

Post Opening Project Evaluation



A1 Dishforth to Leeming One Year After Opening Study

July 2015

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Executive Summary

Scheme Description

The A1 Dishforth to Leeming scheme is a Highways England (formerly Highways Agency) major scheme to upgrade a 13.7 miles (22km) section of the A1 to motorway standard in North Yorkshire, together with the provision of a Local Access Road (LAR) to provide access to local traffic. The scheme fully opened in March 2012.

Scheme Objectives

Objective (Scheme Statement of Case)	Achieved?
Reduce high levels of accidents	✓
Reduce congestion	✓
Enhance journey time reliability	✓

Key Findings

- Traffic flows on the A1 have decreased since the scheme opened and are lower than forecast. This reduction is in line with a nationwide reduction in traffic coinciding with the economic downturn.
- A1(M) traffic is experiencing more reliable journeys together with time savings in the region of 2 to 3 minutes.
- The numbers of collisions on the A1(M) have reduced since the scheme opened and the impacts are better than forecast.
- Monetary benefits are lower than expected, due to the lower than forecast traffic volumes.

Summary of Scheme Impacts

Traffic

- Traffic flows on the A1(M) have decreased since the scheme opened and are lower than forecast. Post opening, the A1(M) at this location carried between 48,400 and 49,800 vehicles on an average weekday.
- There is still a decrease in the A1(M) corridor when the traffic flows on the parallel Local Access Road are included.
- There is no evidence of traffic re-assignment to/from other major routes in the area since the scheme opened.
- Journey times for A1(M) traffic are between 2 to 3 minutes quicker per vehicle throughout the day. Journey time savings for vehicles using the A1 are slightly lower than forecast.
- Journey time reliability has improved throughout the day since the scheme opened.
- Traffic flows are considerably lower than forecast on the A1 and Local Access Road (although it should be noted that the forecast assumed that the scheme would be completed to Barton).

Safety

- Analysis of the observed collision data for the scheme key links which were directly affected by the scheme shows an initial reduction of 22.2 collisions a year. This represents a decrease of 64%. This will be revisited at the five years after opening stage when a larger data set will be available and will allow firm conclusions to be drawn.
- The number of serious collisions has fallen by a slightly greater amount than the average of all collisions, with a 74% reduction.

- The improved section of the A1(M) now includes emergency telephones situated at various points on both sides of the carriageway. The impact on personal security is therefore better than expected.

Environment

- Air Quality and Noise & Vibration impacts are better than expected due to lower than predicted traffic flows. However, as traffic flows predicted were based on the A1 Dishforth to Barton scheme, the relevance of the predictions may only be confirmed once the A1 Leeming to Barton scheme is completed.
- Planting within the scheme is generally progressing well with only isolated areas of concern noted for areas of high weed infestation and poor soil preparation. The monitoring in place during the aftercare period will highlight issues of concern and the current concerns will be assessed in the next POPE report.
- The selected use of landscape mounds was allowed for in the Environment Statement (ES); however, due to increased availability of construction fill through the splitting of the original scheme, mounds have been increased in size. One landscape mound in particular (north of Oak Tree Underpass) has not received shaping in keeping with the surrounding landscape which is an opportunity missed for allowing the scheme to minimise its expected impact on the surrounding landscape character.
- Lighting columns, in addition to those proposed in the ES, have been included at three locations along the scheme. This was as a result of handover discussions with north Yorkshire County Council and was done in consultation with local residents. One location (east of Londonderry overbridge) is noted to increase the visual day and night time intrusion on properties to the northern end of the village.

Accessibility and Integration

- The scheme has improved crossing provisions along the A1. However, some non-motorised users have to travel further to cross the road. The impact is beneficial (better than expected).
- The scheme has had no discernible impact on option values or access to the transport system, which is as expected.
- The scheme has had no impact on public transport interchanges, which is as expected.
- The scheme is aligned with local, regional and national policies related to land use and development plans.

Summary of Scheme Economic Performance

All monetary figures in 2002 Market Prices		Forecast	Outturn Reforecast
Travel Time Benefits		£305.0m	£221.5m
Safety Benefits		£12.8m	£61.7m
Total Present Value Benefits (PVB)		£317.8m	£283.2m
Indirect Tax		£52.5m	£75.9m
Present Value Costs (PVC)		£268.9m	£237.4m
Benefit Cost Ratio (BCR)	Indirect tax as negative cost	1.5	0.9
	Indirect tax as positive benefit	1.4	0.9

- The outturn journey time benefits are lower than forecast. This is primarily due to observed traffic volumes being lower than forecast.
- Outturn safety benefits were higher than forecast.
- Outturn investment costs are £251.7m, 13% lower than forecast.
- The forecast impact on indirect tax was for an increase in tax revenues to the Government. The outturn indirect tax evaluation shows that the Government is receiving less indirect tax revenue because traffic volumes are lower than forecast.
- Taking indirect tax as a benefit, the scheme delivers a BCR of 0.9 which shows that the scheme is poor value for money. However, it should be noted that additional benefits may be realised once the improvements to the A1 between Leeming and Barton are completed.
- Due to the inherent difficulty in isolating the wider economic impacts of the scheme, it has not been possible to conclude whether the scheme has had a direct impact on stimulating economic activity.

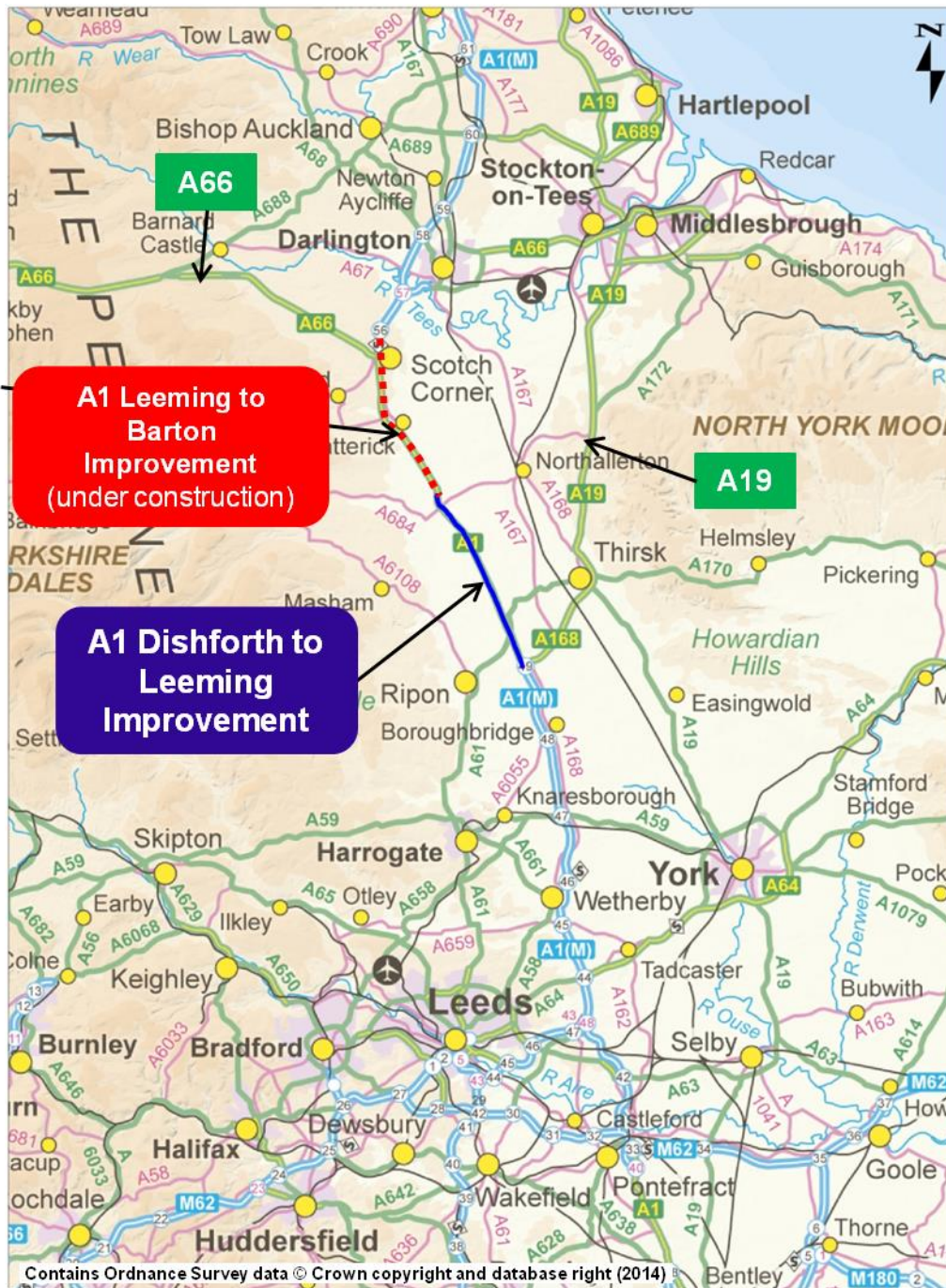
1. Introduction

- 1.1 This report presents the One Year After (OYA) Opening Evaluation of the A1 Dishforth to Leeming Improvement undertaken as part of Highways England's (formerly Highways Agency) Post Opening Project Evaluation (POPE) process.
- 1.2 More specifically, the report sets out the following:
- A comparison of the 'before' and 'after' traffic volumes on the A1 and other roads in the vicinity of the A1 Dishforth to Leeming scheme;
 - A comparison of 'before' and 'after' journey times on the A1;
 - An outline of the changes in collision rates on the corridor following the opening of the scheme;
 - A monetised comparison of the predicted and actual impacts of the A1 Dishforth to Leeming scheme;
 - Evaluation of the impact upon the environment, more specifically the impact upon noise, air quality, landscape, biodiversity, heritage and water; and
 - An assessment of the A1 Dishforth to Leeming scheme's impact on the accessibility and integration objectives.

Scheme Context

- 1.3 The A1 Dishforth to Leeming scheme is a Highways England Major Scheme to upgrade a section of the A1 to motorway standard. The A1 is a strategic north/south inter-regional trunk road, linking London and the south of England with the north-east of England and Scotland. Originally built to single and dual carriageway standards, many sections have been upgraded to motorway standard over the past decades, with the upgraded sections referred to as A1(M).
- 1.4 The Dishforth to Leeming section (shown in **Figure 1.1**) runs through North Yorkshire serving local areas such as Thirsk, Ripon and Northallerton. This section is one of the few remaining sections of route remaining to be upgraded.
- 1.5 The A1 Dishforth to Leeming scheme was originally included in the Highways Agency's (at time of appraisal) Major Schemes A1 Dishforth to Barton improvement scheme. However, on 31st March 2008 the Secretary of State for Transport announced that the A1 Dishforth to Barton improvement scheme will be delivered in two phases due to further investigation being required about local access road provision and a land take issue regarding a local access north of Leeming junction. It was announced that the southern section (Dishforth to Leeming) would be built first, followed by the northern section (Leeming to Barton). This OYA study concerns the A1 Dishforth to Leeming section, henceforth referred to as the scheme.
- 1.6 The geographical location of the scheme is shown in **Figure 1.1**. This section of road is used by approximately 45,000-54,000 vehicles (2006) on a daily basis, with around a quarter being heavy goods and slow moving agricultural vehicles, the capacity of the old road was considered insufficient, severely congested and a constraint to economic growth in the area. There were also safety concerns at the numerous sub standard junctions given the high traffic flows using the junctions.
- 1.7 The scheme itself upgrades the 13 mile section between Dishforth and Leeming, leaving just the Leeming to Barton section remaining as dual carriageway, scheduled for upgrade starting in early 2014 and opening in 2016.
- 1.8 Construction for the A1 Dishforth to Leeming scheme began in February 2009 and was completed on the March 2012.

Figure 1.1 Scheme Location



Problems Prior to the Scheme

1.9 The following issues were identified in the Public Inquiry documents as the main reasons for the improvement:

- The **alignment of the route is generally poor**, with a number of sub standard sections of horizontal and vertical curvature as well as **sub-standard junction layouts**. There are frequent **sub-standard accesses, central reserve crossings** and local road junctions;
- The whole of the Dishforth to Leeming section of the A1 identified for improvement experienced heavy traffic flows, carrying between 45,000 and 54,000 vehicles per day (in 2006, dependent on exact location), approximately one quarter of which were heavy goods vehicles (HGVs) as well as **slow-moving agricultural traffic**;

- The poor layout and junction arrangement in combination with the volume, type and speed of traffic resulted in a **poor safety record**. Over the five year period leading up to the scheme's public inquiry (2001-2005), there were 11 fatal, 89 serious and 294 slight injury accidents in the Dishforth to Barton section¹; and
- The volume of traffic in combination with the effects of slower moving heavy goods vehicles and farm traffic led to **severe congestion** and **poor journey time reliability**.

1.10 The combination of these issues meant that this part of A1 provided a poor level of service on a corridor of substantial importance to the strategic north/south movement and prosperity of the area. This necessitated the implementation of the scheme.

Scheme Description

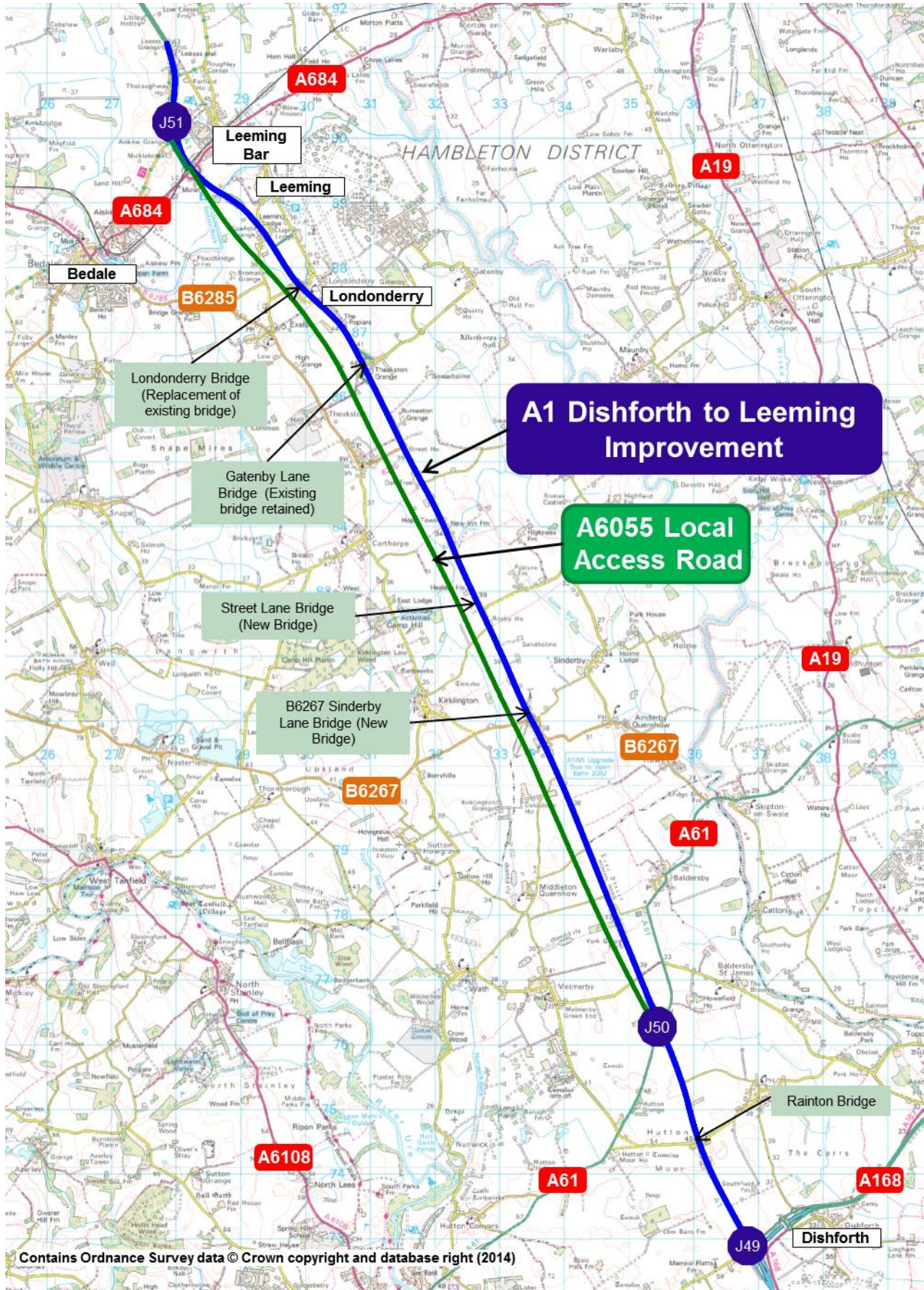
1.11 The old A1 route was constructed during the 1950s and 1960s and as such failed to meet the present day standard for route layout and alignment. Prior to the scheme, the route contained high numbers of sub-standard accesses, central reserve crossings and local road junctions. To improve upon this situation, the main components of the scheme included:

- Provision of a dual three lane motorway with a hard shoulder between the Dishforth and Leeming junctions;
- Provision of junctions between the motorway and local road network at Dishforth (J49), A61 Baldersby (J50) and Leeming (J51);
- Provision of a single carriageway Local Access Road (LAR) - the A6055 - between Baldersby (J50) and Leeming (J51), to meet the demand for local and non-motorway traffic;
- Enhancement of existing, or provision of new underpasses at B6267 Sinderby Lane, Oak Tree Underpass, A684 Beadle Road and A6055 Leases Road; and
- Provision of new overbridges and enhancement of existing at A61 Baldersby, Street Lane, Gatenby lane and Londonderry.

1.12 The key features of the scheme are displayed in **Figure 1.2**.

¹ A1 Dishforth to Barton Outline Statement of Case. Secretary of State for Transport. 31st March 2006.

Figure 1.2 A1 Dishforth to Leeming Improvements



Scheme Objectives

- 1.13 The scheme was developed to achieve three key objectives (as defined in the scheme Statement of Case):
- **Reduce high levels of accidents;**
 - **Reduce congestion; and**
 - **Enhance journey time reliability.**
- 1.14 There were also special requirements:
- To ensure the needs of non motorised and public transport users (both local and long distance) are catered for;
 - To provide a single carriageway all purpose road (LAR – Local Access Road) where appropriate, to meet the needs of local and non-motorway traffic; and
 - To work closely with statutory bodies, particularly English Heritage, in relation to archaeological issues.

Historical Context

- 1.15 A summary of the key aspects of the scheme's development from conception to final opening is presented in **Table 1.1**.

Table 1.1 History of the A1 Dishforth to Leeming Scheme

Date	Event
June 2002	Proposal for upgrading A1 Dishforth to Barton
June 2005	Public Consultation
March 2006	Draft Orders publication
October 2006	Public Inquiry
March 2008	Secretary of State decision to proceed with upgrading the A1 between Dishforth and Leeming only at this stage
March 2009	Start of works
October 2011	An initial section of the scheme route between Dishforth and Baldersby opened six months early on 6th October 2011
March 2012	The remaining sections were completed and the scheme opened to traffic on 31st March 2012

Post Opening Project Evaluation (POPE)

Highways England Appraisal Process

- 1.16 Highways England is responsible for improving the strategic highway network (motorways and trunk roads) through the Major Schemes programme. At each key decision stage through the planning process, schemes are subject to a rigorous appraisal process to provide a justification for the project's continued development.
- 1.17 When submitting a proposal for a major transport scheme, the Department for Transport (DfT) specifies that an Appraisal Summary Table (AST) is produced which records the degree to which the five Government objectives for Transport (Environment, Safety, Economy,

Accessibility and Integration) have been achieved¹. The contents of the AST allow judgements to be made about the overall value for money of the scheme. The AST for this scheme is presented in Chapter 7 of this report.

Post Opening Project Evaluation

- 1.18 POPE studies are carried out for all Major Schemes to evaluate the strengths and weaknesses in the techniques used for appraising schemes. This is so that improvements can be made in the future. For POPE, this is achieved by comparing information collected before and after the opening of the scheme, against predictions made during the planning process. The outturn impacts of a scheme are summarised in an Evaluation Summary Table (EST) which summarises the extent to which the objectives of a scheme have been achieved. The EST for this scheme can be found in Chapter 7 of this report.

Report Structure

- 1.19 Following this introduction, the report is divided into eight further chapters as follows:

- **Chapter 2** – Traffic Impact Evaluation;
 - **Chapter 3** – Safety Evaluation;
 - **Chapter 4** – Economic Evaluation;
 - **Chapter 5** – Environmental Evaluation;
 - **Chapter 6** – Accessibility and Integration Evaluation;
 - **Chapter 7** – Appraisal and Evaluation Summary Tables; and
 - **Chapter 8** – Conclusions.
-
- **Appendix A** – Tables and Figures in this Report
 - **Appendix B** – Environment Information Requested
 - **Appendix C** – ES Landscape Assessment Summary
 - **Appendix D** – Photomontage Comparison Views
 - **Appendix E** – Cultural Heritage
 - **Appendix F** – Drainage – Photographs of ponds
 - **Appendix G** - Glossary

¹ These were the objectives for transport at the time of the scheme appraisal.

2. Traffic Impact Evaluation

Introduction

- 2.1 This chapter considers traffic data from a number of sources to provide a before and post-opening comparison of traffic flows and journey times on key routes affected by the implementation of the A1 Dishforth to Leeming Improvement. More specifically, this section includes:
- A summary of the key data sources used to support this evaluation;
 - A description of national, regional and local background traffic trends;
 - A detailed comparison of before and after traffic flows and journey times on key routes in the study area likely to be affected by the scheme; and
 - An explanation of key differences between forecast and outturn impacts of the scheme on traffic flows and journey times in the vicinity of the scheme.

Background Changes in Traffic

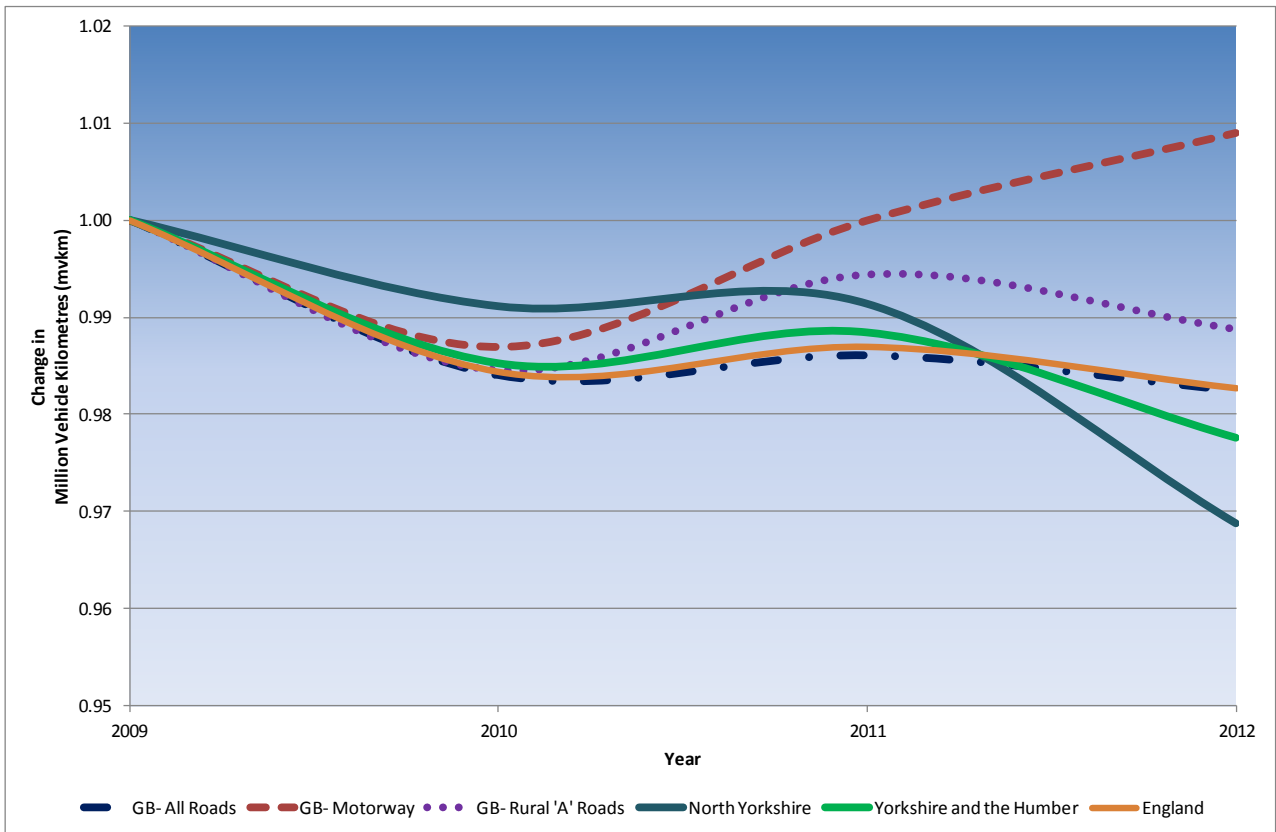
- 2.2 Historically in POPE scheme evaluations, the 'before' counts have often been factored to take account of background traffic growth so that they are directly comparable with the 'after' counts. This usually involves the use of National Road Traffic Forecasts (NRTF) with local adjustments made using National Transport Model (NTM) Local Growth Factors.
- 2.3 However, due to the recent economic climate which has seen widespread reductions in motor vehicle travel in the UK as a whole (since 2008), it is no longer deemed appropriate to use this method of factoring 'before' counts to reflect background changes in traffic. Rather, a more considered approach is required in order to assess changes in the vicinity of the scheme, within the context of national, regional and locally observed background changes in traffic.
- 2.4 In order to better understand the effects of the recent economic downturn, it is useful to look at the long term trends in traffic nationally, regionally and in the local area of the scheme.

Long Term Traffic Trends

- 2.5 The Department for Transport (DfT) produces observed annual statistics for all motor vehicles in terms of distances travelled. These are reported by road types for Great Britain and by region¹. At present, this data is available up to 2012. This is shown in **Figure 2.1**.

¹ Road Traffic and Speeds (<http://www.dft.gov.uk/pgr/statistics/datatablespublications/roads/traffic>) Table TRA8904. Motor vehicle traffic (vehicle kilometres) by local authority in Great Britain, annual from 1993.

Figure 2.1 – Long Term Traffic Flow Change



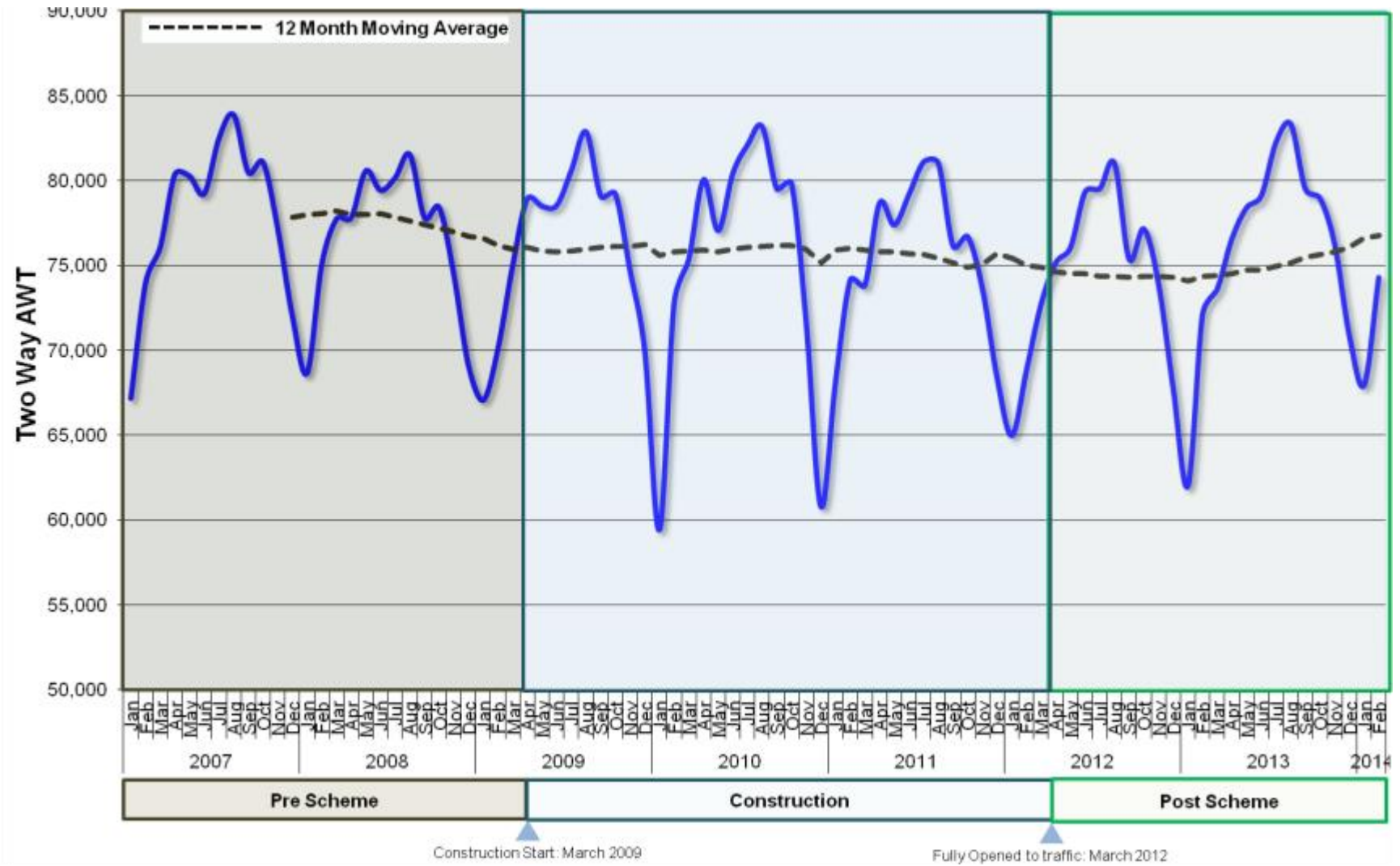
2.6 **Figure 2.1** shows that in general traffic flows have slightly reduced between 2009 and 2012, particularly in North Yorkshire. Motorways are the only roads to have experienced growth, but it should be noted that this covers the whole of Britain.

Long Term Traffic Trends on the A1

2.7 **Figure 2.2** overleaf presents the long term traffic trends on the A1(M) immediately south of Dishforth. This shows the following:

- Traffic flows are highest during the summer months and lowest during the winter.
- In general there has been a steady decline in traffic flows on the A1 since 2007.
- The opening of the A1 Dishforth to Leeming scheme has not resulted in increased traffic using the A1.

Figure 2.2 – Long term traffic trend on the A1(M) south of Dishforth



- 2.8 On the basis of these trends, no factoring of traffic flow data to adjust for background traffic flow changes has been used in this study.

Traffic Volume Analysis

- 2.9 The following section considers the main traffic related impacts of the scheme on the key routes within the study area and more specifically explores:

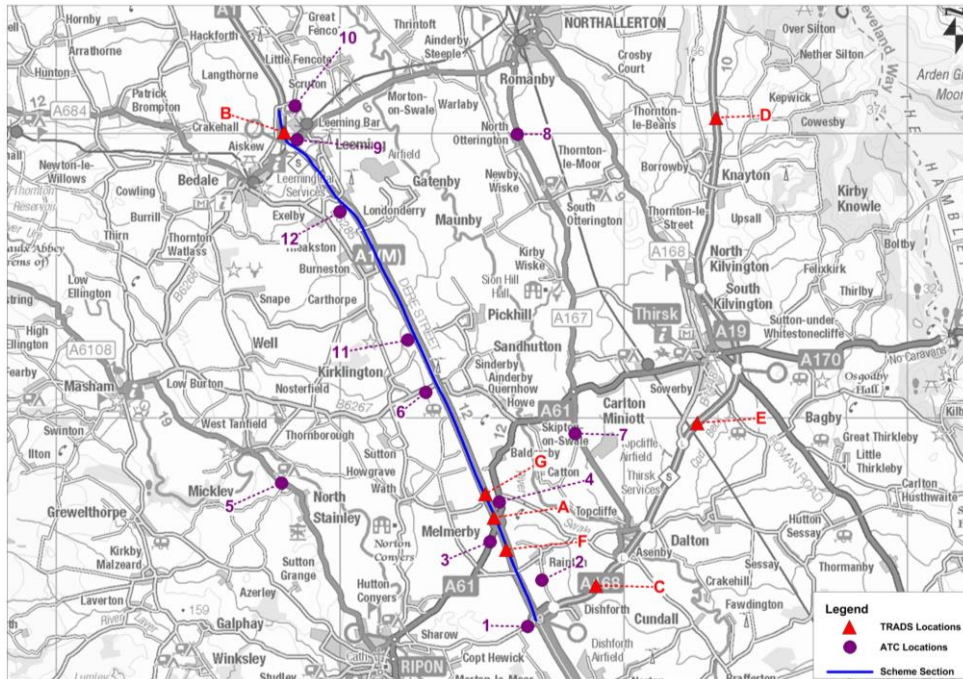
- Background changes in traffic – to provide context against which observed changes in actual traffic can be considered;
- A comparison of before and post-opening traffic flows for key routes – to identify where significant traffic flow changes have been observed;
- A comparison of traffic flow forecasts and outturn patterns identified after opening – to identify whether traffic flow changes were as expected or otherwise; and
- The reasons why outturn traffic impacts may not have been in line with expectations – to identify whether greater consideration of/different thinking in scheme appraisal would have lead to a more accurate forecast.

Data Sources

- 2.10 For the purposes of this evaluation study, the main sources of count data include:
- Permanent count data obtained from the TRADS¹ database for count locations on the strategic road network for March 2008 (pre-scheme) and February/March 2013 (OYA);
 - Pre-scheme 24-hr classified Automatic Traffic Count (ATC) data conducted in March 2008, commissioned by Atkins specifically for the purpose of this study;
 - Post-opening 24-hr classified ATC data conducted in September 2013, commissioned by Atkins specifically for the purpose of this study.
- 2.11 The location of the traffic count data used in this evaluation is shown in **Figure 2.3**.

¹ TRADS is the Highways England website containing traffic flow data from automatic traffic counts on the HA's highway network.

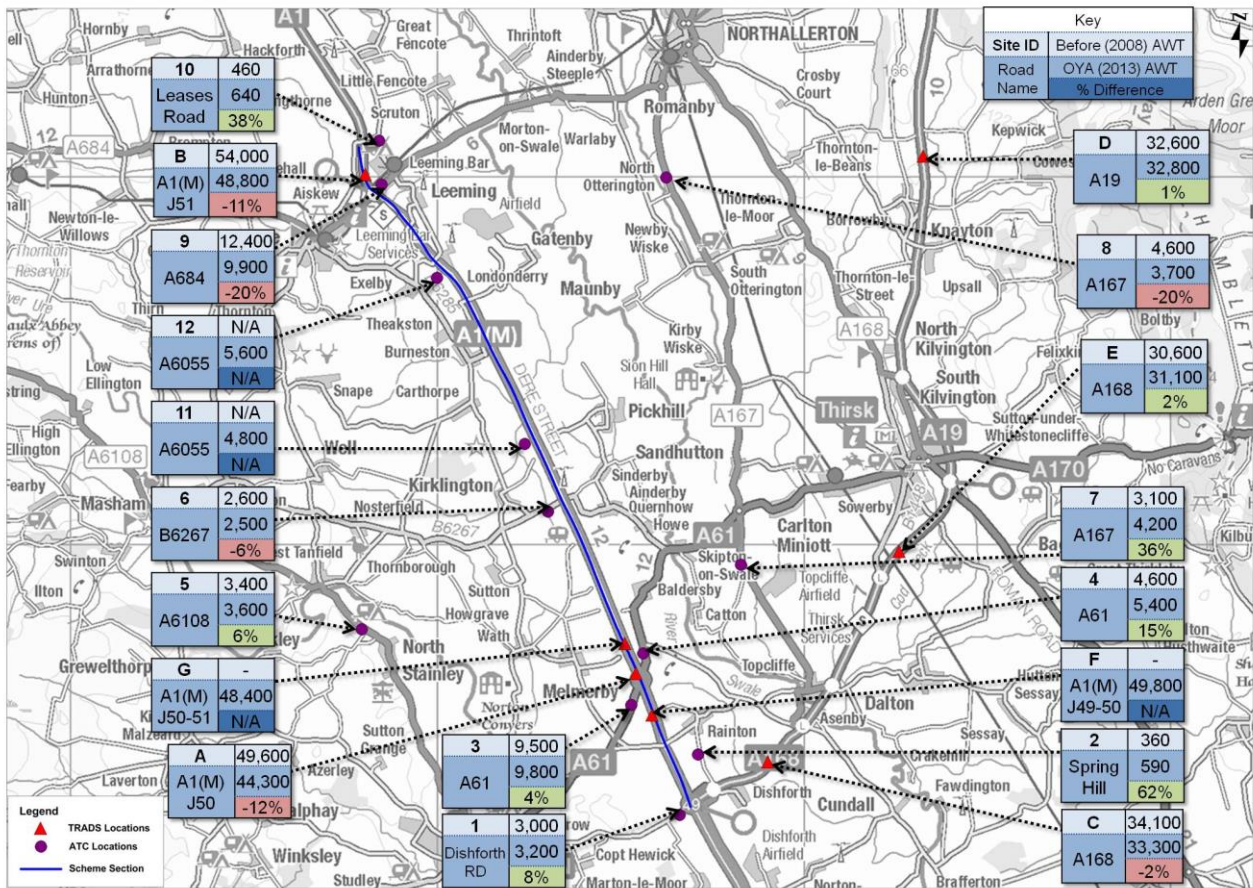
Figure 2.3 Pre-scheme and Post-opening Count Locations



Traffic Volume Analysis

- 2.12 Having considered the wider trends in traffic volume, it is now possible to analyse changes between pre-scheme and post-opening traffic flows on all key roads in the vicinity of the A1 Dishforth to Leeming Scheme, in order to assess the scheme's impact on traffic patterns.
- 2.13 A comparison of pre-scheme and post-opening Average Weekday Traffic (AWT) flows along routes in the study area is presented in **Figure 2.4**. Pre-scheme flows on the A1(M) mainline were not available, so flows through junctions 50 and 51 are used to support the analysis.

Figure 2.4 Comparison of Pre-scheme and Post-opening ATC 2-Way AWT in Scheme Vicinity



2.14 Figure 2.4 shows that:

- Between 48,400 and 49,800 vehicles use the A1(M) mainline on an average weekday;
- Flows through Junctions 50 and 51 have reduced by 12% and 11%, respectively. Some of this reduction can be accounted for by the shift in traffic from the A1(M) onto the new LAR which carries 4,800 vehicles each weekday. Even accounting for the flows on the LAR, there has still been a reduction in overall flows along the A1(M) corridor between the pre-scheme and OYA periods;
- Flows along the A19/A168 are largely unchanged at the OYA stage, though there have been increases in traffic on other local routes, including Spring Hill (62% increase);
- Along the A167, flows north of the A61 have decreased by 20% but south of the A61 they have increased by 36%; and
- Around Leeming, flows on the A684 have fallen 20% whilst on Leases Road they have increased 38%.

Forecast vs. Outturn Traffic Flows

Traffic Modelling Approach

2.15 Traffic modelling for the A1 Dishforth to Leeming scheme was undertaken in 2005, prior to the decision to split the A1 Dishforth to Barton improvement scheme into two separate schemes. When the scheme was split, no model update was undertaken. As such, the forecast flows presented here in the Do Something (DS) scenario assume that the entire A1 Dishforth to Barton route was upgraded.

- 2.16 Modelling was undertaken using the TRIPS/CUBE suite of programs. A base year of 2004 was used, with forecasts produced for a 2010 opening year, 2025 design year, and 2017 and 2031 forecast years. Three scenarios were modelled for each year to account for different changes in background traffic growth, these being realistic (central growth), pessimistic (low growth) and optimistic (high growth) forecasts.
- 2.17 The modelled area covered the A1 and the side roads. The A19 located to the east of the scheme was not included. It was, however, noted in the Traffic Forecasting Report (2005) for Dishforth to Barton Scheme that re-assignment of traffic from the A19 and other strategic routes (including the M6) was expected to be minimal.
- 2.18 The A1 Dishforth to Barton improvement scheme Traffic Forecasting Report (2005), Local Model Validation Report (2005), Economic Assessment Report (2005), Environmental Statement (2006) and Statement of Case (unknown) were provided to support this study. The only scheme traffic flow forecasts that could be found were in the Environmental Statement (ES). (The Traffic Forecasting Report only contained trip matrix totals). The forecasts in the ES were for the 2010 opening year for the *optimistic* scenario only. The limited amount of forecast data available limits the comparison between forecast and observed traffic flows.

Forecast vs. Observed Do-Minimum Traffic Flows

- 2.19 A comparison of forecast and observed Do Minimum (DM) traffic flows has not been possible due to the lack of observed data on the A1(M) for the pre-scheme period.

Forecast vs. Observed Do-Something Traffic Flows

- 2.20 Forecast two-way AADT flows for the 2010 opening year for the optimistic scenario were obtained from the scheme's Environmental Statement (2006). These are compared to observed OYA flows in **Table 2.1**. It should be noted that the forecasts assumed that the entire A1 Dishforth to Barton route would be upgraded to motorway standard, however only the Dishforth to Leeming section has been built.

Table 2.1 Forecast 2010 Two-Way AADT vs. Observed OYA AADT

Route	Direction	Forecast 2013 DS	Observed 2013 ADT	Difference Forecast DS v Observed
A1(M) J49-50	NB	34,300	23,200	-32%
	SB	33,500	22,400	-33%
A1(M) J50-51	NB	31,100	22,900	-26%
	SB	30,700	21,600	-30%
A6055 Local Access Route	NB	4,400	2,400	-45%
	SB	2,900	2,100	-28%

- 2.21 **Table 2.1** shows that observed traffic flows on the A1(M) are between 32% and 36% lower than forecast between J49 and 50, and 22% lower between J50 and 51. On the A6055 LAR, observed flows are between 28% and 45% lower than forecast, dependent on which section of the route is compared.
- 2.22 The difference between forecast and observed flows can partly be attributed to the forecast assuming that the entire A1 Dishforth to Barton route would be upgraded to motorway standard. As this has not occurred, any traffic re-assignment forecast onto the upgraded route is likely to be lower than expected.

2.23 Additionally, it has already been noted that observed traffic flows on the A1(M) have actually decreased since the scheme opened. Given the results presented here, it is arguable that recent economic conditions have had an impact on traffic growth which was not forecast at the appraisal stage, resulting in flows on the A1(M) being considerably lower than forecast. As macro economic conditions improve, traffic flows can be expected to rise.

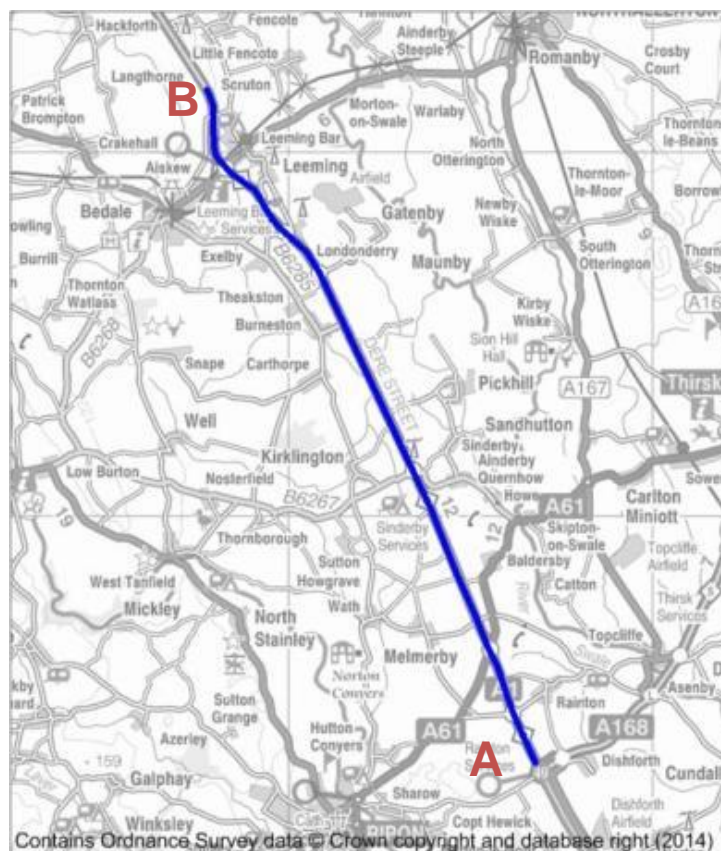
Journey Time Analysis

2.24 One of the objectives of the scheme was to ‘overcome problems of congestion and journey time reliability’. This section considers how the scheme has helped overcome congestion by improving journey times on the A1(M) between Dishforth and Leeming and the impact the scheme has had on journey time reliability.

2.25 Data from satnav devices has been used to determine before and OYA journey times in the northbound and southbound directions of the scheme. The route surveyed is shown in **Figure 2.5** and comprises:

- In the northbound direction (points A to B):
 - The A1(M) from the Junction 49 on-slip to the north of Junction 51, where the A1(M) becomes the A1.
- In the southbound direction (points B to A):
 - From just north of Junction 51, where the A1 becomes the A1(M), ending at the start of the off-slip for Junction 49.

Figure 2.5 – Journey Time Routes and Timing Points



2.26 The calendar periods used in this study are:

- Pre-scheme: 1st March 2008 to 28 February 2009; and

- Post-scheme: 1st April 2012 to 31st March 2013 (i.e. before construction of the A1 Leeming to Barton Improvement commenced).

2.27 The following time periods have been assessed:

- Monday to Friday
 - AM Peak 0800-0900;
 - PM Peak 1 1600-1700;
 - PM Peak 2 1700-1800;
 - PM Peak 3 1500-1600; and
 - Inter-peak 0700-0800, 0900-1500 and 1800-1900.
- Saturday and Sunday 0900-1700; and
- Monday to Sunday 1900-0700.

Journey Time Results

2.28 **Table 2.2** presents the average pre-scheme and OYA journey times along the A1(M) between J49 and 51.

Table 2.2 Average Pre-Scheme and OYA Journey Time Savings (mm:ss)

Link	Period	Time	Pre (2008/09)	OYA (2012/13)	Difference
A1(M) J49-51 NB	Night	00-07:00, 19:00-24:00	13:53	11:52	-02:01 (-15%)
	AM	M-F 08:00-09:00	15:01	11:41	-03:20 (-22%)
	PM1	M-F 16:00-17:00	14:48	11:37	-03:11 (-22%)
	PM2	M-F 17:00-18:00	14:28	11:42	-02:46 (-19%)
	PM3	M-F 15:00-16:00	14:47	11:39	-03:08 (-21%)
	IP	M-F 07:00-08:00, 09:00-15:00, 18:00-19:00	15:29	11:39	-03:50 (-25%)
	Weekend	09:00-19:00	14:14	11:26	-02:48 (-20%)
A1(M) J49-51 SB	Night	00-07:00, 19:00-24:00	13:17	00:11:47	-01:30 (-11%)
	AM	M-F 08:00-09:00	13:49	00:11:26	-02:23 (-17%)
	PM1	M-F 16:00-17:00	14:11	00:11:30	-02:41 (-19%)
	PM2	M-F 17:00-18:00	14:08	00:11:30	-02:38 (-19%)
	PM3	M-F 15:00-16:00	14:14	00:11:37	-02:37 (-18%)
	IP	M-F 07:00-08:00, 09:00-15:00, 18:00-19:00	14:47	00:11:40	-03:07 (-21%)
	Weekend	09:00-19:00	13:21	00:11:12	-02:09 (-16%)

2.29 From **Table 2.2** it can be seen that:

- Across all time periods there has been a reduction in journey times. There has been a slightly greater reduction in journey times in the northbound direction than the southbound;
- In the AM peak, journey time savings of 3m20s have been noted in the northbound direction, a 22% reduction. In the southbound, savings in the AM total 2m23s, a reduction of 17%;
- During the three PM hours of 1500-1800, NB average journey times have reduced by between 19% and 22%, whilst in the SB direction they have reduced by 18-19%; and

- The period with the greatest journey time savings is the IP, with a 3m50s (25%) reduction in journey times in the northbound direction and 3m06s (21%) in the southbound. The higher time saving seen in the IP is likely to be due to the average journey time pre scheme being pulled downwards due to the high number of HGVs and slow moving agricultural vehicles that used the route pre scheme, as noted in the ES. The ES also notes that due to only two lanes being available, lorries overtaking slow moving vehicles delayed all traffic. It is likely that the vast majority of these would have used the A1 in the interpeaks whilst traffic is lower, hence increasing the journey times in the IP.

Journey Time Reliability

- 2.30 Reliability is concerned with the variability of journey times within a given time periods. As a measure of reliability, **Figure 2-6** and **Figure 2-7** show the scale of the inter-quartile range (5th to 95th percentile) of the journey times recorded in the pre and post-scheme periods. The smaller the inter-quartile range, the more reliable journey times are considered to be.
- 2.31 The results in **Figure 2-6** and **Figure 2-7** show that in both directions, prior to scheme opening, journey time reliability was poor. This is particularly so during the AM peak and inter-peak periods. However, following scheme opening, the range of journey times has reduced significantly across all periods, as evident in the far low interquartile ranges. This shows that journey time reliability has improved following scheme opening, with congestion and other delays not causing as significant journey time impacts as prior to scheme opening.

Figure 2-6 Pre-Scheme vs. OYA Change in Journey Time Reliability – Northbound

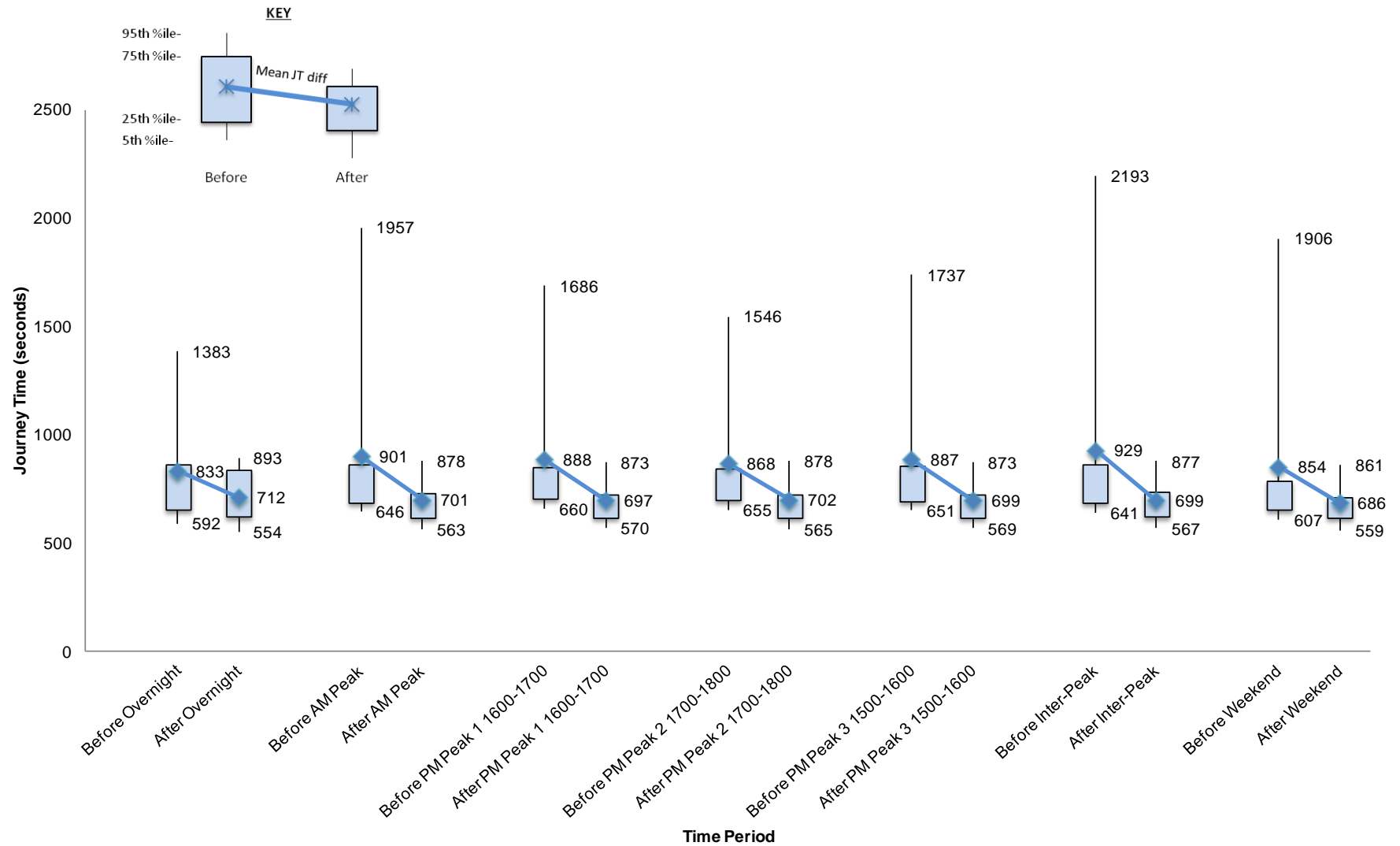
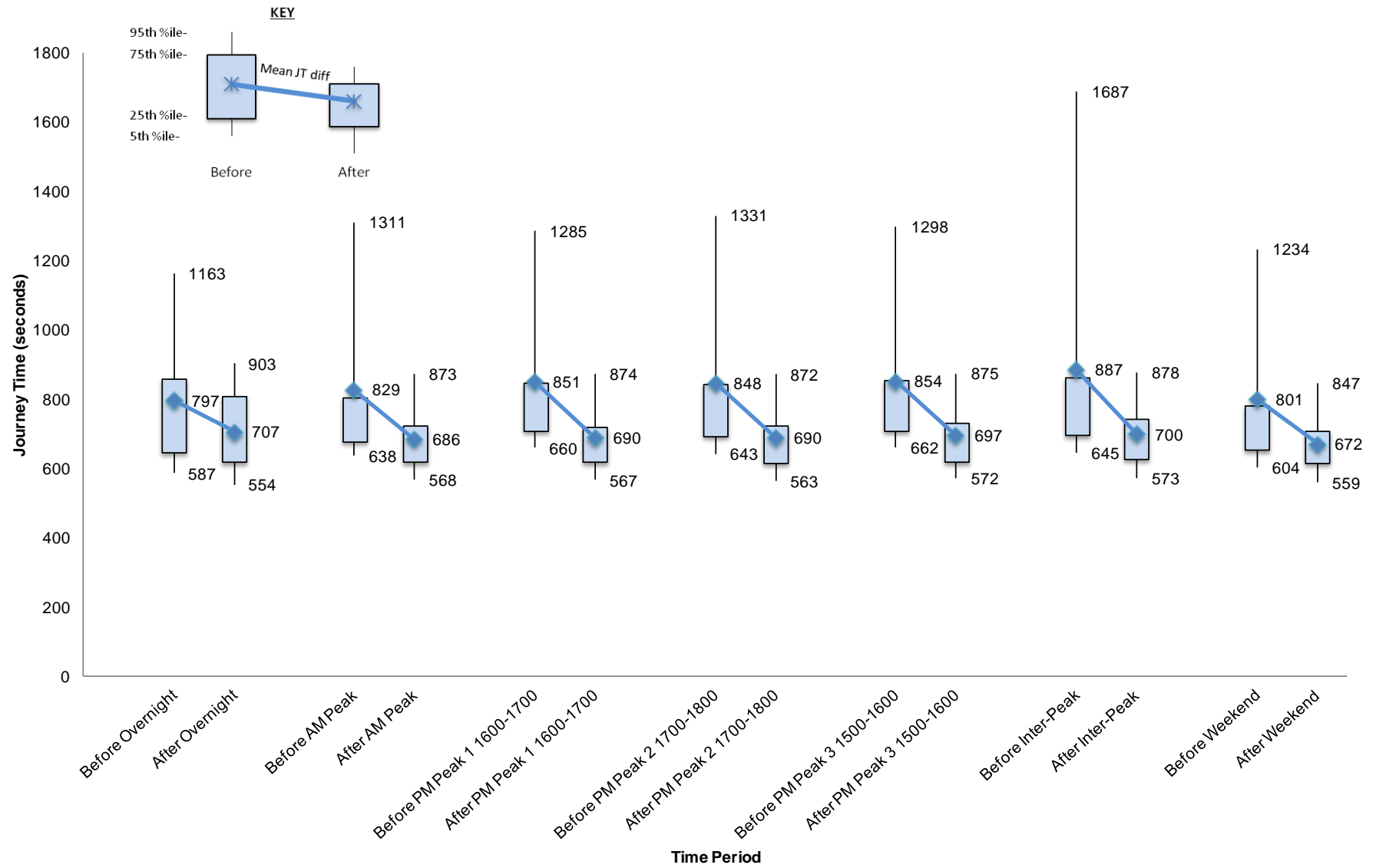


Figure 2-7 Pre-Scheme vs. OYA Change in Journey Time Reliability – Southbound



Forecast v Observed Journey Times

- 2.32 The scheme’s AST states that there would be ‘average time saving of 3 min on the A1 for the Peak hours of the Design year’ (the design year being 2025).
- 2.33 Forecast journey times are not presented in the scheme’s AST, LMVR, Traffic Forecasting Report or Economic Assessment Report. As such, we can only compare the forecast saving of three minutes against the observed savings. This comparison is presented in **Table 2.3** for the AM and PM peak, as defined in the Traffic Forecasting Report.

Table 2.3 Forecast v Observed Journey Times (mm:ss)

Link	Period	Scenario	Forecast	Observed	Difference
A1(M) J49-51 NB	AM 0800-0900	Pre-Scheme	-	15:01	-
		OYA	-	11:41	-
		Difference	-03:00	-03:20	11%
	PM 1700-1800	Pre-Scheme	-	14:28	-
		OYA	-	11:42	-
		Difference	-03:00	-02:46	-8%
A1(M) J49-51 SB	AM 0800-0900	Pre-Scheme	-	13:49	-
		OYA	-	11:47	-
		Difference	-03:00	-02:02	-32%
	PM 1700-1800	Pre-Scheme	-	14:08	-
		OYA	-	11:30	-
		Difference	-03:00	-02:38	-12%

- 2.34 The key points to note from the data presented in **Table 2.3** are:
- In the northbound direction, journey times in the AM peak have reduced by 3min20sec, an 11% increase on the forecast saving of 3min. In the PM peak, however, journey time savings are 8% below the forecast amount; and
 - Journey time savings in the southbound direction are lower than in the northbound. For the AM peak, savings total approximately 2min, 32% lower than the forecast saving of 3min, whilst in the PM peak, journey time savings are 12% lower than that forecast.

Key Points

Traffic and Journey Time Impacts

- Traffic flows on the A1 have decreased since the scheme opened.
- There is still a decrease in the A1 corridor when the traffic flows on the parallel Local Access Road are included.
- There is no evidence of traffic re-assignment to/from other major routes in the area since the scheme opened.
- Journey time savings for A1 traffic are 2 to 3 minute throughout the day.
- Journey time reliability has improved throughout the day since the scheme opened.

Traffic and Journey Time Forecasting

- Traffic flows are considerably lower than forecast on the A1 and Local Access Road (although it should be noted that the forecast assumed that the scheme would be completed to Barton).
- Journey time savings for vehicles using the A1 are slightly lower than forecast.

3. Safety Evaluation

Introduction

- 3.1 This chapter examines the impact of the scheme on safety. The DfT's objectives for transport set out the principal objectives to reduce collisions and improve security. This includes reducing the loss of life, injuries and damage resulting from transport collisions and crime.
- 3.2 In order to assess the scheme's impact on collisions, this section of the report analyses changes in personal injury collisions (PICs) occurring before and after scheme opening. An evaluation of the scheme's impact on personal security has also been undertaken through the use of observations made during a site visit.
- 3.3 The analysis of accidents in this study will only cover the A1 Dishforth to Leeming route and not the wider area. The reason for this is twofold:
- Traffic flow data shown in **Figure 2.4** reveals there has not been any re-routing of traffic from local major trunk roads and alternative routes onto the A1 since scheme opening (and vice-versa); and
 - The lack of a COBA model or map of geographic coverage prevents an understanding of what routes were appraised (as discussed in the following section).

Data Sources

Forecast Data

- 3.4 The forecast impact on safety for the A1 Dishforth to Leeming scheme was undertaken when the route improvements were to be delivered as part of the larger A1 Dishforth to Barton scheme. At this time, the A1 Dishforth to Barton Economic Assessment Report (EAR) (2005) was produced, detailing the forecast safety benefits resulting from the route improvement.
- 3.5 However, as previously noted in Chapter One, the A1 Dishforth to Leeming route improvement was split into two separate schemes. Following the split of the schemes, an AST was produced for the A1 Dishforth to Leeming section. Detailed in the AST are the forecast monetary safety benefits resulting from the scheme, however no forecast on actual accident number savings is detailed. No documentation detailing the safety forecasting assumptions, methodology or results could be obtained for this POPE study.
- 3.6 The forecast safety benefits for the scheme were produced using COBA (as specified in the EAR), however, a copy of the COBA model and map of the area could not be obtained for this study, meaning:
- We are unable to determine the geographic scope of the COBA appraisal; and
 - We cannot obtain detailed accident forecasts for the scheme only links.
- 3.7 As such, no comparison of forecast versus observed collisions has been presented in this report.

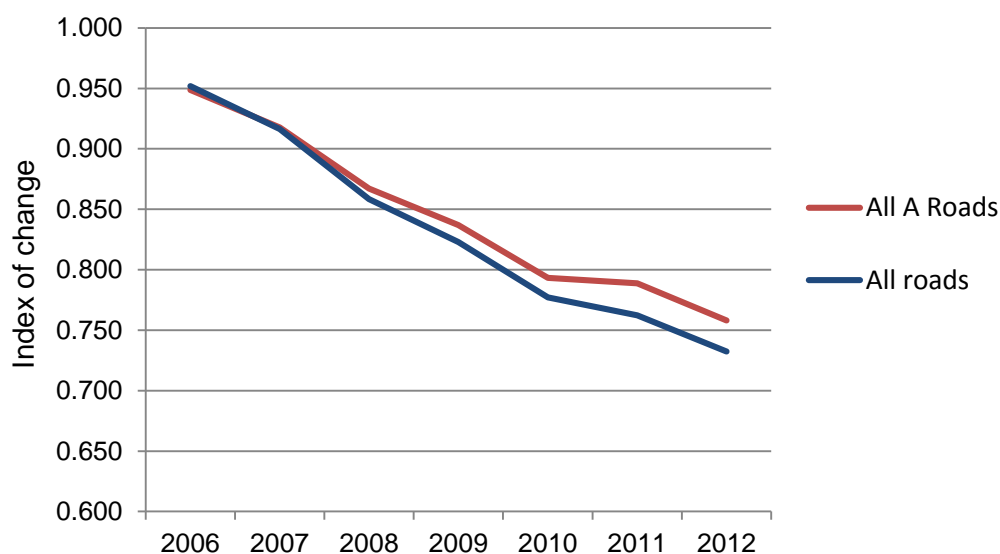
Observed Data

- 3.8 Collision data for the scheme was obtained from North Yorkshire County Council covering the following time periods:
- Pre-scheme: 1st March 2004 – 28th February 2009;
 - Construction: 1st March 2009 – 31st March 2012; and
 - Post-opening: 1st April 2012 – 31st December 2013.

- 3.9 The collision data is based on the records of PICs (i.e. collisions that involve injuries to one or more persons) recorded in the STATS19 data collected by the police when attending collisions. Collisions that do not result in injury are not included in this dataset and are thus not considered in this evaluation.
- 3.10 It should also be noted that at this stage, the collision data may not yet have been validated by the DfT. The requirement for up to date and site specific information necessitated the use of unvalidated data sourced from the local authority. Thus the data is judged to be sufficiently robust for use in this study, but it may be subject to change. However, it is not anticipated that this would be significant in terms of the analysis of collision numbers presented in this report.

Background Changes in Collision Reduction

- 3.11 It is widely recognised that for over a decade there has been a year-on-year reduction in the numbers of personal injury collisions on the roads, even against a trend of increasing traffic volumes during much of that period. The reasons for the reduction are considered to be multi-factorial and include improved safety measures in vehicles and reduced numbers of younger drivers.
- 3.12 We need to consider this background trend when considering the changes in collision numbers on the A1 between Dishforth and Leeming as if the scheme had not been built, collision numbers in the area may still have been influenced by wider trends and reduced.
- 3.13 When we compare the numbers of collisions in this area before and after the scheme was built and associate the net change with the scheme, we need to take this background reduction into account. The best way to do this is to assume that, if the scheme had not been built, the number of collisions would have dropped at the same rate as they did nationally during the same period. This gives us what is known as the counterfactual 'without scheme' scenario on a like for like basis with the observed post opening data which is the 'with scheme' scenario.
- 3.14 The comparison needed is between the middle year in the after period (2012) and the middle of the pre-construction period (2006). The approach is to use national data for the changes in the numbers of collisions in this period occurring on rural A roads. **Figure 3.1** illustrates the changes in collision numbers by road type between 2006 and 2012.
- 3.15 The difference between the numbers of collisions in these two scenarios can then be attributed to the scheme rather than the wider national trends. This result will inform the calculation of monetised safety benefits achieved by the scheme as discussed in the economy chapter of this report.

Figure 3.1 – Trends in Injury Collision Numbers¹

Collision Numbers

- 3.16 This section analyses the observed trends in PICs following the implementation of the scheme. This includes investigating the changes in the number of collisions and associated casualties as well as whether there has been a reduction in the relative severity of incidents.
- 3.17 An evaluation of before and after opening collision numbers by year for the scheme section is shown in **Table 3.1**. Additionally presented is the pre-scheme counterfactual number of collisions, which is an alteration based on the counterfactual scenario in which it is assumed that without the scheme in place, the collision numbers here would have reduced in line with the regional trend. The results are also presented graphically in **Figure 3.2**.

Table 3.1 – Number of Collisions by Severity along the Scheme Route

Time Period	Date		Number of Collisions				Average Annual			
	From	To	Fatal	Serious	Slight	Total	Fatal	Serious	Slight	All
Pre-Scheme	Mar-04	Feb-05	1	6	53	60	1.8	6.6	38.7	47.1
	Mar-05	Feb-06	1	7	31	39				
	Mar-06	Feb-07	2	7	28	37				
	Mar-07	Feb-08	4	8	50	62				
	Mar-08	Feb-09	1	5	31	37				
Without Scheme Counterfactual										34.8
Construction Period	Mar-09	Feb-10	0	6	25	31	0	4.2	16.9	21.1
	Mar-10	Feb-11	0	5	15	20				
	Mar-11	Mar-12	0	2	12	14				
Post-Opening	Apr-12	Mar-13	0	1	13	14	0	1.7	10.9	12.6
	Apr-13	Dec-13	0	2	6	8				

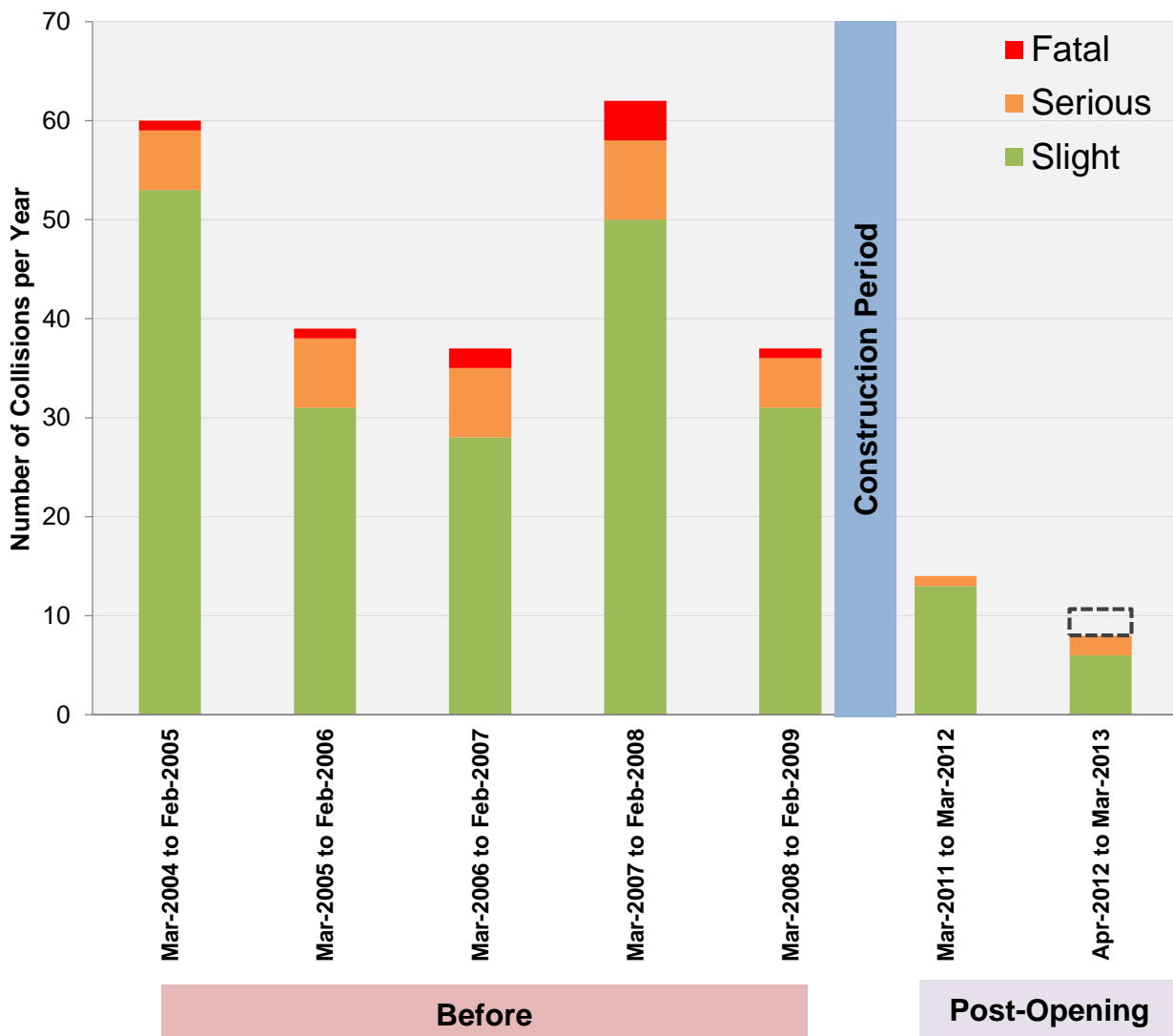
¹ Department for Transport statistics: RAS10002
(https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239702/ras10002.xls)

3.18 From **Table 3.1** it can be seen that:

- The annual average number of PICs occurring on the scheme route has fallen from 47.1 to 12.6, a reduction of 72%;
- There have been no fatal collisions since the scheme opened, when prior to scheme opening there were an average of 1.8 fatal PICs each year;
- The number of serious collisions has fallen by a slightly greater amount than the average of all collisions, with a 74% reduction; and
- The pre-scheme counterfactual rate (accounting for the background reduction in collisions over time) is calculated as 34.8 PICs per annum. Compared with the post-opening collision rate, this represents an annual collision decrease of 22.2 PICs, or 64%.

3.19 The data clearly shows that the number and severity of collisions have significantly improved since the scheme opened.

Figure 3.2 – Number of Collisions along the Scheme Route



Statistical Significance

- 3.20 In order to determine whether the changes in collision numbers observed before and after the scheme opened are statistically significant, a Chi-Square test has been undertaken. This test uses the before counterfactual and post-opening number of collisions and traffic flows for the COBA area to establish whether the changes are significant or are likely to have occurred by chance.
- 3.21 The result found that the change in collision rate is statistically significant and therefore the reduction in collision is unlikely to have occurred by chance alone.

Collision Rates

- 3.22 The number of collisions along a length of road together with its AADT (annual average daily traffic) can be used to calculate a collision rate (calculated as number of collisions per million vehicle kilometres). This has been undertaken for the pre- and post-opening periods to reveal the change in accident rates following scheme opening, as shown in **Table 3.2**.

Table 3.2 Collision rates on the Scheme Section

Time Period	Collision Rate (PIC/mvkm)
Before	0.134
Without Scheme Counterfactual Rate	0.099
After	0.040
Observed Saving	0.059 (59%)

- 3.23 **Table 3.2** reveals that following scheme opening, the collision rate has reduced by 59% when compared to the pre-scheme counterfactual rate.

Road Safety Audit Stage 4a (RSA)

- 3.24 The A1 Dishforth to Leeming RSA 12 month monitoring report was published in May 2014. This report noted that there had been relatively few collisions post opening both on the A1(M) and the LAR, but the following location was noted as needing review at a later date.
- The LAR, south of the Leeming Bar Services roundabout was noted as being a location to be reconsidered during the RSA4 (36 month) assessment, as two collisions occurring here post opening were indicative of high speed. The RSA4a noted that there is currently insufficient evidence to draw conclusions at the OYA stage.
- 3.25 Following a collision the A6055 southbound approach to Excelby Lane junction was considered in more detail. The audit team noted that whilst there is an Advance Direction Sign (ADS) and a direction sign at the junction, it was felt that that the 'conspicuity of the junction is poor'. Two suggestions were made, suggesting that the ADS be changed to a 'map' type sign, and that verge marker posts (including reflectors) be installed on both sides of the junction.
- 3.26 The RSA also considered visibility at the Londonderry junction on the A6055 following a complaint from the Parish Council. The RSA concludes that, subject to regular grass cutting, there is not an issue with visibility, although notes that it would be further considered at the RSA 36 month audit stage.
- 3.27 At the time of the RSA report, it was noted that there were two recommendations outstanding from the Stage 3 RSA which had not yet been undertaken. This was relating to the Baldersby

GSJ, where; the overrun area around the central island remained damaged, and the recommendation of additional chevron boards to be installed on the approach to the junction.

Forecast v Observed Collision Savings

- 3.28 This section typically compares the number of observed collisions with that forecast to occur in the COBA area assessment. However, the scheme's COBA has not been made available for this study. For the accidents sub-objective, the scheme's AST states only that a present value benefit of £12.844m (2002 prices discounted to 2002) was forecast, with no detail on actual collision numbers.
- 3.29 Due to the lack of necessary data to make the comparison between forecast and observed collision numbers, it has not been possible to undertake this evaluation.

Personal Security

- 3.30 The aim of this sub-objective is to reflect both changes in security and the likely number of users affected. In terms of roads, security includes the perception of risk from personal injury, damage to or theft of vehicles, and theft of property for individuals or from vehicles.
- On the road itself (e.g. being attacked whilst broken down).
 - In service areas, car parks, and so on (e.g. vehicle damage while parked at a service station, being attacked while walking to a parked car).
 - At junctions (e.g. smash and grab incidents while queuing at lights).
- 3.31 The primary indicators for roads include surveillance, landscaping, lighting and visibility, emergency call facilities and pedestrian and cyclist facilities.

Forecast

- 3.32 The scheme appraisal states that would have 'no impact' on personal security.

Observed

This section of the A1 now includes emergency telephones situated at various points on both sides of the carriageway. The impact is therefore slight beneficial (better than expected).

Key Points

Collisions

- Analysis of the observed collision data for the scheme key links which were directly affected by the scheme shows a reduction (when compared to the counterfactual) of 22.2 collisions a year. This represents a decrease of 64%.
- The number of serious collisions has fallen by a slightly greater amount than the average of all collisions, with a 74% reduction;

Personal Security

- The improved section of the A1(M) now includes emergency telephones situated at various points on both sides of the carriageway. The impact on personal security is therefore better than expected.

4. Economy Evaluation

Introduction

- 4.1 The purpose of this chapter is to evaluate how the scheme is performing against the economy objective, which consists of the following sub-objectives:
- Achieve good value for money in relation to impacts on public accounts.
 - Improve Transport Economic Efficiency (TEE) for business users, transport providers and consumer users.
 - Improve journey reliability.
 - Provide beneficial wider economic impacts.
- 4.2 The scheme's economic impacts were forecast when the route was to be upgraded as part of the wider A1 Dishforth to Barton Improvement. The impacts were detailed in the A1 Dishforth to Barton Improvement Economic Assessment Report (2005), with Cost Benefit Analysis (COBA) and Transport User Benefit Appraisal (TUBA) modelling programs used to model the journey time and safety benefits of the scheme. The modelling software Queues and Delays at Roadworks (QUADRO) used to model the construction impacts of the scheme.
- 4.3 When the A1 Dishforth to Barton Improvement scheme was split into two separate schemes, an update to the traffic forecasts and associated Economic Assessment Report was not prepared for the smaller scheme. A new AST was produced for the A1 Dishforth to Leeming scheme, however it is unknown how the updated figures in the AST were calculated.
- 4.1 The AST presented a forecast Present Value Benefit (PVB) which included a number of benefit streams including safety and construction and maintenance delay. It has therefore not been possible to isolate the journey time benefits from this PVB. Therefore, it has been necessary to undertake a review of the components of the forecast PVB for the A1 scheme between Dishforth and Barton which is presented in the Economic Assessment Report (2005) to determine a proportion of the PVB that can be attributed to journey time benefits. This proportion was applied to the forecast PVB for Dishforth to Leeming contained in the EAR.
- 4.2 This section provides a comparison between the outturn costs and benefits and the forecast economic impacts, as well as considering the scheme's wider economic impacts. Outturn journey time and safety economic impacts are based upon the observed results reported in Chapters 2 and 3. A number of assumptions were required which have been clearly documented in the relevant parts of this section.

Transport Economic Efficiency

Monetised Journey Time Benefits

- 4.3 The POPE method of evaluating the economic value of benefits arriving from journey time savings is based upon calculating the observed vehicle hour savings, combined with the assumption that the observed vehicle hour saving at the OYA stage can be taken as indicative of that over the whole 60 year appraisal period. An average value of time can then be applied to the observed saving to calculate monetary benefits (or disbenefits) resulting from the change in journey time and vehicle flow.
- 4.4 The forecast and outturn monetised journey time saving are presented in **Table 4.1**.

Table 4.1 Outturn Monetised Journey Time Benefits

		60 Year Monetary Benefit based on Value of Time saved
Forecast		£305.0m
Re-Forecast (based on outturn Impacts)	0% traffic growth	£221.5m
	NRTF (National Road Traffic Forecast) traffic growth	£279.3m

Note: 2002 market prices discounted to 2002.

4.5 The results presented in **Table 4.1** show that the re-forecast 60 year monetary journey time benefit for the scheme is between £221.5m and £279.3m which is lower than the original forecast. This difference can be attributed to:

- Average journey time savings across the whole day are slightly lower than the forecast saving of three minutes; and
- Observed traffic flows are 26-33% lower than forecast at the appraisal stage which means that fewer than expected vehicles are obtaining the journey time benefits of the scheme.

4.6 As there is no evidence of traffic growth on this section of the A1(M) since the scheme opened, the 0% traffic growth re-forecast will be used for the calculation of the PVB and BCR later in this section.

4.7 The re-forecast monetary benefits presented in this section are considered a conservative estimate of the long term journey time benefits that the scheme will bring about for those travelling on the A1(M). Whilst vehicle flows on the scheme section have fallen between the pre and post scheme period (even when flows on the LAR are taken into account), in the medium term the DfT forecasts that traffic will increase from 2015, with an expected increase in vehicle flows of 19% between 2015 and 2025 across the strategic road network¹. Given this forecast increase in vehicle flows, the widening of the A1(M) will reduce congestion in future years compared to the level that would have occurred in a DM scenario. As such, the long term monetary benefits resulting from reduced congestion on the route are expected to be higher than those re-forecast in **Table 4.1**.

Monetised Safety Benefits

4.8 The normal POPE method of evaluating the economic value of benefits arising from safety improvements is based upon comparing the observed and forecast collision savings in the opening year. However, it was not possible to use this approach here because no COBA model was available for the scheme nor was any detailed information about safety forecasts available. The evaluation will therefore be based on the PAR (Project Appraisal Report) approach.

4.9 The assessment of monetised safety benefits in PAR is based on the difference between the observed number of PIC's occurring on the scheme route and the pre-scheme counterfactual, as shown in **Table 4.2**. The average annual saving multiplied by the average value of an accident over the same period, capitalised over a 60 year period and discounted to 2002. This is summarised in **Table 4.2**.

¹ Road Transport Forecasts 2013 (Department for Transport, 2013)

Table 4.2 Evaluation of Outturn Safety Benefits

PAR method for the evaluation of safety benefits		
Annual average accident saving in first year	22.3	
Value of an accident on a dual carriageway (50-70mph limit) in 2012 in 2002 market prices	£92,910	
Saving capitalised over 60 year appraisal period and discounted to 2002 (2002 market prices and values)	0% Traffic Growth	NRTF Traffic Growth
	£61.7m	£78.6m

- 4.10 The evaluation of the safety benefits indicates that the savings would be between £61.7m and £78.6m over 60 years. This compares to a forecast saving of £12.8m as detailed in the scheme's AST. As there is no evidence of observed traffic growth on the A1(M), the 0% traffic growth re-forecast is considered to be the most appropriate for use in the calculation of PVB and BCR later in this section.

Construction Delay and Maintenance

- 4.11 The DfT's QUADRO program was used to estimate the impact of the originally proposed A1 Dishforth to Barton scheme on road users in terms of journey times and operating costs during the construction phase. The results of this were presented in the A1 Dishforth to Barton EAR.
- 4.12 It is not possible to undertake an evaluation of the monetary impact of construction and future maintenance as this would have required traffic surveys to have been undertaken during periods of roadworks and is outside the scope of POPE. During construction it would be expected that some additional traffic delays would occur. However, during periods of maintenance, the extra capacity provided by the upgrading of the route would offer an improved opportunity to implement traffic management measures without adversely affecting the operation of the route.

Present Value Benefits

- 4.13 A comparison of all forecast and outturn benefits is presented in **Table 4.3**.

Table 4.3 Summary of Scheme Present Value Benefits

Benefit	Forecast	Re-Forecast based on OYA Outturn Impacts
Journey Time Benefits	£305.0m	£221.5m
Safety Benefits	£12.8m	£61.7m
Total PVB	£317.8m	£283.2m

Note: 2002 market prices discounted to 2002.

- 4.14 The results presented in **Table 4.3** show that the re-forecast PVB for the scheme is £283m, 11% lower than forecasted at the appraisal stage despite the higher than forecast safety benefits. This is due to the lower than forecast journey time benefits resulting from lower than forecast traffic flows even though journey times have reduced.

Scheme Costs

Investment Costs

- 4.15 This section compares the forecast cost of the scheme with the outturn cost. Scheme costs include the cost to Highways England of constructing the scheme and purchasing the land.
- 4.16 Forecast costs were provided by Highways England and are the *February 2009 Range Estimate* approved by HIB (Highways Investment Board) and the Secretary of State. This forecast was presented as a minimum, maximum and central estimate. For the purposes of this evaluation the central estimate has been used. The costs were provided in 2006 prices. To ensure consistency with the other prices used in this evaluation, they have been converted to 2002 prices.
- 4.17 Outturn investment costs have been obtained from the Highways Agency (at time of request) Regional Finance Manager (supplied in January 2014) and are presented along with the forecast cost in **Table 4.4**.

Table 4.4 Evaluation of Forecast vs. Outturn Cost

Forecast Cost (February 2009)		Outturn Cost (as of January 2014)		% Difference
February 2009 Range Estimate approved by Highways Investment Board (2006 Q2 prices)	£327.0m	As spent costs in 2002-2014 years and prices	£317.5m	-
Costs in £m 2002 prices, undiscounted	£286.1m	Costs in £m 2002 prices, undiscounted	£251.7m	-13%

- 4.18 **Table 4.4** shows that the scheme was delivered for less than the forecast cost. Although, it should be noted that all of the costs associated with the scheme may not have been realised at the time of this report (for example Part 1 land compensation claims).

Indirect Taxation

- 4.19 Indirect tax revenue impact is the expected change in indirect tax revenue to the Government due to changes in the transport sector as a result of the scheme over the appraisal period. At the appraisal stage, the impact of the scheme on indirect taxation was calculated as an impact on the cost of the scheme to public accounts using TUBA.
- 4.20 For this study, the indirect tax impact is derived primarily from the monetisation of the forecast change in fuel consumption over the sixty years period. A scheme may result in changed fuel consumption due to:
- Changes in speeds resulting in greater or lesser fuel efficiency for the same trips.
 - Changes in distance travelled.
 - Increased road use through induced traffic or the reduction of trip suppression.
- 4.21 The methodology adopted to evaluate the indirect tax impact of the A1(M) Dishforth to Leeming Improvement scheme has been based on estimating the change in fuel consumption as a result of the scheme opening. This involves comparing the forecast and observed net change in vehicle flows, speeds and vehicle classes for the DM and DS scenarios in order to calculate fuel consumption. The ratio method is then used to reforecast the outturn monetary impact.
- 4.22 **Table 4.5** presents a summary of the indirect taxation impact on public accounts as forecast at the appraisal stage and re-forecast using one year of post opening observed data.

Table 4.5 Summary of Indirect Taxation Impact (60 years)

Forecast	Re-Forecast based on FYA Outturn Impacts	Difference
-£52.5m	+ £75.9m	-130%

Note: 2002 market prices discounted to 2002.

- 4.23 The results presented in **Table 4.5** show that the scheme has a re-forecast outturn impact on indirect taxation of £75.9m, compared to a forecast of -£52.5m. This difference suggests that rather than increasing fuel consumption, the scheme has led to a *decrease* in fuel consumption hence reduced indirect tax.
- 4.24 This difference is a result of post-scheme flows being lower than pre-scheme flows, even when local traffic using the LAR is taken into account.
- 4.25 It is acknowledged that the methodology applied is only an approximate estimate of indirect tax; however it is a useful indicator of the scheme's impact on this economic element. Should traffic volumes and vehicle speeds change in the coming years it would be expected that impacts on indirect tax will change. This can be further examined in the scheme's Five Years After POPE study.

Present Value Costs

- 4.26 The Present Value Cost (PVC) is calculated to allow for a valid comparison with benefits. Values in differing years are converted to a standard base year through the process of discounting, as defined by the Treasury Green Book. A comparison of the forecast and outturn PVC is shown in **Table 4.6**.

Table 4.6 Summary of present value cost

Present Value Cost	Forecast	Re-Forecast based on OYA Outturn Impacts
Investment cost expressed as present value	£268.9m	£237.4m
PVC including Indirect tax impact as part of costs	£216.4m	£313.3m

Note: 2002 market prices discounted to 2002.

Benefit Cost Ratio

- 4.27 The Benefit Cost Ratio (BCR) is used as an indicator of the overall value for money of the scheme. It is the comparison of the benefits (PVB) and costs (PVC) expressed in terms of present value.
- 4.28 Projects with a BCR greater than 1 have greater benefits than costs; hence they have positive net benefits. The higher the ratio, the greater the benefits relative to the costs. It is to be noted that the BCR is insensitive to the magnitude of net benefits and therefore may favour projects with small costs and benefits over those with higher net benefits.
- 4.29 At the time of scheme appraisal, Treasury guidance was to include indirect tax as a cost. However, the most recent guidance on indirect tax impacts is to include these as a benefit, rather than a reduction in cost. This means that when a scheme leads to increased fuel consumption and hence increase tax revenue, the PVB is increased rather than the PVC being decreased.

Table 4.7 Forecast vs. Outturn Re-forecast Benefit Cost Ratio

		Forecast	Re-Forecast based on FYA Outturn Impacts
Indirect Tax as a Cost	PVB	£317.8m	£283.2m
	PVC	£216.4m	£313.3m
	BCR	1.5	0.9
Indirect Tax as a Benefit	PVB	£370.3m	£207.3m
	PVC	£268.9m	£237.4m
	BCR	1.4	0.9

- 4.30 It can be seen from **Table 4.7** that the BCR is considerably lower than forecast. This is primarily due to the lower than expected journey time benefit resulting from lower than forecast traffic flows. However, additional benefits may be realised once the improved A1 between Leeming and Barton opens and more traffic is attracted to the A1(M) route.
- 4.31 It should be noted that the BCR ignores non-monetised impacts. Under the DfT's objectives for Transport, the impacts on wider objectives must be assessed but are not monetised. The evaluations of the wider economic impacts, environmental, accessibility and integration objectives are covered in the following sections of the report.

Wider Economic Impacts

Forecast

- 4.32 The AST stated that there would be '*no impact*'.

Evaluation

- 4.33 The scheme is not located in a regeneration area and there were no significant developments dependant on the improvement taking place.
- 4.34 The greatest wider economic impacts are likely to be for long distance travellers benefitting from the considerable improvements to journey times and reliability on the A1(M) which forms a key strategic link between London and Scotland. These impacts have been monetised earlier in this section.
- 4.35 It is inherently difficult to isolate wider economic impacts which could be attributed to the scheme, particularly so soon after scheme opening. Due to this, it has not been possible to determine whether the scheme has had a direct impact on stimulating local economic activity. The evaluated impact at this stage is therefore no impact as expected.

Key Points

Present Value Benefits

- The outturn journey time benefits are lower than forecast. This is primarily due to observed traffic volumes being lower than forecast.
- Outturn safety benefits were higher than forecast.

Present Value Costs

- Outturn investment costs are £251.7m, 13% lower than forecast.
- The forecast indirection taxation was for an increase in tax revenues to the government. The outturn indirect tax shows that the government is receiving less indirect tax revenue because traffic volumes are lower than forecast.

Benefit Cost Ratio

- Taking indirect tax as a benefit, the scheme delivers a BCR of 0.9 which shows that as evaluated at the one year after opening stage, the scheme is shown to be poor value for money. However, it should be noted that additional benefits may be realised once the improvements to the A1 between Leeming and Barton are completed.

Wider Economic Impacts

- Due to the inherent difficulty in isolating the wider economic impacts of the scheme, it has not been possible to conclude whether the scheme has had a direct impact on stimulating economic activity.

5. Environment Evaluation

Introduction

5.1 This section documents the evaluation of the impacts of the scheme on the environmental sub-objectives.

5.2 The ES notes that the objectives for the Scheme were to:

- Resolve the existing problems on the A1(M) associated with poor alignment, poor accident record and high percentage of HGV's. All these issues led to congestion, safety and journey time reliability problems;
- Ensure the needs of NMU users were catered for; and
- Ensure no significant worsening of the Appraisal Summary Table sub-criteria assessment results and improve on them where possible, within the constraints of the brief.

Key Facts

5.3 The upgrading of 13 miles of dual carriageway to motorway status included:

- Modification of substantial parts of the old A1, and constructed new sections to provide approximately 12 miles of local access road running alongside the motorway to cater for local traffic, walkers, cyclists and equestrians;
- Building eleven new bridges, demolishing six and modification of five existing ones;
- Installation of four of the new style MS4 variable message signs, 16 miles of communications ducting and 30 emergency telephones; and
- Creation four wildlife ponds and fourteen balancing ponds.
- Design to be sympathetic with the existing landscape character of the area and nearby settlements.
- Inclusion of wild flower planting which will create new habitats along the road.
- Minimising the effects on the nationally important archaeological site at Healam by realigning the route and modifying construction methods.

Figure 5.1 – View of the scheme looking north from the Gatenby Overbridge



Data Collection

5.4 The following documents have been used in the environmental evaluation part of this study:

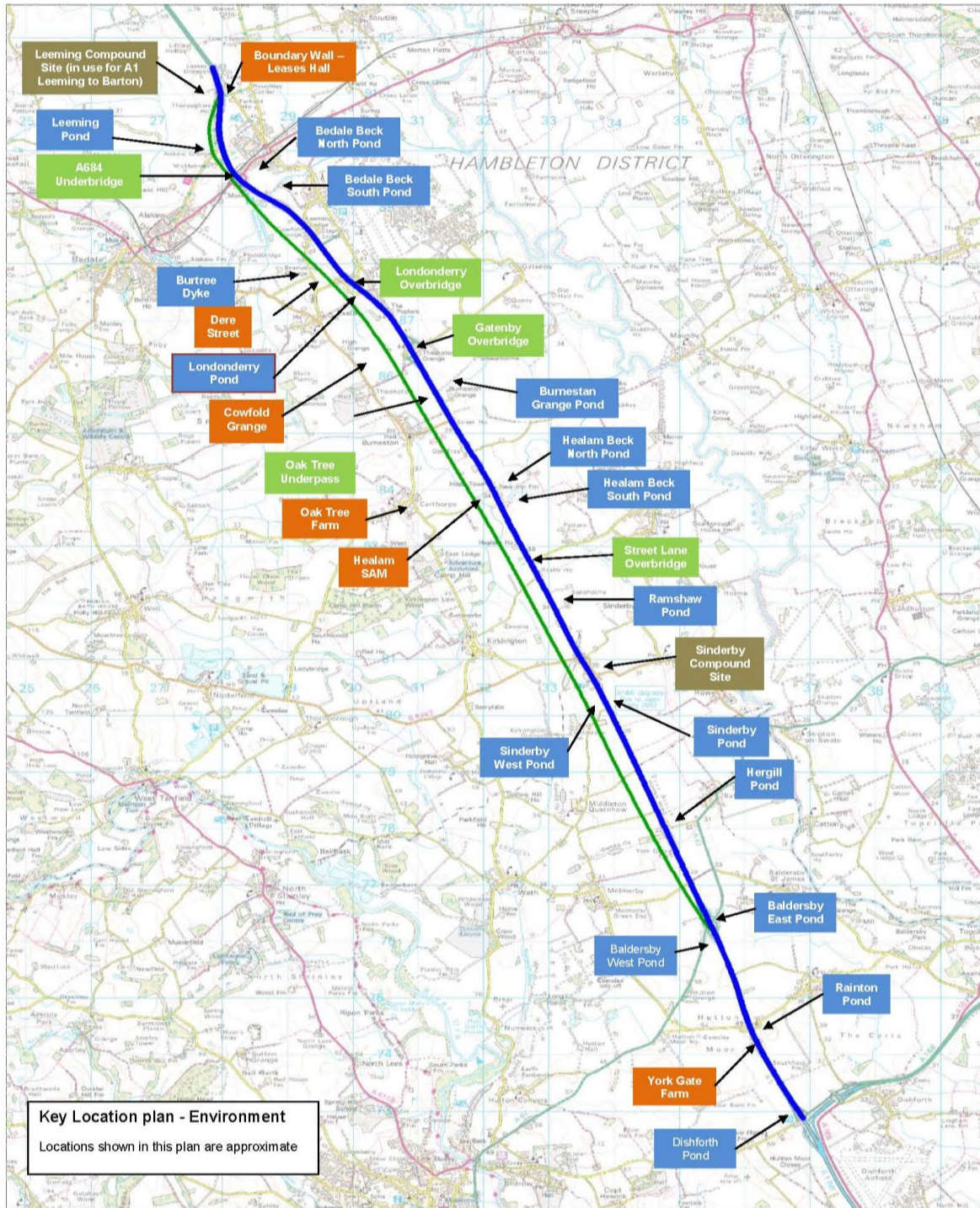
- Appraisal Summary Table (AST), June 2006;
- Environmental Statement (ES) Volumes 1, 2 and 3 (for A1 Leeming to Barton), March 2006;
- Environmental Masterplan (EMP) Drawings;
- As Built drawings (landscape and ponds);
- Landscape Site Observations (received in place of monitoring reports);
- Environment Database spreadsheet;
- Side Road Order Departures – Proposed Lighting Mitigation , August 2010;
- Proposed Route Drainage – General Arrangement, September 2007;
- A1(M) Dishforth to Barton Motorway Upgrade – The Archaeology of Roman Dere Street, No date;
- Construction Environmental Management Plan (CEMP) May 2001;
- Series 3000 specification appendix 30/6 – Planting;
- Series 3000 specification appendix 30/7 – Grass, bulbs and wildflower maintenance;
- Series 3000 specification appendix 30/9 – Establishment maintenance for plants;
- Series 3000 specification appendix 30/10 – Maintenance of established trees and shrubs;
- Series 3000 specification appendix 30/11 – Management of water bodies;
- Series 3000 specification appendix 30/12 – Special ecological measures;
- Scheme commemorative Brochure, no date;
- Completion of Construction Stage NMU Audit Report, April 2014;
- Draft NMU Response and Exception report May 2014;
- Landscape Works within Healam Scheduled Ancient Monument (SAM) boundary; and
- Archaeology Liaison Meetings in August and September 2009

5.5 A full list of the background information requested and received to help with the compilation of this report is included in Appendix B.

Site Inspections

5.6 A site visit was undertaken in October 2013. Photomontages were available in the ES and have been used for comparison in this report. Most photographs taken for inclusion in this report were taken at this time. A selection of photographs taken from a subsequent site visit in March 2014 has been included in this report and are labelled as such. Key locations referred to in this report are shown in **Figure 5.2**.

Figure 5.2 – Key Location Map



Consultations

5.7 Table 5.1 lists the organisations contacted regarding their views on the impacts they perceive the road scheme has had on the environment, and whether they feel that the mitigation measures implemented have been effective.

Table 5.1 Summary of Environmental Consultation Responses

Organisation	Field of Interest	Comments
Environment Agency	Water	Response received and included in Water Quality section
Natural England	Biodiversity	Response received and included in the Biodiversity section.
English Heritage	Archaeology	No response to consultation received
North Yorkshire County Council (NYCC)	General	Response received for PROW, included in the Physical Fitness section
Hambleton District Council	General	Response received for air quality, included in the Air Quality section
Richmondshire District Council	General	No response to consultation received
Rainton with Newby Parish Council	General	Response received and included in the Landscape and Water quality sections
Richmondshire Parish Council	General	No response to consultation received
Department for Environment, Food and Rural Affairs (Defra)	General	No response to consultation received
British Horse Society	Physical Fitness	No response to consultation received
Yorkshire Wildlife Trust	Biodiversity	Response included in biodiversity section
Internal Drainage Boards (Upper and Lower Swale)	Drainage	Response received and included in the Water Quality section.

Animal Mortality

- 5.8 The Managing Agent Contractor (MAC) has been consulted with regard to animal mortality figures. Data received is included in the Biodiversity section.

Environmental Awards

- 5.9 The scheme received the following awards:
- Considerate Constructors Award (Gold) 2011 – The award recognises the best-kept sites in the country; and
 - Considerate Constructors Award (Silver) 2012.

Traffic Forecasts and Evaluation

- 5.10 Three of the environmental sub-objectives (noise, local air quality and greenhouse gases) are directly related to traffic flows. No new environmental surveys are undertaken for POPE and an assumption is made that if the observed level of traffic is in line with forecasts, then it is likely that local noise and air quality are as expected.
- 5.11 No traffic speeds or percentage HGVs were available for inclusion for comparison in the ES.
- 5.12 POPE Environment methodology for assessment allows for variation in traffic flows of 25% more or 20% less when compared with what was originally forecast in a particular year, which

would allow for the assumption that the local noise impact is likely to be either 'worse than' or 'better than' expected.

- 5.13 The traffic forecast comparisons in Table 5.2 are extracted from the predictions for the original scheme, A1 Dishforth to Barton (see Section 1 for explanation of split of scheme). The difference between forecast and observed flows can partly be attributed to the forecast assuming that the entire A1 Dishforth to Barton route would up upgraded to motorway standard. As this has not occurred, any traffic re-assignment forecast onto the upgraded route is likely to be lower than expected. It is also arguable that recent economic conditions have had an impact on traffic growth which was not forecast at the appraisal stage, resulting in flows on the A1(M) being considerably lower than forecast. As macro economic conditions improve, traffic flows can be expected to rise.
- 5.14 As construction of this scheme was divided in two, traffic figures represented in this scheme are likely to be optimistic and their assessment based on POPE methodology is not strictly applicable. It is suggested that accurate comparisons of predicted traffic flows with observed flows can only be undertaken at the five year after scheme opening assessment when the scheme, Leeming to Barton is open to traffic.
- 5.15 Based solely on a comparison of traffic figures available, traffic flows are significantly lower than predicted.

Table 5.2 Forecast 2010 Two-Way AADT vs. Observed OYA AADT

Route	Direction	Forecast 2013 DS	Observed 2013 ADT	Difference Forecast DS v Observed
A1(M) J49-50	NB	34,300	23,200	-32%
	SB	33,500	22,400	-33%
A1(M) J50-51	NB	31,100	22,900	-26%
	SB	30,700	21,600	-30%
A6055 Local Access Route	NB	4,400	2,400	-45%
	SB	2,900	2,100	-28%

Noise

Forecast

AST

- 5.16 The 2006 AST stated that there would be an overall improvement in noise levels assuming the scheme would include low noise surfacing throughout. It was expected that one location would be exposed to a substantial increase in noise levels.

Environmental Statement

- 5.17 The ES stated that:
- Analysis of the predicted traffic noise levels showed that there would be an overall improvement in traffic noise levels with the scheme, however due to the assumption that all existing road surfaces were HRA¹, at a small number of locations the difference in

¹ Hot Rolled Asphalt

traffic noise levels between the do minimum and do something scenario could be slightly more than predicted and reported.

- Some properties would experience substantial/significant increases in traffic noise levels. The ES made recommendations for properties where mitigation could be required to reduce the overall impact at these properties.
- The proposed route would have a smooth road surface which, in the absence of road surface discontinuities would minimise vibrations from road traffic vehicles using the route. A small number of properties would experience an increase in airborne vibration from the proposed scheme.

5.18 The ES concluded that predicted traffic noise levels over the entire study area under consideration indicated that the scheme would result in an overall reduction in traffic noise levels, and no properties would experience a substantial increase in traffic noise.

Consultation

5.19 No response to consultation on the noise sub objective have been received.

Evaluation

5.20 Table 5.2 shows that observed traffic flows are **better than expected** on the A1(M) and LAR when compared with those predicted in the ES (Dishforth to Barton) for the Do Something scenario.

5.21 A proprietary thin-surface course (TSC) with a correction factor of -2.5 dB in relation to hot rolled asphalt has been used along the whole of the scheme carriageways. This is a Road Tyre Noise Level 3 which is equivalent to a Road Surface Influence (RSI) of -3.5 dB(A). It is understood that this surfacing was factored in during noise calculations which form the base for requirements for noise insulation, environmental barriers and bunds.

5.22 Noise barrier locations shown on the EMP drawings are on the southbound carriageway and include noise attenuation for properties at Burneston Grange, north of Londonderry Overbridge and screening of a plant nursery at the A684 Underbridge.

Figure 5.3 – Noise barrier at Burneston Grange



5.23 As clarified in the Traffic Forecast and Evaluation section, a direct comparison between predicted traffic flows in the ES and observed traffic flows undertaken for this report cannot accurately be made. This is due, in the most part, to the assumption that the route Dishforth to Barton would be upgraded to motorway standard. At OYA, the noise predictions based on the ES vs. Observed figures is **better than expected**, but can only be accurately compared at FYA when the whole ES scheme has been completed.

Table 5.3 Summary of Noise Evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	Overall improvement in noise levels assuming the scheme will include low noise surfacing throughout. Based upon the output of the model, 1 location is exposed to a substantial increase in noise levels.	Not available
EST	The overall increased improvement in noise levels above those predicted in the AST report due to lower than expected traffic flows, however, as the predicted traffic flows are based on the whole scheme A1 Dishforth to Barton, an assessment cannot be made at OYA and should be properly assessed during the FYA assessment when the whole scheme, on which the traffic predictions are based	-

Local Air Quality

Forecast

AST

- 5.24 The 2006 AST stated that 14 properties were expected to be demolished. The scheme would not create or remove exceedences of the AQS objective. The scheme would not affect air quality within AQMA of increase annual mean PM₁₀ and NO₂ levels at 20m from the road centre by more than 1µg m³ or 2µg m³ respectively. All predicted concentrations for PM₁₀ and NO₂ would be below 40 µg m³.

Environmental Statement

- 5.25 The ES stated that:
- Local authorities had not declared any Air Quality Management Areas (AQMA) along the length of the A1 from Dishforth to Leeming. This suggested that existing air quality in the vicinity of the proposed A1 upgrade, as determined by the local authorities, was generally good, with no exceedences of national objectives.
 - There were predicted to be no exceedences of the national air quality objectives either with or without the proposals. With the A1 improvements the largest benefits were predicted to occur at Hopetown House and Healam House. At both of these properties the proposed alignment took the carriageway further away from the properties in the do-something scenario than in the do minimum scenario causing predicted beneficial impacts of up to **major significance**. **Adverse** impacts at other sensitive receptors are predicted to be of up to **minor significance**.
 - Impacts on regional air pollution and climate change had been quantified in terms of the change in total annual traffic emissions resulting from the proposals. The road improvements were predicted to increase total traffic emissions, which was primarily a result of the higher average vehicle speeds facilitated by the improvements, however, it was difficult to quantify impacts on regional air pollution and climate change associated with these changes of emissions. Mitigating the impact of traffic emissions on regional air quality and climate change was a national problem that required a combined effort at local, regional and national level.

Consultation

- 5.26 The Hambleton District Council responded to consultation stating that the Council's nearest air quality monitoring site is located at Londonderry, North Yorkshire and is approximately 95m to the east of the A1. The monitoring results (nitrogen dioxide diffusion tube, bias adjusted) do not show any increase or decrease from the previous year and are well under the annual objective for nitrogen dioxide. Therefore, on the basis of these results for nitrogen dioxide the impact of the scheme on local air quality is neutral. The Council does not have any relevant information on particulate matter (PM₁₀) close to the A1 so the impact of PM₁₀ is unknown.

Evaluation

- 5.27 Average traffic flows on the A1(M) is lower than predicted, indicating air quality is overall **better than expected**.
- 5.28 As discussed in the Noise and Vibration section above, ES comparisons with Observed traffic figures indicate that air quality should be better than expected. Traffic figures from the ES assume that the route Dishforth to Barton would be upgraded to motorway standard which would indicate a higher traffic flow. At OYA, the air quality predictions based on the ES vs. Observed figures is **better than expected**, but can only be accurately compared at FYA when the whole ES scheme has been completed.

Table 5.4 Summary of Air Quality Evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	14 properties are expected to be demolished. The scheme does not create or remove exceedences of the AQS objective. The scheme does not affect air quality within AQMA of increase annual mean PM ₁₀ and NO ₂ levels at 20m from the road centre by more than 1µg m ³ or 2µg m ³ respectively. All predicted concentrations for PM ₁₀ and NO ₂ are below 40 µg m ³	Not available
EST	The air quality predictions based on the ES vs. Observed figures is better than expected, but can only be accurately compared at FYA when the whole ES scheme has been completed.	Better than expected

Greenhouse Gases

- 5.29 The assessment of the impacts of transport schemes on emissions of greenhouse gases is one of the environment sub-objectives. WebTAG notes that carbon dioxide (CO₂) is considered the most important greenhouse gas which is therefore used as the key indicator for the purposes of assessing the impacts of transport options on climate change. Changes in CO₂ levels are considered in terms of equivalent tonnes of carbon released as a result of the scheme. Carbon emissions are therefore estimated for the DS and DM scenarios using forecast and observed FYA data.

Forecast Greenhouse Gases

- 5.30 The ES forecast a net increase in 18,359 tonnes of carbon dioxide (5,007 tonnes of carbon). This forecast is for the entire section of the A1 from Dishforth to Barton.
- 5.31 The AST forecast concerning greenhouse gases states that '*the change in emissions is primarily as a result of the predicted increase in average vehicle speed due to the road improvement*'. No quantitative forecasts were presented.

- 5.32 Based on the statement in the AST it is presumed that the forecast for greenhouse gases was for a slight adverse impact.

Evaluation of Greenhouse Gases

- 5.33 A re-forecast of carbon emissions on the A1(M) between junctions 40 and 51 for the DM and DS scenarios has been calculated using current DMRB guidance. Observed carbon emissions were calculated using the same methodology for the DM and DS scenarios, using flow and speed data collected for this study. Table 5.5 presents the results.

Table 5.5 Re-Forecast and Outturn Change in Carbon Emissions

	Carbon Emissions (carbon tonnes/year)	
	Re-Forecast	Observed
Do Minimum	43,604	32,083
Do Something	46,075	33,094
Net Change	2,471	1,011
	+6%	+3%

- 5.34 Table 5.5 shows that observed carbon emissions increased by 3% between the DM and DS scenarios, equivalent to 1,011 tonnes of carbon. This is in below the re-forecast increase in emissions of 6% between the DM and DS scenarios, equivalent to 2,741 carbon tonnes. The lower than forecast increase in carbon emissions is a product of observed traffic being lower than forecast. Whilst traffic has fallen between the pre-scheme and post-scheme periods (suggesting a reduction in emissions could be expected), this offset by the increase in speed on the A1(M) following scheme opening, which causes greater carbon emissions.
- 5.35 From these results it can be concluded that the scheme has led to a minor increase in carbon emissions from vehicles travelling on the A1(M) between Dishforth and Leeming. However, should traffic flows increase in coming years then it would be expected that greenhouse gas emissions will increase. Further analysis at the FYA stage will allow for better understanding of the long term impacts of the scheme on greenhouse gas emissions.

Table 5.6 Evaluation Summary: Greenhouse Gases

Sub-Objective	FYA Score	Evaluation
Greenhouse Gases	Slight adverse	As expected

Landscape

Forecast

AST

- 5.36 The 2006 landscape AST stated that the widened road corridor and introduction of vertical elements in to the landscape would alter the locally valued landscape character, having a negative impact. There would be an overall beneficial effect on visual amenity due to a net increase in vegetation cover. The impact overall was assessed as **Slight Adverse**.

Environmental Statement

- 5.37 Appendix C provides a detailed ES assessment of the landscape impact of the scheme, including the Local Access Road. The effects of the scheme are summarised as follows:

- The new mainline would be more prominent in the landscape as it would not benefit from established hedgerow screening. The road and moving traffic on it would be more visible from the surrounding areas in the opening year, with this diminishing in some areas by the design year. Vertical features of the scheme would be prominent and include vertical concrete barriers (VCB) in the central reservation, new gantries, new motorway communication structures (MS3 signboards) and mitigation earth mounds. In addition to the mainline, there would be new balancing ponds with associated access tracks.
- In mitigation, new hedgerows with hedgerow trees would be planted beside the highway boundary fence, screen planting would be planted on the mitigation earth mounds and there would be additional planting around the new balancing ponds. However in the year in which the scheme is completed, these would effectively only appear as lines of tree tubes and hence not help to integrate the scheme particularly into the surrounding environment. All embankments, verges and the mitigation mounds would be seeded ensuring the establishment of a grass sward relatively quickly.

Figure 5.4 – Industrial development along the A1(M) near the Northalleton/Bedale junction



- 5.38 The introduction of gantries, noise/visual screen barriers, VCBs and several new MS3s would increase the amount of visual clutter in the landscape, but given the urban nature of some sections of the Scheme, they would not be out of character with the surroundings.
- 5.39 New lighting columns would be introduced which would be at variance with the character of the surrounding landscape.

Consultation

- 5.40 The Rainton with Newby Parish Council advised that the overhead signing gantries are prominent and intrusive, particularly a night time when illuminated.
- 5.41 Response: It is noted that the ES identified that these structures were permanent impacts brought in to a landscape that was sensitive to the introduction of these vertical elements and were a reinforcement of the linear form which already cuts through the landscape. The ES confirmed that it was expected that these visual components would remain visible by year 15.

Evaluation

Environmental Database (EDB)

- 5.42 A landscape EDB has been maintained for management of planting plots, hedgerows, grassland plots and planting within pond areas throughout the aftercare period. Common themes identified within this database include:

Planting outside of planting season (March 2011)

- 5.43 During the last construction planting season, selected planting plots were planted at the Contractor's risk outside of the recommended UK planting season. The EDB has identified plots to be monitored during the aftercare maintenance period. Plant failures will be replaced within the following planting season.

Planting plot not maintained to specification (weed control)

- 5.44 Control of weeds on site, including docks, ragwort and thistles in planting plots and general weeds and grasses within plant shelters appear to have been an ongoing concern during construction. This was apparently a particular issue where areas were not available for weed control due to traffic management conflicts. This may have an impact on weed proliferation due to seed being set without controls in place. It is noted that weed control forms a part of the five year aftercare maintenance programme.
- 5.45 Aftercare maintenance budget reductions have resulted in a reduction in the originally proposed maintenance regime. Although weed control generally is undertaken as required, maintenance within plant shelters is not being undertaken. Vegetation, including weed growth, within plant shelters serves as competition against expected plant growth of planted plots.

Figure 5.5 – Londonderry overbridge – colonisation of weed species outside of planting plots



Figure 5.6 – Weed species have been allowed to seed which will contribute to next seasons weed control



Existing vegetation retained

- 5.46 Existing retained vegetation within the scheme remains unaffected by the construction of the scheme and will serve to assist in the reintegration of the scheme within the landscape. The as built series 30/10 specification appendix noted that retained trees located adjacent to the A1(M), namely at Healam (Poplars group), Sinderby (Poplars and Ash group) and Leases Oak (Individual tree near Leeming junction between the LAR and the A1(M)) will be subject to an annual arboricultural survey by a suitably qualified arboriculturalist to determine structural integrity. No survey was received by POPE for consideration this report.

Monitoring of land previously contaminated with Japanese Knotweed and Himalayan Balsam

- 5.47 During the construction phase, sites containing Japanese knotweed and Himalayan Balsam were treated as required. These areas are subject to monitoring throughout the five year aftercare period.

Poor soil in some planting plots; compacted ground

- 5.48 Poor soil and compacted ground which has affected, or has the potential to affect, plant growth has been marked within the EDB. Soil remediation has been undertaken through the use of a slow release fertiliser directly to individual plants. Planting plots will be monitored through the five year aftercare period and growth targets referred to.

Overall planting assessment

- 5.49 The scheme was divided into four areas from south to north during construction which has resulted in differing plant growth within each section. Overall plant growth progress is good in southern areas which were subject to early planting, with the northern sections showing acceptable growth at OYA. As discussed in the EDB section above, there are areas showing limited growth, possibly due to compaction or poor topsoil. These areas are subject to monitoring throughout the aftercare period, during which mitigation, including decompaction and replacement of topsoil, may be identified to ensure growth targets are reached.

Figure 5.7 – Grass and weeds are starting to colonise the central hard strip



Figure 5.8 – Planting south of the Street Lane Overbridge



- 5.50 Hedgerows planted throughout the scheme appear to be progressing satisfactorily in areas planted most recently, with those planted two to three years previously are showing good growth and are set to meet their growth targets for integration and screening.

Figure 5.9 – Hedgerows - Growth rates within the scheme vary due to staggered planting times



- 5.51 Within the maintenance period at OYA, replacement of dead plant stock has amounted to approximately 3% of total trees and shrubs planted within the scheme. Annual inspections are being undertaken to identify affected planting plots, which are recorded in 'Landscape Observation Certificates'.
- 5.52 The handover to the Managing Agent Contractor (MAC) for shoulder and visibility splay maintenance has occurred. It appears, as shown in Figure 5.10 below that whilst areas subject to aftercare maintenance are being maintained as a part of the aftercare responsibilities, the shoulder adjacent to carriageway has not received maintenance from the MAC. The MAC responded that grass cutting for aesthetic reasons was not a part of their contractual obligations. They stated that grass cutting is only undertaken for safety reasons e.g. at junctions and slip roads. It is confirmed by POPE that this grass cutting regime has been accepted nationally and is not restricted to this scheme alone.
- 5.53 This lack of maintenance has the potential to allow the spread of weed seeds within the soft estate, allow blockage of drains and impact on planting plots subject to aftercare maintenance.

Figure 5.10 – Grass cutting for visibility splays and adjacent to the road have not been undertaken by the Managing Agent



- 5.54 Due to strengthened earthworks to the west of Gatenby overbridge (undertaken due to insufficient scheme land take) remedial measures have been necessitated for planting pits to ensure growth targets may be reached. It is especially important in this area due to the lighting at the adjacent roundabout on the LAR. It is unlikely that trees on this embankment will reach the required screening height due to their location only halfway up the embankment. Although the ES Environmental Masterplan drawing notes that planting on this embankment should

reach the top of embankment and is to be used to assist in screening views from Theakston and Exelby, the strengthened embankment does not allow for this.

Figure 5.11 – Strengthened slope west of Gatenby Overbridge



Landscape mounds and anti-glare fencing

5.55 The ES allows for earth mounding and false cuttings to provide ‘instant’ screening for sensitive visual receptors. The baseline Landscape Character assessment in the ES established that the scheme area was predominantly flat to gently rolling and that earth mounds were uncommon in the landscape and had the potential to affect the character of the immediate landscape. The use of earth mounds within the scheme was restricted to a relatively small number of locations where visual screening was essential to minimise impacts on the most sensitive visual receptors.

Close board timber fencing was proposed as a visual barrier in the ES only where immediate visual screening was essential and other land availability constraints prevented the use of earth mounding or screen planting.

Figure 5.12 – Combinations of earth mounding and anti-glare fencing



Additional landscape mounds between the LAR and A1(M) – balance of construction material on site

- 5.56 As discussed in the section above, the ES allowed for earth mounding and anti-glare screening where required between the LAR and the A1(M). Towards the northern section of the scheme, earthworks' balancing of material appears to have revealed an excess of construction fill on site. As the scheme has been built in 4 sections, the opportunities for incorporation of this excess material throughout the site was not practical. Proposals were made for inclusion of increased earth mounding in the northern end of the scheme, where land availability allowed. The increased height of the bunds has meant that anti-glare fencing has not been necessary in some areas. It is noted that in most instances, the mounds are no higher than the combined mound and anti-glare screen proposed in the ES. It is noted by Highways England that full assessments were undertaken to ensure the principles set out in the ES were not breached.

North of Oak Tree Underpass (west)

- 5.57 The scheme EMP drawing shows a separation between the main carriageway and the LAR through the use of a slightly raised 'sausage' shaped bund running adjacent to the mainline on the southern side and moving across to the LAR side providing a continuous visual screen between the mainline and the LAR. Woodland planting was proposed throughout the large plot for screening views from Burneston.
- 5.58 The built scheme shows a bund covering all of this area which achieves the screening effect required by the ES. However, the final shaping of the bund has not been undertaken with sympathy for the surrounding landscape, most especially for the Grade II listed Oak Tree Farm. The unnatural shape stands out in the landscape. The mound has not received shaping in keeping with the surrounding landscape but this may be masked by the design year when the trees mature. Softening of the bund could have been achieved through planting of a mixture of shrubs and trees on the slopes of the bund but appears to not have been considered. The success or failure of the planting in masking the unnatural shape of the mound should be assessed at FYA.

Figure 5.13 – Landscape bund north of Oak Tree Underpass



Gatenby Junction (north east)

- 5.59 The scheme EMP drawing shows the area retaining a level slope up from the A1(M) and includes an area of old A1(M) to be broken out and landscaped with areas of shrubs and individual trees. Fill material has been included within this area, amending the final shape and planting. The area blends into the local landscape, with woodland plots mirroring linear planting to the east of scheme.

Figure 5.14 – Earthworks and planting to the north east of Gatenby Overbridge



Leeming Junction offslip (south west)

- 5.60 The scheme EMP drawing shows some screen planting immediately adjacent to the western roundabout at Northallerton / Bedale junction whose purpose is noted for the screening of Leeming Bar from the roundabout. It is noted that Leeming Bar is to the east of the junction and would not be affected by the western offslip as indicated in the EMP drawing due to the A1(M) located on embankment in this area. A large, unshaped earth mound has replaced proposed planting which is not in keeping with the immediate landscape and does not assist with landscape and biodiversity integration as required in the ES.

Site compounds

- 5.61 Two site compounds were in use during the construction phase of the scheme. One site compound remains in use to the north east of the Northallerton/Bedale junction as the scheme immediately to the north of the Dishforth to Leeming scheme (A1(M) Leeming to Barton) has commenced. It is noted that this site is the former Leases Tip and owned by Highways England but subject to a tipping licence which rests with the former landowner. A restoration plan is currently being developed as part of the northern scheme which will be approved by the Land Protection Act and the EA.
- 5.62 The second compound at Sinderby has been completed in line with landowner specification. Excess construction materials have been stockpiled on site at the landowner's request. It is noted in the ES that no definitive locations for site compounds and site storage facilities were agreed, and to this end detailed mitigation proposals were not available.

Figure 5.15 – Leeming Compound (photograph taken in March 2014)



Figure 5.16 – Sinderby Compound (photograph taken in March 2014)



Additional Lighting Proposals: Side Road Departures – Proposed Lighting Mitigation (PLM)

- 5.63 Minor design changes necessitated additional / introduced lighting to one junction, one roundabout and one overbridge. Lighting is used for new and replacement road lighting in order to minimise both light spill outside the motorway and night sky glow. The mainline of the A1(M) remains unlit.

Sinderby Junction

- 5.64 Lighting was proposed in the ES at this junction; however this has been increased by seven 10 metre high lighting columns running along the northbound LAR approach to the roundabout. The seven additional lighting units were assessed and being seen in the context of the adjacent previously proposed road lighting and from most locations in the adjacent landscape would be indistinguishable from it. No other changes are proposed at this junction and the additional lighting units would therefore have a negligible additional impact on landscape character both at day time and in hours of darkness.
- 5.65 No additional landscape measures were considered necessary to mitigate the effects of the additional lighting units. The PLM noted a **negligible** effect on views.

Gatenby Roundabout

- 5.66 Lighting was proposed in the ES at this roundabout; however this has been increased by seven 12 metre high lighting columns approaching the roundabout from Gatenby. The seven additional lighting units would be seen in the context of the adjacent previously proposed road lighting and from many locations in the adjacent landscape would be indistinguishable from it. At some locations the illuminated area would appear to be extended but the overall effects would be minimal.
- 5.67 No other changes were proposed at this junction and the additional lighting units would therefore have a negligible additional impact on landscape character both at day time and in hours of darkness. The PLM noted a **negligible** effect on views.

Figure 5.17 – Eastern approach from Gatenby – lighting columns



Londonderry Overbridge

- 5.68 As proposed in the ES, Londonderry overbridge was to be replaced to maintain east/west farm movements with no lighting proposed. As a result of several departures from standard¹ which included reductions in visibility and curvature, 12 lighting columns have been placed on the approaches to the overbridge and on the overbridge itself. Final lighting column height to users of the overbridge and western approaches is 12 metres; column height for the eastern approach is 10 metres. Additional mitigation planting has been introduced to enhance the screening at this overbridge. It was noted in the PLM that receptors would experience some increase in magnitude of adverse visual impact compared to those in the ES due to increased day and night time intrusion. Properties at the northern end of Londonderry Village would experience an increase in adverse impacts changing from an ES predicted **Moderate Beneficial** Effect to a **Slight Adverse** effect.
- 5.69 It is confirmed that the lighting installed on the approaches to the Londonderry overbridge was a handover requirement stipulated by the North Yorkshire County Council associated with alignment departures. Highways England confirmed that close liaison with the Parish Council and residents was undertaken and as far as practical concerns were addressed

Figure 5.18 – Londonderry Overbridge, including the eastern approach showing introduced lighting columns and mitigation planting



Overall assessment of the additional lighting

- 5.70 Although the PLM notes that there would be no change against the significance of effect for landscape character noted in the ES, and that mitigation planting would be installed at the

¹ A non-compliance with a Mandatory Requirement of a Declared Standard – Published design standards offer benefits but also potential constraints and progressive authorities may seek to work beyond the limits of standards in delivering “more for less”.

approaches for Londonderry Overbridge, it is noted that the cumulative impact of the additional lighting columns has not been assessed.

5.71 Pre-scheme assessment of the route confirmed that the route runs through a predominantly rural landscape with minimal lighting during the hours of darkness. The only pre-scheme lit sections of the A1(M) were a small section either side of Rainton Overbridge and at Leeming Junction. It is noted that the additional lighting is within areas already designed to accommodate lighting columns and that the increase in lighting columns and resultant light spill is mostly negligible.

Photomontage comparisons

5.72 Photomontage comparisons are located in Appendix F. These include ES views before the scheme, ES predicted views with the scheme and the one year after comparison views (photographs for OYA taken in October 2013)

Location 1 – Wide Howe

5.73 Views from the footpath adjacent to Wide Howe towards Baldersby Junction are as expected.

Location 2 - Baldersby

5.74 View from Baldersby towards the A1(M) is as expected.

Location 3: Gatenby

5.75 The predicted impact of the scheme differs from the built scheme, possibly due to the ES being originally drawn up for the longer scheme – A1(M) Dishforth to Barton. Within this scheme, it was anticipated that more suitable fill material would be available from the Leeming to Barton section. When the scheme was split, there was a need to reduce the imported fill requirement as much as possible which resulted in the LAR alignment being lowered.

Location 4 - Londonderry

5.76 Views from Londonderry towards the A1(M) demonstrate the visibility of the introduced lighting columns on the approach embankment and their effect on visual receptors in Londonderry. It appears that an increase in woodland removal has been undertaken.

Table 5.7 Summary of Landscape and Visual Evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	The widened road corridor and introduction of vertical elements in to the landscape will alter the locally valued landscape character, having a negative impact. There will be an overall beneficial effect on visual amenity due to a net increase in vegetation cover	Slight Adverse
EST	Through the introduction of increased height earth mounds, some sections of the scheme are less visible than assessed in the ES. Introduced lighting in a predominantly rural location has both day and night impacts. Overall, however, the successful establishment of most areas of planting at OYA will contribute as expected towards the integration of the scheme into the wider landscape at the design year. The ES noted that the scheme would have a negative impact on landscape character and visibility of the scheme which is noted at OYA.	Slight Adverse As expected

Townscape

Forecast

AST

- 5.77 The 2006 townscape AST stated that scattered rural villages were set back from the A1(M) and towns close to A1(M) were typical of the area. New junctions and a loss of mature trees would redefine the limits of towns and sense of scale and would have an adverse impact upon views. Rural villages would not be affected. The impact overall was assessed as **Slight Adverse**.

Environmental Statement

- 5.78 The ES notes that the scheme does not pass directly through any towns with 'Spaces of Townscape Importance' designation. The built component of the study area for the Scheme comprises one small town (Bedale), several villages and many isolated farmsteads which are dispersed throughout the study area. Towns in the area are generally centred on a historic core, which expanded during the 20th Century. The villages are frequently of a linear form, running along roads with buildings facing each other and set back across a wide main street. Village greens and churches with towers or spires are common and these small settlements generally have significant amounts of mature vegetation. The vernacular building style is brick buildings with pantile roofs and many of the buildings are of historic interest.
- 5.79 The original A1 was a key feature of the existing townscape through some sections of this scheme. Loss of vegetation would have a detrimental impact on the townscape as its function was not only the screening of the A1(M) but also softening the appearance of the industrial estates.

Consultation

- 5.80 No response to consultation on the Townscape sub objective were received.

Evaluation

- 5.81 The ES does not discuss the Townscape element in detail due to the limited effect the scheme was expected to have on the surrounding area. The scheme does not dissect any towns, with existing developments located either side of the scheme. Loss of mature trees and hedgerows serve to redefine the limits of towns and sense of scale as noted in the AST. This effect will lessen considerably by the design year.
- 5.82 The increased lighting noted in the landscape section serves to bring a somewhat urban element to Gatenby through increased exposure to night time light. Overall, however, this increased lighting does not affect the EST score for Townscape which is **as expected**.

Table 5.8 Summary of Townscape Evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	Scattered rural villages set back from A1 and towns close to A1 typical of the area. New junctions and loss of mature trees will redefine limits of towns and sense of scale and will have an adverse impact upon views. Rural villages are not affected	Slight Adverse
EST	Increased lighting has a visual impact on the limited townscape elements within the scheme. It is not considered that the overall effect on townscape differs to that predicted in the ES	Slight Adverse As expected

Biodiversity

Forecast

AST

- 5.83 The 2006 AST stated that there would be adverse impacts on a SINC¹ (county important site), locally important habitats and protected faunal species including badger, otter and great crested newt. The impact overall was assessed as **Slight Adverse**.

Environmental Statement

- 5.84 The ES stated that the impacts to designated sites were assessed as **Slight Adverse** during construction, reducing to **Neutral** in the Design Year of the scheme. Mitigation including the provision of a mammal tunnel and compensatory terrestrial habitat for great crested newt would reduce impacts.
- 5.85 Impacts on terrestrial habitats were assessed to be **Slight Adverse** during construction, reducing to **Neutral** in the Design Year of the scheme, with impacts to aquatic habitats being **Slight Adverse** for watercourses and **Slight Beneficial** for pond habitat. Loss of high quality habitat would be minimal, although there would be small losses of mature trees, sections of good quality hedgerow, sections of species-rich verge grassland, bankside habitat and two ponds. This would be offset by the creation of new screen planting, species-rich grass verges and new ponds, although bankside habitat would be permanently lost. New landscape planting would use native species that are typically found in the surrounding area and would be designed with ecological principles, relating to HABAP² and LBAP³ objectives where appropriate. By the Design Year, it was expected that proposed habitat creation would off-set losses to road construction, and the scheme could have some benefits for nature conservation. For example, water quality in the watercourses would improve as a result of the incorporation of pollution prevention measures, minimising potential impacts to a number of ecologically valuable sites downstream of the A1, including Swale Lakes SSSI⁴.
- 5.86 The main impacts of the scheme would involve disturbance to legally protected species during the construction phase, including bats, otters, badger, great crested newt and breeding birds. However, the residual impacts of the scheme in the Design Year following the implementation of mitigation would be reduced to **Neutral** for the majority of species excluding otter, badger and great crested newt for which there would be an overall **Slight Adverse** impact. Additional surveys prior to construction would be undertaken to ensure that there has been no changes

¹ Sites of Importance for Nature Conservation

² Highways England Biodiversity Action Plan

³ Local Biodiversity Action Plan

⁴ Sites of Specific Scientific Interest

in the distribution of protected species. Should populations be encountered that were previously not found during survey work, mitigation measures would be undertaken as appropriate.

- 5.87 With proposed mitigation fully implemented, the ecological significance of the overall impact was assessed as **Moderate Adverse** during construction, in the short-term. However, in the long-term (Design Year), when planting and new habitats had become established and mitigation was maintained and managed in accordance with an Environmental Management Plan, the overall residual impact is assessed as **Slight Adverse**.
- 5.88 The residual magnitude of the potential impact of the scheme on Swale Lakes SSSI, following the implementation of mitigation measures is assessed as **Neutral**.
- 5.89 Species / Habitat specific evaluation from the ES can be found in Appendix D

Consultation

- 5.90 Natural England (NE) stated that it has not provided detailed advice on this project, as there are no nationally or internationally designated nature conservation sites or nationally designated landscapes that are affected by the scheme. Therefore they do not wish to make detailed comments on the project evaluation. With regard to bat roosts, they can confirm that they are satisfied that the scheme will not have a significant impact on the local bat population as long as the conditions included in the licence are adhered to.
- 5.91 The Yorkshire Wildlife Trust stated that they were not aware of any projects that they have in the area and as such would not provide any comment on the scheme.

Evaluation

- 5.92 Monitoring reports and NE license reports and as built ecology drawings were not provided for this study. This means that it has not been possible to confirm ecology features were installed as required in the ES. It is noted however, that NE licences were obtained and conditions therein strictly followed associated with relocation of all protected wildlife prior to construction activities.
- 5.93 It is understood from the opening Ceremony Commemorative Brochure that new habitats, away from the road, were created for great crested newts, badgers, otters and 3 kinds of bat; the brown long eared bat, the common Pipistrelle bat and Daubenton's bat. New habitats were built before construction commenced so that any protected species found in the construction area could be relocated to their new and safe locations.

Figure 5.19 – Entrance to willow otter holt
(photo from Ecology Progress Report February-March 2010)



5.94 As indicated in the ES and Landscape as built drawings and confirmed during the 2013 site visit, amphibian hibernacula have been installed at the Hergill balancing pond.

Figure 5.20 – Hergill Balancing Pond – amphibian hibernacula have been installed throughout the pond surrounds



5.95 Mammal fencing along the route as been installed as expected. This includes otter, deer and badger fencing. Exclusion fencing for rabbits has been included within the scheme.

Figure 5.21 – Otter fencing at Bedale Beck North pond



Figure 5.22 – Deer fencing between the LAR and A1(M)



- 5.96 An otter/mammal ledge under the Healam Beck overbridge as been installed as required in the RS. Possible otter footprints were noted during the March 2014 site visit.

Figure 5.23 – Mammal Ledge under the Healam Beck Overbridge



Figure 5.24 – Possible otter footprints visible under the Healam Beck Overbridge



Animal Mortality Figures

- 5.97 The Managing Agent Contractor (MAC) has been consulted with regard to animal mortality due to motorway traffic between Dishforth and Leeming and have provided the records shown in

Table 5.9 below. The figures provided are based on those recorded after handover from the construction contract and as such, cannot be used to compare mortality figures before the scheme was built. Pre-scheme mortality records appear not to be available

- 5.98 The figures are low, with only some concern in the area between Londonderry and Leeming. Deer proof fencing is not in place in this area which may be contributing to the higher mortality rates to the north of the scheme.

Table 5.9 Animal Mortality Figure provided by the Managing Agent Contractor

Location	Species	2012/2013	2013/2014
Baldersby to Sinderby	Badger	0	0
	Deer	0	1
Londonderry to Northallerton / Leeming Junction	Badger	1	0
	Deer	3	1

Table 5.10 Summary of Effects

Origin of Assessment	Summary of Effects on Biodiversity	Assessment
AST	Adverse impacts on a SINC (county important site), locally important habitats and protected faunal species including badger, otter and great crested newt.	Slight Adverse
EST	Without the monitoring reports and as built ecology drawings which would include confirmation of installation of mitigation required, it is not possible to provide an assessment of the effects of the scheme on biodiversity as detailed in the ES.	-

Cultural Heritage and Archaeology

Forecast

AST

- 5.99 The 2006 AST predicted that there would be **slight adverse** visual impacts on several Listed Buildings and direct adverse impacts on 1 SAM. There would be direct **adverse** impacts on several other sites and buildings of local and regional importance.
- 5.100 The AST further stated that the scheme would be damaging to nationally significant heritage assets but that adequate mitigation would be implemented. The impact overall was assessed as **Moderate Adverse**.

Environmental Statement

- 5.101 The ES noted that with mitigation measures in place, the cumulative impact upon the built heritage, including the Listed Buildings, historic landscape features and archaeological sites, including the designated sites, was considered to be **Moderate Adverse**.

Scheduled Ancient Monument

- 5.102 Excavation would be undertaken in the area of the Scheduled Ancient Monument (SAM) at Healam Bridge in order to establish the character of archaeological deposits so as to assess the impact of the scheme and inform mitigation strategies. Evaluation excavation would also

be undertaken at all locations where geophysical survey suggested the existence of archaeological deposits of more than low value.

Built Heritage

- 5.103 The historic buildings within the study area comprised a number of different types of structure. These include farmhouses, inns, cottages and country houses and their associated structures. Features associated with the development and use of the road, such as mileposts and bridges, were also present.
- 5.104 The historic buildings date largely to the 18th and 19th century. The construction of some of these buildings can be related to periods of intensified use of Dere Street as a main thoroughfare. In the late 18th century increasing coach traffic would have led to the need for coaching inns, such as New Inn Farm and Oak Grange.
- 5.105 The increase in railways led to the decline of coaches after 1845, and Sinderby Station was built in 1852. However, the route was still the main road through the region and construction adjacent to the road continued during this period. Development close to the road was usually associated with agriculture or industry. The rural nature of the landscape made this an attractive location for country houses, but these were usually set back from the main thoroughfare, or shielded by a wall, as at Leases Hall.
- 5.106 The majority of buildings present along the route were built of brick. These varied between hand-made bricks of the 18th and early 19th centuries and machine-made bricks brought into the area via the railways in the mid- and later 19th century.
- 5.107 Within the study area the proposed route would impact a number of historic built heritage features. These impacts would be caused by the required demolition or loss of part of a structure or its grounds or increased visual intrusion, noise, and vibration.
- 5.108 There are six Grade II Listed Buildings and other structures affected by the scheme. These comprise:
- A milepost (B1),
 - York Gate Farm (B2),
 - Healam Bridge (B8),
 - Oak Tree Farm (B11),
 - Cowfold Grange (B14), and
 - Boundary wall to Leases Hall (B16)

Historic Landscape Features

- 5.109 The principal components of historic landscapes in this area have been identified as enclosure period and earlier field systems, earthwork boundaries and ridge and furrow; parkland and other designed landscapes; ancient woodland and other specific ancient management regimes; roads and tracks; and pasture and moorland exhibiting earthwork survival. The potential interest of modern landscapes is acknowledged but within the route corridor of the A1 industrial, commercial, and MOD facilities do not constitute landscapes of historic value.
- 5.110 Impacts upon historic landscape features by the proposed route comprise severance or loss of historic features, increased visual intrusion, and changes to historic landscape character. While impacts upon the historic landscape types are listed below.

Impacts on Historic Landscape Types

- 5.111 Highway corridor – Construction of the proposed main alignment would impact upon the adjacent existing highway corridor through the removal of hedgerows and other features. The impact is considered to be **Intermediate Negative**.

Designated Sites

- 5.112 At Healam Bridge Roman fort and vicus¹, the proposed road alignment would pass to the east of the focus of settlement and the Roman fort. It would traverse at grade, south of Healam Beck, an area which appears to have been given over to orchards and paddocks in the Roman period, which contains very few archaeological features. A new bridge crossing would be made over the current channel of Healam Beck some distance downstream of the Roman crossing of the beck. North of Healam Beck the road will continue at grade through an area thought to have been occupied by small-scale Roman industry, where again there is relatively little archaeology. Construction of the road would entail removal of topsoil throughout its route across the scheduled area. The interpretation of archaeological activity summarised has been confirmed by evaluation excavation. The magnitude of impact on the Healam Bridge Roman fort and settlement is considered to be **Minor Negative**.

Archaeology

- 5.113 The proposals would impact upon a number of buried archaeological sites within the study area in addition to impacts upon designated sites described above.
- 5.114 Because the proposed alignment would be mostly at grade the proposed route would mainly impact upon archaeological sites through the removal of material during works, the potential destruction of sensitive deposits caused by the presence of heavy plant and the potential alteration of stable ground conditions which might lead to degradation of the quality and survival of buried archaeological remains.
- 5.115 In overall terms, it was expected that the Published Scheme would have a **minor adverse** effect on Cultural Heritage.

Consultation

- 5.116 No response has been received from English Heritage at the time of writing.
- 5.117 North Yorkshire County Council (NYCC) responded that the impact of the scheme on the heritage resources along the routes, including archaeology and built heritage was as expected. NYCC also stated that they would have liked to have seen the digital archive arising from the project deposited with the Archaeology Data Service.

Evaluation

- 5.118 A number of archaeological sites were identified for excavation in advance of construction work, including Nationally Designated Romano-British sites. A full time team of archaeologists were present during site clearance work and topsoil removal in order to undertake these excavations and to identify and record any additional sites encountered.
- 5.119 During the project's Archaeology Liaison Meetings in August and September 2009, English Heritage expressed concerns regarding the Scheme's landscape design and management proposals for the Healam SAM. These concerns are summarized as follows:
- Impacts to unknown underground archaeology arising from the planting preparation works and subsequent growth of new areas of shrubby vegetation adjacent to Healam Bridge;
 - The potential for damage to the Listed structure of Healam Bridge from the subsequent growth of new planting; and
 - Impacts to unknown underground archaeology within the SAM and to the Healam Bridge structure from the existing unmanaged scrub and vegetation on site.

¹ In ancient Rome, the vicus was a neighbourhood.

- 5.120 In order to preserve the archaeology long term, English Heritage proposed that landscape proposals should consider the following:
- Scheduled areas should be kept as open as possible and existing scrub and understorey managed effectively;
 - New shrub planting should be limited to the boundaries of Healam Beck so that Healam Bridge remains visible;
 - Management regimes should be kept to a minimum; and
 - Tree and shrub planting along the proposed local access road (LAR) and mainline carriageway should be designed so as not to create a visual barrier between the two halves of the SAM.
- 5.121 During the site visits confirmation of the requirements listed above were noted. However, the allowance of growth of bramble on the Healam Bridge is a cause for concern as noted below.
- 5.122 As shown on the As built Planting Plans, there are two discrete areas of existing planting within the SAM that are retained. The first is a retained hedgerow that runs south from Healam Bridge until it exits the SAM. This hedge sits to the west of the new realigned highway. The second is part of a small remnant area of woodland to the north of Healam Bridge. The retained hedgerow and woodland and existing areas of scrub across the SAM are subject to a management regime.
- 5.123 A summary of the results of the investigations undertaken for the scheme has been received by POPE for the OYA evaluation. These results show that the main archaeological interest lies in the Roman period, especially around the Roman fort and settlement at Healam. The summary confirms that the A1(M) corridor may have been used as a route from prehistoric times but that Roman Dere Street was the beginning of the long history of an engineered road which was important throughout the Roman period and was once again to become famous in the coaching days of the 18th century. The road regained its importance with the rise of motor traffic in the 20th century.
- 5.124 The alignment of the new A1(M) was planned to avoid the Roman fort and settlement, but it traverses an area outside the fort to the north-east. Here the complex remains of a Roman 'industrial estate' were found on the north bank of Healam Beck. The area appears to have been mainly used for food processing and storage. Nearby kilns may have been used for baking or brewing.
- 5.125 A number of the buildings had been rebuilt several times over the three centuries that the fort and settlement remained in use. The excavated area produced a large quantity of finds which are being researched by the scheme archaeologists. One of the buildings had been constructed over the burial of a horse, thought to have been placed as a sacrifice or ritual offering.

Figure 5.25 – Reconstruction of how the fort and settlement might have looked in the second century AD (image from ‘The Archaeology of Roman Dere Street’)



Healam SAM site – eastern side of A1(M)



- 5.126 It is understood that pieces of tile, slag and animal bone were found, as well as pottery and a wide range of metal objects. The lowermost levels, which had remained waterlogged since Roman times, contained preserved wooden posts and occasional wooden artefacts which are only rarely found, including a dowel or pin and the lid of a storage jar.
- 5.127 The construction of a new gas pipeline on the banks of the beck to the west of the fort at Healam showed that Roman activity had extended into this area, where traces of buildings were found. The area had also been used as a burial ground, and a number of child burials were present. Although people continued to live and farm in the area after the Roman period no evidence was found along the A1 upgrade stretch and it seem likely that people continued to avoid the road, which by then was less well used.
- 5.128 The report on the finds from the excavations has not been provided to POPE for use in this report, and no confirmation of publishing of the academic report was received. Following publication of the report the finds and records from the excavations should be deposited in the Yorkshire Museum, York. Information should also be obtainable from the North Yorkshire County Council Historic Environment Record. It should be confirmed at FYA whether the finds and reports have been lodged as required.

Grade II Listed Buildings and other structures

- 5.129 The ES stated that the mainline carriage way would be widened to the east of the existing carriageway between Baldersby junction and Leeming resulting in the main road moving further away from York Gate Farm and Oak Tree Farm. This would improve the immediate visual setting. The magnitude of impact was therefore considered to be **Minor Positive**.

- 5.130 It is noted that the motorway has moved further from York Gate and Oak Tree Farms and mounding is included between the LAR and A1 mainline carriageway opposite as shown in views included in Appendix F. Views of high sided vehicles can be noted from the first floor of Oak Tree Farm house. York Gate farm building is in a state of decay and appears to not be occupied.
- 5.131 The residual impact upon Cowfold Grange and Leases Hall boundary wall and both Grade II listed structures is considered to be no change once planting has matured.

Figure 5.26 – Listed structures within the scheme



York Gate Farm

Oak Tree Farm

Leases Hall Boundary Wall

- 5.132 The A1(M) route alignment has been designed so as to minimise impact upon areas of high archaeological value, including Healam Bridge where the route has been moved off-line to avoid the principal areas of the Roman fort and settlement. Construction of the road entailed removal of topsoil throughout its route across the scheduled area. The magnitude of impact on the Healam Bridge Roman fort and settlement is considered to be **Minor Negative**.

Figure 5.27 – Healam Bridge including inset photograph of wear due to historical line fishing on the bridge parapet (main photograph taken in March 2014)



- 5.133 It was noted during the site visit in March 2014 that maintenance on Healam Bridge does not appear to include the control of encroaching Brambles. This plant may threaten the future visibility and structural integrity of the bridge. It is noted that it appears to be a MAC requirement although this is not confirmed.

Figure 5.28 – View on Healam Bridge showing encroachment of Brambles



Table 5.11 Summary of Cultural Heritage Evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	There will be slight adverse visual impacts on several Listed Buildings and direct adverse impacts on 1 SAM. There will be direct adverse impacts on several other sites and buildings of local and regional importance. The current proposals will be damaging to nationally significant heritage assets but adequate mitigation will be implemented.	Moderate Adverse
EST	As noted in the AST and confirmed through the archaeology summary, the impact on the Healam SAM site is as expected. Retention of vegetation at the Healam Bridge is as required, although the presence of brambles on the structure is a cause for concern. The academic report was not made available to POPE and confirmation of the deposition of the finds was not received.	As Expected

Water Quality and Drainage

Forecast

AST

- 5.134 The 2006 AST stated that with mitigation, the scheme would have a **neutral** impact on flood risk and a **significant beneficial** impact on water quality.

Environmental Statement

Internal Drainage Board

- 5.135 The ES confirmed that there was one Internal Drainage Board (IDB) located within the study area – Bedale & Upper Swale IDB. The IDB was contacted to determine what watercourses were within their jurisdiction. Any discharges to or works affecting watercourses within the IDB jurisdiction required prior consent from the IDB.

Proposed Drainage Networks

- 5.136 The ES stated that the main components of the drainage network would be as follows:
- Edge of carriageway drainage would be principally achieved using slip formed concrete surface water channels. Where a thin surface course was used adjacent to these channels there would be a requirement to install a continuous horizontal fin drain beneath, connecting to the vertical drain running parallel with the channel;

- Surface water from these channels would discharge into a carrier drain network generally via specific outlets which, in whatever format, would incorporate sumps as initial pollution mitigation measures;
- On interchanges, kerbs and gullies were envisaged;
- On the local access road, existing combined drainage would be utilised as much as possible but some new sections of kerbs and gullies were envisaged, the gullies being connected to carrier drains and outfalls;
- The carrier drain networks would discharge via further pollution control measures into balancing ponds or storage reservoirs prior to outfalling into soakaways, watercourses, ditches or rivers;
- Pre-earthworks drainage would substantially be filter drains although there would be locations where ditch alternatives might be acceptable;
- In cuttings, on the verge to the high side of the carriageway, a concrete channel and fin drain in accordance with HCD B4¹ would be provided to drain the cutting slope; and
- The use of swales had been considered but geotechnical concerns and safety implications might preclude their use.

5.137 As a further line of defence, protection measures in the form of petrol interceptors would be installed to control pollution from hydrocarbons.

5.138 The ES noted that although there was a view that interceptors should not be provided as a matter of course, it acknowledged that they could be useful in conjunction with other methods of treatment. During the detailed design the necessity to install interceptors would be evaluated for each catchment. If other measures in place in a particular catchment provide the equivalent protection to that which an interceptor would provide they would be removed from the detailed design for that catchment. If required, interceptors would be installed.

5.139 Bypass oil separators are also useful in conjunction with other methods of treatment were to be incorporated into the drainage networks as a further line of defence. These bypass oil separators were to be located upstream of each balancing pond or outfall and suitable access for maintenance would be provided.

Pond Design

5.140 The types of ponds used to provide the required level of surface water runoff treatment would be in accordance with DMRB HA 103/01².

5.141 Generally ponds would be designed as 'wet' and would principally attenuate surface water runoff. However, primary treatment would be achieved in that retention times would be such that there would be settlement of suspended solids. It was envisaged that a further level of treatment might be achieved with the provision of appropriate vegetation.

Potential Operational Impacts

5.142 The main features of the scheme which could potentially have an impact on surface and groundwater quality were:

- Placement of temporary structures in water bodies, particularly Bedale Beck and Healam Beck;
- An increase in impervious hard surfaces and a consequent change in the volume of runoff;
- An increase in the deposition of pollutants from road vehicles onto hard surfaces; and
- Potential for accident spillages

¹ Highways Construction Details – B4 - a precast concrete unit with cross sectional shapes. Their use in verge and slope drainage in cuttings would normally be necessary only in very impermeable soils or where fairly high flows occur such as from rock faces.

² Vegetative Treatment Systems for Highway Runoff

Estimated Impact on Water Quality within Ground and Surface Waters

- 5.143 Drainage from the new road surfaces had the potential to carry a wide range of soluble and insoluble pollutants such as suspended solids, hydrocarbons (derived from oil and fuel), metals (especially dissolved copper and total zinc), organic toxic matter and pesticides, and rock-salt (plus other de-icing agents). There was also the additional risk that an accidental spillage may occur that could lead to a pollution incident occurring.
- 5.144 In the event of the potential operational impacts identified above occurring without the adoption of appropriate mitigation measures, there was the possibility that **substantial adverse** impacts might result to affected watercourses.

Conclusions

- 5.145 The ES concluded the existing drainage of the A1 corridor between Dishforth and Leeming did not have any pollution control measures in place (except petrol interceptors at Baldersby Junction). The proposed scheme would incorporate a series of pollution control measures which would improve the quality of the discharges from the highway drainage compared to the Do Minimum situation. Overall, with the incorporation of the recommended mitigation, the proposed scheme would provide benefits to water quality during the operation of the scheme. In addition, the provision of balancing ponds and other discharge control measures would limit the impact of discharge to watercourses. The residual increase in peak water levels upstream of structures would be limited. The provision of grade-separated junctions reduced the risk of a serious pollution incident as the result of a traffic accident.
- 5.146 Installation of pollution prevention measures within the drainage system to capture accidental spillage where none previously existed would further reduce the risks associated with the scheme and have a significant positive benefit for long-term water quality within the route corridor.
- 5.147 With the implementation of good practice in pollution control during construction activities and appropriate mitigation incorporated into the design and construction of structures crossing watercourses it was expected that there should only be **minor adverse** effects. Liaison with the Environment Agency (EA) would continue throughout the detailed design phase.
- 5.148 There were likely to be minor effects from operational discharges which would include acceptable, limited increase in water levels on some watercourses resulting from the construction of new watercourse crossings. Significant increase had been eliminated in the initial design stage of the structures.
- 5.149 The provision of balancing ponds and other discharge control measures would control and limit the impact of discharge to watercourses. The residual increase in peak water levels upstream of structures would be limited.
- 5.150 The overall impact of the scheme on floodplain/ flood risk, with mitigation, was considered to be **neutral**. The overall impact on water quality was considered to be a **significant beneficial** impact.

Consultation

- 5.151 The EA responded that they “have reviewed the document and have no comments make. However it would be interesting to view the final plans especially if they indicate the location of highway drainage and spill response protection measures (interceptors).”
- 5.152 The Swale and Ure Internal Drainage Board (IDB) responded to a request for consultation as follows:

- Bedale and Upper Swale IDB was abolished and is now part of the Swale and Ure Drainage Board as of 1 April 2012;
- The drainage and flow attenuation measures have been constructed in accordance with the design. Londonderry Balancing Pond discharges to Burtree Dyke which is a Board maintained watercourse, and it was inspected whilst work was in progress. The Board also undertook an inspection of the outfall to Scurf Beck, again a Board maintained watercourse, discharging from the Leazes Balancing pond. Modifications to the outfall were requested and carried out;
- We have had a long series of complaints from one landowner on Burtree Dyke. Highways England made strenuous efforts to address the complaints but there is no evidence that any were valid.
- The Board has received no other complaint from any other ratepayer within the scope of the scheme. To the best of their knowledge there are no outstanding matters relating to drainage and attenuation as a result of the works.

5.153 The Rainton with Newby Parish Council advised that a part of the drainage scheme relies on a balancing pond off Sleights lane (Rainton Balancing Pond see Figure 5.29). The Parish Council noted that there appeared to be issues with the pond overflowing and causing flooding to the surrounding agricultural land. In addition, road water, including pollution from diesel/petrol and road debris has found its way into the local drainage system. The council noted that complaints had been lodged in this respect and some remedial work carried out which has not been fully tested as yet.

Figure 5.29 – Rainton Balancing Pond



Evaluation

- 5.154 With reference to the response to consultation received from the Bedale and Upper Swale IDB, Highways England confirmed that:
- The outfall from the Londonderry Balancing Pond, due to effects of pond attenuation, is less than that discharged from the original A1(M);
 - The pond discharge rate has been independently verified by and agreed with the IDB;
 - It is satisfied that the works have been constructed in accordance with the design and that agreed with the IDB; and
 - It has met the landowner and his agent and is prepared to consider any additional evidence presented.
- 5.155 With reference to the response to consultation received from the Rainton with Newby Parish Council, Highways England confirmed that:

- The Rainton pond was designed to control the outfall rate into a local drain to no more than existed from the original A1 outfall into the same local drain. It is noted by Highways England that the pond has not overflowed as described by the Parish Council, and flooding that has occurred has been as a result of the lack of maintenance of the riparian drain.
- The riparian drain passes through fields and also provides drainage for these fields before passing through the village of Rainton and ultimately discharging into the River Swale. The discharge rate (with a substantial factor of safety) was agreed with the Environment Agency.
- It is noted that the drain is the responsibility of adjacent landowners except where it drains through the village where it becomes the responsibility of Yorkshire Water.
- Towards the end of construction and post opening the HA (at the time) received complaints from residents of Rainton that there was substantial flooding in the adjacent fields and in parts of Rainton village. The HA investigated the flooding and discovered there was a partial blockage of this drain due to tree roots etc in the vicinity of Sleights Lane (in the village). Yorkshire water and NYCC were informed. NYCC did some further investigation and concluded that the section actually passing under Sleights Lane was clear. Yorkshire Water did however carry out some root clearance for part of a section in the village.
- Conscious of the concerns of residents and the increased likelihood of excessive precipitation due to changing weather patterns the HA looked at ways of further reducing discharge rates into the riparian drain. This resulted in a scheme to provide a pumped connection between the Rainton and Dishforth ponds. This connection has now been installed along with the pumping facility. Pending provision of a permanent power supply which is imminent, temporary arrangements are in place to ensure the pumping system can operate with temporary generators whenever high rainfall is forecast. The pumping system will not completely remove the discharge into the riparian drain but it reduces the rate to a nominal amount substantially less than existed from the original A1 prior to construction of the improvement.

- 5.156 In accordance with agreement with RAF Leeming, ponds were designed as “dry” to reduce the likely incidence of bird strikes on RAF aircraft. That said the ponds do have a minimal depth of water present at all times though this will not be apparent due to reed growth etc.
- 5.157 The ES stated that the use of swales had been considered but geotechnical concerns and safety implications might preclude their use. However, a swale has been installed north east of the Gatenby overbridge to capture possible increased run off from that quadrant of the bridge earthworks. The infilling of the quadrant is a result of the materials balancing within the scheme and results in the pre-scheme bowl shape incorporated the original A1 on slip which would have acted similarly to the swale now introduced.

Figure 5.30 – Swale north of Gatenby Overbridge



5.158 During the site visit in October 2013, all ponds were accessed and seen to be well maintained and in line with as built drawings. All appeared to be operating as expected to retain water and allow gentle overflow in times of high rainfall events. Dense reed growth to restrict access to waterbirds like ducks and geese within most ponds is a result of restrictions imposed by RAF Leeming to flight paths.

Figure 5.31 – Hergill balancing pond showing area (in foreground) provided to accommodate any overflow in periods of heavy rainfall



5.159 Mitigation measures have been implemented as expected in the ES and no information has been provided to POPE that would indicate that it is performing other than as intended. Based on the information available at OYA it is considered that the scheme’s overall impact has been **moderate beneficial**, and **as expected**.

Table 5.12 Summary of Water Quality and Drainage evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	With mitigation, the scheme will have a neutral impact on flood risk and a significant beneficial impact on water quality.	Flood Risk Neutral
		Water Quality Significant Beneficial
EST	Mitigation installed as a part of the scheme was confirmed during the site visit and through as built drainage plans	As Expected

	provided. It is noted that drainage features appear to be operating as expected.	
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Physical Fitness

Forecast

AST

- 5.160 The 2006 AST stated that increases in journey length would result in 25 pedestrian journeys per day being greater than 30 minutes. The inclusion of new links to connect up the existing Public Rights of Way (PRoW) network would allow people to extend their circular leisure journeys.

Environmental Statement

- 5.161 The assessment of the impacts of the scheme considered the direct effects of the proposed upgrading of the A1 and indirect effects resulting from changes in traffic flows arising from the proposals on the following:
- Direct loss of the A1 as a Non-Motorised User (NMU) route;
 - Direct impacts on community facilities;
 - Severance effects between residents and community facilities;
 - Effects on amenity of routes used by NMUs;
 - Effects on physical fitness resulting in changes in NMU activities; and
 - Effects on access by NMUs to the public transport system.
- 5.162 The results of pedestrian surveys illustrated that the routes within the village of Leeming Bar, was frequently used, particularly where there was grade-separated crossing provision on the A1. This route provided important links used for accessing services and travel to and from work and school as well as for leisure purposes. It was noted that NMU routes outside this populated area would be generally used principally for recreation and were used less frequently.
- 5.163 The A1 upgrade scheme would not result in the demolition of any community buildings. The majority of PRoW within the vicinity of the A1 would be affected by the improvements, but no routes would be permanently closed. These routes would be maintained using diversions to the grade separated crossing provision. The inclusion of the LAR and new PRoW provision would further link up the existing PRoW network and would provide for more circular leisure routes for NMU's.

Community Severance

- 5.164 Severance would occur as a result of the scheme where NMU routes that crossed the existing A1 at-grade would be diverted or where existing grade-separated crossings were being relocated or removed. Users of four NMU routes would experience cumulative severe severance as a result of these improvements. Existing severance would be relieved for all NMU routes which were connected to the A1, through the provision of the LAR and new PRoW, which would reduce NMU exposure to high volumes of traffic.
- 5.165 The majority of daily NMU journeys would experience no change in cumulative severance as a result of the scheme. Overall the scheme would likely result in a slight increase in severance, as more NMU journeys would experience cumulative severance than cumulative relief from severance. This increase would be slight as for the majority of daily pedestrian journey experiencing an increase in cumulative severance. This would likely be slight in nature.

Journey Amenity

- 5.166 The ES stated that amenity value of the A1 was poor due to NMU exposure to heavy traffic flows, fast vehicle speeds and associated noise and dust generation. The scheme would provide alternative provision for NMUs for the most part along the LAR, which would be an improvement in amenity value due to significantly less traffic and lower speeds. The route would also have better crossing facilities for NMU's. The new provision would link up the NMU network and provide more route options for NMU's.

Figure 5.32 – Multi-use path along the LAR, adjacent to the A1 (M) south of the Bedale/Northallerton junction



- 5.167 Journey amenity for the PRow and local road network was generally good until the user was in close proximity to the A1, when the level of amenity reduced rapidly. Visual amenity value in the opening year would be reduced for most NMU routes, resulting from the removal of roadside vegetation, (which provided screening), the introduction of a wider road carriageway and new structures and gantries. However, visual amenity value was likely to be similar to the original situation by the design year (2010), as vegetation would have matured. Amenity value would also be reduced due to increased journey lengths resulting from route diversions.
- 5.168 For the majority of weekly NMU journey the amenity would be approximately the same as the original. In the opening year more NMU journeys would experience a decrease in amenity as a result of the scheme than an improvement and therefore in the opening year there would be an overall reduction in journey amenity. However, by the design year reductions in visual amenity would have been mitigated and therefore, although the other factors would still be present, the overall amenity of NMU journeys was likely to be more similar to the original situation.

Physical Fitness

- 5.169 The inclusion of new links to connect up the existing PRow network would allow people to extend their circular leisure journeys should they wish. It was expected that the provision of additional links might encourage NMUs to use routes currently not used. There was also the potential for people who currently did not use the NMU routes in the area to start to following the inclusion of the new routes providing opportunities to take journeys without being exposed to high volumes of traffic. These potential physical fitness benefits were said to be not easily quantified using the methodology however, generally physical fitness would have the potential to increase. The scheme would result in a **beneficial** impact on physical fitness.

Consultation

- 5.170 North Yorkshire County Council (NYCC) provided extensive comments which are to be found in Appendix E. They confirmed that the PRow network had been seriously affected by the constant development of the A1 over many years before this scheme.

- 5.171 The issues raised by the NYCC are considered by Highways England and North Yorkshire County Council in the Completion of Construction Stage NMU Audit. Comments from this audit are included in the evaluation section of this report.

Figure 5.33 - PROW signage examples throughout the route, located along the LAR



Evaluation

- 5.172 Highways England confirmed that the North Yorkshire County Council (NYCC) took the opportunity to address long standing issues associated with the A1 corridor prior to scheme construction – ie perceived severance as a result of high traffic flows preventing safe crossing of the A1. In addition Highways England worked closely with NYCC to ensure optimum solutions to route crossing of the A1 motorway. Where appropriate, and not covered by the side roads order, alternative routes to obviate the need for NMU's, particularly equestrians to use the LAR have been investigated and in appropriate circumstances will be promoted by NYCC.
- 5.173 The “Public Rights of Way and Provision for Non-Motorised Users: Strategy” (forming the NMU Context Report) identified key principles regarding NMU provision for the scheme:
- Avoid, or where necessary minimise the closure of any existing public rights of way.
 - Where diversions are required, additional route lengths will be kept to a reasonable length and the locations chosen to avoid, or minimise disturbance to adjacent landowners and farm operations. Diversion lengths will be minimised in accordance with the Highways England guidelines (TD19).
 - The proposed local access road (LAR) will be designed to encourage use by NMU's as a link between the existing PROW and the local road networks.
 - Where side-road bridges cross the route, and are likely to be used by NMUs, appropriate design provision will be incorporated to ensure safe use. Similarly where accommodation bridges carry new or diverted rights of way, appropriate facilities will be incorporated.

- Where the LAR is planned to utilise the current local road network, consultation with the relevant highway authority will be undertaken to agree NMU provision on those lengths.
- Where future usage can be reasonably predicted, new links will be considered. The location and widths of which should be minimised to reduce land-take and disturbance to landowners and farming operations.
- It is not proposed to incorporate additional bridge crossings solely for improving PROW linkage, as the economic viability cannot be justified based on current usage. However diversions and new links via proposed sideroad bridges will be incorporated.
- NMU provision at the junctions along the A1 will be considered as part of the junction design.
- The landscape mitigation strategy will incorporate measures, where practicable and at reasonable cost, to reduce the adverse effects of the scheme on visual amenity for public rights of way users. This will however need to be balanced against the openness required to avoid potential personal security threats to footpath users, particularly in urban fringe areas.

NMU Response and Exception Report

5.174 Selected items addressed during the Completion of Construction Stage Audit are included in the paragraphs below. The items identify the issues raised and agreed actions to be taken.

Equestrian corrals

5.175 The report notes that there are various locations where corrals are positioned on a substantial embankment with little fencing to the rear resulting in an inadequate means of containment for horses waiting to cross the carriageway. There is a risk of horses backing out of the corrals and collapsing over the safety barrier and down the embankment. The response to this concern included the provision of fencing at the rear of two corrals has been reviewed.

Figure 5.34 – Example of corral / refuge crossing point between the A1(M) and LAR



NMU facilities north of the Leeming Bar Roundabout on the A6055

5.176 The tie-in to the A684 is unclear in terms of priority for pedestrians, cyclists and equestrians with inadequate holding fences on the carriageway side of corrals some of which have an exit gap of three metres which the BHS consider is too wide. The exit gaps have been re-measured and reduced to 2.5m as necessary. The report notes that the tie-in to the A684 is unclear in terms of priority for pedestrians, cyclists and equestrians. No guidance is given as to where or how each user continues their route upon reaching the A684. The tie-in from the NMU route between the A6055 and the A684 involves a junction of a multi-user route with a footway making the NMU route a “legal” cul de sac.

Figure 5.35 Looking towards the junction of the LAR (A6055) with the A684

NMU Facilities in the vicinity of Bedale Beck

- 5.177 The report noted that the route lies within the highway boundary of the A6055. It does not have a separate designation within the Scheme and Orders for the A1 Motorway Dishforth to Barton Improvement, and can only be considered as a footway within the A6055, a footway being a way comprised in a highway which also comprises a carriageway, being a way over which the public have a right of way on foot only, as defined in CI 329 of the Highways Act 1980. The route connects to the A684, on which the only designated NMU facility is a footway. NYCC as Highway Authority has no plans to make designated provision on the A684 for cyclists or equestrians. The route can therefore only be considered as a footway. The signs indicating its availability for cyclists and equestrians will be removed. The report identified that there was a lack of guidance for NMU's when emerging from Bedale Beck NMU route on to the A6055. Where the route emerges back onto the A6055 a road marking delineation should be implemented to guide users along the NMU route and also prevent tripping / trying to cross the carriageway using the full height kerb. The response confirmed that road marking delineation will be provided.
- 5.178 NYCC expressed concern at the style and operation of the steel access gate at the bottom of the ramp from the A6055 down to the NMU route under the motorway. They requested that Highways England review the type of access gate used on the Bedale Beck NMU route. The response included the replacement of the steel gate with one of wooden construction to BS 5709:2006.
- 5.179 The report note that otter fence to the bottom of the east side motorway embankment south of Bedale Beck is a cause of concern to the BHS in that horses and riders may be harmed if they come into contact with the part of the fence which is at a 45degree cantilever over the NMU route. The response stated that the otter fence includes a cantilevered overhang above the bridleway and as such forms a hazard to passing equestrians. Because of the width of the adjacent bridleway the hazard is only deemed significant at the end brackets of the cantilever. Tapered sections will be provided comprising plain fence wire between the ends of the cantilever and the next fence post to deflect any equestrian away from the end brackets. The detail of the otter fence has been reviewed. Tapered sections will be provided to deflect any equestrian away from the end brackets.

The report highlighted that the type of bridleway surface immediately north of the Old Bedale Beck Bridge, may cause problems for NMU's when traversing it. The response indicated that the surfacing north of the Old Bedale Beck bridge is a section of new bridleway created by the Scheme and Orders for the A1 Motorway Dishforth to Barton Improvement (New highway A in Schedule 12). It will be resurfaced in stone to a similar specification to that used on other sections of bridleway with unbound surfacing.

Figure 5.36 - Access track approaching Bedale Beck overbridge



- 5.180 The report notes that there are two potholes on the west side edge of the Old Bedale Beck Bridge which may present a hazard to NMU's. It is understood the bridge is privately owned. The response noted that the Public Right of Way crossing the Old Bedale Beck Bridge is part of Bridleway Aiskew 10.4/5 not affected by the Scheme, even though a new bridleway also crossing the Bridge was created by the Scheme (New Highway A in Schedule 12). Irrespective of ownership, North Yorkshire County Council (NYCC) as Local highway Authority is responsible for the wearing course of the bridleway, unless the owner is known to have damaged it. Highways England will remind NYCC of its responsibilities for maintenance.

Potential slip issue for horses on the A6055 west hardened verge between Londonderry and Green Gate Lane

- 5.181 The report notes that there is a slip potential for horses on surfacing material on the east side of the A6055 between Londonderry and Green Gate Lane. There is evidence of hoof marks on the hardened verge and of horses slipping on the metallised surface. The response states that the hardened verge will be treated with surface dressing to create a roughened surface to reduce the risk of horses slipping at this location.

Inappropriate use of tactile pavings

- 5.182 The tactile paving either side of the driveway to the private property, 'Peace Haven,' adjacent to the A684 junction is not considered appropriate for the existing non-signalised layout; and the tactile paving across Green Gate Lane adjacent to its junction with the A6055 encourages crossing at this location but does not lead to a continuing NMU route. The response noted that the provision of tactile paving across private driveways is not standard practice. The private drive at Peace Haven on the A684 is no longer in use and the tactile paving has been removed and there is no footway continuing from the tactile paving north from Green Gate Lane. The tactile paving on both sides of Green Gate Lane are therefore misleading and will be removed.
- 5.183 Inappropriate tactile paving has been identified at a third location. There is a cycle-turn "jug-handle" on the south-west quadrant of the Leeming Bar Services roundabout, unconnected to any footway, but provided with tactile paving. There is no pedestrian access; the 'jug-handle' has been provided only for cyclists to cross from the northbound carriageway of the LAR onto the multi-user path on the eastern verge of the LAR. The 'jug handle' gives cyclists a diversion away from the roundabout. However, the tactile paving presents a skid risk to cyclists and will be removed.

A61 Baldersby Junction

- 5.184 The visibility for both equestrians and motorists of the equestrian crossings at the A61 Baldersby Junction may be below standard, in particular from the A1(M) northbound off-slip to

the corral on the A61(W), and from the north corral on the A61(E). The response notes that the visibility of the equestrian crossings has been reviewed. The tree in the hedge on the north side of the A61 will be removed.

- 5.185 The report notes that the use of the A61 Baldersby Junction by equestrians is a matter of concern to the BHS in that the configuration of the junction and the sight lines to the equestrian facilities are poor. The response concluded that the desire lines and alternative routes for equestrians through the A61 Baldersby Junction are being reviewed with NYCC and appropriate alternative routes will be created. Additional direction signs for equestrians will be erected at the junction of Silicar Lane with the A6055.

Illegal erection of gates across NMU routes

- 5.186 The report notes that gates had been erected across NMU routes which was noted by the NYCC as being illegal under the Highways Act unless specific written permission is granted by the highway authority (in this case the NYCC). As a result of this, six of the seven gates have been removed as they were not necessary for stock control purposes, with one remaining as it is on a highway of higher status (HA) than a Public Bridleway, therefore the legislation does not apply.

Figure 5.37 – Access gate for horse riders in the foreground, bridleway in the background running adjacent to the A1(M)



- 5.187 The report notes that on Back Lane at its junction with the A6055 to the south of Leases Junction Roundabout removal of the Bridleway gate would leave the bridleway open to unrestricted access onto the A6055. As the gate is included in the issue above, the gate is to be removed and replaced with staggered fences with reflective markers to restrict the movement of NMUs from Back Lane onto the A6055. The response further notes that Back Lane is stopped up short of the A6055 under the scheme. No new highway was created between the new PMA to the Leeming Junction Balancing Pond and the A6055 even though on the ground the old road remains and is used as an NMU route.

Access to bottom of embankments by equestrians

- 5.188 The report noted that poor access for equestrians to the bottom of embankments is reported by the BHS. The response notes that the provision of access to the bottom of embankments by equestrians has been reviewed. No further action will be taken.

Figure 5.38 – Bedale Beck with multiuse access



Figure 5.39 – Access south of Bedale Beck Overbridge



5.189 Based on the site visit review of the EMP drawings for PROW accommodation as a part of the scheme and the ‘Response and Exclusion’ report showing additional changes as a result of the NMU Audit, it is concluded that the scheme has had a **‘neutral’** impact overall on Physical Fitness, as expected. The final version of the ‘Response and Exclusion’ report should be assessed at FYA.

Table 5.13 Summary of Physical Fitness evaluation

Origin of Assessment	Summary of Predicted Effects	Assessment
AST	Increases in journey length will result in 25 pedestrian journeys per day being greater than 30 minutes. The inclusion of new links to connect up the existing PROW network would also allow people to extend their circular leisure journeys.	+ 25 pedestrian journeys greater than 30 minutes
EST	Based on the site visit and review of the EMP drawings for PROW accommodation as a part of the scheme, it is concluded that the scheme impact overall on Physical Fitness is as expected. The NMU Audit report and its accompanying ‘Responses and Exceptions’ report has been reviewed and actions noted in the evaluation section.	As expected

Journey Ambience

- 5.190 The journey ambience sub-objective considers traveller care (facilities and information), traveller views and traveller stress (frustration, fear of potential accidents and route uncertainty).
- 5.191 **Traveller care** is concerned with the quality of the journey as affected by the provision of facilities and information along the route. This includes the number and type of facilities and en-route information, together with their spacing and quality.
- 5.192 **Traveller views** are defined as the extent to which travellers, including drivers, are exposed to different types of scenery, which the route passes through. The assessment considers landscape character and potential views, good or bad, along the route.
- 5.193 **Driver stress** is defined in DMRB as “the adverse mental and physiological effects experienced by drivers traversing a road network”. Driver stress is affected by a number of

factors including; road layout and geometry, surface riding characteristics, junction frequency, traffic speed and flow per lane characteristics. Collectively these factors can induce feelings of discomfort, annoyance, frustration and fear in drivers resulting in physical and emotional tension, which detracts from the value and safety of the journey. The extent of stress induced in individual drivers differs greatly due to their level of skill, experience, temperament, knowledge of the route and state of health. Driver stress has the following components:

- Frustration;
- Fear of potential accidents; and
- Route uncertainty.

Forecast

AST

- 5.194 The 2006 AST stated that on balance, the overall assessment for vehicle travellers was considered to be better as, with the exception of traveller facilities, the road would either enhance vehicle travellers' journeys or at least not make them worse. The impact overall was assessed as **Large Beneficial**.

Environmental Statement

Traveller Care – Assessment of Effects

- 5.195 The ES noted that the proposed A1 three-lane motorway would not provide for any lay-bys, however where the existing A1 was to be utilised as a local access road the existing lay-bys would be retained.
- 5.196 Facilities such as lay-bys, toilets, petrol filling stations, restaurants and cafes, lodgings and shops would not be provided for on the A1 Motorway. The widening of the route corridor would require the demolition of a number of properties, originally providing services and facilities along the route, Therefore the situation for travellers as far as facilities would be concerned would be worse. Long distance travellers would continue to access the existing facilities in the towns and villages and to existing facilities adjacent to the route via junctions and the LAR. Local traffic would continue to access the existing facilities (including some lay-by provision) via the local access road, where access would be much improved due to reduced congestion along those routes. On balance therefore the effect of the scheme on traveller care facilities has been assessed as slightly worse.
- 5.197 Information – The new motorway design proposed motorway signals (MS3), lane signals, message signs and direction signs. The proposed signalling scheme incorporated tactical and strategic signs. The ES assumed that the proposed communications structures would be cantilever mounted MS3's with lane signals and tactical message signs mounted on these portal gantries.

Traveller Views – Assessment of Effects

- 5.198 Dishforth Interchange to Baldersby Junction – It was considered in the ES that there would be little or no change to the views from the road in either direction along this stretch of road, views would remain open.
- 5.199 Baldersby Junction to Sinderby Underbridge – The views between Baldersby Junction and Sinderby Underbridge would remain predominantly open to the east across agricultural land and towards the North Yorkshire Moors, with only occasional new planting. To the west the views would be restricted by the local access road would run on the existing line of the A1. This would be a change to the previously intermittent views from the road.
- 5.200 Sinderby Underbridge to Gatenby Overbridge – The views between Sinderby Underbridge and Pickhill would remain open in an easterly direction, across agricultural land and towards the North Yorkshire Moors. New earth mounding and vegetation between the mainline and local access road would restrict views in a westerly direction. Between Pickhill and Gatenby

Overbridge, views would remain intermittent to the east due to both vegetation and topography screening views, but new earth mounding and vegetation between the mainline and local access road would restrict views in a westerly direction.

- 5.201 Gatenby Overbridge to Leeming Overbridge – Between Gatenby Overbridge and Leeming Overbridge, views in an easterly direction would remain restricted, with only occasional narrow views across the urban area of Leeming and on towards the North Yorkshire Moors. There would only be views in a westerly direction of the local access road, which would be on embankment and would screen views from the mainline to the wider landscape in that direction.

Driver Stress – Assessment of Effects

- 5.202 The speed limits on the original road network would remain and the proposed LAR speeds would be subject to discussions with North Yorkshire County Council (NYCC). The volume of traffic predicted to use the local road network and LAR with the improvements to the A1 in place would reduce when compared with the predicted traffic volume without the improvements.
- 5.203 Frustration – The A1 improvement proposals would result in the removal of all non-motorway and the majority of local traffic off the new A1 onto the local road network and LAR, reducing congestion and queuing for local traffic. Therefore the upgrading of the A1 would reduce frustration for local and non-motorway traffic. Through traffic would continue to use the upgraded A1 Motorway, and experience reduced congestion and higher, more consistent travelling speeds. The proposals included for the removal of all at-grade junctions, providing the separation of through traffic from slower moving local and non-motorway traffic. The former direct access arrangements on to the A1 from minor roads and residential and commercial properties would be removed, providing separation from through traffic with the provision of an extensive network of local access roads (LAR) and private means of access (PMA). Overall both local and through travellers would be able to drive at a speed more consistent with the standard of the road, and therefore traveller frustration can be considered to be better following implementation of the scheme.
- 5.204 Fear of Accidents – The removal of non-motorway and local traffic off the proposed motorway and onto a dedicated local access road network, where the levels of traffic and the percentage of HGV's would be far lower than on the main line would, would result in a reduction of the fear of accidents. Fear of accidents would also be reduced for through traffic, which continued to use the mainline and be separated not only from local and non-motorway traffic but also from pedestrians, equestrians and cyclists. Improvements to the geometry of the new motorway would also assist in reducing the fear of accidents with sight lines improving road uncertainty.
- 5.205 Route Uncertainty – The signage along the old A1 was considered to be up to the current standard for an all-purpose trunk road. However the poor geometry of the road had resulted in some route uncertainty. The signage on the proposed local access road would be discussed with NYCC, and would be up to the current local authority standard. On balance, route uncertainty for local and non-motorway traffic using the local road network was expected to remain unchanged. For the A1(M), a coordinated system of route signage, overhead gantries and variable message signs (MS3) would be designed to current standards for the whole of the route and provide greater route certainty.

Table 5.14 Summary of Forecast Vehicle Travellers

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Information	✓		
	Facilities			✓
Travellers' Views	Views from the Road		✓	
Traveller Stress	Frustration	✓		
	Fear of accidents	✓		
	Route uncertainty	✓		
	DMRB assessment		✓	
Overall Score		✓		

Consultation

5.206 No response to consultation has been received.

Evaluation

- 5.207 Traffic congestion has significantly reduced on the A1(M), journey times have improved by 17-22% and there have been fewer collisions as detailed in the traffic and safety chapters of this study, all of which will have reduced driver stress.
- 5.208 The results in the traffic chapter show that in both directions, prior to scheme opening, journey time reliability was poor. However, following scheme opening, the range of journey times has reduced significantly across all periods. This shows that journey time reliability has improved following scheme opening, with congestion and other delays not causing as significant journey time impacts as has been the case prior to scheme opening
- 5.209 The clear signage and fewer junctions will mean there is less route uncertainty.
- 5.210 No laybys have been provided as expected along the A1(M) with the existing facilities now along the LAR remaining accessible although ease of access is reduced as expected.
- 5.211 Table 5.15 summarises the evaluation of the various elements of journey ambience and the scheme's impact on this sub-objective. Overall the scheme impact is **large beneficial** as expected.

Table 5.15 Summary of Journey Ambience Evaluation

Traveller Factor		Score	OYA evaluation
Views		Neutral As expected	<p>The proposed road is predominantly located within a flat rural landscape with open views across the wide vale to the East and West. Generally, travellers on the road experience open or intermittent views across the landscape. However with the introduction of the motorway there are some exceptions, namely between Baldersby junction and Sinderby underbridge where existing open views have been reduced and are now intermittent, and between Gatenby overbridge and Low Street where intermittent views are now restricted. Although additional earth mounding has been introduced into the scheme, views are not significantly affected as height compensation through the replacement of anti-glare screens with the additional mounding has offset this potential loss.</p> <p>On balance the overall effect on traveller views is neutral.</p>
Driver Stress	Frustration	Large Beneficial As expected	<p>With the introduction of a LAR facilitating the removal of non-motorway and local traffic off the main-line, journey time along the A1(M) has improved, therefore traveller frustration can be considered to be better following implementation of the scheme. This is confirmed in the traffic chapter of this report,</p>
	Fear of Accidents		<p>The fear of accidents for both local and through traffic has reduced as evidenced in the safety chapter with a reduction in collisions of 64% and a 74% reduction in serious collisions.</p> <p>The removal of non-motorway and slow moving local traffic and the segregation of NMU's from the main line has reduced the fear of accidents for motorway users.</p> <p>Local traffic utilising the LAR experience a reduction in the fear of accidents due to much reduced traffic levels and percentages of HGV's.</p>
	Route Uncertainty		<p>Route uncertainty for local traffic using the LAR is considered to be <i>neutral</i>, as current design standards have been maintained. However through traffic benefits from an increase in the provision of signage and improvements to route alignment, which is considered to be an improvement. On balance improved route uncertainty on the main line and no change for local traffic results in an overall <i>better</i> effect on traveller's route uncertainty.</p>
Care		Slight Beneficial As expected	<p>By upgrading of the route to motorway standard, the level of information provided is considered to be a slight improvement on the existing situation, with the introduction of variable message boards. The effects of the proposals on information provided for travellers are therefore considered to be <i>better</i>.</p> <p>With regard to traveller facilities the introduction of the Scheme has resulted in a <i>worsening</i> of the provision of facilities on the motorway, as a result of the demolition of a number of facilities, the removal of lay-bys and the removal of direct access to these facilities from the proposed motorway. However many of the retained facilities can still be accessed from the LAR, allowing local traffic continued access and through traffic access by way of small detours from the motorway junctions.</p> <p>The overall effect on traveller care is considered to be <i>worse</i>.</p>
Summary Score		Slight Beneficial As expected	<p>Along the proposed main line motorway driver stress levels would remain similar with or without the scheme, having been assessed as high for both scenarios in 2025. However non-motorway and local traffic utilising the new local access road experience a reduction in stress levels, due to reduced traffic levels and the percentage of HGV's. On balance the overall effect on driver stress is <i>neutral</i>. On balance the overall assessment for vehicle travellers is considered to be <i>better</i>, as, with the exception of traveller facilities the road will either enhance vehicle travellers' journeys or at least not make them worse.</p>

Key Points

Noise

- The overall increased improvement in noise levels above those predicted in the AST report is due to lower than expected traffic flows. However, these figures cannot be accurately used due to original predictions being based on the A1 Dishforth to Barton scheme which would have encouraged higher use through increased motorway use for longer journeys. Environmental barriers have been installed as expected at three locations on the southbound A1(M).

Local Air Quality

- As for noise and vibration above, the air quality predictions based on the ES vs. Observed figures is better than expected, but can only be accurately compared at FYA when the original scheme including Leeming to Barton has been completed to obtain an accurate forecast vs observed comparison.

Greenhouse Gases

- Carbon emissions are higher due to increased speeds. However, the impact is lower than expected because traffic flows are lower than forecast.

Landscape and Townscape

- Through the introduction of increased height earth mounds into the landscape there is a negative impact on landscape character making some sections of the scheme are more visible than intended in the ES. Introduced lighting in a predominantly rural location has both day and night impacts. Overall, however, the successful establishment of most areas of planting at OYA contribute greatly towards the integration of the scheme into the wider landscape. The ES noted that the scheme would have a negative impact on landscape character which is noted at OYA.
- Increased lighting has a visual impact on the limited townscape elements within the scheme. It is not considered that that the overall effect on townscape differs to what is predicted in the ES.

Biodiversity

- Without the monitoring reports which would include confirmation of installation of mitigation required, it is not possible to provide an assessment of the effects of the scheme on biodiversity as detailed in the ES.

Cultural Heritage

- As noted in the AST and confirmed through the archaeology summary, the impact on the Healam SAM site is as expected. The effects on Grade II listed buildings is as expected. Retention of vegetation at the Healam Bridge is as required, although the presence of brambles on the structure is a cause for concern. The academic report was not made available to POPE and confirmation of the deposition of the finds was not received.

Water

- Beneficial impacts to water quality due to introduction of positive drainage features and treatment of discharge.

Physical Fitness

- Based on the site visit and review of the EMP drawings for PROW accommodation as a part of the scheme, it is concluded that the scheme has had a 'neutral' impact overall on Physical Fitness, as expected. The NMU Audit report and its accompanying 'Responses and Exceptions' report should be reviewed at FYA to ensure the requirements of the ES are met.

Journey Ambience

- Along the proposed main line motorway driver stress levels would remain similar with or without the scheme, having been assessed as high for both scenarios in 2025. However non-motorway and local traffic utilising the new local access road experience a reduction in stress levels, due to reduced traffic levels and the percentage of HGV's. On balance the overall effect on driver stress is neutral. The overall assessment for vehicle travellers is considered to be better, as, the with the exception of traveller facilities the road will either enhance vehicle travellers' journeys or at least not make them worse.

6. Accessibility and Integration Evaluation

- 6.1 This chapter evaluates the impact of the scheme in terms of the accessibility and integration objectives; comparing qualitative forecast assessments from the scheme AST with post-opening findings and analysis of policy objectives.

Accessibility

- 6.2 The accessibility objective is concerned with how the scheme has affected the ability of people in different locations to reach different types of facility, using any mode of transport. The accessibility objective consists of three sub-objectives. These are:

- Option values;
- Access to the transport system; and
- Severance.

Option Values

- 6.3 Option values, as defined in WebTAG, relate to the availability of different transport modes within the study area, regardless of usage. For example, a car user may value the availability of a bus service along the route even if they haven't used it, as it offers an alternative mode should their car become unavailable.

Forecast

- 6.4 Option values were not considered as part of the scheme appraisal.

Evaluation

- 6.5 The scheme has no impact on option values.

Access to the Transport System

Forecast

- 6.6 The AST stated:

'There will be no new access to rail or better bus services' Score: Neutral.

Evaluation

- 6.7 The scheme has not improved accessibility to new bus or rail services so the impact is 'neutral' as expected.

Severance

Forecast

- 6.8 For the severance objective, the AST stated:

'Majority of journeys experience no change, although overall there is a slight increase as more journeys experience severance than severance relief.' Score: Slight Adverse.

Evaluation

- 6.9 Before the scheme was implemented, there were a number of at-grade crossings on the A1 where gaps in the central reserve allowed users to cross between minor roads or public rights of way. There were also a number of grade separated crossings which allowed NMU's to cross the A1 without being exposed to the same levels of traffic.

- 6.10 The implementation of the scheme has resulted in the following:

- The improvement has an impact on the majority of public rights of way (PROW) in the vicinity of the scheme. However, no routes have been closed.
- Instead the routes have been maintained using diversions to the grade separated crossing provision.
- This has removed the possibility for crossing the A1(M) at-grade, thereby significantly improving severance (and safety). Although, this has resulted in longer journeys for some users.
- Provision has been included on the Local Access Road (LAR) to ensure that the route would be open to NMU's and to facilitate NMU's wishing to cross the LAR.
- At crossing points on the LAR, horse corals have been provided.

The scheme has been implemented in line with the proposals. However, the mitigation measures listed above have helped to remove the severance issues in the area. The impact is therefore beneficial (better than expected).

Integration

- 6.11 The integration objective consists of two main elements:
- Interchange with other transport modes: how the scheme assists different modes of transport in working together and the ease of people moving between them to choose sustainable transport choices; and
 - Land Use Policy and Other Government Policies: how the scheme integrates with local land use and wider government objectives.

Transport Interchange

Forecast

- 6.12 The AST stated that there would be a neutral impact because there are *'no interchanges'*.

Evaluation

- 6.13 The scheme has had no impact on transport interchanges so the impact is neutral as expected.

Land Use Policy and Other Government Policies

- 6.14 This section looks at the scheme in relation to national, regional and local level land use and development policies.

Forecast

- 6.15 The AST forecast the following for Land Use Policy:
'Overall, proposals accord with national, regional, and local planning policy framework, with significant weight attached to policies promoting scheme.'

- 6.16 The AST forecast the following for Other Government Policies:
'The proposed scheme generally integrates well with relevant other Government policy documents. In particular, this key north-south link improvement scheme will benefit policies in relation to sustainability, biodiversity, accessibility, water quality and groundwater protection and cycling.'

- 6.17 The appraisal score for both of these sub objectives was **'beneficial'**.

Evaluation

- 6.18 An evaluation of the scheme in relation to policy has been undertaken and summarised in **Table 6.1** on the following page. Given the findings presented, it is considered that the overall impact of the scheme on land use policy and other government policies is **beneficial as expected**.

Key Points

Accessibility

- The scheme has improved provision to cross the A1. However, some non motorised users have to travel further to cross the road. The impact is beneficial (better than expected).
- The scheme has had no discernible impact on option values or access to the transport system as expected.

Integration

- The scheme has had no impact on the on public transport interchanges as expected.
- The scheme is aligned with local, regional and national policies related to land use and development plans.

Table 6.1 – Scheme Alignment with National Regional and Local Policy

	Policy/Document	Relevant Policy Objective/Reference	Relevant Scheme Impacts	Alignment
Local Policies	North Yorkshire Local Transport Plan 2 (2006-2011)	<p>The Local Transport Plan 2 stated that: <i>The County Council supports, in principle, the upgrading of the whole of the A1 through North Yorkshire to three lane motorway standard. The A1 (and M1 south of Leeds) forms the main north/south communications route east of the Pennines. It provides vital links between North Yorkshire and the South of England and onwards into Europe. It also provides the main route to the north east of England and Scotland. The A1 is therefore vital to the economic vitality of North Yorkshire and the wider economies of the northern regions of England and Scotland. Upgrading of the A1 through North Yorkshire will remove a number of bottlenecks improving safety journey time reliability and providing some extra capacity.</i></p> <p>The following transport objectives are set out in LTP2:</p> <ul style="list-style-type: none"> • Objective 2 (Safety) – To improve safety for all highway users; • Objective 3 (Environment) – To enhance the natural and built environment through the appropriate provision of services and transport; • Objective 4 (Congestion) – To ensure that traffic congestion, and its adverse environmental and social effects, is minimised; and • Objective 6 (Economy) – To provide and maintain an efficient transport network contributing towards increased economic prosperity for everyone. 	<ul style="list-style-type: none"> • The scheme has contributed to a reduction in collisions on the A1. • The increased capacity provided by scheme has resulted in decreased congestion demonstrated through improved journey times. • Journey time reliability has improved since the scheme opened. 	✓
	North Yorkshire Local Transport Plan (2011-16)	<p>The Local Transport Plan 3 stated that: <i>The County Council will support in principle any major new transport schemes outside of the direct control of the County Council that help to improve connectivity. This includes any improvements implemented on the strategic road network by the Highways Agency to the routes such as the A64 and A1.</i></p> <p>The following objectives are set out in the LTP 3:</p> <ul style="list-style-type: none"> • Supporting flourishing local economies by delivering reliable and efficient transport networks and services (local economies); • Reducing the impact of transport on the natural and built environment and tackling climate change (environment and climate change); • Improving transport safety and security and promoting healthier travel (safety and healthier travel); • Promoting greater equality of opportunity for all by improving people’s access to all necessary services (access to services); and • Ensuring transport helps improve quality of life for all (quality of life). 		✓
Regional Policies	The Yorkshire and Humber Plan Regional Spatial Strategy to 2026	<p>The Regional Spatial Strategy identifies the following transport investment and management priorities:</p> <p>Policy A6 – Improvement to the management and capacity of strategic north-south road links to address congestion and protect their strategic role.</p>	<ul style="list-style-type: none"> • The scheme has increased the capacity of the A1 in North Yorkshire. • Congestion has reduced on this section of the A1 has reduced. 	✓
National Policies	The Future of Transport: a Network for 2030	<p>The strategy builds on the progress that had already been made since the implementation of the 10 year plan for transport. This plan extended out to 2014-2015 but the strategy also looks even further ahead, at the challenges we face over next 20-30 years.</p> <p>The Strategy is built around three themes:</p> <ul style="list-style-type: none"> • Sustained investment; • Improvements in transport management; and • Planning ahead. <p>The main goal is to provide a road network that provides a more reliable and free-flowing system for motorists, other road users and businesses, where travellers can make informed choices about how and when they travel, and so minimise the adverse impact of road traffic on the environment and other people.</p>	<ul style="list-style-type: none"> • Journey time reliability has improved on this section of the A1 since the scheme opened. • The scheme has increased the capacity of the A1 in North Yorkshire. 	✓
	Action for Roads - A network for the 21st century (July 2013)	<ul style="list-style-type: none"> • Support the UK economy and drive growth into the future through provision of a well-connected road infrastructure with sufficient capacity; • Push for greater safety, and avoid letting the improvements of recent years breed complacency; and • Ensure transport plays its part in meeting carbon budgets and other environmental targets. 	<ul style="list-style-type: none"> • The capacity of the A1 has been increased. • The scheme has contributed to a reduction in collisions on the A1. 	✓

7. Appraisal Summary Table (AST) & Evaluation Summary Table (EST)

Appraisal Summary Table (AST)

- 7.1 The Appraisal Summary Table (AST) is a brief summary of the main economic, safety, environmental and social impacts of a highway scheme. Table 7.1 presents the AST for the A1 Dishforth to Leeming Improvement scheme.
- 7.2 The AST presents a brief description of the scheme, a statement detailing the problems that the scheme planned to address, and makes an assessment of the schemes predicted qualitative and quantitative impacts against the following core DfT objectives for transport.
- **Environment** – an estimate of the impact of the scheme on factors such as noise, local air quality, landscape, biodiversity, and water.
 - **Safety** – measured reduction in the number and severity of accidents and qualitative assessment of impacts on security.
 - **Economy** – Estimated impact of the scheme upon journey times, vehicle operating costs, scheme costs, journey time reliability and wider economic impact.
 - **Accessibility** – A review of scheme impact upon access to the public transport network, community severance, and non-motorised user impact.
 - **Integration** – A description of how a scheme is integrated with wider local planning, regional and national policy objectives.

Evaluation Summary Table (EST)

- 7.3 The Evaluation Summary Table (EST) was devised for the POPE process to record a summary of the outturn impacts against the DfT objectives, compared to the predictions in the AST.
- 7.4 Drawing on the results presented in this report, **Table 7.2** presents the EST for the A1 Dishforth to Leeming Improvement. An assessment of each of the objectives at the opening year stage is given. Where possible, the format of the EST mirrors the appearance and process of the AST to enable direct comparison between the two.

Table 7.1 – Appraisal Summary Table

AST		A1 Dishforth to Leeming Improvement		
Option		Description A1 upgrade of D2 all purpose to D3 Motorway with provision of All Purpose Road (LAR) for non-motorway traffic.	Problems: Congestion, delays and poor accident record	
Present Value of Costs (PVC) £110.023 million				
OBJ	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE IMPACT	ASSESSMENT
Environment	Noise	Overall improvement in traffic noise levels assuming the scheme will include low noise surfacing throughout. Based upon the output of the model, 1 location is exposed to a substantial increase in noise levels.	N/A	N/A
	Local Air Quality	14 properties are expected to be demolished. The scheme does not create or remove exceedences of the AQS objective. The scheme does not affect air quality within an AQMA or increase annual mean PM ₁₀ and NO ₂ levels at 20m from the road centre by more than 1µg m ³ or 2µg m ³ respectively. All predicted concentrations for PM ₁₀ and NO ₂ are below 40 µg m ³ .	N/A	N/A
	Greenhouse Gases	The change in emissions is primarily as a result of the predicted increase in average vehicle speed due to the road improvements.	N/A	N/A
	Landscape	The widened road corridor and introduction of vertical elements in to the landscape will alter the locally valued landscape character, having a negative impact. There will be an overall beneficial effect on visual amenity due to a net increase in vegetation cover.	N/A	Slight Adverse
	Townscape	Scattered rural villages set-back from A1 & towns close to A1 typical of the area. New junctions & loss of mature trees will redefine limits of towns & sense of scale & will have an adverse impact upon views. Rural villages are not affected.	N/A	Slight Adverse
	Heritage of Historic Resources	Proposals damaging to 6 nationally significant heritage assets, 3 SAMs & 3 Listed Buildings. Positive effects on 3 national assets (all Listed Buildings), with adverse effects on 108 assets of mostly local importance.	N/A	Moderate Adverse
	Biodiversity	Adverse impacts on a SINC (county important site), locally important habitats and protected faunal species including badger, otter and great crested newt.	N/A	Slight Adverse
	Water Environment	Beneficial impacts to water quality due to introduction of positive drainage features and treatment of discharge.	N/A	Neutral
	Physical Fitness	Inclusion of new links to connect the existing PRoW network allows circular leisure journeys to be extended.	Increase of 25 pedestrian journeys greater than 30 minutes	Total number of people cycling or walking for more than 30 minutes is 25.
	Journey Ambience	Overall assessment for vehicle travellers considered to be better as the road will enhance vehicle traveller's journeys, with the exception of travellers' facilities.	N/A	Large Beneficial
Safety	Accidents	COBA and QUADRO results including 3.5% discount rate. All costs are 2002 prices discounted to 2002.	N/A	PVB=£12.844 million. Realistic £million's in 2002 prices discounted to 2002
	Security	No Impact	N/A	N/A
Economy	Public Accounts	TUBA, COBA and QUADRO results including 3.5% discount rate. All costs are 2002 prices discounted to 2002.	Central Government PVC, Investments and Operating Costs =£162.544; Indirect tax revenues = -£52.521. All £millions in 2002 prices discounted to 2002	PVC=£110.023 million; Costs are £million's in 2002 prices discounted to 2002
	TEE: Business Users and Transport Providers	TUBA, COBA and QUADRO results including 3.5% discount rate. All costs are 2002 prices discounted to 2002.	Business User PVB = £159.363, Private Sector Provider PVB = £0.854, Other PVB = £0 All £millions in 2002 prices discounted to 2002	Business Users and Providers PVB = £160.217 All £millions in 2002 prices discounted to 2002
	TEE: Consumers	TUBA, COBA and QUADRO results including 3.5% discount rate. All costs are 2002 prices discounted to 2002.	N/A	Consumer User PVB = £56.129 All £millions in 2002 prices discounted to 2002
	Reliability	Reduced congestion as a result of improvement.	Reduced journey times through the network.	Average time saving of 3 min on the A1 for the Peak hours of the Design Year.
	WEI	No Impact.	N/A	N/A
Accessibility	Option Values	-	-	-
	Severance	Majority of journeys experience no change, although overall there is slight increase as more journeys experience severance than severance relief.	Neutral – 292. Negative change in severance – 99 Positive change in severance - 36	Slight Adverse
	Access to the Transport System	There will be no new access to rail or better bus services as a result of the proposals. Access to public transport is not affected.	-1% to +1%	Neutral
Integration	Transport Interchange	No interchanges.	N/A	Neutral
	Land Use Policy	Overall, proposals accord national, regional and local planning policy framework, with significant weight attached to policies promoting scheme.	N/A	Beneficial
	Other Gov't Policies	The proposed scheme generally integrates well with relevant other Government policy documents. In particular, this key north-south link improvement scheme will benefit policies in relation to sustainability, biodiversity, accessibility, water quality and ground water protection and cycling.	N/A	Beneficial

Table 7.2 – Evaluation Summary Table

OBJ	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE IMPACT	ASSESSMENT
Environment	Noise	The overall increased improvement in noise levels above those predicted in the AST report due to lower than expected traffic flows	-	Better than expected
	Local Air Quality	The air quality predictions based on the ES vs. Observed traffic figures is better than expected, but can only be accurately compared at FYA when the original scheme including Leeming to Barton has been completed to obtain an accurate forecast vs. observed comparison.	-	Better than expected
	Greenhouse Gases	Carbon emissions have increased due to increased speeds.	+1,011 tonnes of carbon per year.	Slight Adverse (As expected)
	Landscape	Through the introduction of increased height earth mounds into the identified negative impact on landscape character, some sections of the scheme are more visible than intended in the ES. Introduced lighting in a predominantly rural location has both day and night impacts. Overall, however, the successful establishment of most areas of planting at OYA contribute greatly towards the integration of the scheme into the wider landscape. The ES noted that the scheme would have a negative impact on landscape character which is noted at OYA.	-	Slight Adverse (As expected)
	Townscape	Increased lighting has a visual impact on the limited townscape elements within the scheme. It is not considered that that the overall effect on townscape differs to what is predicted in the ES	-	Slight Adverse (As expected)
	Heritage of Historic Resources	As noted in the AST and confirmed through the archaeology summary, the impact on the Healam SAM site is as expected. The effects on Grade II listed buildings is as expected. Retention of vegetation at the Healam Bridge is as required, although the presence of brambles on the structure is a cause for concern. The academic report was not made available to POPE and confirmation of the deposition of the finds was not received.	-	Moderate adverse (As expected)
	Biodiversity	Without the monitoring reports which would include confirmation of installation of mitigation required, it is not possible to provide an assessment of the effects of the scheme on biodiversity as detailed in the ES.	-	Slight Adverse (No evaluation possible at OYA)
	Water Environment	Mitigation installed as a part of the scheme was confirmed during the site visit and through drainage plans provided. It is noted that drainage features appear to be operating as expected.	-	Neutral (As expected)
	Physical Fitness	Based on the site visit and review of the EMP drawings for PROW accommodation as a part of the scheme, it is concluded that the scheme impact overall on Physical Fitness is as expected. The NMU Audit report and its accompanying 'Responses and Exceptions' report should be reviewed at FYA to ensure the requirements of the ES are met.	-	As expected
	Journey Ambience	Along the proposed main line motorway driver stress levels would remain similar with or without the scheme, having been assessed as high for both scenarios in 2025. However non-motorway and local traffic utilising the new local access road experience a reduction in stress levels, due to reduced traffic levels and the percentage of HGV's. On balance the overall effect on driver stress is <i>neutral</i> . On balance the overall assessment for vehicle travellers is considered to be <i>better</i> , as, with the exception of traveller facilities the road will either enhance vehicle travellers' journeys or at least not make them worse.	-	Large Beneficial (As expected)
Safety	Accidents	There has been a 72% reduction in the number of collisions since the scheme opened.	-	Beneficial (Better than expected)
	Security	This section of the A1 now includes emergency telephones situated at various points on both sides of the carriageway. The impact on personal security is therefore better than expected.	-	Beneficial (Better than expected)
Economy	Public Accounts	The outturn scheme cost is lower than forecast.	Forecast Cost: £286.1m Outturn Cost: £251.7m	Better than expected.
	Transport Economic Efficiency	Journey time benefits are lower than expected due to lower than forecast traffic flows.	Outturn journey time benefit: £221.5m	Worse than expected
	Reliability	Journey time reliability has improved as a result of the scheme.	-	Beneficial
	Wider Economic Impacts	Due to the inherent difficulty in isolating the wider economic impacts of the scheme, it has not been possible to conclude whether the scheme has had a direct impact on stimulating economic activity.	-	Neutral
Accessibility	Option Values	The scheme has had no impact on option values.	-	Neutral
	Severance	The scheme has improved provision to cross the A1. However, some non motorised users have to travel further to cross the road.	-	Beneficial (Better than expected)
	Access to the Transport System	The scheme has not improved accessibility to new bus or rail services.	-	Neutral (As expected)
Integration	Transport Interchange	The scheme has had no impact on transport interchanges.	-	Neutral (As expected)
	Land Use Policy	The scheme is aligned with local, regional and national policies related to land use and development plans.	-	Beneficial (As expected)
	Other Gov't Policy			

8. Conclusions

8.1 To conclude this report this section summarises how the scheme is meeting its objectives.

Success against Objectives

8.2 The objectives can be categorised as follows:

- DfT's objectives: Impacts are assessed against the Government's objectives for transport at the time of the appraisal. Namely: Environment, safety, economy, accessibility and integration; and
- Scheme specific objectives.

DfT objectives

8.3 The scheme's successes against the standard five objectives and sub-objectives are presented in full in the form of the Evaluation Summary Table presented earlier in Table 7.2.

Scheme specific objectives

Drawing upon information presented in this report, a summary of the scheme's successes against the scheme specific objectives for each phase, as listed previously in Section 1 of this report is provided in **Table 8.1**.

Table 8.1 – Summary of success against scheme objectives

Objective (Scheme Statement of Case)	Has the scheme objective been achieved?
Reduce high levels of accidents.	Collisions have reduced on the A1(M) since the scheme opened. ✓
Reduce congestion	The capacity of the route has been increased journey times are now shorter which shows that congestion has reduced. ✓
Enhance journey time reliability	Journey time reliability has improved since the scheme opened. ✓

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Appendix B – Environment Information Requested

Requested Information	Response
Environmental Statement.	Received ES, figures and technical reports.
AST.	Received.
Any amendments/updates/addendums etc to the ES or any further studies or reports relevant to environmental issues.	Amendments to various documents received.
'As Built' drawings for landscape, ecological mitigation measures, drainage, fencing, earthworks etc. Preferably electronically or on CD.	Received ecology, landscape, drainage and earthworks as built.
Copies of the Landscape/Ecology Management Plan or Handover Environmental Management Plans.	Received.
Contact names for consultation.	Received from the pre-scheme assessment.
Archaeology - were there any finds etc. Have any Archaeological reports been written either popular or academic and if so are these available?	Received draft report and confirmation of intention to lodge finds.
Have any properties been eligible for noise insulation?	No final information indicating installed insulation received, only proposed assessments without conclusions.
Have there been any Part 1 Claims regarding noise, air quality or lighting? Have any post opening surveys been undertaken?	Information received.
Has any post opening survey or monitoring been carried out e.g. for ecology/biodiversity or water quality and if so would copies of the reports be available?	Landscape and ecology monitoring undertaken.
Animal Mortality Data.	Post opening data received from MAC.
Any publicity material.	Material obtained from website.
Pre scheme Non Motorised User (NMU) Audit or Vulnerable User Survey.	None received.
NMU post opening survey.	NMU Post Construction Audit received. RSA4a received.
Employers Requirements Works Information - Environment sections.	Received.
Health and Safety File – Environment sections.	Received.
Construction Environment Management Plan (CEMP).	Not received.
Landscape and Ecology Aftercare Plan (LEAP) and / or Landscape Management Plan (LMP).	Received.
Handover Environmental Management Plan (HEMP).	None received.
The Road Surface Influence (RSI) value of any low noise surface installed.	Received.
Details of environmental awards.	Received.

Appendix C – ES Landscape Assessment Summary

- C1 The proposed A1D2B scheme passes through a predominantly rural, agricultural landscape in North Yorkshire in which the existing A1 is already a key characteristic of the baseline landscape.
- C2 The landscape and visual impact assessment (LVIA) has demonstrated that there would be effects on the landscape character of the study area and views of it ranging from slight to substantial/moderate in terms of significance. Some of the effects would be adverse and some would be beneficial.
- C3 An iterative design process was adopted to minimise adverse landscape and visual effects and to optimise potential benefits of the scheme. The result is an environmental master plan (EMP) that incorporates proposals for the landscaping of the road corridor. In some areas planting of trees, shrubs and hedges will be undertaken to integrate the scheme into the existing landscape pattern, provide visual screening and replace lost habitats. In other areas the existing landscape has an open character, and the landscape proposals reflect this, by minimising the amount and density of planting.
- C4 Landscape and visual mitigation, relies heavily on new planting which takes a number of years to mature. Therefore, earth mounds and visual barriers have also been proposed for some locations to provide immediate screening where this was considered necessary.
- C5 Overall, in the year of opening, there would be a moderate adverse effect on the landscape character of the study area. However, by the design year when mitigation planting has matured, there would be only a slight residual adverse effect on the landscape character of the study area.
- C6 The adverse effects on landscape character in the year of opening arise generally from the widening of the overall road corridor, the introduction of new structures and junctions, the loss of existing roadside vegetation and the introduction of additional vertical elements into the landscape such as gantries, electronic message boards (MS3s), antiglare barriers and central reservation barriers. The removal of vegetation would also open up views of moving traffic making vehicles more prominent in the landscape.
- C7 By the design year, the landscape mitigation would have integrated the scheme into the landscape to a similar extent as the A1 is at present. Between Baldersby Junction and Sinderby Junction and also between Gatenby Junction and Leeming Junction, the new planting would enhance the existing landscape. The only residual adverse effects would result from the vertical elements such as the gantries and MS3s.
- C8 There would be no adverse effects on any statutory landscape designations or the setting of any Conservation Areas.
- C9 Due to the gently undulating landform of the study area, the zone of visual influence (ZVI) of the scheme would be restricted to approximately 1 - 3km either side of the proposed road corridor and also distant views from vantage points in the Yorkshire Dales National Park and the North Yorkshire Moors National Park, both of which are located over 13km from the scheme. Significant effects would only occur at viewpoints within 1 – 3km of the scheme. Within this distance, visual receptors of the scheme have been identified at residential properties in villages, towns and at isolated properties; hotels and caravan sites; along public rights of way (PROW); at leisure facilities such as public parks; community facilities such as churches and at places of work such as offices. The vast majority of visual receptors of the scheme are

clustered in a few villages or towns, particularly at Londonderry and Leeming. Elsewhere the landscape is sparsely populated and the PROWs generally have low usage.

- C10 On balance, it is acknowledged that there would be a moderate adverse effect on the landscape character of the study area in the year of opening but that by the design year, when mitigation has matured, overall there would be only a slight residual adverse effect on landscape character. By the design year, more visual receptors would experience beneficial visual effects than would experience adverse effects.

Landscape Assessment

Dishforth to South of Baldersby Junction

- C.1.1 Although the new mainline would be at approximately the same level as the existing road and the footprint of the new mainline would not be significantly greater than that of the existing A1(M), the road would be more prominent in the landscape as it would no longer benefit from established hedgerow screening. Therefore, the road and moving traffic on it would be more visible from the surrounding areas. Vertical features of the scheme would also be prominent such as the vertical concrete barrier (VCB) in the central reservation, two new gantries, the new motorway communication structures (MS3 signboards) and a 2m high mitigation earth mound between chainage 2630 and 2900 East. In addition to the mainline, there would be two new balancing ponds with associated access tracks.
- C.1.2 In mitigation, new hedgerows with hedgerow trees would be planted beside the site boundary fence, screen planting would be planted on the mitigation earth mound and there would be additional planting around the new balancing ponds. However in the year in which the scheme is completed, these would effectively only appear as lines of tree tubes and hence not help to integrate the scheme particularly into the surrounding environment. All embankments, verges and the mitigation mound would be seeded ensuring the establishment of a grass sward relatively quickly.
- C.1.3 In year 0, it is considered that there would be a medium magnitude of change in the landscape, which would result in a **moderate adverse** effect on the landscape.
- C.1.4 By year 15, it is considered that some of the adverse impacts on the landscape would remain apparent such as the gantries and MS3s. However, these impacts would be offset by the improvements to the hedgerows alongside the A1(M) and new planting on the mitigation mounds and around ponds. Therefore, there would be a low magnitude of change in the landscape compared to the baseline situation, which would result in a **neutral** effect on the landscape.

South of Baldersby Junction to South of Sinderby Underbridge

- C.1.5 Between Baldersby Junction and Sinderby, the mainline would move further east and a new local access road (LAR) would follow the course of the old northbound carriageway of the A1(M). The provision of a mainline and an LAR would widen the overall road corridor. An anti-glare earth mound or anti-glare barrier of approximately 1.5m would be incorporated between the mainline and the LAR.
- C.1.6 In mitigation of the loss of existing vegetation, new screen vegetation and woodland edge trees and shrubs would be planted on all of the junction embankments, although, in the year of completion of the scheme, this would provide little benefit. The embankments would also be seeded which would help integrate the junction into the surrounding landscape to some extent, however, in year 0 when the new woodland is young, the junction would be more prominent than at present.
- C.1.7 Although the new mainline would be at approximately the same level as the existing road, the road would be more prominent in the landscape as it would no longer benefit from established

hedgerow screening on the east side. Therefore, the road and moving traffic on it would be more visible from the surrounding areas. Other vertical features of the scheme would also be prominent such as the VCB in the central reservation, a new gantry, several new MS3s, a 2m mitigation earth mound between chainage 5920 – 6580 East and a 1.5m anti-glare rounded earth mound between the mainline and the LAR.

- C.1.8 The central reserve VCB, new post and rail fencing and the antiglare barrier would emphasise the linearity of the route corridor.
- C.1.9 There would be three new balancing ponds in this section; two south of Baldersby Junction and one in the field north of Hergill Lane. These would be constructed with irregular edges with new vegetation planted around the edges.
- C.1.10 This section of the scheme would incorporate a considerable amount of new planting including; new hedgerows and hedgerow trees on the east side of the new mainline and, woodland planting at Baldersby Junction and east of the mainline to screen views from Baldersby village as well as intermittent tree and shrub groups between the mainline and the LAR. There will also be a considerable amount of planting within a new ecological mitigation area on either side of York Gate Plantation.
- C.1.11 In year 0, it is considered that there would be a medium magnitude of change in the landscape, which would result in a **moderate adverse** effect on the landscape.
- C.1.12 By year 15, it is considered that a few of the adverse impacts on the landscape would remain apparent such as the gantries, MS3s and lighting columns, but that these impacts would be more than offset by the improvements to the landscaping of the route corridor which would improve the integration of the scheme into the landscape.
- C.1.13 Therefore there would be a low magnitude of change in the landscape compared to the baseline situation, which would result in a **slight/moderate beneficial** effect on the landscape.

South of Sinderby Underbridge to South of Gatenby Overbridge

- C.1.14 Existing roadside hedgerows would be lost on both side of the existing A1(M) between Sinderby and Street House Farm but, further north, hedgerows on the western side of the existing A1(M) would be retained and those on the east would be removed. A substantial belt of mature trees on the eastern side of the A1(M) at Sinderby Junction would also be lost and a little riverside vegetation would also be lost at Healam Beck. A series of properties on the east side of the mainline would also be demolished including: Roxby House farm buildings, New Inn Farm, buildings at Hope Town including the Little Bistro Café, Street House and the petrol station opposite Oak Grange.
- C.1.15 At Sinderby, the mainline would rise up above the surrounding landscape and cross over a new underbridge. At this location the road embankment and traffic in its elevated position would be prominent from the surrounding landscape. The existing mature vegetation at this location currently helps to integrate the current junction into the landscape. The retention of a mature tree group to the west of the junction will help to soften the western embankments, but the new un-vegetated slopes rising above an otherwise flat landscape would appear out of character with the surrounding environment. In mitigation, new woodland trees and shrubs would be planted on all of the embankments, however, in the year of completion of the scheme, this would provide little screening benefit. The embankments would also be seeded which would help soften the appearance of the slopes to some extent, however, in year 0 when the new woodland is young, the junction would be more prominent than at present.
- C.1.16 At Street Lane there would be a new overbridge in what is currently a flat landscape. New shrubs and trees would be planted on the embankments to eventually soften them and help integrate them into the landscape but in year 0, the only vegetation on the slopes would be grass. The unvegetated embankments of the overbridge and the LAR at this location would

stand above this landscape and be a prominent feature in the landscape from the surrounding area.

- C.1.17 For most of the remainder of this section, the new mainline would be at approximately the same elevation as the existing road with the exception of where the mainline crosses over Healam Beck at a slightly higher elevation than the existing A1(M). The new road would be more prominent in the landscape as it would no longer benefit from established hedgerow screening on the east side, therefore, the road and moving traffic on it would be more visible from the surrounding areas. Other vertical features of the new scheme would also be prominent such as the VCB in the central reservation, several new MS3 sign boards, and a 1.5m anti-glare barrier between the mainline and the LAR which would take the form of a rounded earth mound where space permits and that of a barrier fence where there is no space for a mound.
- C.1.18 The central reserve VCB, new post and rail fencing and the antiglare barrier would emphasise the linearity of the route corridor. There would be a series of six new balancing ponds in this section. These would be irregular in shape with new vegetation planted around the edges. There would also be two large ecological mitigation areas. The first of these would be east of the mainline between chainage 12470 and 12720 and the second also east of the mainline between chainage 13680 and 14050. Both of these would involve the conversion of agricultural land to meadow with a diverse mixture of native shrub and tree planting as well as a number of small ponds (for further details see the ecology chapter). At year 0, the new vegetation in these areas would be young and in tree tubes, therefore there would be little landscape benefit.
- C.1.19 In year 0, it is considered that there would be a medium magnitude of change in the landscape, which would result in a **moderate adverse** effect on the landscape.
- C.1.20 By year 15 after the completion of the scheme, the new vegetation planted as mitigation would have matured and would provide improved screening of the road, LAR, Sinderby Underbridge and Street Lane Overbridge, effectively integrating the road into the surrounding landscape. The new hedgerows would be more diverse than the existing ones and contain a series of hedgerow trees, which would enhance the character, and field pattern of what is currently an intensive agricultural landscape. Furthermore, the planting around the balancing ponds, between the mainline and the LAR and within the ecological mitigation areas would substantially increase the amount and diversity of vegetation cover whilst respecting the open aspect of the landscape.
- C.1.21 By year 15, it is considered that a few of the adverse impacts on the landscape would remain apparent such as the gantries, MS3s and Street Lane Overbridge, but that the magnitude of these impacts would be reduced by a comprehensive landscaping mitigation scheme.
- C.1.22 Therefore, there would be a low magnitude of change in the landscape compared to the baseline situation, which would result in a **slight/moderate adverse** effect on the landscape.

South of Gatenby Overbridge to North of Leeming Junction

- C.1.23 Through Gatenby Junction to Londonderry Overbridge, the mainline would run predominantly on the line of the existing A1(M) whilst the LAR would run to the west. North of Londonderry up to the A684 (Bedale/Northallerton Road), the mainline would shift marginally east and the LAR would run on the old northbound carriageway of the existing A1(M). North of the A684 to the new Leeming Junction, the mainline would again run predominantly on the line of the existing A1(M) and the LAR would run to the west. Overall this would represent a substantial increase in the width of the route corridor.
- C.1.24 The elevation of the LAR would, for the most part, be similar to that of the existing A1(M), but the LAR would rise above the current level of the A1(M) to link in with overbridges at both Gatenby and Londonderry. Cowfold Bridge would be removed and Londonderry overbridge would be realigned slightly to the south

- C.1.25 At Gatenby overbridge, a new roundabout would be constructed at the level of the existing overbridge. There would also be lighting columns on this roundabout. The existing junction has minimal vegetation on its embankments and, as such, is not currently well integrated into the surrounding flat landscape. Although the footprint of the overbridge including the LAR at this location would be increased, there would be only a low magnitude of change when compared to the existing situation.
- C.1.26 At Londonderry, the realigned overbridge would be similar in scale to the existing overbridge although in year zero, the embankments would be more prominent as they would not have the benefit of established woodland planting.
- C.1.27 A new Leeming Junction would be constructed at approximate chainage 20550. The junction would be located on land which falls to the west, resulting in a junction with an eastern roundabout in cutting and a western roundabout on embankment. The topography in this location, would allow the junction to fit into the landscape relatively well and it would not be particularly prominent from the surrounding area. Although the junction would be a major new feature incorporating lighting columns, the junction would be located directly adjacent to an existing and expanding industrial estate. The landscape in this part of the route corridor is already considered to be urbanised to a great extent and it is therefore able to accommodate such a junction without detriment to the existing landscape character. The existing industrial units would effectively screen the junction from Leeming and limit the magnitude of the impact on the surrounding area.
- C.1.28 Mitigation earth mounds would be constructed west of Londonderry Village and also west of Leeming village between the old Cowfold Bridge and the A684 (Northallerton Road). These would be new vertical elements in the landscape. Other vertical features of the new scheme would also be prominent such as a noise/visual screen barrier across the A684, the VCB in the central reservation, two new gantries, several new MS3 sign boards, and a 1.5m anti-glare barrier between the mainline and the LAR which would take the form of a rounded earth mound where space permits and that of a barrier fence where there is no space for a mound.
- C.1.29 Although these would be additions to the route corridor, the surrounding landscape already contains a number of vertical elements. The buildings within Londonderry, Leeming Bar and Leeming Airbase are ever prominent within the surrounding landscape and there are a series of woodland blocks and mature hedgerows throughout this section, which would mean that the new vertical elements would not be uncharacteristic.
- C.1.30 The central reserve VCB, new post and rail fencing and the antiglare barrier would emphasise the linearity of the route corridor, but given the linearity of the adjacent village and airfield as well as the existing A1(M), this would not significantly alter the baseline landscape character.
- C.1.31 There would be six new balancing ponds in this section. These would have an irregular shape with new vegetation planted around the edges. There would also be a large ecological mitigation area west of the LAR just north of Gatenby Junction. In year 0, the new vegetation in these areas would be young and in tree protection tubes, therefore there would be little landscape benefit. This section of the scheme would incorporate a considerable amount of new planting including; new hedgerows and hedgerow trees, blocks of woodland and intermittent tree and shrub planting. There would also be a considerable amount of planting within the two new ecological mitigation areas and around the ponds. In the year in which the scheme is completed, this new planting would be young and in tree tubes. It would therefore provide little benefit in terms of integrating the scheme into the landscape.
- C.1.32 In year 0, it is considered that there would be a medium magnitude of change in the landscape, which would result in a **moderate adverse** effect on the landscape.

- C.1.33 By year 15 after the completion of the scheme, the new vegetation planted as mitigation would have matured and would provide screening of the road, LAR, Leeming junction and the new overbridges. At Gatenby, the new landscaping would be considerably more extensive than at present and would help to improve the integration of the embankments in into the landscape.
- C.1.34 New landscaping around Leeming Junction would not only help to integrate the junction into the landscape but also soften the edges of Leeming Industrial Estate and help integrate the units better into the wider countryside.
- C.1.35 By year 15, it is considered that a few of the adverse impacts on the landscape would remain apparent such as the gantries and MS3s, but that the magnitude of these impacts would be more than offset by a improvements to the overall landscape as a result of the extensive new planting.
- C.1.36 Therefore, there would be a low magnitude of change in the landscape compared to the baseline situation, which would result in a **slight/moderate beneficial** effect on the landscape.

Appendix D - ES Biodiversity Impacts

Other Significant Sites

- D.1.1 At the Dismantled Railway Melmerby SINC, mitigation would adequately compensate for the loss of terrestrial great crested newt habitat, which would also provide secondary benefits to compensate for the loss of land within the potentially county important site. Appropriate pollution prevention control measures and adherence to PPG5 would minimise impacts to the great crested newt breeding pond. A mammal tunnel would compensate for the loss of the existing underpass of the A1, minimising severance for badger, otter and great crested newt, with new landscape planting designed to guide bats over traffic on the A1(M). Permanent badger and deer fencing would be erected east and west of the A1(M) to guide badger and otter into the tunnel and to prevent deer from accessing the A1(M). However, deer would experience permanent habitat severance. The long term residual magnitude of the potential impact of the scheme following the implementation of mitigation measures is assessed as Minor Negative. The impact significance of the scheme on this site is therefore assessed as **Slight Adverse**.
- D.1.2 At Great Raygill Dike SINC, the residual magnitude of the potential impact of the scheme following the implementation of mitigation measures is assessed as Neutral. The impact significance of the scheme on this site is therefore assessed as **Neutral**.

Terrestrial Habitats

Arable land

- D.1.3 The magnitude of the impact for arable once reinstated assessed as Neutral and the impact significance of the scheme on arable land in the Design Year is therefore assessed as **Neutral**.

Grassland

- D.1.4 The magnitude of the potential impact for the loss of grassland on existing road verges is considered to be Neutral in the long term as this habitat would be replaced along new stretches of road verge, with native wildflowers used in replacement seeding which would provide greater concentrations and diversity of wild flowers. Therefore, losses would represent a relatively low and short term impact in view of the opportunity to create a range of better quality grasslands within the proposed route curtilage. The impact significance of the scheme on grassland habitat is therefore assessed as **Neutral**.

Woodland and Scrub

- D.1.5 Overall, areas of woodland and scrub lost to the scheme are generally of low or local conservation interest. Whilst vegetation would be lost, the impact is minimised by the retention, replacement and enhancement of habitat. Overall, there would be an increase of woodland and scrub habitat within the route corridor and the linking of new and established habitats would be of considerable importance in providing an extension of existing semi-natural habitats, encouraging a more continuous wildlife corridor along the route and reducing fragmentation.
- D.1.6 The immediate impact of the loss of woodland and scrub vegetation is assessed as Minor Negative. However, in the medium term, the initial impact of habitat loss would be reduced by mitigation, and in the long term, following maturation of vegetation, the magnitude of the impact is assessed as Neutral. An overall increase in woodland/scrub coverage could potentially increase the ecological value of habitats of the corridor. The impact significance of the scheme on woodland and scrub habitat is therefore assessed as **Neutral**.

Hedgerows

- D.1.7 Overall, hedgerows lost to the scheme are generally of low or local conservation interest. Whilst vegetation would be lost, the impact is minimised by the retention, replacement and enhancement of habitat, including linear ecological features. Overall, there would be an increase of hedgerow habitat within the route corridor and the linking of new and established habitats would be of considerable importance in providing an extension of existing semi-natural habitats, encouraging a more continuous wildlife corridor along the route and reducing fragmentation.
- D.1.8 The immediate impact of the loss of hedgerows is assessed as **Minor Negative**. However, in the medium term, the initial impact of habitat loss would be reduced by mitigation, for example by the establishment of good quality diverse hedgerows, and in the long term, following maturation of vegetation, the magnitude of the impact is assessed as **Neutral**. The impact significance of the scheme on hedgerow habitat is therefore assessed as **Neutral**.

Quarries / Derelict Areas / Dismantled Railways

- D.1.9 Mitigation would minimise impacts to disused quarries, derelict areas and Sinderby dismantled railway. The magnitude of the potential impact on these sites is considered to be **Neutral** and the impact significance of the scheme is therefore assessed as **Neutral**.

Aquatic Habitats

- D.1.10 Adverse impacts on water quality of aquatic habitats caused by increased contaminated surface water run-off and the threat of pollution spillages would be mitigated by the provision of pollution control measures. Because of the existing absence of pollution control measures, the scheme is predicted to improve existing conditions. Therefore the magnitude of the potential impact on water quality is considered to be **Neutral** and the impact significance of the scheme on water quality is therefore assessed as **Neutral**.

Watercourses

- D.1.11 The loss of riparian habitat and the repeated additional severance of watercourse corridors (important linear features) would have a permanent impact. The magnitude of the potential impact on the watercourses is considered to be **Minor Negative** and the impact significance of the scheme is therefore assessed as **Slight Adverse**.

Ponds and Wetlands

- D.1.12 The two ponds lost by the scheme would each be replaced by two ponds of equal or higher quality, with an additional pond created at Scot Lane (refer to great crested newts). Therefore the magnitude of the potential impact on pond habitat is considered to be **Positive** and the impact significance of the scheme on pond habitat is therefore assessed as **Slight Beneficial**.

Invasive Plant Species

- D.1.13 Appropriate mitigation would minimise the spread of Japanese knotweed and Himalayan balsam at Bedale Beck. The long term magnitude of the potential impact is considered to be **positive** as invasive species would be removed from the riverbanks and the impact significance of the scheme on invasive plant species is therefore assessed as **Slight Beneficial**.

Legally Protected Species and Other Significant Faunal Species Mammals

Bats

- D.1.14 The loss of bat roosts would be appropriately mitigated through the provision of artificial roost sites and roost removal would be undertaken at the appropriate time of year under Defra licence. Although habitat would be lost and severed by the scheme, habitats and features such as linear landscape planting, the creation of grassland areas at junctions and the creation of

balancing ponds, whilst not provided as mitigation specifically for bats, would enhance the area for bat foraging as these features mature.

- D.1.15 Despite mitigation, the road scheme would cause disturbance to bats during construction, with the impact significance assessed as Slight Adverse. However, in the Design Year following customisation of bats to artificial roosts and maturation of new planting proposals, the magnitude of the potential impact on bats is considered to be Neutral and the impact significance of the scheme on bats in the Design Year is therefore assessed as **Neutral**.

Otter

- D.1.16 The loss of an otter holt would be appropriately mitigated through the provision of an artificial holt site under Defra licence. Mitigation would minimise impacts to otter habitat and allow continued passage of otter along watercourses, thereby minimising severance impacts. The provision of mammal ledges would also be an improvement on the present situation where there is no access for otter during flood events. However, despite mitigation, the road scheme would cause disturbance to otter during construction, with the magnitude of the potential impact assessed as Minor Negative, having a Slight Adverse impact significance. This impact would be reduced in the Design Year following maturation of new planting proposals, although new bridges and box culverts would result in permanent habitat loss and create new severance. The magnitude of the potential impact on otter is therefore considered to remain unchanged in the Design Year, with the residual impact significance of the scheme on otter assessed as **Slight Adverse**.

Water vole

- D.1.17 The magnitude of the potential impact on water vole is considered to be Neutral and the impact significance of the scheme on water vole is therefore assessed as **Neutral**.

Badger

- D.1.18 The loss of an annexe sett would be appropriately mitigated, with sett removal undertaken at the appropriate time of year under English Nature licence. Construction works within 30m of an active sett would also be undertaken under licence as appropriate. Although badger habitat would be lost and severed by the scheme, mitigation including fencing and tunnels would minimise impacts. However, permanent impacts would be experienced and the magnitude of the potential impact on badger is considered to be Minor Negative, with the impact significance of the scheme on badger in the Design Year assessed as **Slight Adverse**.

Deer

- D.1.19 With appropriate mitigation, the magnitude of the potential impact on deer is considered to be Neutral and the impact significance of the scheme on deer in the Design Year is therefore assessed as Neutral. This assessment excludes permanent habitat severance impacts to deer at the Dismantled Railway Melmerby SINC.

Brown hare

- D.1.20 Badger, deer and otter fencing, whilst not provided as mitigation specifically for brown hare, would minimise the number of brown hare road fatalities that might otherwise occur. The magnitude of the potential impact on brown hare is considered to be Neutral and the impact significance of the scheme on brown hare in the Design Year is therefore assessed as **Neutral**.

Amphibians

- D.1.21 The loss of two great crested newt breeding ponds and terrestrial habitat used by great crested newt would be appropriately mitigated through trapping and exclusion at the appropriate time of year under Defra licence and through the provision of compensatory habitats and temporary amphibian exclusion fencing where necessary. In addition, habitat creation along the new road

verges and associated landscape planting would provide additional valuable habitat for newts¹⁶. Despite mitigation, the road scheme would cause great disturbance to great crested newts during construction, with the magnitude of the potential impact assessed as Intermediate Negative, having a **Moderate Adverse** impact significance. However, in the Design Year following maturation of compensatory habitat, the magnitude of the potential impact on great crested newts is considered to be **Minor Negative** and the impact significance of the scheme on great crested newts in the Design Year is therefore assessed as **Slight Adverse**. Great crested newt would not be permanently fenced off from the new road verge as it is considered counter-productive to exclude them from such a valuable resource in the interests of reducing road mortality.

Birds

- D.1.22 During construction, disturbance impacts and loss of foraging and nesting habitat, would result in a Minor Negative impact in the short term (Slight Adverse impact significance). However, following the establishment of landscape planting, increased opportunities for breeding and foraging birds would be available and the long term impacts are therefore of Neutral magnitude, resulting in a **Neutral** impact significance.

Aquatic Invertebrates

- D.1.23 During in-channel construction works, short term impacts would be experienced locally by aquatic invertebrates (Minor Negative magnitude, Slight Adverse impact significance). However, the long term impact is assessed to be of Neutral magnitude, resulting in a **Neutral** impact significance.

Fish

- D.1.24 During in-channel construction works, short term impacts could be experienced locally by European protected fish species, although mitigation would minimise impacts (Minor Negative magnitude, Slight Adverse impact significance). The long term impact of the scheme is assessed to be of Neutral magnitude, resulting in a **Neutral** impact significance.

¹⁶ Great crested newt would not be permanently fenced off from the new road verge as it is considered counter-productive to exclude them from such a valuable resource in the interests of reducing road mortality.

Appendix E - Physical Fitness: Comments received from the North Yorkshire County Council

Noise

- The level of noise disturbs the 'quiet enjoyment' of the PRoW network which is as expected as this existed pre-scheme. However, in creating and maintaining routes adjacent to, under and over the A1(M) and LAR, these can be challenging to inexperienced and vulnerable NMU including horses.

Vehicular Movement and Speed

- The vehicular movement and speeds on the A1(M) and the LAR may not have been initially considered as important factors regarding inexperienced and vulnerable NMU including horses but what is being experienced does have a direct detrimental effect on these vulnerable individuals.

Landscape

- The scheme has had a slightly adverse impact on the existing landscape but this will have been as expected. The opportunity of creating, altering and maintaining the routes has enhanced the availability of the PRoW network within the landscape that had been previously disadvantaged by the previous developments of the A1(M). The materials used are the most appropriate for the purpose intended. Lighting can be beneficial on routes but usually not essential or necessary within the PRoW network.

Biodiversity

- The biodiversity in the vicinity of the A1(M) corridor is poor in comparison to many areas within North Yorkshire for the expected NMU within the PRoW network. However, the sympathetic development of new habitats and landscapes may not have a direct influence on the PRoW network but it does mitigate the effects of the A1(M) scheme in the environment.

Cultural Heritage and Archaeology

- An opportunity was missed to improve the PRoW network near to the Scheduled Ancient Monument at Healam Bridge. In fact the network was detrimentally altered and requires further action to make sense of the existing network.

Physical Fitness

- Losses in the PRoW network have occurred but gains have been achieved too, increasing the potential use by the public in the future. Increasing the use of routes is very subjective to the individuals as it requires reactions to the actions taken by Highways England to mitigate the detrimental effects of the scheme on the PRoW network. The scheme regarding the PRoW network and providing for the NMU has created positive opportunities for developing physical fitness and personal wellbeing and welfare. The next step is for the NMU to take these opportunities and use the PRoW network and links created by the scheme.

Journey Amenity

- The use and speed of the LAR may be reduced but it has increased a vehicular corridor from four lanes of traffic to eight lanes. This can have a detrimental effect on the use of a PRoW network by the public regardless of the opportunities created by the scheme. This is a positive and negative, in that the upgrade of the A1(M) cannot be considered to be either a useful or enjoyable feature for the NMU. However, the PRoW network and associated links to the LAR and existing highways does protect, enhance and provide opportunities to existing and new NMU.

Journey Ambience

- Conflicts do occur between all that have an effect on the journey ambience. Many NMU will be local residents that use the routes on a regular basis so the ambience will be a very important factor to these individuals. The speed of vehicles is of concern, especially the horse riders and parents of young children. Inappropriate positioning of signage and landscape plantings has created obstacles and reduced widths in the verges intended for the use by the NMU, raising concerns over fear of accidents.

Rights of Way

Several NMU representatives indicated disappointment in several issues in the 2006 Public Inquiry Inspectors' report not being fully addressed: -

- White lines on the edge of the carriageway at 1 metre on the LAR for cyclists;
- Availability of the 'bottom of the embankments' for use by NMU, especially horse riders; and
- Appropriate positioning of signage to protect the obstruction free verges on either side of the LAR.

Appendix F – Photomontage Comparison Views



Existing view from the footpath beside Wide Howe towards Baldersby Junction.



View from the footpath beside Wide Howe towards Baldersby Junction in the year of opening (Year 0).



View from the footpath beside Wide Howe towards Baldersby Junction one year after opening (Photograph taken in October 2013)

Location 1: Photomontage – Wide Howe



Existing view from Baldersby towards the A1.



View from Baldersby towards the A1 in the year of opening (Year 0).



View from Baldersby towards the A1(M) one year after opening (photograph taken in October 2013)

Location 2: Photomontage – Baldesby



Existing view from Gatenby Overbridge towards the A1.



View from Gatenby Overbridge towards the A1 in the year of opening (Year 0).



View from Gatenby Overbridge towards the A1(M) one year after opening (photograph taken in October 2013)

Location 3: Photomontage – Gatenby



Existing view from Londonderry towards the A1.



View from Londonderry towards the A1 in the year of opening (Year 0).



View from Londonderry towards the A1(M) one year after opening (photograph taken in October 2013)

Location 4: Photomontage – Londonderry



View of the A1(M) just north of Leeming from Leases Hall Boundary



View of the LAR in the foreground and A1(M) behind the landscape mound from Oak Tree Farm. Planting in this area was undertaken in consultation with the owner of Oak Tree Farm to ensure first storey views to farm buildings across the A1(M) which form a part of the same farm.



View across the LAR towards the A1(M) behind the landscape mound from York Gate Farm



Healam Archaeology Site

Appendix G – Drainage – Photographs of ponds

Dishforth Balancing Pond



Rainton Balancing Pond



Baldersby West Balancing Pond



Baldersby East Balancing Pond



Hergill Balancing pond



Sinderby Wet Balancing Pond



Ramshaw Farm West Balancing Pond



Healam Beck South Balancing Pond



Healam Beck North Balancing Pond



Burnestan Grange Balancing Pond



Londonderry Balancing Pond



Bedale Beck South Balancing Pond



Bedale Beck North Balancing Pond



Leeming Balancing Pond



Appendix H - Glossary

Terms	Definition
AADT	Annual Average Daily Traffic. Average of 24 hour flows, seven days a week, for all days within a year.
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.
ADT	Average Daily Traffic. Average daily flows across a given 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.
AAWT	Annual Average Weekday Traffic. As AADT but for five days (Monday to Friday) only.
AWT	Average Weekday Traffic. As ADT but for five days (Monday to Friday) only.
BCR	Benefit Cost Ratio. This is the ratio of benefits to costs when both are expressed in terms of present value i.e. PVB divided by PVC.
Bvkm	Billion Vehicle Kilometres
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 unless it is being used in Accident-only mode.
CRF	Congestion Reference Flow
DfT	Department for Transport
Discount Rate	The percentage rate applied to cash flows to enable comparisons to be made between payments made at different times. The rate quantifies the extent to which a sum of money is worth more to the Government today than the same amount in a year's time.
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.
DM	Do Minimum. In scheme modelling, this is the scenario which comprises the existing road network plus improvement schemes that have already been committed.
DMRB	Design Manual for Roads and Bridges
DS	Do Something. In scheme modelling, this is the scenario detailing the planned scheme plus improvement schemes that have already been committed.
EA	Environment Agency
ES	Environmental Statement
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.
FYA	Five Year After
HA	Highways Agency. Was Executive Agency of the DfT, responsible for operating, maintaining and improving the strategic road network in England. The Highways Agency became Highways England in April 2015.
HGV	Heavy Goods Vehicle
KSI	Killed or Seriously Injured. KSI is the proportion of casualties who are killed or seriously injured and is used as a measure of collision severity.
LNS	Low Noise Surfacing

Terms	Definition
MAC	Managing Area Contractor Organisation normally contracted in 5-year terms for undertaking the management of the road network within a Highways England area.
MVKM	Million Vehicle Kilometres
NMU	Non-Motorised User. A generic term covering pedestrians, cyclists and equestrians.
NRTF	National Road Traffic Forecasts. 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. At the time this scheme was appraised, the most recent one was NRTF97, i.e. dating from 1997.
OYA	One Year After
PIC	Personal Injury Collisions
POPE	Post Opening Project Evaluation. The before and after monitoring of all major highway schemes in England.
Present Value	Present Value. The value today of an amount of money in the future. In cost benefit analysis, values in differing years are converted to a standard base year by the process of discounting giving a present value.
PVB	Present Value Benefits. Value of a stream of benefits accruing over the appraisal period of a scheme expressed in the value of a present value.
PVC	Present Value Costs. As for PVB but for a stream of costs associated with a project
RSA	Road Safety Audit
RSI	Road Surface Index
SSSI	Site of Special Scientific Interest
STATS19	A database of injury accident statistics recorded by police officers attending accidents.
TEE	Transport Economic Efficiency
TEMPRO	Trip End Model Program. This program provides access to the DfT's national Trip End Model projections of growth in travel demand, and the underlying car ownership and planning data projections.
TRADS	Traffic Flow Data System. Database holding information on traffic flows at sites on the strategic network.
UK	United Kingdom
webTAG	DfT's website for guidance on the conduct of transport studies at http://www.webtag.org.uk/