

A596 Northside: Post Opening Project Evaluation

Post Opening Evaluation Report

November 2005

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1. Introduction

BACKGROUND

- 1.1 The A596 Northside Junction improvements opened during September 2002, closely followed by the detrunking of the A596 in April 2003.
- 1.2 The junction improvements formed part of a package of proposals of traffic management and local improvements to the A596/A66. The location of the junction improvement scheme is illustrated in Figure 1.1 below.

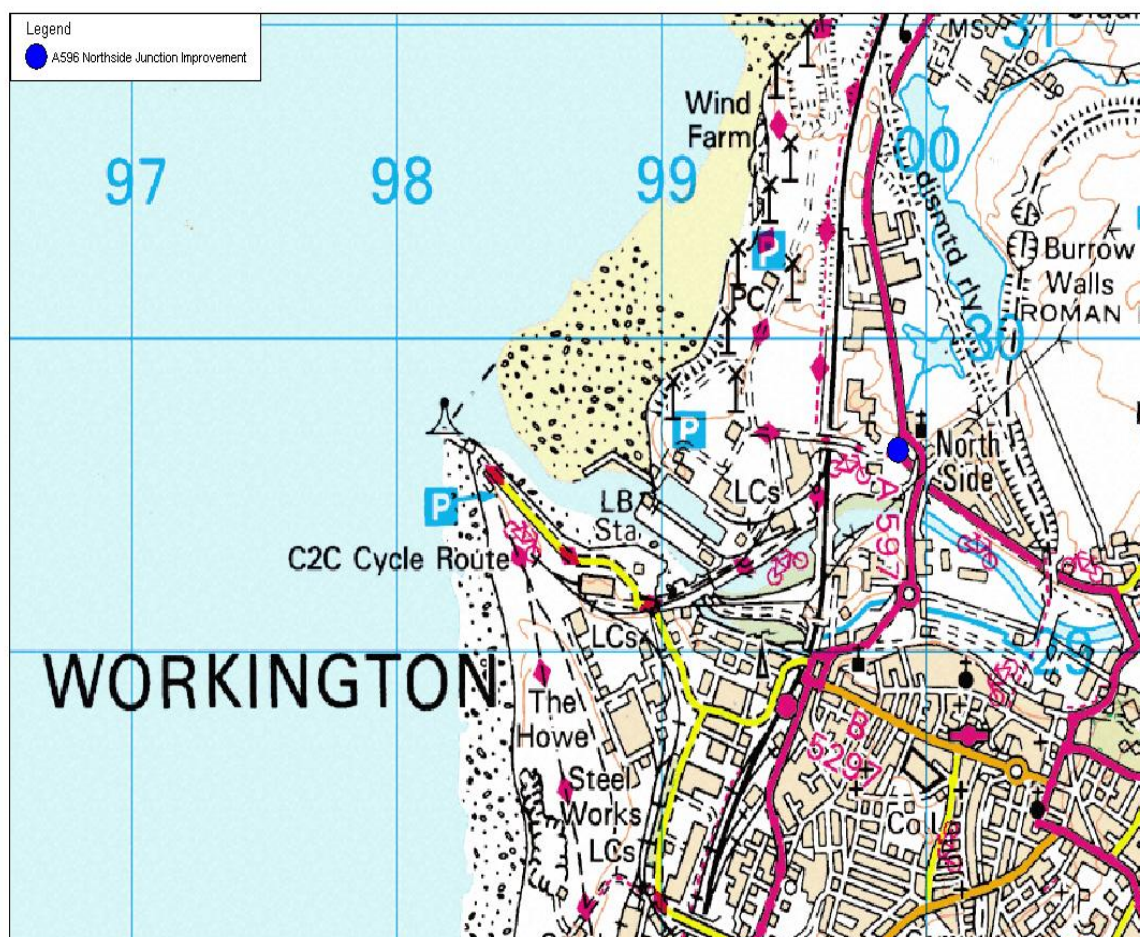


Figure 1.1 – Location of the Northside Junction Improvements

- 1.3 The scheme consisted of the replacement of a priority junction with a roundabout, coupled with the realignment of the east leg of the A596 Northside Road and the improvement of access to the Port of Workington. Figure 1.2 illustrates the scheme.

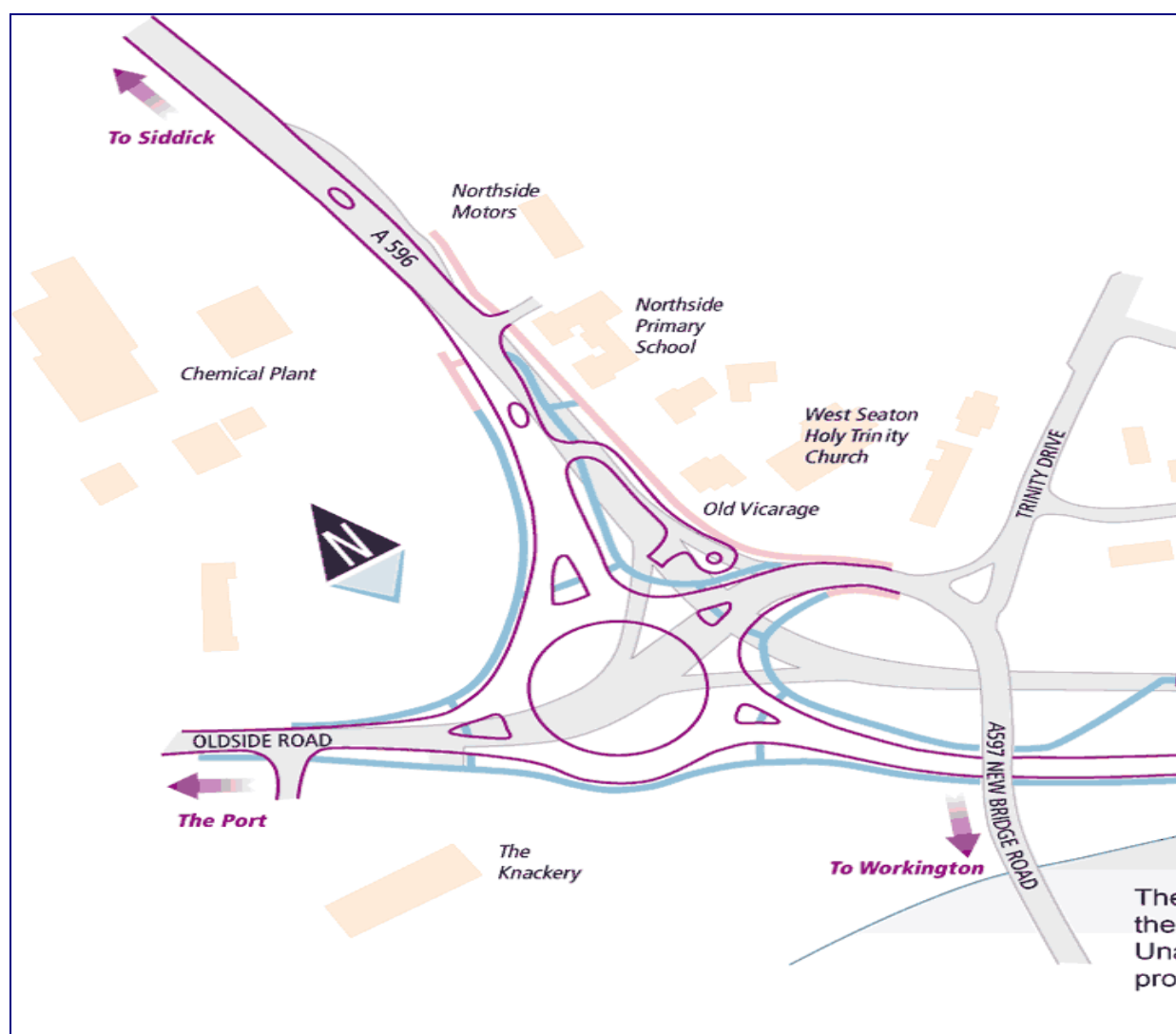


Figure 1.2 – Northside Junction Improvements

SCHEME OBJECTIVES

- 1.4 Local Network Management Schemes are classified into the main scheme types of Safety, Economy, or Integration depending on the type of scheme being undertaken. In this case the Northside Junction Improvement Scheme was defined as an Integration scheme, but it was acknowledged the scheme would deliver also economic and safety benefits.
- 1.5 The traffic using the priority junction at Northside experienced delay during peak times and had an accident problem. The scheme was therefore designed to primarily reduce the delays occurring during peak times for the greater A597 traffic flows and reduce the number of accidents experienced at the location by the provision of a roundabout. The substandard bridge on the A597/A596 was to be abandoned by realigning the eastern leg of the A596 through a redundant railway bridge.

PURPOSE OF THE REPORT

- 1.6 This report represents the LNMS Post Opening Evaluation Report for the A596 Calva Brow junction improvements. This report has been prepared as part of the Post Opening Project Evaluation (POPE) commission for the Highways Agency.
- 1.7 This report will initially undertake an assessment of the measurable impact of the scheme, namely:
- ◆ A comparison of the 'Before' and 'After' traffic volumes on the A596/A597 to illustrate how traffic volumes have changed since the opening of the junction improvements;
 - ◆ A comparison of 'Before' and 'After' journey times to illustrate how journey times have changed since the opening of the junction improvements;
 - ◆ It will also present an evaluation of predicted and outturn economic forecasts based on changes in journey times as well as other outturn effects in the form of an Evaluation Summary Table (EST); and,
 - ◆ The report will also outline the changes in numbers of accidents at the site and whether the nature of the accidents has changed since the opening of the junction improvements.
- 1.8 This report specifically considers the re-evaluation of the predicted benefits for the A596 Northside junction improvements. The three main elements involved are:
- ◆ To identify the costs and benefits originally forecast for the scheme at Order Publication Report (OPR) stage;
 - ◆ To quantify the outturn (actual) costs and the outturn level of benefits actually accruing, based on outturn traffic volume and journey time data for the scheme; and,
 - ◆ To compare the results and quantify the difference in the Present Value of Benefits (PVB).
- 1.9 Following this introduction the report has been divided into five further sections as follows:
- ◆ Section 2 outlines existing data collation and new data collection.
 - ◆ Section 3 presents the measurable outturn effects of the scheme (traffic flows, journey times and accident numbers);
 - ◆ Section 4 presents the original economic results, calculated by the Department for Transport's program COBA for this scheme and the level of benefits that would have been forecast if outturn traffic volumes and journey times were known at the time. The section also compares the COBA and POPE methodologies;
 - ◆ Section 5 presents the original Appraisal Summary Table (AST) for the Northside junction improvements, and then re-evaluates these predictions with an Evaluation Summary Table (EST). The section also gives an early indication of changes in the number of accidents at the site; and finally
 - ◆ Section 6 summarises the main conclusions.

2. Data Collection

'BEFORE' SURVEYS

- 2.1 The original PAR document submitted in support of the scheme was based upon the following data:
- ◆ Economic Evaluation using COBA.
 - ◆ Traffic flow data from the Highways Agency monitoring.
 - ◆ Accident data from Cumbria County Council.

'AFTER' SURVEYS

- 2.2 In the course of undertaking the LMN evaluation of the scheme, the following recent data was utilised:
- ◆ Traffic flow data from the Highways Agency Monitoring North;
 - ◆ Accident data from Managing Agent;
 - ◆ COBA data from Amey Mouchel; and,
 - ◆ Journey time surveys undertaken end of June 2004.

Automatic Traffic Counts

- 2.3 Prior to the 'de-trunking' on 1st April 2003 the Highways Agency had a permanent count site in the vicinity of the A596 Northside Improvement. The count site is described as follows A597 – A594, Siddick Railway Bridge, Workington. Data was obtained from this site for the period 1997 – 2002.

Journey Time/Manual Classified Count Surveys

- 2.4 Journey time surveys were undertaken on 24th June 2004 using video cameras to match vehicles that passed defined timing points on each arm of the roundabout. At the same time as the journey time surveys were being undertaken, turning count data was captured between 0700 and 1900 and was fully classified.

Accident Data

- 2.5 Accident data was obtained for the years 1999 to 2003 in the vicinity of the Northside Improvement, for a 250 metre radius of the junction.

3. Scheme Impact

OVERVIEW

- 3.1 This section provides details of the outturn safety and traffic impacts of the scheme with each discussed in turn below.

SAFETY

Accident Rate

- 3.2 Normally, it is usual for accident savings to be evaluated at least three years after opening in order to get a fair reflection in the number of accidents in the corridor. Therefore this evaluation should be seen as an initial view and cannot be considered as a firm conclusion at this time.
- 3.3 Accident data was obtained from the Managing Agent Contractor for the years 1999 to 2003. As the Northside Improvement opened during September 2002 we have 45 months of pre opening accident data and 15 months of post opening accident data.

Table 3.1 - Accidents at Northside Improvement

Year	Slight	Serious	Fatal	Total
1999	4	-	-	4
2000	2	-	-	2
2001	5	-	-	5
2002	1	-	-	1
2003	3	-	-	3
PRE (45 months)	11	-	-	11 (2.93 acc per year)
POST (15 months)	4	-	-	4 (3.20 acc per year)

- 3.4 Table 3.1 illustrates that in the 45 months prior to the completion of the scheme there was an average of 2.93 accidents per year. The average number of accidents occurring after the scheme opened is 3.20 accidents per year. From this it can be seen that the post-opening case appears to be similar or slightly worse than the pre-opening case. Given the short time period for which post-opening data is available, it should be concluded that there is **no evidence of an accident reduction at the junction.**
- 3.5 For a priority junction of this type COBA predicts 2.76 accidents to occur annually, this is calculated by taking into account the levels of traffic flow and traffic conflict at the site. This value is comparable to that of the observed pre scheme opening average annual accident number of 2.93.
- 3.6 However, the COBA prediction for annual accident numbers for the Calva Brow roundabout is 0.80 accidents per year, a quarter of the accident rate observed in the post opening period. From the evidence available this suggests that COBA does not accurately forecast accidents at junctions of this type.

Severity

- 3.7 As all accidents occurring at Calva Brow over the last 5 years have caused only slight casualties, no significant conclusions can be made on the positive impact of the scheme on the severity of casualties.

Accident Types and Locations

- 3.8 In addition to the above analysis it was decided to examine the accident descriptions and location information to determine how many accidents were attributed to the junction both with the old junction arrangement (priority junction) and the new junction arrangement (roundabout).
- 3.9 Figure 3.1 illustrates the location of accidents at Northside pre and post scheme opening (over the period 1999-2003).

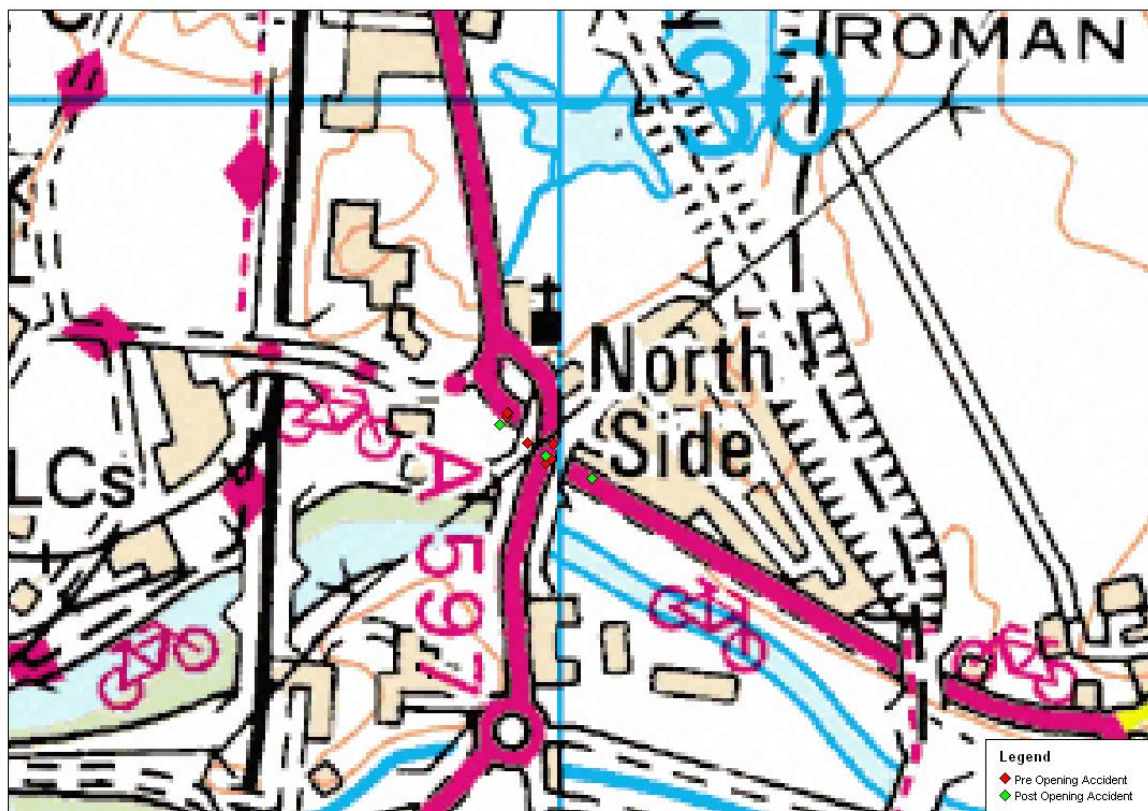


Figure 3.1 - 1999 – 2003 Accidents at the Location Plan

- 3.10 Of the 11 accidents that occurred in the 45 months pre opening 9 can be attributed to vehicles pulling out of the priority junction at Northside. These typically had descriptions such as:

- ◆ *Vehicle 1 pulled out of junction into path of vehicle 2; and,*
- ◆ *Vehicle 1 emerged from minor road and collided with vehicle two travelling on A596.*

Hence of all the accidents that occurred in the 45 months pre opening 82% were directly attributable to the priority junction.

- 3.11 In the 15 months post opening four accidents occurred that were described as follows:
- ◆ Accident One – vehicle one travelling along the A596 Northside Road from direction of Workington Town. Approached new roundabout at Northside. At the point of entering the roundabout the front of vehicle 1 collided with the front of vehicle two.
 - ◆ Accident Two – vehicle two travelling towards Workington Docks. Vehicle One travelling towards Northside. Vehicles collide offside front corners. Vehicle one failed to stop.
 - ◆ Accident Three – vehicle two stops to give way at roundabout. Vehicle one collides.
 - ◆ Accident Four – vehicle one collided with rear of vehicle two.
- 3.12 Although the new junction arrangement has removed all accidents associated with a priority junction (as the junction is now a roundabout) at least 2 out of the 4 accidents can be attributed to the new junction.

Summary of Safety Findings

The annual average number of accidents occurring at the A596 Northside junction has slightly increased in the post scheme opening period. As the increase is slight and there is not sufficient post opening data to validate the post opening result, the conclusion drawn from this initial review is that the number of accidents occurring annually has not changed between the pre and post scheme periods.

From available data, the Do Something COBA model of the scheme has underestimated the number of accidents at the new junction, in turn over-estimating the level of accident benefit associated with the scheme.

TRAFFIC VOLUME CHANGES

- 3.13 Figure 3.2 highlights the change in 12 hour (0700-1900) traffic flows for each movement at Northside between June 2000 and June 2004. It illustrates a significant difference in traffic volumes travelling to and from the port. This could be accounted for by the variation of levels of activity at the port, occurring through the levels of shipping activity on the two days. On the basis of this assumption it is difficult to draw a conclusion regarding the effect of the Northside improvements on the levels of traffic travelling to and from the port.
- 3.14 Figure 3.2 also illustrates three significant changes in the volumes of traffic making movements at the junction, namely:
- ◆ Traffic volumes making the right turning movement from the A596 (Workington) to the A597 (New Bridge) increased 38%, an increase of 539 vehicles to a traffic volume of 1403 vehicles making this movement over the 12 hour period.
 - ◆ Traffic volumes making the right turning movement from the A597 (New Bridge) to the A596 (Siddick) increased 34%, an increase of 1249 vehicles to a traffic volume of 3720 vehicles making this movement over the 12 hour period.
 - ◆ Traffic volumes travelling straight on from the A596 (Workington) to the A596 (Siddick) decreased 12%, a decrease of 227 vehicles to a traffic volume of 1865 vehicles making this movement over the 12 hour period.

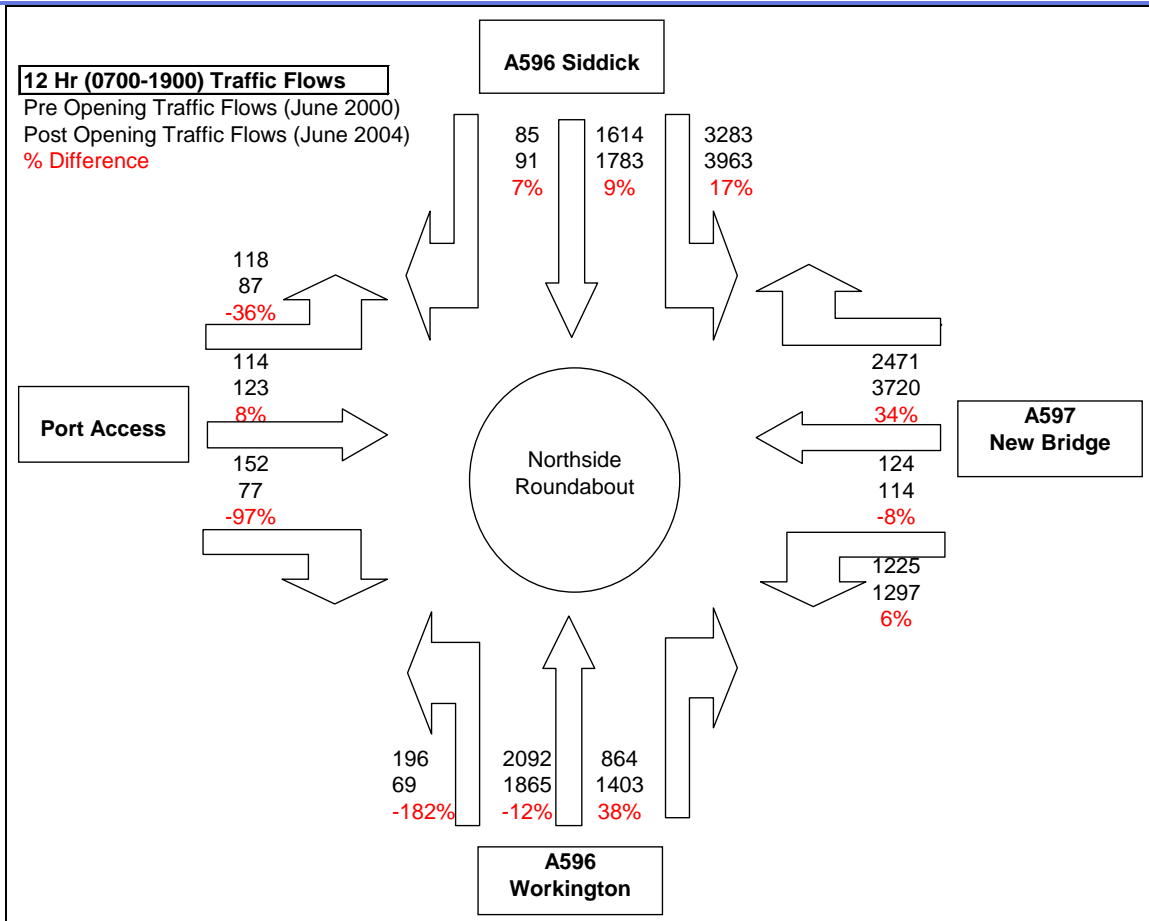


Figure 3.2 - Traffic Flows 'Before' and 'After' Scheme Opening (0700-1900)

Summary

The A596 Northside Scheme has led to a small decrease in the traffic flow travelling from Workington to Siddick due to the replacement of the routes priority status at Northside junction with a roundabout. However the new roundabout has facilitated an easier turn for traffic travelling from the A596 to the A596 New Bridge, as well as the turn from the A597 New Bridge to the A596 Siddick.

JOURNEY TIMES

- 3.15 Post scheme opening surveys were undertaken in June 2004 by Atkins.
- 3.16 As there was no actual pre scheme journey time information available, it was necessary to locate a different source of data comparable to actual post scheme opening, journey time information.
- 3.17 The Replica Do Minimum 2002 journey times were extracted from COBA and used as the actual 2002 journey times (Pre scheme). When used in conjunction with the actual post scheme opening journey times (June 2004), a comparable pre and post scheme opening journey time dataset is held.

- 3.18 As COBA models priority junctions with a good degree of sensitivity it can be assumed that Do Minimum journey times are sufficiently accurate to be used as actual pre scheme journey times.
- 3.19 Figure 3.3 shows the actual number of vehicle hours saved in 2004 at the Northside improvement, as determined by the actual observed journey time data.

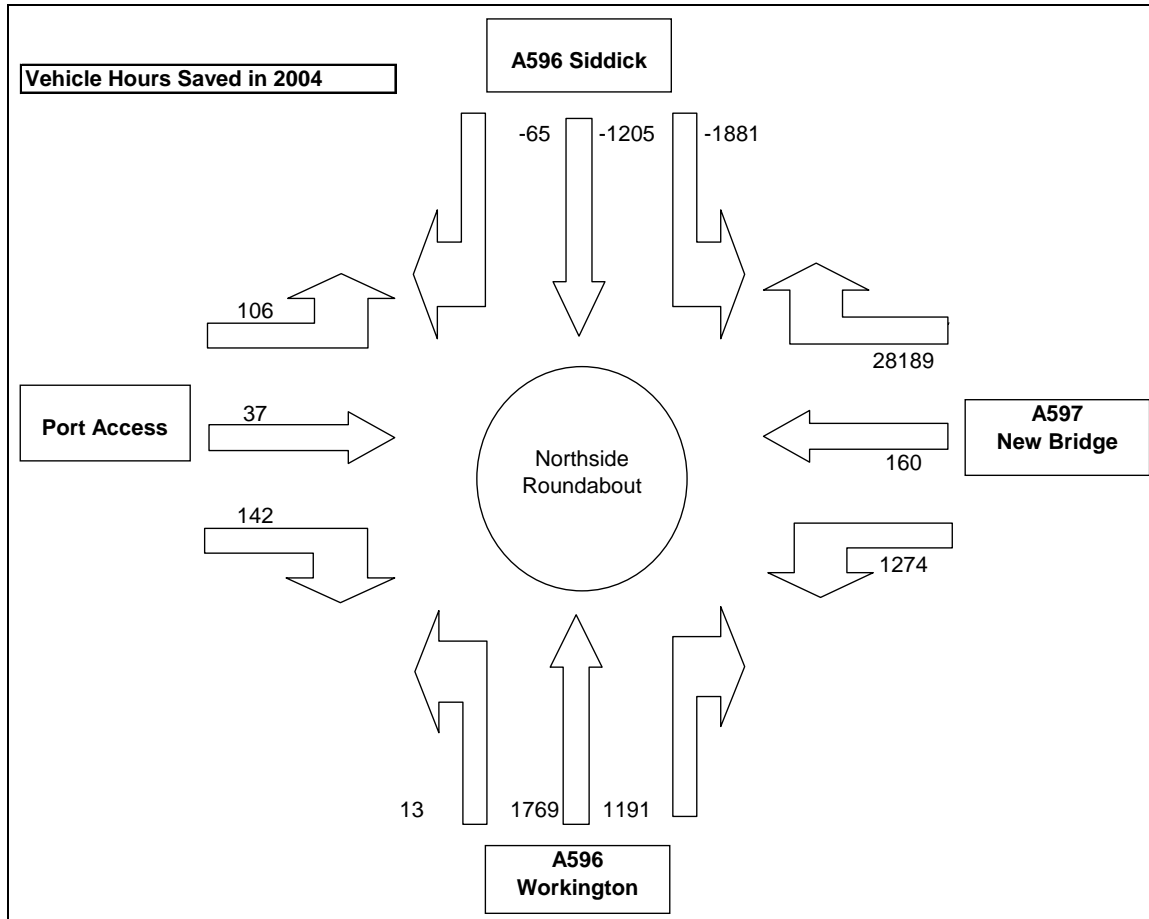


Figure 3.3 - Vehicle Hours Saved in 2004 at Northside Improvements

- 3.20 The method used to determine the annual vehicle hour savings in the post opening year is as follows. The vehicle hours saved per annum for each turning movement possible at Northside junction for AM, PM and daytime Inter peak hour periods (individually) were calculated using the calculation below and then summed together to give the total number of vehicle hours saved at the site during the post opening year.

$$\text{Vehicle Hours saved per Annum} = \Delta JT * [(Before Q + After Q)/2] * 3600 * 365$$

Where,

ΔJT - is the difference in Journey time between the pre and post journey time for a given movement at the Northside site (in seconds).

Before Q = Traffic Flow for the given period of the day (i.e. the AM peak), for a given traffic movement, before the schemes construction.

After Q = Traffic Flow for the given period of the day (i.e. the AM peak), for a given traffic movement, after the schemes opening.

- 3.21 The most significant saving in vehicle hours at Northside improvement in 2004 was the 28,189 vehicle hours saved by vehicles making the right turn movement from A597 New Bridge to the A596 heading towards Siddick.
- 3.22 Only two of the traffic movements occurring at Northside roundabout suffered a disbenefit from the improvements. Those two were traffic moving from the A596 (from Siddick) travelling straight on towards Workington or turning left onto the A597, these movements felt a disbenefit of 1205 and 1881 vehicles hours per annum respectively.

Summary

The A596 Northside Scheme improvements have led to an extremely large vehicle hour saving for the right turn movement from the A597 New Bridge to the A596 towards Siddick. The cause of the saving was the replacement of the old priority junction with a roundabout, providing the right turn out of the A596 New Bridge priority over the A596 Siddick bound traffic.

Of all the other movements, only two experienced increases in vehicle hours post scheme opening. The two movements that experienced vehicle hour increases were traffic moving from the A596 (from Siddick) travelling straight on towards Workington and turning left onto the A597. Both of which suffered an increase in journey time through the removal of priority for the A596 Siddick arm of the junction, that allows traffic travelling from the A596 Workington to turn onto the A597 New Bridge without waiting

4. Economic Impacts of the Scheme

INTRODUCTION

- 4.1 This section assesses the level of economic benefits predicted for the scheme and compares these predictions with actual benefits accrued when considering actual traffic volume changes and actual journey time benefits. Two approaches are presented here:
- ◆ A simple comparison of the level of cost and benefits from the COBA evaluation with the outturn traffic flows were input into the original COBA model. This provides a brief assessment of how well the COBA model performs; and,
 - ◆ The main re-evaluation, termed the Post Opening Project Evaluation (POPE) methodology. This uses observed outturn journey time and accident savings to provide an economic assessment of the performance of the scheme. This result is presented in the scheme EST and is expressed in same terms as the original evaluation (present value year of 1994, and discount rate of 6 per cent).

COBA REPLICATION AND EVALUATION

- 4.2 The COBA input files used in the original appraisal were made available by Amey Mouchel so no additional work was required to replicate the original results. The COBA network consists of a single node (priority in Do-Minimum, roundabout in Do-Something) with 4 entry links attached.
- 4.3 Tables 4.1 and 4.2 show the output benefits for the replicated COBA model for low and high traffic growth and the benefits predicted by the COBA model using outturn data.
- 4.4 Table 4.1 shows that the economic benefits (low traffic growth) reported at the Order Publication (OPR) Stage were replicated. The final column of the table refers to what COBA results would have been if the actual flows could have been inserted. This shows that the outturn traffic flow data has increased the benefits from £2.822M to £5.725M, an increase of £2.903M. Table 4.2 (high traffic growth) shows the outturn flows increased benefits from £4.387M to £7.249M, an increase of £2.862M.

POPE EVALUATION

ACCIDENTS

- 4.5 The original Amey Mouchel assessment forecast an accident saving in the opening year of 0.5 PIAs and this saving would apply over the whole 30 year assessment period, accruing £0.708M in benefits.
- 4.6 **In the 15 month period after the scheme opened there has been no improvement in the number of accidents occurring at the Northside junction, in fact an increase of 0.27 accidents per year has been observed. As it is usual for accident savings to be evaluated at least three years after opening in order to get a fair reflection in the number of accidents in the corridor, this increase in accident numbers will be ignored until more accident data is available. Therefore, it can be assumed that no accident benefits have been accrued in the scheme's post opening year.**

JOURNEY TIME BENEFITS/DISBENEFITS

- 4.7 In order to compare the original and outturn assessments of journey time savings it was necessary to run a revised COBA model using the outturn traffic patterns at the junction, so providing an opening year assessment of the change in junction delay that a COBA model would forecast. This was then compared to an economic assessment based on the actual observed data journey time data. This process can be summarised as:
- ◆ The outturn COBA model (using 2004 traffic flows) predicted a weighted vehicle time saving of 41,777 hours at Northside in the post opening year, equalling £0.242M worth of benefit (1994 prices discounted at 6%). This value was then capitalised to 30-years using PAR capitalisation factors; then,
 - ◆ Using the journey time data, the level of benefit observed in opening year is assessed and then multiplied by the £/vehicle hour ratio from the post opening year of the outturn COBA model. The benefits are then factored to up to the 30 year assessment period using PAR 3.3 capitalisation factors.
- 4.8 Both of the above calculations are illustrated in Table 4.3.
- 4.9 **The scheme has significantly less journey time benefits than predicted in the Outturn COBA model; this has been confirmed using outturn flow data and COBA speed/flow relationships.**

COMPARISON OF OVERALL BENEFITS OVER THE 30 YEAR ASSESSMENT PERIOD

- 4.10 Table 4.4 highlights the net level of benefit offered by the scheme over 30 years in terms of accident and journey time changes. When the weighted average of accident / journey time benefits over the first 30 years is compared to a capitalised estimate based on post opening data, there is a decrease in the level of benefit.
- 4.11 **The cost predicted in the original PAR for the scheme was £791,000 in 1994 prices and Values discounted at 6%. The actual out-turn cost for the scheme in 1994 prices and Values discounted at 6% was £933,954, 19% higher than the original PAR.**

SUMMARY

- 4.12 Table 4.4 presents a summary of the original PAR, outturn COBA, and POPE economic assessments all expressed in terms of 1994 prices, discounted to 1994 at 6 per cent.
- 4.13 The main points to note are:
- ◆ The original evaluation overestimated the journey time and accident benefits resulting from the schemes implementation. The net effect of this is that the outturn benefits changed from £6.682M positive in the predicted corrected outturn COBA to £4.693M positive; and,
 - ◆ The out-turn costs are £0.143M less than predicted in the Original Par Document.

Table 4.1 – COBA Evaluation: Low Growth

Low Traffic Growth			
COBA ITEM	OPR (as reported)	Replication	Outturn Count Data + Opening Yr Included
Link Transit Time	-584	-584	-705
Junction Delay	2,892	2,892	6,104
Vehicle Operating Cost (VOC) Benefits	-158	-158	-186
Accidents Link	-53	-53	-62
Accidents Junction	725	725	574
PVB (£000s)	2822	2822	5725
In 1994 Prices & Values discounted at 6%			

Table 4.2 – COBA Evaluation: High Growth

High Traffic Growth			
COBA ITEM	OPR (as reported)	Replication	Outturn Count Data + Opening Yr Included
Link Transit Time	-791	-791	-927
Junction Delay	4,584	4,584	7,764
Vehicle Operating Cost (VOC) Benefits	-169	-169	-191
Accidents Link	-71	-71	-80
Accidents Junction	834	834	683
PVB (£000s)	4387	4387	7249
In 1994 Prices & Values discounted at 6%			

Table 4.3 – POPE Economic Evaluation

Item	Value
A: Total Vehicle Hour Saving in Scheme Opening Year (COBA)	41,777 Vehicle Hours
B: Total Vehicle Hour Saving in Scheme Opening Year (Observed, from Table 4.2)	28,189 Vehicle Hours
C = B/A: Ratio of Observed to Forecast Time Savings (=B/A)	0.675
E: Opening Year Travel Time Benefit (COBA)	£0.242m
F: Weighted Capitalisation Factor (calculates 30 year benefits from opening year benefits: source PAR3.3)	28.8
G = E*F: Travel Time Benefits (30 year assessment period)	£6.970M
H = G*C: Accrued Benefit over 30 yrs (H) = (G)*(E)	£4.693M

Table 4.4 - Comparison of Original PAR Predicted Costs/Benefits with Out-turn Costs/Benefits

In 1994 Prices and Values	Original PAR Evaluation	Outturn COBA (Using 2004 Flows) Predicted Benefits	Out-turn
A. Link Transit and Junction Delay Benefit	£2.900m	£5.974m	£4.693m
B: Accident Benefit	£0.750m	£0.708m	£0
C : Present Value of Benefit = A+B	£3.650m	£6.682m	£4.693m
D: Present Value of Costs (PVC)	£0.791m	£0.791m	£0.934m
E: Benefit/Cost Ratio (BCR) = C/D	4.61	8.45	5.02

5. Summary of Appraisal and Evaluation Summary Tables

INTRODUCTION

- 5.1 In order to evaluate fully the effects of the opening of the A596 Northside junction improvements, we have undertaken a review of the Appraisal Summary Table (AST) prepared for the original PAR document. The AST is the record of the predicted impacts of the scheme. Annex A presents this original AST for A596 Northside junction improvements.
- 5.2 This AST summarises the predicted impacts of the scheme across a range of different sub-objectives. The sub-objectives within an AST are:
- ◆ **Environmental impacts** such as Noise, Local Air Quality, Landscape, Biodiversity, Heritage and Water;
 - ◆ **Safety Impacts**, measuring and reduction in accidents;
 - ◆ **Economy impacts**, including savings in Journey time and Vehicle Operating Costs, Scheme Cost and Reliability of journeys;
 - ◆ **Accessibility impacts**, such as change in access to public transport, severance within communities and impact on pedestrian and other modes; and
 - ◆ **Integration**, measured by how the scheme accords with local policy.

APPRAISAL SUMMARY TABLE (AST)

- 5.3 The main points to note from the Northside AST are:

Environment

- 5.4 Slight improvement in local air quality predicted and a slight decrease in noise levels for local properties. As far as can be established, these conclusions are not based upon a formal assessment in accordance with the DMRB.
- 5.5 Slight adverse effect on the landscape as the replacement junction is of a similar scale to the existing junction. This will remove some existing planting.
- 5.6 Slight adverse effect on biodiversity, proposed planting and strict controls during construction may reduce the impact.
- 5.7 Some direct physical impact of locally significant dismantled railway (slight adverse).
- 5.8 Slight adverse effect on water with the direct discharge of surface water to Ling Beck, this will be controlled by pollution inspectors.

Safety

- 5.9 Slight Improvement in safety with 15.44 accidents predicted to be saved over the 30 year assessment period. This is based on a COBA 10 R5 (weighted averages LG*0.6 + HG*0.4) output and uses full PAR guidance.

Economy

- 5.10 A substantial benefit in journey times is predicted with savings of 6.03 minutes during the peak and 1.38 minutes interpeak.

Accessibility

- 5.11 The provision of increased and better facilities for footways and cycleways together with provision of splitter islands at the roundabout and or the A596 Maryport Road offers non-motorised users a slight benefit by enhancing amenity and safety.
- 5.12 The proposed bus bay would be similar in size and location to the existing bus bay, but access would be improved with the provision of a splitter island in A596 adjacent to the bus bay. Access to public transport can therefore be seen to be slightly improved.

Integration

- 5.13 The scheme offers enhanced integration via fulfilling strategic inter-modal and freight transport objectives, improving access to the port of Workington.
- 5.14 All other objectives within the AST were either not appraised or were not applicable for this scheme.

OUTTURN EFFECTS

- 5.15 In order to assess the actual or outturn effects of the opening of the scheme, we have produced an Evaluation Summary Table (EST), which mirrors the appearance of the AST, and includes details of the actual sub-objectives that have been evaluated.
- 5.16 The main points to note on the EST are:

Environment

- 5.17 An initial view has been taken of the environment sub-objectives that are related to changes in traffic operating conditions. These are 'Air Quality', 'Noise', 'Landscape', 'Biodiversity', 'Heritage' and 'Water'.

Noise

- 5.18 The original PAR predicted a slight decrease in noise levels through a combination of increased distance between properties and the carriageway and the provision of thin wearing course.
- 5.19 As the roundabout was built it can be assumed that the properties will be further away from the carriageway although no pre-roundabout plans are currently held so this cannot be verified.

Local Air Quality

- 5.20 The original PAR predicted a slight improvement in the local air quality by increasing the distance between properties and the carriageway, and therefore reducing the level of pollution experienced at the properties.
- 5.21 As the roundabout was built it can be assumed that the properties will be further away from the carriageway although no pre-roundabout plans are currently held so this cannot be verified.

Landscape

- 5.22 The original PAR predicted a slight reduction in some mitigation planting. As no pre scheme photographs can be obtained this statement cannot be verified.

Biodiversity

- 5.23 The original PAR predicted no significant impact on biodiversity; in fact it highlighted a possible improvement in biodiversity from the planting proposals planned.
- 5.24 Figure 5.1 illustrates the planting undertaken as part of the Northside improvements. This would indicate a slight improvement in the biodiversity at the site however there are no pre photographs to verify this prediction.

Heritage

- 5.25 The original PAR predicted a slightly adverse impact on heritage through some direct physical impact on the site of the locally dismantled railway. As there are no pre photographs no assessment of this prediction can be made.

Water

- 5.26 The original PAR predicted a slightly negative affect on water quality through potential discharges into the Ling Beck, but that pollution interceptors would be used to control any discharges.
- 5.27 It is beyond the scope of this report to assess such predictions, particularly as no pre information is currently available regarding pollution levels within the Ling Beck.



Figure 5.1 - Example of Planting Undertaken as part of Northside Improvements

5.28 Our evaluation of the environmental sub-objectives is shown in table 5.1.

Table 5.1 – Summary of Environmental Sub-Objective Scores

Sub-Objective	Predicted	Outturn
Air Quality	Slight Beneficial	Not Assessed
Noise	Slight Beneficial	Not Assessed
Landscape	Slight Beneficial	Not Assessed
Biodiversity	Slight Adverse	Not Assessed
Heritage	Slight Adverse	Not Assessed
Water	Slight Adverse	Not Assessed

ACCESSIBILITY

- 5.29 The PAR predicted that the provision of increased and better facilities for footways and cycleways together with provision of splitter islands at the roundabout and or the A589 Maryport Road will enhance the amenity and safety for non-motorised users. This included a reduction in the levels of severance at the site and the improvement of access to public transport.
- 5.30 Figures 5.2 and 5.3 illustrate the implementation of splitter islands and better pedestrian / cyclist facilities respectively. These improvements enhance the amenity and safety of the site for non-road users.



Figure 5.2 - An Example of a Splitter Island at Northside



Figure 5.3 - An Example of the New Cycle and Pedestrian Facilities at Northside

5.31 The new splitter islands (figure 5.2) also improve access to public transport by offering a safe crossing place for non-road users to access the new bus bay shown in figure 5.4 and help to reduce severance on the A596 c/w.



Figure 5.4 – The New Bus Bay on the A596

- 5.32 By moving the trunk road away from properties, adjacent amenity areas have been created and levels of severance have been slightly reduced.
- 5.33 The implementation of splitter islands and better pedestrian / cyclist facilities has improved the level of accessibility at the scheme location. Therefore the scheme can be seen as beneficial with regard to accessibility.

INTEGRATION

- 5.34 The PAR predicted that the junction improvement would fulfil strategic inter-modal and freight transport objectives, improve the local riverside environment and provide an upgraded access and prestigious entrance to the port of Workington.

Inter-modal and Freight Transport Objectives

- 5.35 The new junction is now in place and will enhance the existing access to the rail freight network. We score this as a slight benefit.

Improve Riverside Environment

- 5.36 As no information is held on the riverside environment pre scheme, this prediction can not be appraised. We score this sub-objective as a neutral.

Improved Access to the Port of Workington

- 5.37 Access has been improved to the Port for vehicles travelling towards the site from all possible movements at the roundabout (see figure 5.5). We score this as a slight benefit.



Figure 5.5 – The New Entrance to the Port of Workington

5.38 Overall the scheme has had a moderately beneficial impact on levels of integration at the site, as predicted in the original PAR document.

6. Summary of Conclusions

6.1 The highways Agency has a requirement to carry out re-evaluations of trunk road schemes recently implemented by the Department of Transport. The purpose of these re-evaluations is to provide a back check of the levels of benefit accruing from new schemes and to determine how far the department achieves the objectives and benefits it claims from its road programme.

6.2 In summary, the main points to note from the Evaluation of the Northside Junction Improvements are:

Safety

6.3 The scheme was purported to save 0.5 accidents in the post opening year. In actuality an increase of 0.25 accidents was observed in the post opening year. However, given the short time period for which post-opening data is available, it should be concluded that there is **no evidence of an accident reduction at the junction.**

Traffic Volumes

6.4 The A596 Northside Scheme has led to a small decrease in the traffic flow travelling from Workington to Siddick due to the replacement of the routes priority status at Northside junction with a roundabout. However the new roundabout has facilitated an easier turn for traffic travelling from the A596 to the A596 New Bridge, as well as the turn from the A597 New Bridge to the A596 Siddick.

Journey Times

6.5 The A596 Northside Scheme improvements have led to an extremely large vehicle hour saving for the right turn movement from the A597 New Bridge to the A596 towards Siddick. The cause of the saving was the replacement of the old priority junction with a roundabout, providing the right turn out of the A596 New Bridge priority over the A596 Siddick bound traffic.

6.6 Of all the other movements, only two experienced increases in vehicle hours post scheme opening. The two movements that experienced vehicle hour increases were traffic moving from the A596 (from Siddick) travelling straight on towards Workington and turning left onto the A597. Both of which suffered an increase in journey time through the removal of priority for the A596 Siddick arm of the junction, that allows traffic travelling from the A596 Workington to turn onto the A597 New Bridge without waiting

Scheme Costs

6.7 The actual out-turn cost for the scheme in 1994 prices and Values discounted at 6% was £933,954, £0.143M more than the original PAR document prediction of £791,000.

Economic Evaluation (Over 30 years)

6.8 The original evaluation overestimated the journey time and accident benefits resulting from the schemes implementation. The net effect of this is that the outturn benefits changed from £6.970M positive in the predicted corrected outturn COBA to £4.693M positive.

6.9 The out-turn costs are £0.143M less than predicted in the Original Par Document.

Environment

6.10 The lack of pre scheme data on the environmental sub-objectives removes the possibility of any meaningful assessment; therefore no assessment has been made.

Accessibility

6.11 The scheme has provided increased and better facilities for footways and cycleways, together with provision of splitter islands at the roundabout offering non-motorised users a slight benefit by enhancing amenity and safety.

Integration

6.12 The junction has as predicted fulfilled the strategic inter-modal and freight transport objectives, as well as providing an upgraded access and prestigious entrance to the port of Workington.

Overall

6.13 The scheme has failed to produce the economic and safety benefits predicted in the original PAR, although the safety benefits cannot be fully appreciated until more data is available.

6.14 The scheme has succeeded in increasing the level of accessibility and integration at Northside roundabout.

6.15 The impact of the scheme on the environment is not verifiable due to a lack of pre scheme data.

6.16 The scheme should be re-evaluated in future years when more post opening data is available. This will enable more robust conclusions to be drawn. Especially regarding the levels of accident benefits achieved.

Annex A - Original Scheme AST

Original Scheme AST

A596 NORTHSIDE JUNCTION IMPROVEMENT, WORKINGTON		2000/01 SCHEME –Provision of small Roundabout and realign Northside Road and improve access to the Port of Workington.	Current Cost £2,257 m, Date Q3 2001	
PROBLEMS		13,000 AADT, 8.1% HGV, (2000) Existing priority junction crossroads with safety problems. Greater traffic flows on A597 side road than on A596 Northside Trunk Road. . Severe sub standard junction visibility from A597.		
OTHER OPTIONS		Provision of traffic signals at existing crossroads junction.		
OBJECTIVES		QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT
ENVIRONMENT	Noise	Noise increases as traffic increases. The new carriageways are further away than existing and with the use of thin wearing course, noise would be reduced. Impact is assessed as <i>moderate beneficial</i> .	No. properties experiencing: - Increase in noise 0 - Decrease in noise 20	Net 21 properties experience <i>lower</i> noise levels
CO ₂ : xxx tonnes added or removed	Local air quality	Not assessed. However with moving road away from property and with reduction in pollution from vehicles with time through legislation; air quality would improve. Impact assessed as <i>beneficial</i> .	No. properties experiencing: - better air quality N/A - worse air quality N/A	+/- PM10 +/- NO ₂
	Landscape	Replacement junction of similar scale will remove some mitigation existing planting.	Not Applicable	<i>Slight Adverse</i>
	Biodiversity	Little impact on biodiversity may be improved by planting proposals, strict controls during construction.	Not Applicable	<i>Slight Adverse</i>
	Heritage	Some direct physical impact on site of locally significant dismantled railway.	Not Applicable	<i>Slight Adverse</i>
	Water	Direct discharges of surface water to Ling Beck controlled by pollution interceptors.	Not Applicable	<i>Slight Adverse</i>
SAFETY	-	Construction and/or maintenance disbenefits have not been assessed. Estimated number of injury accidents saved in first year 0.5	Accidents Deaths Serious Slight 21.7 0.4 6.4 29.9	PVB £0.7 m / £0.8 m 90 % of PVC
ECONOMY	Journey times & Veh. op. costs		Scheme journey time savings: Peak 6.03 mins; inter-peak 1.38 mins	PVB £2.2 m / £3.6 m 346 % of PVC
	Cost		Not Applicable	PVC £ 0.79 m
	Journey time reliability	Small scheme : not relevant	Stress on key trunk road link: Before %; After %	<i>Not assessed</i>
	Regeneration	Small scheme : not considered	Serves regeneration priority area? Development depends on project?	<i>Yes</i> <i>No</i>
ACCESSIBILITY	Pedestrians and others	Proposed splitter islands – improved amenity	Not Applicable	<i>Slight beneficial</i>
	Access to public transport	Proposed splitter islands – improved access	Not Applicable	<i>Neutral</i>
	Community severance	Proposed splitter islands, reduces existing severance	Not Applicable	<i>Slight beneficial</i>
INTEGRATION	-	Fulfils strategic inter-modal and freight transport objectives with the provision of an upgraded access to the Port of Workington	NotApplicable	<i>Enhance</i>
Version of ..October 2001		Cost benefit analysis (low / high)	PVB 2.823 m / £4.386 m, PVC £0.791 m, NPV £2.032m / £3.595m, BCR 3.570 / 5.547, FYRR 13.1% / 16.2%	

Annex B - Atkins EST

Atkins EST

A596 NORTHSIDE JUNCTION IMPROVEMENT, WORKINGTON		2000/01 SCHEME –Provision of small Roundabout and realign Northside Road and improve access to the Port of Workington.	In 1994 Prices, discounted to 1994 (6%)
Overall the scheme represents good value for money, due to the high level of benefits. PROBLEMS		13,000 AADT, 8.1% HGV, (2000) Existing priority junction crossroads with safety problems. Greater traffic flows on A597 side road than on A596 Northside Trunk Road. . Severe sub standard junction visibility from A597.	
OTHER OPTIONS		Provision of traffic signals at existing crossroads junction.	
OBJECTIVES		QUALITATIVE IMPACTS	QUANTITATIVE MEASURE
ENVIRONMENT	Noise	<i>Not assessed</i>	Not Applicable
CO ₂ : xxxx tonnes added or removed	Local air quality	<i>Not assessed</i>	Not Applicable
	Landscape	<i>Not assessed</i>	Not Applicable
	Biodiversity	<i>Not assessed</i>	Not Applicable
	Heritage	<i>Not assessed</i>	Not Applicable
	Water	<i>Not assessed</i>	Not Applicable
SAFETY	-	Increase in accidents by 0.27 in post opening year. This is taken as evidence not that the scheme is worse in accident terms than the original junction, but that the scheme is not yet able to demonstrate an accident benefit.	<i>30 Yr Assessment</i> I <i>No evidence of accident benefit</i>
ECONOMY	Journey times & Veh. op. costs	Saving of 28,189 vehicle hours in the Post opening Year	<i>1 Yr Assessment</i> £0.163M
	Cost		Not Applicable
	Journey time reliability	Small scheme : not relevant	Stress on key trunk road link: Before %; After %
	Regeneration	Small scheme : not considered	Serves regeneration priority area? Development depends on project?
ACCESSIBILITY	Pedestrians and others	Proposed splitter islands – improved amenity	Not Applicable
	Access to public transport	Proposed splitter islands – improved access	Not Applicable
	Community severance	Proposed splitter islands, reduces existing severance	Not Applicable
INTEGRATION	-	Fulfils strategic inter-modal and freight transport objectives with the provision of an upgraded access to the Port of Workington	Not Applicable
Version of ..October 2001		Cost benefit analysis (low / high)	PVB £4.693m, PVC £0.934m, NPV £3.759m, BCR 5.02 ,

