A38 Dobwalls Bypass One Year After Report

June 2011

Document History

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Executive Summary

Scheme Description

The A38 Dobwalls Bypass opened on 19th December 2008, and consisted of the construction of a 2 mile long dual carriageway to the north of the village of Dobwalls in Cornwall. The key additional features of this scheme are:

- A new roundabout at the western end of the bypass to link with the A390;
- A new 0.6 mile link road for the A390 to join with the new roundabout, including a new bridge over the London Penzance railway line;
- Provision of two bridges to carry local roads over the bypass;
- Two junctions to allow access to and from the bypass at the eastern end; and
- Environmental mitigation measures, including two bat 'bridge' structures across the bypass.

Objectives (DfT Roads Review, 1997)	Achieved?
To Provide additional capacity and reduce congestion	Yes
To enhance road safety	Yes
To improve the environment of the village by removing through traffic	Yes

Key Findings

- The objectives of this scheme have been met – to reduce congestion, improve road safety and improve the village environment.
- One year after opening, observed journey times on the bypass are between 1.5 minutes and 5 minutes less than those observed on the former A38 route prior to scheme opening. The most significant savings were seen in the westbound direction in peak times.
- On the whole, traffic flows across the corridor were in line with predictions, although the level of traffic expected to remain on the former A38 through Dobwalls was underestimated.
- The observed safety benefit seen across the network at the one year after stage is in line with predicted benefits, saving approximately 10 personal injury accidents in the opening year.
- Although no changes were made to the local bus services as a result of the scheme, feedback received indicates that bus reliability has greatly improved due to reduced congestion.
- The additional costs of the scheme are largely due to delays during construction due to adverse weather.
- The reduction in traffic through the village of Dobwalls has enabled the local authority (with funding from the HA) to implement measures such as reducing carriageway width and speed limit to restore the village environment, as expected. The reduction in HGVs in Dobwalls has also improved air quality and noise levels in the village.
- The use of Cornish hedges are a distinctive feature of the scheme, and their use adds local character in an Area of Great Landscape Value (AGLV), however the choice of materials used for some drainage channels detracts from the local rural landscape character.

- The use of shillet[1] in the landscaping has resulted in a bare appearance as little vegetation growth is evident at the one year after stage. It is considered that this will have improved by the five years after stage.

Summary of Scheme Impacts

Traffic

- The scheme has successfully rerouted a significant amount of traffic (83-87%) away from the village of Dobwalls, only slightly less than the prediction of 90%.
- Screenline analysis shows an overall increase in traffic in the A38 corridor of 4.4% (990 vehicles) which may be as a result of the scheme.
- One year after opening, observed journey times on the bypass are between 1.5 minutes and 5 minutes less than those observed on the former A38 route prior to scheme opening. The most significant savings were seen in the westbound direction in peak times.
- Traffic flows on the bypass in the opening year are very close to those predicted for the low growth scenario.
- The bypass has successfully removed the majority of HGVs from the village, reducing from over 1,860 per day to just 130 per day.

Safety

- In the one year period after the opening of the bypass, there has been a reduction of 10 persona injury accidents (PIAs) in the area covered by the appraisal;
- Casualty numbers have also reduced by 15, from an annual average of 61 to 46 per year. No fatal accidents have been noted since the bypass opened.
- Post opening there has been a large reduction in accidents occurring on the former A38. The accident rates for the former A38 and for the new bypass are 19% and 43% below the national average, respectively, for roads of a similar type.

Environment

- Environmental impacts on most sub objectives were as expected.
- The removal of traffic from the village of Dobwalls has had a beneficial impact on noise and air quality for the majority of residents, as well as improving the village environment for pedestrians and cyclists.
- The use of hydro-seeded shillet throughout (in preference to topsoil) for seeded areas has had mixed effects – it has been effective in weed control; however establishment of grass is slow with large areas offering little greening at this OYA stage.
- Potential for immediate impact to create a gateway to the village at Dobwalls roundabout has been diluted by a combination of a lack of greening and use of tree specimens that are relatively small in relation to the scale of space.
- Environmental mitigation measures are in place and monitoring of bats, dormice and translocated reptiles/amphibians is being undertaken in accordance with the CEMP.

[1] Coarse soil with pieces of slate

Accessibility

- Severance has been reduced by the removal of more than 80% of the traffic from the village of Dobwalls; and
- Over 80% of respondents to the residents survey agreed that the environment had improved for pedestrians and cyclists since the bypass opened.

Integration

- The scheme's objectives are in line with historical as well as current regional and local policies, including the Cornwall LTP and the Caradon Local Plan[2].

Summary of Scheme Economic Performance

All in 2002 prices, discounted to 2002	Low Growth Predicted	High Growth Predicted	Post Opening Re Forecast
Safety PVB	£33.26m	£39.72m	£38.46m
Economy PVB[3] includes VOC	£34.32m	£80.21m	£22.82m
Total 60 year PVB	**£67.60m**	**£119.93m**	**£61.28m**
Investment cost[4]	£30.49m	£30.49m	£38.8m
Indirect Tax	-£8.09m	-£8.07m	-£8.09m
PVC	**£22.40m**	**£22.42m**	**£30.71m**
BCR	**3.02**	**5.35**	**2.0**

- The scheme's economy benefits of £22.82 million were lower than forecast, although is considered to be a conservative estimate as this only considers the impact of changes on the A38 route, and not the wider area. It is also lower due to a probable underestimation of the pre scheme situation during the busy summer months;
- The scheme has performed well in terms of safety, with the benefits being higher than the low growth forecast for the opening year;
- The schemes reforecast PVC is £30.71m, with the inclusion of the low growth predicted indirect tax revenue; and
- The schemes outturn BCR is 2.0 which represents good value for money, despite the increase in costs.

[2] The statutory development plan for the Caradon District at 31st March 2009 - Caradon Local Plan
[3] This figure includes the impact of vehicle operating costs, the outturn economy PVB has been calculated using the proportions of VOC given in the low growth scenario.
[4] The outturn spend profile for this scheme was derived from the HA Regional Finance Manager (in March 2010). The forecast costs are from the Economic Appraisal Report (August 2004).

1. Introduction

Background

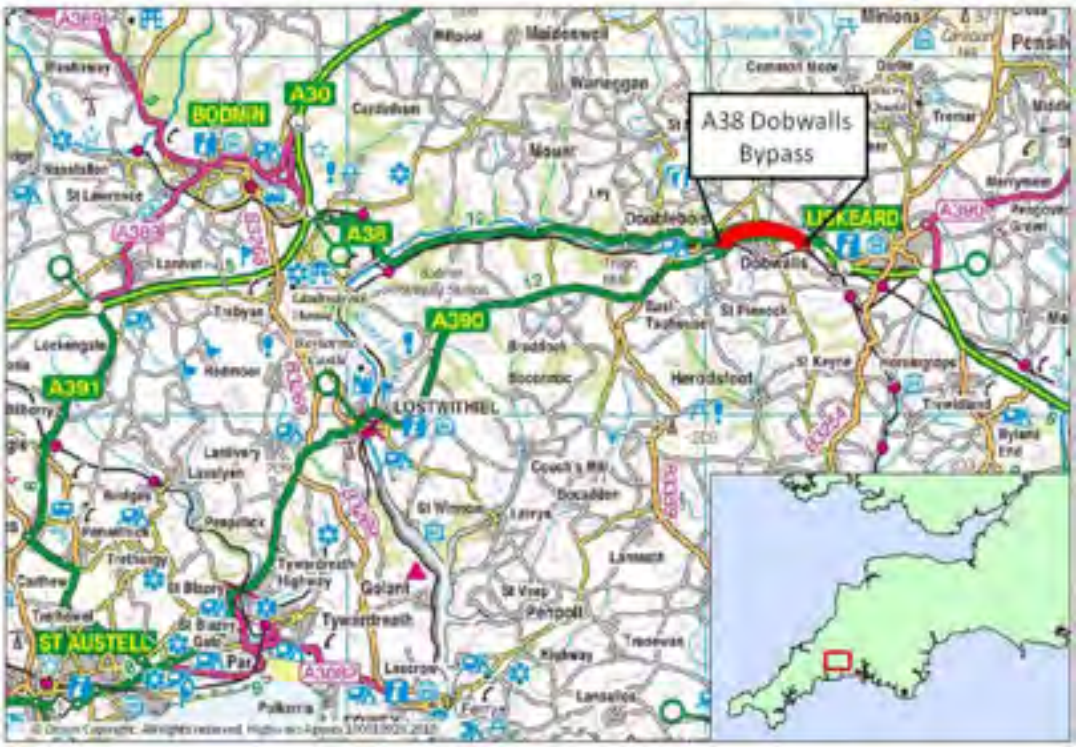
1.1 The A38 Dobwalls bypass is a major Highways Agency (HA) scheme to improve the A38 trunk road through the village of Dobwalls in Cornwall. The scheme involved the construction of a 2 mile long dual carriageway bypass to the north of the village, along with some alterations to the A390 alignment to the west of the village and local access roads. The scheme opened on 19th December 2008, and this report is a One Year After (OYA) evaluation of the emerging impacts of the scheme.

Scheme Location

1.2 Dobwalls is located on the A38 trunk road between Bodmin and Liskeard, and this section is a key link between Plymouth to the east and the rest of Cornwall, within the Area 1 Managing Agent Contractor area. Figure 1.1 shows the regional location of the scheme. The A38 through Cornwall is an important route, particularly for holiday traffic as it provides one of only two trunk road routes to popular tourist destinations in Cornwall, although it performs a secondary role to the A30. The old road through the village of Dobwalls was detrunked in 2009 and responsibility for maintenance passed over to Cornwall Council.

1.3 The area is predominantly rural in nature, with many small hamlets and villages accessed by minor roads. The villages of Dobwalls, and neighbouring Doublebois have a combined population of approximately 2,100 people[5], although this does swell slightly in summer with a number of tourists staying in the area.

Figure 1.1 – Regional Location of Scheme



[5] Office for National Statistics (ONS) 2001 Census data for Dobwalls and Trewidland Ward

Need for the Scheme

1.4 The scheme arose due to problems with congestion and safety through the village of Dobwalls. The majority of the A38 between Plymouth and Liskeard to the east of Dobwalls is dual carriageway, which then reduces to a single carriageway (with a short climbing lane section westbound) through the village of Dobwalls. This bottleneck effect was accentuated at weekends and during the summer as the number of vehicles travelling along the route increased dramatically due to the A38 being a key holiday route to southern Cornwall.

1.5 Further to this, this section also has a number of substandard features, including at-grade junctions, and private accesses (both residential and commercial). The junction of the old A38 and the A390 was originally a signal controlled junction which contributed to the queuing often seen through Dobwalls.

Scheme Objectives

1.6 The 1997 Roads Review Assessment paper stated that the A38 Dobwalls bypass objectives were:

- To provide additional capacity and reduce congestion;
- To enhance road safety; and
- To improve the environment of the village by the removal of through traffic.

1.7 The Secretary of State's specific objective for the scheme was cited as 'to resolve the congestion and accident problems in Dobwalls and work closely with key stakeholders to improve the environment within the village'.

1.8 The Environmental Statement (ES) added further detail to these core objectives, stating that the scheme would result in the removal of approximately 90% of traffic from the existing A38 at Dobwalls providing:

- Reduction in casualties due to accidents;
- Resolution of congestion, particularly associated with the peak holiday season, resulting in large beneficial effects predicted in terms of journey ambience (reduced driver stress for road users of the scheme; and reduced traveller stress for pedestrians and cyclists in Dobwalls);
- An improved environment for pedestrians, cyclists and other users of local roads in and around Dobwalls; and
- Improved amenity for residents and visitors, including potential for a sense of place to be restored to benefit the townscape, resulting in a moderate beneficial predicted impact.

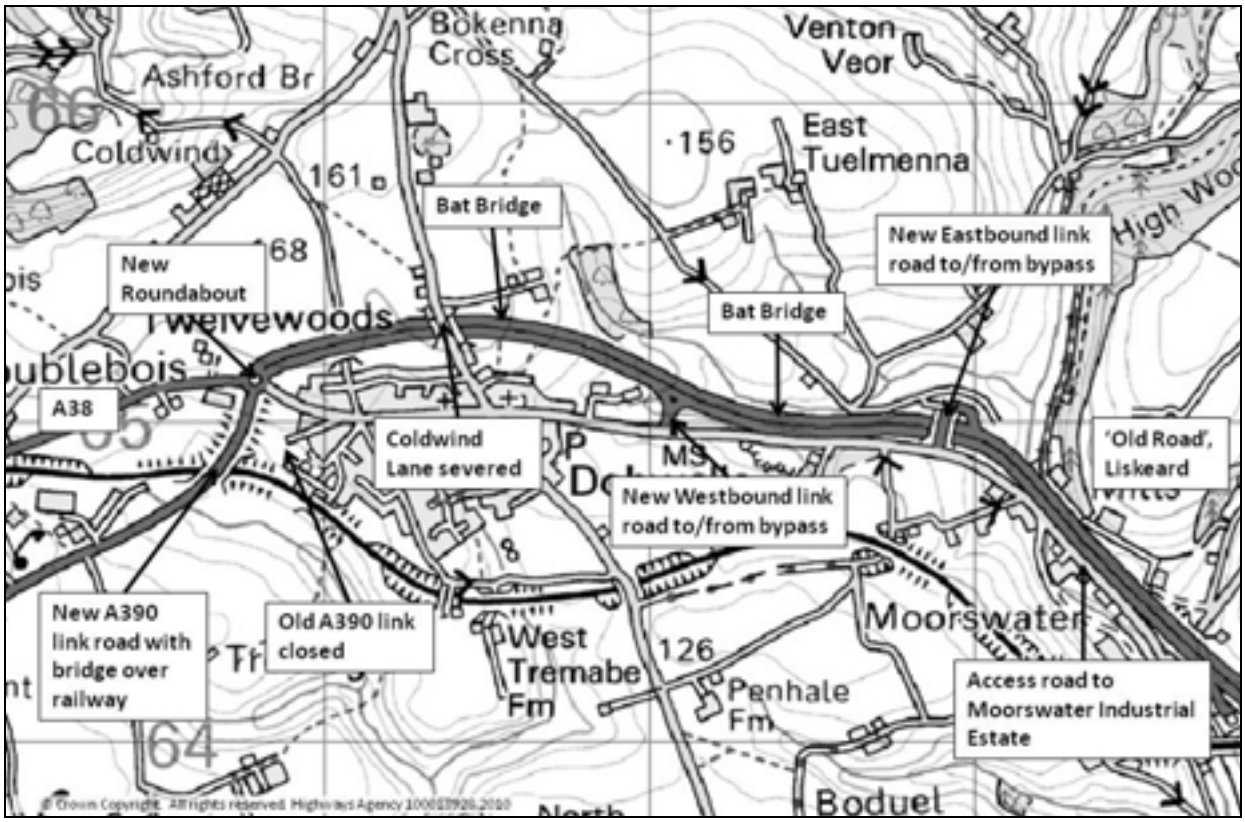
Scheme Description

1.9 The scheme consists of a 2 mile long dual carriageway which passes to the north of the village of Dobwalls. The scheme included the following key elements, the locations of which are shown in Figure 1.2:

- New 0.6 mile A390 link road (joining to the new roundabout), with the closure of the old A390 link into Dobwalls;
- A new distributor road linking to the Moorswater Industrial Estate running parallel to the bypass for a short section east of Dobwalls;
- A roundabout at the junction of the A38 and A390, west of Dobwalls;

- Two new over bridges at junctions to link the bypass with the local roads, with Coldwind Lane severed;
- A new bridge to take the A390 over the London – Penzance railway line;
- Two bat 'bridge' structures over the bypass to maintain flight paths;
- Provision of 1.6km of new foot/cycle track, mainly to the west of Dobwalls and the A390; and
- Further environmental mitigation measures including bat boxes, mammal tunnels and otter fencing.

Figure 1.2 – Scheme Details



History of the Scheme

1.10 A summary of the key dates of the development of the scheme is given in

1.11 Table 1.1.

Table 1.1 – Key dates in Scheme Development

Date	Event
1973	A scheme to improve the trunk road between Liskeard and Bodmin included in Roads Programme. Scheme deferred before any public consultation took place.
1987	A scheme to improve the A38 between Liskeard and Bodmin was reintroduced into the programme.
1992	Preferred route announced for the A38 Liskeard to Bodmin improvement (eastern and western sections).
1994	Preferred route announced for the A38 Liskeard to Bodmin improvement (central section).
1995	Scheme split into two sections, the Dobwalls Bypass, and the Dobwalls to Bodmin Improvement. Dobwalls Bypass remained in the Roads Programme, and the Dobwalls to Bodmin Improvement placed in the longer term Programme.
1996	Dobwalls to Bodmin Improvement withdrawn from the Programme.
1997	Statutory Route Protection Plan issued to confirm the Preferred Route for Dobwalls bypass.
2001	Scheme added to the Targeted Programme of Improvement, and a review of the 1997 Preferred Route commenced.
2002	Review completed, resulting in a recommendation to retain the route with modifications at each end of the bypass.
2002-3	Public Consultation undertaken for the revised Preferred Route.
May 2003	Preferred Route announced.
2005	Draft Orders published.
February 2007	Construction Commenced.
September 2008	Bypass partially opened to traffic in each direction with traffic management.
December 2008	19th December, the bypass fully opened to traffic in both directions.
March 2009	A390 link road fully opened to traffic, scheme completed.

Additional Issues

Environmental

1.12 This scheme included two bat bridges and a bat house to help maintain flight paths and roosts for bats. The monitoring of the success of this has been undertaken and is reported on further in the Environment section of this report

Detrunking

1.13 Following opening, the former A38 through Dobwalls has been detrunked. As part of the detrunking works, a number of improvements were made by Cornwall Council to the old road (although partly funded by the Highways Agency which was included in the predicted cost of the scheme). Improvements included narrowing the road with lining, introducing double mini roundabouts at the crossroads in Dobwalls (Figure 1.3) and the removal of the signalised pedestrian crossing outside the pub in the village.

Figure 1.3 – New double roundabouts at Dobwalls Crossroads

1.14 As part of the detrunking works, the speed limit through the village has been reduced from 40mph to 30mph post opening, with gateway signing.

Figure 1.4 – Gateway signing, with speed limit

1.15 Whilst the improvements help to reduce the 'trunk road' style of the road, it is noted that the route is still required to meet certain standards, as it is used as a diversion route in the event that the bypass is closed. These changes are considered throughout the report in relation to the impact of the scheme on each of the objectives.

Congestion Management

1.16 Due to the problems with congestion, a one way system was implemented in summer peak times to try to reduce queuing through the village. Before surveys undertaken for the traffic section are all undertaken in a normal situation where the signalised junction with the A390 was fully operational. The signals were removed as part of the scheme, therefore do not impact upon the after surveys.

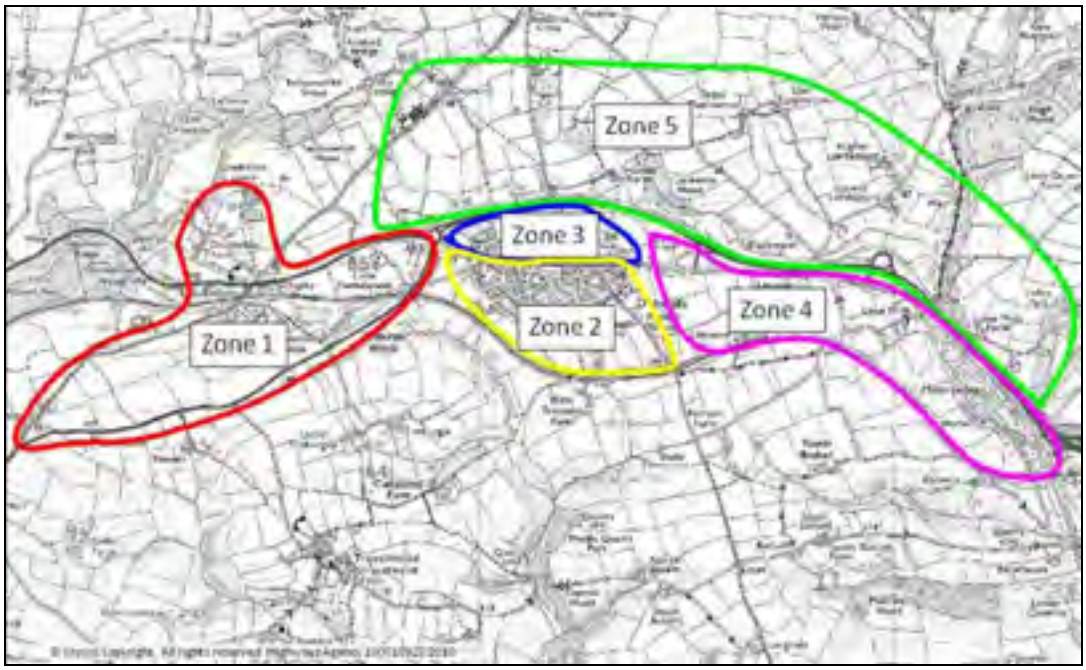
1.17 A climbing lane was also in place on the westbound approach to Dobwalls however the effectiveness of this was being hindered as although traffic could potentially pass slower vehicles at this point, the queuing on the approach to the A390 junction often extended to the climbing lane therefore not allowing this facility to be utilised effectively.

Residents Survey

1.18 A number of the DfT (Department for Transport) appraisal objectives are difficult to quantify. In order to address this, this report will draw upon findings from a consultation exercise which involved a residents survey. The questionnaire was designed to elicit the views of local residents on a number of issues relating to severance, accessibility, environmental impact and quality of life. A copy of the questionnaire used is included in Appendix D of this report. The questionnaires were distributed to all residents in the Dobwalls and Doublebois areas in July 2010.

1.19 Results from the questionnaire have informed the evaluation within this report, and have been incorporated throughout to represent public perception on a number of the sub-objectives evaluated.

Figure 1.5 – Residents Survey Distribution Zones



1.20 The survey area was split into different zones so that it is possible to determine the views of residents living close to the bypass, and those who live close to the old route. Figure 1.5 shows the areas covered by the residents survey.

1.21 Table 1.2 shows the response rate from the resident survey by zone. In total, 699 forms were delivered and 260 were returned giving a response rate of 37%.

Table 1.2 – Response Rate – Resident Survey

Zone	Number Delivered	Number Returned	% Returned
1 (Doublebois)	55	14	26%
2 (South Dobwalls)	364	158	43%
3 (North Dobwalls)	225	72	32%
4 (Moorswater)	23	6	26%
5 (Outlying properties)	32	10	31%
Total	**699**	**260**	**37%**

1.22 It can be seen from Table 1.2 that the highest response rates were from zone 2 and 3, which were those representing the main village of Dobwalls.

1.23 Some of the questions asked in the residents survey did not necessarily directly apply to an appraisal sub-objective, but provide a useful outline to set the scene of this report. The responses to these questions have been included here.

1.24 The opening question within the survey was required in order to filter those residents who moved to the Dobwalls area since the scheme opened. It can be seen from Table 1.3 that 95% of the local residents who responded to the question have lived in the area for more than one year.

1.25 Of those respondents who had lived in the area less than one year, eight said the bypass had influenced their decision to move to Dobwalls, whilst four stated that the bypass had had no impact on their decision to move. The remaining two responses were don't know.

Table 1.3 –How long have you lived in the area?

Response	Frequency	Percentage
Less than one year	14	5%
More than one year	246	95%
Total	**260**	

Respondents were also asked (if they had lived in the area for more than one year) whether they had been opposed to the scheme. It can be seen from the results in

1.26 Table 1.4 that only 6% of respondents were opposed to the construction of the scheme. The vast majority (91%) of people who responded to the question were not opposed to the scheme. Approximately 3% of people did not feel strongly either way.

1.27 There was limited variance across the zones, however zones 4 and 5 had a lower proportion (60%) of those in favour of the bypass. Both of these are the most affected by the bypass design, although are based on a lower base of respondents.

Table 1.4 –Were you opposed to the bypass?

Response	Frequency	Percentage
In favour	223	91%
Opposed	16	6%
Don't Know	7	3%
Total	**246**	

1.28 Throughout this report, where quotes from respondents are included, these have been chosen as representative comments in relation to the issues raised.

Purpose of the Report

1.29 This report represents the One Year After (OYA) study for the A38 Dobwalls Bypass and has been prepared as part of the Post Opening Project Evaluation (POPE) commission for the Highways Agency.

Overview of POPE

1.30 The Highways Agency (HA) is responsible for improving the strategic road network (motorways and trunk roads) by delivering the Major Projects Programme (formerly Targeted Programme of Improvements or TPI). 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. 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 Central Government NATA (New Approach to Appraisal) objectives for Transport (Environment, Safety, Economy, Accessibility and Integration) have been achieved. The contents of the AST (and where necessary it's more detailed supporting documentation) allow judgements to be made about the overall value for money of the scheme. The AST for this scheme is shown in Table A.1 in the Appendix.

1.31 POPE studies are undertaken for all Major Schemes. During the planning process, scheme effects are based on well informed predictions. However, it is vital to identify the strengths and weaknesses in the techniques used for appraising schemes so that improvements can be made in the future. For POPE, this is achieved by comparing information collected before and after a scheme opens to traffic, with predictions made during the planning process. Outturn impacts are summarised in an Evaluation Summary Table (EST). The EST summarises the extent to which the scheme objectives have been achieved and the EST for the Dobwalls Bypass scheme is shown in Table B.1 in the Appendix.

The Evaluation Approach

1.32 In line with the POPE procedures, this report compares traffic conditions in October 2006 before the bypass opened with that of one year after opening in October 2009. The report summarises traffic impacts as well as the five DfT appraisal objectives.

Organisations Involved in this Study

1.33 The following organisations have been involved in this study and have supplied data and information used in the scheme evaluation:

- The Highways Agency;
- Cornwall Council;
- Relevant Parish Councils;
- South West Tourism; and
- Statutory Environmental Bodies.

Report Structure

1.34 Following this introduction, the report is divided into 7 further sections as follows:

Section 2 – Traffic Analysis

Section 3 – Safety

Section 4 – Economic Evaluation

Section 5 – Environment

Section 6– Accessibility and Integration

Section 7 – Conclusions

Section 8 – Appraisal Summary Table and Evaluation Summary Table

1.35 Explanations of the technical terms used throughout this document are provided at the end of the report in a Glossary of Terms.

2. Traffic Analysis

Introduction

2.1 In order to assess the varied traffic impacts of the scheme, this section examines the following;

- Changes in Average Weekday Traffic (AWT) volumes, between 2006 and 2009;
- Journey time changes along the routes affected by the scheme improvements;
- Observed changes in traffic volumes in the area compared to those forecast during the appraisal process; and
- Observed journey times compared to predicted journey times.

Data Collection

2.2 Traffic data used for this report was collected during the following time periods;

- October 2006 (Before opening); and
- October 2009 and April 2010 (to represent One Year After opening).

Sources of Data

2.3 Traffic data used throughout this report was taken from the following sources;

- Permanent automatic traffic count (ATC) sites from the Highways Agency's permanent TRADs (Traffic Database system) sites and Cornwall Council (CC); and
- Journey time surveys and traffic counts commissioned specifically for this study by Atkins in 2006 and 2009.

Count Locations

2.4 Table 2.1 provides details of the count sites used within this report, including location, source and dates of traffic flows used. Figure 2.1 shows the location of each of the traffic count sites, and corresponds to the numbering used in Table 2.1.

Figure 2.1 – Traffic Count Locations

Table 2.1 – Traffic Count Locations

Site Number	Road	Location	2006 Survey	2009/10 Survey
1	A390	South of Treburgie Water	✓	✓
2	Former A38	West of Dobwalls Crossroads	✓	✓
3	Former A38	East of Dobwalls Crossroads	✓	✓
4	Former A38	West of Quarry	✓	✓
5	Former A38	Outside Moorswater Industrial Estate	✓	✓
6	'Old Road'	Into Liskeard	✓	✓
7	A38 Bypass	Eastern End	n/a	✓
8	A38	Liskeard	✓	✓
9	A38 Bypass	Western end	n/a	✓
10	A38	East of Doublebois	x	✓
11	A38	West of Doublebois	✓	✓

Approach

Seasonality

2.5 In order to ensure that the 'before' and 'one year after' flows are directly comparable, consideration needs to be made in relation to seasonality. All of the before counts were undertaken in October, whilst the traffic flows used to represent the one year after situation are a mix of October and March flows. A TRADS site on the A38 between Dobwalls and Bodmin has been analysed, and shows that October 2009 flows were 4.5% higher than those seen in March 2010. Any traffic count undertaken in March 2010 has therefore been adjusted using this factor to represent October 2009 flows to ensure like for like comparisons can be made.

Background Changes in Traffic

2.6 Historically in POPE scheme evaluation, 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 Trip End Model Presentation Program (TEMPRO).

2.7 However, due to the current economic climate which has seen widespread reductions in motor vehicle travel in the UK as a whole since the latter part of 2008, it is no longer deemed appropriate to use this method of factoring 'before' counts to reflect background changes in traffic.

2.8 In order to better understand the effects of the recent economic downturn, it is useful to look at the long term trends in traffic in the area of the scheme, and also on the A38 where there has been good long term data availability for the years prior to and following the opening of the Dobwalls Bypass.

Regional and National Trends

2.9 The Department for Transport (DfT) produces observed annual statistics for all motor vehicles by local authority. At present, data is available up to the year 2009. This data between 2006 and 2009 is shown in million vehicle miles (mvm) for the county of Cornwall. DfT also produce information regarding national traffic trend changes by road type, this is shown between 2006 and 2009 for Great Britain as a whole in Table 2.2.

Table 2.2 - Local and Regional Trends in Million Vehicle Miles

Year	Great Britain[6]		Cornwall[7]	
	mvm	Factor of change on 2006	mvm	Factor of change on 2006
2006	78,900	0	2,857	0
2007	79,700	1.01	2,832	0.99
2008	79,100	1.00	2,924	1.02
2009	78,000	0.99	2,901	1.02

[6] Transport Statistics Bulletin: Road Traffic and Congestion in Great Britain for all motor vehicles, DfT,
[7] Estimated traffic for all motor vehicles, on all road types by Local Authority: 1993-2009, DfT

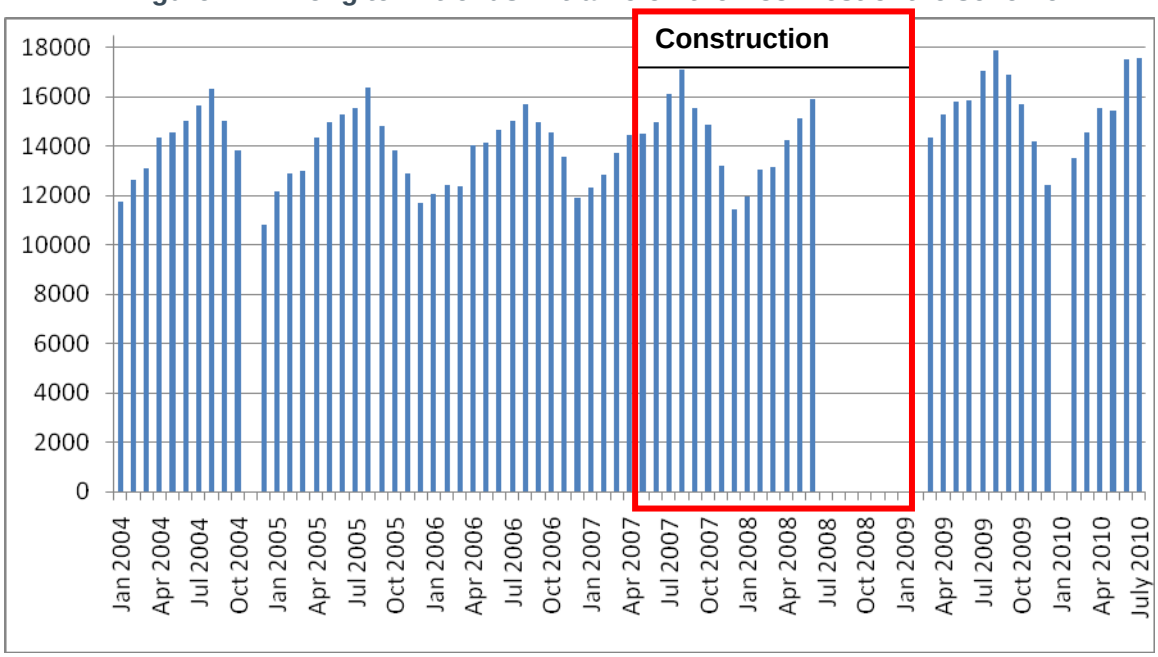
2.10 It can be seen from the table above that the trend in traffic growth for Great Britain as a whole indicates that there has been an overall reduction in the amount of traffic on the roads since 2007, and provisional data for 2010 suggests that this has fallen again, compared to the previous year.

2.11 Cornwall appears to have experienced a trend opposite to that seen nationally, particularly for 2008 where national trends show a decrease in traffic. Data for Cornwall in 2009 shows that there has been a slight reduction in traffic compared to the levels observed in 2008, however it is noted that traffic for Cornwall in 2009 remains higher than seen in 2006, which is the opposite to that seen in England as a whole. Based on this, figures stated in the remainder of the report are likely to contain an element **of overall background growth in the region of 1% between 2006 and 2009, although all flows presented in this report are as observed, and have not taken background growth into account.**

Trends on the A38

2.12 In order to assess how the changes in traffic levels in the vicinity of the scheme fit within the context of local, regional and nationally observed trends, it is necessary to review long term traffic levels on the A38. Figure 2.2 therefore shows the long term monthly trend in 2-way Average Weekday Traffic (AWT) for a count site on the A38 to the west of the Dobwalls bypass. It should however be noted that long term trends for the A390 are not available, although are assumed to follow similar trends.

Figure 2.2 – Long term trends in traffic on the A38 West of the scheme



2.13 It can be seen from Figure 2.2 that:

- Flows in October 2009 are approximately 7% higher than flows in October 2006, before construction started on the Dobwalls bypass. This increase is higher than seen over the same time period on the A38 to the east of the scheme where approximately 4% was observed, although it indicates that overall there has been an upward trend in traffic flows in the south west;
- Traffic growth on the A38 over the years between 2006 and 2009 has exceeded the regional and nationally observed levels of traffic growth over the same period;

- The A38 west of Dobwalls bypass, prior to the scheme opening, carried approximately 40% more traffic in the summer months compared to the lowest flows recorded in winter; and
- Post opening, the flows in August 2009 are 46% higher than those seen in December 2009. This perhaps shows that, rather than flows increasing uniformly across the year post opening, there is higher increase during the summer months due to holiday traffic.

2.14 Despite the recession which is widely agreed to have started in late 2008 (two consecutive down quarters of Gross Domestic Product), figures obtained from the United Kingdom Tourism Survey (UKTS by Visit England) suggest that there has still been an overall increase in visitors (those staying at least one night) in Cornwall, with an increase in annual visitor numbers from 20.3 million in 2006 to just over 21 million in 2009, which may explain why traffic figures have slightly increased in this area compared to other counties less influenced by tourism. This does not include day visitor numbers which are more difficult to capture.

2.15 Whilst the county of Cornwall is a tourist attraction in itself, the proximity of the Eden Project just 15 miles south of Dobwalls on the A390 may also have helped to maintain traffic numbers through the recession period during the summer months, as it attracts over 1 million visitors a year[8]. It is likely that the recession is the reason for increased tourism within the UK, as fewer people are travelling abroad.

2.16 **Taking the above into account, it should be noted that traffic flow figures presented in this report are as observed, and have not been adjusted to take account of any potential background traffic growth in the area.**

Traffic Volume Analysis

2.17 Traffic volumes around Dobwalls are shown in Table 2.3 which shows the Average 2 Way Weekday Traffic (AWT) flows and Average Daily Traffic (ADT) flows before scheme opening (2006), and one year after opening (OYA) (2009). Table 2.3 shows the changes in AWT around Dobwalls.

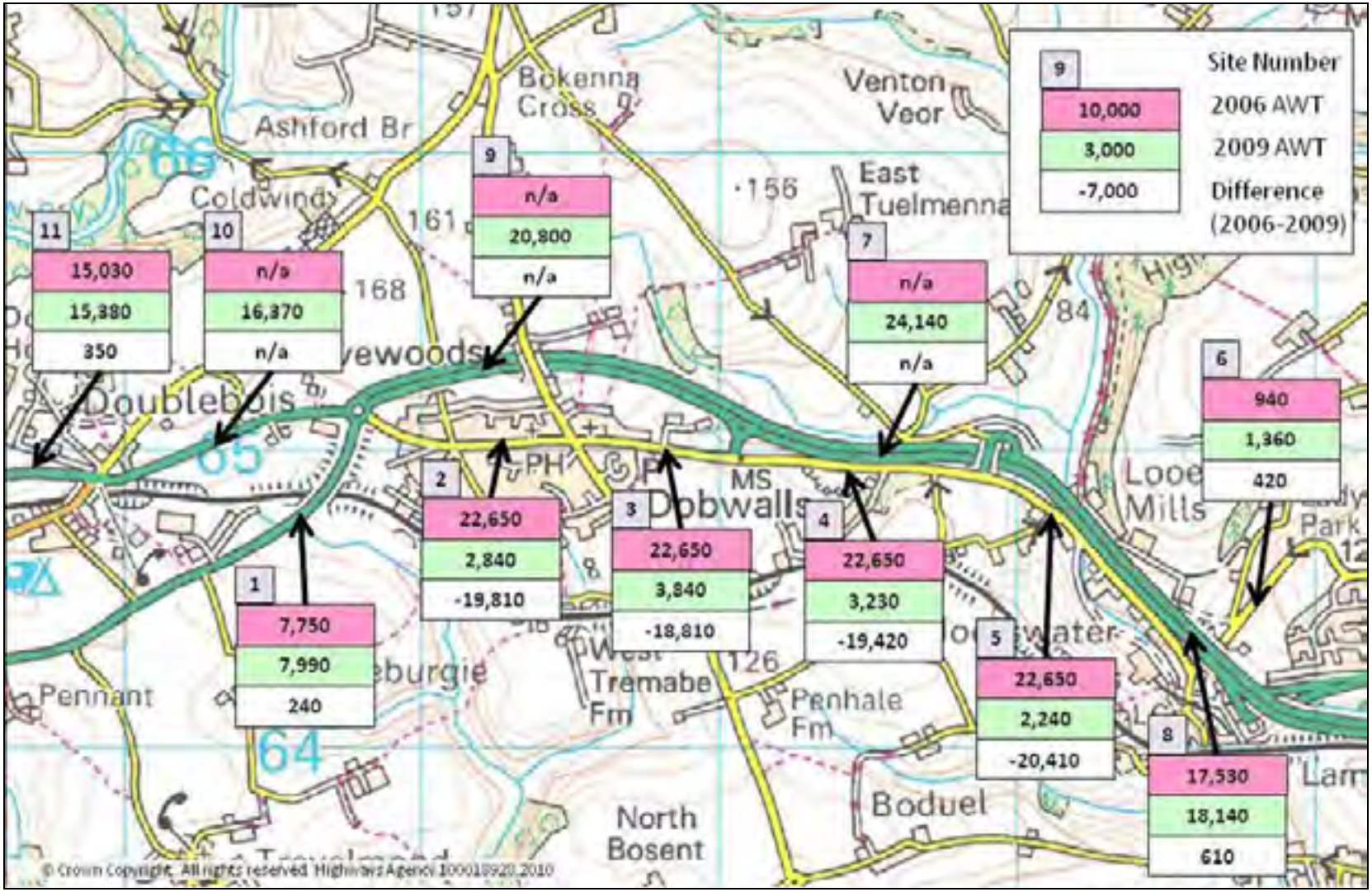
[8] Eden Project, http://www.edenproject.com/index.php 2010

Table 2.3 – Change in 2 way Average Weekday Traffic

Site/ATC	Description	2006		2009		2006-2009 OYA	
		AWT	ADT	AWT	ADT	AWT Change	% Change
1	A390 South of Treburgie Water	7,750	7,400	7,990	7,490	240	3%
2	Former A38 West of Dobwalls Crossroads	22,650	21,500	2,840	2,570	-19,810	-88%
3	Former A38 East of Dobwalls Crossroads	22,650	21,500	3,840	3,450	-18,810	-83%
4	Former A38 between new on off slips	22,650	21,500	3,230	2,820	-19,420	-86%
5	Former A38 outside Moorswater Industrial Estate	22,650	21,500	2,240	1,870	-20,410	-90%
6	Old Road into Liskeard	940	800	1,360	1,140	420	45%
7	A38 Bypass (eastern end)	n/a	n/a	24,140	22,340	n/a	n/a
8	A38 Liskeard	17,530	16,700	18,140	17,170	610	4%
9	A38 Bypass (western end)	n/a	n/a	20,800	19,360	n/a	n/a
10	A38 East of Doublebois	n/a	n/a	16,370	15,300	n/a	n/a
11	A38 West of Doublebois	15,030	14,310	15,380	14,610	350	2%

Increase in traffic volumes Decrease in traffic volumes

Figure 2.3 - Change in 2 way Average Weekday Traffic



2.18 The following observations can be made regarding the traffic flows in the Dobwalls area One Year After opening:

- The old A38 through the village of Dobwalls has seen some of the most significant reductions in traffic. The western end of the village (site 2) has seen an 88% drop (-19,810 vehicles) whilst the eastern side of the village (site 3) has seen a drop of 83% in traffic post opening. This is because through traffic now uses the bypass, rather than travelling through the centre of the village.
- The western end of the bypass (site 9) carries 20,800 vehicles on an average weekday, showing that a large proportion of traffic has transferred to the new road.
- Site 5 outside the Moorswater Industrial Estate has seen the largest percentage decrease in traffic, with a reduction of 90% compared to before opening. This is due to the main A38 through traffic now bypassing this section of road, and vehicles accessing Dobwalls no longer need to travel down this section of road.
- Site 1 on the A390 west of Dobwalls has seen a slight increase in traffic of 3%, equating to approximately 240 vehicles on an average weekday.
- Traffic using the A38 to the west of the scheme has increased slightly, as at Doublebois (site 11) there has been a 2% increase in traffic, however this only equates to an additional 350 vehicles.
- Site 8 to the east of Dobwalls, at Liskeard has seen the largest increase of all the A38 sites as a 4% increase is seen. The local transport plan identifies a number of development areas near Liskeard, which may have contributed to the slight increase in traffic, which is in line with predictions, as this was included in the forecast traffic scenario.
- Site 6 'Old Road' leading to the west of Liskeard has experienced the highest percentage increase in traffic of 45%, although this only equates to 420 vehicles on an average weekday. Further analysis of the data indicated that 90% of all traffic using this route used it between 7am and 7pm, and the average speed was around 25-30mph, on a 60mph road. This suggests that the increase in traffic is from Liskeard residents using this route to access the A38, probably to avoid congestion in Liskeard on route to the alternative accesses to the A38. Figure 2.4 indicates that the route is very narrow with a steep gradient, therefore is not an ideal route for large vehicles. The increase may also be due to local traffic travelling to Moorswater Industrial Estate via Old Road. This Estate, prior to the scheme, had direct access onto the A38 and thus local traffic would use that route. This direct access was closed as part of the scheme, and this traffic would now have to travel up to the next junction on the A38 and return back to the Estate via the 'new' distributor road.

2.19 A comment received from CC suggests that this increase in traffic has been noted by residents close to this road.

Figure 2.4 – 'Old Road' towards Dobwalls/Moorswater Industrial Estate from Liskeard

Screenline Analysis

2.20 In order to identify any strategic rerouting around Dobwalls, a number of the counts detailed in this section of the report have been grouped into a screenline. A screenline can be described as an imaginary line intersecting routes on a map to allow analysis of vehicle movements across a corridor.

A38 Screenline

2.21 This scheme was considered to be of regional importance, rather than strategic importance therefore the screenline has only been considered over the main A38 corridor at Dobwalls, as the scheme appraisal did not expect wider rerouting. Figure 2.5 shows the location of the screenline considered, with the counts that have been used. Due to traffic count unavailability, minor north/south roads have not been included in the screenline.

Figure 2.5 – Location of Screenline

2.22 Table 2.4 shows the total two way average weekday traffic flows across the screenlines for 2006 (before opening) and 2009 (OYA).

Table 2.4 – Screenline Traffic Flow Comparisons

Screenline	2006	2009	Difference (2006-2009)	% Difference (2006-2009)
A38 Dobwalls village (ATC 3)	22,650	2,840	-19,810	-88%
A38 Bypass (ATC 9)	-	20,800	+20,800	-
Screenline	**22,650**	**23,640**	**990**	**4.4%**

2.23 The following observations can be made about traffic changes on the A38 screenline:

- One year after opening, the overall traffic in the corridor has increased by 4.4%. This is similar to the traffic flow increase seen on the A38 at Liskeard to the east of the scheme. This suggests that a very small amount of traffic may have been drawn to the corridor as a whole;
- It is possible that a small element of the traffic on this screenline may be double counted (traffic originating in Dobwalls village going west to join the A38 eastbound), although this is likely to be traffic at the eastern side of the village, rather than the western side which is included in this screenline.

Hourly Profile

2.24 The hourly distribution of traffic flows across the day can be useful in determining the nature of flows on a link. For this scheme, average weekday hourly profiles have been presented for both eastbound and westbound directions on the former A38 in Dobwalls village, for 2006 and 2009.

Figure 2.6 – Eastbound hourly flows on the former A38 through Dobwalls village

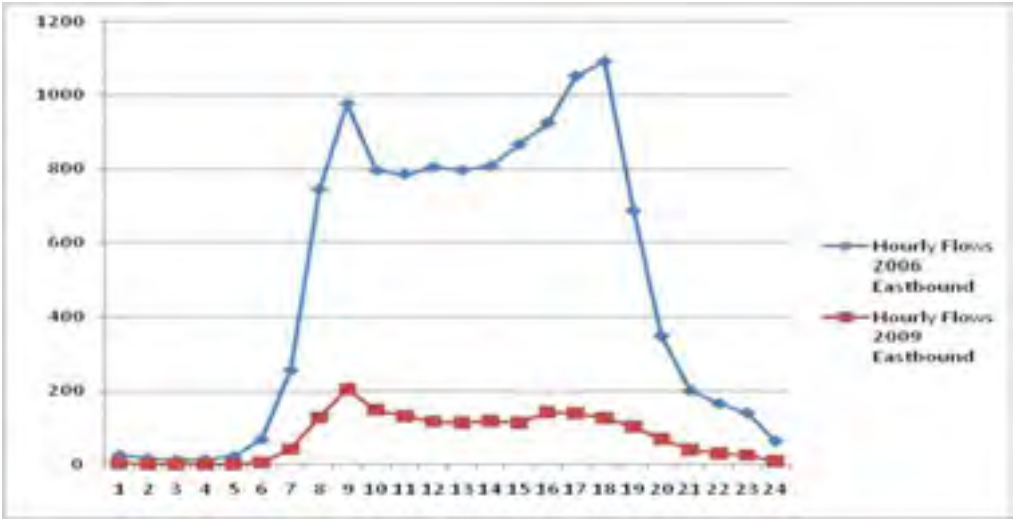
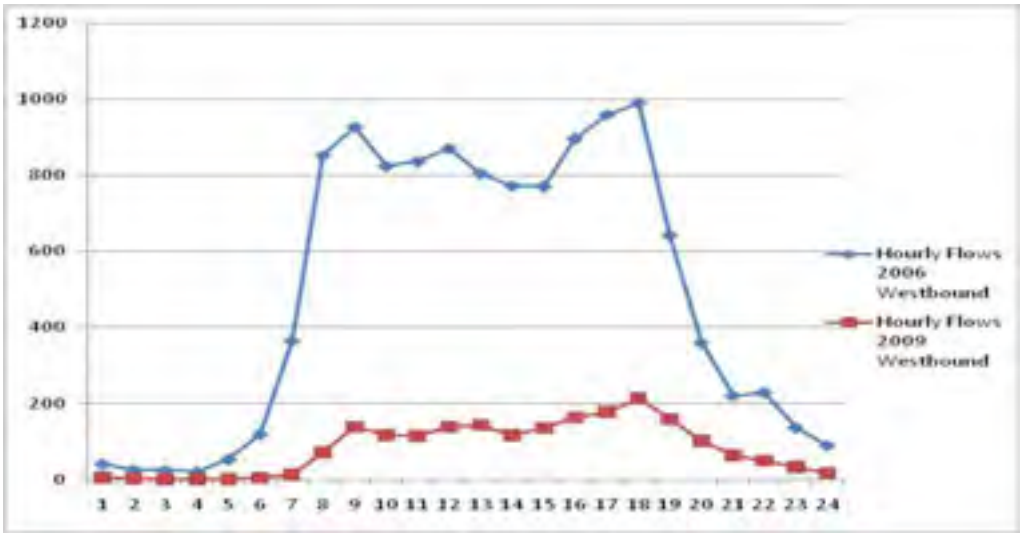


Figure 2.7 – Westbound hourly flows on the former A38 through Dobwalls village



2.25 The following key points can be observed from the graphs;

- Hourly flows on the old road in the eastbound direction show that the overall flows are lower throughout the day and the profile has changed. The peaks and interpeaks are less pronounced after the bypass opened, suggesting that the traffic that remains on the old road is local traffic rather than commuter traffic that provides more definite peaks in traffic flow resulting in minimal change in traffic flow throughout the day; and
- Hourly flows in the westbound direction show a similar pattern, with a flattening of the overall profile throughout the day, with small AM and PM peaks.

HGV Usage

2.26 The Stage 3 Scheme Assessment Report (February 2005) for this scheme stated that the AADT for this scheme in 2003 was 20,700, with approximately 9% (1,863) HGVs. It should be noted that the classification method used to derive this figure is unknown, however the similarity with the post opening figures overall suggests that a comparable classification has been used in the POPE before and after periods.

2.27 Classified ATC data on the old A38 in Dobwalls was not available for the prescheme situation, as the TRADs count did not record classified data. However, data is available for the old A38 through Dobwalls in 2009 post opening. This showed that the percentage of HGVs using the old road has reduced to approximately to 3.7% (or approx 130 vehicles per day).

2.28 Classified data at the western end of the bypass shows that there are approximately 8.5% of the average daily flow which are HGVs, equating to 1,640 vehicles. This suggests that overall there has been no increase in the number of HGVs using this route as a result of the scheme. There has in fact been a slight reduction in HGVs of approximately 5% in the corridor as a whole. Some of this reduction is likely to be due to the fact that lorries accessing the Moorswater Industrial Estate no longer have to travel through the village of Dobwalls, and, if travelling to and from the east of the scheme, they would not need to pass either count site therefore being excluded from the counts.

2.29 HGV signing for the Eden project is evident around the scheme, sending HGVs down the A38 towards Bodmin rather than down the A390 to St Austell. This routing was the same before

the scheme opened, therefore it is not anticipated to have had any impact on HGVs through the corridor.

Forecast vs. Outturn Traffic Flows

2.30 Information regarding the forecast traffic impacts for this scheme is included in the Forecasting Report, and the same flows are used in the Environmental Statement for this scheme. Table 2.5 shows comparisons at sites where both predicted and outturn traffic flows are available. The numbers relating to observed traffic flows in Table 2.5 do not correspond with those in Figure 2.3 because Figure 2.3 presents a monthly Average Weekday Traffic (AWTs), whereas Table 2.5 shows Annual Average Daily Traffic (AADTs).

Forecast Assumptions

2.31 The forecasts were based on a planned opening year of 2008 and design year of 2023, and are based on the scheme that was constructed, as detailed in the introduction of this report. A low and high growth scenario was generated based on TEMPRO and NRTF growth figures.

2.32 Base traffic flows for 2003 were used in the appraisal, and factored up to represent the forecast opening year of 2008 using an estimated average increase in traffic of just over 5% between 2003 and 2008 for low growth, and 18% for high growth. Flows were modelled using SATURN (**S**imulation and **A**ssignment of **T**raffic to **U**rban **R**oad **N**etworks) modelling software, and assumed a small element of new development trips and induced trips. It is understood that some of the expected development for the opening year has been completed, although due to the recession, not as many residential properties have been completed to date. The actual growth on the A38 (west of scheme) between 2003 and 2008 has been observed to be approximately 5%, therefore approximately in line with the predicted low growth in the model.

ATKINS

Table 2.5 – Predicted Traffic Flow Changes

Count Site number	Location	2003 base	2006 (actual before flows)	Actual OYA (2009)	Do Something 2008 low growth	% difference from low growth forecast	Do Something 2008 high growth	% difference from high growth forecast
11	A38 West of Doublebois crossroads	13,700	14,300	14,600	14,300	2.3%	15,900	-5.0%
10	A38 East of Doublebois crossroads	12,900	n/a	15,300	13,600	12.3%	15,200	4.0%
1	A390	7,800	7,400	7,500	8,300	-9.2%	9,200	-15.0%
2	Former A38 Dobwalls west of crossroads	20,500	21,500	2,600	1,900	34.1%	2,100	22.7%
3	Former A38 through Dobwalls, east of crossroads	20,700	21,500	3,500	2,800	23.8%	3,100	36.8%
4	Former A38 by Quarry	21,300	21,500	2,800	2,800	1.1%	3,200	-11.2%
5	Former A38 east of Looe Mills junction	21,600	21,500	1,870	2,150	-13.1%	2,500	-25.1%
6	Moorswater Industrial Estate Road	2,500	n/a	1,870	1,900	-0.7%	2,200	-28.8%
7	Bypass, east of entrance to MIE	21,600	21,500	22,300	22,100	0.9%	24,800	-6.8%
8	A38 Liskeard	15,600	16,700	17,200	16,800	2.5%	19,200	-6.6%
9	Bypass - western end	n/a	n/a	19,400	19,800	-2.0%	22,000	-8.7%
7/9	Bypass by Quarry (between slip roads on and off)	n/a	n/a	20,900	20,600	1.4%	23,000	-6.3%
2, 9	**A38 Screenline**	**n/a**	**21,500**	**21,900**	**21,700**	**1.2%**	**24,200**	**-9%**

Accuracy of forecasts

2.33 Table 2.5 shows that the predicted traffic flows for the opening year on the bypass were relatively accurate, with the central and eastern sections of the bypass showing flows between the high and low growth estimates. Flows on the western section of the bypass are slightly below the low growth estimates.

2.34 Flows through the village (Sites 2 & 3) are less accurate and higher than both the high and low predictions. This suggests that the expected level of reassignment has not occurred, although a significant proportion of traffic has transferred to the bypass. This may be due to an underestimate of the amount of local traffic.

2.35 The sections nearest the industrial estate (Site 6) and the quarry (Site 4) which are not in residential areas are closer to low growth predictions.

2.36 Flows on the A38 through Doublebois vary, with traffic higher than both the high and low growth predictions between the village and the roundabout with the A390. Traffic to the west of the village is seen to be between the high and low growth levels expected.

2.37 Traffic flow predictions across the screenline (including the bypass) have been accurate (falling between the high and low growth scenarios), although the traffic distribution split is inaccurate, as traffic is much higher on the old road, and slightly lower than predicted on the bypass.

2.38 Flows on the A390 are below the levels predicted, suggesting that perhaps traffic is continuing westbound along the A38 to the crossroads at Doublebois before turning left down the B3360 to reach the A390 further south. In addition, signing on the A390 northbound directs traffic towards the A38 (Bodmin) to use the B3360 to Doublebois, missing the traffic count used for this survey. In addition to this there was an over-prediction of traffic flows in the Do-Minimum scenario.

Reasons for Forecasting Inaccuracy

2.39 The following points suggest possible reasons why, in relation to this scheme, there have been some inaccurate traffic flow forecasts:

- Traffic on the old route is significantly higher than expected, possibly due to an underestimation of the level of village traffic which still requires access to and from the village, and therefore will not transfer to the bypass;
- The underestimate of traffic using the old road may be partly explained by considering the impact of the north south route which crosses the former A38 at the crossroads in the centre of the village. No traffic data is available for North-South routes, however any traffic using these routes must now go through the village, as other routes have been severed by the bypass or bridges provided which don't allow access to the bypass without travelling through the village first; and
- The higher than forecast traffic on the A38 to the east of Doublebois is less easily explained. It has been suggested by the Highways Agency that many satnavs may not have been reprogrammed, therefore misdirecting people to the crossroads in Doublebois to access the A390 rather than using the roundabout. Signing is clearly available at the roundabout to indicate that the A390 should be accessed from the roundabout in the westbound direction, however signs still remain from the eastbound direction at Doublebois to send you to the A390 via the B3360. This should be considered at the Five Years After (FYA) stage to establish if the trend continues.

2.40 As detailed earlier, Cornwall has not seen the reduction in traffic observed elsewhere in the country, therefore the growth forecasts applied to the 2003 base flows for the low growth scenario have more or less been realised. This indicates that it is more likely that any error is due to the reaction of the model regarding traffic reassignment, rather than the anticipated growth in the area.

Journey Times

2.41 One of the objectives of this bypass scheme was to reduce delays on the old A38 route through Dobwalls. In order to assess the schemes success against this objective, journey times along the old A38 route and the new bypass have been compared in the before and after periods.

Data Collection

2.42 Surveys of journey times were collected along the following routes, with the relevant survey years shown in brackets;

- **Route 1**
  - **Before**: Old A38 between the St Neot Road junction to the west of the scheme and the junction with the B3254 at Liskeard using the old road (2006)
  - **After:** A38 between the St Neot road junction to the west of the scheme, then using the old route through the village, and rejoining (using the appropriate slip roads) the A38 towards Liskeard. (2009);
- **Route 2**
  - **After**: A38 between the St Neot Road junction, then using the bypass to the junction with the B3254 at Liskeard (2009);

2.43 The journey time surveys involved timing six to eight ‘runs’ in each direction along each predetermined route during the morning (AM) peak (0700-0900), interpeak (1000-1500) and evening (PM) peak (1600-1800) periods. Each route had a series of intermediate timing points to provide a detailed breakdown of journey time and average journey speed along the route.

2.44 Each of these routes are detailed in Figure 2.8. The bypass layout has affected the eastern end of the old road, therefore vehicles requiring access to and from Dobwalls village are now required to use part of the new bypass at the eastern end of the route. The bypass operates at a higher speed than the old road, however there are now more junctions to negotiate in the new layout for traffic using the old road through Dobwalls. In addition, the speed limit through the village of Dobwalls has been reduced post opening from 40mph to 30mph, resulting in a slightly slower free-flow journey time on the old road than in the pre scheme situation.

2.45 Table 2.6 shows the initial impact of the bypass on journey times in the opening year on the A38 route.

Figure 2.8 - Journey Time Survey Routes

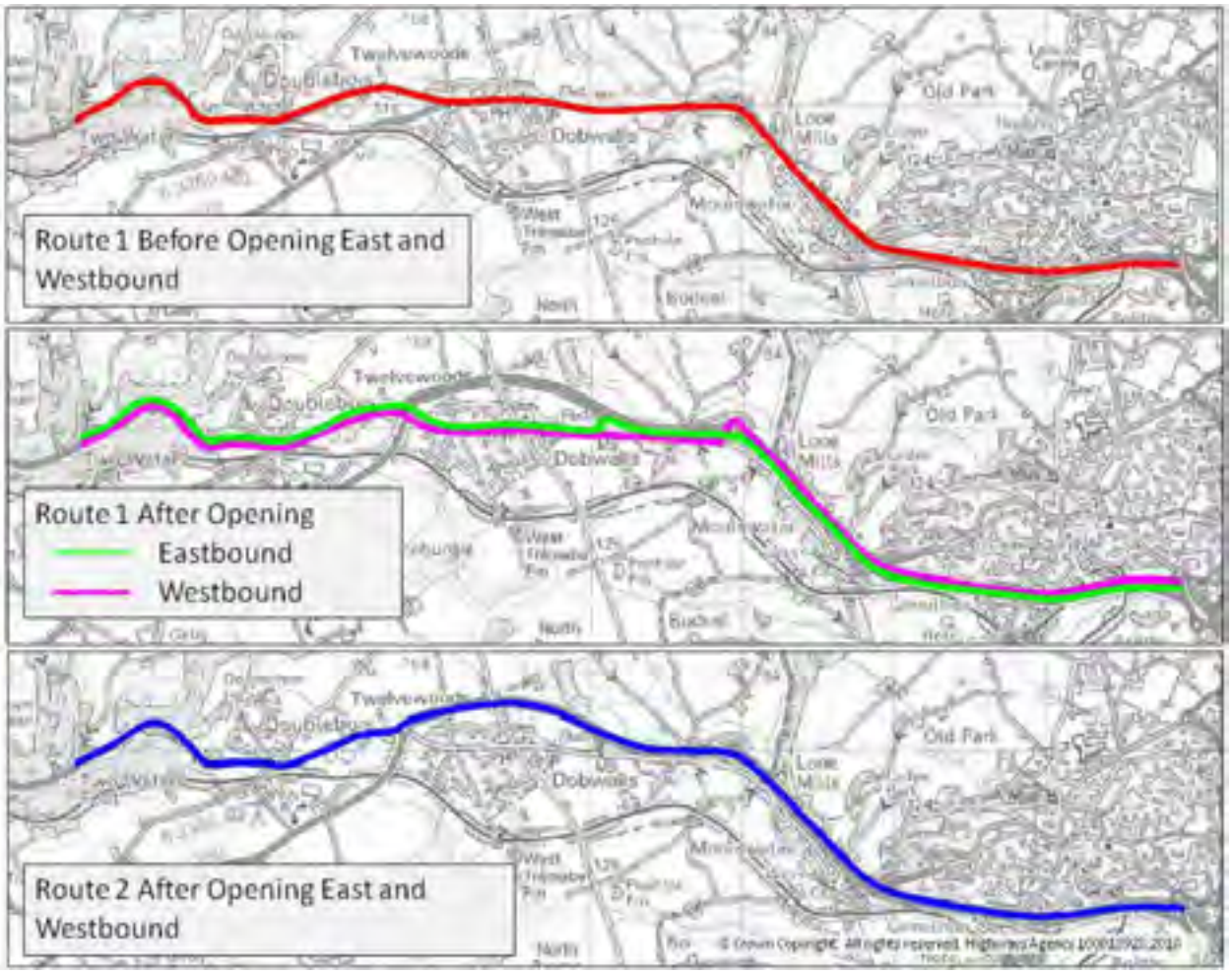


Table 2.6 – Comparison of Old and New A38 Journey Times One Year After Opening

Direction	Period	Route 1 (Former A38)				Route 2 (Bypass)		
		Before	After (2009)	Time Difference	% Diff	After (2009)	Time Difference	% Diff
Eastbound	AM	07:04	07:23	-00:20	-5%	05:46	01:18	18%
	IP	06:43	07:08	-00:25	-6%	05:37	01:06	16%
	PM	07:04	07:07	-00:03	-1%	05:41	01:27	20%
Westbound	AM	10:56	06:55	04:00	37%	05:36	05:19	49%
	IP	06:26	06:44	-00:18	-5%	05:42	00:44	11%
	PM	08:11	06:29	01:42	21%	05:36	02:35	32%

2.46 Key points seen in Table 2.6 are;

- Significant savings can be seen when the bypass is compared to the former A38 in all time periods and both directions. The largest savings are in the westbound direction in the AM peak, followed by the westbound direction in the PM peak;

- Significant savings can also been seen on the former A38 in the westbound direction in both the AM and PM peaks, where savings of up to 37% (4 minutes) are seen in the AM peak;
- A small increase in journey time is seen on the former A38 in all time periods in the eastbound direction, as well as in the interpeak in the westbound direction. This is likely to be due the increase in the number of junctions along the old route post opening, as well as the reduction in speed limit from 40mph to 30mph. It is unlikely that such a small increase would be noticeable to traffic using the route; and
- Journey times along the old road are now more consistent across the day.

2.47 Reliability of journey times is discussed later in this report (Section 4) as it forms part of the Economy sub objective under Transport Economic Efficiency.

Forecast Journey Time Savings

2.48 The AST states that a total of 210,000 (Low Growth) or 270,000 (High Growth) vehicle hours would be saved per year. The AST also stated a saving of 1.4/1.7 minutes in the peak hours, and 1.1/1.2 minutes in the off peak. No details are available to indicate what these savings represent in terms of direction and route length.

2.49 The monetised forecast journey time benefits for this scheme were generated through the TUBA programme, which uses origin destination data rather than pure journey times, therefore the information provided in the AST is the only mention of time savings known.

2.50 For the purposes of this report it is not considered possible to make any comparisons between the observed and forecast journey time savings due to the lack of clarity regarding what the forecast saving represents. Journey time benefits of the scheme are discussed later in Section 4: Economy.

Public Perception of Journey Times and Congestion

2.51 A question within the residents questionnaire asked how in their view, the residents felt the following had changed since the opening of the bypass:

- Congestion through Dobwalls village; and
- ‘Through’ journey times on the new A38.

2.52 Due to the area being influenced by increased traffic in summer, residents were asked to consider these questions in relation to ‘during the summer tourist season’ and ‘out of the tourist season’ in order to establish if any perceived changes were specific to the time of year. The responses are summarised in

2.53

2.54

2.55 Table 2.7 and Table 2.8.

Table 2.7 –How has congestion changed since the bypass opened?

	Summer Season	Out of Season
1 – Worse	1 (0.4%)	1 (0.4%)
2	2 (0.8%)	3 (1.2%)
3	2 (0.8%)	12 (4.9%)
4	12 (4.9%)	32 (13.0%)
5 – Better	223 (90.7%)	193 (78.5%)
Left Blank	6 (2.4%)	5 (2.0%)
Total	**246**	**246**

Table 2.8 –How have journey times changed since the bypass opened?

	Summer Season	Out of Season
1 – Worse	1 (0.4%)	1 (0.4%)
2	2 (0.8%)	1 (0.4%)
3	11 (4.5%)	21 (8.5%)
4	28 (11.4%)	32 (13.0%)
5 – Better	195 (79.3%)	179 (72.8%)
Left Blank	9 (3.7%)	12 (4.9%)
Total	**246**	**246**

2.56 Key points to note from the tables are;

- In the summer season, 96% of respondents perceived that congestion had improved (score of 4 or 5) since the opening of the bypass. This improvement is mirrored out of the tourist season, with 92% of respondents suggesting that congestion was much improved;
- The number of respondents suggesting a neutral response to the perceived change in congestion (score of 3) is higher in the out of season situation compared to the summer season (0.8% compared to 4.9%). This could suggest that respondents did not consider congestion to be as severe out of the tourist season, which is supported by the traffic levels shown previously in this section;
- A similar pattern is shown in the responses for journey times, with 90.7% of respondents stating that journey times have improved post opening in the summer tourist season, compared to 85.8% out of the tourist season;
- There is a larger number of people responding neutrally in the out of season situation compared to the summer season situation, again suggesting that perhaps the problem was not perceived as severe in winter; and

- For both congestion and journey times, respondents who stated that these had not improved post opening only accounted for approximately 1% of respondents, with marginal differences between the summer season and out of season scenarios. Upon closer inspection, the main reasons for this were due to the perception that on road car parking caused congestion and is slowing down traffic using the former A38 through Dobwalls.

Key Findings: Traffic

Traffic Volumes

- The bypass carries between 24,100 (eastern section) and 20,800 (western section) vehicles on an average weekday (2 way);
- The scheme has removed between 83 and 88% of traffic from the centre of Dobwalls village, representing a decrease in traffic of up to 19,810 vehicles per weekday;
- In terms of the A38 to the east and west of Dobwalls, both have seen an increase in traffic, 4% to the east, and 2% to the west, suggesting that traffic has increased slightly in the corridor, with a 4.4% increase seen across the A38 screenline at Dobwalls;
- 'Old Road' Liskeard has seen the biggest increase in traffic, of 45%; and
- The scheme has successfully removed the majority of HGVs from the village, with these reducing from 1,860 a day, to just 130 per day.

Journey Times

- Journey time savings are apparent in all peak periods for the A38 bypass route compared to the former A38 route before the construction of the bypass. Savings of over 5 minutes (49%) are seen in the AM peak westbound and a 32% reduction in the PM peak; and
- Savings are also seen when using the former A38 in the westbound direction, where savings of between 21% and 49% are achieved. However, small time increases are seen in the eastbound direction on the former A38, which is likely to be due to the reduced speed limit (30mph) in force through Dobwalls village.

Accuracy of Forecasts

- Overall, the predicted traffic flows in the area were realised. The majority of actual flows were very close to the predicted low growth estimate, which is perhaps a reflection of the reduction in traffic growth during the recession, therefore the observed increases are seen to be in line with the low growth forecasts;
- Flows were under predicted on the former A38 through Dobwalls, where the OYA observed flows are significantly above the high growth scenario. The vast majority of traffic has however transferred to the bypass, suggesting that the level of traffic requiring access to the old road was underestimated (i.e those requiring access to the minor roads at the crossroads; and
- Limited information on forecast journey time assumptions was available for this scheme, therefore no comparisons have been made.

Perception of Local Residents

- In the summer season, 91% of respondents thought that journey times had improved post opening, with 86% agreeing for the out of season period; and
- 96% of respondent felt that congestion had improved in the summer season. Although a higher number of respondents scored neutral for congestion out of season, suggesting that perhaps the problem was not perceived to be so severe in the winter, and supports the traffic flows seen off season.

3. Safety

Introduction

3.1 This section of the report looks at how successful the scheme has been in addressing the sub-objectives of reducing accidents, and improving security. Personal Injury Accidents (PIAs) recorded in the area before the scheme opened have been compared with accidents occurring on the network after the bypass opened. The safety benefits arising from accident savings account for between 45% (Low Growth) and 30% (High Growth) of the total benefits expected for the scheme.

3.2 The assessment for the security sub objective has been based on observations made during the site visit undertaken in January 2010.

Data Sources

3.3 For the purposes of this report, accident data has been obtained from Cornwall Council for the years 2001-2010 (five years before construction, and one year after opening). The accident data is based on the records of PIAs recorded in the STATS19 data collected by police when attending accidents on the road network. Damage only accidents are not included, as these are not routinely collated in a consistent manner.

3.4 The accident data referred to in this report has not necessarily been derived from the national validated accidents produced by DfT. As such, the data may subsequently be found to be incomplete or contain inaccuracies. The requirement for up-to-date information and site specific data was a consideration in the decision to use unvalidated data. As it is sourced from a Local Processing Unit it is sufficiently robust for use in this context.

3.5 It should be noted that the following evaluation only considers one full year of 'after opening' data, therefore any conclusions drawn should be viewed with caution. Further analysis will be undertaken at the Five Year After (FYA) stage, where more robust conclusions will be drawn regarding the impact on accidents in the area.

Accidents and Casualties

Study Area Used

3.6 The forecast safety benefits of this scheme are derived from a COBA (Cost Benefit Analysis) model, which gives predicted accident savings for the opening year, and over the appraisal period (60 years). Where possible, in order to evaluate the safety benefits after scheme opening, the same geographical area is studied in order to make like-for-like comparisons between the forecast and observed impacts.

3.7 In this instance, the geographical study area used to forecast the scheme benefits is shown in Figure 3.1. This includes the old and new road, as well as the town of Liskeard to the east of the scheme, and Doublebois to the west of the scheme. The COBA model predicted that the major changes in accidents would occur on the roads that were altered as a result of the scheme. For the purposes of this study therefore, the area of analysis used in this study is the same area covered by the COBA model.

Figure 3.1 – Accident Analysis Area

Evaluation of Accident Numbers

3.8 Accident data has been obtained for the five years prior to the opening of the bypass (2002-2006). The construction of the bypass began in 2007 therefore accident data from January 2007 onwards has not been considered, as it is likely that the construction process resulted in atypical traffic flows/traffic diversions at various times through the construction process.

3.9 Whilst the main section of the bypass was open to traffic in December 2008, construction work continued on the A390 link road until March 2009. Therefore in order to ensure that the accident analysis for the after situation represents the impact of the fully completed scheme, accident records have been used for the after period between April 2009 and March 2010.

3.10 Accident records have been broken down into yearly periods, and by severity of accident. These have been broken down to show an annual average for the five year before period and the one year after period. Accident severity is categorised by the severity of the injury of the worst casualty.

Table 3.1 – Number of Personal Injury Accidents by Severity

	Time Period	Accident Severity			Total	Annual Average
		Fatal	Serious	Slight		
Five Years Before	2002	0	5	38	43	**45.4**
	2003	1	6	42	51	
	2004	1	3	41	46	
	2005	0	2	49	52	
	2006	1	2	36	40	
	Total	**3**	**18**	**206**	**227**	
One Year After	April 2009-March 2010	0	4	31	35	**35**
	Total	**0**	**4**	**31**	**35**	
Annual Saving in Opening Year						**10.4**

3.11 The key points that can be drawn from Table 3.1 are:

- In the five years before the scheme opened the annual number of accidents varied between 40 to 52 per year, giving an average of 45.4 accidents per year prior to the scheme opening;
- In the one year after opening 35 accidents were seen, giving an annual accident saving of 10.4 per year;
- Post opening no fatal accidents have been recorded. However, the number of serious accidents recorded post opening has increased slightly from an annual rate of 3.4 to 4 serious accidents per year; and
- Post opening, there has been a reduction in overall accidents; however the percentage of killed and seriously injured accidents has increased slightly from 9% to 11% per year, perhaps reflecting increased speeds as congestion has reduced.

3.12 It should be noted however, that the 'after' analysis is based on one year of accident data only, and therefore whilst it can be used to suggest initial findings, firm conclusions are unable to be drawn. Further analysis will be undertaken at the Five Years After stage.

Location of Accidents

3.13 The location of the accidents in the before period are shown in Figure 3.2, and the accidents in the after period in Figure 3.3.

Figure 3.2 - Accident Locations and Severity Before Opening

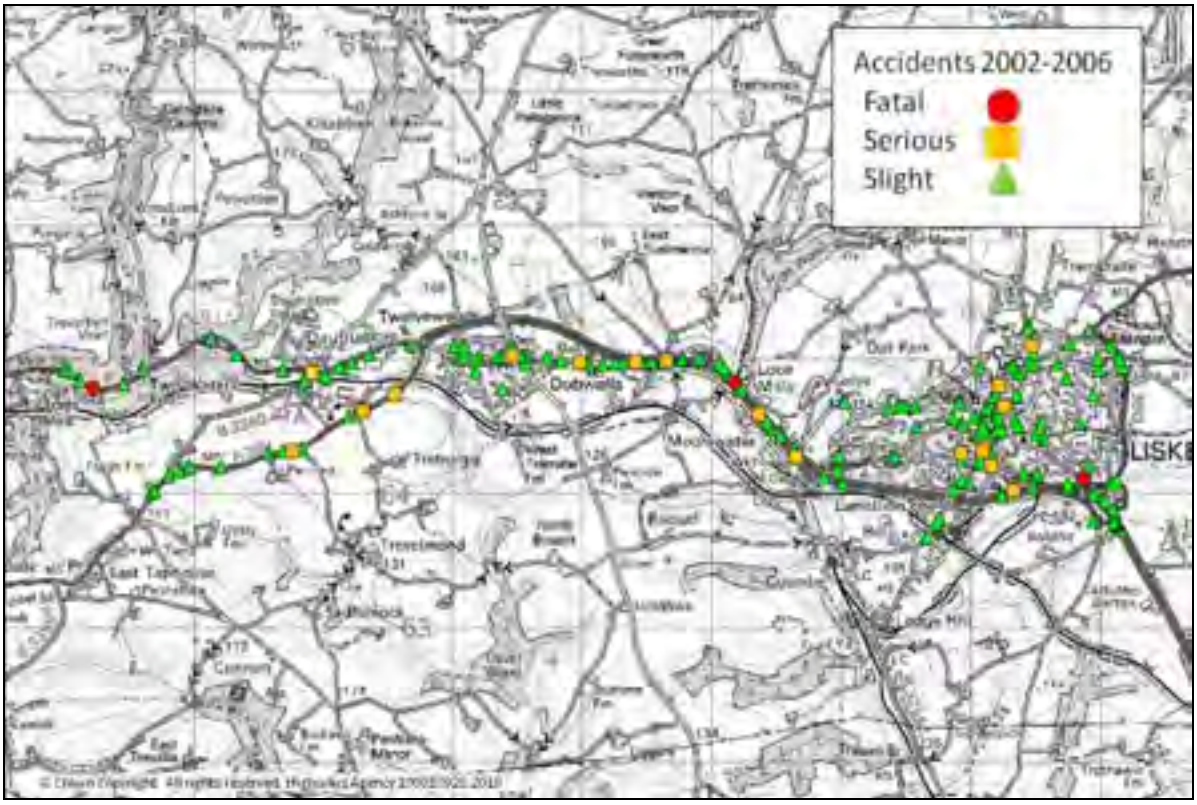
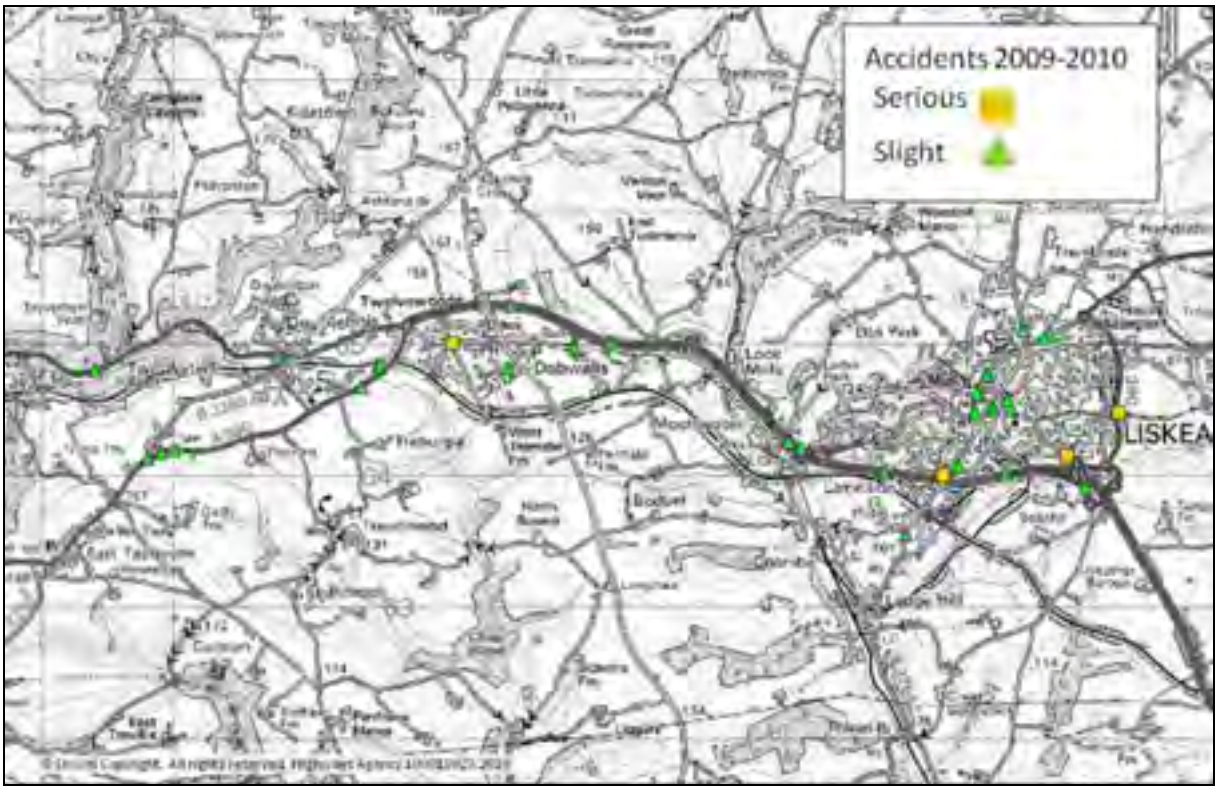


Figure 3.3 – Accident Locations and Severity After Opening



3.14 From these figures, the following can be noted;

- There have only been two accidents post opening on the bypass, both of which were slight accidents;
- There have only been two accidents on the old road post opening, one of which was serious in severity;
- There have been no accidents to date post opening at the new roundabout at the western end of the scheme; and
- There has only been one slight accident at the crossroads in Doublebois indicating that the perceived increased speeds and traffic flows through the village have not resulted in a safety issue at the crossroads in Doublebois.

3.15 A number of comments were noted from respondents to the residents survey, suggesting that there are perceived safety issues with the mini roundabouts in the centre of Dobwalls. An example comment is 'The two mini roundabouts on the old road are extremely dangerous'. As yet, this is not supported by any recorded accidents, however this should be considered at the FYA stage when more accident data will be available to draw more robust conclusions.

Accidents involving Non-motorised Users (NMUs)

3.16 In the five years prior to the construction of the scheme, there were three accidents involving a pedestrian and no accidents involving cyclists or equestrians in the study area. Two of the accidents were slight, and one was serious in severity.

3.17 In the 12 months since the bypass opened, there has been one accident involving a cyclist, which was classified as serious in severity in Liskeard.

NMU Audit

3.18 A NMU Audit[9] (currently in Draft) was undertaken on behalf of the Highways Agency upon completion of the construction stage of the scheme. The audit raised several issues in relation to potential safety hazards to NMUs. The nature of some of the main issues is briefly summarised below with more details and recommended actions provided in the full NMU Audit report:

- Instances of tactile paving uneven and lower than carriageway and signposts mounted on land several cm below it, creating trip hazards;
- No reflective band on any of the bollards which could cause an obstruction for visually impaired NMUs;
- Sections of the layby appearing unfinished and misused by vehicles creating substantial amounts of mud and creating slip hazards;
- Sloping areas where water and detritus collects and forms a slip hazard for NMUs;
- A new length of cycle/footway has been marked on the existing footway in Moorswater layby. The cycle/footway is severely overgrown with branches and shrubs and the surface is contaminated with moss and grass. This would cause NMUs to choose an alternative route in the layby in potential conflict with motorised vehicles;
- Beams under over-bridges causing potential hazards to unsuspecting NMUs;

[9] A38 Dobwalls Bypass NMU Audit Report, Completion of Construction Stage, 1 April 2010

- Drainage outlets on underside of over-bridges causing ponding and potential slip hazards to NMUs;
- There are no markings on the cycle/footway in parts which make its extremities indistinct for visually impaired NMUs and for all NMUs during darkness or inclement weather; and
- The lights and the illumination of the ADS (Advance Direction Sign) for the Liskeard off-slip were not working at the time of the Audit. The bulb for the ADS was missing. This plunges the area east of the 100yd countdown marker into darkness and may prevent NMUs from using the facility.

Evaluation of Casualty Numbers and Severity

3.19 The severities of the accidents detailed in the previous section are determined by the severity of the worst affected casualty. Reducing the number of people killed or seriously injured (KSI) in road accidents is a Government Objective (2010 Casualty reduction target). The following table shows the breakdown of the casualties, with the average number per year shown in brackets for the before period.

Table 3.2 – Annual Average Number of Casualties by Severity Before and After Scheme Opening

	Time Period	Casualty Severity			Total	Annual Average
		Fatal	Serious	Slight		
Before	(2002-2006)	3 (0.6)	20 (4)	281 (56.2)	304	60.8
After	(2009-2010)	0	5	41	46	46
					Saving	**14.8**

3.20 From the information presented in Table 3.2, the following observations can be made;

- The annual average number of casualties has fallen from 60.8 prior to the bypass opening, to 46 in the opening year, a reduction of 24%;
- No fatalities have occurred in the year since the bypass opened; and
- The annual average number of slight casualties has reduced by 27% from 56.2 to 41 per year.

3.21 These figures indicate that not only has the bypass resulted in a reduction in total casualties across the study area, but has also had an impact on the severity of casualties (particularly fatal accidents. The % KSI has increased slightly from 7.6% to 10.1% post opening. It should however be noted that there have been no fatal accidents since the bypass opened.

Accident Rate on A38 Compared to the National Average

3.22 The number of accidents along a length of road, together with its AADT (Annual Average Daily Traffic) flow can be used to calculate an accident rate, known as PIA/mvkm (personal Injury Accidents per million vehicle kilometre). This rate has been calculated for the old A38 route, before and after the bypass opened, and for the bypass in the after situation. This has then been compared to the national average for the relevant carriageway types both before and after opening.

3.23 It should be noted that only accidents occurring on the A38 bypass and the old road through Dobwalls village have been included in this calculation, therefore the numbers do not correspond with the numbers presented earlier in this section.

3.24 Before the scheme, this section of the A38 included a reduced speed limit of 40mph through the village, whilst the rest of the route was at the national speed limit, and therefore national averages for both the 30/40mph and 50/60/70mph speed categories have been provided for single carriageways.

3.25 Following opening, the old route has been significantly changed, particularly at the eastern end close to the Moorswater Industrial Estate where an access road is now in place, removing the majority of traffic from the entrance, and traffic flows now vary considerably along the length of the route. Therefore in order to calculate the overall pre and post opening accident rates, the appropriate flow on each section of road was used. In addition, as the old A38 covered a number of different types of road (30/40mph, 50-70mph single carriageway as well as a small section of dual carriageway/climbing lane), the national accident rates have been shown for each type of road.

Table 3.3 – Accident Rate Comparison[10]

Link	Length (km)	Pre Opening		Post Opening		National Average Accident Rate (PIA/mvkm)
		PIA/Year	Accident Rate (PIA/mvkm)	PIA/Year	Accident Rate (PIA/mvkm)	
Old A38	3.1	12.2	0.53	2.0	0.64	0.79 (30/40mph) 0.34 (50-70mph)
Bypass	3.2	-	-	2.0	0.08	0.14

3.26 The following can be concluded:

- The accident rate for the bypass one year after opening is 0.08 PIA/mvkm. This is below the national accident rate for a road of this type;
- One year after opening, it can be seen that the accident rate on the old A38 route has actually increased post opening, even though the actual number of accidents have reduced. This is due to the significant reduction in traffic on this route meaning that although only a small number of accidents have occurred, it is relatively large compared to the level of traffic; and
- The post opening accident rate for the old road, although increased, is still below the national average for a single carriageway road with a 30-40mph speed limit.

3.27 It should be reiterated however that these figures represent emerging trends only and firm conclusions can only be drawn at the five year after reporting stage when more accident data will be available.

[10] Based on DMRB Vol 13, Section 1, Part 2, Chapter 4, Table 4/1 Link and Junction Combined.

Statistical Significance of Observed Accident and Casualty Savings

3.28 In order to determine whether the changes in accident and casualty rates observed before and after the scheme opened are statistically significant, a Chi- Square test was undertaken. This test uses the before and after accident/casualty numbers and traffic flows to establish whether the change is significant, or likely to have occurred by chance. A Chi-Square value greater than 3.84 would suggest that we can be 95% confident that a change in accident/casualty rate is not a result of chance alone. This test just considers accidents on the old and new sections of the A38, and not the wider area.

3.29 The result of this analysis is *greater than 3.84*, which suggests that we can be 95% confident that the change in accident and casualty rate is not a result of chance alone and therefore the scheme has had a direct impact on accident and casualty rates, although this will be confirmed at the FYA stage.

Comparison with Forecast Accident Savings

3.30 This section compares the number of actual accidents discussed earlier, with those predicted to occur. The predictions have been obtained from the COBA model for this scheme and cover the whole of the COBA modelled area. For the 'actual' accidents, the Do Minimum figures are based on the annual average of five years data before the scheme construction started, whilst the Do-Something figures are based on the annual average of 12 months post opening data.

Table 3.4 – Comparison of Predicted and Observed Accidents

Annual Accidents		Low Growth	High Growth
COBA Predicted PIA's (Opening Year)	Do Minimum (without scheme)	41.7	37.6
	Do Something (with scheme)	32	28.6
	Saving	**9.7**	**9**
	% Change	**-23%**	**24%**
Observed PIA's (Opening Year average)	Do Minimum (without scheme)	45.4	
	Do Something (with scheme)	35	
	Saving	**10.4**	
	% Change	**-23%**	

3.31 Table 3.4 shows that the observed change in the number of accidents is slightly higher than predicted, however, the Do Minimum number of accidents was also higher. It can be seen from the overall percentage change in accident numbers that the observed reduction of 23% is in line with that which was predicted for the area as a whole for low traffic growth, which is the more representative situation seen at the one year after stage.

3.32 It is therefore concluded that at this initial stage the forecast accident savings over the appraised area are very accurate. This is likely to be due to the small appraisal area, ensuring that any changes can be accurately considered in the post opening evaluation.

However, these relate to very low numbers and further conclusions will need to be drawn at the five year after stage when more accident data will be available for analysis.

Residents Survey Responses

Safety for Drivers and Non Motorised Users

3.33 One of the questions within the residents questionnaire addressed the issue of safety with regards to drivers and non motorised users. They were asked if they agreed that *'safety for drivers/non motorised users had improved in the area since the bypass opened?'.* A summary of the responses to these questions is shown in Table 3.5.

Table 3.5 – Responses from Residents Regarding Safety for Drivers

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Left Blank
To what extent do you agree/disagree that safety for **drivers** has improved in the area since the bypass opened?						
Number of responses	104	74	39	22	6	1
Percentage	42%	30%	16%	9%	2%	<1%
To what extent do you agree/disagree that safety for **pedestrians and cyclists** has improved in the area since the bypass opened?						
Number of responses	152	59	19	9	7	0
Percentage	62%	24%	7%	4%	3%	0%

3.34 It can be seen from Table 3.5 that:

- For drivers, 72% of respondents strongly agreed or agreed that safety had improved post opening, with 11.4% of respondents suggesting that safety for drivers had not improved since the bypass opened. A further 16% of respondents stated a neutral impact on safety for drivers or left the answer blank;
- Several respondents stated that roadside parking in Dobwalls was now a problem, with several noting '*The village is now hazardous due to cars parked indiscriminately through it. Otherwise I would have strongly agreed';*
- Others noted that speeding through the village was now a problem '*there are no speed signs in the village so it's turning into a racetrack'*. The speed limit has been reduced from 40mph to 30mph since the bypass opened, with the speed limits displayed prominently at either end of the village, although no repeater signs are provided. It should be noted that the Highway Code states that there is no requirement for 30mph repeater signs where street lighting is evident, as this indicates a 30mph limit in the absence of any signing;
- For pedestrians and cyclists, 86% of respondents strongly agreed or agreed that safety had improved post opening, with 7% disagreeing. A further 7% stated a neutral impact on safety for cyclists and pedestrians;
- Several respondents stated that a reduction in vehicles makes it safer to cross the road and walk around the village '*There is a dramatic reduction of traffic in the village'; and*

'Walking through the village is a lot easier.' 'It is now much safer to cross the road in Dobwalls.' This is considered in more detail in the Severance section of this report.

3.35 The results of the residents survey generally support the evidence seen from the accident figures, showing that the reduction in traffic and improved footways etc have resulted in increased safety for both motorised and non motorised users. However, the comments regarding speeding and parking problems should be considered in more detail at the five year after stage.

Security

3.36 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 from individuals or from vehicles. The AST states that *'Less queues reduce driver vulnerability'* and gives a score of Slight Beneficial.

3.37 In order to assess this sub-objective, it was necessary to draw upon observations made during the site visit in January 2010. For highways schemes, guidance suggests that security issues may arise from the following:

- 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); and
- At signals or junctions (e.g. smash and grab incident while queuing at traffic lights).

3.38 The primary indicators for roads include surveillance, landscaping, lighting and visibility, emergency call facilities and pedestrian and cyclist facilities.

Evaluation of impacts on Security

3.39 A simple qualitative assessment of the scheme based on observations made during the site visit indicates that:

- The removal of traffic though Dobwalls, and hence delays associated with the signalised junction in Dobwalls have eased congestion, leading to freer flowing traffic which is less conducive to the possibility of smash and grab incidents (although in a semi rural location, this is considered to be of low risk);
- The entire length of the shared use footpath/cycleway running along the northern edge of the scheme is exposed due to the local landscape giving users good visibility;
- There are no lay-bys along the length of the scheme and no emergency call facilities; and
- There is modern lighting provided on the approach to the roundabout.

3.40 In summary, it is likely that this sub-objective could be scored as slight beneficial as the reduction in queuing traffic will have reduced driver vulnerability.

Key Findings: Safety

Accidents and Casualties

- For the one year period after the opening of the bypass, there has been a reduction of 10.4 accidents per year based on the same area used in the original COBA appraisal;
- Casualty numbers have also reduced by 14.8 from 60.8 to 46 per year. No fatalities have been noted since the bypass opened; and
- Post opening there has been a large reduction in accidents occurring on the former A38, with just two accidents in the opening year, and two accidents on the bypass. As a result, the accident rate for both roads is below the national average for a similar road type.

Statistical Significance

- The reduction in accidents and casualties seen in the one year after opening has been statistically significant. It is therefore considered that (at this early stage) this reduction has been as a direct result of the scheme.

Forecast Accuracy

- The outturn annual accident saving in the opening year has been 10.4 compared to a predicted 9.7; however the overall reduction is 23%, exactly what was predicted, suggesting high forecasting accuracy. It is likely that this is due to the relatively small area of appraisal, reducing the opportunity for other network changes affecting the results.

Residents Survey

- 70% of respondents considered that safety for drivers had improved, although 21% considered that it had not improved. The main reasons for disagreeing were relating to a perceived safety issue with parked cars along the former A38, and potential speeding through the village of Dobwalls. It should be noted however that there have been no reported injury accidents in the opening year relating to either of these issues; and
- 86% of respondents considered that safety for pedestrians and cyclists had improved, mainly due to the reduction in traffic through the village, and improved foot/cycle ways provided as part of the scheme.

Security

- The scheme's impact on security was scored as slight beneficial in the AST. The scheme had no significant changes for security, and the improved lighting and pedestrian facilities have led to a score of slight beneficial for the EST.

4. Economy

Introduction

4.1 This section provides a reforecast of the 60 year monetary benefits of the A38 Dobwalls Improvement scheme over the period 2008 to 2067. This re-forecast is based on the empirical data collected before and after opening for the purpose of this evaluation and draws upon appropriate assumptions and evidence provided in the following:

- Economic Assessment Report (2004);
- AST (2005);
- TUBA model (2004);
- COBA model (2004); and
- Outturn costs from HA Regional Finance Manager, March 2010.

4.2 Outturn costs of the scheme have also been compared with those predicted in the appraisal period. It should be noted that the total outturn costs of the scheme do not include any post opening compensation payments such as Part 1 claims. The FYA study will consider these additional costs further.

Predicted Benefits

4.3 A summary of the predicted benefits (for both high and low growth scenarios) from the Economic Assessment Report (2004) is shown in Table 4.1.

Table 4.1 – Predicted Economic Benefits

2002 prices, discounted to 2002	Low Growth (LG)	High Growth (HG)	% (of overall Low Growth benefits)
Journey Times (TUBA)	£43.46m (64.4%)	£84.71m (70.6%)	**64.4%**
Vehicle Operating Costs (TUBA)	-£10.67m (-15.8%)	-£9.71m (-7.9%)	-15.8%
Accidents – Links (COBA)	£28.85m (42.7%)	£35.34m (29.4%)	**42.7%**
Accidents – Junctions (COBA)	£4.44m (6.6%)	£4.38m (3.6%)	6.6%
Construction/Maintenance delay (QUADRO)	£1.53m (2.3%)	£5.21m (4.3%)	2.3%
Total Benefits	**£67.60m**	**£119.93m**	**100%**

4.4 The following points should be noted:

- A majority of the scheme benefits have been derived from consumer and business user journey times and accident savings;
- Increases in vehicle operating costs due to increased vehicle speeds offsetting a sizeable proportion of the overall monetised benefits from the scheme; and

- Benefits also include a very small proportion of construction/maintenance delay, as calculated by QUADRO.

Evaluation of Outturn Benefits

4.5 Based on observed journey time, safety and traffic data collected as part of this evaluation, this section provides a re-forecast of the two main monetary impacts predicted for the scheme (journey time savings and accident reductions).

4.6 Due to the absence of sufficient data, the contributions from Vehicle Operating Costs (VOCs), and delays caused by construction/maintenance delay have not been re-forecast as part of this evaluation.

Transport Economic Efficiency (TEE) – Journey Time Savings

Forecast Methodology

4.7 By relieving congestion on the A38 through the village of Dobwalls, the scheme was predicted to generate considerable journey time benefits. The TUBA model forecast total 60 year journey time benefits of £43.46m (LG) and £84.71m (HG); these are consistent with the values reported in the Economic Assessment Report. There was however insufficient information in the appraisal documentation to relate these monetised impacts with the journey time reductions reported in the AST (1.1 – 1.7mins; 0.21m – 0.27m vehicle hours). It is unclear whether this number is an annual average or a summer season maximum benefit.

4.8 The predicted monetary benefits included adjustments for varying journey time savings on weekdays, weekends and during holiday periods. They did not include any benefits that may occur in off peak periods between the hours of 19:00 and 07:00 as these were expected to be minimal.

Evaluation Methodology

4.9 The basis of the POPE methodology (in terms of vehicle hour savings) is a comparison of the predicted opening year vehicle hour saving and the observed journey times and traffic flows before and one year after opening (used to calculate an empirically based observed vehicle hour saving). This ratio is then assumed to hold true over the appraisal period and as such a 60 year monetised benefit can then be derived.

4.10 This method is typically applied to schemes that have been appraised using the COBA software as the model output gives the necessary details as a link based comparison can be made between modelled and actual journey time and traffic flow data. TUBA is matrix based (unlike COBA which is link based) and is based on origin and destination data, therefore does not give forecast journey times for any particular link or route. It is therefore not normally possible to use standard TUBA outputs to create a comparable forecast based on the impacts on a particular route for low and high growth scenarios.

4.11 Information available in the EAR shows the study area considered in the model is small and includes only the A38 corridor through Dobwalls and the area including Liskeard town.

4.12 For the purposes of quantifying the outturn benefits, the POPE methodology using the ratio of accuracy of change in vehicle hours to reforecast the 60 year monetary benefit has been used, and the following assumptions have been made:

- The evaluation results provide a quantified assessment of the journey time benefits occurring in the A38 corridor (old/new road comparison) and not the wider network – it is

anticipated that the vast majority of benefits will occur on the main through route of the A38, with some benefits also provided by the A390;

- The evaluation excludes any potential journey time impacts in Liskeard;
- The evaluation is based on pre and post opening journey time surveys and traffic counts undertaken in October (2006 and 2006, respectively) – as such although some adjustment has been made for summer traffic (using the method prescribed in the appraisal) our estimate of journey times is likely to be conservative.

Evaluation

4.13 For the evaluation of selected links, vehicle hours saved in the opening year have been calculated using the observed traffic flows and journey times described in the traffic section, extrapolated to a full year based on AM, IP and PM weekday time periods as used in the appraisal. Additional benefits for weekends have been accounted for by applying the off peak and peak journey times from weekdays to weekend flows (where similar traffic flows are seen).

4.14 The outturn monetary benefits for the 60 year scheme life period have then been calculated using the proportion assumed in the low growth scenario as this is more reflective of the changes in observed traffic flows after opening. Table 4.2 shows the predicted and outturn TEE benefits for the A38 bypass scheme.

Table 4.2 – Predicted vs. Outturn TEE benefits

2002 prices discounted to 2002	Predicted (LG)	Predicted (HG)	Outturn (LG)
Vehicle Hours Saving (in opening year)	0.21m	0.27m	0.14m
Journey time benefit over 60 years (PVB from TUBA)	**£43.46m**	**£84.71m**	**£28.97m**

4.15 Based on the ratio of opening year vehicle hour saving to 60 year monetised benefit, the total benefit has been calculated as £28.97m. It can be see that the total vehicle hour outturn savings in the opening year are below both the low and high growth scenarios. However the following points should be noted when considering this outturn calculation as it is likely to be a conservative estimate as;

- This figure does not take any benefits seen in Liskeard, or other local roads into account, where smaller benefits are likely to have occurred due to reduced congestion on the A38;
- October is generally considered to be a neutral month therefore any journey times and traffic counts observed are generally considered to be representative of conditions for a majority of the year. However, this evaluation has only proxied the likely extent of the summer and holiday period journey time savings and as such may not have fully captured the potentially larger economic benefits that are likely to have occurred during the summer months and other holiday periods; and
- More than expected traffic volumes on the old road could suggest that not as many users have benefited from the full scheme saving as forecast, because this traffic is still using the older slower route.

Vehicle Operating Costs

4.16 It has been noted previously in this section that it is not possible to do an accurate reforecast of vehicle operating costs for the outturn situation, as there is a lack of information available relating to speeds etc. For the purpose of considering the outturn BCR, the assumptions made in the low growth scenario (Table 4.1) for the proportions of VOCs and construction/maintenance delay have been applied to the outturn economy benefits.

Safety - Accident Savings

4.17 The economic impact of changes in safety for road schemes such as this one are calculated by assigning monetary benefits to the reduction in the number and severity of personal injury accidents over the appraisal period.

Forecast

4.18 Overall, the total accident savings resulting from the scheme were forecast (using COBA) to be between £33.2 million (LG) and £39.7 million (HG) over the 60 years of the appraisal period (2002 prices discounted to 2002).

Evaluation Methodology

4.19 The POPE method of evaluating the economic value of safety benefits arising from the scheme is based upon comparing the forecast and observed accident saving in the opening year combined with the assumption that the accuracy of the safety impact in the opening year can be taken to be indicative of that over the whole 60 year appraisal period. Based on these assumptions, comparing the forecast opening year accident saving with the observed saving in the opening year enables the calculation of a 60 year monetised benefit. These figures were gathered from the COBA model output for the scheme, which corresponds with the information included in the Economic Assessment Report (EAR).

Evaluation

4.20 The evaluation of the safety benefits is shown in Table 4.3. This calculation is based on the presumption that the forecast ratio of the number of accidents saved in the opening year to the forecast 60 year benefit (shown in (c) in the table) can be used to generate a re-forecast economic benefit (e) based on the observed saving of accidents (d).

Table 4.3 – Predicted vs. Outturn Accident Benefits

	2002 prices discounted to 2002		Low Growth	High Growth
COBA Forecast	Forecast number of accidents saved in opening year	(a)	9	9.7
	Forecast benefit over 60 years	(b)	£33.29m	£39.72m
	Approximate 60 year benefit per opening year accident saved	(c) = (b) / (a)	£3.70m	£4.10m
Observed	Outturn number of accidents saved in opening year	(d)	10.4	
POPE Re-Forecast	Re-forecast 60 year accident benefit (Safety PVB)	(e) = (d) x (c)	**£38.46m**	**£42.57m**

4.21 This POPE evaluation of the re-forecast 60 year benefits indicates an outturn safety benefit of between £38.46 million and £42.57 million depending on future traffic growth patterns**.** This is based on the assumption that the accidents observed in the opening year are typical of the impact to be seen in the future, and that the modelled assumptions in the COBA are representative of the future safety impact.

4.22 The POPE re-forecast shows that the accident benefits are slightly higher than the high growth scenario. However, the analysis has only utilised one year of post opening data. An analysis of the accident impacts should be possible in greater detail when undertaking the Five Years After study. However it should be noted that the change in the number of accidents post opening is seen to be statistically significant, adding weight to the conclusions that can be drawn at the one year stage. In order to provide a conservative estimate, the Low Growth re-forecast has been carried forward into the outturn PVB which is discussed later in this section.

Scheme Costs

4.23 This section compares the forecast investment cost of the scheme with the outturn cost as of 2010 as shown in Table 4.4. The last published predicted costs (prior to the start of construction) are contained in the Economic Appraisal Report (August 2004).

4.24 The outturn spend profile for this scheme has been obtained for the purpose of this study from the HA Regional Finance Manager (in March 2010). The as-spent figures for the period 2000 – 2009 have been converted to 2002 prices. This figure can then be compared with the forecast cost on a comparable basis. It should also be noted that the outturn costs at this stage does not include the Part 1 Land Compensation Claims which only commences one year after opening. A more valid comparison of the scheme costs is therefore possible at the Five Years After Opening stage.

4.25 These outturn costs and forecast costs, which are not discounted, are shown in 2002 prices in Table 4.4.

Table 4.4 – Investment Costs for Dobwalls Bypass in 2002 prices (£million)

	Forecast Cost	Outturn Cost	Difference
Construction	£28.31m	£41.99m	29%
Supervision	£1.99m		
Preparation	£2.28m		
Land	£2.83m	£3.49m	23%
Total	£35.42m	**£45.48m**	**28%**

4.26 It is understood from the project sponsor that due to poor weather during construction, the approved budget for the completion of the scheme was increased twice during construction. It is understood that the weather issues resulted in a number of delays during construction, adding to the costs. Therefore whilst the overall as-spent costs are shown as 28% higher than forecast, this was monitored and adjusted throughout the construction period. The project sponsor also suggested that the increase in land cost is partly due to increases in land values between the forecast and outturn.

Indirect Taxation

Evaluation of Indirect Taxation

4.27 In the context of highway scheme appraisal, indirect taxation represents the change in the government's taxation revenue as a result of a scheme. The total forecast PVC (Present Value Costs) includes an amount of indirect tax which relates primarily to changes in the net revenue from the value of VAT and fuel duty that the government was expected to gain as a result of the scheme. This is explained by the higher speeds on the bypass than on the former route, and some (limited) induced traffic. Note in the case of this scheme, the length of the new route is almost identical to the length of the former route. The scheme's forecast impact on Indirect Tax is available from the original TUBA outputs from the time of the appraisal. These are given in 2002 prices, discounted to 2002 at 3.5%.

4.28 In scheme appraisal, this net tax revenue is forecast for the whole 60 year appraisal period of a scheme. In the case of this scheme the indirect tax is included as a negative cost, this means that the revenue forecast to be raised as a result of the scheme is subtracted from the scheme cost.

4.29 The majority of the indirect tax for this scheme was expected to be due to the increased speeds on both the former A38 and traffic using the bypass.

4.30 For this evaluation, the predicted impact of indirect tax has not been recalculated due to multiple issues. These include;

- The difficulty in replicating the fuel consumption impact of the climbing lane on the former A38 (especially on HGVs), i.e. slow moving/stop start traffic and the resulting impacts it also has on other traffic;
- The lack of a detailed breakdown in pre scheme traffic composition;
- The lack of detailed spot speeds along the former A38 in the pre scheme situation; and
- Detailed speeds and traffic flow data are only available for the main A38 corridor in the post scheme situation, therefore the benefits outside of this area could not be replicated, representing an underestimate of the impacts if calculated just using those.

4.31 Therefore, for the purpose of this evaluation report, the predicted indirect tax benefits have been assumed to be relevant for the outturn opening year and more accurate than a recalculation given the above limitations, and due to the following reasons:

- Predicted traffic flows across the corridor are generally in line with those seen in the opening year;
- Observed journey times have significantly improved since the bypass opened. Although the performance against predicted changes is difficult to quantify as limited details are available. It is likely that as traffic is free flowing in the opening year, the detailed calculations of indirect tax still stand; and
- The as built scheme is as detailed in the appraisal documents.

4.32 As such, the forecast indirect tax of £8.09 million has been included in the PVC used in the following section to calculate the BCR.

Benefit Cost Ratio (BCR)

4.33 The BCR is a measure of economic worth, it is the net benefit which would be obtained in return for each unit of cost to public accounts of a scheme, and is stated in the economic appraisal of major schemes.

4.34 For the purpose of evaluating the BCR, the forecast and outturn costs have been discounted to 2002 using the now standard discount rate of 3.5% to give Present Values (PV). Using the predicted economic benefits (PVB) and costs (PVC) from the economic appraisal, and the outturn reforecast PVB and PVC detailed earlier in this chapter, the BCRs can be compared as shown in Table 4.5.

Table 4.5 – Benefit Cost Ratio (BCR)

All in 2002 prices, discounted to 2002	Forecast Low Growth (£m)	Forecast High Growth (£m)	Outturn (£m)
Safety PVB	£33.29m	£39.72m	£38.46m
Economy PVB[11]	£34.32m	£80.21m	£22.82m
Total PVB	**£67.60m**	**£119.93m**	**£61.28m**
Investment cost	£30.49m	£30.49m	£38.80m
Indirect Tax	-£8.09m	-£8.07m	-£8.09m
PVC	**£22.40m**	**£22.42m**	**£30.71m**
BCR	**3.02**	**5.35**	**2.0**

4.35 Table 4.5 shows that the outturn BCR is 2.0 which demonstrates good value for money, although it is below the forecast BCR for the low growth scenario. It should be noted that the total outturn PVB of £61.28m is below the predicted PVB of £67.6m and the over-estimate of the journey time savings has been offset by the under-estimate of the accident savings.

4.36 This BCR is likely to be a *conservative* estimate as the outturn economy PVB:

- only takes into account traffic using the main A38 route, and does not account for benefits accrued on smaller roads in the area including those in Liskeard; and
- does not necessarily take into account the full benefit achieved in the peak tourist season, when traffic flows and journey times are at their peak.

4.37 The out-turn BCR is likely to be an underestimate and in reality closer to the low growth BCR estimate.

4.38 It should be noted that webTAG guidance highlights that the use of BCR as a summary measure is hampered by the lack of monetised values for many of the impacts, particularly the environmental, accessibility and integration objectives which must be assessed but are not monetised. The evaluation of these three objectives is covered by the following two

[11] This figure includes the impact of vehicle operating costs and maintenance delay costs, and as such are lower than those given previously in the report for economy benefits. The outturn economy PVB has been calculated using the proportions of VOC given in the low growth scenario.

sections. The AST provides a summary which covers all the objectives, monetised or non-monetised.

Route Stress

4.39 Route Stress is a measure of the capacity level of the route and hence its ability to allow traffic to run freely through the route. The AST for this scheme forecast a reduction in route stress from 87/96% to 11/12% (low and high growth scenarios) post opening, with an assessment of 'Slight Beneficial'. Route Stress is a proxy for reliability and was used in the appraisal; therefore it has been used for the evaluation here, using the methodology detailed below.

Changes to Route Stress

4.40 Calculation methods presented in DMRB Volume 5, Section 1, Part 3 TA/46/97 Annex D have been used to determine the Capacity, Congestion Reference Flow (CRF) and stress factors for the A38 as a single carriageway before the scheme opened, and a dual carriageway after the scheme opened.

4.41 Capacity, which can be described as 'the maximum sustainable hourly lane throughput' has then been calculated by using the set parameters above and the percentage of HGVs in the peak hour.

4.42 Using the calculated Capacity, the CRF was then derived by using the following formula:

CRF = Capacity*NL*Wf*100/PkF*100/PkD*AADT/AAWT

4.43 Table 4.6 shows the estimated CRF and route stress percentage for the A38. Stress can be expressed as AADT/CRF.

Table 4.6 - Route Stress on the A38 before and One Year After scheme opening

Route	Forecast (AST)		Observed	
	Pre Scheme	Opening Year	2006	2009
Old A38	87/96%	-	91%	15% (75%)
New Bypass	-	11/12%	-	25% (75%)

Note: *No HGV data was available for the old road in 2006, therefore the % HGV used in the Statement of Case has been used as a proxy.*

4.44 The following observations can be made regarding changes to route stress on the A38:

- Stress on the old A38 has reduced from 91% to 15% which is a significant improvement on the before situation;
- It can be seen that the new bypass after scheme opening is at 25% stress, almost twice the predicted stress level of 11/12%, however this is still low and represents good reliability; and

- DfT[12] guidance states that only values between 75% - 125% should be considered and anything outside this range should be adjusted up or down to 75% or 125%, hence the adjusted stress figures are included in brackets.

Wider Economic Impacts

4.45 The AST for this scheme stated a neutral impact in terms of wider economic impacts, as no significant change was expected.

4.46 No development in the area was dependent on the scheme, however the Cornwall Local Transport Plan (LTP) states that they aimed to provide an integrated transport network that contributes towards the development of a vibrant and successful Cornish economy. By removing the bottleneck and congestion in Dobwalls, this scheme is in line with this policy however, no development was dependent on the scheme. Therefore it has been concluded that at this one year after stage, the bypass has had a neutral impact on the wider economy, although it has benefited the local businesses in Moorswater in terms of access to their premises.

Key Findings: Economy

- A conservative estimate of outturn vehicle hour benefits (once VOCs and maintenance delays have been taken into account) has been calculated to be £22.8m, compared to a low growth forecast of £34.3m. The main reasons for this are;
    - This only takes into account traffic using the main A38 route, and does not account for any benefits accrued on smaller roads in the area including those in Liskeard; and
    - This does not necessarily take into account the full benefit achieved in the peak tourist season, when traffic flows and journey times are at their peak.
- The outturn safety benefits have been calculated to be £38.5m in the opening year, compared to a low growth prediction of £33.29m. This is due to a slightly higher than forecast accident saving in the opening year;
- The outturn capital costs have been calculated to be £45.5m which is significantly higher than the predicted £35.4m, due to delays due to poor weather and an increase in land values;
- A BCR of 2.0 has been calculated which shows that the scheme represents good value for money despite the increased costs;
- Route stress on the A38 has reduced from 91% below 75% on both routes, indicating that reliability has improved on the former route, and that the bypass is operating within capacity; and
- The impact of the bypass on the wider economy is considered to be neutral.

[12] http://www.dft.gov.uk/pgr/economics/rdg/multimodal/anewdealfortrunkroadsinengla5491?page=7

5. Environment

Introduction

5.1 This section documents the evaluation of the Environmental sub-objectives, focusing on each objective in turn and evaluating them where appropriate information is available. Where a full evaluation is not possible at this OYA stage, suggestions are made for further consideration to be made at the FYA stage.

Objectives

5.2 The Environmental Statement (ES, January 2005) stated that the scheme would result in the removal of approximately 90% of traffic from the existing A38 at Dobwalls providing:

- Reduction in casualties due to accidents;
- Resolution of congestion, particularly associated with the peak tourist season, resulting in large beneficial effects predicted in terms of Journey Ambience (reduced driver stress for road users using the Scheme; and reduced traveller stress for pedestrians and cyclists in Dobwalls);
- An improved environment for pedestrians, cyclists and other users of local roads in and around Dobwalls; and
- Improved amenity for residents and visitors, including potential for a sense of place to be restored to benefit the Townscape, resulting in a moderate beneficial predicted impact.

5.3 The main environmental disadvantages of the scheme were linked to a predicted moderate adverse impact on biodiversity. The ES attributed this prediction to severance of the hedgerow network, including some Cornish Hedges; predicted impacts on the East and West Looe tributaries; and disturbance to the local bat populations.

Data Collection

5.4 The following information has been used in the compilation of this section of the report;

- A38 Dobwalls Bypass Environmental Statement (ES) January 2005 including Volume 1 (Main Text), appendices, figures and Non-Technical Summary;
- Stage 3 Scheme Assessment Report, 2005;
- Appraisal Summary Table (AST) 2005;
- Scheme drawings including;
  - Published Scheme Proposals, Landscape Designs, Existing Wooded Vegetation lost to scheme, Cultural Heritage Features, Water Quality, Drainage and Hydrology Proposed Drainage, Proposed Rights of Way, Mitigation and Bat Crossing Points, Planting plans and detrunking works details; and
  - Construction Environmental Management Plan (CEMP) version 3, dated 2007.
- Draft Landscape and Ecology Management Plan, May 2010;
- Archaeological excavation and observation on the route of the Dobwalls bypass, Dobwalls & Trewidland Parish, near Liskeard, Cornwall 2006-2007 Publication report text for submission to Cornish Archaeology (produced by AC Archaeology, February 2010);

- A38 Dobwalls Bypass Bat Mitigation Monitoring June and October 2008 P0s/60-1B Final Report May 2009; and
- Scheme newsletters and publicity material.

5.5 The Handover Environmental Management Plan is anticipated to be completed in2014 and should be provided to POPE as part of the FYA evaluation.

5.6 A full list of the environmental background information requested to support this evaluation is provided in Table C.1 in Appendix C.

5.7 It is understood from the CEMP and Draft Landscape and Ecology Management Plan that a number of revisions were made to the Scheme whilst on site. With the exception of the installation of anti-glare screens, these changes are reflected in the Planting Plan As Builts dated 2006 and described in the Draft Landscape and Ecology Management Plan.

Site visit

5.8 A site visit was undertaken in April 2010 and in July 2010 for the comparison of photographic viewpoints.

Consultation

5.9 Table 5.1 lists the organisations contacted regarding their views on the impacts they perceive that the bypass scheme has had on the environment, including whether they consider mitigation measures have been effective.

Table 5.1 – Summary of Environmental Consultation Response

Organisation	Field of Interest	Comments
Natural England	Biodiversity & Landscape	Declined to comment as NE has not undertaken any review of the works or seen the results of any post project monitoring of biodiversity mitigation measures
English Heritage	Heritage	No response
Environment Agency	Water	Expressed willingness to comment but no response received
Cornwall Council	General	Commented on air quality (not aware of any complaints), landscape (generally considered 'worse' than expected), biodiversity (would need to see monitoring data to be able to comment. Supportive of use of dormouse nest boxes), heritage (as expected) and access generally as expected
Dobwalls and Trewidland Parish Council	General	No response
West Country Rivers Trust	Water	As the Trust has not undertaken any survey work it felt unable to comment objectively

5.10 The Highways Agency National Part 1 Team has been contacted regarding claims by homeowners affected by this scheme. To date, one property has made a successful claim for noise insulation. It is suggested that Part 1 claims information should be reviewed in the FYA report as it is too early in the process to say how many may be successful.

5.11 The Managing Agent Contractor (MAC) has provided information relating to animal mortality on the A38 from April 2007 to March 2010. Of the pre-scheme reports, three related to cats, and there were two separate incidents of deer fatalities in 2007. Post-opening, three incidents related to cats and one to a polecat in March 2010.

Traffic Forecasts Evaluation

5.12 Three of the environmental sub-objectives (noise, local air quality and greenhouse gases) are directly related to traffic flows. No new noise or air quality surveys are undertaken for POPE. Table 5.2 provides a summary of the ES forecast flows and actual OYA observed traffic flows.

5.13 The ES stated that without the scheme, traffic levels through the centre of the village would rise from 20,700 vehicles per day to between 21,700 (low traffic growth) and 24,100 (high traffic growth) in 2008.

Table 5.2 – ES Forecasts vs Observed Traffic

Location	2006 base observed	2008 ES forecast low growth	2008 ES forecast high growth	Actual OYA	% change over low growth forecast	% change over high growth forecast
A38 West of Doublebois crossroads	14,300	14,300	15,900	**14,600**	2%	-8%
A38 East of Doublebois crossroads	n/a	13,600	15,200	**15,300**	12%	1%
A390	7,400	8,250	9,200	**7,500**	-9%	-19%
Former A38 through Dobwalls, west of crossroads in village	21,500	2,100	2,400	**2,600**	21%	8%
Former A38 east of crossroads	21,50	2,800	3,200	**3,400**	24%	8%
Former A38, east of Looe Mills junction	21,500	2,200	2,500	**1,900**	-13%	-25%
Moorswater Industrial Estate Road	n/a	1,900	2,200	**1,900**	-1%	-14%
Former A38, east of entrance to MIE	21,500	22,100	24,800	**22,300**	1%	-10%
A38 Liskeard	16,700	16,700	19,200	**17,200**	2%	-11%
Bypass - western end	n/a	19,800	22,000	**19,400**	-2%	-12%
Bypass by Quarry (between slip roads on and off)	n/a	20,600	23,000	**20,900**	1%	-10%

5.14 Observed 'after opening' traffic flows indicate that traffic has reduced significantly through Dobwalls since the bypass opened with an 88% reduction west of the central village crossroads and an 83% reduction to the east. Traffic flows on the former A38 through Dobwalls are 8% above the high growth forecasts for 2008 throughout the village, however, the link east of Looe Mills Junction was observed as being less than the predicted high growth flows (25% under the predicted high growth).

5.15 As can be seen from Table 5.2 traffic on the bypass is broadly in line with the low growth forecasts for the opening year of 2008, showing 2% less than predicted at the western end and 1% more than predicted near the quarry (between the on and off slip roads).

5.16 In the Stage 3 Assessment Report 2005, it stated that out of 20,700 AADT, 9% (approximately 1,900) were HGVs on the old A38 through Dobwalls. In 2009, the surveys undertaken for POPE suggest that the HGV% is now 3.7% in the village, (130 HGVs out of approx 3,400 vehicles per day). This is a significant reduction in large vehicles using the route through the village, hence reducing noise and improving safety.

Noise

5.17 The AST stated that the qualitative impacts of the scheme would be as follows: 'improvement within Dobwalls due to the removal of through traffic from village. Some localised adverse impacts along scheme corridor.' With the scheme, the number of people exposed to noise nuisance was expected to rise to 70 within 15 years, comparing favourably to the prediction of 124 people annoyed under the Do Minimum scenario. In conclusion, this was presented in the AST as a reduction in people annoyed by noise equating to 54.

5.18 The ES concluded that the overall noise experienced by residents along the existing A38 and in the settlement of Dobwalls would be reduced by construction of the bypass.

5.19 Several properties would experience a change of direction of the traffic noise source e.g. from the front to the back of the property. One property would qualify for insulation against noise;

- Meadowleigh due to façades facing the traffic.

5.20 The ES expected that the landscape proposals including earth mound screening, construction of Cornish Hedges; false cuttings containing the road to the north of Dobwalls; and low noise surfaces would provide some noise attenuation along the bypass and A390 route. However, two further properties were noted as having the potential to qualify for noise attenuation; Havett View; and Pilgrims.

5.21 It was expected that there would be an overall reduction in the number of properties experiencing substantial and major noise intrusion when comparing the Do Something to the Do Minimum scenarios. Impacts were described in the ES as follows:

"The proposed scheme would be beneficial in alleviating those properties currently exposed to high traffic noise levels of above 70dB(A). 33 properties currently experience noise levels in excess of 70dB(A). Within the published scheme, all of these properties would experience a decrease in traffic noise exposure to below 70dB(A) and no existing properties would experience an increase that would bring them into this high exposure level."

The ES included predictions relating to the potential for residents to experience 'bother'[13] from vibration, linked to projected noise levels. The statistics indicated that by 2023, 127 properties would experience a decrease in 'bother' under both the high and low growth scenarios, but that 122 properties would experience an increase in bother to 2023 in the Do Minimum, compared to 4 with the scheme (Do Something).

Consultation

5.22 Cornwall Council (CC) has been contacted to make comment on the noise climate of the bypass. No response has been received.

5.23 The residents survey included a question asking how the residents feel the level of traffic noise has changed since the opening of the bypass.

Table 5.3– How has traffic noise changed both in and out of the tourist season?

In Season	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
How has traffic noise changed during the summer tourist season since the bypass opened						
1 – Worse	25.0%	1.3%	5.9%	40.0%	10.0%	4.9%
2	8.3%	2.0%	1.5%	20.0%	20.0%	3.3%
3	8.3%	4.6%	7.4%	20.0%	20.0%	6.5%
4	8.3%	17.2%	10.3%	0	10.0%	14.2%
5 – Better	41.7%	70.2%	73.5%	0	30.0%	66.7%
No Response	8.3%	4.6%	1.5%	20.0%	10.0%	4.5%
Total	**12**	**151**	**68**	**5**	**10**	**246**
Out of Season	**Zone 1**	**Zone 2**	**Zone 3**	**Zone 4**	**Zone 5**	**Total**
How has traffic noise changed out of the tourist season since the bypass opened						
1 – Worse	25.0%	1.3%	5.9%	40.0%	10.0%	4.9%
2	16.7%	1.3%	1.5%	0	0	2.0%
3	0.0%	5.3%	8.8%	40.0%	40.0%	8.1%
4	8.3%	17.9%	13.2%	0	10.0%	15.4%
5 – Better	41.7%	68.9%	67.6%	0	30.0%	64.2%
No Response	8.3%	5.3%	2.9%	20.0%	10.0%	5.3%
Total	**12**	**151**	**68**	**5**	**10**	**246**

5.24 Table 5.3 shows the results of the survey by zone and it can be seen that there is very little difference in responses for the tourist season compared to out of the tourist season.

5.25 Zone 4 (Moorswater) contained the highest proportion of respondents that considered traffic noise to be worse (60% scoring 1 or 2 in tourist season, 40% of out season); however this

[13] 'bother' refers to the nuisance from noise experienced by residents.

was based on only five respondents. Zone 3 (South Dobwalls) contained the highest proportion that considered traffic noise to be better.

Evaluation

5.26 The published scheme drawings incorporate several indicative heights for mounds along the scheme; the site visit confirmed that these are broadly in line with expectations. POPE is not aware that any post opening noise surveys have been required to be undertaken for the scheme.

5.27 It has been confirmed by the HA that one property was eligible for noise insulation and a Part 1 claim was successfully made for noise insulation to be installed at the property – Meadowleigh.

5.28 As noted in Table 5.2, traffic flows have significantly reduced along the old A38 as a result of the bypass and noise due to traffic will have reduced for properties adjacent to the old road within Dobwalls.

5.29 Traffic flows for all links surveyed through Dobwalls are showing a change in flows of less than 25% over the predicted high growth forecast; however, flows on the former A38 East of Looe Mills Junction are 25% lower than the high growth forecast (13% lower than the low growth forecast), indicating a greater benefit than expected for this section of the scheme.

5.30 As expected the bypass has moved traffic closer to a previously quiet rural location and noise will have increased for properties north of Dobwalls accessed from Havett Road (e.g. Meadowleigh, Pilgrims, Havett View, Havett Farm, Toll House and outlying properties). Traffic flows on the bypass are broadly in line with expectations and it is therefore considered that noise impacts from traffic are likely to be as expected in the ES.

5.31 The reduction in HGVs along the old road (from 1,900 per day to approx 130 per day) is likely to have helped to reduce the noise levels along the former A38 route.

Table 5.4 – Summary of Noise Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Improvement within Dobwalls due to removal of through traffic from village. Some localised adverse impacts along scheme corridor. Estimated no. of people likely to be annoyed: Do Minimum – 124 Do Something: 70	Net population annoyed (Do Something – 15th year): -54
EST (OYA Evaluation)	Based on observed traffic flows after opening, which have reduced on average by between 83% and 88% there will have been an improvement in the local noise climate adjacent to the old A38 through Dobwalls. Traffic on the bypass is in line with expectations, traffic has been relocated to a previously quiet rural area and there will have been a worsening of the local noise climate for properties nearer to the new bypass as expected.	Likely to be as expected

Air Quality

Forecast Local Air Quality

5.32 The AST stated that 'the scheme would provide a beneficial air quality effect to the majority of residential properties in the study area. However, there would be an increase of 1.10µg/m³ in annual mean PM_{10} levels at 20m from the road centre in the eastern sections of the scheme.'

5.33 The ES stated that residents of 490 properties along the existing road would benefit, while a smaller number (117) close to the bypass would experience deterioration in air quality. Overall, this resulted in an assessment of improvement in the number of receptors experiencing particulates and/or nitrogen dioxide pollutants.

5.34 There was not a pre-existing air quality problem in the area, although Dobwalls was identified as a 'traffic related air pollution hotspot' in the Cornwall Air Quality Strategy, December 2004, meaning that nitrogen dioxide concentrations were close to exceeding the air quality objectives. The ES noted that the scheme implementation had the potential to improve local air quality through the village.

5.35 The ES identified two sensitive receptors:

- Havett View residential centre for autistic people; and
- Manuscript Building – with a day nursery to the rear.

5.36 The ES concluded that:

"The total assessment values for both NO_2 and PM_{10} are negative which indicates a decrease in pollution exposure and therefore a beneficial effect on the community as a whole. The majority of residential properties within 200m of the existing highway network would experience a decrease in PM_{10} and NO_2 concentrations and therefore an improvement in local air quality. This is directly related to the fact that traffic currently travelling through the centre of Dobwalls and therefore affecting the majority of the residential properties within the study area would be removed to the scheme to the north of the village.

Regional Air Quality

5.37 The AST stated that total NOx emissions (regional air quality indicator) predicted with the scheme (Do Something) were higher than those predicted under the Do Minimum scenario, resulting in an overall negative assessment of predicted effects.

5.38 Table 5.6 provides the statistics for regional air quality.

5.39 The ES summarises this negative assessment as negligible at the national scale:

"The changes in total emissions predicted with the published scheme in 2008 and 2023 represent a negligible change in comparison with the UK total quantity of emissions from road traffic sources for 2002. The effect of the published scheme at national level is therefore considered to be neutral."

Consultation

5.40 Cornwall Council (CC) provided air quality monitoring summary reports covering nitrogen oxides14 and carbon monoxide for 2006, 2007 and 2008, however these monitoring results have not been used in this report as they are not considered sufficiently reliable for the evaluation due to poor post opening data capture rate

5.41 No comment was made by CC in respect of any complaints attributed to the scheme regarding air quality, either during construction or post-opening.

5.42 The residents survey included a question on how residents feel the local air quality had changed since the opening of the bypass. Respondents were asked to consider the changes for the peak tourist season and the quieter off season timer periods. Overall, there was minimal difference in the responses, therefore only the peak season results are shown in Table 5.5.

Table 5.5 – How has air quality changed since the bypass opened?

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
How has air quality changed since the bypass opened						
1 – Worse	25%	1%	2%	20%	0	2%
2	0	2%	0	0	10%	2%
3	8%	7%	9%	40%	30%	9%
4	8%	17%	9%	20%	20%	14%
5 – Better	50%	69%	77%	0	20%	67%
No Response	8%	5%	4%	20%	20%	6%
Number of respondents	**12**	**151**	**68**	**5**	**10**	**246**

5.43 It can be noted that the majority of respondents in zones 2 and 3 (Dobwalls North and South) felt that air quality had improved, with only a small proportion considering it to have worsened since the bypass opened. This supports the traffic flow information which shows that the majority of traffic has been removed from the centre of the village.

5.44 The highest proportion of respondents who felt air quality had worsened is seen in Zones 1 and 4; however, these are based on very low response rates. It is noted however that this

[14] Nitrogen oxides (NOx) refers to nitrogen oxide (NO) and nitrogen dioxide (NO_2)

can be related to traffic flows, as increases have been seen post opening on the A38 through Doublebois which is represented by zone 1.

Evaluation

5.45 The ES noted that there was not an overall air quality problem in the area. Traffic has significantly reduced on the old A38 since opening of the bypass and it is likely that residents will have benefited from improved air quality as expected. Traffic on the bypass is lower than the high growth forecasts (-12% and -10 %) although broadly in line with the low growth forecasts, however, properties near to the bypass would still have experienced deterioration in air quality as expected. Overall traffic flows combining the bypass with the old A38 are generally lower than those forecast, with transport related emissions of NOx likely to be lower than expected.

Table 5.6 – Summary of Air Quality Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast) **Local Air Quality**	The scheme would provide a beneficial air quality effect to the majority of the residential properties in the Study Area. However, there would be an increase of 1.10µg/m³ in annual mean PM_{10} levels at 20m from the road centre in the eastern sections of the scheme No. of properties with improved air quality PM_{10}: 490; NO_2: 490 No. or properties with a deterioration in air quality PM_{10}: 117; NO_2: 117	PM_{10}: -1626.9 (improvement) NO_2: -2334.48 (improvement)
EST (OYA Evaluation)	Based on observed traffic flows after opening it is likely that residents of properties along the old A38 will have benefited from improved air quality due to the reduction in traffic and properties nearer to the bypass will have experienced deterioration in air quality.	As expected
Origin of Assessment	**Summary of Effects**	**Assessment**
AST (Forecast) **Regional Air Quality**	For both 2008 and 2023 scenarios, the total NOx emissions predicted with the scheme (Do Something) are higher than those predicted without the scheme (Do Minimum). The effect of the scheme is therefore considered to be negative. NOx tonnes per year: Present (2003) = 38.56 DO MINIMUM: 2008 = 31.51; 2023 = 22.18 DO SOMETHING: 2008 = 35.17; 2023 = 25.19	Do Something (2008) compared with: Present: -3.39 t/year Do Mimimum: +3.66 t/year Do Something (2023) compared with: Present: -13.37 t/year Do Minimum (2023): +3.01 t/year
EST (OYA Evaluation)	Based on observed traffic flows after opening, which generally are lower than the high growth forecasts, traffic based emissions are likely to be lower than predictions.	Likely to be lower than expected

*The statistics included in this cell are a faithful reproduction of the AST. They contradict the qualitative and quantitative assessment and are considered likely to be a typographical error in respect of '+' and '-' scores. For the purpose of POPE, the written assessment and quantitative measures have been used as the basis for analysis compared with outturn.

Greenhouse Gases

5.46 According to the DfT's WebTAG guidance, (CO_2) is considered to be the most important greenhouse gas and, therefore, has been used as the key indicator for the purposes of assessing the impacts of transport options on climate change. Although the focus is on CO_2

emissions, the current guidelines are to express the change in terms of the change in the equivalent tonnes of carbon released as a result of implementing a transport scheme. Therefore the original forecasts figures have been converted to tonnes carbon for the purpose of this evaluation.

Forecast

5.47 The greenhouse gas impact of the scheme was assessed using the guidance for regional air quality modelling from the DMRB. This models fuel consumption related carbon emission rates and requires the following inputs:

- Annual average daily traffic flow to include heavy good vehicles (HGVs) and light duty vehicles (LDVs);
- Percentage of HGVs on each road;
- Average speed of vehicles; and
- Assessment year.

5.48 The AST stated that there would be a 12.5% (793 tonnes) increase in CO_2 in the opening year due to a slight increase in overall length of the route and an increase in the speed of traffic with the scheme in place. This is equivalent to 216 tonnes of carbon. The methodology in use for calculating Carbon emissions in 2007 when the AST was produced is in line with current methodology. The forecast impact on Carbon in the AST matches exactly the forecast Carbon impact in the ES.

Evaluation

Evaluation of Greenhouse Gases

5.49 Using current guidance provided in DMRB Volume 11 Section 3 Part 1, it has been possible to calculate pollutant emissions using observed traffic data. This method has been used to calculate tonnes of Carbon emissions from vehicles using the bypass and the former A38. These calculations have been based on traffic flow data, HGV percentages, and average speeds recorded during the journey time surveys.

5.50 A proxy for the Do-Minimum scenario has been created by assuming the same traffic flows observed before the scheme on the old A38, assuming growth rates detailed in the traffic section. The observed speeds from the after journey time surveys were used for the Do-Something scenario, and the journey times from the before surveys were used for the Do-Minimum scenario.

5.51 Table 5.7 shows that the scheme has had an estimated outturn impact of 165 additional tonnes of Carbon in the first year after opening, based on observed traffic flows, HGV proportions and speeds.

5.52 It can be seen that the increase in carbon emissions is less than predicted. As the traffic flows and speeds are broadly in line with forecast, the differences are likely to be due to the following reasons:

- Traffic flows are broadly in line with the low growth scenario, however it is likely that the forecast change in CO_2 was based on the high growth scenario; and
- The overall number of HGVs has reduced slightly in the corridor.

5.53 A summary of the evaluation compared to the forecast is shown in Table 5.7.

Table 5.7 – Summary of Greenhouse Gas Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Emissions of CO_2 are estimated to increase with the scheme in place by around 12.5% in the opening year (2008). Increases are due to the slight increase in overall length of the route, but mainly due to the increased speeds with the scheme in place.	Total change in CO_2 emissions due to proposed scheme in the opening year is an increase of 793 tonnes of CO_2 per year equivalent to 216 tonnes of carbon (12.5%).
EST (OYA Evaluation)	Increased emissions due to increased speeds and slight increase in traffic	Increase of 8.3% (165 tonnes of carbon), broadly in line with expected

Landscape and Townscape

5.54 For Landscape, the AST stated that the 'scheme avoids AGLV15 but does not quite fit the scale of landscape. Locality already affected by existing A38 and light industry.' Overall the impact was assessed as slight adverse.

5.55 For Townscape, the AST stated that the scheme would result in removal of through traffic from Dobwalls village, thus benefiting human interaction and enabling a sense of place[16] to be restored. The impact overall was assessed as moderate beneficial.

5.56 Throughout this section there are a number of references to photographs, the majority of these are contained in Appendix E of this report, to ensure that the section flows appropriately.

5.57 The ES noted that the alignment avoided crossing steep sided valleys, instead was routed through more open landforms; and that the principal cutting had been 'tucked into' the lower slopes of the rolling ridge to the north of the bypass route in order to minimise visual effects. The scheme was designed to avoid the Caradon Hill AGLV and Looe and Seaton Valley AGLV.

5.58 The intended balance of permanent losses to existing landscape features and new mitigation planting, as stated in the ES, is summarised in Table 5.8. The ES stated that the loss of Cornish Hedges and hedgerows would be partially mitigated by new replacement planting; but that the most significant gains would relate to the creation of new woodland planting and scrub.

[15] AGLV – Area of Great Landscape Value – this refers to the Caradon Hill Area of Great Landscape Value

[16] sense of place Either the intrinsic character of a place, or the meaning people give to it, but, more often, a mixture of both.

5.59 The ES identified the visual impact of the scheme in relation to residential and commercial receptors. This is summarised in Table 5.9. The overall visual impact was assessed as moderate to slight adverse for properties to the north of Dobwalls; and slight adverse for the majority of footpaths.

Table 5.8 – Intended Balance of Landscape Losses and Mitigation Gains

Permanent Losses	Mitigation Gains
2,809m of intact Cornish Hedges and 571m of defunct (degraded) Cornish Hedges	1,770m of Cornish Hedges
2,511m of other hedgerows	1,355m of other new hedgerows, including reinstated hedgerow for bat mitigation south of Havett Farm
2.56 ha. of woodland, other tree cover and scrub	13.69 ha. of new woodland, other tree planting and scrub

Table 5.9 – Summary of Forecast Visual Impacts of Scheme on Receptors

Year 1	Impact	Year 15
9 residential	Substantial Adverse	1 residential
38 residential, 2 commercial	Moderate Adverse	8 residential
91 residential, 4 commercial	Slight Adverse	40 residential, 4 commercial
27 residential	No Change	116 residential, 2 commercial
46 residential	Slight Beneficial	46 residential

5.60 The ES indicated that the earthworks would go beyond basic engineering in order to harmonise with the local topography as far as possible and that the A390 embankments would be blended into the landscape to return much of the temporarily disturbed land to agriculture. Additionally, the landscape design sought to retain mature trees and watercourses where appropriate, for example within the Blackwater Valley. New planting was also designed to reflect the locally indigenous species and/or long-established species: woodland planting was designed to mimic the proportions and distribution of species found locally; open glades were to be left in woodland and woodland edges were designed to be planted with shrub species including Hawthorn, Blackthorn, Hazel and Dog Rose.

5.61 Where permanent dense screens were considered desirable, a similar species mix was identified, also incorporating Field Maple; and Cornish Hedges were specified along highway boundaries wherever appropriate to link with existing hedgebanks and reinstate local landscape character. It was intended that grassland on cutting slopes would be seeded to create species-rich swards; attenuation ponds would be planted with rushes; and lighting would be restricted to the minimum commensurate with road safety using white light and cut-off luminaries at the Dobwalls Roundabout only.

5.62 At the western end, the A390 approach to the Dobwalls Roundabout and Bypass has been elevated to pass over the Penzance to London Paddington Railway line; where the route passes to the north of Dobwalls it is in cutting, extending to Tuelmenna Woods; and then raised on embankment when passing adjacent to the Moorswater Industrial Estate.

Variations to the Scheme

5.63 The Construction Environmental Management Plan (CEMP) and associated Draft Landscape and Ecology Management Plan (dLEMP) provides clearer details on the planting and highlights a number of departures from the scheme proposals (in the ES) that occurred whilst the scheme was on site:

- The dLEMP confirms that topsoil was used for planting areas and that no topsoil was placed on slopes steeper than 1:2 due to potential stability problems and health and safety issues. For grassland areas instead of topsoil, weathered shillet containing a reasonable proportion of fines was specified on all verges and embankment slopes (see Figures 5.4 and 5.5 and views in Appendix E). These areas were hydro-seeded with 'low-grow/low-maintenance' seed mixes. This approach was adopted to encourage a more diverse sward to establish and reduce long term maintenance requirements. New cutting slopes have been left to colonise naturally;
- The advice within the initial Works Information was that there should be minimum use of the visually intrusive post and rail fencing, which often marks the highway boundary up and down the country. As a result, almost all of the new fencing is timber post and wire;
- The dLEMP indicates that tree and shrub planting was undertaken in a more informal and naturalistic style, rather than the 'standard' forestry style geometric grid. and
- It is understood from the dLEMP that despite endeavours to retain as many mature trees as possible on the steep rock face below Looe Mills Farm, several had to be felled at various stages of the project to satisfy health and safety requirements.

Consultation

5.64 CC considers that the impact on landscape is generally worse than expected. The bridges and large revetments are generally considered acceptable and the impact of the bypass on the setting of Dobwalls is considered beneficial after taking the reduction of traffic into account. However, the effectiveness of the execution of mitigation measures is criticised, with CC providing the following specific comments:

- Landscape planting: 'planting densities generally acceptable, greater use of feathered trees rather than transplants/ whips would have provided better initial impact. Extent of planting on site in many instances appears to be less than indicated on drawings. There is little evidence of maintenance. Better standard of planting needed particularly around roundabout and approaches into Dobwalls';
- Earthworks and ground modelling: 'In many instances modelling is too severe and unsympathetic with landform. Finishing of verges is poor, often with extensive areas of rough stony ground particularly evident on southern approach from St Austell. Old features such as discarded field gates have not been removed'; and
- Finishing: 'Generally landscape detailing and finishing is poor'.

5.65 Cornwall Council comments are responded to in the landscape evaluation section below.

5.66 The Dobwalls and Trewidland Parish Council was invited to comment but did not provide a response.

5.67 As part of the residents survey, respondents were asked to consider whether they agreed / disagreed that the visual impact of the bypass had been minimised, blending the bypass with the natural environment. Table 5.10indicates that over 75% of respondents felt that the scheme had been successful in blending in with the surroundings, however 12% felt that the

impact had not been minimised. Where additional comments were provided 71 were negative and 16 positive.

Table 5.10–Has the impact of the bypass on the natural environment has been suitably minimised?

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Left Blank
To what extent do you agree/disagree that the impacts of the bypass on the natural environment has been suitably minimised, blending the bypass with the natural environment?						
Number of responses	88	100	28	20	10	0
Percentage	36%	48%	11%	8%	4%	0%

5.68 The residents survey also asked respondents to consider '*to what extent do you agree/disagree that the bat structures have been suitably incorporated into the overall visual appearance of the bypass scheme within the local landscape?'*

Table 5.11- Have the bat structures been suitably incorporated into the overall visual appearance of the bypass scheme?

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Left Blank
To what extent do you agree/disagree that the bat structures have been suitably incorporated into the overall visual appearance of the bypass scheme within the local landscape?						
Number of responses	23	55	91	36	40	1
Percentage	9%	22%	37%	15%	16%	<1%

5.69 Table 5.11indicates that opinion was split for this issue, with 32% of respondents agreeing that that the structures are well incorporated, and approximately 32% disagreeing. However the most significant response (37%) was to neither agree or disagree, which is likely to indicate that they did not consider it an issue, or did not know what the bat structures were.

5.70 There were a number of common additional responses to this question, of which the main ones are summarised here;

- Negative views were generally because respondents felt that the bat bridges were a waste of money (50 comments)
- 24 respondents felt that the bat bridges were an eyesore, however some respondents added that the bat house was less intrusive

Evaluation

5.71 The removal of significant volumes of traffic from Dobwalls Village has improved the local landscape/townscape character in terms of reduced vehicle intrusion, particularly HGVs, as expected. The scheme included proposals to amend the geometry of the approaches to Dobwalls to increase footpath widths (Figure 5.1). Additional works have been undertaken by the Cornwall Council along the former A38 route, as detailed in the introduction to this report..

Figure 5.1– Example of changes to townscape delivered by scheme

5.72 With regard to the point made by CC in respect of the standard of planting on the approach to the village, the planting appears to have been implemented in line with the ES proposals including some individual larger size trees. However, with specific reference to the Dobwalls Roundabout, in the context of the size of the space and the choice of seeding into shillet across the embankments and roundabout, resulting in slow establishment of grasses and an absence of greening at the time of the site visit, new seeding and planting has yet to make much impact visually (see Figure 5.2 (shown larger in Figure E.9 in Appendix E)), (see Figure 5.3, Figure E.1 in the Appendix, and Figure E.2 in the Appendix). The roundabout lacks visual interest; and planting has yet to establish. However, it is too early to assess whether the planting will provide a ‘gateway’ feature as it matures and this should be reviewed at FYA.

Figure 5.2 – Example of hydro-seeded shillet surface

5.73 The scheme has followed an alignment sympathetic to the AGLV designation and where cuttings are used, they are effective in minimising overall visibility. Cornish Hedges are included at various points along the length of the scheme – they provide a locally distinctive feature and the site visit indicated that, with few exceptions, plants appear to be establishing well with growth extending above the spiral guards (see Figure E.4). However, the embankment over the railway is particularly prominent in longer distance views, especially from the west; and the overall lack of greening at OYA emphasises this effect. As the new planting establishes this should soften the embankment, integrating it into the local landscape. The lack of greening on the slopes along the length of the bypass makes the route feel somewhat barren, drawing the eye to the hard engineering, several areas of which appear to have been poorly finished (see Figure E.6) as opposed to showcasing the more vernacular features within the design such as the Cornish Hedges. The ES landscape proposals indicated that the cutting slopes would be species rich grass which can take time to become established.

5.74 It is anticipated that as the landscaping planting matures and the grassland areas establish a greener aspect to the slopes, the scheme should become more integrated into the local landscape – ongoing establishment should be considered as part of the FYA evaluation – Figure E.7 demonstrates a selection of the planting common to the scheme. Appendix E provides a selection of comparative views of the route before and after the implementation of the scheme. From these it is apparent that the scheme has contributed to a considerable loss of greening overall and the appearance of road infrastructure in longer distance views is now considerably more prominent. However, the views from the vantage points depicted in Appendix C indicate effective use of topography and intervening vegetation to ensure that views over the road are interrupted, delivering an intermittent range of screening features – it is anticipated that the screening will become more effective over time as the landscaping matures.

Figure 5.3 – View across Dobwalls Roundabout towards the entrance to Dobwalls (in the right of frame)

5.75 Given the decision to use the shillet as a means of encouraging more effective colonisation of species rich grassland and restrict weed inundation, the overall appearance of the scheme, although somewhat bare, is broadly as should be expected at OYA for this type of approach. It should also be noted that the ES landscape proposals showed the cutting slopes as species rich grassland and it would have been good practice anyway to use a low fertility soil. However, verges, roundabouts and 'gateway' areas were expected to be amenity grass which would usually be sown onto topsoil for quick establishment and a green appearance. and these areas of seeding could be considered marginally worse than expected for this element of the overall landscape proposals at the OYA evaluation. The ongoing establishment of the grassland areas should be considered at FYA.

5.76 The ES specified that lighting should be of a full cut-off design to minimise light spill. The amount of lighting was to be limited to the minimum required for operational safety and sited exclusively at the Dobwalls Roundabout (approaches and on the roundabout). The site visit confirmed that the installation of lighting is of the type and in the locations expected based on the positioning shown in the proposed scheme drawings.

Figure 5.4 – View of the bypass looking west from Havett Road Bridge

5.77 The CEMP includes information relating to the ongoing aftercare of all planting, seeding and environmental areas, stating that they will be maintained as part of the contract aftercare for 5 years following completion of the planting works.

5.78 A comparison of the proposed scheme drawings to the as builts indicates that the overall location and amount of planting is broadly as expected, albeit that certain features such as the bat house have altered the pattern of planting. The bat structures are visible within the route corridor but existing vegetation and landform limits their impacts on the wider landscape. There are a number of locations where culverts and drainage channels have been constructed in light coloured materials with a finish that is rougher than expected, resulting in an overall appearance that is prominent and detracts from the local rural landscape character – as noted by CC landscape officer and Figure 5.5, Figure E.18, Figure E.19 and Figure E.24.

5.79 It is too soon to be able to evaluate the overall effectiveness of the landscape planting and this should be reviewed at the FYA stage. Some plots, particularly the Cornish Hedges along the more exposed northern ridge at the western approach to the Dobwalls Roundabout, are less well advanced than others. The significant proportion of planting appears to be establishing well with good levels of growth over tubes and spiral guards noted along the length of the scheme. The shillet has not aided early establishment of grass, albeit that it also appears to have been effective in controlling weeds.

Table 5.12 – Summary of Landscape and Townscape Impacts

Origin of Assessment	Summary of Effects	Assessment
AST Landscape (Forecast)	Scheme avoids AGLV but does not quite fit scale of landscape. Locality already affected by existing A38 and light industry	Slight Adverse
AST Townscape (Forecast)	Removal of through-traffic from Dobwalls would benefit human interaction and enable a sense of place to be restored.	Moderate Beneficial
EST Landscape (OYA Evaluation)	The bypass avoids the AGLV and the gently curving alignment reflects common landforms in the locale, aided by the careful use of a cutting to the north of Dobwalls. However, embankments at the western end and adjacent to the Moorswater Corridor Distributor Road, coupled with steep cutting through the Blackwater Valley, create prominent and incongruent features in the wider landscape. The slow growth of grasses and subsequent lack of greening to the scheme at OYA increases the dominance of the engineering in the landscape, to the detriment of delivering integration to the landscape.	Worse than Expected at OYA, likely to be As Expected by FYA
EST Townscape (OYA Evaluation)	The old A38 has been subject to significant reduction in road traffic following opening of the bypass. Detrunking works have included widening of verges at the approaches to the Dobwalls East Junction to enable the installation of a combined footway/cycleway with verge; and a reduction in road width at the western approach to Dobwalls, enabling widened pavements. These elements have combined to improve visual amenity, create a road more suited to village character and improve the safety and segregation of NMU routes between Dobwalls and settlements to the east. The bypass does pass close to Dobwalls as expected, but is not visible from within the village centre.	As expected

Heritage of Historic Resources

5.80 The AST stated that there would be an adverse impact on the medieval landscape as a result of the scheme, also noting that the scheme would pass close to the Grade II Listed Building of Toll House (as did the existing A38). No impact on historic interest was predicted at Moorswater. The overall impact was assessed as slight adverse.

5.81 The ES noted the following as features that would potentially be affected by the scheme:

- Historically important archaeological features (medieval origins) formed by the combination of field patterns and Cornish Hedges – severance and loss;
- Grade II Listed Toll House at Looe Mills – proximity of the bypass and impact on setting;
- Grade II Listed Milestone (1761) – requirement for relocation and impact on setting; and

- Grade II* Listed St Peter's Church in Dobwalls village – potential benefits arising from reduced traffic flow and impact on setting.

5.82 The ES presented a mitigation strategy comprising a geophysical survey, guiding the locations for a programme of rapid open area excavations (ROAE) and recording of historic field boundaries prior to construction, supported by an archaeological watching brief throughout the contractor's groundworks. The ES states that the work undertaken as part of the mitigation programme would form an archive for ultimate deposition in an approved local museum and, where results warrant it, a summary would be published in the local country archaeological journal entitled 'Cornish Archaeology', or other publication as appropriate. It is understood that this strategy was approved by CC officers in November 2006 and executed shortly thereafter.

5.83 The Grade II* Listed Milestone was also included in the mitigation strategy – it was to be removed during construction and re-sited near to the East Attenuation Pond, visible from the MCDR near Dobwalls East Junction.

Consultation

5.84 CC indicated that the person most directly involved with the scheme is no longer available for comment. The consultation response received stated that the impacts on the heritage of the historic environment were as expected including the impact on the setting of St Peter's Church in Dobwalls village . Specific reference was made to the effectiveness of the removal and re-siting of the Grade II* Listed Milestone; and the installation of the Cornish Hedges within the scheme as being generally well received. The response also stated that although managing the impact of the scheme on the Toll House and turnpike 'never going to be easy', the results have been as expected.

5.85 English Heritage (EH) has been invited to comment upon the scheme. No consultation response has been received.

Evaluation

Listed Buildings and Structures

5.86 The impacts on listed buildings are considered to be generally as expected;

- Grade II Listed Toll House – the interrelationship between Toll House, the A38, the bypass and the turnpike that the building originally served was noted as being difficult to address in the consultation comments from CC. Impacts were predicted in the ES as being neutral as the old A38 already passed very close to the building and the bypass would increase the separation distance only marginally. The evaluation concurs with the resultant effects being as expected;
- Grade II* Listed Milestone – mitigation required that this was removed off-site and reinstated upon completion of the scheme. This has happened and the milestone was refurbished prior to reinstatement (see Figure E.10) – impacts are therefore as expected;
- Grade II* Listed St Peter's Church, Dobwalls – the ES predicted a minor beneficial effect arising from the removal of significant amounts of through traffic from Dobwalls. Traffic figures show reassignment to the bypass to be broadly in line with forecasts, therefore impacts are evaluated to be as expected.

Archaeology

5.87 Archaeological work was undertaken in 2006/2007 and reported in February 2010. A geophysical survey was used to identify some areas of low potential archaeological

importance and the ROAE confirmed nothing of major interest to be present on the scheme route. 22 Cornish Hedges were recorded as distinctive and recommendations made for strategic translocation and new provision as appropriate. All other findings of the ROAE and associated work were reported in the February 2010 report and no further assessments were recommended.

5.88 Archaeological works were undertaken in response to the findings of geophysical surveys completed in 2003 and 2004 covering 90% of the length of the bypass route. The works took place from November 2006 through the winter months to early 2007. The report (published in February 2010) indicates that they included the following:

- Detailed magnetometer surveys for 12 discrete locations along the bypass route – these were undertaken in good conditions but comparatively few geophysical anomalies were recorded and none of the features revealed by the survey was sufficiently distinctive to be readily interpreted or assigned to a specific period;
- The majority of geophysical anomalies were linked to historic field boundaries;
- Five areas subject to detailed magnetometer surveys were noted to have potential traces of human activity and three of these areas were investigated further prior to construction. Linear features were interpreted as field boundaries pre-dating the 1841 tithe map and in one of the areas, ridge and furrow cultivation was noted, potentially of medieval date;
- ROAE was undertaken on the three areas subject to detailed magnetometer surveys. In the excavation nearest to Looe Mills (plot 23, centred on National Grid Reference SX229649) a 'Beaker (early Bronze Age) Pit' was uncovered. The pottery found in the pit was decorated but interpreted as domestic in nature; and quartz was also found in the pit, assumed to have been deliberately introduced. The report concludes the following:
  - *"This pit can therefore be interpreted in two ways. While it may simply be domestic in nature (see pottery report) it may have had a broadly funerary/ceremonial function, perhaps part of a burial cairn. The position of this potential structure, on a bluff overlooking a river valley, would be consistent with its having been constructed to be a visible feature within the landscape."*
- Detailed examination of 22 Cornish Hedges along the route, some following machine excavation of 5m wide sections. Details of construction and form have been recorded in the project archive. In addition, the ES indicates that mitigation for landscaping and the retention of bat flight routes incorporated the translocation of some of the Cornish Hedges and severed hedgerows, incorporating as much of the original material as possible;
- An archaeological watching brief during the course of the contractors' topsoil stripping and initial earthmoving contract. No significant remains were uncovered and all details of observations are contained within the project archive.

5.89 The Archaeology report February 2010 notes that, on the basis of the recorded data and on-site observations, no significant (i.e. medieval or earlier) archaeological features or deposits were identified. Subsoil features that were identified (pit/ditches) were all undated or of modern origin and the small quantity of artefacts that were recovered suggest only very sporadic activity dating from the Mesolithic (late hunter-gatherer) period onwards. Details of the finds are reported to be contained within the archive – the ES indicated that this was to be prepared for deposition in an approved local museum; however, the February 2010 report does not confirm the final location. This should be confirmed as part of the FYA evaluation.

Table 5.13 – Summary of Heritage of Historic Resources Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Adverse impact on medieval landscape. Scheme close to Toll House (listed building) as does the existing A38. No impact on historic interest at Moorswater.	Slight Adverse
EST (OYA Evaluation)	CC considers that the impact on the heritage of historic resources is as expected and is not aware that there have been any unforeseen impacts. It considers that the execution and reporting of archaeological works is as expected; that the relocation and reinstatement of the Grade II* Listed Milestone went well; that Cornish hedge replacement has been well received generally; and that the overall impact of the scheme on the setting of Listed Buildings and Structures has been as expected. The mitigation strategy indicates that an archive should be prepared for deposition in an approved local museum.	As expected

Biodiversity

5.90 The AST stated that there would be adverse impacts on the hedgerow network, the East Looe and West Looe tributaries and the bat populations within the study area. It was also noted that woodland planting and new Cornish hedges would provide additional habitats and that other protected species are accommodated within the scheme design.

5.91 The ES noted that there were no statutory designations of nature conservation interest within 2km of the scheme and that most of the fields through which the route passed were of low ecological value as a result of agricultural improvement works over several decades. Tuelmenna Wood and High Wood lie to the north of the scheme and include plants associated with ancient woodland, rendering them of ecological value. In addition, the traditional Cornish hedge field boundaries and networks of streams were assessed as being of considerable ecological interest.

5.92 The ES highlighted that the principal impact on fauna would relate to the loss of bat roosts and disturbance/severance of bat flight paths. In addition, a need was identified for reptile translocation and habitat creation; and mitigation for interference with otter movement corridors. Table 5.15 provides a summary of the predicted biodiversity impacts identified in the ES, proposed mitigation and evaluation.

5.93 In brief, the mitigation proposed for the scheme included the following:

- Sensitive construction activities to take account of nesting birds and breeding seasons;
- Reptile translocation and exclusion during construction works;

  Licensed removal of bat roosts and closure of badger setts;
- Habitat creation within the landscape design to include new Cornish hedges, woodland planting, diverted open streams at East and West Looe tributaries and provision of wetland habitat aimed specifically at foraging bats; and
- Provision of safe bat, otter and badger crossing points and wildlife fencing to prevent animal casualties on the new road.

5.94 The overall impacts were predicted to equate to a moderate adverse effect on biodiversity.

Consultation

5.95 Natural England (NE) welcomed the opportunity to participate in the POPE evaluation; however, declined to comment at this OYA stage as NE has not undertaken any review of the works or seen the results of any post project monitoring of biodiversity mitigation measures.

5.96 CC responded to similar effect in that monitoring data would need to be provided and reviewed before meaningful comment could be made and was particularly keen to see bat monitoring data in order to assist with a reported high level of enquires received about whether the approach at A38 Dobwalls bypass has been successful. However, CC also expressed support for the use of dormouse nest boxes as opposed to tubes, due to their benefits in terms of ongoing monitoring; and noted that the Scheme includes considerable planting that should hopefully mature to provide good habitat in the future.

5.97 CC Landscape team felt that opportunities for habitat creation, including wetland and meadow areas, had been missed.

Evaluation

5.98 **Error! Reference source not found.** at the end of this Biodiversity section summarises the effects of the scheme, proposed mitigation and evaluation. The table encompasses the protected species that were identified as experiencing potential impacts from the scheme.

5.99 It is too soon to be able to evaluate fully the effectiveness of the mitigation measures and this should be considered further at FYA, including re-consulting with NE and extending consultation to include the local Wildlife Trust. At the FYA stage the CEMP indicates that monitoring data should be available for bats, dormice and reptiles/amphibians. .

Table 5.14 – Summary of Biodiversity Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Adverse impact on the hedgerow network, the East Looe and West Looe tributaries and the bat populations within the study area. Woodland planting and new Cornish Hedges provide additional habitats, Other protected species are accommodated within the Scheme design	Moderate Adverse
EST (OYA Evaluation)	Mitigation measures incorporated into the scheme as expected. HA monitoring in place to establish effectiveness of measures for bats, dormice and translocated reptiles/amphibians. Further study would be required to evaluate effectiveness of other measures. Biodiversity to be considered further at FYA including areas of new planting and the ecological mitigation area	Likely to be as expected

Table 5.15 – Summary of Biodiversity Mitigation and Evaluation

NOTE: All illustrative material referenced in this table is contained in the Environmental Supporting Information appended to this Report.

Aspect	Predicted Impact	Mitigation Measures	Evaluation
Vegetation	Permanent loss of 2,809m of intact Cornish Hedges and 571m of defunct (degraded) Cornish Hedges Permanent loss of 2,511m of other hedgerows Permanent loss of 2.56 ha. of woodland, other tree cover and scrub Tuelmenna Wood replanted deciduous wood on English Nature's Ancient Woodland Inventory (Beech, Oak and some Alder) High Wood dominated by coniferous plantations No designated sites identified	Reinstatement of 1,770m of new Cornish Hedges, incorporating some translocated material Reinstatement of 1,355m of other hedgerows, including a translocated hedgerow for bat mitigation to the south of Havett Farm 13.69 ha. of new woodland, other tree planting and scrub Planting of c.54,000 new trees and shrubs of species of local provenance Planting plots to avoid the forestry grid in order to reflect the planting pattern of Tuelmenna Wood Creation of species rich grassland and sensitive roadside planting to create diverse roadside habitats of value to wildlife Particular attention paid to tie-in of new planting with existing, including retention of mature trees to assist with bat navigation on approaches to bat bridging structures Planting of Bulrushes to attenuation ponds	Cornish Hedges have been created and planted, largely in accordance with the Proposed Scheme drawings included in the ES. In general terms, plants are showing good signs of vigour with growth often extending beyond the spiral guards Figures E4 and E17 in Appendix E Hedgerows have been planted, largely in accordance with the Proposed Scheme drawings included in the ES. In general terms, plants appear to be establishing well, particularly notable towards the eastern end of the Scheme where the aspect is less-exposed Hydro-seeding of shillet has occurred consistently along the length of the Scheme using a mix of grass species. Shillet, specified to discourage weed establishment and encourage a more diverse sward (cited in CEMP), means that at the OYA stage grass growth is slow (as would be expected on low fertility substrate) and areas have yet to green up. However, evidence of thin growth was observed during the site visit and the level of establishment should be re-evaluated at FYA. see various photographs in Appendix E e.g. FiguresE1, E2 and E9 Native planting and woodland edge planting has been carried out. Majority of planting plots appear to follow a cranked grid as opposed to avoiding the forestry grid – this is particularly apparent on the embankments of the MCDR. See comments in landscape section in respect of use of feathered trees and alterations to the species mix. Where it was possible to obtain a vantage point, the Site visit confirmed that the attenuation ponds include marginal planting and some bulrushes, which should help to increase ecological diversity. Establishment of planting should be considered at FYA stage. See E22 and E23 in Appendix E

Aspect	Predicted Impact	Mitigation Measures	Evaluation
Birds	ES mentioned potential impact of breeding birds, citing the following species as present in the locale: • Skylark; • Yellowhammer; • Linnet; • Song Thrush; • House Sparrow; • Starling; and • Peregrine Falcon (at Moorswater Viaduct)	Works undertaken outside breeding bird season. Avoid disturbance of nesting birds during construction works. Mitigation planting designed to deliver some replacement habitat, including native trees and shrubs and the use of seed, fruit and nut bearing shrubs in areas of scrub.	New planting will in time provide additional habitat suitable for birds

Aspect	Predicted Impact	Mitigation Measures	Evaluation
Bats	Unavoidable disturbance and loss of bat roosts Severance of flight paths at Havett Farm; between Lantoom Quarry and Moorswater; and between maternity roosts at Havett View and Toll House Disturbance to foraging habitat as a result of relocation of streams	Bat roosts removed under licence from Defra. Temporary fencing used along the road during construction to maintain integrity of flight paths. Subject to surveys commissioned by HA in 2007, which have been used for comparison in subsequent monitoring. Creation of three bat crossings: • 1. Havett Road Bridge crossing adapted to deliver a high-sided parapet to provide a route for safe passage of bats (Figure E12); • 2. Purpose built bat crossing with a tie-in to existing vegetation to the east of Havett Road Bridge (see Figure E.13), known as 'bat bridge near Havett Road'; • 3. Purpose built bat crossing (known as 'bat bridge near Lantoon Quarry') with a tie-in to retained vegetation between MCDR and bypass and tree to the north of the bypass, plus tree planting atop the embankment to the south of the MCDR (see Figure E.14, Figure E.15 and Figure E.16) Translocation of roadside hedgerows from Havett View to designated area to the east of Havett View, supplemented with new native shrub planting (see Figure E.17) Surveys undertaken in 2007 and 2008 provided an opportunity for the effectiveness of planting, particularly in terms of connectivity for bats, to be assessed. Recommendations were made for some areas of planting to be increased; and the plugging of gaps where establishment of planting was noticeably weak Creation of more wetland foraging habitat within the ecological mitigation area to the north of the bypass (opposite Dobwalls East Junction) Installation of 96 bat boxes for lost roosts in the vicinity of Petersfield and Blackwater Farms; Looe Mills; High Wood; and Moorswater Industrial Estate CEMP identifies a requirement for 5 years of monitoring under Defra licence by a suitably qualified ecologist. This comprises an annual survey and includes provision for the relocation of bat boxes to optimise positioning if considered appropriate.	Bat house erected to mitigate the loss of roosts– this was not included in the Proposed Scheme drawings accompanying the ES (see Figure E.11). Monitoring report indicates that house was not erected in time for the 2008 surveys (undertaken 23/24th June); and that in June 2009, modifications were noted as necessary to improve the situation for bats; however, it is included in the annual monitoring programme for Sep. 2010-2015 inclusive. 96 Bat boxes specified for erection in a number of locations in and around Tuelmenna Wood. Monitoring report indicated that 79 of the 96 boxes were found to be in place – one contained a pair of pipistrelle bats; and seven others contained bat droppings. The three hibernation boxes showed no bat activity, but had all been used by birds in 2008 (surveyed 2nd October). Recommendations were made for ongoing annual monitoring and the location/replacement of lost boxes – two were noted as damaged and in need of replacement; and two were suspected to have been sited on felled trees and therefore in need of replacement. The 2009 report noted that recommendations arising from the 2007 and 2008 surveys had been acted upon. Bat crossings 1 and 2 appear to have been effectively executed with a good level of vegetation tie in to the north and south of the bypass. Bat crossing 3 would benefit from more mature planting at the southernmost tie-in to aid in guidance as noted in the Monitoring report. Specifically, the monitoring report notes that the position of the foundations for the crossing have precluded planting at the ideal locations. Bat monitoring is programmed for annual survey for a period of 5 years following completion of the mitigation measures. The final report should be available for the FYA evaluation. In general terms, there is evidence of continuing presence of a range of bats species in the vicinity of the Bypass – Brown Long Eared, Serotine and Whiskered/Brandt's Bats are generally considered to be of particular rarity – and usage of mitigation measures installed as part of the Scheme. The June 2009 Summary Report provides a brief overview of changes in trends, reporting on surveys undertaken on 15th June 2009 (dusk surveys) and 16th June 2009 (dawn surveys) – this included an internal and external inspection of the bat house on the afternoon of 16th June 2009. The bat house inspection indicated that there was a need for some modifications – the openings to the eastern side of the roof needed to be in-filled and the weatherboarding on the same side needed to be raised slightly to allow bats access under the boarding. The report anticipated that the May 2011 monitoring will comment upon the effectiveness of any modifications, as well as providing the first set of survey data for this mitigation feature. This will require review at FYA. Table E1 summarises 2008 and 2009 results.

Aspect	Predicted Impact	Mitigation Measures	Evaluation
			The general trend in levels of activity is downwards although, with the exception of usage levels of Bat Crossing 2 by Brown Long Eared bats. Particularly in relation to Whiskered/Brandt's Bats, this general reduction is partially attributed to possible colony dispersal/movement, evidenced by the absence of a roost at Toll House between May/June 2004 and July 2004 (reported in the Bat Mitigation Monitoring Report, May 2009). The MAC provided animal mortality data and to date there has been no reported bat mortality on the Bypass. The MAC should be re-contacted for the FYA
Dormice	Potential for disturbance through the loss of Cornish Hedges to the Scheme.	Licensed clearance undertaken between September and October to avoid the breeding season. CEMP identifies a requirement for 5 years of monitoring under Defra licence by a suitably qualified ecologist. This comprises May and October surveys of the 20 nest boxes in 2010, 2012 and 2014.	It is understood that during vegetation clearance of suitable Dormouse habitat no animals were found and the only evidence was two nests in located in the Cornish Hedgebank on Coldwind Lane CEMP notes the installation of 5 Dormouse nest boxes within the hedge west of Coldwind Lane and 15 at the margins of Tuelmenna Wood. Dormouse nest box monitoring is programmed for survey over a period of 5 years to October 2014. The final report should be available for the FYA evaluation.
Otters	Temporary adverse effects arising from disturbance to watercourses.	Installation of square culverts with ledges and fencing at right angles to the river channel to discourage otters from crossing the road	The dLEMP notes that survey work in spring 2006 identified otter on the East Looe upstream and downstream of the existing A38 crossing and on the Blackwater Tributary. Activity on the West Looe Rivers and tributaries was confined to south of the railway. It states that an otter ledge has been provided in the East Looe Culvert and fencing to prevent otters accessing the road. Fencing has also been provided at the attenuation ponds on the West Looe to prevent otters accessing the A390. . The MAC provided animal mortality data and to date there has been no reported otter mortality on the Bypass. The MAC should be re-contacted for the FYA

Aspect	Predicted Impact	Mitigation Measures	Evaluation
Fish	The ES references potential disturbance to fish as a consequence of alterations to and severance of watercourse, encompassing the following species: • Brown trout • Bullhead • Eel; and • Lamprey	Avoidance of works during spawning time Engineering works to the East Looe River to open the watercourse out, incorporating 600mm gravel beds to benefit fish species, scrapes and on-line ponds, as well as fish culverts and weirs to allow upstream fish migration Creation of new wet grassland area and replacement of riparian habitat to the West Looe Tributaries (part of the Ecological Mitigation Area to the north of the bypass opposite the Dobwalls East Junction).	The As Built drawings show delivery of appropriate features and planting to support the mitigation as proposed. The dLEMP notes that to mitigate for the loss of 270m open watercourse of one of the East Looe tributaries the section north of the bypass was diverted as an open watercourse towards Tuelmenna Wood and flows through a series of newly created on-line ponds and scrapes before flowing into the tributary eastwards from Tuelmenna Wood. No planting of the ponds or watercourse has been undertaken with the intention that it colonises naturally. Access to the Ecological Mitigation Area was not possible during the site visit and it is suggested that this could be considered in more detail at FYA. From the information provided to POPE it would appear that there is no monitoring undertaken as part of the scheme which would confirm whether fish species have been disturbed by the scheme or not.
Badgers	One badger sett required closure to enable the Scheme to be realised (Sett C) Badger runs may be affected by road construction	Closure of one badger sett under licence from Defra Provision of badger fencing to prevent badgers crossing the bypass and badger tunnels under the new road: • Chainage 1,050; • Chainage 1,200; • Chainage 1,830 on bypass to Ch 1,350 on MCDR Tunnel approaches designed to deliver slight funnelling and connect to hedges and planting	The DLEMP notes that during survey work in Spring 2006 no active badger setts were located within 30m of the scheme and therefore there was no requirement to obtain a disturbance licence from NE. The consultees contacted for OYA have not provided any comments in respect of badgers. The dLEMP notes that 3 badger tunnels and mammal fencing have been provided. It is suggested that badger tunnels are visited at the FYA evaluation. The dLEMP also notes that no badger monitoring is required The MAC provided animal mortality data and to date there has been no reported badger mortality on the Bypass. The MAC should be re-contacted for the FYA.
Reptiles/ Amphibians	Potential disturbance during construction and some temporary habitat loss	ES specified translocation of slowworm and common lizard. CEMP indicated that 20 slowworms and 7 lizards were moved to a translocation site comprising rough grassland, hedgebanks and edge habitat. Monitoring was specified to be undertaken in accordance with best practice guidance set out in the Herpetofauna Groups of Britain and Ireland (HGBI) guidelines. Additional planting, particularly in the ecological mitigation area to the north of the bypass (opposite Dobwalls East Junction) would provide replacement habitat.	The dLEMP notes that the cleared area was fenced to prevent re-colonisation during the works but after completion of the scheme the fencing was removed and reptiles allowed to re-colonise the area. The ecological mitigation area as presented in the As Built drawings incorporates suitable habitat and scrub planting has also been included as a planting type within the new highway planting areas. The dLEMP notes that monitoring of the reptile population will be carried out for two seasons in order to determine the success of the project. The results of the monitoring should be available to POPE for the FYA evaluation New attenuation ponds with marginal planting have been provided. No information has been made available to POPE which would confirm whether amphibians have moved into these areas. This could be considered at FYA if any further information becomes available e.g. from the local Wildlife Trust.

Water

5.100 The AST stated that the route alignment reduced the number of watercourse crossings to the minimum but that the western end would cross the headwater of West Looe River. There would be a negligible overall impact on water quality with surface run-off channelled to lined ditches leading to interception ponds feeding three attenuation ponds and a retention tank prior to discharge. The overall impact was assessed as slight adverse.

5.101 The ES noted that construction of the route would involve crossing two main watercourses and a number of tributaries. Measures were designed to deliver appropriate drainage and, where possible, incorporated ecological mitigation and included:

- The provision of new highway drainage which would avoid any direct discharge to the rivers;;
- Culverts designed to be self-cleaning at high velocities and allow fish passage at low flows;
- Development of three lined attenuation ponds designed for 100 year storm events, fed by lined interception ponds planted with reeds and kept permanently wet;
- A retention tank comprising an oversized storm water pipe discharging a distance of 400-500m downstream of salmonid spawning areas;
- Relocation of the pond at Lantoom Quarry to retain its role as an interception pond for stormwater run-off from quarry operations;
- The creation of a new wet grassland area and replacement riparian habitat to compensate for the loss of 200m of open watercourse (as a result of being culverted) associated with the West Looe tributaries;
- Diversion of the East Looe Tributaries to create a open watercourse to the east of Petersfield, connecting Tuelmenna Wood to Blackwater Stream;
- The extension of the East Looe River culvert and addition of 600mm gravel bed to benefit fish species; and
- Seeding of embankment slopes in the interests of stability.

Consultation

5.102 The Environment Agency (EA) was invited to comment and although EA expressed a willingness to comment on the scheme a response has not been received.

5.103 The West Country Rivers Trust has been contacted. The response received states that the Trust has not undertaken any survey work upstream or downstream of the bypass and is therefore unable to comment in an objective way on the structures in place to mitigate the construction. The Trust suggested that the Fowey Rivers Association might have fisheries information and it is suggested they could be consulted at FYA if no scheme monitoring relating to fish is available.

Evaluation

5.104 Based on the As Built drawings and site visit it would appear that the mitigation measures that were viewed have been incorporated into the scheme as expected. Specific comments and observations are described below.

5.105 The site visit confirmed that drainage has been installed throughout the scheme. No comments have been received to suggest there have been any pollution issues – this will require review at FYA.

5.106 The site visit was conducted following a period of sustained rainfall – there was no evidence of undue pooling of water or overflow, suggesting that culverts have been installed to be effective at conveyance of high velocity flow. POPE is not aware whether there is any information which would indicate whether the culverts facilitate fish migration at low flows as required by the ES.

5.107 At this early stage post scheme opening, embankment seeding has been undertaken but the landscape planting is yet to become well-established (see section of the evaluation of landscape impacts of the scheme)and, consequently, the drainage associated with the scheme forms a prominent feature throughout (see Figure E.19 and Figure E.21). . In addition to this, the site visit identified several locations where vegetation has established within the drainage channels – this may have an adverse effect on the free conveyance of water (see Figure E.20).

Figure 5.5 – Confluence of west railway culvert and Treburgie culvert

5.108 Two of the three attenuation ponds were accessible during the site visit. Planting and vegetation has yet to become well-established around the ponds; however, they appeared to be retaining water, in line with the proposals set out in the ES (see Figure E.22 and Figure E.23).

5.109 The culverts serving the East Attenuation Pond were visible from the bypass access route connecting Dobwalls East Junction to Toll House. Visual inspection did not identify any obvious blockages.

5.110 It has not been possible to conduct an evaluation of the following proposed mitigation due to difficulties with access – these will need to be reviewed at FYA:

- The retention tank comprising an oversized storm water pipe discharging a distance of 400-500m downstream of salmonid[17] spawning areas;

[17] Salmonid: 'of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish'.

- Relocation of the pond at Lantoom Quarry to retain its role as an interception pond for stormwater run-off from quarry operations;
- Mitigation measures within the Ecological Mitigation Area – this area was not accessed during the OYA Site visit:
  - The creation of a new wet grassland area and replacement riparian habitat to compensate for the loss of 200m of open watercourse associated with the West Looe tributaries;
  - Diversion of the East Looe Tributaries to create a open watercourse to the east of Petersfield, connecting Tuelmenna Wood to Blackwater Stream; and
- The extension of the East Looe River culvert and addition of 600mm gravel bed to benefit fish species.

5.111 It is understood that no ongoing monitoring of water quality is included in the contract. Without monitoring information it is not possible to evaluate any impact the scheme may have had on the water environment including fish. The CEMP identifies routine maintenance as follows:

- Open drainage ditches – treated for weeds and inspected once every two months to ensure unimpeded flow. Specific reference is made to the control of American Water Fern (*azollo filiuloides*), Australian Swamp Stonecrop (*crassula helmsii*) and Parrot Feather *(myriophyllum aquaticum*).

5.112 Those aspects of the drainage mitigation measures where access was not possible will be considered at FYA including re-consulting with EA and extending consultation to include the Fowey Rivers Association.

Table 5.16 – Summary of Water Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Watercourse crossings reduced to a minimum. Western end crosses headwater of West Looe River.	Slight Adverse
EST (OYA Evaluation)	Mitigation measures have been incorporated into the scheme and there is no information at OYA which would suggest that they are performing other than as expected. Ongoing maintenance to ensure the mitigation measures have remained effective will be considered at FYA.	Likely to be as expected

Physical Fitness

5.113 The AST stated that there would be improved conditions in the village of Dobwalls following completion of the scheme, with the ES highlighting that there would be major benefits to residents of the village arising from the de-trunking, delivering a substantial reduction in community severance. The AST also noted additional pedestrian/cyclist facilities, but indicated that journey times changes would be insignificant.

5.114 The scheme required the stopping up of three side roads. As part of the mitigation, the ES identified additional pedestrian and cyclist provision as follows:

- New combined footway and cycle track between Treburgie Water and Dobwalls via the redundant A390 and A38;
- Coldwind Lane severed and stopped up – diversions via new footpaths between Coldwind Land and Havett Road to connect to the new Havett Road bridge on each side;
- new footpath along the north of the Scheme to connect the two footpaths to Havett Road; and
- New combined footway and cycle track on the northern side of the Moorswater Collector /Distributor Road (MCDR), extended across the proposed bridge at Looe Mills to connect to Toll House.

5.115 The ES summarised the impacts of the scheme as follows:

"Pedestrian and cyclist routes would be improved by the Published Scheme with the provision of 2.5km of new combined footway/cycle track, including links from Treburgie Water, Doublebois and Moorswater to Dobwalls…loss of visual amenity on existing footpaths would be partly mitigated by landscape planting…local access to Moorswater Industrial Estate would be improved for all highway users with the completion of the new MCDR…

5.116 The overall impact was assessed in terms of the change in number of cyclist and pedestrian trips and the total number of people travelling by these modes – the impact was quantified as zero for all indicators. For the purposes of POPE, this is interpreted as a 'neutral' impact.

5.117 The ES included figures to show the impact of the scheme on the local footpath network. This is reproduced in Figure E.25 in Appendix E.

Variations to the Scheme

5.118 The site visit revealed that since the bypass has opened, footpath no.33 running parallel to the westbound carriageway of the bypass in a westerly direction from Havett Road Bridge was extinguished on 29th March 2010 due to construction of a new housing development (see Figure E.26). This footpath was originally provided as part of the scheme to compensate for the closure of Coldwind Lane. In extinguishing this footpath, this connection has temporarily been lost; however, on-site plans suggested that an alternative route (to the south of the new housing development) is to be provided.

Consultation

5.119 CC was invited to comment on the impacts of the scheme. A response was received indicating that there remained some 'unresolved issues'; a subsequent response stated that the structures and surface are commensurate with use and that the unresolved issues comprise the installation of two public footpath signs – one to the north of the Havett Road bridge and one to the south.

Evaluation

5.120 No new Non-Motorised User (NMU) surveys have been carried out specifically for POPE. However, the scheme NMU Audit Report (April 2010) Completion of Construction Stage notes that 'there is anecdotal evidence of NMUs using the new and established routes to move between Liskeard, Dobwalls and Doublebois on a regular basis for social, domestic and pleasure purposes'. Traffic has significantly reduced on the old A38 and it is likely that this will have encouraged pedestrians and cyclists to take advantage of the quieter roads and improved the local environment. .Responses to the residents survey suggest that approximately 30% of respondents now use PROWs more often than they did prior to the

construction of the bypass. This is considered in further detail in the Accessibility chapter later in this report. The scheme has also delivered a much improved connection between Dobwalls and the Moorswater Industrial Estate.

5.121 The footpaths severed by the bypass have been maintained across the bypass via the overbridges and new links as expected (see Figure E.25).

5.122 The proposed entrance to footpath No.33 was expected to be a stile, the site visit revealed that this is actually delivered by a gate. Additionally, the combined foot and cycle tracks have been fitted with a range of different entrance markings and barriers – the treatment is not consistent throughout and in one location where the path approaches the Toll House access road on a relatively steep slope, barriers appear to have been added post-construction (see Figure E.27).

5.123 The quality of surface treatments and finishing and the experience for pedestrians and cyclists using the new routes is addressed in the evaluation of Journey Ambience.

Table 5.17 – Summary of Physical Fitness Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Improved conditions in village. Additional pedestrian /cyclist facilities, but journey time changes insignificant. Change in no. cyclist trips >30 mins: 0 Change in no. pedestrian trips >30 mins: 0 Change in total no. people walking/cycling >30 mins: 0	Neutral
EST (OYA Evaluation)	Traffic has significantly reduced along the old A38 resulting in an improvement in local amenity. It is considered that connectivity has been retained across the bypass for NMUs and the scheme links into the wider PROW network. The bypass has introduced traffic noise into the previously quiet countryside	As expected

Journey Ambience

5.124 The AST stated that travellers would benefit from intermittent views and that driver stress would be reduced with the scheme. Additionally to this, the AST also predicted that traveller stress would be reduced for pedestrians and cyclists in Dobwalls. The overall impact was assessed as large beneficial.

5.125 The ES described the old A38 as severely congested to the point that a one way traffic diversion had previously been put in place on Saturdays during the summer months. The need for the scheme, as published on the HA website, also cited problems of above average accidents, high HGV percentages using the route and frequent congestion causing inconvenience, community severance, noise within the village of Dobwalls. The topography of the eastern approach to Dobwalls also necessitated the inclusion of a climbing lane.

5.126 In order to enhance the journey ambience, the ES identified that the scheme sought to provide a range of views for travellers on the bypass and the A390; and reduce driver stress by improving safety, reducing delays and improving journey time reliability. The ES suggested that particular consideration had been given to delivering views of the types of scenery or landscape character identified as characteristic of the locale, aided by the pattern of the planting and the ground shaping used along the route; and incorporating views of features of particular interest or prominence (e.g. the Moorswater Viaduct).

5.127 The ES summarised the overall impact of the scheme on driver stress as follows:

"The Published Scheme would provide a modern standard dual carriageway bypass of Dobwalls, together with improved sections of single carriageways west of Dobwalls on the A390 and A38 towards Doublebois. There would also be a separate Distributor Corridor Road to the Moorswater Industrial Estate. Whilst there is no specific mitigation included in the Scheme resulting from the assessment of impacts on driver stress, the Scheme itself would reduce driver frustration and mitigate the driver stress that would otherwise occur on the existing alignment."

5.128 The ES stated that the continuous belt of roadside planting along the western ridge would create an attractive corridor for the vehicle traveller, as well as largely concealing traffic from inward looking views. The reinstatement of Cornish hedges was considered particularly important, especially in making a large feature of Dobwalls roundabout. Additionally, the scheme specified the removal of traffic signage from within Dobwalls to de-clutter the streetscene.

Consultation

5.129 CC Landscape team made the following comments relating to cyclepaths and signage for non motorised users. The POPE team considers them of greatest relevance to consideration of journey ambience:

- **Cyclepaths:** 'Little care seems to have been given to making the cyclepaths interesting and attractive. This is particularly the case for the southern route from Treburgie up to the roundabout where the opportunity to create something approaching a linear park has been lost and the visual quality compromised by harsh over-engineered drainage features and boundary treatments. Similarly the section running adjacent to the bypass below Looe Mills Farm is poorly designed and better separation from the road by construction of new Cornish hedges would have greatly improved the cycle path setting'; and
- **Signage:** 'Direction signage of cycleways is inconsistent. Where signage has been provided it is often inappropriate and adds to visual clutter. There appears to have been a failure to consider the cycle infrastructure in the context of the broader Cornwall cycle route network as part of a high quality integrated facility'.

Evaluation

5.130 The Journey Ambience sub-objective considers Traveller Care (facilities and information), Traveller Views and Traveller Stress (frustration, fear of potential accidents and route uncertainty).

Traveller Care

5.131 The ES noted that the Scheme did not include any lay-bys or stopping points since it was not possible to achieve acceptable sightlines along the alignment. Signage has been installed to direct drivers to Dobwalls for local services.

Traveller Views

5.132 For users of the bypass, despite part of the road being in deep cutting, earthworks have been used to retain an intermittent set of unfolding views to the north and the Moorswater Viaduct is framed in views for drivers travelling east as the road drops down to connect to the Liskeard bypass to the east. In addition, the A390 approach to the Dobwalls Roundabout is on an embankment and offers sweeping views over countryside to the north-west and west.

5.133 On the old A38, the aspect for travellers has altered significantly. The Moorswater Collector Distributor Road (MDCR) runs parallel to the bypass and is elevated on the approach to Dobwalls East junction. Consequently, drivers on the MCDR have views of the bypass in the foreground of longer distance rural views; and anti-glare screens have been erected, to reduce the impact of headlight dazzle arising from intervisibility of the two roads. These screens form a prominent feature in views at this point of the route, detracting from enjoyment of the rural landscape beyond (see Figure E.32), particularly for pedestrians and cyclists.

5.134 In addition to the bypass, the scheme has incorporated a considerable amount of new shared use footway/cycle tracks – in terms of journey ambience, the site visit has identified variations in the quality and appeal of these routes in terms of aspect, noise and perception of safety, much of which is linked to the traveller views:

- **Treburgie Water to Dobwalls Roundabout –** this route is at the base of a steep embankment rising to the A390; passes several culverts and the railway line; and offers little intervisibility to neighbouring roads or properties (see Figure 5.6). At the OYA evaluation, planting has yet to fully establish and, with the exception of the retained woodland to the north-west, this route feels isolated and offers little to convey the rural landscape character of the wider context (see Figure E.19, Figure E.21 and Figure E.29). The CC Landscape team comments that an opportunity to create something approaching a linear park here has been missed and that 'the visual quality of the route has been compromised by harsh over-engineered drainage features and boundary treatments'; and
- **Approach to Dobwalls Roundabout –** at OYA , the surfacing of this route is poorly finished and some areas including verges appear to require remedial work (see Figure 5.7); the roundabout lacks visual interest; and planting which was expected to help mitigate the loss of visual amenity for users of this route, has yet to establish (see Figure E.1, Figure E.6 Figure E.28 (first two photographs));

Figure 5.6 – Shared use foot and cycle track connecting Treburgie Water to Dobwalls Roundabout – view looking south-west

Figure 5.7 – Approach from shared use foot and cycle track to Dobwalls Roundabout

- **Approach to Dobwalls –** the short length of the former A38 provides a link between the roundabout and the village and the combination of feathered trees on the embankment, which separates the link from traffic, coupled with new hedgerow planting suggest that this will mature into an attractive route in time;
- **Moorswater Collector/Distributor Road (MCDR) –** this route has a high quality surface finish, offers good visibility and a range of views, albeit that some of these are limited by the anti-glare screens. However, the gradient is steep and there are no resting points for pedestrians – this could perhaps be considered in future designs. It is expected that as planting matures, this route will become more attractive and better reflect the rural landscape character (see Figure E.32 and Figure E.35 in Appendix E). This aspect will be confirmed at FYA;
- **Combined Footway/Cycle Track adjacent to Bypass –** this route passes very close to the bypass at a number of locations, resulting in rapidly moving traffic forming a prominent feature in views (see Figure 5.8). Additionally, the steep cutting slope forms a deep and impenetrable barrier to views to the north. The sense of enclosure and the frequent passing of rapidly moving traffic, including HGVs, means this route is less inviting than others delivered as part of the scheme (i.e. where the separation distances from traffic are greater and views are more open). These effects are mitigated to some extent when looking south-east towards the Moorswater Viaduct; however, views to the north-west are dominated by the road and associated infrastructure (see Figure E.33 and Figure E.34).

Figure 5.8 – View from shared use foot and cycle track looking north-west along bypass from point east of Toll House

Traveller Stress

5.135 The ES stated that the new bypass would be significantly better than the existing A38 in terms of driver stress. Driver stress has three main components;

- Frustration – the proposed dual lane carriageway road offers the opportunity for safe overtaking of slower traffic and rationalisation of junctions is likely to have reduced driver stress;
- Fear of potential accidents – the provision of a high standard dual carriageway has improved sight distances and reduced conflict with oncoming traffic. Traffic has been removed from the former A38, reducing the risk of accidents, however, as noted in the Safety section earlier in this report, an increase in parked cars and new junction designs has resulted in some residents perceiving potential dangers. Pedestrians and cyclists are encouraged to use the existing A38 and segregated provision;
- Route uncertainty – through traffic is automatically routed onto the bypass. Signing along the bypass provides for local traffic and ensures that there is no route uncertainty.

5.136 A broader consideration of traveller stress also considers the experience of pedestrians and cyclists; in general terms, traffic on the old A38 has reduced by just under the 90% predicted. This will have reduced stress for all users of the old road (drivers and NMUs). Journey times have also significantly improved, particularly in the westbound direction.

Table 5.18 – Summary of Journey Ambience Impacts

Origin of Assessment	Summary of Effects	Assessment
AST (Forecast)	Travellers benefit from intermittent views. Reduced driver stress with Scheme. Reduced traveller stress for pedestrians and cyclists in Dobwalls	Large beneficial
EST (OYA Evaluation)	The provision of the bypass and the removal of significant volumes of traffic from the old A38 has benefited journey ambience. However, provision for NMUs has created some isolated and exposed routes.	As expected

Key Findings: Environment

- With the exception of Landscape, all sub-objectives are considered to be in line with expectations.

Noise and Air Quality

- Traffic flows on the old A38 have reduced significantly with local noise and air quality benefits for residents in Dobwalls. The provision of the bypass has relocated traffic into the countryside where there has been a worsening of noise and air quality for the few properties close to the route corridor as expected; and
- Regional air quality appears to be better than expected based on traffic flows.

Greenhouse Gas

- Carbon emissions have increased post opening by approximately 8%, which is lower than the expected 12.5% increase.

Landscape and Townscape

- The removal of significant volumes of traffic from Dobwalls village has improved the local landscape/townscape character in terms of reduced vehicle intrusion as expected and has enabled the local authority to undertake some traffic calming measures;
- The scheme has followed an alignment sympathetic to the AGLV designations and where cuttings are used, they are effective in minimising overall visibility;
- Cornish Hedges are included at various points along the length of the scheme – they provide a locally distinctive feature and the site visit indicated that, with few exceptions, plants appear to be establishing well with growth extending above the spiral guards;
- The use of hydro-seeded shillet throughout in preference to topsoil for seeded areas has had mixed effects – it has been effective in weed control; however establishment of grass is slow with large areas offering little greening at this OYA stage; and

Heritage of Historic Resources

- CC considers that the impact on the heritage of historic resources is as expected and is not aware that there have been any unforeseen impacts;
- . The archaeological archive is understood to be under preparation and will be placed in an approved local museum – to be confirmed at the FYA evaluation;
- There were no direct impacts on Listed Buildings, the setting of St Peters Church has benefited from significant reductions in through traffic on the old A38; and the relocation and reinstatement of the Grade II* Listed Milestone went well; and

- Cornish hedge replacement has been well received generally and adds to historic character. This will need to be reconsidered at the FYA evaluation when the establishment of planting should be more advanced.

Biodiversity

- Mitigation measures are in place and monitoring of bats, dormice and translocated reptiles/amphibians is being undertaken; and
- It is suggested that biodiversity is considered further at FYA when monitoring/survey information should be available and new planting should have become more established.

Water

- Mitigation measures have been incorporated into the scheme and there is no information which would suggest that they are performing other than as expected;
- There is a need for vegetation clearance within some of the open water channels.

Physical Fitness

- Traffic has significantly reduced along the old A38 resulting in an improvement in local amenity; however, the bypass has introduced traffic noise into the previously quiet countryside;
- It is considered that connectivity has been retained across the bypass for NMUs and the scheme links into the wider PROW network.

Journey Ambience

- The provision of the bypass and the removal of significant volumes of traffic from the old A38 has benefited journey ambience;
- Provision for NMUs has created some isolated routes and areas of exposure to high-speed traffic.

6. Accessibility and Integration

Introduction

6.1 The AST for this scheme assesses the impact of the bypass against the following objectives and sub objectives;

- Accessibility
  - Option Values;
  - Severance; and
  - Access to the Transport System.
- Integration
  - Transport Interchange;
  - Land Use Policy; and
  - Other Government Policies.

6.2 This section will examine each of these elements in relation to the A38 Dobwalls Bypass.

Accessibility

Option Values

6.3 The AST for this scheme states that ***'no new alternative modes of transport provided or change to bus and rail services envisaged'.*** Option values are associated with unexpected use of a transport facility, i.e the availability of transport options even if they are rarely used. For example, a car owner may value the ability to use a bus service when, for whatever reason, they cannot drive or their car is unavailable.

Public Transport

6.4 The AST for the scheme predicted that there would be a neutral impact on public transport, as '*there was no change to bus and rail services envisaged'.*

6.5 Consultation with the main bus company in the area confirmed that there have been no changes to public transport services or infrastructure as a result of this scheme, therefore, a suitable assessment for this scheme is considered to be neutral. However, it was noted that the reduction in congestion through the centre of Dobwalls had greatly increased the reliability of the current bus routes which pass through Dobwalls linking with Liskeard, Bodmin and St Austell.

Severance

6.6 The AST states that the '*relief of existing severance in Dobwalls improving accessibility for pedestrians, cyclists and equestrians outweighs slight negative/moderate negative severance at Treburgie Water and Coldwind*', giving an overall assessment of Moderate Beneficial.

6.7 As previously shown in the traffic chapter, traffic has reduced on the A38 through the centre of Dobwalls, therefore suggesting that severance for local residents has been reduced. The bypass cut through two footpaths; however, these have all been rerouted to cross the bypass

using the overbridges. Other footpaths have been created around the scheme, see Figure E.25 in Appendix E.

Non Motorised Users

6.8 The old A38 trunk road ran through the centre of Dobwalls village, making it difficult for pedestrians to cross the road, despite the provision of a signalised pedestrian crossing in the centre. As part of the detrunking works undertaken in the village, this pedestrian crossing was removed, however a number of dropped kerbs have been implemented, and the reduced traffic levels make it easier and safer to cross the road throughout the village.

6.9 Improved pedestrian links have also been added around the western end of the bypass, and along the former route of the A390 (see Figure 6.1).

Figure 6.1 – New footpath following former A390 route

6.10 Additional improvements (outside of the bypass scheme) have also been made to provide a footway between Dobwalls and Doublebois as part of the HA's Local Network Management Scheme (LNMS) process. These have further reduced severance in the vicinity of the scheme.

6.11 A NMU Audit (currently in Draft) was undertaken on behalf of the Highways Agency upon completion of the construction stage of the scheme. Safety issues relating to NMUs which were raised in the audit were summarised in the Safety Section of this report. With regards to NMU activity and desire lines, the audit states:

'There is no evidence of significant NMU activity on the dual carriageway section of the Trunk Road.'

6.12 In relation to the facilities provided by the scheme, it goes on to state:

'There is no evidence of desire lines for NMUs on the dual carriageway section of the Trunk Road. There are desire lines for NMUs between Liskeard and Dobwalls and Dobwalls and Doublebois. These desire lines are satisfied by the use of the new cycle/footway routes on a regular basis.'

6.13 Although no counts of NMUs were provided in the audit, it goes on to state:

'There is anecdotal evidence of NMUs using the new and established routes to move between Liskeard, Dobwalls and Doublebois on a regular basis for social, domestic and pleasure purposes'.

Public Perception of Facilities for Non-Motorised Users

6.14 In the Residents Survey, residents were asked whether their use of facilities such as the local shops, and the public rights of way and national cycle routes in the area had changed since the scheme opened. Table 6.1 summarises the responses to this question.

Table 6.1 – Since the bypass opened, do you use any of the following facilities?

Response	Shops	Public Rights of Way	National Cycle Network routes
More	45 (18%)	72 (29%)	43 (17%)
Less	8 (3%)	3 (1%)	2 (<1%)
No change/left blank	193 (79%)	171 (70%)	201 (82%)
Total	**246**	**246**	**246**

6.15 Table 6.1 indicates that the majority (between 70-82%) of respondents have not changed/had no opinion how they use local facilities as a result of the bypass. However, encouragingly, very small numbers of respondents felt that they now used facilities less, suggesting that the shops are still a key part of the community. PROW (Public rights of way) show the highest percentage of increased users (29%), with the local shops and cycle routes not far behind at 18% and 17% respectively.

6.16 Respondents were invited to leave comments on this question, and the main themes that emerged were that the footpaths/cycle paths are perceived to be safer and more accessible. Respondents generally felt that access to the village, particularly the shops was easier since the opening of the bypass. It is noted however, that the increase in parked cars along the route has led some respondents to perceive an increased risk of an accident, although no figures are available at the one year stage to support this. It is suggested therefore that this is considered at the FYA stage.

Access to the Transport System

Change in modes of transport after opening of bypass

As part of the resident survey, residents were asked to state their most common mode of transport to travel around the local area, although a number of respondents ticked more than one option, hence why Total Users in

Table 6.2 exceeds the total number of questionnaires returned. Further to this, respondents were asked to consider whether they now make more or less journeys by mode.

6.17 Table 6.2 shows the change in use of each mode, according to the answer given to the most common mode of transport, i.e. 9% of respondents who stated that the car was their most common mode stated that they were making more journeys post opening.

Table 6.2 – Change in the number of journeys made by most common mode

	Total Users	More	Less	No change	Left Blank
Since the bypass opened, are you making more or less journeys?					
Car	201	9%	11%	79%	1%
Public Transport	37	43%	3%	51%	3%
On Foot	84	54%	1%	43%	2%
Bicycle	16	69%	0%	31%	0%

6.18 It can be seen from

6.19 Table 6.2 that:

- Post opening, 69% of those people who regularly cycled stated that they were making more journeys by bike than they were prior to the bypass;
- Similar results are seen for users of public transport where 43% stated that they now undertake more journeys by public transport. This pattern is the same for those who regularly walk. This suggests that the bypass has had a positive impact on non car users, who have become more active, making more journeys by their chosen mode.
- However, 9% of car users stated that they now make more journeys by car. A similar number of car users (11%) stated that they made fewer journeys by car, with the remaining 79% of car users not considering that the bypass had made any change to the way they use their car.

Change in the environment for Pedestrians and Cyclists

6.20 As part of the residents survey, respondents were asked to consider the impact of the bypass on the general environment for cyclists and pedestrians. They were asked to consider whether there was any difference between the peak summer season, and the out of tourist season, as traffic levels vary considerably throughout the year.

Table 6.3 – Environment for Cyclists and Pedestrians

	Summer Season	Out of Season
How has the environment for pedestrians changed since the bypass opened?		
1 – Worse	2%	1.2%
2	1.2%	2.0%
3	3.3%	3.3%
4	14.2%	15.2%
5 – Better	72.8%	68.9%
No Response	6.5%	9.4%
How has the environment for cyclists changed since the bypass opened?		
1 – Worse	2.4%	1.6%
2	1.6%	2.0%
3	8.9%	4.1%
4	14.2%	17.9%
5 – Better	66.7%	65.0%
No Response	6.1%	9.3%

6.21 Key points to note from this table are;

- There is very little difference between the opinions for both pedestrians and cyclists in either season, as over 80% of responses agreed that the environment had improved after the bypass opened;
- There is a slightly higher percentage of respondents agreeing that the environment had improved more in the summer season than out of peak season, although overall still high for both; and
- A small number of respondents stated that the environment had worsened for both pedestrians and cyclists. Further analysis of responses by zone suggests that these are mainly from zones 1 and 5 (Doublebois and North of the bypass), which may reflect the slightly higher traffic seen through Doublebois, and the rerouting of some routes to accommodate the bypass close to zone 5. Overall, the consensus seems to be that the scheme has improved the environment for pedestrians and cyclists.

Integration

Transport Interchange

6.22 The AST for this scheme states that the scheme would have 'no effect on passenger or freight interchange indicators'. The scheme has not resulted in any changes to public transport facilities in Dobwalls, however the reduced traffic flows through the village have facilitated easier movements for buses by removing traffic. Additionally, the reduced traffic

flows, and realignment of access to the Moorswater Industrial Estate have facilitated easier access for commercial vehicles using the industrial estate.

6.23 Any impacts on transport interchange are therefore not due to the direct improvement of facilities, but rather to the reduction in traffic on the old road. A score of neutral for this sub objective is therefore considered to be representative of the situation.

Land Use Policy

6.24 This section of the report looks at the scheme in relation to national, regional and local land policies, and considers its effects on policy integration. The AST for this scheme states that 'the facilitation of national, regional and local transport and economic policies outweighs hindrance of regional and local policies on the protection of agricultural land, landscape and cultural heritage.'

6.25 The A38 Dobwalls bypass is located within the administrative area of the Unitary Authority area of Cornwall Council.

National Policy

Government and Trunk Road Policy Objectives

6.26 The Governments overarching objectives for transport are set out in the document 'A New Deal for Trunk Roads in England'. These objectives are

- To protect and enhance the built and natural **environment**;
- To improve **safety** for all travellers;
- To contribute to an efficient **economy**, and to support sustainable growth in appropriate locations;
- To promote **accessibility** to everyday facilities for all, especially those without a car; and
- To promote the **integration** of all forms of transport and land use planning, leading to a better more efficient transport system.

Regional Policy

London to South West and South Wales Multi Modal Study (SWARMMS) (2002)

6.27 The SWARMMS study stated that the A38 between Plymouth and Bodmin, whilst performing an important role linking Cornwall with Plymouth and South Devon, did not perform a major strategic role within the wider SWARMMS area. As such, the emphasis within the strategy was on better management of traffic flow and accident prevention, rather than providing any significant upgrades on this section. It then continued on to state that any changes to the route network in the vicinity should be dictated by local need. It is acknowledged in the report that the A38 Dobwalls bypass scheme was an example of a scheme being dictated by local need, and that the scheme was already a Government Commitment, therefore not included within the SWARMMS study directly.

South West Regional Transport Strategy (2006)

6.28 The A38 between Plymouth and Bodmin is classified as a 'regionally significant road route' in the Regional Transport Strategy. As such, the Dobwalls Bypass scheme aligns closely with one of the strategic objectives, shown below;

> ***TR4*** *The remainder of the trunk road network will be managed and investment targeting so as to ensure that it performs its strategic function. Measures should seek to maintain safe, efficient operation and reliability of journey times within, into and out of the region.*

Regional stakeholders will work with the Highways Agency to manage demand so as to avoid congestion compromising the strategic function.

Cornwall Local Transport Plan (2006-2011)

6.29 The A38 Dobwalls bypass aligns with a number of key policies (transport aims) in the Cornwall Local Transport Plan, including;

- Improve access to key services and facilities in Cornwall;
- Improve local safety for all who travel in Cornwall;
- Reduce the growth of traffic congestion and transport related air pollution and improve public transport in Cornwall;
- Provide and maintain an integrated transport network that contributes towards the development of a vibrant and successful Cornish economy and regeneration; and
- Reduce the impact of transport on Cornwall's natural, historic and built environment.

6.30 The improvement in journey time reliability and reduction in accidents as a result of the A38 Dobwalls bypass scheme assists with all of the above objectives.

Cornwall Structure Plan (2004)

6.31 The strategic planning framework for development and transport infrastructure in Cornwall is set out in the above document. The transport strategy detailed within the plan identifies the A38 Dobwalls bypass as a key strategic transport proposal to help deliver the strategy. A number of key aims are set out in the document, with the relevant ones detailed below;

- Support economic and social well-being by enabling the efficient and effective movement of people and goods within Cornwall and between Cornwall and the rest of the United Kingdom and Europe by rail, road, sea and air; and
- Maintain and enhance highway infrastructure to improve environmental conditions and road safety.

Caradon Local Plan (2007)

6.32 The A38 Dobwalls Bypass scheme lies within the former Caradon District Council. This was formally replaced by Cornwall Council in April 2009 when Cornwall Council and 6 districts, including Caradon were combined into a unitary authority. The original Local Plan published in 1999 included a mention of safeguarding the route for the new bypass.

6.33 Additionally, the Local Plan states that any proposals involving the construction of new lengths of highway should include provision for Cornish hedges on highway field boundaries and include sufficient land for landscaping and planting. The built scheme incorporated Cornish hedges into the design of the bypass, and are considered to be establishing well.

6.34 The built scheme aligns with historical policies, as well as current national, regional and local policies.

Other Government Policies

6.35 The AST stated that the scheme complies with relevant Government policies, although it mentioned no specific policies. It is considered that the inclusion of footpaths, cycle paths and the reduction in accidents will contribute to overall safety and casualty reduction policies.

Key Findings: Accessibility and Integration

Accessibility

- Severance has been reduced by the removal of between 83 and 88% of the traffic from Dobwalls village;
- The reduction in traffic on the former A38 has resulted in an increase in on street parking, causing concern that this will lead to a safety problem, and reduce the perceived benefits gained from the reduction in traffic;
- Respondents to the residents survey indicated that the bypass had not changed how they used local facilities, suggesting that the shops are still a key part of the community and local economy; and
- No changes to public transport were made as a result of the scheme, however the reduction in traffic means that reliability has improved, and there are more pleasant waiting conditions for bus users.

Integration

- The scheme aligns with historical policies as well as current national, regional and local policies.

7. Conclusions

7.1 To conclude this report, this section summarises how the scheme is meeting its scheme specific objectives, and assess the schemes impacts against those forecast. Objectives can be categorised as follows:

- NATA objectives: Impacts are assessed against the Governments five objectives for Transport; safety, economy, environmental, accessibility and integration; and
- Scheme specific objectives.

7.2 The scheme's success against the NATA objectives is presented in Appendix B in the form of an Evaluation Summary Table (EST).

Scheme Specific Objectives

7.3 The evaluation of the scheme's specific objectives, as reported in the study are summarised in Table 7.1. Although there are a number of different published versions of the objectives, the table below summarises outcomes against the main themes of the objectives which were covered in the 1997 Roads Review.

Table 7.1 – Success against Scheme Objectives

Source	Objective	Success	
1997 Roads Review	To provide additional capacity and reduce congestion	The removal of up to 88% of traffic has reduced congestion through Dobwalls, and has increased capacity for future traffic growth as route stress on the bypass is now 25% compared to 91% on the former A38 route before the scheme opened.	✓
	To enhance road safety	The removal of traffic from the village of Dobwalls, and the provision of a higher standard dual carriageway has resulted in a saving of 10.4 PIAs (personal injury accidents) in the opening year.	✓
	To improve the environment of the village by the removal of through traffic	The scheme has removed up to 88% of traffic from the village of Dobwalls therefore reducing noise, improving air quality and improving non motorised user safety. Additionally, the improvements undertaken to detrunk the former A38 route help to return the route to a village road rather than a trunk road.	✓

7.4 In summary, it can be seen that based on the information available at the one year after stage, the A38 Dobwalls bypass scheme is achieving all its objectives.

Appendix A – AST

Table A.1 – Appraisal Summary Table

Option: A38 Dobwalls Bypass		**Description: Dual carriageway bypass to the north of Dobwalls with a single carriageway link to the A390 passing over the railway**	**Problems: Congestion and accident problems in Dobwalls. Degraded environment in the village**	**PVC - £22.4m 2002**
OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
Environment	Noise	Improvement within Dobwalls due to removal of through traffic from village. Some localised adverse impacts along scheme corridor.	Estimated no. people likely to be annoyed: Do minimum: 124; Do something: 70	Net population annoyed (Do Something – 15th year): -54
	Local Air Quality	The Scheme would provide a beneficial air quality effect to the majority of the residential properties in the Study Area. However, there would be an increase of 1.10µg/m3 in annual mean PM10 levels at 20m from the road centre in the eastern section of the Scheme.	No. of properties with improved air quality: PM10: 490; NO2: 490 No. of properties with a deterioration in air quality: PM10: 117; NO2: 117	PM10: -1626.9 (improvement) NO2: -2334.48 (improvement)
	Regional Air Quality	For both 2008 and 2023 scenarios, the total NOx emissions predicted with the Scheme (Do Something) are higher than those predicted without the Scheme (Do Minimum). The effect of Scheme is therefore considered to be negative.	NOx – tonnes per year: Present (2003) = 38.56 DO MINIMUM: 2008 = 31.51; 2023 = 22.18 DO SOMETHING: 2008 = 35.17; 2023 = 25.19	Do Something (2008) compared with: Present: - 3.39 t/year Do Minimum (2008): + 3.66 t/year Do Something (2023) compared with: Present - 13.37 t/year Do-Minimum: (2023) + 3.01 t/year
	Greenhouse Gases	For both 2008 and 2023 scenarios, the total CO2 emissions predicted with the Scheme (Do Something) are higher than those predicted without the Scheme (Do Minimum). The effect of Scheme is therefore considered to be negative.	CO2 – tonnes per year: Present (2003) = 5,694 t/year DO MINIMUM 2008 = 6,335; 2023 = 7,875 DO SOMETHING 2008 = 7,128; 2023 = 8,738	DO SOMETHING (2008) as % of: Present Do Minimum (2003)= 125% Future Do Minimum (2008)= 112% DO SOMETHING (2023) as % of: Present Do Minimum (2003) = 153% Future Do Minimum (2023) = 111%
	Landscape	Scheme avoids AGLV but does not quite fit scale of landscape. Locality already affected by existing A38 and light industry.	-	Slight Adverse
	Townscape	Removal of through traffic from Dobwalls would benefit human interaction and enable a sense of place to be restored.	-	Moderate Beneficial
	Heritage of Historic Resources	Adverse impact on medieval landscape. Scheme close to Toll House (listed building) as does the existing A38. No impact on historic interest at Moorswater.	-	Slight Adverse
	Biodiversity	Adverse impact on the hedgerow network, the East Looe and West Looe tributaries and the bat populations within the study area. Woodland planting and new Cornish hedges provide additional habitats. Other protected species are accommodated within the Scheme design.	-	Moderate Adverse
	Water	Watercourse crossings reduced to minimum. Western end crosses headwater of West Looe river.	-	Slight Adverse
	Physical Fitness	Improved conditions in village. Additional pedestrian/cyclist facilities by journey times changes insignificant.	Change in no cyclist trips >30mins: 0 Change in no pedestrian trips >30mins: 0	Change in total no people waling/cycling> 30mins:0
	Journey Ambience	Travellers benefit from intermittent views. Reduced driver stress with Scheme. Reduced traveller stress for pedestrians and cyclists in Dobwalls.	-	Large Beneficial
Safety	Accidents	Removal of through traffic from Dobwalls, and construction of higher standard carriageway, improved safety	Savings in accidents: (Low growth/high growth over 60 year appraisal period) Fatal: 14.7/17.7; Serious: 100.8/121.2 Slight: 718.2/848.3. No. of PIAs 530.2/629.0	Present Value of Benefits: Links: £28.8m / £35.3m Junctions: £4.4m / £4.4m Low growth/high growth discounted 2002 values
	Security	Less Queues reduce driver vulnerability	-	Slight Beneficial
Economy	Public Accounts	Central Government costs	Central Government Present Value of Costs	£22.4m / £22.4m Low growth/high growth discounted 2002 values
	Business /Consumer Users	Reduced journey time for through and local traffic.	Veh Hrs Saved/year 0.21m/0.27m Peak time change 1.4/1.7mins Off Peak time change 1.1/1.2mins	£20.3m / £47.2m Low growth/high growth discounted 2002 values

Option: A38 Dobwalls Bypass		Description: Dual carriageway bypass to the north of Dobwalls with a single carriageway link to the A390 passing over the railway	Problems: Congestion and accident problems in Dobwalls. Degraded environment in the village	PVC - £22.4m 2002
			Opening year low growth/high growth	£14.0m / £33.0m Low growth/high growth discounted 2002 values
Economy (cont.)	Reliability	Improved standard of road leads to improved reliability.	-	Slight Beneficial
	Wider Economic Impacts	No significant change.	-	Neutral
Accessibility	Option Values	No new alternative modes of transport provided or change to bus and rail services envisaged.	-	Neutral
	Severance	Relief of existing severance in Dobwalls improving accessibility for pedestrians, cyclists and equestrians outweighs slight negative / moderate negative severance at Treburgie Water and Coldwind.	-	Moderate Beneficial
	Access to the Transport System	No change to private car ownership or proximity to public transport services as a result of this scheme.	-	Neutral
Integration	Transport Interchange	No effect on passenger or freight interchange indicators	-	Neutral
	Land-use Policy	Facilitation of national, regional and local transport and economic policies outweighs hindrance of regional and local polices on protection of agricultural land, landscape and cultural heritage	-	Beneficial
	Other Government Policies	Complies with relevant Government policies.	-	Neutral

Appendix B – EST

Table B.1 – Evaluation Summary Table

OBJECTIVE	SUB-OBJECTIVE	QUALITATIVE IMPACTS	QUANTITATIVE ASSESSMENT	ASSESSMENT
Environment	Noise	Reductions in through traffic suggest that there will have been an improvement in the local noise environment adjacent to the old A38 through Dobwalls. Traffic on the bypass is in line with expectations - traffic has been relocated to a previously quiet rural area and there will have been a worsening of the local noise climate for properties nearer to the new bypass.	Observed traffic flows reduced on average by between 83 and 88% on the old A38 through Dobwalls	Likely to be As Expected
	Local Air Quality	**Local:** residents of properties along the old A38 will have benefited from improved air quality due to the 83-88% reduction in traffic and properties nearer to the bypass will have experienced deterioration in air quality. **Regional:** observed traffic flows after opening are generally lower than the high growth forecasts. Therefore, traffic based emissions are likely to be lower than predictions	-	Likely to be As Expected
	Greenhouse Gases	Net gain in tonnes of carbon is slightly below the level expected.	Net gain in tonnes of Carbon added:165	Likely to be As Expected
	Landscape	The bypass avoids the AGLV and the gently curving alignment reflects common landforms in the locale, aided by the careful use of a cutting to the north of Dobwalls. Embankments at the western end and adjacent to the MCDR, coupled with steep cutting through the Blackwater Valley, create prominent and incongruent features in the wider landscape. The slow growth of grasses and subsequent lack of greening to the scheme at OYA increases the dominance of the engineering in the landscape, to the detriment of delivering integration to the landscape.	-	Adverse (Worse than Expected at OYA) Likely to be As Expected by FYA
	Townscape	The old A38 has experienced a reduction in flows of 83-88% post opening. Detrunking works have included widening of verges and pavements allowing installation of a combined footway/cycleway with verges and localised pavement widening. These elements have combined to improve visual amenity, create a road more suited to village character and improve the safety and segregation of NMU routes between Dobwalls and settlements to the east. The bypass does pass close to Dobwalls as expected, but is not visible from within the village centre.	-	As Expected (moderate beneficial)
	Heritage of Historic Resources	CC considers that the impact on the heritage of historic resources is as expected and is not aware that there have been any unforeseen impacts. It considers that the execution and reporting of archaeological works is as expected; that the relocation and reinstatement of the Grade II* Listed Milestone went well; that Cornish Hedge replacement has been well received generally; and that the overall impact of the Scheme on the setting of Listed Buildings and Structures has been as expected. The mitigation strategy indicates that an archive should be prepared for deposition in an approved local museum.	-	As Expected (slight adverse)
	Biodiversity	Mitigation measures incorporated into the scheme as expected. HA monitoring in place to establish effectiveness of measures for bats, dormice and translocated reptiles/amphibians. Further study would be required to evaluate effectiveness of other measures. Biodiversity to be considered further at FYA including areas of new planting and the ecological mitigation area	-	As Expected (moderate adverse)
	Water	Mitigation measures have been incorporated into the scheme and there is no information suggesting that they are performing other than as expected. However, there appear to be some areas that may become blocked by vegetation in the absence of clearance works.	-	Likely to be As Expected (slight adverse)
	Physical Fitness	Traffic has significantly reduced along the old A38 resulting in an improvement in local amenity. It is considered that connectivity has been retained across the bypass for NMUs and the scheme links into the wider PROW network. The bypass has introduced traffic noise into the previously quiet countryside	-	As Expected
	Journey Ambience	The provision of the bypass and the removal of significant volumes of traffic from the old A38 has benefited journey ambience. However, provision for NMUs has created some isolated and exposed routes.	-	As Expected (Large Beneficial)
Safety	Accidents	The number of accidents saved in the opening year is statistically significant, and is likely to exceed the forecast scheme life saving, although longer term trends need to be considered.	Annual opening year accident saving:10.4	Beneficial (as expected) £38.46m
	Security	Improved traffic flow on A38 and reduced congestion improves security.	-	Slight Beneficial (as expected)
Economy	TEE	Journey time benefits are seen on routes in the area. Vehicle hour saving not has high as predicted, possibly due to an underestimate of problems in the prescheme situation, and full appraisal area not considered.	-	£22.8m (beneficial)
	Reliability	Reduction in traffic flows has improved journey time reliability.	Route stress reduced from 91% to 25%.	As expected (slight beneficial)
	Wider Economic Impacts	No development was dependent on the bypass, although access improved for commercial properties.	-	As Expected (neutral)
Accessibility	Option Values	The scheme did not change public transport options, although has improved the reliability of buses by removing traffic, and improved the waiting environment.	-	As Expected (neutral)
	Severance	Removal of traffic through Dobwalls has reduced severance.	-	As Expected (moderate beneficial)
	Access to the Transport System	No changes have been provided for access to the transport system as part of the scheme.	-	As Expected (neutral)
Integration	Transport Interchange	Not applicable for this scheme.	-	As Expected (neutral)
	Land-use Policy	Scheme aligns with local policies, mitigation assists with policies on protection of land.	-	As Expected (beneficial)

	Other Government Policies	Scheme aligns with regional and local transport strategy.	-	As Expected (beneficial)

Appendix C - Box 1 Information

C.1 Box I Information used in Evaluation

C.1.1 The following table indicates the information requested by the POPE Team. The column on the right provides details of the information received and incorporated into the evaluation.

Table C.1 – Box 1 Information

Environment Specific Requirements	Information Received by POPE Team
Environment Statement (ES) or if not a scheme requirement the latest Scheme Assessment Report (SAR).	A38 Dobwalls Bypass Environmental Statement (ES) January 2005 including Volume 1 (Main Text), appendices, figures and Non-Technical Summary (NTS); Appraisal Summary Table (AST) 20/06/05.
Any amendments, updates or addendums to the ES/SAR or any relevant further studies or reports. Any significant changes to the scheme since the ES/SAR.	Stage 3 Scheme Assessment Report, 08/02/2005 (document ref: TUE 91061/ 70/ B)
As Built drawings for landscape/biodiversity/environmental mitigation measures/drainage/ fencing/ earthworks etc.	HHT91061BB/3000/016 – 020 Revision Z – Planting Plans Sheets 1 – 5 As Built (dated 02/02/20010)
Health & Safety File (info relevant to environment sub-objectives and may also included As Built drawings)	Not provided
Construction Environment Management Plan (CEMP)	Construction Environmental Management Plan version 3 (01/02/2007, document ref: MA87074), including appendices;
Landscape and Ecology Aftercare Plan (LEAP).	Draft Landscape and Ecology Management Plan, May 2010 (document ref: HHT91061BB/064)
Handover Environmental Management Plan (HEMP).	This is due in 2014 and will be available for the FYA evaluation
Relevant Contact Names for: consultation	
Archaeological Reports (including any non-technical publications as well as the technical report).	Archaeological excavation and observation on the route of the Dobwalls bypass, Dobwalls & Trewidland Parish, near Liskeard, Cornwall 2006-2007 Publication report text for submission to Cornish Archaeology (produced by AC Archaeology, February 2010);
List of properties eligible for noise insulation. The insulation performance properties of any noise barriers installed (The BS EN 1794-2 result provided by the noise barrier manufacturer) The Road Surface Influence (RSI) value of any low noise surface installed	List of properties eligible for noise insulation received. No noise barriers installed on the scheme RSI not made available to POPE
List of Part 1 Claims regarding noise/air quality/lighting etc (obtained by POPE from HA national part 1 team).	One successful claim at this OYA stage. Early in claims process and the Part 1 Team will be re-contacted at FYA
Reports/results for any pre and post construction survey and monitoring work e.g. for noise, biodiversity, water quality etc).	A38 Dobwalls Bypass Bat Mitigation Monitoring June and October 2008 P0s/60-1B Final Report May 2009; A38 Dobwalls Bypass Bat Mitigation Monitoring June 2009 – Summary Document.
Animal mortality data (pre and post opening)	Provided by the Managing Agent Contractor
Post opening Non-motorised User (NMU) Audit or Vulnerable User Survey	NMU Audit Report Completion of Construction Stage (April 2010)
Any information regarding environmental enhancements to streetscape/townscape e.g. for bypassed settlements.	YES HHT91061BB/1200/42 Revision E – Detrunking Works – Kerbs, Footways and Other Paved Areas, Road Markings and Traffic Sign Sheet 17 of 20 (dated 25/01/2007); HHT91061CC/DTW/001 and 002 – Detrunking Works – Kerbs, Footways and Other Paved Areas and Pavement Sheet 16(1) and 16(2) of 20 (dated 16/01/2009).
Employers Requirements Works Information – environment section	Not made available to POPE

Appendix D – Residents Survey Form

Safe roads, Reliable journeys, Informed travellers

HIGHWAYS AGENCY

Dobwalls Bypass Residents Survey | A38

The Highways Agency is seeking the opinions of local residents on the impacts of the A38 Dobwalls Bypass which opened in December 2008.

We would like to know how the bypass has affected your daily life and your travel behaviour. Furthermore we would like to understand whether there have been any other impacts, and whether these are as expected. All comments received will be used to inform our 'One Year After' opening report of the scheme. The lessons learnt will be used in the design and development of similar schemes elsewhere on the HA network.

By returning the completed form you will be entered into a prize draw to win £50 worth of high street vouchers.

Instructions

Please give your answers to each question or statement with a tick (✔). There is space after some of the questions to make comments if you wish. At the end there is a larger space to make further comments. All your responses will be treated in confidence.

An Executive Agency of the Department for Transport

1. How long have you lived in the area?

- Less than 1 year
  (Please go to Question 2 below)
- More than 1 year
  (Please go to Question 3 below)

If you have answered 'less than 1 year' then it is likely you will be unaware of the conditions in the area before the bypass opened in 2008. The majority of the questions in this form will therefore not be relevant to you.

2. Did the bypass influence your decision to move here?

- Yes
- No
- Don't Know

(Please go to Question 13)

3. How supportive were you of the Dobwalls Bypass scheme before construction?

- In Favour
- Opposed
- Don't Know

Please give a reason for your response:

4. To what extent do you agree/disagree that safety for *drivers* has improved in the area since the bypass opened?

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

Please give a reason for your response:

5. To what extent do you agree/disagree that safety for *pedestrians and cyclists* has improved in the area since the bypass opened?

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

Please give a reason for your response:

6. Since the bypass opened, do you use any of the following?

	More	Less	No Change
Local facilities such as:			
Shops	☐	☐	☐
Public Rights of Way	☐	☐	☐
National Cycle Network routes	☐	☐	☐

Please give any reasons for your response:

7. To what extent do you agree/disagree that the visual impact of the bypass has been minimised, blending the bypass with the natural environment?

- Strongly Agree
- Agree
- Neither Agree or Disagree
- Disagree
- Strongly Disagree

Please give a reason for your response:

Dobwalls Bypass Residents Survey | A38

In view of the seasonal nature of traffic flows on the A38, please consider the following question according to the specified time of year.

8. In your view, how have the following issues changed *during the summer tourist season* since the bypass opened?

	Worse 1	2	3	4	Better 5
Congestion through Dobwalls village	☐	☐	☐	☐	☐
Through journey times on the A38 route	☐	☐	☐	☐	☐
Public transport reliability and punctuality	☐	☐	☐	☐	☐
Traffic noise	☐	☐	☐	☐	☐
Local air quality	☐	☐	☐	☐	☐
Environment for pedestrians	☐	☐	☐	☐	☐
Environment for cyclists	☐	☐	☐	☐	☐

Please give any reasons for your response:

9. In your view, how have the following issues changed *out of the tourist season* since the bypass opened?

	Worse 1	2	3	4	Better 5
Congestion through Dobwalls village	☐	☐	☐	☐	☐
Through journey times on the A38 route	☐	☐	☐	☐	☐
Public transport reliability and punctuality	☐	☐	☐	☐	☐
Traffic noise	☐	☐	☐	☐	☐
Local air quality	☐	☐	☐	☐	☐
Environment for pedestrians	☐	☐	☐	☐	☐
Environment for cyclists	☐	☐	☐	☐	☐

Please give any reasons for your response:

10. How do you currently travel around your local area? (please tick your most common one)

- ☐ Car
- ☐ Public Transport
- ☐ On Foot
- ☐ Bicycle
- ☐ Other (please specify)

.....

11. Since the bypass opened, are you making more or less journeys?

	More	Less	No Change
By Car	☐	☐	☐
By Public Transport	☐	☐	☐
On Foot	☐	☐	☐
By Bicycle	☐	☐	☐
Other (please specify)	☐	☐	☐

.....

12. To what extent do you agree/disagree that the bat structures have been suitably incorporated into the overall visual appearance of the bypass scheme within the local landscape?

Please select one relevant option.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither Agree or Disagree
- ☐ Disagree
- ☐ Strongly Disagree

Please give a reason for your response:

13. Which of the following categories best describes yourself?

Please select one relevant option.

	Male	Female
16-19	☐	☐
20-29	☐	☐
30-39	☐	☐
40-49	☐	☐
50-59	☐	☐
60-69	☐	☐
Over 70	☐	☐
Prefer not to say	☐	☐

14. If you have any further comments you would like to raise in relation to the Dobwalls Bypass, please write them below.

(Please continue on an additional sheet if necessary and attach firmly)

Win £50 High Street Gift Vouchers

If you would like to enter the prize draw we require a few details which will only be used for the purpose of the draw.

Name:

Daytime Telephone Number:

Thank you for taking the time to complete this questionnaire

Please return your completed questionnaire by 25.07.10 using the prepaid reply envelope or send to:

Atkins Transport Planning,
The Axis, Floor 10 West,
10 Holliday Street,
Birmingham, B1 1TF

Data Protection Act 1998: The Highways Agency is bound by the principles for the Data Protection Act 1998. Our policy is that personal information about you will: Not be used for any purpose other than that specified on collection, be held in a secure manner, be maintained accurately and up to date, only be accessible to those in the Agency with the need to see and process it (or similar); and be destroyed when that process is complete.

For further information about this survey please contact:
Linda Sullivan
Tel 0121 483 5417 or
e-mail linda.sullivan@atkinsglobal.com

For general information about motorways and trunk roads please call Information Line:

0300 123 5000

e-mail: ha_info@highways.gsi.gov.uk
Lines open 24 hours a day,
365 days a year.

Calls to 0300 numbers will cost no more than 5p per minute from a standard BT residential landline. Call charges from other landlines and mobile networks may vary, but will be no more than a standard geographic call and will be included in all inclusive minutes and discount schemes.

Appendix E – Additional Environmental Photos

E.1 Environment: Supporting Information

E.1.1 This Appendix contains material that has been collated to support the analysis of the environmental performance of the A38 Dobwalls Bypass.

Site visit Photographs

Figure E.1 – Dobwalls roundabout viewed from NMU route crossing A390

Figure E.2 – Dobwalls roundabout looking over A390 towards old A38 approach to Dobwalls and A38 Bypass

Figure E.3 – Tree planting on embankment between NMU route and old A38 on approach to Dobwalls

Figure E.4 – Views of Cornish hedges delivered as part of mitigation strategy

Figure E.5 – Examples of finishing to the new NMU route adjacent to the A390

Figure E.6 – Example of surfacing to NMU route on approach to Dobwalls roundabout

Figure E.7 – Examples of typical planting to bypass cutting slopes

Figure E.8 – View of the bypass looking west from Havett Road Bridge

Figure E.9 – Example of shillet hydro-seeded surface

Figure E.10 – Grade II* Listed milestone following refurbishment and relocation

Figure E.11 – Bat house to the north of the bypass, approx. Ch 2,250

Figure E.12 – Bat crossing 1: parapets beneath Havett Road Bridge

Figure E.13 – Selection of views of bat crossing 2, approx. Ch 750

Figure E.14 – Selection of views of bat crossing 3, approx. Ch 1,855 bypass

Figure E.15 – Selection of views of bat crossing 3 between the bypass and Moorswater Collector / Distributor Road

Figure E.16 – Bat crossing 3, approx. Ch 1,390 MCDR

Figure E.17 – Cornish hedge linking to translocated hedgerow to tie in to bat crossing 2 at Havett View

Figure E.18 – Confluence of west railway culvert and Treburgie culvert

Figure E.19 – A390 railway culvert reinforced slope

Figure E.20 – Vegetation in Tuelmenna Wood culvert

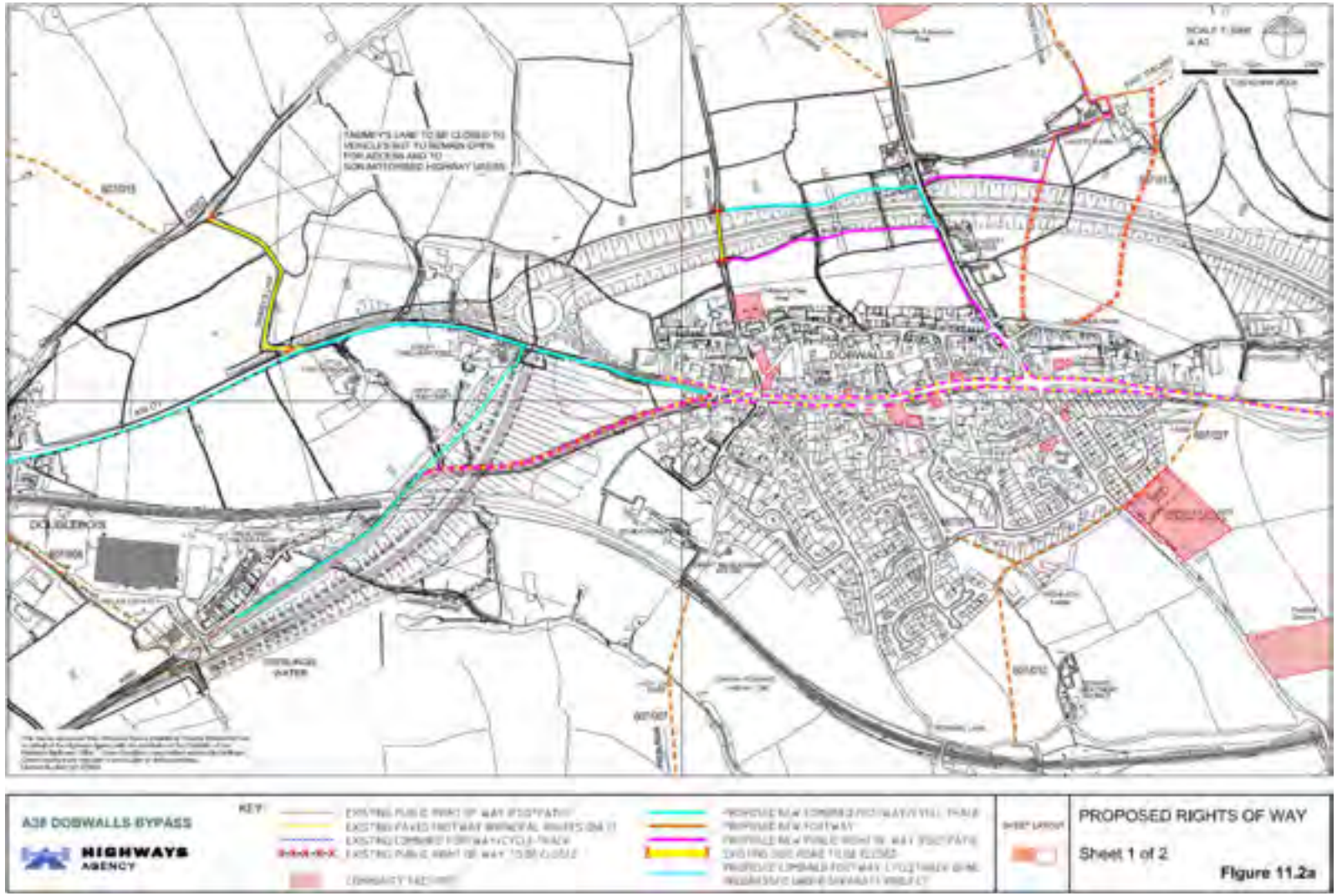
Figure E.21 – Drainage channel adjacent NMU route between Coldwind Lane and Havett Road Bridge

Figure E.22 – Central attenuation pond

Figure E.23 – East attenuation pond

Figure E.24 – Culverts to east attenuation pond

Figure E.25 – Impacts of the proposed scheme on public footpaths



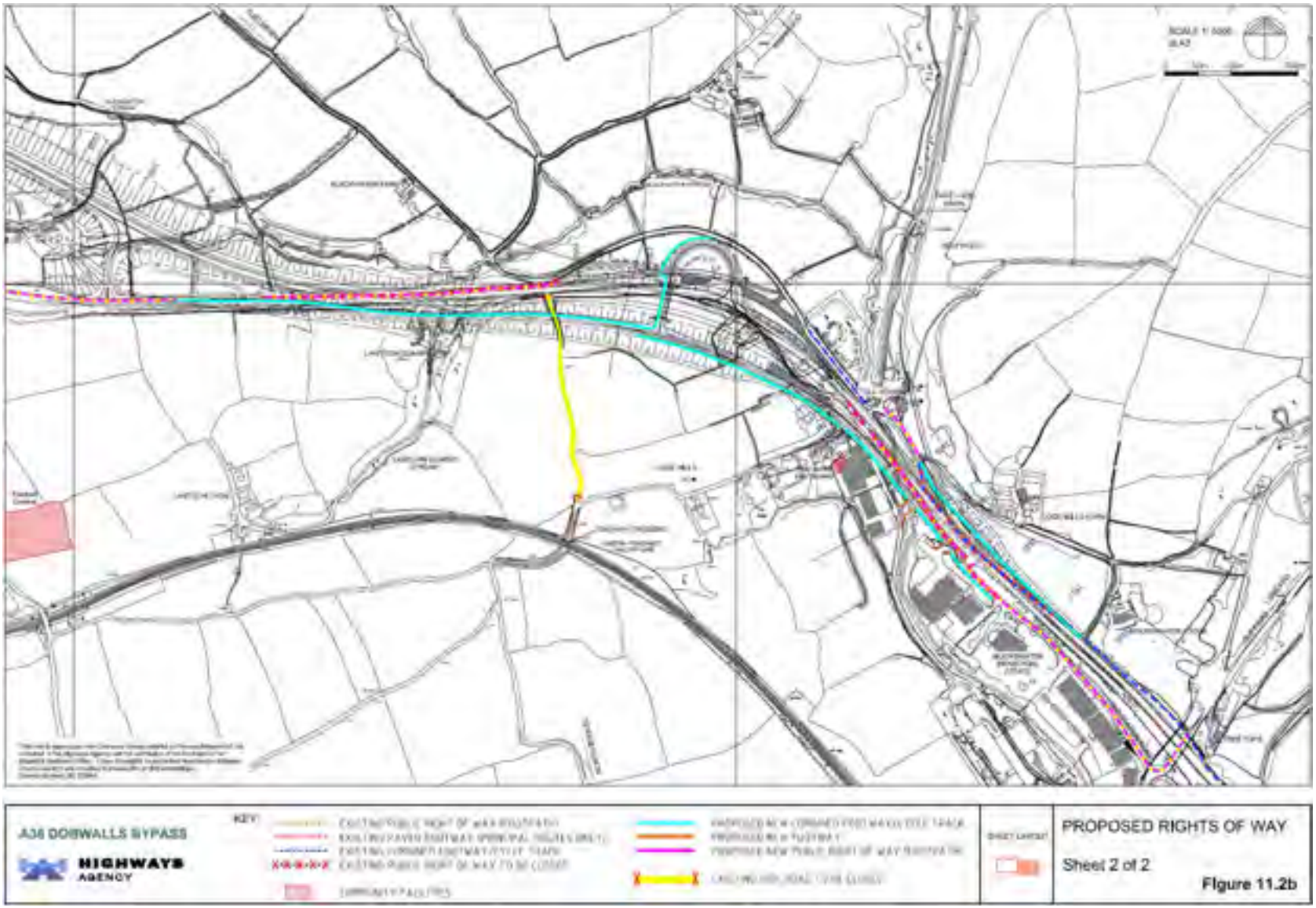

A38 DOBWALLS BYPASS
HIGHWAYS AGENCY
KEY
PROPOSED RIGHTS OF WAY
Sheet 2 of 2
Figure 11.2b

Figure E.26 – Extinguished footpath FP/607/No.33 and view through to housing development

Figure E.27 – Barriers installed on combined footway/cycle track approaching Toll House access road north of Looe Mills junction

Figure E.28 – Selection of combined footway/cycle trackviews: surface treatment and signage

Figure E.29 – Views looking south-west along combined footway/cycle track towards Treburgie Water

Figure E.30 – Link between A390 and Dobwalls

Figure E.31 – View looking towards Havett Road Bridge from footway/cycle track linking to Coldwind Lane

Figure E.32 – View looking south-east along Moorswater Collector / Distributor Road towards bat crossing 3

Figure E.33 – View looking towards the Moorswater viaduct from path adjacent bypass and Toll House

Figure E.34 – Views of combined footway/cycle track adjacent cutting at Looe Mills Farm

Figure E.35 – Views of the combined footway/cycle track between Moorswater Industrial Estate and Dobwalls

Figure E.36 – View looking north along old A38 into Dobwalls

Table E.1 – Summary of Bat Mitigation Monitoring Final Report, May 2009 (reported on monitoring in 2008) and Monitoring Summary in June 2009

	Species	Confirmed	Possible	Nearby	Away	Unconfirmed
Havett Road Crossing	Common Pipistrelle	2009 – none **2008 – two**	2009 – none 2008 – none	2009 – none 2008 – none	2009 – none **2008 – two**	2009 – none 2008 – none
	Brown Long Eared	2009 – none 2008 – none	2009 – none **2008 – one**	2009 – none 2008 – none	2009 – none 2008 – none	2009 – none 2008 – none
Havett Farm Crossing (Point 2)	Common Pipistrelle	**2009 – two** 2008 – none	2009 – none 2008 – none	2009 – none **2008 – ten**	2009 – none **2008 – two**	2009 – none 2008 – none
	Brown Long Eared	**2009 – two** 2008 – none	2009 – none 2008 – none	2009 – none **2008 – one**	**2009 – one** 2008 – none	**2009 – three** 2008 – none
	Myotis Species	2009 – none 2008 – none	2009 – none 2008 – none	**2009 – one** 2008 – none	2009 – none 2008 – none	2009 – none 2008 – none
Lantoom Quarry Crossing (Point 3)	Common Pipistrelle	**2009 – one** **2008 - two**	2009 – none **2008 – one**	2009 – none **2008 – one**	2009 – none 2008 – none	2009 – none 2008 - none

Key:

Confirmed – bat seen directly over structure

Possible – bat possibly flying directly over structure

Nearby – bat seen flying across bypass within 5m of structure

Away – bat seen flying across bypass >5m away from structure

Unconfirmed – bats thought to have crossed the bypass but cannot be confirmed

GLOSSARY

Term	Abbreviation	Description where appropriate
Area of Great Landscape Value	**AGLV**	Defined by local authorities in development plans with a view to safeguarding areas of regional or local landscape importance from inappropriate development.
Annual Average Daily Traffic	**AADT**	Average of 24 hour flows, seven days a week, for all days within the year.
Annual Average Weekday Traffic	**AAWT**	As **AADT** but for five days, (Monday to Friday) only.
Accessibility	**-**	**Accessibility** can be defined as 'ease of reaching'. The accessibility objective is concerned with increasing the ability with which people in different locations, and with differing availability of transport, can reach different types of facility.
AM	**-**	Denoting the morning peak period
Appraisal Summary Table	**AST**	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**
Automatic Traffic Count	**ATC**	An automated method of recording the volume (and sometimes classification) of vehicles passing a particular point on a road.
Average Weekday Traffic	**AWT**	Average of Monday to Friday 24 hour flows over a particular period.
Average Daily Traffic	**ADT**	Average of Monday to Sunday 24 hour flows over a particular period.
Benefit Cost Ratio	**BCR**	The ratio between the monetised benefits and costs of a scheme, used as a measure of value for money in economic terms.
Billion vehicle miles	**Billion Vehicle Miles**	Billion vehicle miles (in number of vehicles)
Capacity	**-**	The maximum hourly lane throughput
Capitalisation	**-**	The process by which benefits for a scheme are factored to give an estimate for the appropriate appraisal period.
Civil Engineering Environmental Quality Assessment and Award Scheme	**CEEQUAL**	CEEQUAL is the assessment and awards scheme for improving sustainability in civil engineering and public realm projects.

Term	Abbreviation	Description where appropriate
Chi-square	**-**	A statistical test to determine whether the observed values of a variable are significantly different from those expected on the basis of a null hypothesis. Variables are categorised to determine whether a distribution of scores is due to chance or experimental factors and tests whether one variable is independent of another.
Cornwall Council	**CC**	The unitary authority covering the county of Cornwall. Formerly known as Cornwall County Council.
COst Benefit Analysis	**COBA**	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.
Congestion Reference Flow	**CRF**	An **AADT** flow estimate at which a road is likely to be congested in the peak periods on an average day.
Department for Transport	**DfT**	A Government department whose objective is to oversee the delivery of a reliable, safe and secure transport system that responds efficiently to the needs of individuals and business whilst safeguarding our environment.
Detrunking	**-**	Detrunking is a process where the management of non-core trunk roads is transferred from the Highways Agency to the Local Highway Authority.
Discounting	**-**	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.
Design Manual for Roads and Bridges	**DMRB**	A comprehensive manual system which sets out current standards, Advice Notes and other published documents relating to Strategic Road works.
Dobwalls and Trewidland Council	**-**	Local Council covering Dobwalls village
Do-minimum	**DM**	In scheme modelling, this is the scenario which comprises the existing road network plus improvement schemes that have already been committed.
Do-something	**DS**	In scheme modelling, this is the scenario detailing the planned scheme.

Term	Abbreviation	Description where appropriate
Environment Agency	**EA**	An Executive Non departmental public body responsible to the Secretary of State for Environment, Food and Rural Affairs. Its principal aims are to protect and improve the environment and to promote sustainable development.
Environmental Statement	**ES**	This must be submitted with the initial planning application and covers all potential significant impacts that the road project may have on the environment.
Evaluation Summary Table	**EST**	In **POPE** studies, this is a summary of the evaluations of the **TAG** objectives using a similar format to the forecasts in the **AST.**
Five Years After	**FYA**	Relating to a POPE evaluation Five Years After scheme opening
Grade I Listed	**-**	A **listed building** in the United Kingdom is a building which has been placed on the **Statutory List of Buildings of Special Architectural or Historic Interest**. Grade 1 listed buildings are considered to be buildings of outstanding architectural or historic interest.
Heavy Goods Vehicle	**HGV**	Goods-carrying vehicle over 3,500kg unladen weight.
Handover Environmental Management Plan	**HEMP**	Handover Environmental Management Plan
Highways Agency	**HA**	An Executive Agency of the Department for Transport **(DfT),** responsible for operating, maintaining and improving the strategic road network in England.
Induced trips	**-**	New trips that have been generated as a result of a scheme.
Inter Peak	**IP**	The time between the **AM** and **PM** peaks
Journey speeds	**-**	Speeds which are determined from the length of road and time taken to travel it.
Killed or Seriously Injured	**KSI**	A term used to describe the number of people killed or seriously injured as a result of **PIAs.**
Listed buildings	**-**	A building that is protected due to its age or of particular importance. Development is normally restricted in the vicinity of these buildings.
Major Schemes Road programme	**-**	The **HA**'s programme of investment in improvements to the Trunk road and Motorway road network comprised of a number of major schemes each costing more than £5m. Formerly known as **TPI.**

Term	Abbreviation	Description where appropriate
Million vehicle kilometres	**mvkm**	Million vehicle kilometres
Mph	**Mph**	Miles per hour
National Cycle Network	**-**	The National Cycle Network is a network of cycle routes in the United Kingdom. The National Cycle Network was created by the charity **SUSTRANS** (Sustainable Transport).
Natural England	**-**	The government's advisor on the natural environment, whose remit is to ensure sustainable stewardship of the land and sea so that people and nature can thrive.
New Approach To Appraisal	**NATA**	Used for transport scheme appraisal since 1998.
Non-motorised User	**NMU**	A term used to describe pedestrians, cyclists and equestrians.
National Road Traffic Forecast.	**NRTF**	This document defines the latest forecasts produced by the Department of the Environment, Transport and the Regions of the growth in the volume of motor traffic. The most recent one is **NRTF07** and the one previous was **NRTF97**.
National Rivers Authority	**NRA**	The former body for managing water resources investigating and regulating pollution, and taking over floor controls and land drainage in England and Wales (now the EA)
One Year After	**OYA**	Relating to a **POPE** study One Year After scheme opening.
Project Appraisal Report	**PAR**	The **PAR** is a key summary document in which the need for a project, its costs and benefits are appraised. Used for road scheme's less than £5m.
Part 1 Claims	**-**	Claims for compensation under Part 1 of the Land Compensation Act 1973, relating to homeowners affected by road schemes.
Personal Injury Accident	**PIA**	A term commonly used to refer to road accidents.
Personal Injury Accidents per million Vehicle kilometres	**PIA/mvkm**	A term used to express accident rates for a particular link on a road, i.e the number of accidents per million vehicle kilometres travelled.
PM peak	**-**	Evening peak period
Post Opening Project Evaluation	**POPE**	Before & after monitoring of all major highway schemes in England.
Present Value of Benefits	**PVB**	The value of the scheme's estimated benefits discounted back to a common base year.

Term	Abbreviation	Description where appropriate
Present Value of Costs	**PVC**	The value of the scheme's estimated costs discounted back to a common base year.
Public Rights of Way	**PROW**	Highways that allow the public right of passage through them.
'Route Stress'	**Stress**	Ratio of the AADT flow to the CRF. When the traffic flow on a particular link reaches the CRF it is considered to be at 100% Stress.
Single 2 lane	**S2**	A standard single carriageway with 1 lane in each direction
Scheduled Ancient Monument	**SAM**	Sites of national heritage importance designated under the Ancient Monuments and Archaeological Areas Act 1979
Screenline	**-**	An imaginary line intersecting routes on a map to allow easier analysis of vehicular movement across a corridor.
Security	**-**	In terms of the **NATA** sub-objective relating to the likelihood of crime or perception of likely crime.
Severance	**-**	Community **severance** is the separation of adjacent areas by road or heavy traffic, causing negative impact on non-motorised users, particularly pedestrians.
Shillet		Coarse soil with pieces of slate.
STATS19	**STATS19**	A database of injury accident statistics recorded by police officers attending accidents
Traffic Impact Study	**TIS**	An evaluation undertaken shortly after the opening of a scheme to determine the immediate impacts on traffic flows and journey times.
Transport Analysis Guidance	**TAG**	**Transport Analysis Guidance** - as defined in **WebTAG**.
Transport Statistics Bulletin	**TSB**	Produced by the **DfT** presenting information on traffic in Great Britain
Trip End Model Program	**TEMPRO**	A program which 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.
Targeted Programme of Improvements.	**TPI**	The **Highways Agency's** programme of investment in improvements to the Trunk road and Motorway road network comprised of a number of major schemes each costing more than £5m. Now called Major Highways Schemes.
Traffic Database	**TRADs**	Traffic count database developed by the Agency, to hold data from monitoring sites in England.

Term	Abbreviation	Description where appropriate
Vehicle Operating Cost	**VOC**	Reflects fuel and other operating costs calculated from total distance travelled on affected links, also taking into account vehicle speeds.
webTAG	**webTAG**	Department for Transport's website for guidance on the conduct of transport studies at **http://www.webtag.org.uk/**