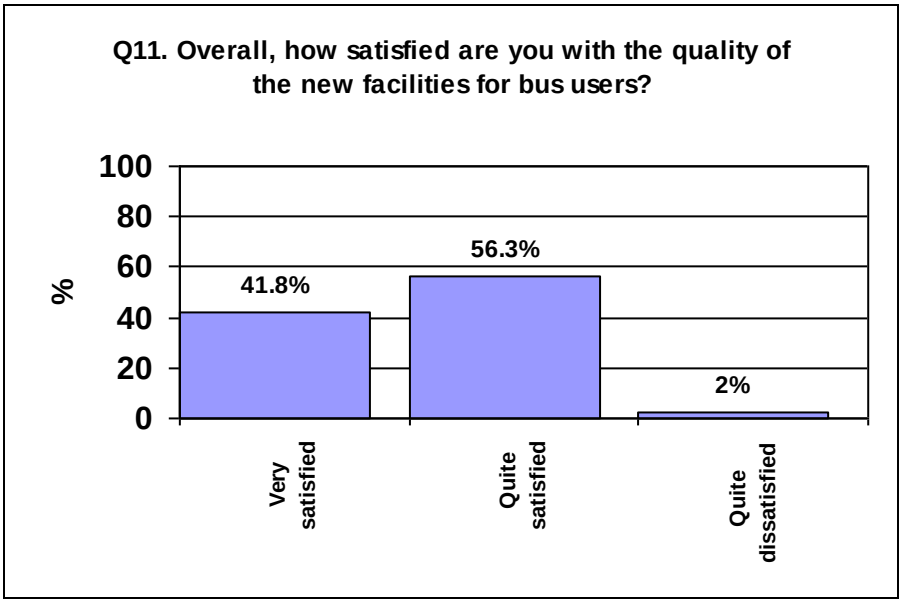
Indicator 13 – Awareness Level

The results of the interview survey conducted outside the railway station in October 2007 indicate that
47.8% of all respondents were aware of the works carried out outside the station between January and April 2007 and their purpose. In the 60+ age group this awareness rose to 61.3% which indicates that communications to this group were executed extremely effectively. This is particularly important within Norfolk where an ageing population is a key issue.



Indicator 14 – Acceptance Level

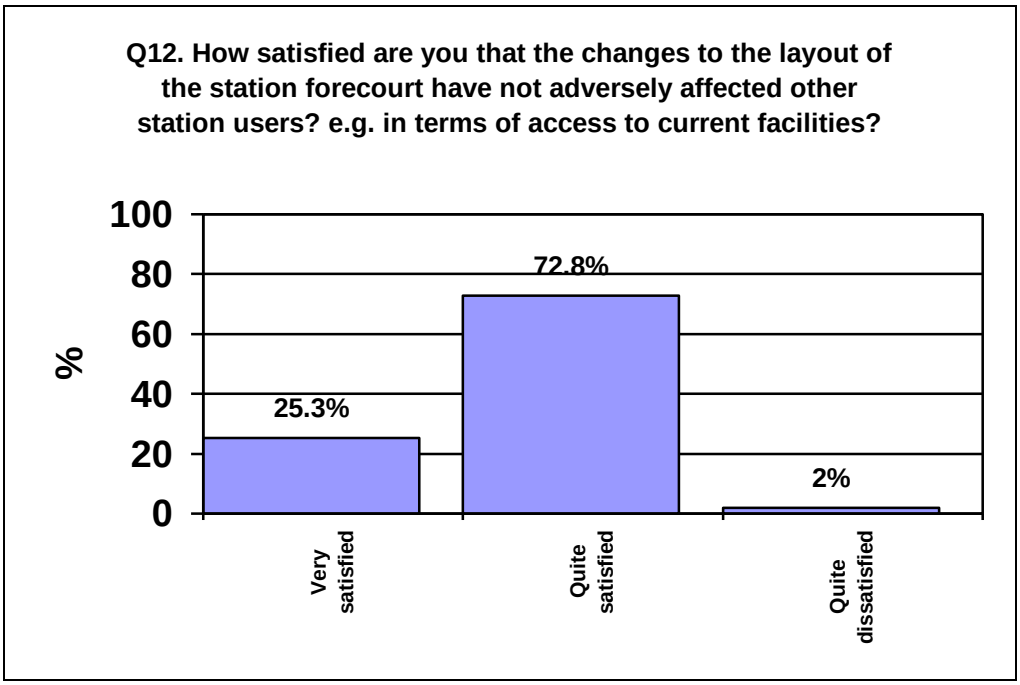
The results of the interview survey conducted outside the railway station in October 2007 indicate high levels of public satisfaction with the measure itself and the fact that its implementation has not adversely affected other users of the railway station.



41.8% of all respondents were very satisfied with the quality of the new facilities for bus users, and a further 56.3% were quite satisfied, giving a total satisfaction rating of 98%. 2% were quite dissatisfied with the measure. There were no respondents very dissatisfied with the measure.

Amongst the 60+ age group, the number of 'very satisfied' respondents rose to 51.6%, 11.7% higher than other age groups.

25.3% of all respondents were very satisfied that the measure had not adversely affected other users of the railway station, and a further 72.8% were quite satisfied, giving a total satisfaction rating of 98% on this criterion. 2% were quite dissatisfied with the impact of the measure on other station users. There were no respondents very dissatisfied with this aspect of the measure.



The 60+ age group again responded positively to this question with a total of 32.3% 'very satisfied' versus 24% in other age groups.

A further indicator of public satisfaction with the measure is that the October 2007 survey recorded a substantial increase in the frequency of usage of buses from the railway station to the city centre compared with the data from the 2004 consultation questionnaire, although this result must be treated with caution due to differences between the two samples. There was an increase of 12.3% in those using services 5+ days per week following implementation of the measure. There was an overall increase of 24.3% in those using the bus at least once a week and a decrease of 24.2% in those using the bus less than once a week, suggesting a shift to more frequent use amongst those questioned.

Frequency of use	% pre measure	% post measure	% change
5+ days/week	24.5	36.8	12.3
3-4 days/week	15.8	26.3	10.5
1-2 days/week	15.3	16.8	1.5
1-3 days/month	7.5	8.0	0.5
<1/month	8.0	7.3	-0.7
Never	29.0	5.0	-24.0

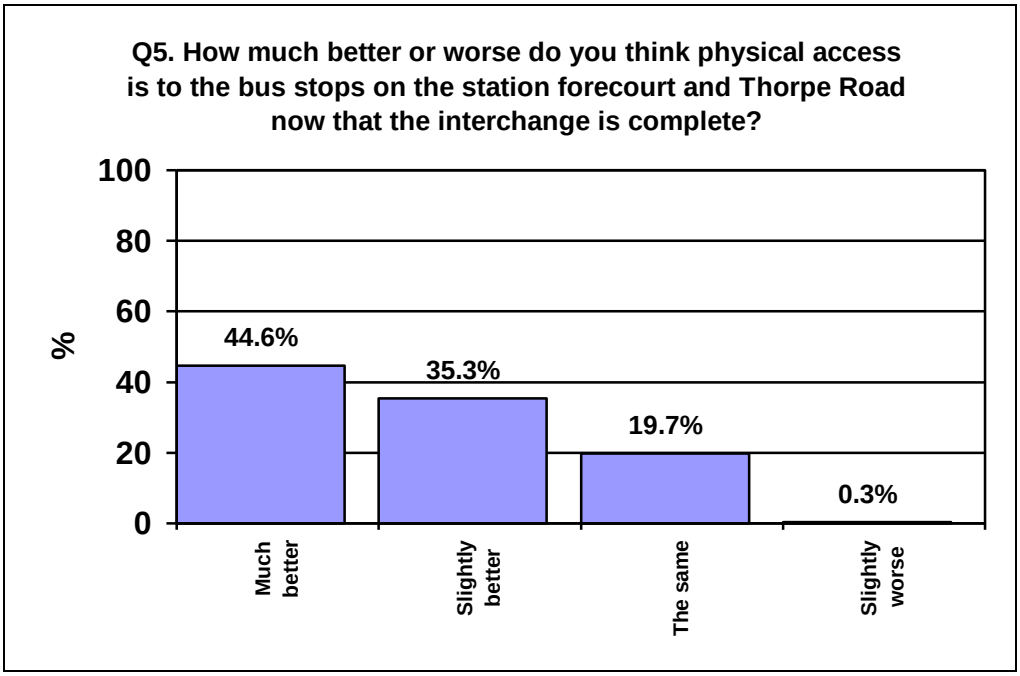
Free responses were accepted for most questions in the survey. Some of the most frequently mentioned comments are listed below:

Good seating
More comfortable and more shelter
Good shelter and view from shelter
Good facilities
Good service
Very pleased/satisfied

Indicator 15 – Perception of PT accessibility

Whilst it was not initially planned to include an indicator of accessibility to public transport for this measure, the survey undertaken in October 2007 offered an opportunity to test public perceptions. The results have been included in the evaluation to demonstrate the impact of the measure on the physical accessibility of public transport.

A total of 57.8% of all respondents felt that access was 'much' or 'slightly better'. This rises to 79.9% for those who gave a definite response and to 85.7% amongst the 60+ age group.



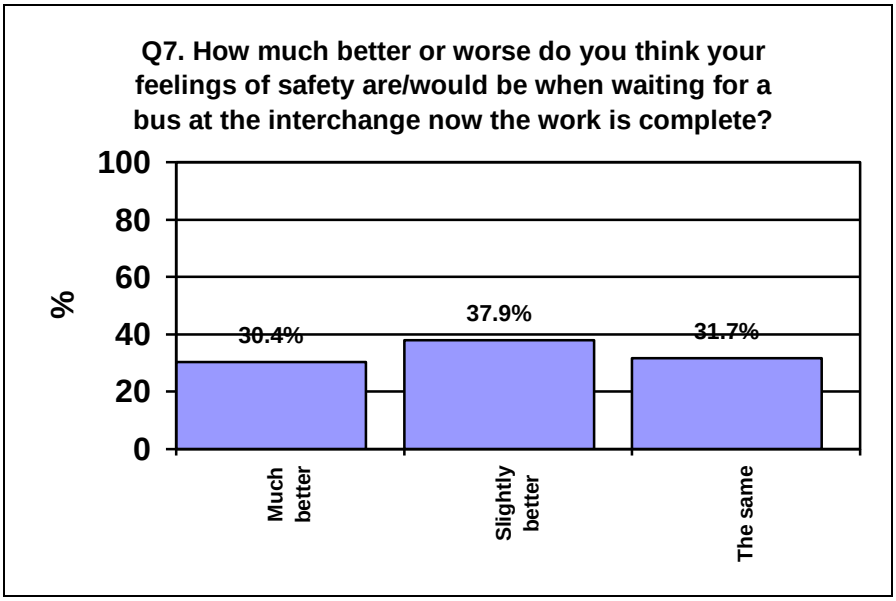
A number of free responses also express perceptions of improved accessibility as a result of the measure. Some examples of these comments are shown below:

As a blind person – find it very easy
Bus stop is much easier to find
Easier access
Easier access disabled
Easier access with pushchair

Indicator 17 – Perception of PT security

The results of the interview survey conducted outside the railway station in October 2007 indicate that public perception of safety and security when waiting for a bus at the railway station has improved following the implementation of the measure

30.4% of respondents said that they felt much safer when using the new interchange facilities than they did prior to the implementation of the measure. A further 37.9% felt slightly safer. The remaining 31.7% of respondents perceived no change in their safety as a result of the measure. No respondents felt less safe as a result of the measure.



The level of lighting in the interchange waiting area, the segregation of the waiting area from traffic and the open design of the waiting area with multiple access points all featured in the reasons given by respondents for their answer to this question. This pattern was reflected amongst older respondents.

After Measure – Views of Interchange Waiting Area

A number of free responses also express a feeling of greater security since the introduction of the new measure. Some examples of these comments are shown below:

Away from traffic
Better lighting
Better vision – able to see
Feels much safer at night with lighting

C3 Achievement of targets and objectives

No.	Target	Rating
1	Double the effective frequency of bus services from the station forecourt to the city centre from 6 to 12 buses per hour (Monday to Saturday daytime)	★★★
2	Provide high quality waiting facilities and real-time passenger information on the station forecourt	★★
3	Provide convenient pedestrian links between the station building, the waiting facility and the bus stops both on the forecourt and the adjacent highway	★★
4	Increase public transport modal share, particularly through the increased use of heavy rail for local journeys into Norwich	NA
NA = Not Assessed 0 = Not achieved ★ = Substantially achieved (at least 50%) ★★= Achieved in full ★★★= Exceeded		

Evidence to support the achievement ratings given is provided below, together with further detail on how targets and objectives have been achieved and where outcomes have differed from the original stated objective.

Objective 1

The increased visibility offered by the facility means that passengers can wait in the shelter whilst having the ability to access bus services to the city centre departing both from the station forecourt and Thorpe Road. This has delivered a doubling in the effective frequency of services operated by First Eastern Counties Buses from 6 to 12 daytime buses per hour.

Park & Ride services operating from the Thorpe Road stop continue to provide 6 daytime departures per hour, with additional services at peak periods.

Following the implementation of the measure, independent operator Simonds extended their Services 1 and 2, operating between Diss, Long Stratton and Norwich, to the railway station forecourt from April 2007. The combined frequency of these services is approximately hourly, with a total of 14 departures per day. They wished to serve more of the city centre and felt that the facilities at the station provided a suitable terminus and layover point.

However, after approximately two months the services were moved away from the station forecourt to drop off passengers at the bus lay-by outside the station on Riverside Road and pick up at the Thorpe Road stop adjacent to the new interchange. The reasons for this move were that problems had been encountered meeting timetabled departures. These were exacerbated by extended layover of First vehicles at the station forecourt stop blocking access for other vehicles and delays at the traffic signals encountered on access to and egress from the station forecourt.

Anglian Bus has also introduced additional bus routes serving the railway station following the implementation of the measure (October 2007). Two of these services terminate at the station. It is conceivable that the measure has influenced the decision to terminate these services at the station rather than in the city centre, but Anglian Bus have not responded to our approach to confirm this.

When the additional services from the railway station to the city centre introduced by Simonds and Anglian Bus following the implementation of the measure are taken into account, the target for increasing the frequency of services has been exceeded.

Objective 2

Real-time passenger information has been provided with the interchange waiting area. The quality of the new facility was measured by a passenger survey undertaken in October 2007. This target has been achieved in full and further details can be found in section C3.

Objective 3

The measure has provided convenient pedestrian links between the station building, the waiting facility and the bus stops at the site. The only aspiration that could not be achieved was the provision of a covered way between the station building and the waiting facility as suggested by one interest group. This target has been achieved in full and further details can be found in section C3.

Objective 4

Assessment of the impact of the measure on modal share for public transport, particularly for local heavy rail services, has proved difficult. The data gathering process that would have assisted this has been discontinued. However statistics are available for patronage on the 'Bittern Line' local rail service between Norwich and Sheringham. Comparing the period April 2006 –February 2007 and April 2007 to February 2008 there has been an increase in patronage of 3.15%. Whilst the data is reliable, it should be noted that this line operates to tourist destinations on the North Norfolk Coast and the weather during the summer of 2007 was particularly poor, resulting in lower than expected patronage. It is not possible to attribute the increase in rail patronage on the Bittern Line to the implementation of the measure, but we can assume that it will have increased the overall satisfaction levels of rail users making onward bus journeys in Norwich.

C4 Up-scaling of results

The results of this measure in part reflect the specific characteristics of the site. The separation of bus stops for services originating at and passing the railway station prior to the implementation of the measure was an issue unique to the site, but the lack of a focal point for interchange is an issue at a number of other sites in Norwich where there are significant levels of interchange activity.

We have identified three specific sites within Norwich where there is potential for the provision of improved interchange facilities similar to those at the railway station. These sites do not suffer from the confusion generated by multiple stops in disparate locations, but would benefit from improvements in information provision and an improved waiting environment for passengers.

- **Anglia Square** – Many bus services from the north of the city converge at this location and there is a significant level of interchange activity. The existing facilities at bus stops on Magdalen Street are poor. Major redevelopment proposals for this area of the city centre include a new bus interchange facility on Edward Street. This is expected to be funded by the developer and thus represents a real opportunity for up-scaling of the measure.
- **Tombland** – A large number of bus services operate from stops on both sides of the road. Each stop has a small cantilever bus shelter, but the spacing between the stops is sub-standard. Information provision is poor. The bus stops become taxi ranks after bus services finish at night. There is scope to create a high quality waiting environment for both bus and taxi users in this location. Replacing the existing multitude of bus shelters with a single waiting area on each side of the road could enhance the streetscape in this historic area of the city.

- **University of East Anglia** – The University is one of the key trip attractors outside the city centre and travel planning initiatives (including the CIVITAS measure to provide individual travel advice) have been successful in increasing public transport patronage. Three bus services currently terminate at the University, providing interchange opportunities for journeys to and from the Norfolk and Norwich University Hospital and Norwich Research Park. There is potential to work with the University authorities to develop high quality interchange facilities at the Waveney Terrace bus stops.

In addition to the specific sites identified above there is potential for up-scaling by applying some of the principles of the measure to other bus stops within Norwich that link public transport to key trip attractors such as strategic employment areas, supermarkets and shopping centres. When new developments of this nature are proposed there will be opportunities to secure developer funding for public transport facilities. As a minimum, stops should be upgraded to provide a more comfortable waiting environment and improved information. New bus stop sites in major developments should be prominent in order to capitalise on the improved image and create greater interest in public transport amongst car users.

Based on the evaluation results of this measure, it can be assumed that each new interchange created would significantly improve the passenger experience in terms of waiting environment and perceptions of safety, accessibility and service quality. There is also some evidence to suggest that the demand stimulated by improved interchange facilities may encourage operators to increase service frequencies, in turn contributing to an increase in public transport patronage over a wider area.

C5 Appraisal of evaluation approach

The evaluation of this measure has yielded some very interesting and encouraging results. In particular, the on-street interview survey has been valuable in speaking to users and generating an understanding of how the measure has directly impacted upon them. Whilst relatively expensive and labour intensive, face to face interview surveys undoubtedly provide a level of detail and consistency that could not be attained through any other channels.

In general, the questions included in the survey were appropriate and well received. However, the addition of a question at the start of the questionnaire to distinguish between bus users and other users of the facilities on the railway station forecourt would have been useful to enable further cross-tabulation of results at the evaluation stage and should be included in any future surveys.

The decision to adopt bus service patronage as an indicator in place of operating revenues has paid dividends by providing very useful hard data from bus ticket machines, which is considered to be representative of the overall change in patronage on routes serving the railway station. In retrospect, the indicator would have been better set as patronage from the outset. This increases the validity of the data by eliminating the impact of fares changes on revenue and we have found that operators are more likely to release patronage data for their commercial operations than revenue data.

The major changes to some bus routes serving the railway station in the period immediately following the implementation of the measure, notably the replacement of First services 14 and 15 by service 12, operating at the same frequency but to a different destination west of the city has meant the pre and post implementation data for these routes are not directly comparable.

The evaluation of bus service levels before and after implementation of the measure was a relatively straightforward undertaking as records of local bus registrations are maintained by Norfolk County Council and the Traffic Commissioner. The service timetable forms part of

the registered particulars of a service, is distributed to the public and is the basis against which operational performance is monitored by the appropriate bodies.

The process evaluation has demonstrated the importance of those involved in delivering public transport infrastructure projects building relationships with the major transport operators and infrastructure owners (in this case Network Rail) as key stakeholders. Trust, respect and confidence can be gained through early consultation and transparency at all stages of the development of the measure.

C6 Summary of evaluation results

The key results are as follows:

- **There is good awareness of the measure** – 48% of people surveyed were aware of the works carried out outside the station and their purpose
- **There is a very high level of satisfaction with the measure –** 98% of people surveyed were satisfied with the quality of the interchange facilities
- **The measure has improved perceptions of public transport accessibility and security** – 80% of people surveyed thought that physical access to the bus stops had been improved – 68% of people surveyed felt safer when using the new interchange
- **The perceived frequency of the bus service to the city centre has increased –** 34% of people surveyed thought that the frequency of bus services from the railway station to the city centre had improved following the implementation of the measure
- **The actual frequency of the bus service to the city centre has increased –** 7 additional services now operating from the interchange have added approximately 80 extra departures per day
- **The frequency of usage of the bus service to the city centre has increased –** the proportion of those travelling at least once a week has increased by 24%, and the proportion travelling at least five days a week by 12%, demonstrating a shift towards more frequent travel.
- **Passenger journeys to and from the station have increased –** passenger boardings at the railway station on service 25 - the most frequent service between the station and the city centre - have increased by 9%. The number of passengers alighting from service 25 at the station has increased by 19%.

D Lessons learned

D1 Barriers and drivers

D1.1 Barriers

- **Commercial interests** – The key barrier to a more radical scheme that would have achieved the original aspiration of increasing the space allocated to buses **within** the station forecourt to provide future capacity for additional services was the adverse commercial impacts of the loss of long stay parking spaces on the station forecourt on revenue for the station operator and potentially on rental income for the landowner. This barrier could not be overcome and was accepted as a constraint on the design of the measure.
- **Public opposition** to some detail of the measure was a potential acceptance barrier. The risk of the measure failing due to public opposition was assessed as low, but this barrier

was overcome by confirming public support for the measure through consultation and seeking to address any concerns raised on matters of detail during the design process.

- The need to secure **political support** for the measure was a potential barrier to its implementation. This was overcome by demonstrating public support for the measure through consultation and a proactive approach to seeking political approval for a preferred scheme from the Norwich Highways Agency Joint Committee of Norfolk County Council and Norwich City Council prior to the commencement of the planning process and detailed design.
- The need to secure **planning, listed building and conservation area consents** for the measure was a legal barrier to its implementation. Delay in obtaining these consents was assessed as a significant risk to delivery of the measure within the planned timescale. This barrier was overcome by early consultation with English Heritage and the Conservation Officer and Development Control officers of Norwich City Council. Early consultation enabled many of the concerns raised to be addressed in the design of the measure and the selection of materials and finishes.
- **Network Rail approval** – The need to secure approval for the measure from Network Rail, the station landlord, at both the approval in principle and detailed design stages was assessed as a high risk to delivery of the measure within the planned timescale. The strategy adopted to overcome this barrier was the involvement of Network Rail and the station operator as key stakeholders from the outset of the project; to ensure the correct procedures were followed and details submitted for approval were correct and comprehensive; and finally to ensure that any issues raised by Network Rail were addressed without delay. This risk was realised, but eventually overcome through regular communication with Network Rail and the station operator to request that approval was expedited. The problem was not opposition to the measure, but the staff involved - especially one person working for the station operator - prioritising other tasks and treating review and approval of the Form A submission for a scheme being promoted by a third party as a low priority.
- **Cost of design changes** – A potential financial barrier to implementation of the measure was the possibility that design changes required to secure approval for the measure would result in cost of the measure exceeding the available funding. This risk was mitigated through regular review of cost estimates against the measure budget and the inclusion of a contingency sum within cost estimates. No material design changes were required by Network Rail, but changes to the design of the cycle shelter and layout of cycle parking were required to satisfy planning conditions and secure support from Norwich Cycling Campaign. These additional costs were covered from the contingency within the measure budget.
- The imposition of **planning conditions** regarding the retention and protection of trees was a legal barrier to the commencement of construction work on site. This was overcome by a site meeting with Norwich City Council's Tree Protection Officer leading to agreement of arrangements for protection of trees to be retained and acceptance of a proposal to remove and replace three existing trees in preference to attempting to relocate these trees.
- The **availability of labour resources for construction** emerged as a barrier to delivery of the measure within the planned timescale due to uncertainty regarding the length of time required to obtain the necessary railway industry consents. The construction contractor was unwilling to commit labour resources to construction without a firm programmed start date, but the construction programme could not be firmed up until Network Rail approval had been received. This problem was never entirely overcome, but mitigated through regular contact with the construction contractor to keep them informed of progress towards gaining the necessary approvals.

D1.2 Drivers

- **Project Board** – The measure was taken forward as a final element of a wider scheme to improve public transport interchange facilities in Norwich city centre. As such it was overseen by the Project Board for the wider scheme which acted as a driving force to make the necessary resources available and expedite delivery of the measure.
- **Measure Leader** – Constant pressure on the railway stakeholders by the Measure Leader, supported by Norfolk County Council officers, was required to move the measure forward through the Network Rail approval process.
- **Contractor's Site Agent** – During the construction stage the contractor's site agent played a key role in ensuring construction was completed with minimal delay following late delivery of steelwork by a sub-contractor. This involved reprogramming of work to bring forward tasks not dependent on the steelwork being in place.

D2 Participation of stakeholders

- **First Eastern Counties Buses (bus operator) –** Strong support for measure.
- **Norwich Cycling Campaign (cycling group)** – Opposition to relocation of cycle parking facilities to accommodate the bus interchange waiting area. Objected to planning application. Concerns resolved by changes made to measure to provide additional cycle stands and retain a greater number of existing cycle stands in present position on the station forecourt. Outcome was withdrawal of objection when scheme considered by Norwich City Council Planning Applications Committee.
- **Rail Passengers Committee for Eastern England - now Passenger Focus (passenger association)** – Expressed strong support for measure at consultation stage. They considered the new waiting area to be a great improvement and welcomed the proposal to move the waiting area and bus stop close to the Thorpe Road bus stops. Their main concern was over information provision and signage. They felt there should be real time information displays on the station concourse as well as in the bus waiting area.
- **Norwich Hackney Trade Association (business association)** – Association representing taxi operators using the railway station forecourt. Generally neutral to measure as this did not alter the position of the head of the existing taxi rank and the changes to the layout of the station forecourt maintained capacity to accommodate waiting taxis.
- **Living Streets (walking group)** – Expressed strong support for measure at consultation stage. Indicated that they were very satisfied with the scheme and expressed no concerns. They felt that the scheme would increase availability of services to and from the station, speed up boarding times and enable easier disabled access.
- **Norwich and Norfolk Transport Action Group (local interest group)** – Expressed moderate support for measure at consultation stage. Comments similar to those made by Living Streets.
- **Norwich Green Party (local interest group)** – Mixed response at consultation stage. They suggested that the bus shelter should be fully enclosed to provide greater protection from the elements. They felt that cyclists should have a greater priority in the plans, with secure covered parking facilities provided as part of the scheme. They were also concerned about loss of trees and suggested more trees on the station forecourt would be desirable.
- **X-Leisure (local/regional business)** – Expressed moderate support for measure at consultation stage. As the operator of leisure facilities adjacent to the railway station at Riverside they saw the proposed interchange facilities as useful in improving the quality of bus services to and from Riverside, and better lighting and seating as conducive to an improvement in late night behaviour and better security.

- **Sustainable Travel for the East of England Region (local interest group)** – Expressed moderate support for measure at consultation stage. STEER considered the lack of a covered way between the station building and the bus waiting area to be a serious omission from the scheme. They suggested that this could be achieved without visual obstruction of the frontage of the station building by creating a new access on the north side of the station through an unoccupied (at that time) retail unit. They also highlighted the importance of signage to guide passengers between the station platforms and bus stops. The suggestion of a covered way between the station building and the bus waiting area was considered at the outset of the design stage, but was dismissed on the grounds of affordability, the visual impact on the frontage of the station building and commercial barriers to the creation of a new access through the unoccupied retail unit which has since been let.

D3 Recommendations

With a high level of positive passenger feedback, increased frequency of journeys and passenger growth, this measure has proved extremely successful and is **highly recommended for replication** in other cities in locations with a **significant level of interchange activity**, but **lacking a focal point for interchange** and/or with **poor physical connectivity between individual stops** in an interchange cluster.

Whilst some of the challenges faced by this measure and solutions adopted reflect the specific characteristics of the site and local circumstances within Norwich, there is considerable scope to apply the wider principles of the measure to other cities. Specific recommendations that may be transferable to other cities are listed below:

- **Making use of local knowledge of the public transport network** will help to identify bus stops, or clusters of stops, that have potential to cause confusion to passengers. Multiple stops with no clearly defined waiting area and waiting facilities with only partial vision of bus stops, particularly those used by visitors who may be unfamiliar with the local public transport network, should be the focus of an initial search for suitable sites.
- **Early discussions with transport operators and infrastructure owners** will be extremely useful in identifying suitable sites and collating baseline data. Their involvement from the outset will also help to develop an open and positive exchange about the delivery of the measure and is likely to lead to greater support throughout the process. Regular briefings for senior stakeholder representatives may assist in expediting formal approval of the measure from key stakeholders by ensuring that delivery of the measure becomes a shared priority.
- The development of proposals for public transport interchange facilities in a historic city will benefit from **early consultation with heritage bodies and local planning and conservation officers**, particularly where historic buildings and landmarks are affected.
- **Public engagement and consultation** should play a key role in developing the design of a public transport interchange scheme and can yield valuable information to inform the design process. Appropriate methods may include public exhibitions and the use of face to face interviews or self-completion questionnaires.

Several aspects of the measure have generated a significant number of favourable comments from users and should be recognised as **good practice** for adoption in the future planning and development of small to medium sized public transport interchange schemes. These include:

- The level of lighting in and around the interchange waiting area and cycle parking facilities and the contribution this makes to user perceptions of safety and security

  "Good lighting makes it much safer at night"

"Lighting at night better especially for young girls"

- The provision of a sheltered waiting area of sufficient size to accommodate all waiting passengers with a design providing segregation of the waiting area from traffic

  "Passengers were spilling on walkway before"

  "Much better as more room to get away from traffic"

- A shelter that is sufficiently enclosed to provide protection from the elements, but sufficiently open to contribute to positive perceptions of security and clear lines of sight to both stops

  "More open and more cover"

  "It feels quite safe"

  "Much better shelter, good environment to wait in"

D4 Future activities relating to the measure

The interchange facilities were handed over to the station operator following completion. Under an agreement reached between Norfolk County Council and the station operator a commuted sum has been provided to the station operator to cover cleaning and maintenance costs for the remaining duration of the current Greater Anglia rail franchise. The interchange will become an asset of the franchise with responsibility for cleaning and maintenance passing to future franchisees.

Any future development of public transport ticketing and information technology for Norwich, such as smartcards and real time information to mobile phones will include the interchange and its related services. The feasibility of implementing facilities for credit and debit card payment for tickets purchased from ticket vending machines is to be reviewed during 2008 and any solution will be applied to the unit within the interchange.

The knowledge gained from the development and implementation of the measure will be utilised in future public transport infrastructure projects undertaken by the Norfolk Planning and Transportation Partnership.

After Measure – Thorpe Road