

ONE YEAR AFTER STUDY

A63 Melton Grade Separated Junction



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Glossary

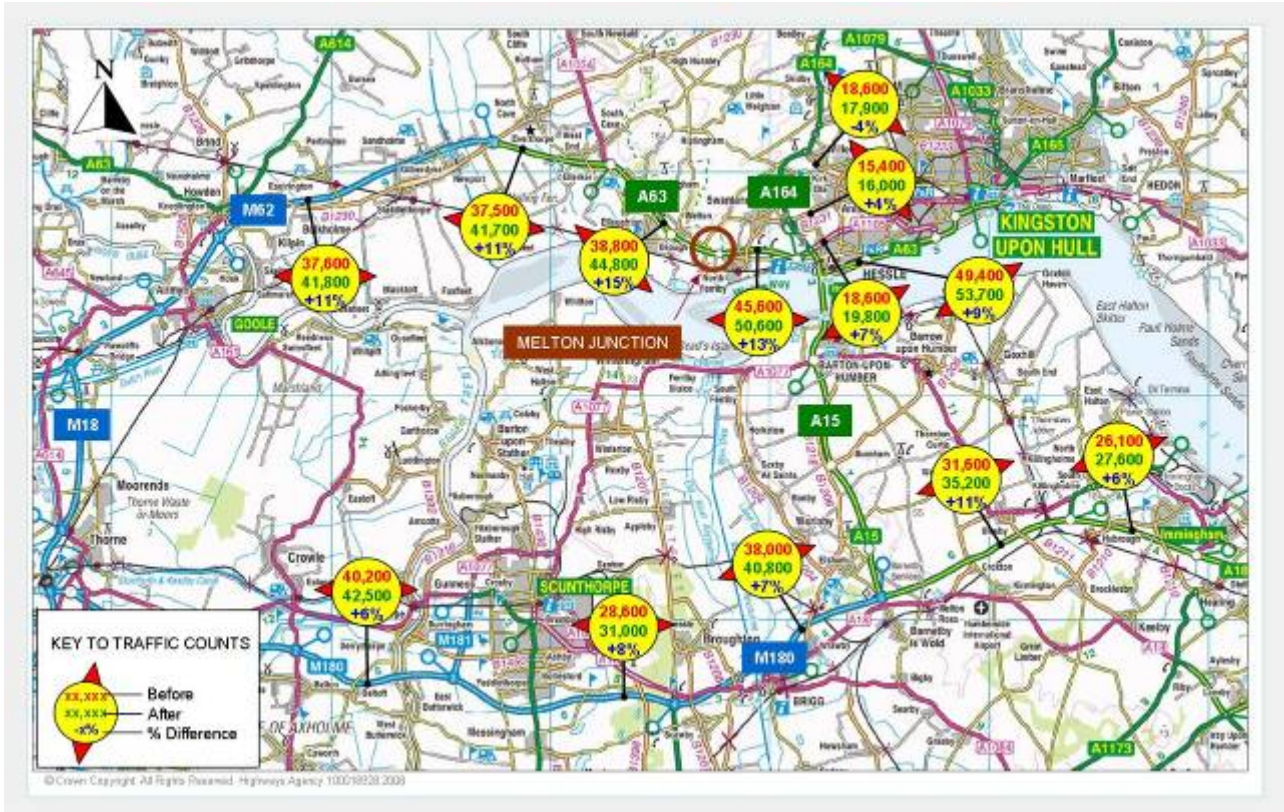
Term	Definition
AADT	Annual Average Daily Traffic. Average of 24 hour flows, seven days a week, for all days within the year.
AAWT	Annual Average Weekday Traffic. As AADT but for five days, (Monday to Friday) only.
Accessibility	Accessibility can be defined as 'ease of reaching'. The accessibility objective is concerned with increasing the ability with which people in different locations, and with differing availability of transport, can reach different types of facility.
AM	denoting the morning peak period
AST	Appraisal Summary Table. This records the impacts of the scheme according to the Government's five key objects for transport, as defined in DfT guidance contained on its Transport Analysis Guidance web pages, WebTAG
ATC	Automatic Traffic Count, a machine which measures traffic flow at a point in the road.
AWT	Average Weekday Traffic. Average of Monday to Friday 24 hour flows.
COBA	COst Benefit Analysis – a computer program which compares the costs of providing road schemes with the benefits derived by road users (in terms of time, vehicle operating costs and accidents), and expresses the results in terms of a monetary valuation. The COBA model uses the fixed trip matrix.
CRF	Congestion Reference Flow - AADT flow at which a road is likely to be congested in the peak periods of an average day.
Discounting	Discounting is a technique used to compare costs and benefits that occur in different time periods and is the process of adjusting future cash flows to their present values to reflect the time value of money, e.g. £1 worth of benefits now is worth more than £1 in the future. A standard base year needs to be used which is 2002 for the appraisal used in this report.
EST	Evaluation Summary Table. In POPE studies, this is a summary of the evaluations of the TAG objectives using a similar format to the forecasts in the AST.
HEMP	Handover Environmental Management Plan. A document specifying the continuing environmental maintenance and management following scheme construction.
HGV	Heavy Goods Vehicle.
High Growth	An assumption about traffic growth, related to the general state of

	the economy, used in forecasting. Usually a scheme is designed for a central case, between the Low Growth and High Growth scenarios.
Highways Agency	An Executive Agency of the Department for Transport, responsible for operating, maintaining and improving the strategic road network in England.
IP	Inter Peak , the time between the AM and PM peaks
Light vehicle	Not a HGV. For traffic flow data, it is a vehicle less than 5.2m in length.
Managing Agent	A Managing Agent is responsible for the operation, maintenance, and improvement of the motorway and trunk road network of a Highways Agency area.
Low Growth	An assumption about traffic growth, related to the general state of the economy, used in forecasting. Usually a scheme is designed for a central case, between the Low Growth and High Growth scenarios.
MTC	Manual turning count. A survey of the turning movements of vehicles at a junction undertaken by human observers, normally on a single day.
NRTF	National Road Traffic Forecast. This document defines the latest forecasts produced by the Department of the Environment, Transport and the Regions of the growth in the volume of motor traffic. The most recent one is NRTF97 and the one previous was NRTF89.
NAQS	National Air Quality Strategy , a part of the Environment Act 1995, setting limits on various pollutants.
OGV1, OGV2	Other Goods Vehicle. OGV1 = Goods Vehicles with 2 or 3 axles, OGV2= Goods Vehicles with 4 or more axles
OPR	Order Publication Report
PIA	Personal Injury Accident. A road traffic accident in which at least one person required medical treatment.
PIA/mvkm	PIA/mvkm is the number of PIAs per million vehicle kilometres where 'vehicle kilometres' are the number of vehicles using a section of the road multiplied by the length of the road.
PM	evening peak period
POPE	Post Opening Project Evaluation , before & after monitoring of all major highway schemes in England.
Route Stress	This is used as a proxy for journey time reliability. It is described as the stress level of a road and is calculated as the ratio of flow to capacity: AADT / CRF.

Seasonality	Seasonality is the variation in traffic behaviour across the year due to varying daylight levels, weather conditions, school holidays, etc.
Severance	Community severance is the separation of adjacent areas by road or heavy traffic, causing negative impact on non-motorised users, particularly pedestrians.
TAG	Transport Analysis Guidance, as defined in WebTAG.
TEMPRO	Trip End Model Presentation PROgram , DfT software which provides forecast data on trips for transport planning purposes.
Vehicle hours	Vehicle hours refers to the total time spent by all vehicles using a road and is expressed normally as a yearly value. For example, if 10,000 vehicles a day used a route with a 6 minute journey time, then the route's vehicle hours for the year would be 365,000.
vpd	Vehicles Per Day
webTAG	Department for Transport's website for guidance on the conduct of transport studies at http://www.webtag.org.uk/

Executive Summary

The Melton Grade Separated junction opened to traffic in October 2006, with construction and traffic management continuing to April 2007. The scheme is located on the A63 west of Hull, and has provided an overbridge, slips and link roads to replace three former at-grade junctions. The objectives were to remove junction delays, improve safety, and facilitate development.



Before and After Automatic Traffic Counts

Traffic flows (24 hr AWT) on the A63 and other major roads are shown in the above diagram. This shows an increase of 13-15% on the A63 between 2004 and 2007, compared with 6-8% on the M180 during the same time, and 4% overall in Yorkshire and Humberside. Some reassignment to the A63 has occurred, but no additional traffic has been generated, since associated development has yet to be completed. The actual flows are less than predictions, which assumed local development prior to the scheme opening year.

Journey time surveys have shown savings of between ½ minute and 1¼ minutes on the A63, and between 0 and 2¼ minutes on routes crossing the A63. Some of these routes have increased in distance, but now avoid conflict with through traffic.

There has been virtually no change to accident or casualty rates, on the network corresponding to that used for forecasting, although there has been a reduction within the strict limits of the scheme. The nature of accidents has changed with the new road layout. These results are based on only 18 months' data after scheme opening, and cannot be regarded as definitive.

The cost of the scheme was £37.6 million, compared with £14.1 million forecast (at 2002 prices).

The monetary benefit, arising from savings in vehicle-time and accidents, is assessed as £84million over 30 years (at 2002 values). This is less than the forecast figure of about £98.8 million, largely due to traffic levels having been over-predicted.

The scheme formed part of the local authority's Structure Plan, playing a part in efforts to bring development and employment to the area. Two business parks at Melton are currently under construction, but have not yet contributed any additional development traffic.

1. Introduction

BACKGROUND

- 1.1 The A63 Melton Grade Separated Junction provided a single grade-separated junction, replacing three former at-grade junctions on the A63 near Melton, west of Hull. One of these was signalised, the only signal junction on the M62/ A63 route between Leeds and Hull.
- 1.2 The scheme opened to traffic on 2nd October 2006. Continuing construction work and traffic management continued until 5th April 2007, involving off-peak lane closures and overnight road closures. A completion certificate was issued on 30th May 2007. Formal takeover of the A63 by the Highways Agency, and the link roads by East Riding of Yorkshire Council, took place on 11th June 2007.
- 1.3 The A63 is a dual-carriageway road running west of Hull, to connect with the M62, giving access to Leeds, Sheffield, and the national motorway network. It forms part of the Trans-European Road Network (TERN). An alternative connection between Hull and the national motorway network to the south exists using the A15 via the Humber Bridge, which is tolled. The location of the scheme and its context in the road network, with the most important routes highlighted, are shown below in Figure 1.1.

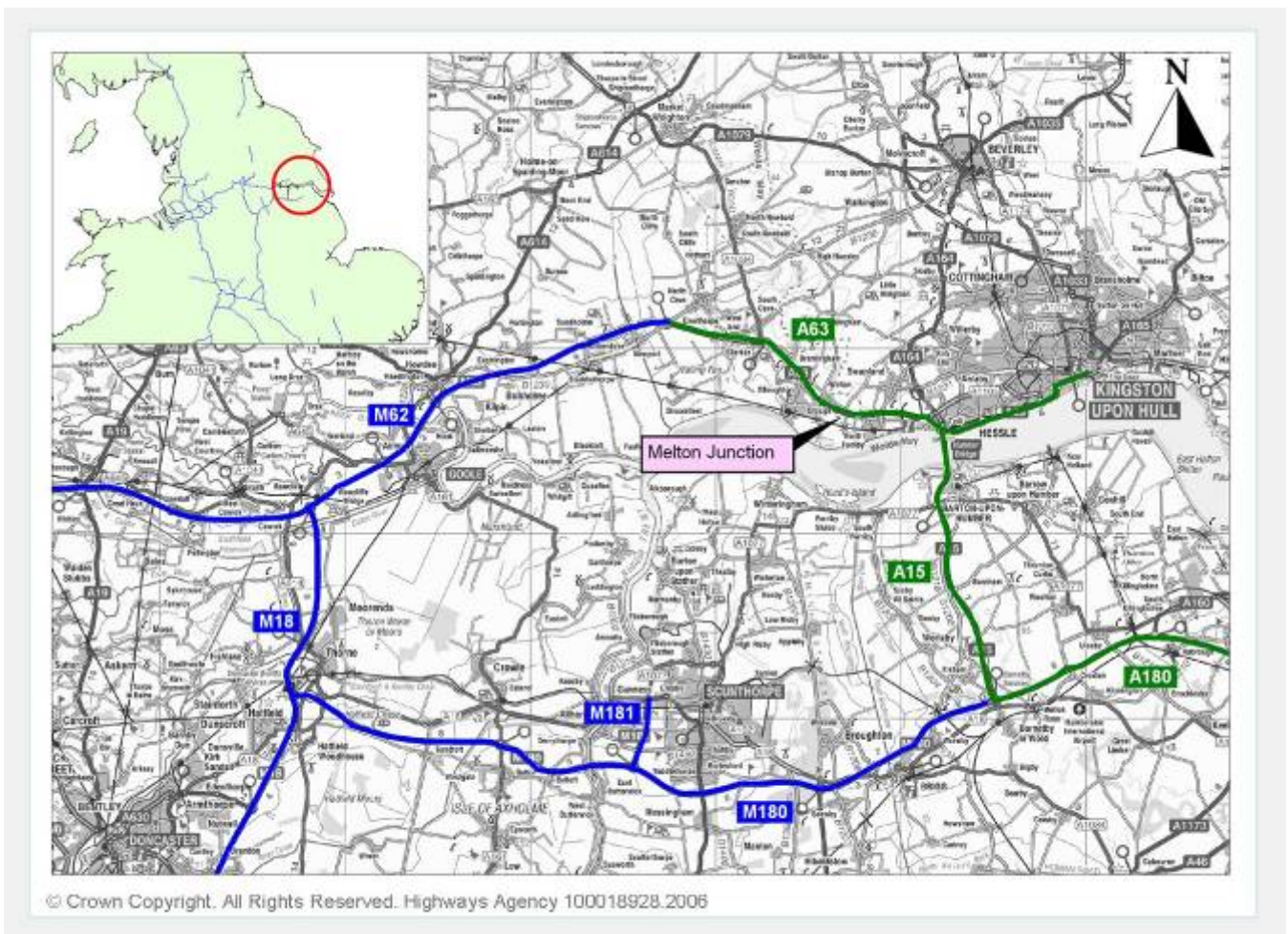


Figure 1.1 – Scheme Location and Context

Objectives

1.4 Formerly, the A63 in Melton suffered from congestion and poor safety, placing restrictions on developments in the area. The objectives of the scheme were to:

- ◆ remove junction delays;
- ◆ eliminate accidents caused by conflicting movements at three at-grade junctions; and
- ◆ facilitate new development.

Scheme Design

1.5 The scheme provided 1.5 km of new all-purpose dual 2 lane carriageway, on a slightly different alignment from the former A63. The new grade-separated junction is a dumbbell interchange consisting of an overbridge with a roundabout each side of the A63, and slip roads giving access to and from the eastbound and westbound carriageways. An indicative layout plan of the entire scheme is shown in Figure 1.2, and a more detailed plan of the junction area is shown in Figure 1.3.

1.6 A new single-carriageway link road (named South Lawn Way) runs between the northern dumb-bell roundabout and Melton Bottom. A dual-carriageway link road (named Monks Way East & West) leads from the southern dumb-bell roundabout, connecting with Brickyard Lane and Gibson Lane at new roundabouts. A new two-way connector road south of the A63 links the southern dumb-bell roundabout with the Melton Road/ Corby Park access. The southern dumb-bell roundabout is bypassed by two dedicated slips: one leading westbound from the Melton Road/ Corby Park link road to Monks Way East (the Southern Link Road), and the other leading from Monks Way East to the A63 westbound onslip. The Brickyard Lane roundabout is also bypassed by a dedicated slip for E-S movements.

1.7 Parallel footpaths and cycleways are extensively provided. The Yorkshire Wolds Way, a long-distance footpath, has been diverted to the overbridge. A subway for the use of pedestrians and cyclists has been provided beneath Monks Way East, immediately south of the junction, and a new foot/ cycle-bridge has been constructed over the A63 close to the former Gibson Lane crossing. Bus stops are provided on Monks Way East and West.

A63 MELTON GRADE SEPARATED JUNCTION – ONE YEAR AFTER

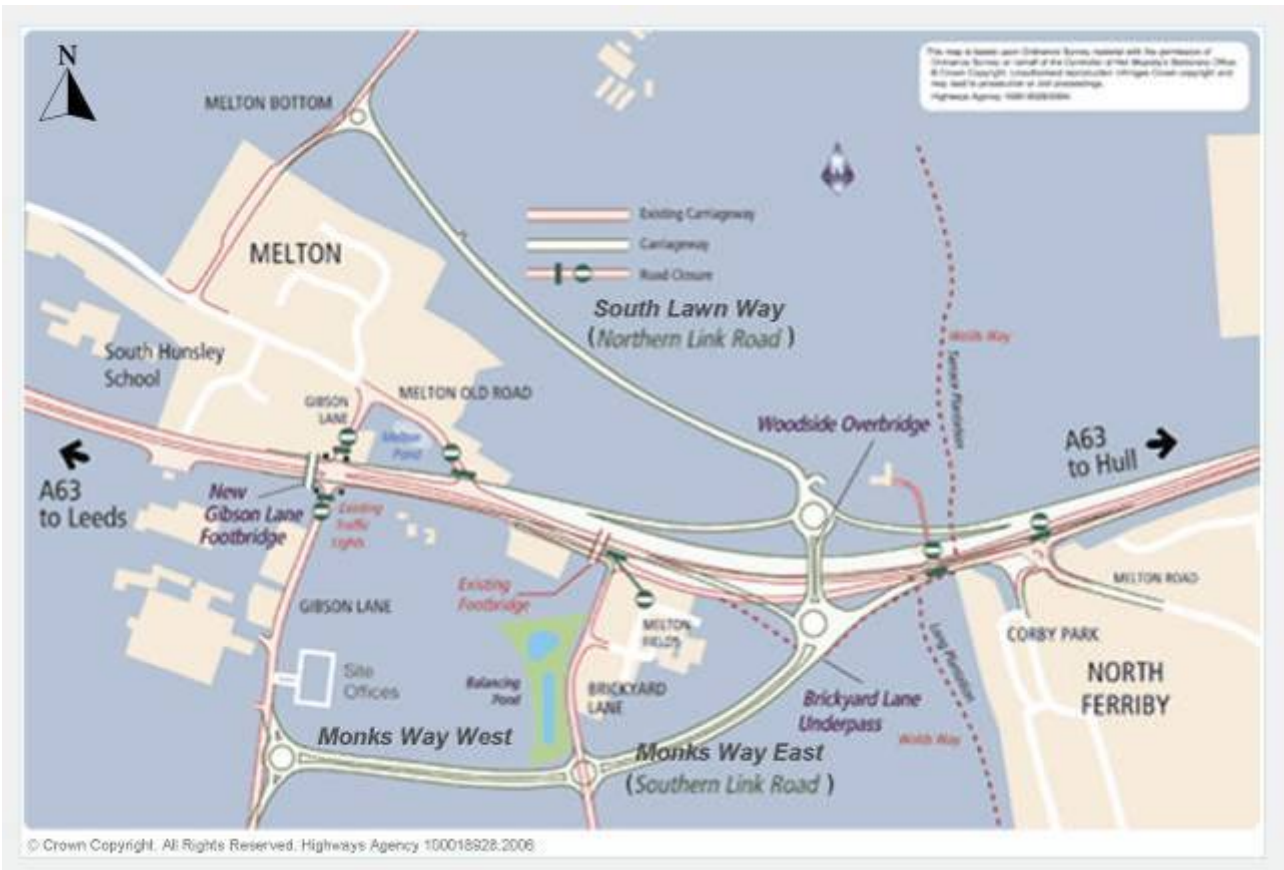


Figure 1.2 - Scheme Layout

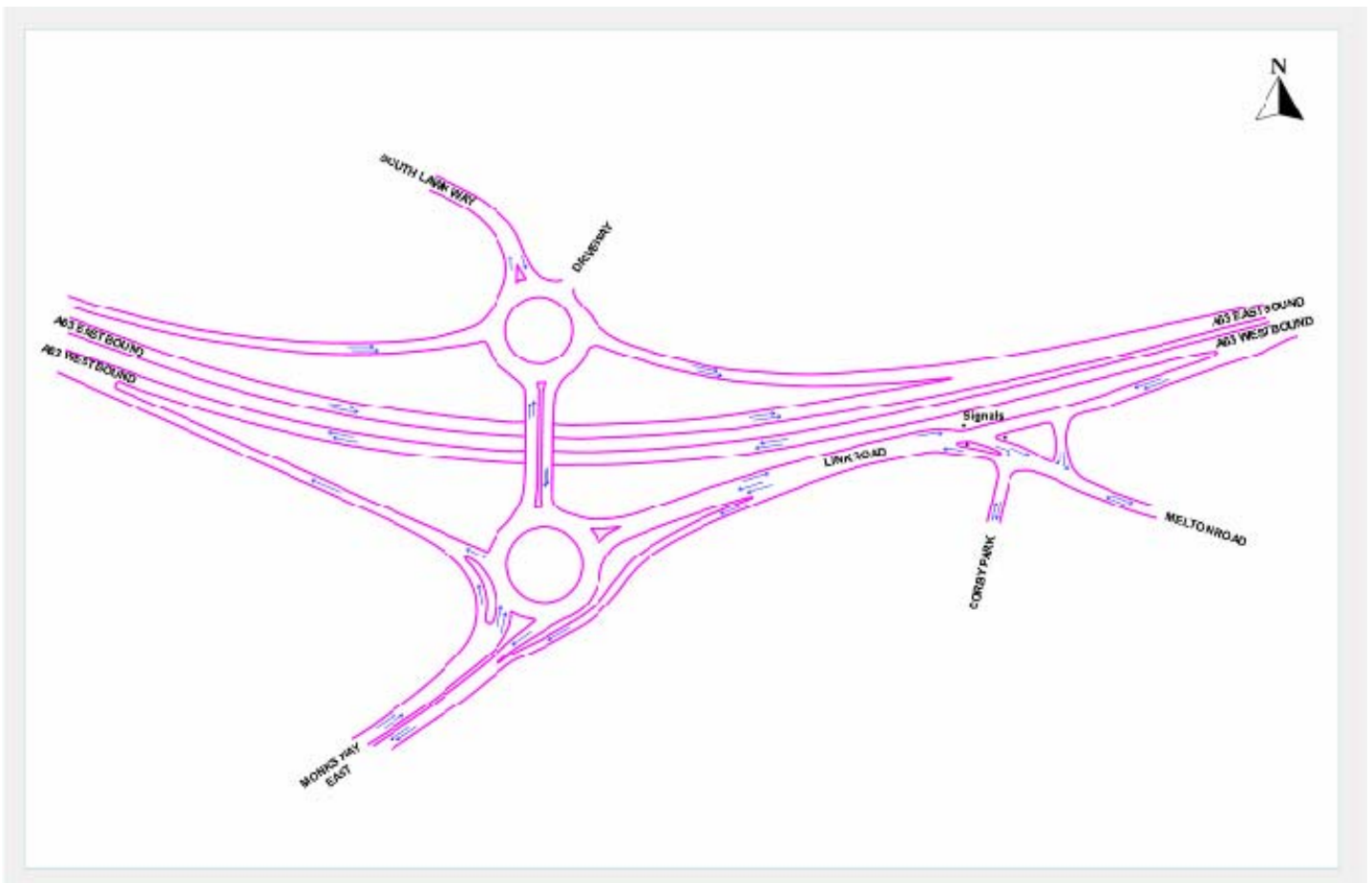


Figure 1.3 – Junction Layout

A63 MELTON GRADE SEPARATED JUNCTION – ONE YEAR AFTER

- 1.8 An earlier proposal for a grade separated junction was announced in 1987, and reached Order Publication Report (OPR) stage in 1996, but was deferred in the roads review of 1998. The present scheme entered the Programme of Major Schemes (formerly known as the TPI programme) in March 2000, and a Public Inquiry was held in November 2001, with the decision being announced in June 2003. Construction took place from September 2004 to October 2006.
- 1.9 The scheme falls within the East Riding of Yorkshire District, which is a unitary local authority. It is part of Highways Agency Area 12, and the Managing Agent Contractor (MAC) is Carillion-WSP.

THE POPE REPORT

- 1.10 The Highways Agency has a requirement to carry out post-opening evaluations of trunk road schemes recently implemented under the Programme of Major Schemes. The purpose of these evaluations is to provide information about the appraisal process by determining how far the objectives and predicted benefits have been achieved.
- 1.11 This report represents the 'One-Year After' report for the A63 Melton Grade Separated Junction, and is prepared under the Highways Agency Post-Opening Project Evaluation (POPE) Commission.
- 1.12 This report sets out a number of assessments, namely:
- ◆ A comparison of the 'Before' and 'After' traffic volumes on the A63 and adjacent roads, and comparing these with predictions;
 - ◆ A comparison of 'Before' and 'After' journey times;
 - ◆ An analysis of accidents;
 - ◆ An evaluation of the outturn economic benefits, based on changes in traffic volumes, journey times and accidents;
 - ◆ A comparison of the outturn cost with the budgeted cost;
 - ◆ An evaluation of environmental outcomes compared with forecast impacts; and
 - ◆ A review of the original Appraisal Summary Table in the form of a new Evaluation Summary Table (EST).

Structure of the Report

- 1.13 Following this introduction, the report continues as follows:
- ◆ Section 2 discusses the traffic flows, journey times, and comparison with forecasts;
 - ◆ Section 3 considers safety;
 - ◆ Section 4 derives updated economic benefits based on vehicle-time and accident savings in the first year, and compares these with forecasts;
 - ◆ Section 5 discusses Environment, Accessibility and Integration;
 - ◆ Section 6 presents the original Appraisal Summary Table (AST), and then re-evaluates the outcomes with an Evaluation Summary Table (EST);
 - ◆ Section 7 summarises the main conclusions of the report; and
 - ◆ Annex A: gives detailed results from automatic traffic counts summarised in section 2.
 - ◆ Annex B: gives detailed results from the turning counts summarised in section 2.
 - ◆ Annex C: gives detailed results from the journey time surveys summarised in section 2.

Sources

1.14 The following sources were used in compiling this report:

- ◆ The Highways Agency supplied traffic data for its roads, provided information on scheme costs, and took part in consultations on a variety of other matters;
- ◆ East Riding of Yorkshire Council provided traffic count and accident data, and were consulted on a variety of other matters ;
- ◆ Traffic surveys commissioned specifically for this study;
- ◆ Appraisal Summary Table dated 2000;
- ◆ *A63 Melton Grade Separated Junction: Traffic Forecasting Report*, Hyder Consulting Ltd, June 2002;
- ◆ *A63 Melton Grade Separated Junction: Economic Assessment Report*, Hyder Consulting Ltd, August 2002;
- ◆ *A63 Melton Grade Separated Junction: Environmental Statement Report*, Highways Agency, October 2000;
- ◆ Statutory environmental consultees (Natural England, English Heritage and the Environment Agency); and
- ◆ Site visits by Atkins transport planners and environmental specialists.

2. Traffic Data Collection and Analysis

TRAFFIC VOLUMES

Data Collection

2.1 Traffic counts were collected 'Before' construction (June 2004) and 'After' (October 2007), from the following sources:

- ◆ Highways Agency volume data from permanent count sites on trunk roads and motorways;
- ◆ East Riding of Yorkshire Council (ERYC) volume data from permanent sites west of Hull;
- ◆ Manual turning counts carried out for the purpose of this study on four at-grade junctions on the A63 'Before' the improvement; and
- ◆ A single video turning count carried out at the new Melton Junction, 'After' the improvement.

2.2 The locations of these sites near Melton Junction are shown in Figure 2.1 below.

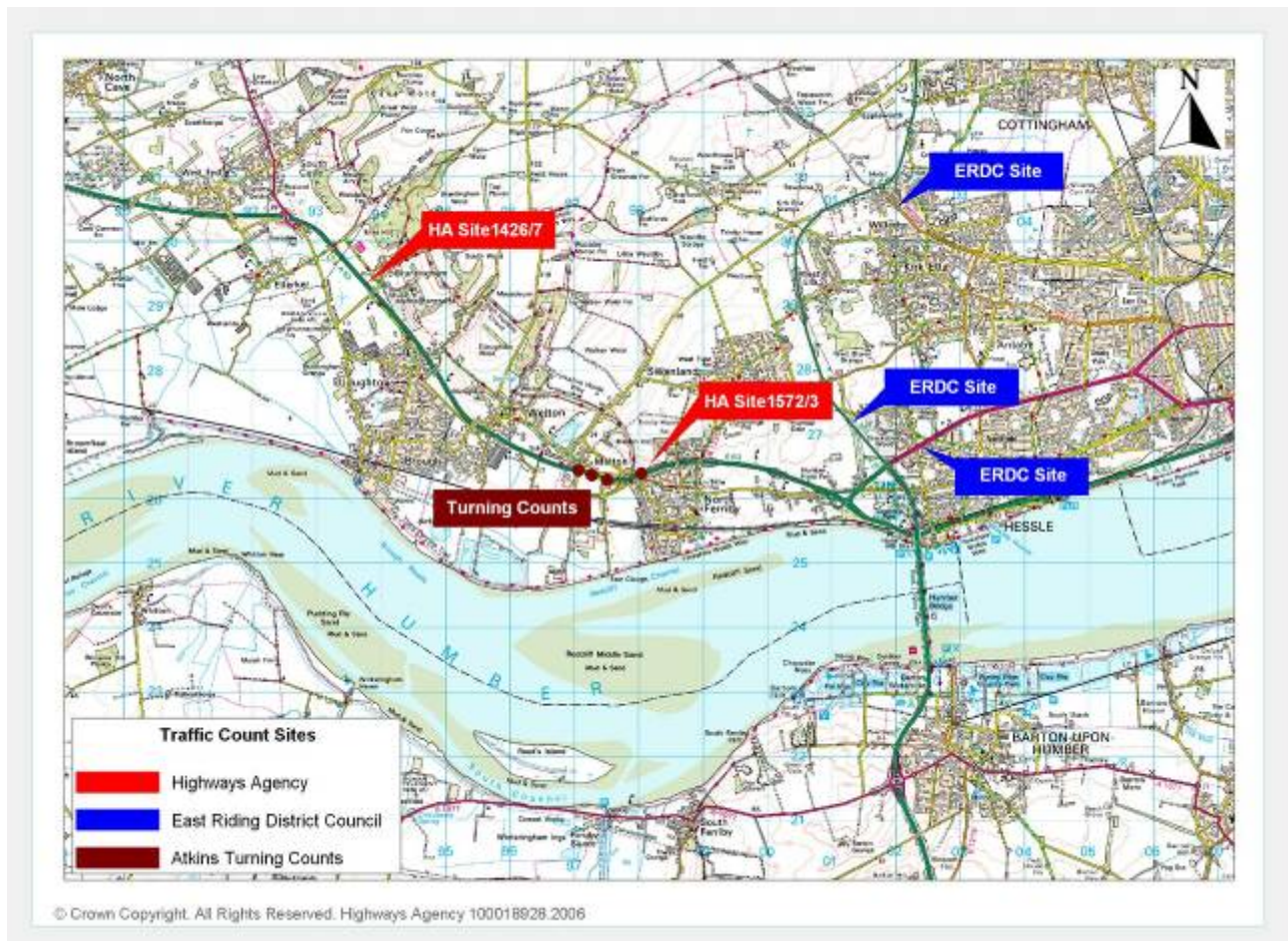


Figure 2.1 – Traffic Count Locations

2.3 The count site on the A63 at Melton has retained the same site number (1572/3) and grid reference in the Highways Agency TRADS database, although the 'Before' and 'After' counts are actually in different locations. Before construction of the Scheme, the count site

Trends

2.9 Whereas Figure 2.2 showed Before-and-After flows at a large number of sites, it is also useful to see the trend in flows on the A63 near Melton. Figure 2.3 shows the AWTs for each month since January 2002, at sites 1426/7 (west of Welton junction), and 1572/3 (east of Melton junction). Data is missing for some months at both sites, but is more complete at Welton, as the A63 here was unaffected by construction.

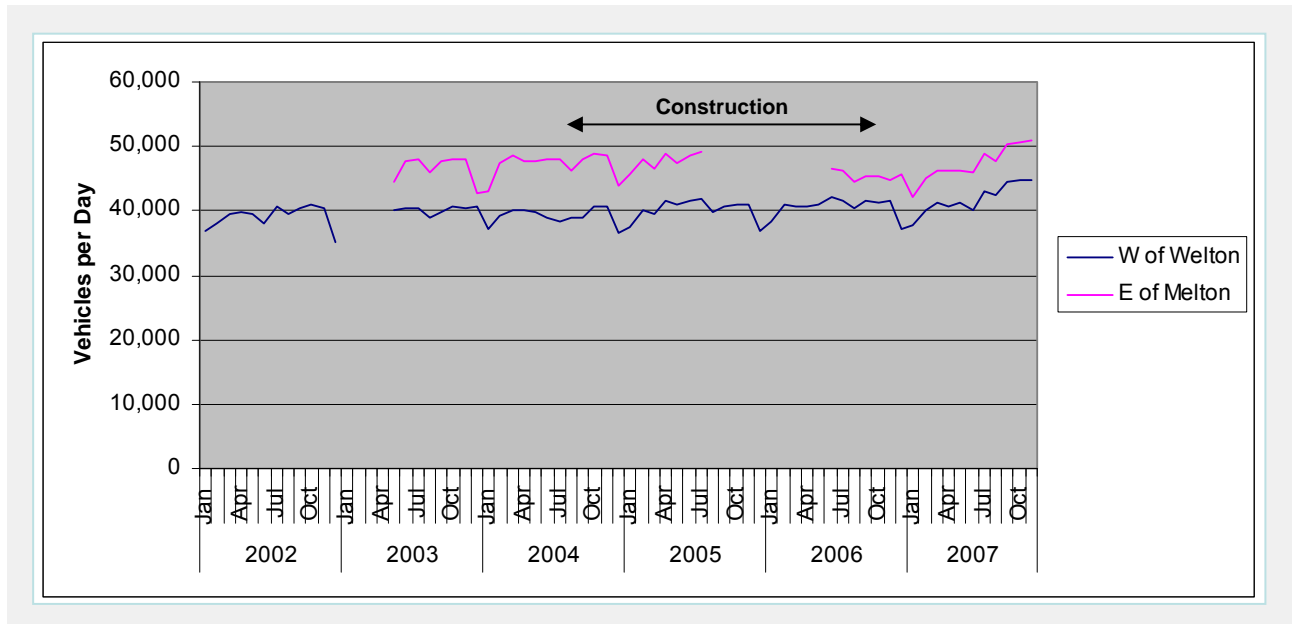


Figure 2.3 – Trends in AWTs at Two Sites on A63 near Melton

- 2.10 Perhaps the most noticeable feature of this figure is the accelerating rate of traffic growth in the year since Scheme completion. This is believed to be due to reassignment from the M180 and A1079, and not due to additional development, since no new developments have been completed in the Melton area one year after scheme opening.
- 2.11 The following histograms give more detail for site 1572/3 east of Melton. Figure 2.4 shows monthly AWTs and ADTs for the year from December 2006 to November 2007.

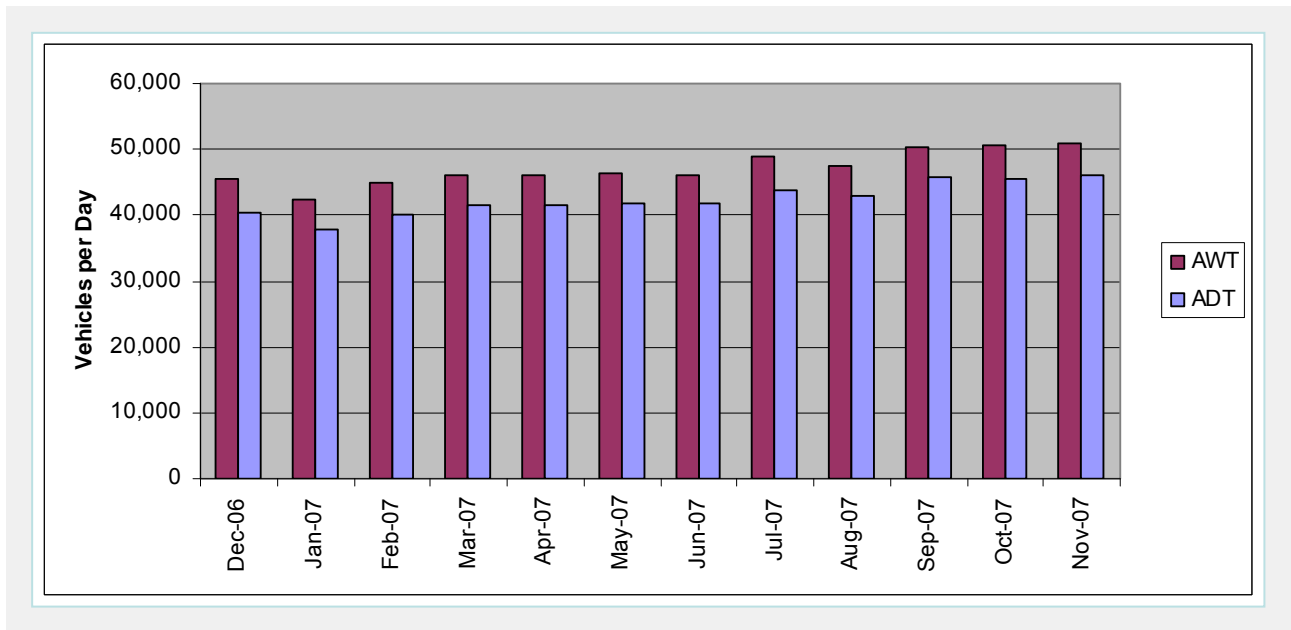


Figure 2.4 – Monthly Traffic Variation on A63 east of Melton

2.12 Figure 2.4 shows that flows in the busiest month (November 2007) is 22% higher than in the quietest month (January 2002). The month closest to the average is August, therefore seasonality by the COBA definition (which compares August with the average month) is nil. However, no correction has been made for the trend of increasing traffic, upon which seasonal variation is superimposed.

Results of Turning Counts

2.13 Diagrams and commentaries summarising the 'Before' and 'After' turning counts are given in Annex B. Note that the change in road layout has allowed differing presentations of the results. The 'Before' results are those of four separate junctions, treated individually, while the 'After' results take the form of a matrix of movements at the entire new junction. Turning flows are of course available at each new roundabout. These are not shown, but are used in economic analysis in chapter 4.

2.14 The 'Before' situation over 12 hours is summarised in Figure 2.5 below, and an 'After' matrix of 12-hour movements is given in Table 2.1.

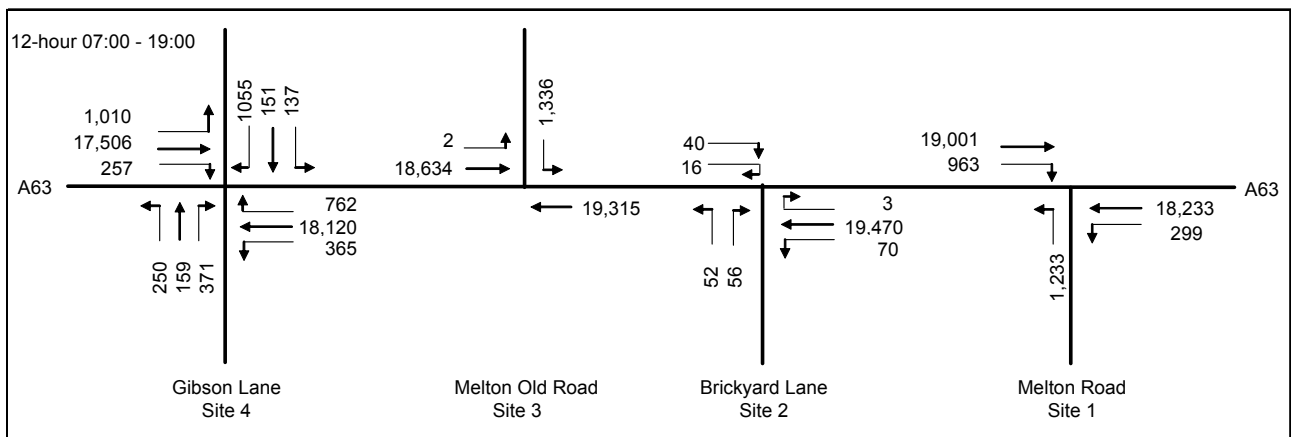


Figure 2.5 – 'Before' 12-Hour Turning Flows

Table 2.1 – ‘After’ 12-hour Matrix (Arms as Referenced in Figure 2.6)

12 Hr 07:00 to 19:00		To						Total
		A	B	C	D	E	F	
From	A	0	1524	26	773	362	51	2736
	B	0	0	544	256	191	1423	2414
	C	0	0	0	0	0	0	0
	D	0	622	211	0	617	1013	2463
	E	0	190	422	160	0	389	1161
	F	0	0	0	0	0	0	0
	Total	0	2336	1203	1189	1170	2876	8774

2.15 Link flows (12-hour) from the ‘After’ turning count are given above in Figure 2.6. This shows the total vehicles and percentage of heavy vehicles (HV), in this case taken to be the sum of vehicle classes OGV1, OGV2, and bus.

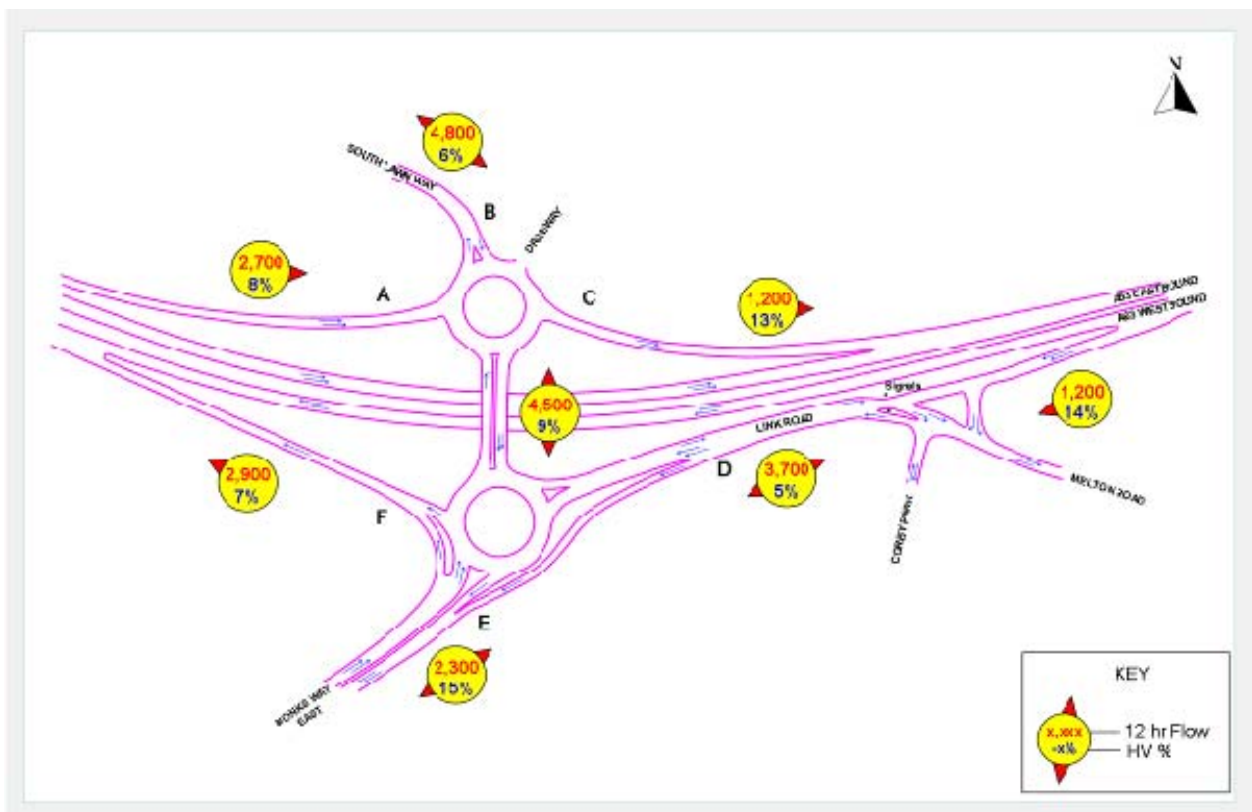


Figure 2.6 – ‘After’ 12-hour Link Flows at Melton Junction

2.16 It is not possible to compare the percentages in Figure 2.6 with classified counts collected by the Highways Agency, as there is no overlap in roads counted. However, it may be noted that on the A63 mainline, the 12-hour weekday proportion of vehicles over 5.2 metres in length is 21%.

Predicted and Actual Traffic Volumes

2.17 Predictions were based on a 1998-base traffic model. For the Do-Minimum, base year flows were projected forward to the 2006 opening year by factors reflecting anticipated local development between those years. Additionally, for the Do-Something, the Traffic Forecasting Report applied further growth to reflect new development expected to result from the improvement of Melton Junction. However, the COBA forecast does not include this additional growth (although it does include the do-minimum growth between 1998 and 2006). In the following comparison, the COBA figures are used instead of the TFR,

because although scheme-related development is under construction, it is not yet generating traffic¹.

Table 2-2 – Predicted and Actual Traffic Flows (AADT)

	Before					After				
	Predicted			Actual	Diff from Central	Predicted			Actual	Diff from Central
	Low	High	Central			Low	High	Central		
A63 W of Welton	44476	49032	46754	36508	-22%	44461	49016	46738	40337	-14%
A63 E of Melton	52043	57298	54671	42936	-21%	52025	57279	54652	45565	-17%
Gibson La, S of A63	2794	3063	2929	894	-69%					
Gibson La, N of A63	8347	10211	9279	1539	-83%					
Melton Old Rd, N of A63	7078	9316	8197	1533	-81%					
Brickyard La, S of A63	3155	3261	3208	250	-92%					
Melton Rd, S of A63	3340	3725	3532	2973	-16%					
South Lawn Way						7811	8664	8238	5182	-37%
Monks Way East						5891	6262	6076	2543	-58%
Link Road						4811	5194	5002	3984	-20%
Melton WB offslip						2336	2478	2407	1314	-45%
Melton WB onslip						5033	5427	5230	3137	-40%
Melton EB offslip						4889	5081	4985	2985	-40%
Melton EB onslip						2530	2863	2697	1312	-51%
Melton overbridge						7434	8017	7725	4910	-36%

- 2.18 Separate forecasts were made for Low Growth and High Growth scenarios. In this POPE report, these are used to provide 'Central Case' figures.
- 2.19 For purposes of comparison, all figures have been converted to 2007 24-hour AADT. In the case of the 'Predicted', this was done with factors from COBA, while for the 'Actual' case, factors from observed values were used. The resulting comparison is given in Table 2.2.
- 2.20 For all links with before-and-after traffic counts shown in the table, Predicted flows exceeded the Actual. This is believed to be due to the anticipated development traffic between 1998 and 2006 having been less than expected or non-existent. This refers to development modelled in the Do-Minimum case, as distinct from development expected to occur as a result of the scheme. This traffic would have formed a greater proportion of total flow on local roads than on the A63, which is why the percentage differences on these roads are mostly greater.

JOURNEY TIMES

Data Collection

- 2.21 'Before' and 'After' journey time runs were carried out on the A63, between the junction with the A1034 at South Cave in the west, and the A15 in the east. This is shown red in Figure 2.6 below.
- 2.22 Further journey time runs were carried out on two routes crossing the A63. The end-points for each run were identical in the 'Before' and 'After' cases, but the routes followed between the end-points differed due to changes in road layout arising from the Scheme. The 'Before' routes utilised the surface crossings that existed at the time. The 'After' routes used the overbridge, and are shown in Figure 2.7. On all routes, six runs were carried out in each direction.

¹ By the time of the Five Year After study, some or all of the scheme-related development is expected to be complete and generating traffic, therefore the basis for comparison is likely to be different from that given in the present report.

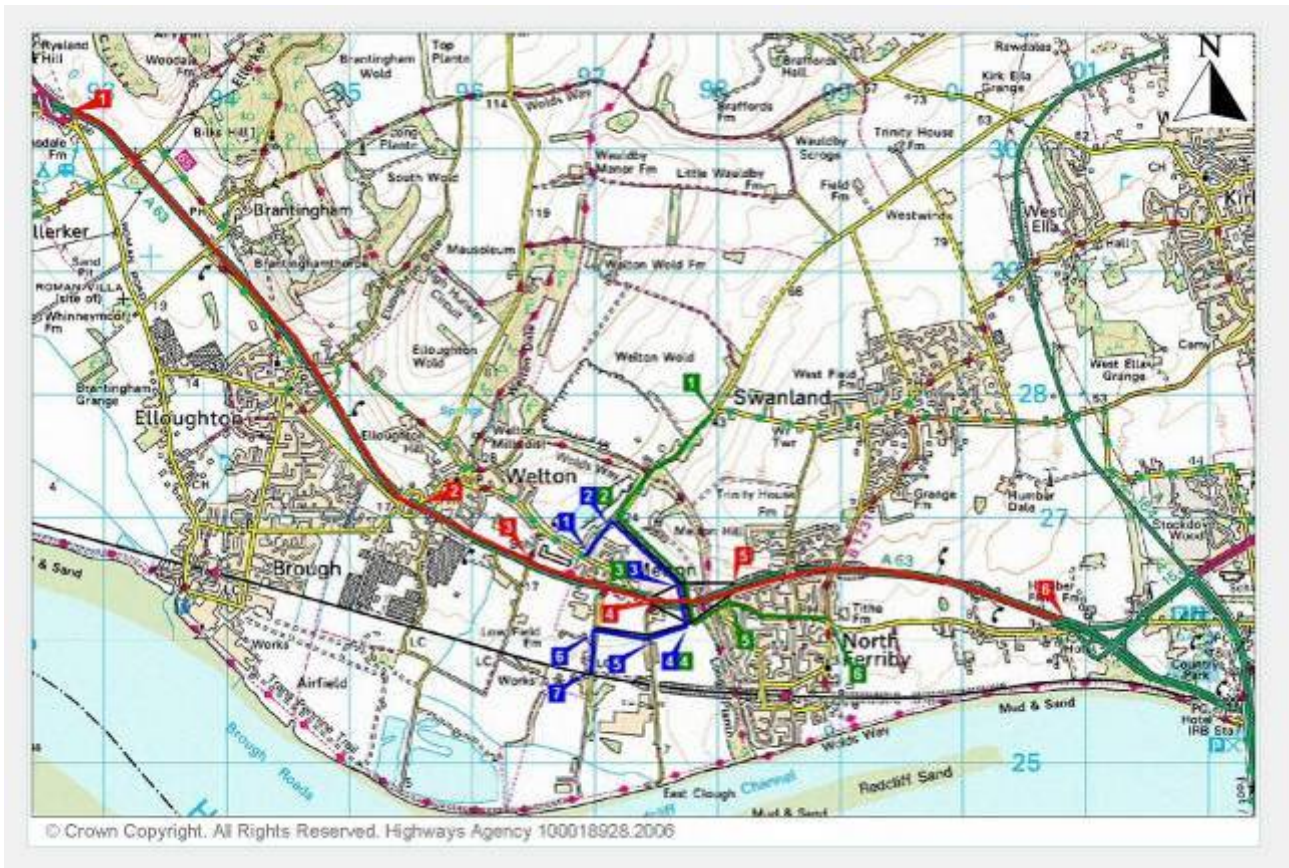


Figure 2.7 – Journey Time Routes ('After')

Journey Time Results

2.23 Average 'Before' and 'After' times between all timing points are tabulated in Annex C at the end of this report. A summary of journey time changes for the total routes is given below in Table 2.3.

Table 2-3 – Summary of Journey Time Savings (m:s)

Route	Time Savings		
	AM Peak	InterPeak	PM Peak
Red Route (A63) Eastbound	00:49	01:21	01:49
Red Route (A63) Westbound	00:29	00:50	01:28
Green Route (Swanland - N. Ferriby) Southbound	01:24	00:39	01:42
Green Route (N. Ferriby - Swanland) Northbound	02:11	01:22	02:02
Blue Route (Melton Bottom - Gibson La) Southbound	01:28	01:39	01:29
Blue Route (Gibson La - Melton Bottom) Northbound	00:02	00:21	00:00

2.24 Table 2.2 shows that on the A63 red route, time savings of up to 1 minute 49 seconds have been achieved. This is due to the removal of traffic signals, and the change to free-flow conditions for through traffic. The PM peak shows the greatest savings, and values are rather higher in the eastbound direction than westbound.

2.25 The green route shows time savings of up to 2 minutes 11 seconds, and are rather greater northbound than southbound. This route runs between the junction of Melton Bottom with Mill Road, Swanland, north of the A63, and the junction of High Street with Church Road, North Ferriby, south of the A63. The route has become 0.5 km shorter with the new road layout. However the main reason for the time saving is that it is no longer necessary to turn left into the A63 and right out of it, but now the overbridge is used instead.

2.26 The blue route shows mixed results, with time savings up to 1 minute 39 seconds southbound, but small or no savings northbound. The route runs between the junction of Melton Bottom with East Dale Road, north of the A63, and the Gibson Lane level crossing south of the A63. Previously it was necessary to cross the A63 at traffic signals, whereas now the overbridge is used, lengthening the route from 1.1 km to 2.6 km.

Key Points for Traffic:

- The A63 at Melton is used by about 50,600 vehicles per day (vpd). This is a 13% increase over the volume before the start of scheme construction.
- A 12-hour count showed the overbridge was used by 4,500 vehicles, the northern link road by 4,800 vehicles, and the southern slip road by 2,300 vehicles.
- These flows do not include traffic which will be generated by new development currently taking place as a result of the scheme.
- Observed traffic flows are lower than predicted (when compared with a prediction which did not include trips generated by development due to the scheme).
- It is believed that less development took place in the area between 1998 and 2006 than was assumed in the Do-Minimum scenario.
- The scheme has resulted in journey time savings up to 1.8 minutes for through A63 traffic.
- Journey times on routes crossing or turning at the junction show savings between nil and 2.2 minutes.

3. Safety

ACCIDENT DATA COLLECTION

- 3.1 In accident studies it is normal to use a minimum of three years' data, therefore at this stage, the results must be considered as provisional. Records of personal injury accidents (PIAs) and casualties were obtained from East Riding of Yorkshire Council. The study area includes the A63, the old and new roads at Melton Junction, Welton Junction, and Welton Old Road, between the villages of Melton and Welton. This study area basically corresponds with the COBA network. The roads forming the study area are shown highlighted in the following Figure 3.1.

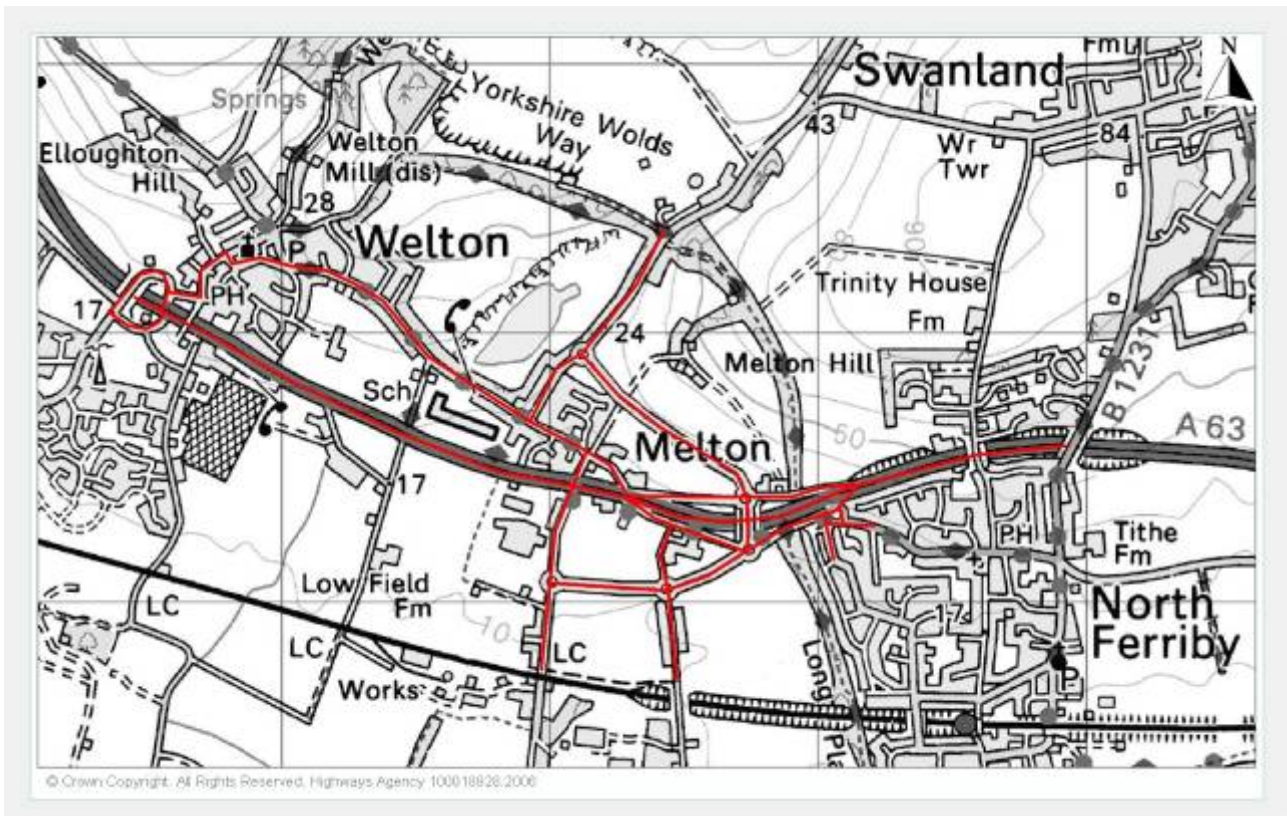


Figure 3.1 – Roads Used in Accident Analysis

- 3.2 Data covered the period August 2001 – July 2004 (three years before the start of scheme construction), and May 2007 – October 2008 (one-and-a-half years after the ending of traffic management following scheme opening). Where annual 'Before' accident rates are used, these have been derived by dividing the totals by 3, and the 'After' rates by 1.5. Traffic calming, including a 20 mph speed limit has been introduced in Welton in 2001.

RESULTS

- 3.3 The locations of accidents occurring within the study area are shown below in Figures 3.2 and 3.3. These are differentiated by severity, with green denoting 'serious' and yellow denoting 'slight'. There were no 'fatal' accidents during the periods considered.

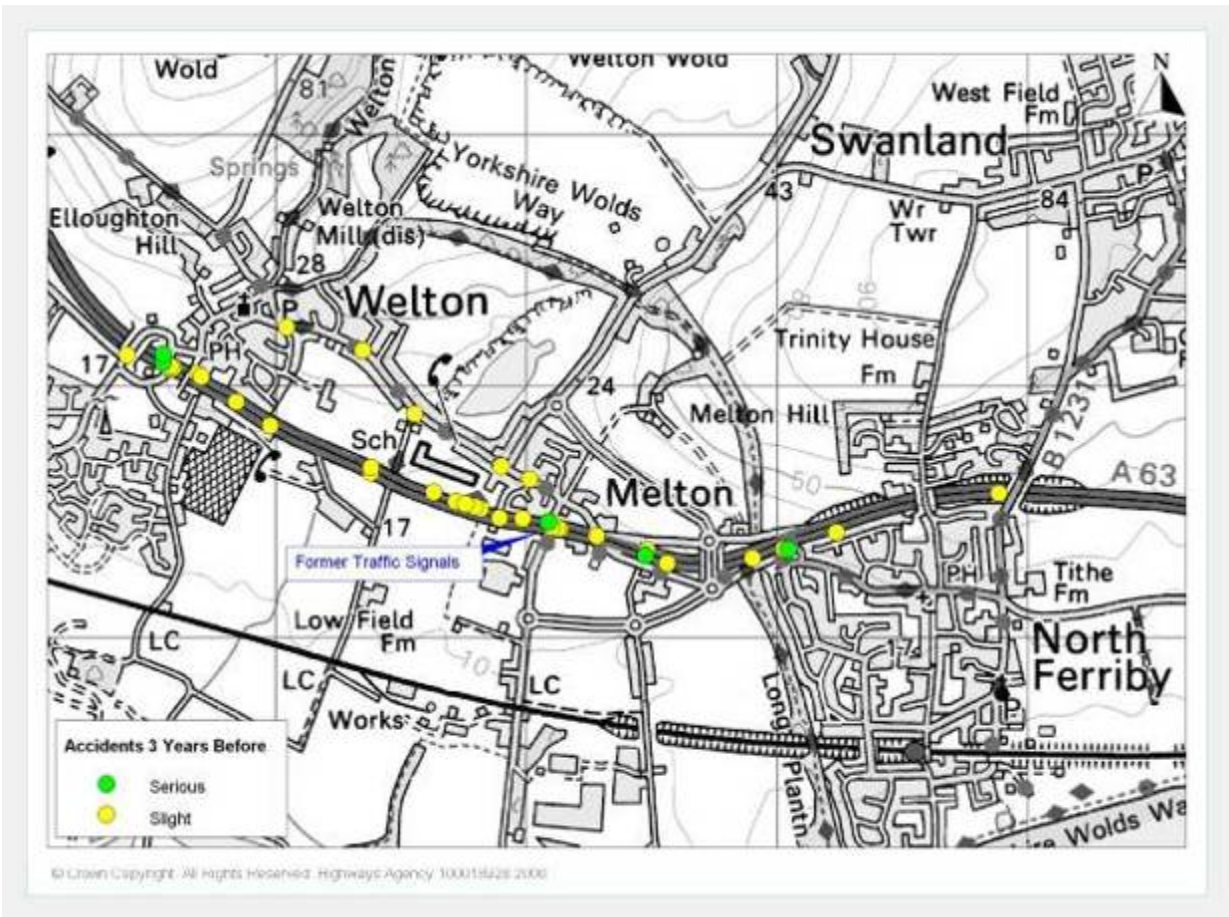


Figure 3.2 – Accidents during 3 Years ‘Before’ Scheme Construction

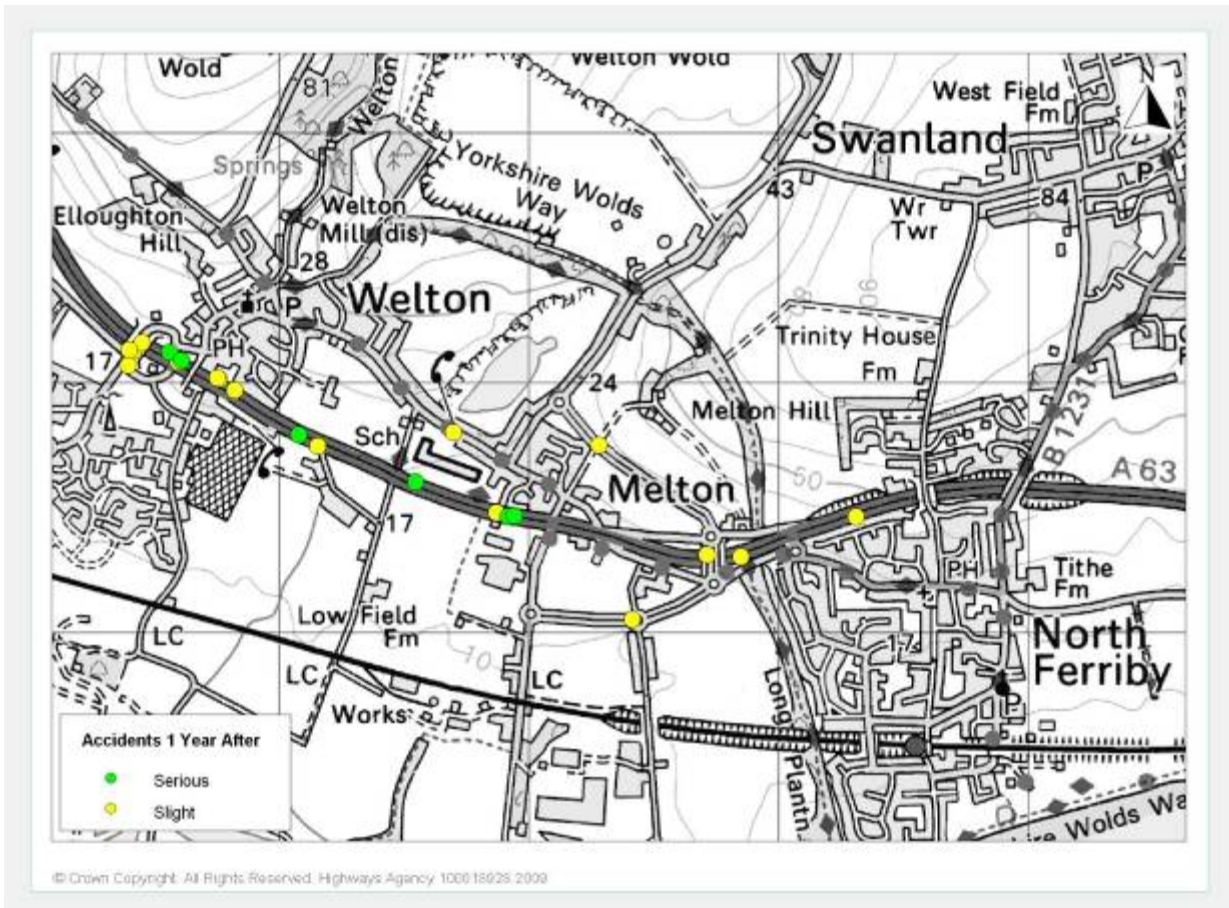


Figure 3.3 – Accidents during 1.5 Years ‘After’ End of Traffic Management

- 3.4 Table 3.1 gives the numbers of PIAs and casualties in the study area by severity. This shows that over the study area, there have been only 0.7 fewer accidents per year, or essentially no change. Note that this is a preliminary result based on only 18 month's 'After' data, and the full benefit of the scheme may not yet be felt.
- 3.5 This result may be compared with the COBA prediction, for the no-induced traffic case, that 7.3 accidents would be saved in the first year. The no-induced traffic prediction is considered relevant at this one-year-after stage, since development traffic resulting from the Scheme has not yet been generated. (Note that when induced traffic was taken into account, accident numbers were predicted to increase).

Table 3-1 – Accidents and Casualties within Study Area

	Accidents per Year		Casualties per Year	
	Before	After	Before	After
Fatal	0.0	0.0	0.0	0.0
Serious	1.7	4.0	2.7	5.3
Slight	13.7	10.7	19.0	13.3
Total	15.3	14.7	21.7	18.7

- 3.6 Those accidents occurring within the strict confines of the scheme area (rather than the wider study area) are shown below in Table 3.2. The area includes slips and link roads constructed as part of the Scheme, in the 'After' case. This subset does show a decline in numbers, with a halving of the annual rate. However a reduction in the immediate scheme area implies an increase elsewhere in the study area.

Table 3-2 – Accidents Confined to Scheme Area

	Accidents per Year		Casualties per Year	
	Before	After	Before	After
Fatal	0.0	0.0	0.0	0.0
Serious	1.0	0.0	1.3	0.0
Slight	5.7	3.3	9.0	4.0
Total	6.7	3.3	10.3	4.0

- 3.7 Accident numbers on the A63 itself in the study area are shown in Figure 3.3 below. The 'Before' figures are annual averages. The Severity Index is the number of Fatal + Serious accidents as a ratio of the total. This measure is seen to have increased from 0.125 to 0.375. The final column is the number of personal injury accidents per million vehicle-kilometres, a measure which allows traffic volume to be taken into account. This shows a decrease from 0.258 to 0.184. Note this still exceeds the national average accident rate of 0.108 for this class of road.

Table 3-3 – Accidents on the A63 in Study Area

	ACCIDENTS				Severity Index	Dist km	AADT	mvkm	pia/mvkm
	Fatal	Serious	Slight	Total					
Before	0.0	1.7	11.7	13.3	0.125	3.7	38,300	51.724	0.258
After	0.0	4.0	6.7	10.7	0.375	3.7	43,000	58.072	0.184

- 3.8 It is of interest to discover whether any change in the nature of accidents has occurred as a result of the scheme. Therefore Table 3.4 below lists the numbers of accidents in various categories 'Before' and 'After' the Scheme. Note that categories 7 and 8 apply only to the old layout. Category 8 includes both shunts and conflicting movements at the former traffic signals, so that category 3 excludes these shunts. Category 9 applies only to the new layout.

Table 3-4 – Categorised Accidents ‘Before’ and ‘After’

Accident Category	Accidents per Year	
	Before	After
1 Single vehicle loss of control	4.3	6.7
2 Collision at A63 slip road merge	0.7	2.0
3 Shunt on A63 main carriageway	2.7	2.7
4 Collision changing lane on A63 main carriageway	2.3	1.3
5 Collision on minor roads	1.3	1.3
6 Pedestrian hit by vehicle	0.7	0.0
7 Collision crossing A63 central reserve (old layout)	1.0	0.0
8 Collision at A63 signals (old layout)	2.3	0.0
9 Collision on link roads (new layout)	0.0	0.7
Total	15.3	14.7

3.9 Single-vehicle accidents form the largest category, and have increased in proportion ‘After’, accounting for nearly half of all accidents. Collisions at slip roads have increased slightly, and lane-change collisions have reduced slightly. There were slightly more accidents that were only possible in the old layout (categories 7 & 8) than those possible only in the new layout (category 9).

Conclusion

3.10 A preliminary result is that the Scheme has not yet resulted in a significant improvement in road safety in a study area corresponding to the COBA network, although within the limit of the scheme itself, accidents have halved. At present only 18 month’s results are available post-opening, whereas accident studies are normally based on at least three years’ data. More reliable conclusions will be possible in the Five Years After report.

Key Points for Safety:

- Based on only 18 months’ data since scheme opening, there has been a negligible change in accident rates over the study area used in forecasting. This compares with a predicted saving of 7.3 accidents saved in the opening year.
- However, there has been a reduction equivalent to 3.4 accidents per year, in the strict confines of the scheme.
- On the A63, the accident rate has fallen from 0.258 to 0.184 PIAs per million vehicle-kilometres. This remains above the national average for this type of road.
- There has been an increase in single-vehicle accidents, but accidents at traffic signals and crossing the central reservation have been eliminated.

4. Economy

SCHEME COSTS

- 4.1 The total cost given by the Highways Agency (July 2008) is £43.9 million. A contribution of £2.7 million was made by the developers of Melton and Melton West business parks, and when this is subtracted the cost becomes £41.2 million. This figure is the sum of expenditure from 2000 to 2007, as spent. For comparative purposes, it is necessary to convert both predicted and actual costs to a common base year. In POPE studies, a 2002 base year is used.
- 4.2 Table 4.1 below compares predicted and actual costs, all converted to 2002 prices. The prediction is that for 'Do-Something Scheme 2', for costs expected to be incurred between 2000 and 2006, as given in the Economic Assessment Report (EAR). Since both predicted and outturn costs start from 2000, a comparison is valid. Table 4.1 shows that the outturn cost was £37.6 million, compared with the prediction of £14.1 million (undiscounted). Thus the outturn cost was 2.6 times that predicted in the EAR. Note that for comparison of predicted and actual costs, it is appropriate to consider undiscounted values, while for comparing costs with benefits, the discounted values should be used.

Table 4-1 – Predicted and Actual Costs (at 2002 Prices)

	Predicted (£m)	Actual (£m)
Undiscounted	14.1	37.6
Discounted	13.0	34.2

- 4.3 The cost overrun is subject to Highways Agency internal audit and external review, and has been notified to the Secretary of State.

PREDICTED AND OBSERVED BENEFITS

- 4.4 Different predictions were made at various stages during the scheme's design, and judgement is needed to select the most appropriate set as the basis for comparison. Two Appraisal Summary Tables (ASTs) are known:
- ◆ The first AST dates from 2000, and was used for the Public Inquiry. It shows 30-year benefits which can be matched with COBA results presented in the Economic Assessment Report (EAR). The AST & COBA assume no increase in trips due to the scheme. The costs and benefits relate to a present-value year of 1994, discounted at 6%.
 - ◆ The second AST dates from November 2003. The vehicle-time benefits are derived from URECA output, and the accident benefits are derived from COBA. Future development traffic is taken into consideration. The present-value year is 1998, and the assessment period is 30 years. Neither the URECA values nor the COBA values can be matched with any results in the Economic Assessment Report. They are evidently derived from new model runs undertaken after the EAR was issued, and after the Public Inquiry¹.

¹ It has been subsequently ascertained that the reassessment was made to support a new DfT funding submission prior to scheme procurement in November 2003, following PAR guidance applicable at the time.

- 4.5 One of the scheme objectives was to cater for new development. Monks Way East has accesses to future development sites, indeed Melton Business Park is currently under construction. However none of the proposed development has been completed, and no associated traffic is yet present on the road network.
- 4.6 The first AST relates to the ‘Option 1’ scheme, whereas Option 2 was actually built. COBA files for both options have been obtained. However, the differences in benefits between the two options are quite minor, as shown by a comparison in the EAR. The original AST contains the figures that would have been used in the Orders Publication Report (OPR) and the Public Inquiry. The derivation of the figures in the original AST is understood, and development traffic is not included, matching actual conditions at this One Year After stage.
- 4.7 For these reasons, it is appropriate to use the COBA for Option 2 as a basis of predictions in this chapter. The first AST will be evaluated in chapter 6. The predicted costs and benefits are summarised in Table 4.2 below.

Table 4-2 – Summary of Predictions (at 1994 Values)

		Predicted Costs & Benefits			
Date of Appraisal	2000				
Appraisal Period	30 years				
Present-value Year	1994				
Predictions	Low Growth		High Growth		
	£ million	% of PVC	£ million	% of PVC	
- Journey Time	25.3	433%	67.6	1156%	
- Vehicle Operating Cost	-6.1	-104%	-4.0	-68%	
- Accident	3.1	53%	5.4	92%	
- Constr & Maint Delays	-2.4		-4.0		
Present Value of Benefit (PVB)	20.0		65.1		
Present Value of Cost (PVC)	5.9		5.9		
Net Present Value (NPV=PVB-PVC)	14.1		59.2		
Benefit Cost Ratio (BCR=PVB/PVC)	3.4		11.1		

- 4.8 Table 4.2 shows that the total benefit was predicted to be £20.0 million in the low growth scenario, and £65.1 million in the high growth scenario (at 1994 values). No ‘central case’ was given.

THE POPE METHODOLOGY

- 4.9 It is usual in POPE reporting to assess a scheme’s economic benefits by two separate methods, the ‘POPE Methodology’, which is described in this section, and the ‘COBA Methodology’, which follows later.
- 4.10 The POPE Methodology measures the changes in annual vehicle-hours and in accidents at key links and junctions in the network, based on observed data. These annual changes are compared with predicted changes at the same links and junctions, taken from a COBA run for the same year. The observed:predicted ratios are applied to the predicted monetary benefits (converted to 2002 values) resulting from vehicle-time and accident savings, to derive new ‘observed’ values of these benefits.

Vehicle-hours

- 4.11 For this calculation, the actual ‘Before’ traffic flows have been factored to October 2007, the same as the ‘After’ date. The results for vehicle-hours are summarised in the table below.

Table 4-3 – Benefits from Vehicle-Hour Savings (at 2002 Values)

		COBA		Outturn
		Low	High	
Annual Vehicle-Hours	Before	1,347,856	1,633,969	1,093,542
	After	1,228,494	1,285,606	876,111
	Difference	-119,362	-348,364	-217,431
Monetary Time Benefit £m		49.295	130.578	85.648

- 4.12 The total observed time saving is 217,431 vehicle-hours in the opening year. This is based on the product of traffic flows and journey times, summed for all the relevant links and junctions.¹
- 4.13 For the same traffic movements, the COBA low-growth prediction was a first-year saving of 119,632 vehicle-hours, corresponding to a 30-year monetary benefit of £49.295 million (at 2002 values). Using the same ratio of time saving to monetary benefit, the observed saving gives a benefit of £89.797 million.
- 4.14 The COBA high-growth prediction was a first-year saving of 348,364 vehicle-hours, corresponding to a 30-year monetary benefit of £130.578 million (at 2002 values). Again using the same ratio of time saving to monetary benefit, the observed saving in this case gives a benefit of £81.500million.
- 4.15 Thus similar values for the observed time benefit are derived in each case, which are approximately mid-way between the high-growth and low-growth predictions. In this POPE evaluation it is proposed to use values mid-way between Low and High growth. This gives an Observed benefit of £85.648 million, and this figure is entered in Table 4.3.

Accidents

- 4.16 As shown in the previous chapter, there has been a reduction of 0.7 accidents per year, compared with 7.3 predicted. The actual saving is 9% of the predicted saving.
- 4.17 The predicted monetary benefits were £7.780m for Low Growth, and £13.572m for High Growth (at 2002 values). The 'actual' re-evaluated benefit is 9% of the central-case prediction, or £0.959 million. See Figure 4.4.

Table 4.4 Benefits from Accident Savings (at 2002 Values)

		COBA		Outturn
		Low	High	
Annual Accidents	Before	22.0	24.5	15.3
	After	15.1	16.7	14.7
	Difference	-6.9	-7.8	-0.7
Monetary Time Benefit £m		7.780	13.572	0.959

Summary of POPE Methodology

- 4.18 The following table summarises the scheme benefits from the POPE methodology evaluation, one year after opening. The outturn benefit of £85.648 million is 15% lower than predicted, due largely to the absence of an accident saving.

¹ Although more traffic now uses the A63, the 'Rule-of-Half' has not been used, since it is only appropriate for induced, but not reassigned traffic.

Table 4-4 – Predicted and Actual Benefits (at 2002 Values)

	COBA Prediction			Outturn
	Low	High	Central	
Vehicle-Time Benefit £m	49.295	130.578	89.93672	85.648
Accident Benefit £m	7.780	13.572	10.676	0.959
Combined Benefit £m	57.075	144.150	100.613	86.607

THE COBA METHODOLOGY

- 4.19 This section presents a comparison of predicted benefits as calculated by COBA and an assessment of what those benefits would be if the outturn traffic volumes and journey time savings were known at the time of forecasting.
- 4.20 The COBA files used to derive the AST were requested from the Highways Agency. Two sets of files were supplied, one relating to Option 1 (given in the AST), and another relating to Option 2 (which was actually built). The results from the two options differ slightly, and it was felt more appropriate to use the Option2 version. The comparison between results from this COBA and the AST are given in Table 4.5 below.

Table 4-5 – Comparison of Benefits from Different Sources (at 1994 Values)

	AST (Option 1)		EAR (Option 2)		COBA Replication	
	Low	High	Low	High	Low	High
Present Value of Cost (PVC) - £m	5.1	5.1	5.9	5.9	5.3	5.3
Journey Time Benefit - £m	23.2	64.2	25.3	67.6	25.3	67.0
Operating Cost - £m	-6.2	-4.2	-6.0	-4.0	-6.0	-4.0
Accident Benefit - £m	3.0	4.9	3.1	5.4	4.0	7.0
Constr & Maint Benefit - £m	-	-	-2.4	-4.0	-2.4	-4.0
Present Value of Benefit (PVB) - £m	20.0	64.9	20.0	65.1	20.9	66.0
Net Present Value (NPV) - £m	14.9	59.8	14.2	59.2	15.6	60.7
Benefit Cost Ratio (BCR)	3.9	12.8	3.4	11.1	3.9	12.5

- 4.21 When the COBA files for Option 2 were re-run, to try to replicate the EAR benefits, large differences were encountered, which turned out to be due to the scheme costs being entered as pounds rather than thousands of pounds. Therefore the files supplied could not actually have been those used to compile the EAR. When these errors were corrected, a re-run of the COBA program produced results which were similar to those of the EAR, but not identical. These results appear in Table 4.5 above. Nevertheless, the match is considered sufficiently close for these files to be used as the basis for further work.
- 4.22 When the input files were modified by the inclusion of observed traffic data (but not accidents), for both Do-Minimum and Do-Something, the outturn benefits were approximately 85% of those predicted. The difference between the Low-Growth and the High-Growth results is far greater than the difference between prediction and outturn. Note that the COBA results include vehicle operating costs and construction and maintenance delays (input from the QUADRO program), that were missing from the POPE methodology. The updated COBA results are shown converted to 2002 values in Table 4.6 below. A 'central case' column has been added.

Table 4-6 – Updated COBA Results (at 2002 Values)

	COBA Update		
	Low	High	Central
Present Value of Cost (PVC) - £m	10.3	10.3	10.3
Journey Time Benefit - £m	38.4	98.1	68.3
Operating Cost - £m	-5.6	-1.6	-3.6
Accident Benefit - £m	11.0	20.4	15.7
Constr & Maint Benefit - £m	-4.6	-7.6	-6.1
Present Value of Benefit (PVB) - £m	39.3	109.3	74.3
Net Present Value (NPV) - £m	28.9	99.0	64.0
Benefit Cost Ratio (BCR)	3.8	10.6	7.2

COMPARISON OF POPE WITH COBA METHODOLOGY

4.23 A comparison of the Predicted and Outturn 'central case' benefits (at 2002 values) is shown in the table below. The low outturn time benefits from the COBA methodology are due to the traffic flows having been over-predicted, leading to unrealistically high modelled Do-Minimum peak time delays, particularly at the Gibson Lane signal junction.

Table 4-7 – Comparison of 'Central Case' Benefit Calculations (at 2002 Values)

	Prediction	Outturn	
		POPE	COBA
Journey Time Benefit - £m	90.6	85.6	68.3
Accident Benefit - £m	8.3	1.0	15.7
Combined Benefit -£m	98.8	86.6	84.0

4.24 Although the outturn results are not quite as high as the central-case prediction, it is apparent that the anticipated journey-time benefits have been largely realised, even without taking into account any future induced traffic. Both sets of outturn central-case time benefits are well within the Low/ High Growth range of predictions. The accident benefits are difficult to quantify with only 18 months' data, and may well become more favourable in a repeat evaluation at the Five Years After stage.

Key Points for Economy:

- The outturn cost was £34.2 million (at 2002 prices, discounted). This is 160% higher than predicted.
- The 30-year benefit, as re-evaluated by the COBA methodology, is £84.0 million (2002 present value). This is 15% lower than predicted.
- The re-evaluated BCR is 2.5.
- This analysis does not include the effects of development facilitated by the scheme, as this is currently still under construction.

5. Environment

5.1 Environment, accessibility and integration are the three remaining objectives of the five Government objectives for transport. As part of the schemes predicted impacts, these objectives were covered in the Appraisal Summary Table AST, (see chapter 6) and formed part of the scheme's pre-opening assessment. As part of the evaluation of this scheme's impacts, this study also reviewed the scheme's influence upon the environment.

Data Collection

5.2 The following documents have been used in the preparation of the Environment section of the report. The list of background information requested to help evaluation of this scheme is included at the end of this chapter.

- ◆ Highways Agency (2000) Appraisal Summary Table - Pre-Implementation.
- ◆ Hyder Consulting (2000) A63 Melton Grade Separated Junction, Environmental Statement Volume 1. Highways Agency.
- ◆ Hyder Consulting (2000) A63 Melton Grade Separated Junction, Environmental Statement Volume 2 Part 1: Landscape, Part 2: Ecology and Nature Conservation, Part 3: Cultural Heritage, Part 4: Planning & Policies, Part 5: Air Quality, Part 6: Water Quality, Part 7: Traffic Noise. Highways Agency.
- ◆ Scott Wilson (2004) A63 Melton Grade Separated Junction, As-built Boundary Fencing drawings. Drawing numbers AB/PD0033/FE/01 to AB/PD0033/FE/05.
- ◆ Scott Wilson (2005) A63 Melton Grade Separated Junction, As-built Landscape Detailed Design. Drawing numbers PD0033/LS/111 to PD0033/LS/124.
- ◆ Scott Wilson (2004) A63 Melton Grade Separated Junction, Detailed Design Drainage Layout. Drawing numbers AB/PD0033/HD/501 to AB/PD0033/HD/514.
- ◆ Scott Wilson (2004) A63 Melton Grade Separated Junction, Attenuation Pond Details. Drawing number AB/PD0033/HD/013.
- ◆ Scott Wilson (2004) A63 Melton Grade Separated Junction, Environmental Barriers. Drawing number AB/PD0033/FE/500 to AB/PD0033/FE/507.
- ◆ Noise & Air Quality Proof of Evidence October 2001

Environmental Effects

5.3 The AST stated that the negative environmental impacts of the scheme would be to:

- ◆ heritage (moderate adverse);
- ◆ community severance (moderate adverse);
- ◆ landscape (slight adverse); and,
- ◆ biodiversity (slight adverse).

5.4 The AST also stated the environmental benefits would be to:

- ◆ pedestrians (slight beneficial);
- ◆ noise (slight beneficial);
- ◆ air quality (slight beneficial); and
- ◆ water (slight beneficial/neutral).

5.5 The ES stated that the negative environmental impacts of the scheme would be to the environmental sub-objectives listed below.

- ◆ Heritage: the ES predicted adverse impacts on archaeological sites including a site of regional importance; an Iron Age/Romano-British and medieval settlement on South Lawn.
- ◆ Landscape: the ES predicted an overall slight adverse impact on the quality of the landscape, part of which is locally designated as an Area of High Landscape Value.
- ◆ Biodiversity: loss of habitats of ecological importance at the local scale including broadleaved woodland, hedgerow and standard trees.
- ◆ Accessibility: some new severance to the local community.
- ◆ Air Quality: increase in air pollution with the scheme compared with if the scheme was not constructed.
- ◆ Melton Hill Lodge (which is owned by the Highways Agency and currently unoccupied) and brick outbuildings at Home Farm would be demolished.

5.6 The ES also stated the greatest environmental benefits would be to the environmental sub-objectives listed below.

- ◆ Landscape and visual; visual benefits to 9 properties.
- ◆ Water; comparatively low risk of pollution incident contaminating local aquifers or watercourses due to new drainage system, which includes a balancing pond and oil / petrol interceptors.
- ◆ Biodiversity; improved amenity and ecological value due to provision of new balancing pond.
- ◆ Accessibility; relief from existing severance including increased safety through provision of improved pedestrian and cyclist crossing facilities.
- ◆ Overall decrease in traffic noise with the proposed scheme, compared with an increase in traffic noise without the scheme due to predicted traffic growth over time. This is due to a decrease in traffic noise on some roads adjacent to the A63 with the proposed scheme, compared with an increase in traffic noise without the scheme due to traffic growth over time. Significant traffic flow decreases, and hence noise decreases would occur along Brickyard Lane and Gibson Lane (north of the new link road) and Melton Old Road. Noise increases greater than 3 dB(A) are predicted for properties along Brickyard Lane and Gibson Lane (south of the new link road), and Corby Park and Melton Road.

Site Visit

5.7 A site visit was undertaken on 28th March 2008 which allowed the scheme to be viewed from the A63 highway, the Woodside overbridge, the Gibson Lane footbridge, adjacent local roads and from other publicly accessible areas, for example, footpaths and embankments.

Consultation

5.8 As part of the evaluation process we have consulted with the Statutory Bodies; Natural England, English Heritage and the Environment Agency. In addition we consulted: East Riding of Yorkshire Council; Humber Archaeology Partnership; North Ferriby Parish Council; Scott Wilson Consultancy; and On-Site Archaeology Ltd., regarding their opinion of the scheme on the environmental resources of the area surrounding the scheme. The consultees were asked to comment on whether in their opinion the mitigation measures implemented have been effective; and whether the effects of the scheme have been worse than expected, as expected, or better than expected

5.9 Table 5.1 shows which organisations were contacted, their field of interest, and the responses received. A summary of their comments is included within each relevant topic in this environment section of the POPE report.

- 5.10 Background information has also been provided by the Design and Build (D&B) Contractor, including environmental and landscape planting plans.

Table 5.1 – Summary of Consultation Responses

Organisation	Field of Interest	Response Received
		Comments
Natural England	Landscape, Biodiversity	Due to a lack of information held by Natural England it is not possible for it to comment on the environmental effects of the scheme or whether the proposed mitigation measures are in place.
English Heritage	Heritage	No response
Environment Agency	Water	It has consulted internally with various experts in the fields of drainage, pollution and biodiversity and has no information relating to the impact of the new carriageway that would enable it to make an assessment.
East Riding of Yorkshire Council (ERYC)	General	ERYC do not have a county ecologist and suggested speaking to Natural England or Yorkshire Wildlife Trust for biodiversity related enquiries. ERYC suggested speaking to Humber Archaeological Partnership since they represent ERYC on heritage issues. ERYC commented on landscape, noise and access.
North Ferriby Parish Council	Landscape, Noise, Local Access	No response
Humber Archaeology Partnership (County Archaeologist)	Heritage	Provided comments about the preparation of the excavation report and consultation process. (Telephone response)
Scott Wilson Consultancy	Heritage	No response
On-Site Archaeology Ltd.	Heritage	Provided comments about the archaeological fieldwork. (Telephone response)

ENVIRONMENT

Traffic growth

- 5.11 Three of the environmental parameters, noise, greenhouse gas, and local air quality, are directly related to traffic flows. No new modelling has been undertaken as part of this study. In line with the POPE methodology, an assumption has been made that the level of traffic and the level of traffic noise or local air quality associated with that traffic are directly related. Therefore, if the observed level of traffic is as forecast it could be assumed that the traffic noise and local air quality impacts are as expected.
- 5.12 Traffic growth forecasts are provided for National Road Traffic Forecasting (NRTF) low and high traffic growth, for the ES predicted opening year of 2006 only. This is due to the fact that the predicted traffic flow figures for the grade separated junction was associated with development of the land around the junction which has not yet occurred (in June 2008). The original traffic growth figures predicted in the ES, for the design year, took into account the growth in industrial development around the junction. Since less development has progressed than expected in the opening year, it is not helpful to use the opening year figures to predict the traffic growth in the design year, 2021.

5.13 The predicted and observed traffic flows are summarised in Table 2-1 in Chapter 2 of this report. For all links with before-and-after traffic counts shown in Table 2-1, predicted flows exceeded the observed flows. This is likely to be because the anticipated development traffic between 1998 and 2006 is less than expected or non-existent, due to the proposed development not being as far advanced as expected. This traffic would have formed a greater proportion of total flow on local roads than on the A63, which is why the percentage differences on the local roads are mostly greater.

Noise

Predicted Impacts

5.14 The AST predicted that:

- ◆ noise decreases of greater than 3dB(A) would occur to the south due to realignment of the A63 to the north and screening provided by the slip roads;
- ◆ noise increases of greater than 3dB(A) arise due to Melton Bottom link (now called South Lawn Way);
- ◆ the number of properties experiencing an increase in noise is 12 and the number of properties experiencing a decrease in noise is 73 (assuming NRTF high growth); and,
- ◆ a net 69 properties experience lower noise levels (assuming NRTF high growth).

5.15 The ES predicted the noise effects listed below.

- ◆ The realignment of the main A63 carriageway further to the north in the central part of the scheme, coupled with the construction of raised slip roads on embankment (which would act as a noise barrier and screen sections of the main carriageway) would result in noise reductions of between 3-5 dB(A) and 5-10 dB(A) for 33 dwellings south of the road. These locations are at Main Road, Melton Fields and the end properties in Plantation Drive. The bowling green at Melton Fields would similarly benefit in this way.
- ◆ The closure of Melton Old Road, north of the scheme, was expected to bring noise reductions of between 3-5 dB(A) and 5-10 dB(A) for approximately 28 dwellings at this location.
- ◆ The reduction in traffic flows along East Dale Road would bring reductions of almost 3 dB(A) by the year 2021.
- ◆ Since there were few dwellings to the north close to the central part of the scheme, the beneficial movement of the main carriageway away from dwellings to the south would have very limited noise impacts to the north. However, the new link road to Melton Bottom would bring traffic flows closer to the rear facades of dwellings in St James Road that were not previously directly affected by traffic noise, bringing noise increases of 3-5 dB(A) for 11 dwellings.
- ◆ Due to the predicted traffic flow increases south of the scheme along Melton Road and Corby Road, noise increases of approximately 3 dB(A) or just under were predicted for dwellings in these roads. Noise increases of approximately 9 and 7 dB(A) respectively were predicted for Brickyard Lane and Gibson Lane (south of Monks Way East). These increases in traffic were primarily due to the new industrial and residential developments proposed for the area south of the A63, rather than a direct consequence of the scheme itself.
- ◆ The property Woodside was likely to be eligible for noise insulation by due to a predicted exceedance of the Noise Insulation Regulations specified level of 68 dB(A). Home Farm, Nos. 7 and 9 Gibson Lane and Nos. 4 and 5 Hellyer Close at the eastern end of the scheme have also been identified as likely to be eligible for insulation. It was also possible that 10 dwellings in Reynolds Close may also be eligible for insulation under the Noise Insulation Regulations. A detailed assessment of eligibility would be undertaken as a matter of course prior to the road's construction using the latest design drawings and traffic flows.

Mitigation Measures

- 5.16 Mitigation measures identified in the ES are very limited and the only statement regarding noise mitigation measures in either Volume 1 or Volume 2 of the ES is that; the new road construction and improvement works would leave a smooth tarmac surface, which, in the absence of road surface discontinuities, will minimise vibrations from road traffic vehicles.
- 5.17 The Noise and Air Quality Proof of Evidence does however include detailed information on noise mitigation measures including the use of a quieter road surface, noise attenuation fences, an earth mound and walls/fences.

Consultation

- 5.18 East Riding of Yorkshire Council is not aware of any noise problems that have arisen following completion of the GSJ and they have not had any objections from local residents about the scheme since it was completed.

Evaluation

- 5.19 Noise mitigation measures have been included in the scheme as follows;
- ◆ A low-noise surface was used on the A63 dual carriageway.
 - ◆ Provision of 2m high fence to screen the A63 from Corby Park This can be seen in Photograph 5.1 and in Photograph 5.2. In Photograph 5.2 the noise barrier can be seen in its entirety in the mid-ground of the photograph, extending from where the slip roads start to increase in grade;
 - ◆ A 2m high noise attenuation fence at the rear of West Parklands Drive and Parklands Drive;
 - ◆ A 2m high new trunk road boundary wall adjacent to 1-6 Main Road;
 - ◆ A 1.8m high fence adjacent to Melton Village pond and
 - ◆ A 1m high earth mound constructed along South Lawn Road between Melton Bottom and the access to Melton Hill Farm to screen properties in St James Road (Photograph 5.3). It is understood that the additional barrier on top of the bund was agreed after the Public Inquiry.
- 5.20 Predicted traffic flow increases south of the scheme were anticipated to cause noise increases on Melton Road, Corby Road, Brickyard Lane and Gibson Lane (south of Monks Way East). These increases in traffic were primarily due to the new industrial and residential developments proposed for the area south of the A63, rather than a direct consequence of the scheme itself. These developments have not progressed as anticipated and the contribution to traffic flow of this development is significantly less than predicted. Therefore, noise increases on these roads, due to this predicted traffic, are expected to be significantly less than originally predicted.
- 5.21 The ES stated that a detailed assessment of eligibility for noise insulation would be undertaken as a matter of course prior to the road's construction using the latest design drawings and traffic flows. A noise assessment was carried out, and an extract of the report was provided by Scott Wilson Consultants.
- 5.22 The realignment of the main A63 carriageway further to the north in the central part of the scheme, coupled with the construction of raised slip roads on embankment; noise reductions at Main Road, Melton Fields and the end properties in Plantation Drive, were predicted, and are likely to have occurred as expected. However the widening of the carriageway is likely to have had a negative effect on properties around the footbridge at Gibson Lane, which is supported by the fact, that all of the properties identified as being eligible for noise insulation are in Reynolds Close.

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5.23 Due to the fact that the current traffic flow forecasts are less than forecast in the ES and AST, and the fact that the observed flows after construction of the scheme are less than the observed flows before the scheme, it is anticipated that noise levels are better than expected.

Photograph 5.1 – Melton Road looking east toward the westbound exit slip.



Photograph 5.2 – The A63 looking east from the Woodside overbridge.



Photograph 5.3 – South Lawn Road looking north-west towards Melton Bottom.



Photograph 5.4 – South Lawn Road looking south-east.



Summary

- 5.24 In summary, the current noise environment is considered to be better than expected due to lower than forecast traffic flows. The local noise climate should be re-evaluated in the 5 year

after report in the light of the anticipated additional traffic flow generated by the residential and industrial development south of the A63.

Local Air Quality

Predicted Impacts

- 5.25 The AST predicted that:
- ◆ the scheme would cause an increase in PM10 levels of 2 $\mu\text{g}/\text{m}^3$ or more and an increase in NO₂ levels of 2 ppb or more, only at a few locations north of the scheme, but more locations to the south experience greater decreases;
 - ◆ the NAQS NO₂ objective of 21 ppb is exceeded with or without the proposal; and
 - ◆ the number of properties experiencing better air quality is 200 and the number of properties experiencing worse air quality is 112 (assuming NRTF high growth).
- 5.26 The ES summarised the results of detailed air quality modelling which found changes in air quality at receptors close to the scheme were generally as a result of the increase in traffic, including the traffic associated with the new residential and industrial development south of the A63, rather than the new highway arrangement.
- 5.27 In particular the ES predicted the effects listed below.
- ◆ Five receptor locations were predicted to exceed the NAQS objective for annual mean concentrations of NO₂ of 21 ppb with the proposed scheme.
 - ◆ One location, the site of the former clubhouse on Gibson Lane, is predicted to experience levels above the NO₂ objective level of 105 ppb for maximum 1-hour concentrations with the proposed scheme although the small change is not considered to breach the allowable 18 exceedances per year. However, there will be an increase in concentrations at locations that are presently predicted to exceed the objective.
 - ◆ For annual mean concentrations of PM10 there are only insignificant increases with the proposed scheme and the majority of receptors remain below the objective. A small decrease will arise in part of Gibson Lane due to its closure south of the A63.
 - ◆ With regard to PM10 24-hour means, all receptors studied were predicted to exceed the objective of 50 $\mu\text{g}/\text{m}^3$; and
- 5.28 The generalised local impact assessment indicated that there is deterioration in generalised local and net air quality due to the proposed scheme.
- 5.29 The predictions in the ES were undertaken using the peak hour traffic data forecast for 2006. Traffic flows for the design year of 2021, were expected to be higher than for 2006, however, the improved emission controls and the higher proportion of the vehicle fleet fitted with emission control technology was expected to combine to generate lower emissions and lower ambient concentrations compared to earlier years. Therefore, an assessment relative to 2006 represents the worst case situation; concentrations beyond this date were expected to decrease in line with the tighter emission controls.

Mitigation Measures

- 5.30 The assessment of local air quality undertaken as part of the ES suggested that no mitigation was felt to be appropriate.

Consultation

- 5.31 None of the consultees commented on air quality related issues.

Evaluation

- 5.32 The forecast 2006 traffic flows used for modelling the air quality in the ES and AST were more than actually observed in the first year after the scheme opened. Therefore it is anticipated that the effect of the scheme on air quality is better than expected.
- 5.33 This assessment is likely to change if the forecast residential and industrial development to the south of the A63 proceeds as anticipated.
- 5.34 Due to the currently lower traffic flows than predicted the air quality as a result of the scheme is likely to be better than expected. This conclusion should be re-examined in the 5 year after report and assess the effect of the anticipated additional traffic flow generated by the residential and industrial development south of the A63.

Greenhouse gases

- 5.35 Predictions of carbon emissions are given by COBA version 11.7. Two sets of COBA runs have been undertaken: the first with original predicted traffic flows, and the second with observed traffic flows. The table below shows the tonnes of carbon in the opening year.

Table 5-2 – Tonnes of Carbon Emitted in Opening Year

		Predicted Traffic	Observed Traffic
Low Growth	Do Minimum	11,313	10,012
	Do Something	11,827	10,055
	Increase	514	43
High Growth	Do Minimum	12,296	10,173
	Do Something	12,831	10,204
	Increase	535	31

- 5.36 Less carbon is shown being emitted for the observed traffic flows than for the predicted traffic flows. This is a consequence of the observed traffic being lower than predicted. The difference between the Do-Something and Do-Minimum cases is also less for observed traffic. Thus the additional 31-43 tonnes of carbon emitted in the opening year is only 6-8% of that predicted.

Summary

- 5.37 The traffic flows are lower than predicted, so the air quality as a result of the scheme is likely to be better than expected.
- 5.38 The 5 year after report should assess the effect on air quality, of the anticipated additional traffic flow generated by the residential and industrial development, south of the A63.

Landscape

Predicted Impacts

- 5.39 The AST predicted that the scheme would cause a slight adverse impact on landscape because the scheme would contribute to the urbanisation of the existing trunk road corridor.
- 5.40 The ES predicted that the proposed junction would, by its nature, be a large prominent structure. However, by siting it on open farmland between Brickyard Lane and North Ferriby, the visual impact on residential areas would be limited to a few isolated properties.
- 5.41 In particular the ES predicted the visual effects listed below.

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- ◆ 15 years after scheme opening, Melton Garage would experience a substantial adverse visual impact.
 - ◆ 15 years after scheme opening, Woodside would experience a substantial/moderate adverse impact as proposed planting matures.
 - ◆ 15 years after scheme opening 21 properties would experience a slight or moderate adverse visual impact.
 - ◆ 15 years after scheme opening 9 properties would experience a slight beneficial visual impact.
 - ◆ Rising ground to the north of the A63, coupled with woodland blocks to the east (Terrace and Long Plantations), would restrict wider views from the surrounding areas.
 - ◆ The existing main trunk road was lit by columns located in the central reserve. The new scheme would replace these columns with verge mounted columns either side of the carriageway. The prominence of the scheme would be increased further by the provision of 8m high lighting columns to the elevated grade separated junction, and at: Gibson Lane roundabout; Brickyard Lane roundabout; Corby Park junction; and, Melton Bottom roundabout. This was predicted to lead to a slight increase in the visual prominence of the A63 both during the day and at night.
- 5.42 Regarding the last bullet point above, it should be noted that the scheme design has in fact retained central reserve lighting columns which are supplemented with verge lighting at merge and diverge slip roads
- 5.43 From a point 100m west of Gibson Lane to a point approximately 425m east of Corby Park junction, the existing A63 would be moved northwards by a maximum of 45m to improve the horizontal alignment. This new road alignment would result in the loss of approximately 900m² of amenity land from the southern edge of the village green. As a result, there would be a slight deterioration in the visual quality of the village green, which was a valuable recreational resource.
- 5.44 The ES assessment of the scheme on the landscape character of the area concluded that construction of the scheme was predicted to have an overall slight adverse impact on the quality of the landscape.

Mitigation Measures

- 5.45 The proposed mitigation measures included 2.8 ha of new planting, which was predicted to help integrate the road into the surroundings and reduce the impact on residential properties adjacent to the scheme.
- 5.46 At Home Farm the scheme was predicted to result in the loss of approximately 1,565m² of land from the farmyard, along with a number of substantial brick built outbuildings and a number of mature trees on the eastern boundary. The loss of these buildings would potentially open up views of the trunk road from the farmhouse. The farmhouse would then potentially become very exposed and, without mitigation measures, would experience significant adverse visual impact, therefore, a screen wall with planting was proposed along the new highway boundary. This treatment would be continuous with the proposals alongside the village green and be supplemented with off site planting. The mitigation measures were predicted to restore a sense of enclosure and would significantly reduce views of the trunk road.
- 5.47 To mitigate the impact on the village green it was proposed to construct a 1.8m high screen wall with a dense strip of tree and shrub planting along the new highway boundary. This would be in conjunction with off site planting within the village green itself.
- 5.48 Three pairs of semi-detached houses between The Grange and Brickyard Lane (1-6 Main Road) were predicted to benefit from the scheme. These properties used to have direct access onto the A63 but a new local access road serves these houses from Brickyard Lane. The access road was planned to be separated from the trunk road by a 1.8m high

wall which would also help improve the outlook for the inhabitants. The screen was to be augmented by shrub planting to further improve views from the houses. As a result of the mitigation, these properties were predicted to experience a slight beneficial effect.

- 5.49 South Lawn was enclosed by a dense hawthorn hedge. The realignment of the trunk road, in conjunction with the proposed junction, would result in the loss of this hedge (approximately 520m). Park Field had approximately 517m of mature hawthorn hedge on the existing highway boundary which was lost during construction. In total, the scheme was predicted to result in the loss of in excess of 1 km of hedgerow. To compensate for this, new hedges comprising mainly hawthorn would be planted along the southern edges of Park Field and South Lawn, and along the link road between Brickyard Lane and Gibson Lane. The hedgerow was to be a double row of transplants, typically at 450mm centres, with occasional feathered trees. They would be planted within the highway boundary and would connect to existing hedgerows to maintain the integrity of the surrounding field patterns. Approximately 1.5 km of hedgerow would be planted as part of the proposals.
- 5.50 To minimise visual disruption to South Lawn, South Lawn Way would be constructed in a cutting below existing ground level. This would allow uninterrupted views across South Lawn and minimise the impact on Melton Park. There was to be no planting along this section of road to retain the open aspect of South Lawn and avoid disruption to the adjacent archaeologically sensitive areas.
- 5.51 The lighting would be high-pressure sodium lamps, which emit a more natural, less yellow light than low-pressure sodium lamps, and be of the full cut-off type, meaning they are designed to minimise the upward spill of light and provide better control and direction of the light beam at lower levels.

Consultation

- 5.52 East Riding of Yorkshire Council (ERYC) stated that, the scheme has blended well into the surrounding landscape. The grading of the site and subsequent treatment in terms of tree planting and hedgerow laying has enabled the scheme to be quite quickly integrated into what is quite a sensitive landscape on the edge of an Area of High Landscape Value. The views of the junction, particularly from the south, are well screened by the landform of the junction and, in the opinion of ERYC, once the trees have matured this will enhance the landscape from this point.

Evaluation

- 5.53 At Home Farm, the farmhouse was predicted to become very exposed and, without mitigation measures, would experience a significant adverse visual impact, therefore, the mitigation measures were predicted to significantly reduce views of the trunk road. Photograph 5.5 shows Home Farm viewed from the eastbound carriageway of the A63 looking north. A close boarded fence provides some visual screening and new planting is in place which should provide additional screening as it becomes established. The ES predicted a severe/moderate adverse effect in year 1, and it is considered that impacts are as expected. Offsite planting has also been undertaken.
- 5.54 Even with the proposed mitigation measures, it was predicted that 13 houses on Melton Fields and Brickyard Lane would experience a significant change in the character of views, and deterioration in the overall visual quality of the residential community. Photograph 5.6 shows the properties at Melton Field adjacent to the scheme, where there are significant areas of planting to screen the views of the western slip road and southern roundabout. Some existing vegetation has also been retained which currently provides some screening. The embankment is currently visible from a number of properties, although this will change over time as the planting on the embankments matures and it is expected that the planting will screen views of the road and the embankment. Additional offsite planting did not take place.

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- 5.55 The three pairs of semi-detached houses between The Grange and Brickyard Lane (1-6 Main Road) have benefited from the scheme (Photograph 5.7). They are now separated from the A63 by a local access road and a 1.8m high wall which screens ground level views of the A63. Shrub planting has also been provided as expected.
- 5.56 All of the hedgerows at the southern edges of Park Field and South Lawn, and along the link road between Brickyard Lane and Gibson Lane have been planted. The majority of planting in these hedgerows has been Hawthorn, with a mix of other species such as Blackthorn, Wych Elm, Hazel, Field Maple, Dog Rose and Holly. As this planting matures it should help to restore the rural character of the landscape adjacent to the scheme.
- 5.57 As planned, South Lawn Way was constructed in a cutting below existing ground level to minimise visual intrusion. This allows uninterrupted views across South Lawn and minimises the impact on Melton Park. No planting was carried out along this section of road to retain the open aspect of South Lawn and avoid disruption to the adjacent archaeologically sensitive areas (Photograph 5.4). Due to the topography in which South Lawn Way is located the result of placing the road in cutting has been to minimise the visual impact of this new link road and it is not visible from the A63 but is visible from the Woodside overbridge.
- 5.58 Melton Garage occupied a prominent location on the corner of the A63 Gibson Lane North. The footbridge would have been constructed less than 20m from the garage and consequently would have been visually very intrusive. To help mitigate views of the bridge off-site planting was to be carried out within the grounds of the garage. The garage is no longer at this location and so the visual intrusion of the footbridge on this property is no longer relevant. Offsite planting was not undertaken

Photograph 5.5 – Home Farm viewed from the eastbound carriageway of the A63 looking north.



Photograph 5.6 – Residential properties at Melton Fields looking east along the A63 west-bound slip road towards the southern roundabout.



Photograph 5.7 – Properties at 1 - 6 Main Road facing west.



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- 5.59 Melton Grange and Coach House were expected to have filtered views of traffic and the footbridge over existing vegetation. Off-site planting has been carried out within the garden and impacts are considered to be as expected (Photograph 5.8).
- 5.60 The Gibson Lane footbridge is visually prominent and impacting on some of the properties adjacent to it, as expected (Photograph 5.9 and 5.10). Offsite planting by agreement has taken place in the vicinity.
- 5.61 As expected, Woodside (Photograph 5.11) has experienced an adverse impact due to loss of existing vegetation and proximity to the new junction and slip road. New planting has been provided which will help screen traffic as it becomes more mature. Offsite planting by agreement has also been undertaken.
- 5.62 In addition to the offsite planting in the landscape section above it was also undertaken at Melton Village pond and at the edge of Long Plantation wood. Offsite planting by agreement was not carried at The Poplars, Melton Garage or Melton Hill Farm.

Photograph 5.8 – Melton Grange residential property looking east from the Gibson Lane footbridge.



Photograph 5.9 – The residential property at the end of Gibson Lane North looking from the footbridge on the west-bound carriageway.



Photograph 5.10 – Gibson Lane North looking from the footbridge on the west-bound carriageway.



Photograph 5.11 – Woodside residential property looking north-east from the northern roundabout.



- 5.63 The ES predicted that the scheme would have an overall slight adverse impact on the quality of the landscape, and the AST predicted that the scheme would cause a slight adverse impact on landscape because the scheme would contribute to the urbanisation of the existing trunk road corridor. It is therefore considered that the effect of the scheme on landscape character is as expected.
- 5.64 It is understood that street lighting remains within the central reservation and is supplemented, with verge lighting at merge and diverge slip roads. As expected additional lighting is provided at: the overbridge; junction and roundabouts. It was predicted that this would cause a slight increase in the visual prominence at night. A night time lighting assessment has not been carried out for this report and could be evaluated during the five year after report.

Summary

- 5.65 Planting has been generally undertaken in accordance with the ES and it is recommended that the ongoing establishment of the screen is evaluated during the 5 year after report.
- 5.66 It is therefore considered that the effect of the scheme on the local landscape character and visual impacts are as expected.

Biodiversity

Predicted Impacts

- 5.67 The AST predicted that the scheme would cause a slight adverse impact partially mitigated by proposed enhancement of existing habitats and creation of new ones.

- 5.68 The ES predicted that the main direct impacts of the scheme would be:
- ◆ the loss of 0.3 hectares of broadleaved woodland in Terrace and Long Plantations, of parish ecological importance;
 - ◆ the loss of hedgerow and standard trees along both sides of the existing carriageway of parish ecological importance; and,
 - ◆ the loss of inter-field hedgerow network of parish ecological importance.
- 5.69 The ES predicted that the main indirect impacts on biodiversity would be:
- ◆ potential impacts on semi-improved pasture at Home Farm and west of Brickyard Lane of local ecological importance; and,
 - ◆ overall reduction in connectivity of inter-field hedgerows of parish ecological importance.
- 5.70 Melton village pond, considered to be of parish ecological value, was not expected to be directly affected by the scheme. Road drainage would be designed to channel run-off away from this feature, to prevent pollution.
- 5.71 The scheme was predicted to cause the loss of approximately 1,700 metres of hedge. The hedgerows along the pre-existing carriageway were comprised of established, mature landscape planting. The inter-field hedgerow network was of limited species diversity, but formed a valuable wildlife corridor in a relatively open and ecologically degraded arable and improved pasture landscape. The hedgerow network provided habitat for nesting and feeding birds, and potential roosting (in the larger, mature tree standards) and feeding habitat for bats.
- 5.72 The direct loss of the hedgerow canopy would not be as significant as the overall reduction in connectivity of the hedgerow network. The effectiveness of wildlife corridors is greatly reduced by loss of connectivity of the habitat, even small gaps creating a barrier to colonising plants and animals.
- 5.73 An area of poor, semi-improved pasture to the west of Brickyard Lane could have been affected by the scheme. It was considered likely that the field held species of conservation value, but the original ES did not record the distribution of species within the field. The ES concluded that the scheme would not have a significant impact on this field. It was predicted that a second area of poor semi-improved grassland to the north of Home Farm should not be significantly affected by the new road alignment.
- 5.74 Neither statutory or non-statutory sites of ecological interest, nor any protected or notable species, were predicted to be directly affected by the scheme. The impact on the ecology of the study area as a result of the proposals is assessed as low. The majority of the habitats which would be affected were considered generally of low conservation value, comprising predominantly arable land and improved grassland.

Mitigation

- 5.75 Run-off from the new road surface was to be directed away from Melton Pond, which the ES stated, may have been contaminated by a small amount of run-off from the previous alignment of the A63. It was proposed to create an ecologically designed balancing pond, to take contaminated run-off from the new carriageway and provide a means of water treatment, prior to discharging into the wider environment. It was to be designed so that polluted water is not discharged into the Humber estuary.
- 5.76 To mitigate for the loss of hedgerows within the study area, new hedgerow planting was to be undertaken, creating species-rich and structurally diverse hedges. New hedge lines should be planted with a mix of shrub species appropriate to the local area. Tree species such as ash and English oak would be planted at irregular intervals along the new hedge

and allowed to mature. Grass margins of at least 2 metres in width were to be left uncut on either side of the hedge to provide a corridor for small mammals.

- 5.77 The impact on Terrace and Long Plantations would be mitigated by appropriate landscape planting. Once the new road was constructed, the edges of both Terrace and Long Plantation would be planted with a range of native broadleaved shrubs to create a natural barrier to the new road alignment.
- 5.78 It was proposed that some of the timber felled on the edges of the plantations, to accommodate the new road alignment, would be relocated within the remaining areas of plantation to provide dead wood habitat for invertebrates and in turn an additional food source for insectivorous birds.
- 5.79 It was proposed that the bat and bird boxes would be provided within the areas of woodland adjacent to the A63, subject to the landowner's permission.

Consultation

- 5.80 ERYC suggested that consultation should be carried out with either Natural England or Yorkshire Wildlife Trust on biodiversity issues as there is no County ecologist at ERYC.
- 5.81 A representative of Natural England stated that, as statutory consultees, they have considered the potential environmental effects of the scheme and would have recommended mitigation measures during the EIA process, prior to the planning application to East Riding of Yorkshire Council. Natural England does not have the resources to conduct an evaluation of the scheme following construction. A post construction evaluation would require information collected by third parties and provided to Natural England. No information has currently been supplied to Natural England that would allow it to perform an evaluation of the scheme. Therefore, in this instance it is not possible for it to comment on the environmental effects of the scheme or whether the proposed mitigation measures are in place.

Evaluation

- 5.82 Neither statutory or non-statutory sites of ecological interest, nor any protected or notable species, were predicted to be directly affected by the scheme. The ES did not record the presence of badgers within the vicinity of the scheme and so no mitigation was included in the ES. However, during pre-construction surveys the presence of badger was recorded to the north of the A63 and a badger sett located. The draft HEMP, written by Scott Wilson Consultants, states that before construction of the scheme, no badgers or badgers road-kills were reported on the A63 and it was agreed at the time that the A63 was likely to be the southern extent of the badger territory. However, some routes for badgers were recorded crossing the route of South Lawn Way (the northern link road). Subsequently four badger tunnels were constructed at South Lawn Way and Monks Way East. No data on the number of road deaths of badgers has been made available during the one year after report. The effectiveness of the badger tunnels and the number of badger road deaths should be assessed during the five year after report. There is an on ongoing monitoring programme on the scheme which includes monitoring the functional effectiveness of the badger tunnels and it is understood that the results of this ongoing monitoring will be reported in the final HEMP and this information on the effectiveness of the badger tunnels should feed into the Five Year After report.
- 5.83 In the ES it was proposed to create an ecologically designed balancing pond at a suitable location to take run-off from the new carriageway and provide a means of water treatment prior to discharging into the wider environment. It was to be designed so that polluted water is not discharged into the estuary. The edge of the balancing pond has been planted with a mixture of marginals and emergents, and the area around the pond with species rich grassland, native trees and amenity shrubs (Photograph 5.12). The draft HEMP

acknowledges that the primary function is as a drainage feature but that some degree of naturalisation has been provided in line with ES and PI commitments.

Photograph 5.12 – The balancing pond to the west of Brickyard Lane.



- 5.84 Replacement hedgerows have been planted along the highway boundary as expected and these are linked to existing retained hedgerows adjacent to the scheme. The ongoing establishment of the hedgerows and their connectivity should be assessed during the five year after report.
- 5.85 As originally proposed in the ES new hedgerows are species-rich and structurally diverse. New hedge lines are planted with a mix of shrub species appropriate to the local area. Grass margins of at least 2 metres in width have been left uncut on either side of the hedges to provide a corridor for small mammals.
- 5.86 Once the new road was constructed, it was proposed to plant the edges of both Terrace Plantation and Long Plantation with a range of native broadleaved shrubs, to create a natural barrier to the new road alignment. The edges have been planted with the same mix of native broadleaved and other native species as have been planted adjacent to all of the A63 alignment.
- 5.87 It was proposed that bat and bird boxes would be provided within the areas of woodland adjacent to the A63, to mitigate for the loss of mature trees and/ or semi-derelict buildings

with potential for use by roosting bats. A total of 11 artificial bat roosts have been installed on trees in Long Plantation, to the south of the A63.

Summary

- 5.88 Mitigation measures for badgers and bats have been provided, as their presence was discovered in proximity to the scheme since the ES.
- 5.89 All of the hedgerows that were lost have been re-planted. Once established this should re-establish the connectivity of hedgerows adjacent to the scheme. The ongoing establishment of the hedgerows and their connectivity should be assessed during the five year after report.
- 5.90 In the ES, it was proposed to create an ecologically designed balancing pond to take contaminated run-off from the new carriageway. The edge of the balancing pond has been planted with a mixture of marginals and emergents, and the area around the pond with species rich grassland, native trees and amenity shrubs.
- 5.91 A total of 11 artificial bat roosts have been installed on trees in Long Plantation, to the south of the A63, to mitigate for the loss of mature trees that may have, in the future, represented some potential for use by roosting bats.

Heritage

Predicted Impacts

- 5.92 The AST predicted that overall the scheme would have a moderate adverse effect on heritage. The scheme would have some impact on all adjacent identified archaeological sites, most notably on one site of regional importance.
- 5.93 The AST also identified that there was limited potential for as yet undiscovered archaeological sites, and these would be identified as part of pre-construction assessment work. If any new sites were identified, impacts would be assessed and an appropriate mitigation strategy formulated.
- 5.94 The ES predicted that no archaeological sites of national importance or listed buildings would be affected by the scheme. There were no registered Historic Parks and Gardens or Historic Battlefields within the study area. The sites predicted to be impacted are summarised in Table 5.3.

Table 5.3– Impacts on Identified Archaeological and Built Environment Sites

Site name	Grade of site	Overall impact
Iron Age/Romano-British and medieval settlement, South Lawn	Regional importance	Moderate adverse
Course of Melton Old Road, South Lawn	Local importance	Slight adverse
Ridge and furrow and related earthworks, west of Brickyard Lane	Local importance	Moderate adverse
Unclassified cropmarks, south of Melton Grange	District importance	Slight adverse
Linear ditch system, east of Melton Bottom	Local importance	Slight adverse
Home Farm, Melton Old Road (north side)	District importance	Slight adverse
Melton Hill Lodge	District importance	Large adverse

Mitigation

- 5.95 It was envisaged that five separate phases of work would be required to ensure that the archaeological heritage of the construction corridor was considered to an appropriate standard. The results of each phase were envisaged to influence and set the parameters for the next. Phases 1 and 2 deal with the assessment and pre-construction works, Phase 3 deals with the recording of archaeological deposits while construction is in progress, and Phases 4 and 5 deal with the assimilation, publication and deposition of any results resulting from the previous phases. In summary, these phases comprise:
- ◆ Phase 1 Detailed evaluation.
 - ◆ Phase 2 Pre-construction investigation.
 - ◆ Phase 3 Watching brief during construction.
 - ◆ Phase 4 Post-excavation assessment.
 - ◆ Phase 5 Post-excavation analysis and publication.
- 5.96 In the South Lawn area, which contained the most significant of the archaeological sites affected by the scheme (the Iron Age/Romano-British and medieval settlement), the mitigation measures would involve the recording of all archaeological deposits within the proposed road corridor (preservation by record) in advance of construction. This would be achieved through a combination of techniques incorporating full excavation, additional trial trenching and subsequent work as necessary, an intensive recording brief, and a more traditional watching brief.
- 5.97 The results of the trial excavations during the ES confirmed that the Iron Age/Romano-British ladder settlement in the southern part of South Lawn was of regional rather than national or county importance. Accordingly, two potential approaches to mitigation in this area were put forward, preservation in situ (i.e. burying the archaeological deposits) and preservation by record (i.e. full archaeological excavation and/or recording). The relative merits of each option were fully discussed, with the conclusion that preservation by record was the preferred option.
- 5.98 Other areas within the proposed construction corridor would be subject to a general Phase 3 watching brief during the initial phases of construction so that any archaeological features that might be uncovered would be recorded.
- 5.99 The ES stated that, for the built environment, the Phase 1 detailed evaluation works would have to conform to a Level 2 survey, as defined by the Royal Commission on the Historic Monuments (England) (RCHME 1996). This is a descriptive record, containing an analysis of the building's development and use, supported by black and white photography of relevant views of the exterior and interior, and sketched drawings with limited dimensional information. If this work suggests that the buildings are of architectural merit, further Phase 2 preconstruction investigation would take place. This work would equate to a Level 3 survey as defined by the Royal Commission on the Historic Monuments (England) and would be a fully analytical survey involving the production of detailed measured plans and elevations.
- 5.100 A summary of the proposed mitigation measures for the South Lawn area and other sites affected by the proposed scheme is given in Table 5.4 below.

Table 5.4 – Summary of Mitigation Measures for Archaeological and Built Environment Sites listed in the ES.

Site name	Proposed mitigation
Iron Age/Romano-British and medieval settlement, South Lawn	Phase 1 works largely complete. Additional Phase 1 trenching and Phase 2 pre-construction excavation and recording followed by Phase 4 and 5 work as appropriate.
Course of Melton Old Road, South Lawn	Phase 1 works complete. Phase 2 preconstruction excavation and recording followed by Phase 4 and 5 work as appropriate.
Ridge and furrow and related earthworks, west of Brickyard Lane	Phase 1 earthwork survey completed. Subsequent Phase 1 trial trenching followed by Phase 2 work as necessary, and Phase 4 and 5 work as appropriate
Unclassified cropmarks, south of Melton Grange	Phase 3 recording followed by Phase 4 and 5 work as appropriate.
Linear ditch system, east of Melton Bottom	Phase 1 trial trenching, followed by Phase 2 pre-construction recording and other Phase 4 and 5 work as appropriate.
Home Farm, Melton Old Road (north side)	Phase 1 building assessment followed by Phase 2 or 3 recording work as required.
Melton Hill Lodge	Phase 1 building assessment followed by Phase 2 or 3 recording work as required.

Consultation

- 5.101 Humber Archaeology Partnership (HAP, the County Archaeologist) stated that whilst they were invited to observe the excavations they were not consulted during the preparation of the excavation report and did not view it until one year after excavations were completed. They were of the view that consultation with the County Archaeologist, regarding the contents of the excavation report, should begin earlier than one year after excavations are complete.
- 5.102 English Heritage (AH) did not respond to the consultation request.

Evaluation

- 5.103 It is understood that archaeological investigations were undertaken between June 2004 and mid-May 2005. The excavations were located to the north and south of the existing dual carriageway and covered a total area of 13.2 hectares. A Post-Excavation Assessment Report (PEAR) and Updated Archaeological Design, produced by On-Site Archaeology was approved for publication in August 2006 and issued to both HAP and EH in November 2006. It is understood that comments on the PEAR were received from EH in January 2007 but none have been received from HAP.
- 5.104 The AST stated that there was limited potential for as yet undiscovered archaeological sites, and these would be identified as part of pre-construction assessment work. If any new sites were identified, impacts would be assessed and an appropriate mitigation strategy formulated. It is understood that the initial archaeological investigations did not identify all of the archaeological features on the site. To the south of the road the excavations uncovered rare and unexpected evidence of early Anglo-Saxon occupation and the extent of the unknown finds resulted in considerably more archaeological evaluation being required than had been anticipated.
- 5.105 It is understood that there was review and subsequent agreement with the HA to the approach to archaeological design at the time of the ES and preparation of the Contract, which led to the level of survey undertaken and the proposal for preservation by record. Some areas were able to be preserved in situ due a redesign of the construction footprint to avoid the main part of the known archaeological complex. Another change to design the

eastern part of the link road on embankment enabled preservation in situ here too, in agreement with EH.

Summary

- 5.106 The ES and AST predicted that overall the scheme would have a moderate adverse effect on heritage. A heritage feature of regional importance was excavated and preserved by record and this discovery contributes to the research and cultural understanding of the local historic landscape. The impact on additional archaeology is likely to be similar to the impact on known archaeology and it is considered that the effects of the scheme are as expected.
- 5.107 Heritage should be considered during the Five Year After study when the academic archaeological report would be available..

Water

Predicted Impacts

- 5.108 The AST stated that the scheme would result in a neutral/slight positive effect on water quality due to improved pollution control measures compared with existing and the fact that the scheme is located in an area of high groundwater vulnerability. The AST also predicted a neutral/slight positive impact on land drainage and flood risk.
- 5.109 The ES predicted that there would be two principal effects, which are in the list below.
- ◆ The probability of a serious pollution incident occurring is once in every 81 years. The acceptable risk of a pollution incident should normally be 1 in 100 years for discharges to aquifers and to reaches of sensitive watercourses. For receiving waters other than aquifers and sensitive watercourses, the acceptable spillage risk is 1 in 50 years.
 - ◆ The scheme would include suitable drainage including a balancing pond and petrol/oil interceptors; therefore it would be unlikely that contaminated runoff from the road surface would cause a deterioration in the quality of surface or groundwater.

Mitigation in ES

- 5.110 A balancing pond would be constructed to the south of the scheme to store the additional runoff from the new road and junction. This would also mitigate against heavy loading of contaminants in the existing downstream drainage channels by restricting the rate of flow into them. Other mitigation measures would include the installation of oil/petrol interceptors upstream of outfall areas to provide a means of separating oil, hydrocarbons and solids from runoff and thus reduce the risk of hazardous chemicals entering existing watercourses.
- 5.111 Surface water runoff at embankments and cuttings would be controlled by drains running along the base of slope. Pre-existing field drains intercepted by the works would be interlinked and connected to outfall into earthworks drainage.
- 5.112 Drainage water from the site flows through natural drainage channels to the Humber Estuary. The probability of a serious pollution incident occurring is once in every 81 years and the Humber Estuary is designated as a SPA. Therefore, this potentially high risk of an accident leading to water contamination would be mitigated through measures such as installation of suitable isolation or treatment units and/or designing the drainage system to increase runoff retention times.

Consultation

- 5.113 The Environment Agency has consulted internally with various experts in the fields of drainage, pollution and biodiversity and has no information relating to the impact of the new carriageway that would enable it to make an assessment.

Evaluation

- 5.114 The probability of a serious pollution incident occurring is once in every 81 years. Given the sensitive nature of the Humber Estuary SPA it is considered more appropriate to apply an acceptable risk of a pollution incident of 1 in 100 years. During the five year after assessment, the risk of pollution could be recalculated, using the traffic flow figures at that time.
- 5.115 A balancing pond has been designed and constructed be designed so that polluted water is not discharged into the estuary. Therefore the Humber Estuary should be protected from any potential accidental spillage on the A63.
- 5.116 No information is available concerning the effects of the new carriageway drainage on Melton Pond. Neither negative nor positive effects have been reported.

Summary

- 5.117 Drainage mitigation measures have been incorporated into the scheme as expected and it would be appropriate to evaluate the effects of these as part of the five year after report, which could include a review of the effects of the new highway drainage on Melton Pond.

Physical Fitness and Journey Ambience*Predicted Impacts*

- 5.118 The AST predicted a slightly beneficial impact to pedestrians and a moderately adverse impact on community severance.
- ◆ The scheme would result in safer, but increased journey paths and travelling time for the residents of Gibson Lane and Melton Fields Estate who need to cross the A63 in order to access the school or the village of Melton. Users of the Wolds Way public footpath would have a greatly reduced diversion to cross the A63. The effect of the scheme on pedestrians and others was predicted to be slightly beneficial.
 - ◆ The degree of new severance to the local community on most of the main journey routes would be moderate to severe. However safer routes would result. The effect of the scheme on community severance was predicted to be moderately adverse.
- 5.119 The ES predicted the effects in the list below.
- ◆ The scheme would have resulted in increased journey paths and travelling time for the residents of Melton Fields Estate who needed to cross the A63 in order to access the school or the village of Melton. This could dissuade people from using the amenities provided in and around the village of Melton, hence altering their travelling patterns.
 - ◆ The existing bus services used the A63 to provide a service between the villages of Melton and North Ferriby, it is likely that these would be re-routed onto the proposed local access roads network. This would entail extra travelling by the residents of Melton Fields Estate and Gibson Lane (south) in order to utilise the bus services, especially if they wanted to travel in an eastbound direction. Similarly villagers travelling by car between Melton and North Ferriby would have a longer journey length.
 - ◆ The new footbridge at Gibson Lane would slightly increase the journey length but would improve safety in relation to the existing at-grade crossing. The new footbridge is designed to accommodate cyclists and would result in increased segregation from traffic and therefore safety of cyclists.
 - ◆ Users of Wolds Way would experience a reduction in their journey length of over 500m using the new overbridge rather than the existing footbridge. However, many footpath users were thought to cross at-grade and although the new overbridge would increase their journey length it would result in increased safety.

- ◆ The major pedestrian and cyclist route between the villages of North Ferriby and Melton remained largely unaffected. Pedestrians and cyclists would use the new Gibson Lane footbridge in place of the footbridge that was replaced.
- ◆ The more clearly defined footpath/cyclepath network associated with the new A63 around Melton and North Ferriby should have resulted in better segregation of these users and traffic and therefore increased safety. There would also be less opportunity or reason to cross at-grade away from designated crossing points.
- ◆ Pedestrians and cycle routes would be situated immediately adjacent to the A63 for a short section between Corby Park and Melton Road. This would result in increased exposure to noise and pollution associated with the A63.
- ◆ New severance to the local community due to the scheme on most of the main journey routes would be moderate to severe. However, the provision of a footbridge at Gibson Lane would provide significant relief from existing severance at this junction and increase safety.
- ◆ The removal of the traffic lights at the junction of the A63 and Gibson Lane would eliminate a potential hazard which would ease driver anxiety for fear of accidents at this particular location.
- ◆ The closure of the local access road junctions with the Trunk Road would reduce the potential for accidents caused by vehicles turning into and out of the local road junctions, hence lowering driver stress caused by the frequency of intersections along a route.
- ◆ The scheme would prohibit the at-grade crossing of the A63 and provide a new footbridge at Gibson Lane. This would reduce the likelihood of pedestrians, especially children stepping into the road, thus lowering the fear factor associated with pedestrian intrusion into the road.
- ◆ The traffic signs constructed as part of the scheme would be verge mounted. They would provide clear information to drivers, thus reducing the uncertainty of negotiating the new slip roads and the local access roads network.

Mitigation

- 5.120 Access to the six houses fronting the existing A63, known as Nos.1-6 Main Road, would be provided by means of a cul-de-sac.
- 5.121 The residential property Woodside would have a new private access from the northern dumbbell roundabout and Melton Bottom Link Road.
- 5.122 For movements between Corby Park and Melton, a combined cycleway/footway facility would be provided on the south side of the two way link road between Corby Park and the southern dumbbell roundabout, transferring via the overbridge either to the north-west onto the eastbound diverge slip road or to the south-west side of the A63 to the westbound merging slip road. A combined cycleway/footway would be constructed adjacent to the verges of the slip roads.
- 5.123 Users of the Public Footpath (Wolds Way) would be accommodated over the A63 via the new overbridge. From the south side of the A63, the new footpath route would be along the south verge of the new link between the southern dumbbell roundabout and Corby Park roundabout. On the north side, the footpath would continue along the north verge of the eastbound merge slip road.

Consultation

- 5.124 ERYC Countryside Access responded stating that the scheme has improved the accessibility of the Yorkshire Wolds Way significantly. It has improved the safety of the route as before construction of the scheme some walkers would cross the A63 at grade. It has also made a big difference for local walkers as the network connects up better. The

only slight problem is, that from a walker's perspective, traffic sometimes seems to come from unexpected directions, and perhaps some signs warning pedestrians about the direction that traffic approaches from would be helpful.

- 5.125 With regard to the point raised concerning signs, it is understood that ERYC has been involved in safety audits at all stages and have not raised this issue before.

Evaluation

- 5.126 No new pedestrian/cycle surveys have been carried out for this report.
- 5.127 The provision of a footbridge at Gibson Lane provides a more accessible route for pedestrians and cyclist than existed before the scheme was constructed and increases safety at this junction.
- 5.128 The scheme results in safer, but increased journey paths and travelling time for the residents of Gibson Lane and Melton Fields Estate who have to cross the A63 in order to access the village of Melton. Similarly villagers travelling by car between Melton and North Ferriby will have a longer journey length.
- 5.129 Users of Wolds Way experience a reduction in their journey length of over 500m using the Woodside overbridge rather than the previously existing footbridge. It also makes the Wold's Way easier and more pleasant to follow since there is now a shorter diversion to cross the A63 safely.
- 5.130 The major pedestrian and cyclist route between the villages of North Ferriby and Melton remains largely unaffected. The new Gibson Lane footbridge is used in place of the existing footbridge that was replaced.
- 5.131 The removal of the traffic lights at the junction of the A63 and Gibson Lane has eliminated a potential hazard which eases driver anxiety for fear of accidents at this particular location. The closure of the local access road junctions with the A63 has also reduced the potential for accidents caused by vehicles turning into and out of the local road junctions, hence lowering driver stress. It is considered that the scheme has reduced driver stress.
- 5.132 Combined footpaths and cycleways are extensively provided. A subway for the use of pedestrians and cyclists has been provided beneath Monks Way East, immediately south of the junction, and a new foot/ cycle-bridge has been constructed over the A63 close to the former Gibson Lane crossing. The more clearly defined footpath and cyclepath network results in better segregation of these users and traffic and therefore increased safety.
- 5.133 An additional mitigation measure that has been introduced since the ES is the combined cycleway and footpath underpass under the Monks Way East. For movements between Corby Park and Melton, the combined cycleway and footpath is on the south side of the two way link road between Corby Park and the southern dumbbell roundabout. It transfers to the South Lawn Way via the Woodside overbridge or via an underpass under the Monks Way East to follow along the south side of the west bound carriageway. Photographs 5.6 and 5.7 show the combined cycleway/footway on the south side of the west bound carriageway; Photograph 5.12 shows the underpass under the Monks Way East.
- 5.134 Access to the six houses fronting the existing A63, known as Nos.1-6 Main Road, is now provided by means of a cul-de-sac at the end of Brickyard Lane.
- 5.135 The residential property Woodside now has a new private access from the northern dumbbell roundabout and Melton Bottom Link Road.

Photograph 5.12 – The underpass under the Monks Way East



Summary

- 5.136 The new scheme increases safety and reduces the fear of accidents for both vehicular and non-vehicular travellers. The scheme results in safer, but increased journey paths and travelling time for the residents of Gibson Lane and Melton Fields Estate who have to cross the A63 in order to access the village of Melton. This positive effect on pedestrian safety is as expected.
- 5.137 Users of Wolds Way experience a reduction in their journey length; an easier and more pleasant route to follow.
- 5.138 The removal of the traffic lights at the junction of the A63 and Gibson Lane and the closure of the local access road junctions has eliminated a potential hazard which eases driver stress and fear of accidents.
- 5.139 Combined footpaths and cycleways are extensively provided resulting in better segregation of these users and traffic and therefore increased safety.

Key Points from Section 5:

- The current observed traffic flow is less than forecast; so it is anticipated that noise and air quality is currently better than expected. This could change if the anticipated residential and industrial development to the south of the A63 proceeds as planned.
- The most significant visual impacts of the scheme are on Woodside, the properties adjacent to the Gibson Lane footbridge and on the properties in Melton Fields and on Brickyard Lane. These effects are currently as expected in the ES.
- The only protected or notable species which could have been directly affected by the scheme were badgers and appropriate mitigation measures were constructed and continue to be maintained and monitored. All of the hedgerows that were lost have been re-planted; this should re-establish the connectivity of hedgerows adjacent to the scheme.
- A heritage feature of regional importance was excavated and preserved by record; therefore it is considered that the effects of the scheme were moderately adverse, as expected.
- A balancing pond has been constructed adjacent to Brickyard Lane to take contaminated run-off from the new carriageway and prevent contamination of the Humber Estuary and the wider environment. This is likely to have had a beneficial effect on the adjacent water environment and this is as expected.
- The scheme increases safety and reduces the fear of accidents for both vehicular and non-vehicular travellers. The scheme results in safer, but increased journey paths and travelling time.
- Users of Wolds Way experience a reduction in their journey length; an easier and more pleasant route to follow.

Record of Information requested April 2008 for use in completion of the environmental evaluation. The Environmental Statement had already been provided by HA.

Information requested	Comments
As Built drawings for landscape, ecological mitigation measures, drainage, fencing, earthworks etc preferable electronically or on CD	Environmental As Built drawings provided by the Designers
Copies of the Landscape management Plan or, HEMP	Draft HEMP provided by the Designers
Contact names for consultation	Provided by designers
Archaeology reports	The academic and popular reports were being written and therefore not available at the time
Properties eligible for noise insulation	Information provided by designers relating to which properties may have been eligible for insulation. Unable to confirm actual number as this was not within their remit on site.
Part 1 Claims	Not provided
Any post opening survey or monitoring e.g. for ecology, water quality	The designers were not aware of any post opening surveys having been carried out

6. Appraisal Summary Table

INTRODUCTION

- 6.1 An Appraisal Summary Table (AST) is a one-page summary of the main economic, environmental, and social impacts of a major road scheme. As explained in chapter 4, two versions of the AST are known, but the earlier one, dating from 2000, is the one corresponding to the OPR and the Public Inquiry. Note this explicitly disregards any development trips and concentrates on the effect of the road scheme alone. This earlier version is considered more valid as a source of predictions, and is reproduced as Table 6.1
- 6.2 The 'Evaluation Summary Table' (EST) has been devised for the POPE process to record a summary of the actual scheme impacts, compared with the predictions in the AST. Where possible the EST mirrors the appearance and process of the AST, to permit comparison between the two. The following paragraphs provide an additional commentary on those topics not already described in previous chapters.

EVALUATION

Option Description, Problems and Other Options

- 6.3 The Option Description relates to Option 1, whereas Option 2 was actually built. The predicted economic benefits of both options are given in the EAR (Tables 3.10 & 3.11), and the differences are in fact relatively minor. The scheme cost was £36.27m at 2002 prices (undiscounted).
- 6.4 The Problems section would appear to be a valid statement of conditions existing in the 'Before' case. Other Options are not considered in the POPE evaluation.

Environment

- 6.5 The evaluation of environmental sub-objectives was considered fully in the previous chapter.

Safety

- 6.6 Based on the first year's data, there has been no change in accidents and casualties, thus the impact on safety has been neutral.

Journey Times

- 6.7 There have been journey time savings up to 1.8 minutes in the peak and 1.3 minutes in the interpeak. These values are for the eastbound direction, which has the larger savings.
- 6.8 The updated COBA gives a monetary benefit of £68.3 million to journey time benefits, representing 212% of PVC.

Cost

- 6.9 The outturn cost is £34.2 million (at 2002 prices & values). This is 2.6 times the sum predicted.

Reliability

- 6.10 The AST did not quantify change to reliability in terms of route stress, so no attempt to do so is made in this evaluation. Traffic on the A63 now flows freely through Melton Junction where previously there were signals. On the A63 journey time route, the spread of times has reduced from 3.73 minutes to 2.23 minutes.

Regeneration

- 6.11 The AST predicted that the scheme would have a substantial benefit for future regeneration south of the A63. A tin smelting works (once the largest in the world) occupied a site near Melton south of the railway and was served by it for access, between 1936 and 1991. East Riding of Yorkshire Council has stated that the land south of the A63 has had a long history of industrial use, but had always suffered from poor access by road. The new Melton Junction is said to have transformed the area, and to have created a highly attractive employment site with the potential to create over 3000 jobs. Currently, the Melton Park business development is under construction on a greenfield site north of the railway.
- 6.12 Melton is one of five so-called 'string-of-pearls' sites on the north bank of the River Humber. These development sites are intended to attract businesses which require access to ports and the motorway network, but which find the City of Hull unsuitable. It is believed this strategy will benefit both the City and the East Riding, since the economies of both are interlinked.
- 6.13 The AST stated that the Scheme serves a regeneration priority area. From consultations, East Riding of Yorkshire Council has confirmed that Melton lies within South Hunsley Ward, a Tier 2 Assisted Area, as recognised by the European Commission on National Regional Aid.
- 6.14 The AST stated that development depends on the Scheme. From consultations, East Riding of Yorkshire Council has confirmed that hitherto development was restricted by planning conditions limiting the number of vehicles using the junctions with the A63. With the opening of the Scheme, these restrictions have been lifted, encouraging developers to take forward their planning applications for Melton Park and Melton West Business Park. The location of these sites in relation to the Scheme is depicted in Figure 6.1, and a photograph of development under construction appears in Figure 6.2.



Figure 6.1 – Melton Development Sites (Viewed to the West)



Figure 2 – Development Under Construction

Pedestrians and Others

- 6.15 Pedestrians were formerly permitted to cross the A63 at the Gibson Lane signals, and at the Brickyard Lane overbridge, although some pedestrians also crossed elsewhere by jumping over barriers. Cyclists crossed at the signals, but not at the old footbridge, due to the difficulty of carrying a cycle over it.
- 6.16 The new Gibson Lane footbridge is safer to use than the former traffic signals, and is ramped to permit use by cyclists and the disabled. Some pedestrian routes have lengthened, but all have become safer due to grade separation. The Melton overbridge has shortened the crossing for walkers on the Wolds Way. The overall result is judged to be beneficial.

Public Transport

- 6.17 Three bus routes use Melton Junction:
- ◆ Stagecoach service no. X62 between Hull and Leeds runs along the A63, through the junction without stopping, three times daily. The grade separation has not led to any re-routing or timetable changes, and the company is not aware of any reliability changes.
 - ◆ East Yorkshire Motor Services no. 153 runs between Hull and North Ferriby. Since the Melton Junction improvement, the service has been extended three times a day to run along Monks Way as far as Gibson Lane roundabout. Few passengers currently board or alight on this extension, but it does represent a new facility that was not present before.
 - ◆ East Yorkshire Motor Services no. 155 runs hourly between Hull and Goole. It previously crossed the A63 in a manoeuvre corresponding to that of the Before 'Green' journey time route. Immediately after the junction improvement, it was decided to extend the service along Monks Way, turning at Gibson Lane roundabout, and returning to the southern roundabout at Melton Junction, without any change to the overall route time. This benefited only a few passengers, so the extension was removed, leaving the service to cross the A63 in the same way as the After 'Green' route. The improved reliability is said to have made it easier to keep to the timetable.
- 6.18 In summary, Stagecoach has reported no change to its through service, but East Yorkshire Motor Services believe there have been improvements on both its local routes.

Community Severance

- 6.19 The dual A63 continues to separate Melton and Welton to the north from Ferriby and Brough to the south. The increased distance of some pedestrian routes is balanced by reductions to others, and by improved safety. As already noted, a subway allows pedestrians and cyclists to cross beneath Monks Way East, and the A63 footbridge is provided with ramps.

Integration

- 6.20 The AST stated that the Scheme complies with the transport policies contained in the Humberside Structure Plan and the adopted Beverley Local Plan.
- 6.21 From consultations, East Riding of Yorkshire Council has confirmed that the Scheme complies with the following policies of the Joint Structure Plan for Kingston upon Hull and East Riding of Yorkshire (JSP), which was adopted in 2005, replacing the former Humberside Structure Plan:

A63 MELTON GRADE SEPARATED JUNCTION – ONE YEAR AFTER

- ◆ Policy T3 provides that the strategic highway network should be managed and improved to facilitate the movement of freight and the long-distance movement of people.
- ◆ Policy EC2 identifies Melton as one of the strategic employment sites in a multi-modal east-west freight transport corridor.

6.22 With regard to the Beverley Local Plan, sites at Melton are allocated for B1, B2, and B8 class development. The council states that improvements along the A63 multi-modal corridor have been important in securing employment opportunities.

Table 6-1 – Appraisal Summary Table (AST) dated November 2000

<i>Proposal name</i> A63 Melton Grade Separated Junction		Option description New grade separated junction accommodating Melton 1-4 & Welton 1 developments (Do something 1) without development traffic		Cost £11.26m (Q2 2000)	
PROBLEMS		Severe accident record on A63 trunk road & extreme restriction on Local Plan development intentions			
OTHER OPTIONS		Other forms of grade separated junction.			
CRITERIA	SUB-CRITERIA	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT	
ENVIRONMENTAL IMPACT	Noise	Noise decreases >3dB(A) occur to the south due to realignment of the A63 to the north and screening provided by the slip roads. Noise increases >3dB(A) arise due to Melton Bottom Link.	No. properties experiencing (w/s): - Increase In Noise 12 - Decrease in noise 73	Net 69 properties experience lower noise levels (High Growth)	
	Local air quality	The proposal leads to an increase of PM ₁₀ levels of 2µg or more and an increase in NO ₂ levels of 2 ppb or more but only at a few locations north of the scheme. More locations to the south experience greater decreases. The NAQs NO ₂ objective of 21 ppb is exceeded with or without the proposal.	No. properties experiencing: (High Growth) - better air quality 200 - worse air quality 112	-181 PM ₁₀ -225 NO ₂ (High Growth)	
	Landscape	Slight adverse impact. Proposals would contribute to the urbanisation of existing trunk road corridor.	Not applicable	Slight negative	
	Biodiversity	Slight adverse impact partially mitigated by proposed enhancement of existing habitats and creation of new ones.	Not applicable	Slight negative	
	Heritage	The proposal will have some impact on all identified archaeological sites, most notably on one site of regional importance. However adequate mitigation (preservation by record) can be specified. There is limited potential for as yet undiscovered archaeological sites, and these will be identified as part of pre-construction assessment work; if any new sites are identified, impacts will be assessed and an appropriate strategy formulated.	Not applicable	Moderate adverse	
	Water	The proposals will cross a drainage ditch of low grade and are located in an area of high groundwater vulnerability. They will result in a slight neutral/ slight positive effect on water quality due to improved pollution control measures compared with existing. Neutral slight positive impacts on land drainage and flood risk.	Not applicable	Neutral/ slight positive	
SAFETY	Accidents	Accident reduction benefits would be gained from introduction of new grade separated junction and associated removal of at-grade junctions. There will be substantial junction benefits from the proposed scheme, but moderate link accident disbenefits. Overall: Moderate beneficial	Low/High Accs Deaths Ser Sli Links -71/-46 -4/-3 -21/15 -89/-60 Juncs 195/212 6/7 57/62 274/301 Total 124/167 2/3 35/47 185/242	Link PVB £-2.3m/£-2.1m % of PVC -49/-41 Junc PVB £5.3m/£7.0m % of PVC 104/137 Total PVB £3.0m/£4.9m % pf PVC 95/96	
ECONOMY	Journey times & Veh. Op. Costs	Moderate benefits to journey times	Trunk road journey time savings: High growth pk 5.6 min; interpk 0.3 min Low growth pk 3.1 min; interpk 0.3 min	Jour time PVB £23.2m/£64.2m % of PVC 455/1259 Veh Op PVB £-6.2m/£-4.2m % of PVC -122/-82	
	Cost	There are no exceptional ongoing costs	Not applicable	PVC £5.07m	
	Reliability	Substantial benefit to journey time reliability	Not applicable	Not applicable	
	Regeneration	The proposed scheme will have substantial benefits for future regeneration south of the A63 corridor	Serves regeneration priority area? Development depends on scheme?	Yes Yes	
ACCESSIBILITY	Pedestrians and others	The scheme would result in safer, but increased journey paths and travelling time for the residents of Gibson Lane and Melton Fields Estate who need to cross the A63 in order to access the school or the village of Melton. Users of the Wolds Way public footpath would also have a greatly reduced diversion to cross the A63	Not applicable	Slight beneficial	
	Access to public transport	The existing bus services use the A63 to provide a service between the villages of Melton and North Ferriby, these will be re-routed onto the proposed local access road network.	Not applicable	Moderate beneficial	
	Community severance	The degree of new severance to the local community on most of the main journey routes would be moderate to severe. However safer routes would result.	Not applicable	Moderate adverse	
INTEGRATION	- -	The scheme complies with transport policies contained in the Humberside Structure Plan and the adopted Beverley Local Plan.	Not applicable	Positive	
Version of COBA: 10		Cost benefit analysis (low/ high)	PVB £20.0m/ £64.7m PVC £5.07m NPV £14.9m/ £59.6m BCR 3.9/ 12.8		

Table 6-2 – Evaluation Summary Table (EST)

<i>Proposal name</i> A63 Melton Grade Separated Junction		Option description 'Option 2' was built		Cost £37.6m (2002 prices)	
PROBLEMS		Congestion on A63 limited development.			
OTHER OPTIONS					
CRITERIA	SUB-CRITERIA	QUALITATIVE IMPACTS	QUANTITATIVE MEASURE	ASSESSMENT	
ENVIRONMENTAL IMPACT	Noise	Noise barriers, and lower than predicted traffic flows after 1 year, are likely to have resulted in a more favourable outcome than predicted.	-	Beneficial	
	Local air quality	Due to the currently lower traffic flows than predicted the air quality as a result of the scheme is likely to be better than expected.	-	Beneficial	
	Landscape	As expected, the most significant visual impacts of the scheme are on Woodside, the properties adjacent to the Gibson Lane footbridge and on the properties in Melton Fields and on Brickyard Lane. Landscape planting and earthworks have helped integrate the scheme into the local landscape.	-	Slight negative	
	Biodiversity	Mitigation measures for bats and badgers. Hedgerows replaced. Balancing pond provides new habitat.	-	Neutral	
	Heritage	More extensive unknown archaeology was discovered on site than expected. The South Lawn Iron Age/Romano-British site has been damaged and preserved by record.	-	Moderate adverse	
	Water	Mitigation measures incorporated into the scheme as expected. Balancing pond prevents run-off polluting the Humber estuary.	-	Beneficial	
SAFETY	Accidents	The accident rate in the first year after opening has remained unchanged.		Neutral	
ECONOMY	Journey times & Veh. Op. Costs	Moderate benefits to journey times	Trunk road journey time savings: Peak 1.8 min; Interpeak 1.35 min	Journey time PVB £68.3m; 200 % of PVC	
	Cost	Additional costs due to extended construction time, among 20 identified causes.		PVC £34.2m	
	Reliability	Substantial benefit to journey time reliability	-	Not applicable	
	Regeneration	The scheme has improved road access to a designated employment area.		Serves South Hunsley Tier 2 Assisted Area. Melton Park & Melton West developments facilitated.	
ACCESSIBILITY	Pedestrians and others	The new Melton overbridge accommodates cyclists and pedestrians, including those using the Wolds Way path. A new footbridge replaces the surface crossing at Gibson Lane. Improved safety due to grade separation. Extensive footpath and cycleway provision alongside link roads.		Moderate beneficial	
	Access to public transport	The new road layout has facilitated an extension to the 153 service (currently little-used), and has enable the 155 service to cross the A63 on the Melton overbridge, with consequent improvement to reliability.		Moderate beneficial	
	Community severance	Improved safety compensates for increased pedestrian and cycling distance on some routes.		Neutral	
INTEGRATION	-	Complies with Joint Structure Plan policies T3 and EC2; and facilitates Beverley Local Plan land allocations.	-	-	
Version of COBA: 10			PVB £84.0 PVC £34.2m NPV £49.8m BCR 2.5 (2002 prices & values)		

7. Conclusions

- 7.1 The Melton Grade Separated junction opened to traffic in October 2006, with further construction work and traffic management work continuing to April 2007. The scheme is located on the A63 west of Hull, and has provided an overbridge, slips and link roads to replace three former at-grade junctions. The objectives were to remove junction delays, improve safety, and facilitate development.
- 7.2 A traffic flow of 50,600 AWT was measured on the A63 at Melton in 2007, representing an increase of 13% on the flow in 2004, before the start of construction. This compares with about 4% regionally, and 7% on the M180, in the same time.
- 7.3 Journey time surveys have shown savings of between ½ minute and 1¾ minutes on the A63, and between 0 and 2¼ minutes on routes crossing the A63. Some of these routes have increased in distance, but now avoid conflict with through traffic.
- 7.4 There has been a very slight reduction in accident and casualty rates over the wider network considered in forecasting, and a halving of accidents in the immediate scheme area, and the nature of accidents has changed with the new road layout. These results are based on only a 18 months' data after scheme opening, and cannot be regarded as definitive. The Five Year After report will be based on more data and will be a more reliable guide to the impact of the scheme on safety.
- 7.5 The cost of the scheme was £37.6 million, compared with £14.1 million forecast (at 2002 prices, undiscounted).
- 7.6 The monetary benefit, arising from savings in vehicle-time and accidents, is assessed as £84 million over 30 years (at 2002 values). This is less than the forecast figure of about £98.8 million, largely due to traffic levels having been over-predicted.
- 7.7 The environmental impacts, both positive and negative, are generally as predicted, except that those dependent on traffic flows (noise and air quality) are likely to be better than predicted at this stage, due to traffic flows not yet having reached forecast levels.
- 7.8 The scheme formed part of the local authority's Structure Plan, playing a part in efforts to bring development and employment to the area. Two business parks at Melton are currently under construction, but have not yet contributed any additional development traffic.

Annex A – Traffic Volumes at Highways Agency Sites

Table A-1 – Traffic Counts ‘Before’ and ‘After’

Location	Site Ref	Easting	Northing	24hr AWT		% Increase
				Before (Jun 04)	After (Oct 07)	
A63, E of A1034	1426-7	495002	427698	38,842	44,755	15%
A63 E of Melton GSJ	1572-3	499250	426575	45,604	50,652	13%
A63 W of A15	30014106-7	500000	426500	45,466	51,628	14%
A63 E of A15	30014100-3	503000	425660	49,383	54,771	11%
A63 between A1034-M62	30014121-3	491956	430373	37,545	41,855	11%
M62 J37-38	1378-9	475610	427587	37,610	41,779	11%
M180 J2-3	1578-9	482500	407200	40,156	42,543	6%
M180 J3-4	30014931-3 & 5	495000	406257	28,615	31,166	9%
M180 J4-5	30014933-6	504000	410940	38,016	40,846	7%
A180 between A15-A160	30014925-7 & 9	505339	411120	31,580	35,052	11%
A180 between A160-A1173	338-9	516565	413921	26,124	27,601	6%
A180 between A160-A1173	30014096-7	514362	414308	25,653	27,165	6%
A180 between A1173-A1136	1440-1	521197	412292	34,935	36,614	5%
B1232, Willerby	2-way	501900	430666	18,578	17887	-4%
A164, N of A1105	2-way	501500	427000	15,389	15932	4%
A1105, E of A164	2-way	502200	426700	18,569	19818	7%

Annex B – Turning Counts

BEFORE

Figure B-1 – 12-Hour Turning Flows

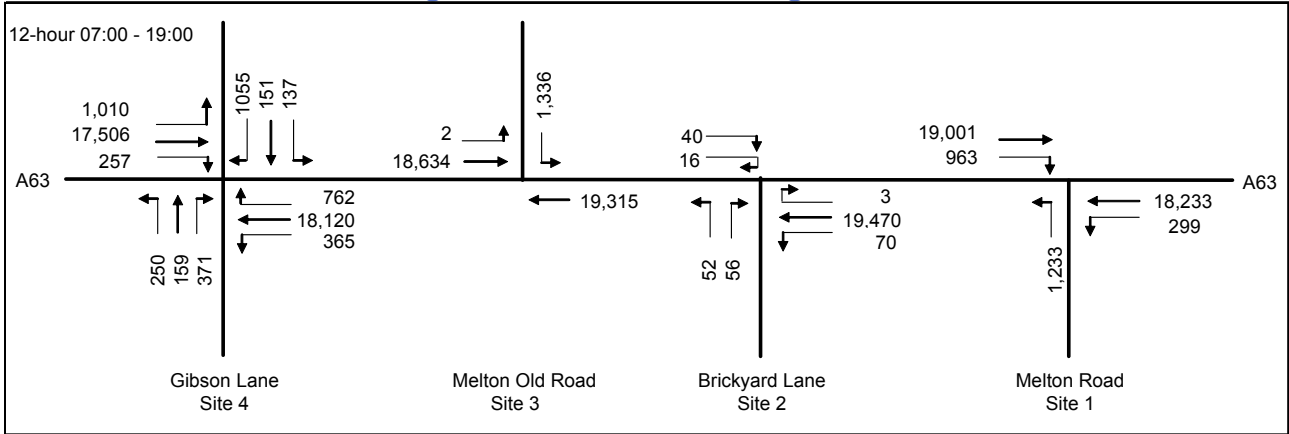
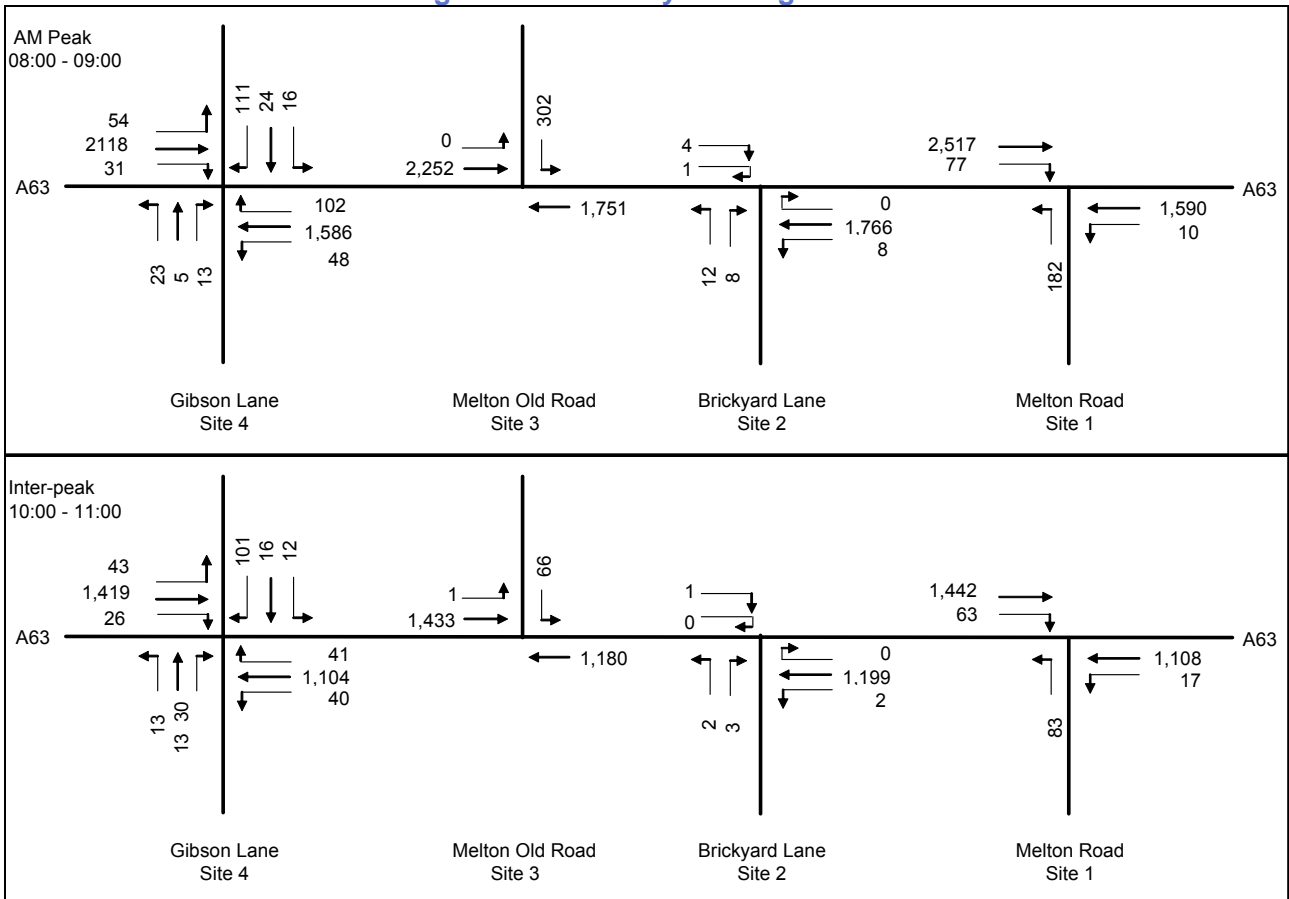
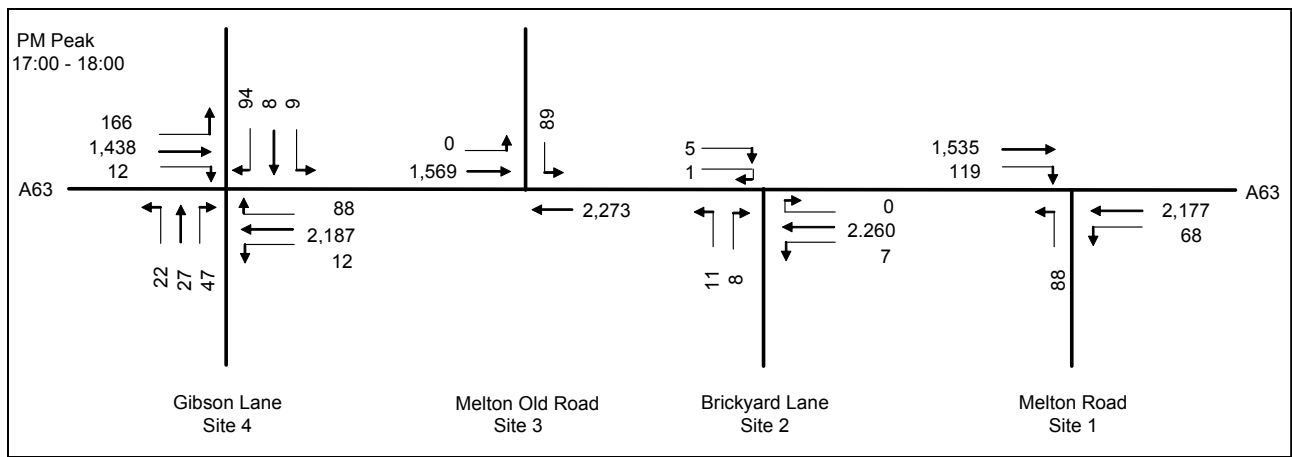


Figure B-2 – Hourly Turning Flows



A63 MELTON GRADE SEPARATED JUNCTION – ONE YEAR AFTER



Site 1

B.1 This was a 3-arm priority junction with Melton Road being the minor arm to the south. Right turns from the A63 into Melton Road were permitted, but right turns out of Melton Road were banned. Over 12 hours, about 1,200 vehicles turned into and out of Melton Road, compared with a through flow of about 19,000 vehicles on the A63. The heavy vehicle percentage (HV%) on Melton Road was about 6% over the 12 hours, compared with 18% on the A63. In the AM peak, about twice as many vehicles turned out of Melton Road as turned into it, while in the PM peak this was reversed. This may have been due to a predominance of commuter trips from residential areas of North Ferriby.

Site 2

B.2 Site 2 was a priority junction with the minor Brickyard Lane to the south. Full movements were possible, but flows to and from Brickyard Lane were very low, totalling just over 100 in 12 hours, with about 5% HV.

Site 3

B.3 Site 3 was the junction with Melton Old Road to the north, with left-in/ left-out movements only. Scarcely any traffic made the left turn from the A63, as this movement would have been more conveniently made from the signal junction to the west (site 4). However, about 1,300 vehicles (4% HV) did turn left into the A63 over 12 hours, and about 300 of these were in the AM peak hour. This movement would have bypassed the signals.

Site 4

B.4 Site 4 was the signalised crossroad junction of Gibson Lane with the A63. The largest movement was between Gibson Road north and A63 west, made by approximately 1,000 vehicles each way over 12 hours (7% HV). In the AM peak, about twice as many vehicles turned out of Gibson Road north as into it, while in the PM peak the situation was reversed. The turn between Gibson Road north and A63 east was unbalanced, with nearly 800 vehicles making the right turn from the A63 east in 12 hours, but only 100 vehicles turning left into it. This was due to the existence of an alternative access to the A63 east, via Site 3. The remaining turns and cross-A63 movements, to and from Gibson Road south, were relatively unimportant.

AFTER

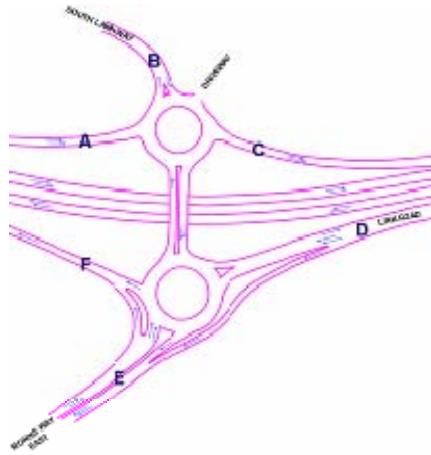


Table B-1 – 12-Hour Matrix of Movements between Arms

12 Hr 07:00 to 19:00		To						
		A	B	C	D	E	F	Total
From	A	0	1524	26	773	362	51	2736
	B	0	0	544	256	191	1423	2414
	C	0	0	0	0	0	0	0
	D	0	622	211	0	617	1013	2463
	E	0	190	422	160	0	389	1161
	F	0	0	0	0	0	0	0
	Total	0	2336	1203	1189	1170	2876	8774

Table B-2 – Hourly Matrices of Movements between Arms

08:00 to 09:00		To						
		A	B	C	D	E	F	Total
From	A	0	198	2	77	61	5	343
	B	0	0	193	39	25	230	487
	C	0	0	0	0	0	0	0
	D	0	66	39	0	82	137	324
	E	0	14	30	12	0	26	82
	F	0	0	0	0	0	0	0
	Total	0	278	264	128	168	398	1236

10:00 to 11:00		To						
		A	B	C	D	E	F	Total
From	A	0	73	2	41	27	3	146
	B	0	0	24	18	12	77	131
	C	0	0	0	0	0	0	0
	D	0	25	17	0	47	81	170
	E	0	11	32	9	0	22	74
	F	0	0	0	0	0	0	0
	Total	0	109	75	68	86	183	521

17:00 to 18:00		To						
		A	B	C	D	E	F	Total
From	A	0	230	1	151	18	6	406
	B	0	0	25	31	9	121	186
	C	0	0	0	0	0	0	0
	D	0	103	12	0	31	96	242
	E	0	30	49	14	0	46	139
	F	0	0	0	0	0	0	0
	Total	0	363	87	196	58	269	973

A63 MELTON GRADE SEPARATED JUNCTION – ONE YEAR AFTER

- B.5 Nearly 9,000 vehicles used the new junction in 12 hours. The largest movement was between A63 west and South Lawn Way (to the north), made by about 1,500 vehicles in each direction.
- B.6 The next largest movement was between A63 west and North Ferriby, via the link road. This was made by about 1,000 vehicles in the westbound direction, and about 800 eastbound.
- B.7 The volume of traffic using the bridge was about 3,100 southbound and 1,400 northbound. The imbalance is explained by the layout of the junction, which requires 6 turns to be made by crossing the bridge southbound, but only 4 turns to be made by crossing the bridge northbound. The most important turn is between South Lawn Way and the A63 west. The north-to-west direction requires a southbound crossing of the bridge, whereas the reverse direction does not need a crossing.

Annex C – Journey Times

Times shown are the average of six journey time runs.

Red Route EB - Before

Section	Time (m:s)		
	AM	IP	PM
A63 (A1034 Brough Rd - Welton Rd)	02:37	02:35	02:38
A63 (Welton Rd - Low Field La)	01:09	01:00	01:06
A63 (Low Field La - Gibson La)	00:42	00:46	00:56
A63 (Gibson La - Melton Old Rd)	00:10	00:10	00:15
A63 (Melton Old Rd - Brickyard La)	00:11	00:11	00:11
A63 (Brickyard La - Melton Rd)	00:28	00:26	00:26
A63 (Melton Rd - A15 Boothferry Rd)	01:59	01:49	01:52
Entire Route	07:16	06:56	07:24

Red Route EB - After

Section	Average Time (m:s)		
	AM	IP	PM
A63 (A1034 Brough Rd - Welton Rd)	02:29	02:27	02:24
A63 (Welton Rd - Low Field La)	00:53	00:36	00:37
A63 (Low Field La -Melton EB offslip)	00:41	00:34	00:33
A63 (Melton EB offslip - EB onslip)	00:23	00:21	00:21
A63 (Melton EB onslip - A15 EB offslip)	02:01	01:37	01:40
Entire Route	06:27	05:35	05:35

Red Route WB - Before

Section	Time (m:s)		
	AM	IP	PM
A63 (A15 Boothferry Rd - Melton Rd)	01:48	01:55	01:53
A63 (Melton Rd - Brickyard La)	00:28	00:24	00:27
A63 (Brickyard La - Melton Old Rd)	00:11	00:10	00:19
A63 (Melton Old Rd - Gibson La)	00:09	00:11	00:19
A63 (Gibson La - Low Field La)	00:30	00:46	00:47
A63 (Lowfield La - Welton Rd)	00:43	00:41	00:45
A63, Welton Rd - A1034 Brough Rd	02:28	02:22	02:38
Entire Route	06:17	06:28	07:09

Red Route WB - After

Section	Time (m:s)		
	AM	IP	PM
A63 (A15 W/b onslip - Melton WB offslip)	01:38	01:39	01:41
A63 (Melton WB offslip - WB onslip)	00:22	00:21	00:22
A63 (Melton WB onslip - Low Field La)	00:34	00:34	00:33
A63 (Lowfield La - Welton Rd)	00:39	00:37	00:36
A63, Welton Rd - A1034 Brough Rd	02:34	02:28	02:29
Entire Route	05:48	05:39	05:41

Green Route SEB - Before

Section	Time (m:s)		
	AM	IP	PM
Melton Bottom (Mill Rd - East Dale Rd)	01:32	01:28	01:30
Melton Old Rd (Melton Bottom - Gibson Rd)	00:35	00:29	00:29
Melton Old Rd (Gibson Rd - A63)	00:16	00:14	00:15
A63 (Melton Old Rd - Brickyard La)	00:35	00:32	00:35
A63 (Brickyard La - Melton Rd)	00:30	00:28	00:31
High St (A63 - Swanland Hill)	01:59	01:19	02:19
Entire Route	05:27	04:30	05:39

Green Route SEB - After

Section	Time (m:s)		
	AM	IP	PM
Melton Bottom (Mill Rd - S Lawn Rd)	01:07	01:00	01:07
South Lawn Rd	00:58	00:55	00:52
Melton overbridge	00:18	00:18	00:17
Link Rd	00:23	00:21	00:23
High St (WB offslip - Swanland Hill)	01:16	01:17	01:18
Entire Route	04:02	03:51	03:57

Green Route NWB - Before

Section	Time (m:s)		
	AM	IP	PM
High St (Swanland Hill - A63)	01:18	01:16	01:28
A63 (Melton Rd - Brickyard La)	00:35	00:34	00:47
A63 (Brickyard La - Melton Old Rd)	00:27	00:22	00:31
Melton Old Rd (A63 - Gibson Rd)	02:08	01:07	01:25
Melton Old Rd (Gibson - Melton Bottom)	00:24	00:24	00:23
Melton Bottom (East Dale Rd - Mill Rd)	01:32	01:31	01:39
Entire Route	06:24	05:13	06:13

Green Route NWB - After

Section	Time (m:s)		
	AM	IP	PM
High St (Swanland Hill - WB offslip)	01:10	01:10	01:15
Link Rd	00:39	00:34	00:34
Melton overbridge	00:17	00:17	00:16
South Lawn Rd	01:01	01:00	01:04
Melton Bottom (S Lawn Rd - Mill Rd)	01:06	00:52	01:01
Entire Route	04:13	03:52	04:11

Blue Route SB - Before

Section	Time (m:s)		
	AM	IP	PM
Melton Old Rd (Melton Bottom - Gibson La)	00:27	00:31	00:28
Gibson La (Old Melton Rd - A63)	00:54	00:57	00:21
Gibson La (A63 - railway level crossing)	03:22	03:12	03:54
Entire Route	04:43	04:40	04:43

Blue Route SB - After

Section	Time (m:s)		
	AM	IP	PM
Melton Bottom (E Dale Rd - S Lawn Way)	00:46	00:38	00:44
South Lawn Way	00:46	00:40	00:43
Melton Overbridge	00:28	00:27	00:30
Melton Overbridge - Brickyard La rbt	00:18	00:18	00:18
Brickyard La rbt - Gibson La rbt	00:31	00:30	00:31
Gibson La rbt - railway level crossing	00:26	00:27	00:28
Entire Route	03:16	03:01	03:14

Blue Route NB - Before

Section	Time (m:s)		
	AM	IP	PM
Gibson La (railway level crossing - A63)	01:07	01:39	01:13
Gibson La (A63 - Old Melton Rd)	01:41	01:15	01:57
Melton Old Rd (Gibson La - Melton Bottom)	00:24	00:22	00:18
Entire Route	03:12	03:16	03:28

Blue Route NB - After

Section	Time (m:s)		
	AM	IP	PM
Railway level crossing - Gibson La rbt	00:41	00:41	01:07
Gibson La rbt - Brickyard La rbt	00:32	00:29	00:30
Brickyard La rbt - Melton Overbridge	00:19	00:19	00:19
Melton Overbridge	00:19	00:18	00:20
South Lawn Way	00:43	00:40	00:42
Melton Bottom (S Lawn Way - E Dale Rd)	00:36	00:28	00:30
Entire Route	03:10	02:55	03:28