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SCOTTISH TRUNK ROAD INFRASTRUCTURE
PROJECT EVALUATION

3YA Evaluation Report for A9(T) Ballinluig Junction Improvement



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3YA Evaluation Report for A9(T) Ballinluig Junction Improvement

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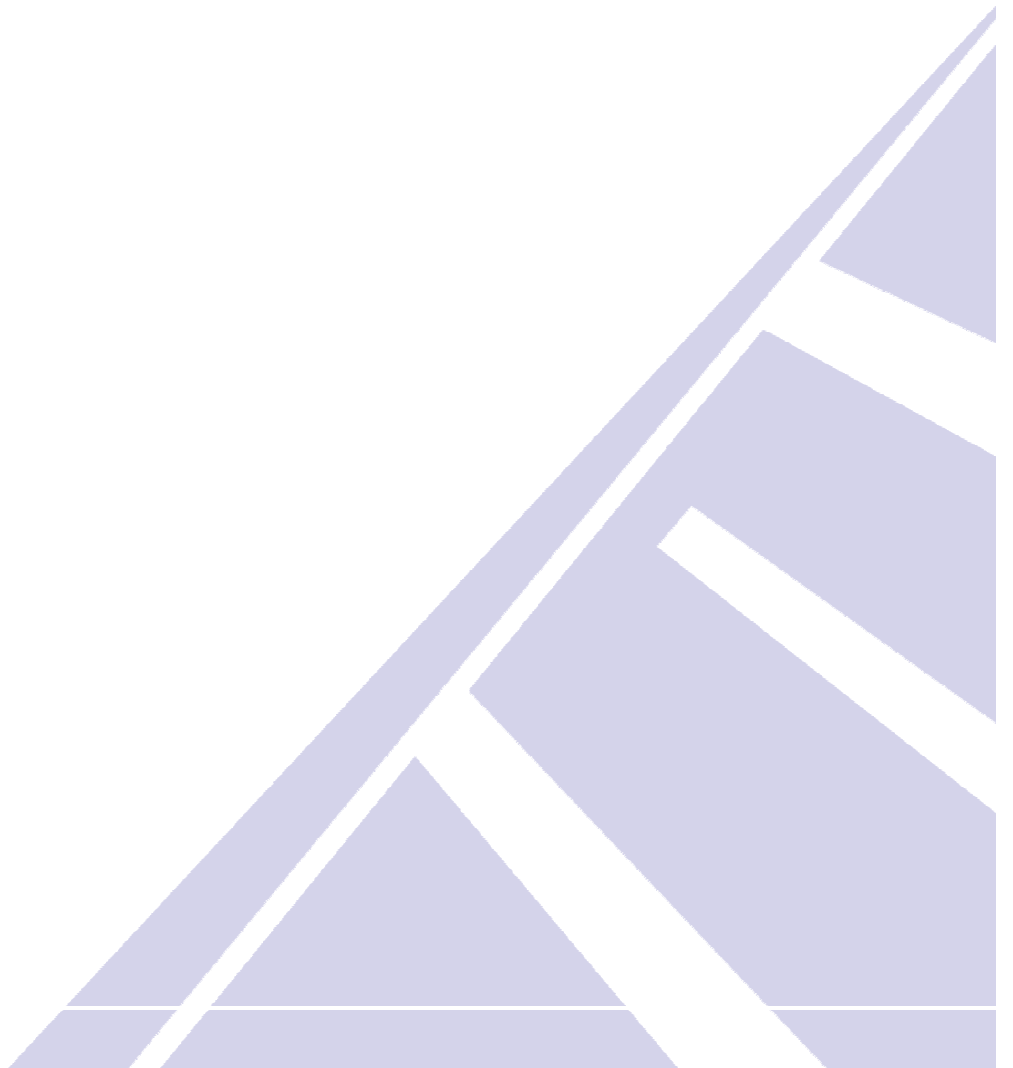
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GLOSSARY

The following abbreviations have been used in this report:

AADT	Annual Average Daily Traffic
ATC	Automatic Traffic Counter
BCR	Benefit to Cost Ratio
D2AP	Dual 2-Lane All Purpose Carriageway
DMRB	Design Manual for Roads and Bridges
NPV	Net Present Value
NRTF	National Road Traffic Forecasts
RSA	Road Safety Audit
S2	Single 2-Lane Carriageway
SAC	Special Areas of Conservation
SSSI	Sites of Special Scientific Interest
STAG	Scottish Transport Appraisal Guidance

SUMMARY OF IMPACTS



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1 SUMMARY OF IMPACTS

This section provides a short summary of the key elements contained within this Three Year After Evaluation report of the A9(T) Ballinluig Junction Improvement project.

1.1 Operational Indicators – How is the project operating?

The project has had no significant impact on traffic volumes within the vicinity of the improvement. Given the project incorporates localised junction improvements, this is as expected.

The project is operating safely in the first three years of operation, with only one accident occurring within the vicinity of the project. This is in comparison to the period three years prior to the opening of the project, when one fatal and two serious accidents occurred within the vicinity of the junction, indicating a significant improvement in road safety following opening of the project.

1.2 Process Indicators – How well was the project implemented?

Process Indicators provide evaluation across the key elements of project cost, programme and process.

Construction of the project commenced in July 2007 and the project was opened to traffic in May 2008. The cost of construction of the project was approximately £2.3m (25%) greater than predicted during the appraisal. It should be noted, however, that the predicted costs used within the cost comparison are derived from the costs estimated at the project's pre-tender stage. Variations in actual and predicted project cost comparisons can occur due to issues identified during the tendering process.

Based on the project's discounted tender cost of approximately £13.1m, the comparison of out-turn and tender costs suggests that the project has been delivered for approximately £1.5m less than the tender cost. The project's tender cost is somewhat greater than the cost predicted at the project's pre-tender stage.

The mitigation which was included within the Scheme Assessment Report has been implemented on site, is in good condition and the majority is operating as expected.

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The Stage 5 Road Safety Audit (RSA) was carried out during February and March 2014 and indicated that two slight personal injury accidents had occurred within the vicinity of the project within the three year period after opening. While one of these accidents occurred on the A9(T) carriageway, it is considered to have occurred outwith the extents of the project. The Stage 5 RSA concluded that neither of the accidents occurring could be attributed to the design or layout of the project and, instead, were more likely to have occurred as a result of driver error.

1.3 Forecasting – How accurate were predictions?

Traffic flows on the A9(T) in the vicinity of the project are broadly in line with those that have been forecast. The predicted 2013 flow was within 2% of the observed 2013 flow under the central traffic forecast scenario.

The cost of construction of the project was greater than that predicted during the appraisal by approximately £2.3m (25%).

1.4 Objectives – Is the project on track to meet its objectives?

The project's objectives, in relation to the operation of the project, focussed on the improvement of road safety. The nature of the project (a grade separated junction removing right turn manoeuvres across the A9(T) carriageway) has improved safety at this location of the A9(T). The project is operating safely in the first three years of operation with only one slight accident occurring within the vicinity of the project.

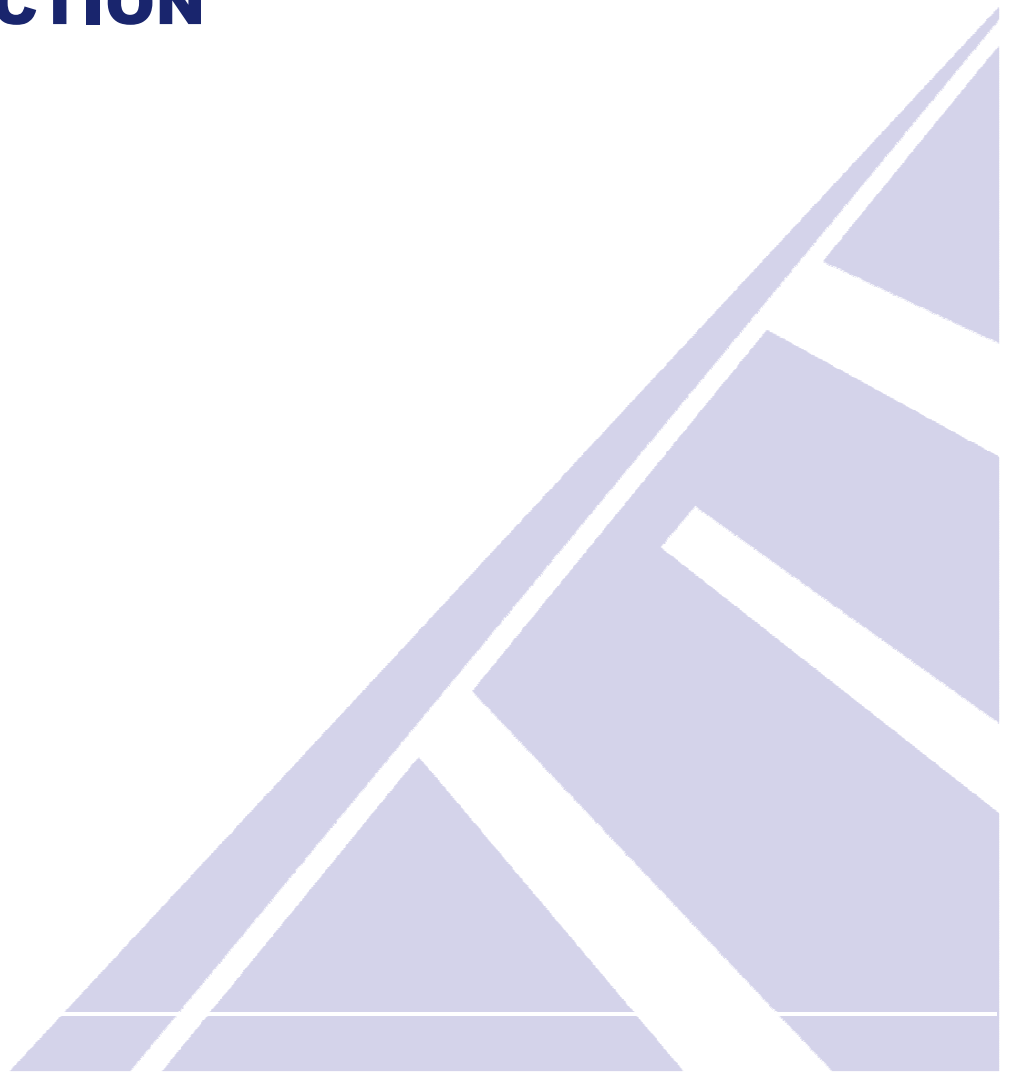
1.5 Costs to Government – Is the project delivering value for money?

Based on the evaluation of value for money at the time of the project's 3YA Evaluation, the Net Present Value (NPV) of £9.92 and Benefit to Cost Ratio (BCR) of 1.95 for the project are likely to be less than predicted at the time of assessment. This reflects higher than predicted construction costs which will impact on the project's value for money.

In combination with other projects previously implemented on the A9(T), such as the junction improvement at Bankfoot and the strategic dualling programme of the route currently being progressed by Transport Scotland, the Ballinluig project can be expected to positively contribute towards providing improvements in road safety and, more generally, benefits to transport users and will help encourage economic development within northern Scotland and beyond.

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INTRODUCTION



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2 INTRODUCTION

2.1 Background to Project Evaluation

Road infrastructure projects normally take a minimum of five to seven years to plan prior to the commencement of construction and it is not possible to know exactly what will happen when a project is opened, nor what would have happened had the project not been built, particularly when the project is opened a number of years after its assessment.

The aims of evaluation, as set out in the Design Manual for Roads and Bridges (DMRB), Volume 5, SH 1/97 'Traffic and Economic Assessment of Road Schemes in Scotland', are as follows:

- To satisfy the demands of good management and public accountability by providing the answers to questions about the effects of a new or improved road;
- To identify the strengths and weaknesses in the techniques used for appraising projects, so that confidence in the roads programme is maintained;
- To allow the predictive ability of the traffic or transport models used to be monitored to establish whether any particular form of model is consistently more reliable than others when applied to particular types of projects; and
- To assist in the assessment of compensation under Part 1 of the Land Compensation (Scotland) Act 1973 for depreciation due to the physical factors caused by the use of public works.

The evaluation of trunk road projects is evolving as Transport Scotland improves its process and reporting to reflect the principles of monitoring and evaluation set out in the Scottish Transport Appraisal Guidance (STAG).

STAG advocates evaluation against indicators and targets derived for the Transport Planning Objectives originally set for the project, STAG criteria (Environment, Safety, Economy, Integration and Accessibility & Social Inclusion) and relevant policy directives, the aim of which is to identify:

- Whether the project is performing as originally intended;
- Whether, and to what extent, it is contributing to established policy directives; and
- Whether the implemented project continues to represent value for money.

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Furthermore, Scottish Trunk Road Infrastructure Project Evaluation (STRIPE) by Transport Scotland sets out the requirements for evaluation which draws on DMRB and STAG. This document was finalised in 2013 and acts as a guide to evaluation for relevant projects. STRIPE states that two programmed evaluations should be carried out on relevant projects, as follows:

- A one-year after Evaluation (1YA) – prepared one year after opening, this report should “provide Transport Scotland with an early indication (as far as is practicable) that the project is operating as planned and is on-track to achieve its objectives. The 1YA evaluation also provides a Process Evaluation including an assessment of actual vs. forecast project cost, and programme together with reasons for variance”. STRIPE also states that a stand-alone report should be prepared on each individual project. Information gathering should be supported by a site visit and stakeholder interviews.
- A Detailed Evaluation – undertaken three or five years after opening. This second evaluation “considers a project’s impacts, whether it has achieved its objectives and reviews the actual impacts against forecasts and determines the causes of any variances”.

2.2 Evaluation Reporting

As recommended in STRIPE, this report constitutes a Detailed Evaluation Report at the Three Year After (3YA) Stage. It is a standalone report on the A9(T) Ballinluig Junction Improvement Project. This project fits the criteria for evaluation at this stage, as it cost over £5m and has previously been evaluated at the One Year After (1YA) Stage. The location of the project is presented in Figure 2.1.

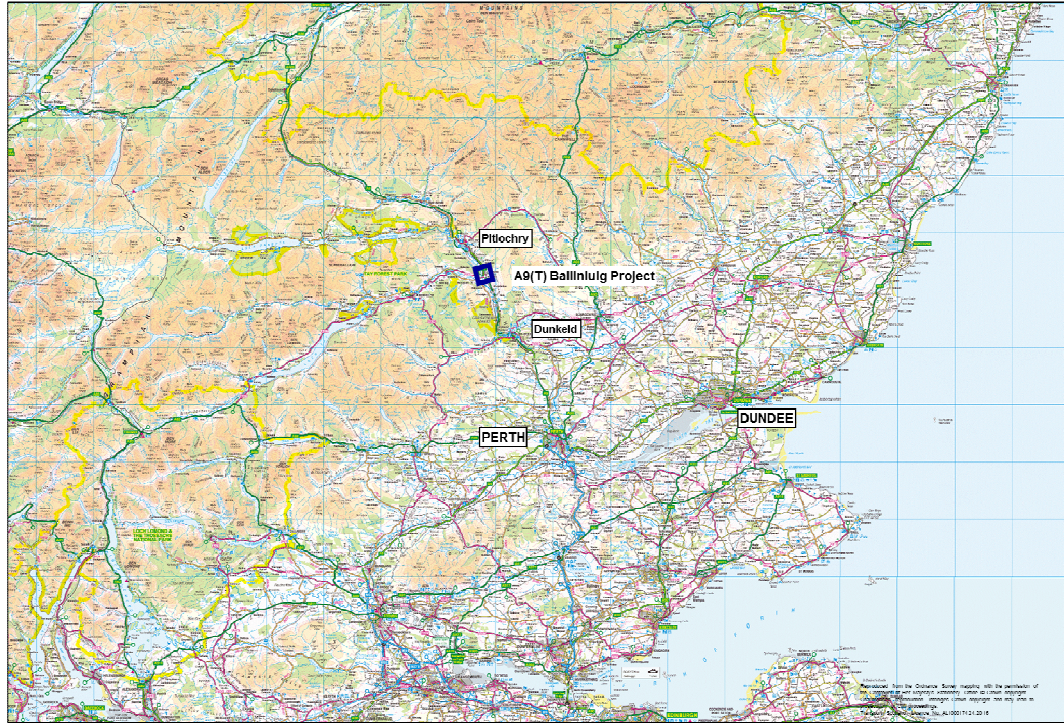
Table 2.1: Project Summary Details

Route	Project Name	Standard	Length (km)	Open to Traffic
A9(T)	Ballinluig Junction Improvement	Junction Improvement		May 08

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Figure 2.1: Project Location Plan



2.3 Previous Evaluations

A 1YA Evaluation was carried out for the A9(T) Ballinluig Junction Improvement project and findings reported within the *Evaluation Report for Trunk Road Projects Opened between April 2007 and March 2009* report, dated January 2013.

The key findings from the 1YA Evaluation report were as follows:

Operational Indicators

Comparison Between Pre and Post Opening Traffic Flows

The comparison between pre and post opening traffic volumes on the A9(T) mainline indicated that traffic flows in 2009 were around 150 vehicles per day (vpd) (approximately 1%) lower than 2007 flow levels. Over the same period, traffic flows on the A827 west of Ballinluig junction saw a marginal increase of approximately 100 vpd or 3%.

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The comparison also indicated that traffic flows on the A9(T) mainline had decreased with annual reductions of approximately 150 vpd to 250 vpd (1% to 2%) between 2009 and 2011. Traffic flows along the A827 west of Ballinluig junction increased by approximately 150 vpd (around 5%) between 2009 and 2010 and decreased by approximately 250 vpd (8%) between 2010 and 2011.

Comparison Between Predicted and Actual Traffic Flows

The comparison between predicted and actual AADT flows indicated that the predicted 2009 flow was approximately 7% lower than the observed 2009 flow, which is within accepted limits (i.e. 20%).

Change in Travel Times

As a result of the grade-separated junction on the A9(T) which facilitates the through movement of traffic, the temporary 50mph speed limit enforced on the A9(T) within the vicinity of the junction had been removed. Whilst journey times had not been measured, it was expected that journey times on the A9(T) will have reduced as a result.

Environment

The 1YA review of the mitigation measures implemented for the project indicated that all mitigation measures identified had been implemented and, overall, the mitigation had been successful, particularly the provision of ecological mitigation and the integration of many of the engineering works into the landscape when viewed from Ballinluig village. However, some of the planting was not establishing well.

Safety

An assessment of the one year post opening personal injury accidents and a review of the Stage 4 RSA report, suggested that the project is operating safely.

Economy

The comparison of predicted and actual traffic flows indicated that the predicted 2009 flow was approximately 7% lower than the observed 2009 flow on the A9(T). The project was likely to, therefore, deliver additional benefits to road users than those predicted as part of the project's appraisal.

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Integration

While the Local Plan relevant at the time that the project was progressed did not contain any Local Government policies specific to Ballinluig Junction, the project supports central Government policy through its objective of reducing accidents.

Accessibility & Social Inclusion

Observations from the environmental mitigation site visit indicated that the project incorporated measures for both cyclists and pedestrians.

Cost to Government

The out-turn cost of the project was approximately £2.1m (23%) greater than was predicted at the time of assessment.

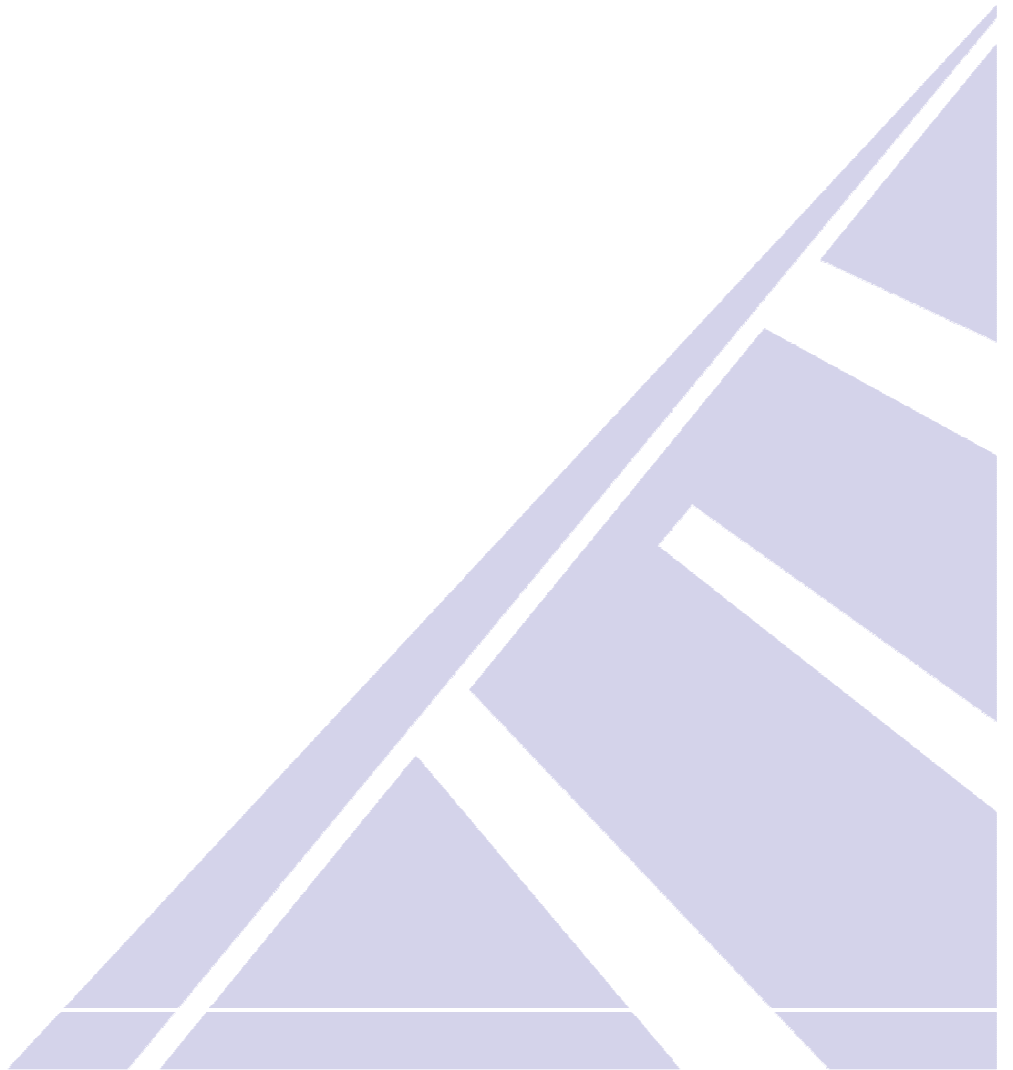
Value for Money

It was judged that, although the NPV and BCR were unlikely to be as great as predicted at the time of assessment, the project would continue to represent value for money.

Achievement of Objectives

The initial indications noted within the 1YA Evaluation Report suggested that each of the project's objectives were likely to be achieved.

DETAIL OF EVALUATION



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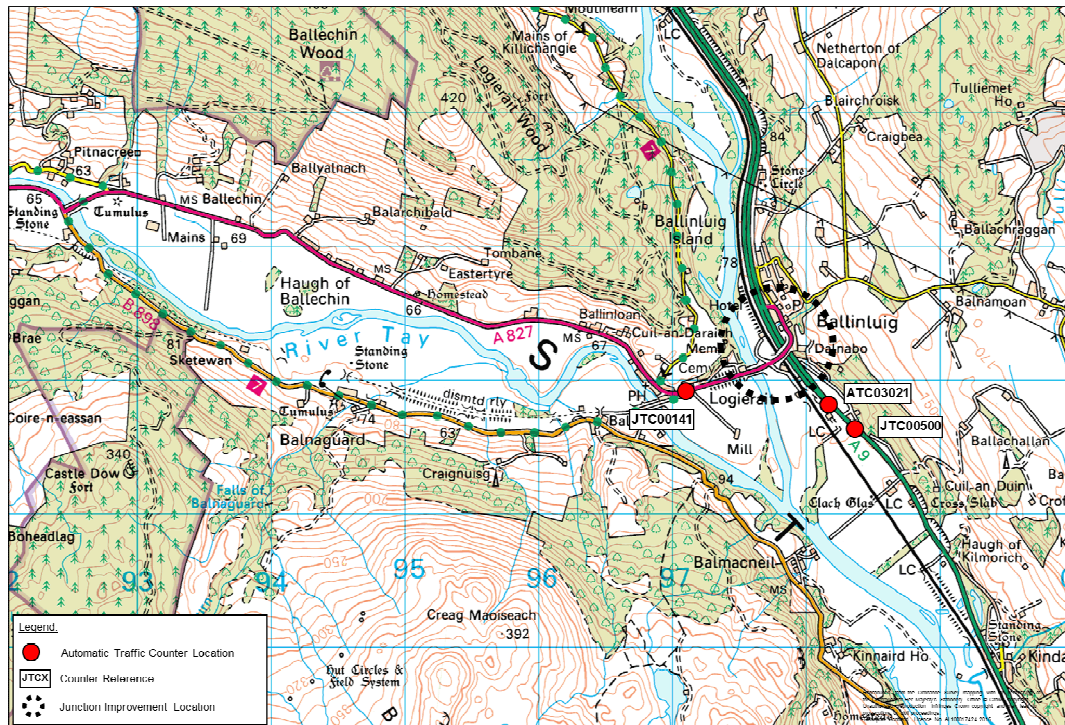
3 PROJECT EVALUATION

3.1 Introduction

Project Description

The project involved the construction of a grade-separated junction, including two new slip roads on the western side of the A9(T) at Ballinluig and improvements to the A9(T) carriageway. The improvements enabled the removal of the temporary 50mph speed limit within the vicinity of the junction. The project was officially opened to traffic on 26th May 2008. The general location of the project is shown in Figure 3.1.

Figure 3.1: Project General Location Plan



Project Objectives

The objectives of the A9(T) Ballinluig Junction Improvement project were set as follows:

- To contribute to Government Safety Objectives for the reduction of fatal and serious accidents of 40% by 2010;
- To achieve good value for money;
- To maintain through movement on A9(T);
- To be able to be maintained and operated safely;

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- To minimise disruption during construction;
- To incorporate measures for non motorised users;
- To avoid impacts on environmentally designated areas (Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI));
- To minimise environmental impact; and
- To be consistent with local planning objectives and policies.

3.2 Evaluation Methodology

As set out in Section 2.1, this Three Year After report presents the results of a Three Year Evaluation of the A9(T) Ballinluig Junction Improvement project, focusing on:

- The operation of the project: how the project is operating (in terms of traffic and safety in particular); and
- Objectives: whether the project has met or will meet its objectives.

A process evaluation has also been carried out, which considers how the project was implemented across the elements of project cost, programme and key processes. The main aspects of the process evaluation are summarised in Section 1 of this report and commentary included within this section under the appropriate criteria. For example, the RSA process is considered as part of the discussion on how the project is operating in terms of Safety.

This 3YA evaluation is informed by the analysis of survey data and supported by a site visit carried out in August 2014. External stakeholder views were invited. Feedback was received from one respondent which is presented within the report.

Appendix B provides further information on the methodology employed and data sources used to inform this 3YA Evaluation.

3.3 The operation of the project and process evaluation

Network Traffic

The evaluation is supported by the consideration of pre and post opening comparison of operational indicators, which focuses on network traffic indicators including traffic volumes and travel times, presented in the following section.

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Traffic Volumes

The Automatic Traffic Counters (ATC) located within the study area are as follows:

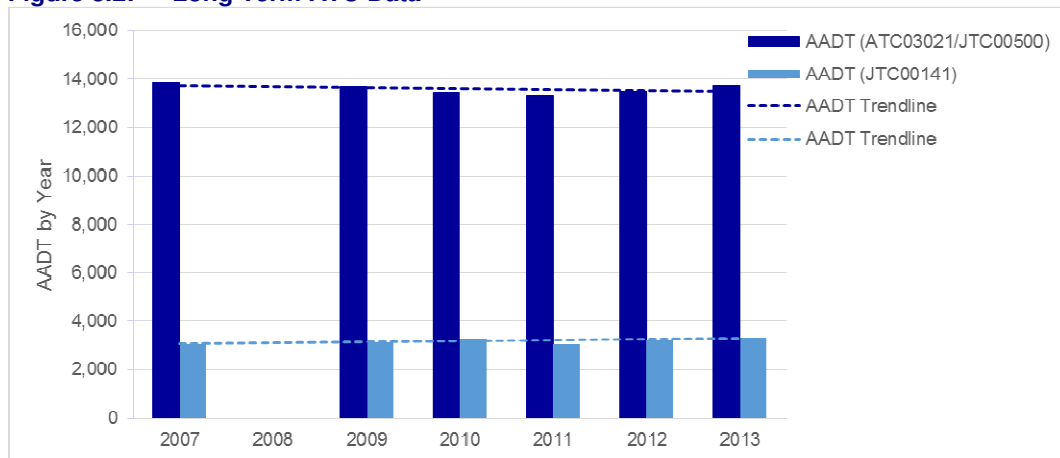
- ATC03021/JTC00500 A9 South of A827 Junction
- JTC00141 A827 Ballinluig Bridge

The locations of the ATCs used to record traffic flows within the study area are shown in Figure 3.1.

Comparison Between Pre and Post Opening Traffic Flows

The Annual Average Daily Traffic (AADT) flows pre and post project opening on the A9(T) route within the vicinity of the project are presented in Figure 3.2. The percentage of Heavy Goods Vehicles (HGVs) are not available as classified traffic data by vehicle type is not available from the ATCs within the vicinity of the project.

Figure 3.2: Long Term ATC Data



Notes: Incomplete data for counter ATC03021/JTC00500 for 2013 – available data for neutral months (March, April & May) used

The **1YA Evaluation** indicated that traffic flows in 2009 were around 150 vehicles per day (vpd) (approximately 1%) lower than 2007 flow levels. Over the same period, traffic flows on the A827 west of Ballinluig junction experienced a marginal increase of approximately 100 vpd or 3%.

Traffic flows on the A9(T) mainline also decreased with annual reductions of approximately 150 vpd to 250 vpd (1% to 2%) between 2009 and 2011. Traffic flows along the A827 west of Ballinluig junction increased by approximately 150 vpd (around 5%) between 2009 and 2010 and decreased by approximately 250 vpd (8%) between 2010 and 2011.

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A comparison between pre and post opening traffic volumes on the A9(T) within the vicinity of the project indicates that traffic flows in 2013 were around 100 vpd (approximately 1%) lower than 2007 flow levels, however 2013 flow levels were broadly consistent with 2009 flow levels. Analysis of the long-term trends in annual traffic flows suggest that the volume of traffic on this section of the A9(T) has been stable for a number of years. Traffic flows along the A827 west of Ballinluig junction increased by approximately 200 vpd (around 6%) between 2009 and 2013.

Comparison Between Predicted and Actual Traffic Flows

The latest flow comparisons for the project are based on AADT flows from 2013 as this was the latest traffic data available from Transport Scotland's traffic counters within the vicinity of the project. As part of the project's appraisal, National Road Traffic Forecasts (NRTF) high traffic growth factors were applied to the 2004 base year traffic flows to derive opening and future modelled assessment year traffic flows. Predicted traffic flows for 2013 have been derived by factoring the 2004 base year flows used in the economic assessment with NRTF central traffic growth factors. A summary of the actual and predicted traffic data is shown in Table 3.1.

Table 3.1: Traffic Analysis Summary

ATC Ref	Actual AADT*	Predicted AADT	% Difference (Predicted – Actual) / Actual
		Central	Central
A9(T)			
JTC00500	13,732	13,492	-1.7%

* 2013 flows (latest ATC data available)

The comparison between predicted and actual AADT flows in Table 3.1 indicates that the predicted 2013 flow was approximately 2% lower than the observed 2013 flow under the central traffic forecast scenario. The **1YA Evaluation** indicated that the predicted 2009 flow was approximately 7% lower than the observed 2009 flow, which is within accepted limits (i.e. 20%).

Traffic Volumes: Key Findings

Observed traffic flows are approximately 2% higher than forecast flows. This is well within accepted limits.

A comparison between the 1YA and 3YA after evaluation shows that the variation between forecast and predicted traffic flows appears to be broadly stable. The magnitude of the variation is unlikely to significantly impact on the overall economic performance of the project which is discussed further in Section 3.6.

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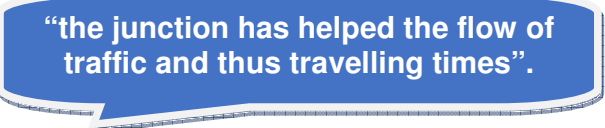
Travel Times

Change in Travel Times

The **1YA Evaluation** indicated that, as a result of the grade-separated junction on the A9(T) which facilitates the through movement of traffic, the temporary 50mph speed limit enforced on the A9(T) within the vicinity of the junction has been removed. Whilst journey times have not been measured, it can be expected that journey times on the A9(T) will have reduced as a result of the removal of the 50mph speed limit.

Stakeholder Feedback

A response noted that the junction “*has helped the flow of traffic and thus travelling times*”.



“the junction has helped the flow of traffic and thus travelling times”.

Travel Times: Key Findings

Stakeholder feedback received indicates that the project has improved the flow of traffic and travel times on the A9(T) within the vicinity of the junction. Overall, however, the project is considered not to have had a significant impact on journey times on the A9(T) route as a whole. This is in part a reflection of the nature of the project which comprised localised junction improvements.

It is recognised that journey times for certain local movements will have increased as a consequence of the longer travel distances resulting from the removal of right turns to / from Ballinluig village from the A9(T).

3.4 Environment

The following section provides a summary of the assessment of environmental mitigation measures proposed for the A9(T) Ballinluig Junction Improvement project. A full report is provided in Appendix A.

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Review of Environmental Mitigation Measures

The environmental mitigation measures originally proposed for the project were obtained from the project's Stage 2 Scheme Assessment Report and the findings of the project's 1YA Evaluation completed in May 2010 were reviewed (see Section 2.3). As part of the 3YA Evaluation, a site visit was carried out in August 2014, to confirm the implementation and condition of the environmental mitigation measures and review any comments raised in the 1YA Evaluation about the environmental mitigation.

The Scheme Assessment Report for the project proposed mitigation measures to address impacts including:

- Ecology and nature conservation;
- Landscape;
- Pedestrians, cyclists and community effects; and
- Water quality and drainage.

Findings

Four SUDS ponds were constructed as part of the project, three on the east side of the carriageway and one on the west below the roundabout. The two eastern ponds that are side by side were dry and showed no evidence of being wet recently due to the lack of wetland vegetation. The gates at these two ponds were missing, potentially raising health and safety concerns if the ponds fill. Three of the four ponds were dry and did not contain wetland marginal vegetation indicating regular wetting. Only a small amount of standing water was visible in the most southerly pond, located by Inch Cottage. Despite the summer conditions, similar ponds in the region, inspected at the same time of year provided evidence of healthy aquatic environments.

The seeding of grass on the verges and a mix of native tree species on the embankments by the carriageway, western pond and bridge structures, has established to grow well overall, although there are some failed trees by the eastern ponds. The planting is a key part of the environmental mitigation to help screen the new bridge structures. The reduction of the visual impact of the new bridge structures will further increase as the planting becomes thicker and taller. However, the galvanised steel parapets on the bridges over the railway remain very prominent and do not sit well in this rural setting. The removal of vegetation alongside the railway line by Network Rail results in further visual impacts in the short to medium term whilst the new vegetation establishes, but this will soften the appearance too when re-established. A mobile phone mast adjacent to the bridges adds a further man-made visual feature within the area.

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There are small clumps of ragwort found across the project. Ragwort poisoning can be fatal to horses and damaging to other livestock.

The mammal fence was inspected and found to be in good condition. The mammal culvert was also inspected and there was a clear trail leading to the culvert, probably made by a large mammal such as badger or otter.

To the east of the A9, provision has been made for cyclists with the local access road and segregated cycleways incorporated into the project design.

Environment: Key Findings

Standing water was not observed in three of the four SUDS ponds and there was very little or no wetland vegetation. The apparent lack of water entering the SUDS ponds may need to be investigated, and the safety of the ponds may need to be checked due to the gaps in the fence from the missing gates.

Planting and landscaping across the project is proving successful and is beginning to help to screen the effects of bridge structures in a rural location, although some trees have failed near the eastern ponds. The removal of vegetation alongside the railway line by Network Rail results in further visual impacts in the short to medium term whilst the new vegetation establishes, but this will soften the appearance when re-established. Where tree planting has failed, empty tubes and redundant posts should be removed and consideration should be given to replacing the lost trees to continue to soften the visual impact of the project. Ragwort was found throughout the project and may need to be managed to prevent risk to livestock.

The issues that have been identified as part of the environmental evaluation process have been provided to Transport Scotland's operating companies for actioning.

3.5 Safety

Accidents

Comparison Between Pre and Post Opening Personal Injury Accident Numbers

The locations and severities of accidents occurring within the vicinity of the project three years before and three years after project completion are shown in Figure 3.3a and Figure 3.3b. A summary of the personal injury accident data is shown in Table 3.2.

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Figure 3.3a: 3 Years Before Opening Personal Injury Accident Numbers

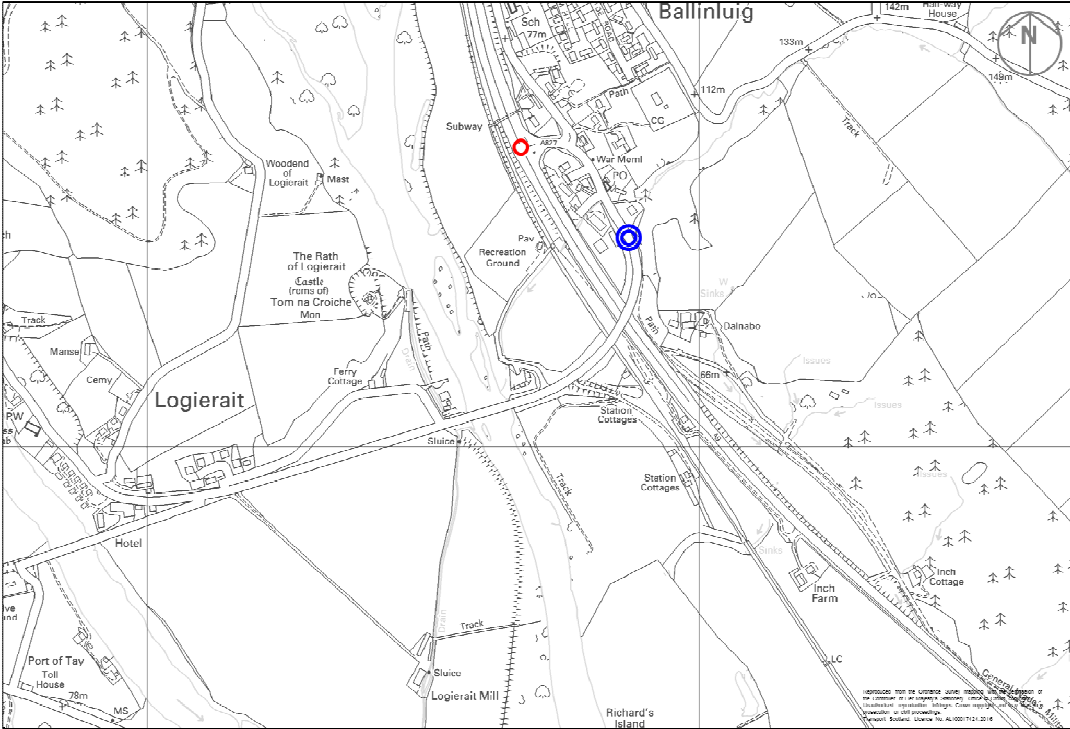
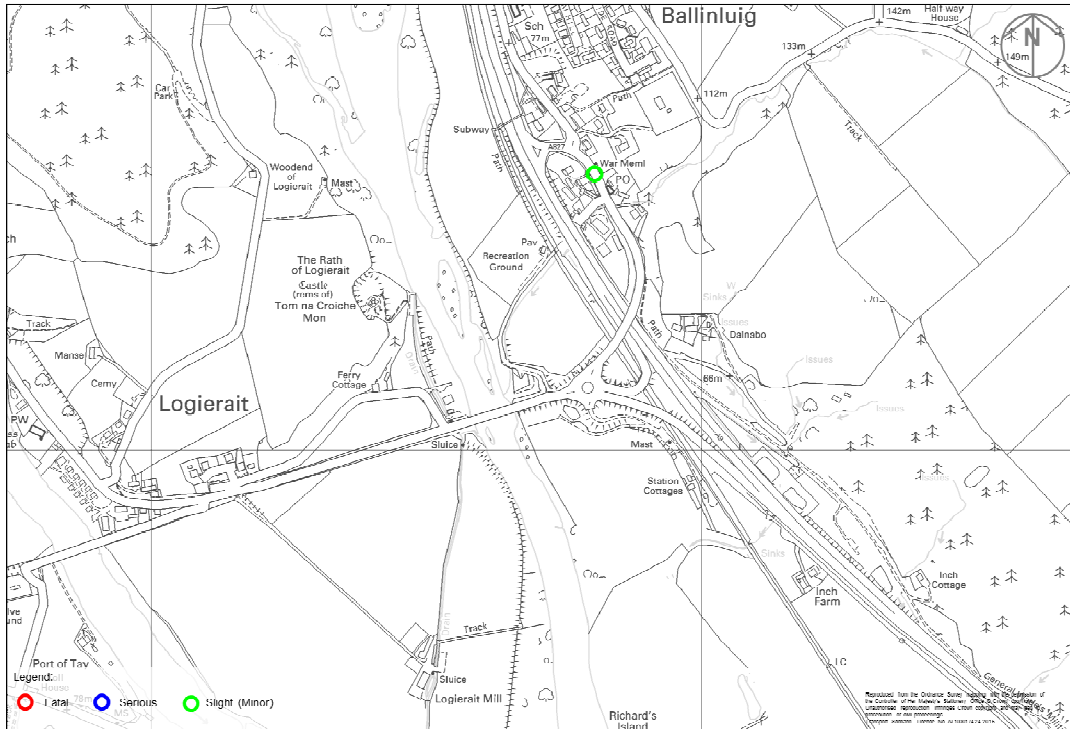


Figure 3.3b: 3 Years After Opening Personal Injury Accident Numbers



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Table 3.2: Accident Data Summary

Period	Fatal	Serious	Slight	Total Accidents
3 Years Before				
A9(T)	1	0	0	1
A827	0	2	0	2
Total	1	2	0	3
1 Year After				
A9(T)	0	0	0	0
A827	0	0	0	0
Total	0	0	0	0
3 Years After				
A9(T)	0	0	0	0
A827	0	0	1	1
Total	0	0	0	1

As can be seen from Table 3.2, one personal injury accident (one slight) occurred in the three year period following the opening of the project in comparison to three personal injury accidents (one fatal, two serious) in the three years before opening suggesting a potential improvement in road safety within the vicinity of the junction.

Road Safety Audits

The RSA process has been followed, with Stage 1, 2, 3, and 4 Audits carried out. The Stage 4 Road Safety Audit (RSA) was carried out in June 2009 and confirmed that no personal injury accidents had occurred within the vicinity of the project within the one year period after opening. The Stage 5 RSA was carried out during February and March 2014 and indicated that two accidents (slight) occurred during the period three years after opening. One of the accidents, located on the A9(T) was deemed to be beyond the northern extents of the project and, therefore, was not included within the analysis presented in Table 3.2. The Stage 5 RSA concluded that neither of the accidents occurring could be attributed to the design or layout of the project and, instead, were more likely to have occurred as a result of driver error.

Stakeholder Feedback

A response affirmed that “*there has been a feeling of greater safety and less incidents for the Police to respond to*” and considered the improvement on safety the main benefit of the project.

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“there has been a feeling of greater safety and less incidents for the Police to respond to”.

Safety: Key Findings

An assessment of the one and three year post opening personal injury accidents and a review of the Stage 5 RSA, undertaken in 2014, suggests that the project is operating safely and has resulted in an improvement in road safety within the vicinity of the junction.

Stakeholder feedback received indicates that there is a perceived feeling of greater safety for road users within the vicinity of the upgraded junction.

3.6 Economy

Transport Economic Efficiency

The comparisons between predicted and actual traffic flows and travel times, presented in section 3.3, can be considered a proxy for whether the predicted economic benefits of the project are likely to be realised.

Comparison Between Predicted and Actual Traffic Flows

The comparison undertaken at the **1YA Evaluation** stage indicated the predicted 2009 flow was approximately 7% lower than the observed 2009 flow on the A9(T). The project may, therefore, deliver additional benefits to road users than those predicted as part of the project’s appraisal.

The latest comparison between predicted and actual traffic flows indicates that the predicted 2009 flow was approximately 2% lower than the observed 2013 flow on the A9(T). The project may, therefore, deliver additional benefits to road users than those predicted as part of the project’s appraisal.

Economy: Key Findings

The difference between predicted and actual AADT flows suggests that the predicted road user benefits are likely to be broadly accurate.

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3.7 Integration

Policy Integration

The **1YA Evaluation** indicated that the Local Plan relevant at the time that the project was progressed does not contain any Local Government policies specific to Ballinluig Junction, however, the project supports Central Government policy through its objective of reducing accidents.

The comparison of pre and post opening accidents in Section 3.5 confirms that the project continues to provide road safety benefits and, in doing so, contributes towards Government Safety Objectives for the reduction of fatal and serious accidents.

Integration: Key Findings

The comparison of three years pre and post opening accidents confirms that the project continues to contribute to Government Safety Objectives for the reduction of fatal and serious accidents.

3.8 Accessibility & Social Inclusion

Community Accessibility

The **1YA Evaluation** indicated that, from observations that were made during the environmental mitigation site visit in May 2010, provision has been made for cyclists within the local access road and through segregated cycleways incorporated into the project design to the east of the A9(T). Signs are present along the access road denoting the presence of cyclists and the road also incorporates several passing places to allow for traffic to pass safely.

The observations that were made during the environmental site visit in August 2014 confirmed that the segregated cycleways provided as part of the project were in use by pedestrians and cyclists at the time of the visit. The pedestrian underpass, located towards the northern extent of the project, maintains access to the bus stop located on the northbound A9(T) carriageway and provides a safe route for pedestrians to access the bus services operating via the A9(T) without the need to cross the A9(T) dual carriageway itself.

Accessibility & Social Inclusion: Key Findings

Observations from the environmental mitigation site visits at both the 1YA and 3YA evaluation stages indicate that the project incorporates measures for both cyclists and pedestrians which appear to be in use.

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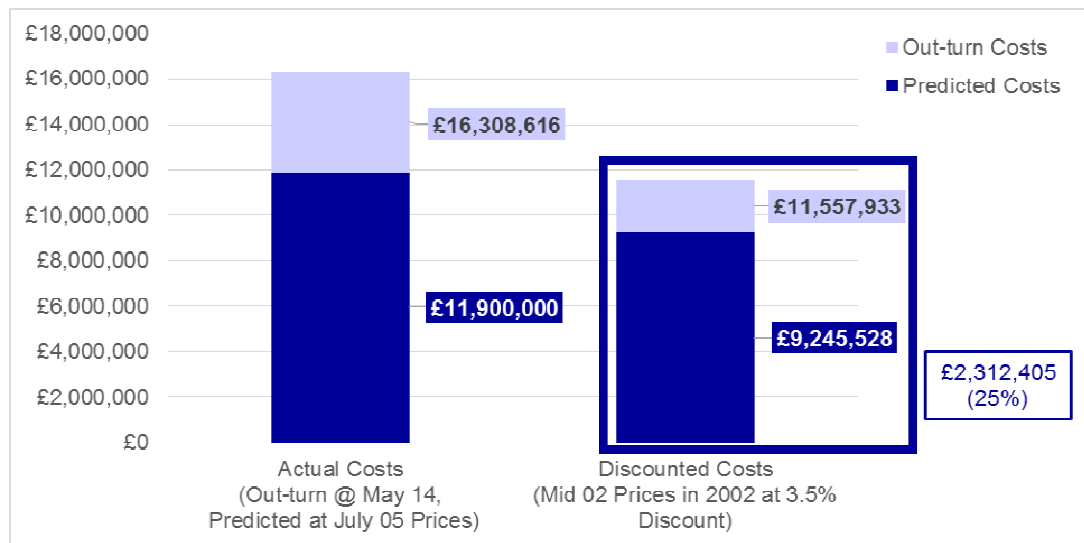
3.9 Cost to Government

Investment Costs

Comparison Between Predicted and Out-turn Costs

The out-turn and predicted project costs are shown in Figure 3.4.

Figure 3.4: Project Cost Summary



The latest comparison indicates that the current out-turn costs for the project are slightly greater than the out-turn costs at the time of the **1YA Evaluation** which may, in part, be due to lane occupation liabilities relating to the construction of the project. The current out-turn costs are approximately £2.3m (25%) greater than was predicted at the time of assessment. This compares to £2.1m (23%) higher at the 1YA Evaluation.

It should be noted, however, that the predicted costs used within the cost comparison are derived from the costs estimated at the project's pre-tender stage. Variations in actual and predicted project cost comparisons can occur due to issues identified during the tendering process.

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The project had a tender cost of approximately £15m¹ which, when discounted to a consistent mid 2002 price base, suggests a discounted cost of approximately £13.1m. This can be compared to the discounted out-turn cost, presented in Figure 3.4, of approximately £11.6m, suggesting that the project has been delivered for approximately £1.5m less than the tender cost. The project's tender cost is somewhat greater than the cost predicted at the project's pre-tender stage.

Cost to Government: Key Findings

The out-turn cost of the project was approximately £2.3m (25%) greater than was predicted at the time of the assessment. Variations in actual and predicted project cost comparisons can occur due to issues identified during the tendering process.

Based on the project's discounted tender cost of approximately £13.1m, the comparison of out-turn and tender costs suggests that the project has been delivered for approximately £1.5m less than the tender cost. The project's tender cost is somewhat greater than the cost predicted at the project's pre-tender stage.

3.10 Value for Money

Initial Indications

The economic appraisal results for the project predicted a Net Present Value (NPV) of £9.92m and Benefit to Cost Ratio (BCR) of 1.95 under the NRTF central traffic forecast scenario.

The comparisons undertaken at the **1YA Evaluation** stage indicated that the benefits are likely to have been underestimated and the cost was greater than predicted suggesting that the NPV and BCR of the project are unlikely to be as great as predicted. Based on the latest comparisons presented in Sections 3.3 and 3.7, which suggest that the benefits are likely to have been underestimated and indicate that the cost is greater than predicted, the NPV and BCR of the project are still unlikely to be as great as predicted.

Value for Money: Key Findings

The difference between predicted and actual AADT flows suggests that the economic benefits of the project can be considered to be broadly accurate.

The cost of the project is approximately £2.3m (25%) greater than was predicted at the time of assessment. This is slightly greater than at the 1YA

¹ Tender cost in 2004 / 2005 Prices

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evaluation stage. The NPV and BCR are expected to be less than forecast as a result of the variation in investment costs.

Whilst the NPV and BCR are unlikely to be as great as predicted at the time of assessment, it is judged that the project will continue to provide a benefit to road users.

3.11 Progress Towards Achieving Objectives

An indication of whether the project has achieved its objectives is based on the pre opening data available, supplemented by post opening data collected as part of the evaluation.

Indications

A summary of the performance of the project against its objectives is presented in Table 3.3.

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Table 3.3: Progress Towards Achieving Objectives

Objective	Commentary	Progress
<p>Contribute to Government safety objectives for the reduction of fatal and serious accidents of 40% by 2010.</p>	<p>One (slight) personal injury accident was recorded in the three year period following the opening of the project in comparison to one fatal and two serious accidents in the three years before opening suggesting an improvement in road safety.</p> <p>Stakeholder feedback received suggested that there had been fewer incidents for the Police to respond to following the upgrade of the junction and that it was considered that the improvement on safety was the main benefit of the project.</p>	<p>+ve</p>
<p>Achieve good value for money.</p>	<p>The economic assessment undertaken for the project indicates that the Ballinluig Junction improvements could deliver significant travel time and accident reduction benefits to road users.</p> <p>The out-turn costs were greater than the predicted project costs, however, a review of the economic assessment indicates that while the project's NPV and BCR may be lower than predicted, even with this increase the project would still have provided a benefit to road users and the project would continue to represent value for money.</p>	<p>+ve</p>
<p>Maintain through movement on A9(T).</p>	<p>The new grade separated junction on the A9(T) facilitates the through movement of traffic through the removal of vehicles turning on the mainline. As the temporary 50mph speed limit on the A9(T) within the vicinity of the junction has been removed, journey times of through traffic are likely to have reduced.</p> <p>Stakeholder feedback received indicated that the junction had helped the flow of traffic and travel times.</p>	<p>+ve</p>

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Objective	Commentary	Progress
Be able to be maintained and operated safely.	A servitude right of access is available along the surfaced track to the south of the A9(T), beyond the trunk road boundary. Whilst there are a few local issues being addressed, the junction can generally be maintained and operated safely.	+ve
Minimise disruption during construction.	<p>Controls / conditions were imposed through the contract to minimise disruption and these were monitored during construction.</p> <p>The traffic management arrangement adopted to slow traffic through the works and provide access to Ballinluig village is considered to have worked well.</p>	+ve
Incorporate measures for non-motorised users.	Several measures were incorporated for non-motorised users including a signed cycleway along the eastern access road, and dedicated cycleways and footpaths elsewhere within the project. These facilities were noted to be in use during site visits undertaken in 2010 and 2014.	+ve
Avoid impacts on environmentally designated area (SAC and SSSI).	The environmental mitigation site visits did not identify any significant impacts occurring to the SAC and SSSI, although no dedicated ecological surveys were undertaken. Cut-off lighting on the new roundabout adjacent to the River Tummel helps in minimising light affecting the interests of the designations.	+ve
Minimise environmental impact.	The design of the project has helped to minimise the environmental impact overall, and the majority of mitigation is seen to be good condition and some failed planting will need to be addressed. A recommendation is made regarding minimising the visual impacts of railway bridges and Network Rail safety barriers further in future schemes..	+ve

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Objective	Commentary	Progress
Be consistent with local planning objectives and policies.	The Local Plan relevant at the time that the project was progressed does not contain any Local Government policies specific to Ballinluig Junction.	=

- Key:
- +ve Indication(s) that objective has been / will be achieved
 - = Progress towards achievement of objective cannot be confirmed
 - Indication(s) that objective has not / will not be achieved

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3.12 Evaluation Summary

The evaluation of the A9(T) Ballinluig Junction Improvement project indicates the project can be considered to have had a localised positive impact on road safety on this section of the A9(T). Three accidents (one fatal and two serious) occurred during the period three years prior to the opening of the project in comparison to one accident (slight) during the period three years following opening of the project indicating a reduction in the number and severity of accidents occurring within the vicinity of the junction.

While the value for money of the project is likely to be less than anticipated, it is important, however, to view the project in combination with other projects previously implemented on the A9(T), such as the junction improvements at Bankfoot, the extension of the dual carriageway at Crubenmore and the strategic dualling programme of the route currently being progressed by Transport Scotland. The project is an integral part of upgrades on this strategic corridor and, overall, it is positively contributing to improving the operation of the route through improving road safety.

Appendix A: Environment

A ENVIRONMENT

This section provides details of the 3-year after evaluation undertaken for the Environment criterion in the Scottish Trunk Road Infrastructure Project Evaluations (STRIPE).

A.1 INTRODUCTION

Background

Transport Scotland has commissioned CH2M to evaluate several projects on the Scottish Trunk Road Network that were constructed and opened approximately three years ago. Part of this 'Three Year After Opening Evaluation' (3YA) comprised a review of the implementation of the projects' environmental mitigation measures.

This report presents the findings of the 3YA environmental review for the A9(T) Ballinluig scheme. The project has previously been subject to a 'One Year After Opening Evaluation' (1YA) environmental review. The findings of the 1YA environmental reviews were reported in:

- Project Evaluation Environmental Mitigation Review August 2010, Report to Transport Scotland, Halcrow Group Ltd 2010.

Environmental Review Purpose and Methodology

The purpose of the 3YA environmental review is to provide a high level review of the condition of the mitigation measures that had been implemented by the project at approximately three years after opening, and make any recommendations to improve the effectiveness of the mitigation or identify trends in the issues being observed so that Transport Scotland can implement improvements in future environmental impact assessment and project design or in the operation and maintenance of the existing projects.

Environmental Review Methodology

The methodology used for the 3YA environmental review selected relevant aspects of the STRIPE² 'Three Years After' methodology that comprised:

- A desk study review of the project objectives and 1YA environmental mitigation review to identify the likely key issues to be evaluated during the 3YA review and any questions remaining from the 1YA reviews.
- A site visit – to give an overview of the mitigation implemented and to focus observations on any issues raised by the 1YA reviews rather

² Transport Scotland Scottish Trunk Road Infrastructure Project Evaluation (STRIPE). Final Guidance August 2013.

than to repeat a visit to every feature that was confirmed as being present and in good condition in the 1YA reviews.

- A short report, setting out the key issues from the 1YA review, the observations from the site visit and comments on the condition of the environmental mitigation. The report will also identify any additional issues/mitigation requirements to improve the effectiveness of the mitigation, and identify any resultant trends in the recommendations being made.

Structure of the Report

The project objectives (including any specific environmental objectives) are provided, followed by the list of likely key environmental issues that were identified during the desk study and any questions raised by the 1YA reviews. The 3YA observations on these key issues identified in the desk study are commented upon, followed by a table of all of the mitigation proposed with details of the 3YA observations and the associated 1YA observations to aid comparison.

A summary of recommendations regarding further studies or suggestions for improving the effectiveness of the environmental mitigation is provided.

A.2 ENVIRONMENTAL FINDINGS

Project Objectives

The project involved the construction of a grade-separated junction, including two new slip roads on the western side of the A9(T) at Ballinluig and improvements to the A9(T) carriageway. The improvements enabled the removal of the temporary 50mph speed limit within the vicinity of the junction.

The objectives of the project sought to improve the operation of the route by enhancing road safety and improving movement on the A9(T) at this location. The objectives included specific regard to the environment, comprising:

- Avoid impacts on environmentally designated area (SACs and SSSIs); and
- Minimise environmental impact.

Key Issues to be Reviewed

The key issues identified during the desk study are summarised below:

- Landscape/planting, mammal fencing & culvert, SUDS ponds, cycle path.

These formed the focus of the 3YA Evaluation. Mitigation confirmed as being present during the 1YA site visit was not re-visited.

A.3 THREE-YEAR AFTER REVIEW FINDINGS

Key issues from the desk-study

During the 1YA evaluation inspection it was established that the identified mitigation had been implemented throughout the project and had been mostly successful, and this was confirmed by the 3YA visit, including the provision of ecological mitigation and the integration of many of the engineering works into the landscape when viewed from the village of Ballinluig.

Four SUDS ponds were constructed as part of the project, three on the east side of the junction and one on the west side close to the roundabout. No water was visible in three of the four ponds and only a small amount of standing water was visible in the most southerly pond, located by Inch Cottage. There were no aquatic plants within either of the two ponds located close together on the east side of the carriageway and the vegetation that is there is dominated by dock weed and thistle. This suggests that the ponds have been dry for some time, longer than anticipated for the time of year (summer) due to the lack of wetland marginal vegetation indicating regular wetting, and that similar ponds in the region, inspected at the same time of year provided evidence of healthy aquatic communities, see Figure 1 and Figure 2.



Figure 1: Dry SUDS pond dominated by dock weed



Figure 2: Dry SUDS pond with no signs of wetland vegetation

Planting near the eastern ponds is largely along the embankment, behind the mammal fence that runs parallel to the carriageway and is as per the landscape project design, comprising a mix of native species. The planting on the embankments and grass verges has established well (see Figure 3 and Figure 4) although a few empty tree guards were observed indicating that some of the planting has failed, see Figure 5.



Figure 3: Mammal fence and planting near SUDS ponds



Figure 4: View of the verges at the southern end of the project looking north.



Figure 5: Planting showing some empty tree guards

It is noted that gates were missing from the fences, see Figure 6. Whilst the lack of water eliminated the potential danger to any members of public entering the pond in the interim, the lack of gates still pose a risk.



Figure 6: Missing gate at pond

There was also minimal wetland vegetation at the isolated, furthest south eastern pond, where a small amount of standing water was visible, see Figure 7. There was no pondside planting and rather it was surrounded by well maintained grass that had been recently mown.



Figure 7: Southern pond with limited wetland vegetation, surrounded by recently mown grass

The pond on the west side of the junction below the roundabout was surrounded by a well-established mix of native trees, dominated by rowan, see Figure 8 and Figure 9. Although the pond is not easily visible from the road, the red berries of the rowan are both visually appealing and provide a good food source for birds.



Figure 8: Embankment planting by the western pond



Figure 9: Planting around pond on west of project

Planting throughout the rest of the project is establishing well, with a mix of native tree species. This planting helps to screen the new structures constructed as part of the project and the wing walls of the two rail bridges. These structures, though necessary, are not sensitive to the rural landscape although the planting goes some way to softening and mitigating the effect, see Figure 10, Figure 11 and Figure 12. The reduction of the visual impact of the new bridge structures can be expected to further increase as the planting becomes thicker and taller.

The galvanised steel parapets on the bridges over the railway line, required to meet Network Rail's health and safety policy, do still remain very prominent and do not sit well in this rural setting, see Figure 11 and Figure 12. The previous removal of vegetation alongside the railway line by Network Rail results in further visual impacts in the short to medium term whilst the new vegetation establishes, but this will soften the appearance too when re-established. A mobile phone mast adjacent to the bridges adds a further man-made visual feature within the area.



Figure 10: View of the bridges and planting from the northern end of project



Figure 11: View of bridge over railway and planting around concrete bridge walls



Figure 12: Planting and bridge walls

Ragwort was found in small patches throughout the project. Ragwort poisoning can be fatal to horses and damaging to other livestock. If not already part of an injurious weed control programme, the area around the project should be considered for inclusion in future programming, to ensure against spread to neighbouring fields and farms where it could present a problem to livestock.

The mammal fence was inspected and found to be in good condition, and meets the specification given in the Scheme Assessment Report, following SNH guidance³, see Figure 13. The mammal culvert (Figure 14) was also inspected and whilst there were no definite signs of use there was a trail leading to the culvert that may have been made by a large mammal such as an otter or badger.

³ <http://www.snh.org.uk/publications/on-line/wildlife/otters/mitigation.asp>



Figure 13: Mammal fence



Figure 14: Mammal culvert (right hand structure) and water-crossing

To the east of the A9, provision has been made for cyclists with the local access road and segregated cycleways incorporated into the project design, which was in use by pedestrians and cyclists at the time of the visit. Signs are present along the access road denoting the presence of cyclists and the road also incorporates several passing places to allow for local traffic to pass safely, see Figure 15 and Figure 16.



Figure 15: Cycle network signage



Figure 16: Cycle provision incorporated into project

Any new issues identified

As noted, the presence of injurious weeds (common ragwort) was observed during the site visit.

Observed traffic flows are approximately 2% higher than forecast flows, and therefore the environmental assessment's forecast that noise and local air quality would not be significant issues were appropriate.

Mitigation measures – detailed observations

An update of the observations relating to individual mitigation measures provided in the 1YA report using the 3YA observations can be found in Table A1.

Recommendations

- The apparent lack of water entering the SUDS ponds may need to be investigated, and safety checked due to the gaps in the fence from the missing gates.
- The growth of planting in the project, especially around the bridge structures, will continue to soften the visual impact of the project further and should be maintained carefully. Where tree planting has failed, empty tubes and redundant posts should be removed and consideration should be given to replacing the lost trees.
- Transport Scotland may wish to consider monitoring the use of the mammal underpasses on various projects to establish the long term effectiveness compared with the expectations set by the environmental impact assessment. For example, this could consist of installing sand boxes at tunnel entrances or motion-operated cameras, reviewing road-kill records and possibly repeating the pre-project mammal surveys within the vicinity of the projects.
- The presence of ragwort across the length of the project could spread to neighbouring fields where equine and other livestock may be held. An assessment should be made to determine whether the risk to grazing animals is high, medium or low and any appropriate action taken, see the Scottish Government's Guidance on How to Prevent the Spread of Ragwort, published 2008.

The issues that have been identified as part of the environmental evaluation process have been provided to Transport Scotland's operating companies for actioning.

Table A1: Implementation of Mitigation Proposed in the Scheme Assessment Report and Observations at 1YA and 3YA Opening

Mitigation Measure Proposed in the Scheme Assessment Report	1 YA Comments	3 YA Comments
Ecology and Nature Conservation		
An otter fence to be placed on the south side of the road extending 50m to either side of the Inch Farm Burn.	Fencing is present and is in good condition.	Fencing is present and is in good condition. (Meets specification from Scheme Assessment Report (follows SNH guidance, rather than DMRB.)
It is expected that the otter culvert will be placed at the pond and stream complex, adjacent to the A9, immediately north of Inch Farm	Culvert is present at this site and provision is made for otters to cross the A9.	Provision for mammals in place with separate mammal culvert. Possible mammal pathways leading up to culvert suggests it may be in use.
Lighting at the proposed roundabout, to be designed to ensure that it does not shine out into the wider landscape, and in particular onto the riverbank of the River Tummel.	The cut-off lighting faces away from the River Tummel, however the lighting columns stand out against the surrounding landscape and are clearly visible from the village of Ballinluig.	The cut-off lighting faces away from the River Tummel.
Landscape		
New retaining wall, headlight barrier and new bridges: the use of high quality sympathetic facing materials to complement the existing built features in the area and to improve the appearance of the scheme.	Headlight barriers are implemented throughout the scheme, they are well incorporated adjacent to the town of Ballinluig. The retaining walls do stand-out throughout the scheme and it is recommended that further work is done in the future to try and integrate them further into future schemes – e.g.	Headlight barriers are implemented throughout the project. Planting is beginning to screen bridge walls, which should improve over time. The removal of vegetation alongside the railway line by Network Rail results in further visual impacts in the short to medium term whilst the new vegetation

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Environment

Mitigation Measure Proposed in the Scheme Assessment Report	1 YA Comments	3 YA Comments
	<p>using more sympathetic materials.</p> <p>The safety barriers on the bridge over the railway do stand out however, this is to accommodate Network Rail's Health and Safety policy and cannot be avoided, however attempts should be made to integrate these features into the existing landscape more in future schemes.</p>	<p>establishes, but this will help to soften the appearance when re-established.</p> <p>The cumulative impacts of vegetation removal by a third party should be considered in future scheme impact assessments.</p> <p>The galvanised steel bridge parapet is a requirement of Network Rail's Health and Safety policy but is very prominent in this rural setting.</p>
<p>Planting (native species and shrubs) to soften and to set the new roads and roundabout into the landscape and to link with the existing landscape pattern. Reseeding of temporary works compounds. New signage should be grouped on minimum number of poles, and new lighting should be designed to minimise light pollution. All retaining structure materials to be of high quality.</p>	<p>Confident that the landscape pattern and patchwork of vegetation is reflected in the scheme, the planting is not establishing particularly well at the present time however it is too early to tell how the planting will end up.</p> <p>New planting alongside the A9 will help to further integrate the scheme into the landscape and screen the new bridges from Ballinluig, however the removal of vegetation alongside the railway line by Network Rail has resulted in increased visual impacts in the short to medium term whilst the new vegetation establishes.</p>	<p>Planting is establishing well across the scheme and fits within the surrounding landscape. However, the galvanised steel parapets on the bridges over the railway line to meet Network Rail's health and safety policy remain very prominent and do not sit well in this rural setting. The vegetation alongside the railway line has not yet grown back, but should help to soften the impact in the medium term.</p> <p>Where tree planting has failed, empty tubes and redundant posts should be removed and consideration should be given to replacing the lost trees.</p>

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Mitigation Measure Proposed in the Scheme Assessment Report	1 YA Comments	3 YA Comments
<i>Pedestrians, cyclists and community effects</i>		
Some existing access to be closed and new access tracks to be provided.	Access provided.	Access provided.
Off-road Cycleway /Footpath (from A827 east of Dalabno Bridge to the Cuil-an-Duin / Ballachallan A9 Access Road)	Cyclist Path signs are present along the access road both where the cycleway is segregated and on the access road itself, passing places are also integrated into the access road to allow for safe passing.	Complete
<i>Water quality and drainage</i>		
New culvert under access road to the east of the A9, culvert to be extended to the west of the A9.	Culvert has been implemented and appears to be operating well – no provision for mammals as per the scheme design.	Complete.
Four new attenuation ponds to be implemented.	Ponds implemented.	Ponds are mostly dry with little to no wetland vegetation.

Appendix B: Methodology and Data Sources

B METHODOLOGY AND DATA SOURCES

B.1 OVERVIEW

The project presented in this report has been evaluated against their objectives and the following criteria, where applicable, to support the evaluation:

- Environment;
- Safety;
- Economy;
- Integration;
- Accessibility & Social Inclusion;
- Costs to Government; and
- Value for Money.

As the evaluation focuses on impacts relating to the project's objectives, evaluations against all of the above criteria may not be undertaken for all projects. The evaluation is supported by the consideration of network traffic indicators, including traffic volumes and travel times, as presented in the following section.

B.2 NETWORK TRAFFIC INDICATORS

Traffic Volumes

Comparison Between Pre and Post Opening Traffic Flows

A comparison of traffic flows pre and post opening has been undertaken for all projects to provide an indication of the impact that the project has had on traffic volumes. The amount of traffic data presented is dependent upon the complexity of the project. The comparison can also serve as a proxy for the effect that the project has had on noise and air quality.

Comparison Between Predicted and Actual Traffic Flows

A comparison of predicted and actual opening year traffic flows has been undertaken for all projects to confirm the accuracy of predictions during the project's preparation. The comparison can also serve as a proxy for whether the predicted benefits of the project are likely to be realised.

Depending on the nature of the traffic modelling undertaken to assess the project, the predicted traffic flow is either derived by:

- factoring the base year or the predicted opening year, design network flows to the actual opening year using National Road Traffic Forecast (NRTF) growth factors; or
- extrapolating from, or interpolating between, the modelled assessment year, design network flows.

The difference between the actual traffic flow and the predictions has been calculated and expressed as a percentage of the actual flow. A threshold of +/-20% is generally accepted by Transport Scotland as being a reasonable range for future year forecast traffic flow comparisons.

The amount of traffic data presented is dependent upon the complexity of the project. The comparison can also serve as a proxy for the likely impact of the project on noise and air quality.

Data Sources

Predicted Traffic Flows	Obtained/derived from the traffic/economic modelling undertaken to support the pre-tender economic assessment.
Actual Traffic Flows	Obtained from automatic traffic counters in the vicinity of the project/study area.

Travel Times

Change in Travel Times

Based on the evaluation of other projects with a comparable standard of carriageway for which pre and post opening journey time data is available, supported by anecdotal evidence where available.

Comparison Between Pre and Post Opening Travel Times

A comparison between pre and post opening travel times has been carried out for projects where the change in travel times cannot be judged based on other projects of a similar nature for which an evaluation has been undertaken.

Comparison Between Predicted and Actual Travel Times

A comparison between predicted and actual opening travel times has been carried out for projects where predicted and post opening travel time information is readily available.

Data Sources

Change in Travel Times	Comment on likely impact on mainline travel time in the absence of pre and post opening information
Stakeholder Feedback	Obtained from Police Scotland.

B.3 ENVIRONMENTAL

Mitigation Measures

A review of the environmental mitigation measures implemented during construction has been undertaken for all projects to establish whether or not the measures proposed during the project's preparation have been introduced and to provide comment on their success. The mitigation measures implemented were confirmed through site visits.

Data Sources

Proposed Mitigation Measures	Presented in the Scheme Assessment Report produced during the project's preparation.
Implemented Mitigation Measures	Confirmed through site visit.

Noise and Air Quality

A review of noise and air quality has not been undertaken for the project as no significant impacts on noise and air quality were expected.

B.4 SAFETY

Accidents

Comparison Between Pre and Post Opening Personal Injury Accident Numbers

A comparison of the personal injury accident numbers pre and post opening has been undertaken for all projects to provide an early indication of whether the project is operating safely.

The number of personal injury accidents for the 3 years within the vicinity of the project prior to opening has been compared with the observed number of personal injury accidents for the project in the three year period after opening.

It is important to realise that road infrastructure projects normally take a minimum of 5 to 7 years to plan prior to the commencement of construction. Many proposed road projects are derived from safety concerns such as fatal and serious accidents and often, these are treated in terms of Accident Investigation and Prevention work prior to planning the permanent solution. The comparison between 3 year pre and post opening accidents, therefore, only demonstrate the minimum road safety improvement derived from the project.

Where the influence of a trunk road improvement project has a significant impact on the local road network, it may be appropriate to extend the scope of the accident analysis.

Road Safety Audits

Road Safety Audit (RSA) reports have been reviewed for the project, where available, to confirm whether there is any evidence that the project is not operating safely and where recommendations have been made for ameliorative measures, if appropriate.

Data Sources

Personal Injury Accident Numbers	Obtained from the STATS19 data collection system.
Safety Issues	Detailed within RSA reports produced following audits carried out 3 years after project opening.

B.5 ECONOMY

Transport Economic Efficiency

A comparison between predicted and actual traffic flows and/or travel times has been undertaken for all projects as a proxy for whether the predicted benefits of the project are likely to be realised.

A comparison which returns a positive traffic flow difference in an uncongested situation indicates that the economic benefits of the project may have been over predicted as fewer vehicles will actually accrue journey time savings than predicted. Similarly, the economic benefits of a project may also be over predicted where actual travel times are greater (i.e. speeds lower) than predicted.

Conversely, where the comparison returns a negative traffic flow difference or actual travel times are less (i.e. speeds higher) than predicted, the economic benefits of the project may have been under predicted.

B.6 INTEGRATION

Commentary on Policy Integration is provided for projects that have specific objectives relating to the Integration criterion.

B.7 ACCESSIBILITY & SOCIAL INCLUSION

Commentary on Community Accessibility has been provided for projects that have specific objectives relating to the Accessibility & Social Inclusion criterion, supported by anecdotal evidence where available.

Data Sources

Provision for Non-motorised Users and Cycling Provisions	Confirmed through site visits.
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B.8 COSTS TO GOVERNMENT

Investment Costs

Comparison Between Predicted and Out-turn Costs

A comparison between predicted and out-turn costs has been undertaken for all projects to confirm the accuracy of predictions during the pre-tender stage and support the evaluation of value for money.

The project cost predicted during the pre-tender stage has been used in the evaluation as it is at this stage that the decision is taken on whether or not to proceed with the project.

One of the features of the progressive analysis of projects is that the economic assessment is undertaken at each stage based on the return on future investment. This means that project costs incurred prior to the pre-tender economic assessment, which are already spent and cannot be recovered (whether or not the project goes ahead) are excluded from the overall project costs input to the economic assessment. As such, only out-turn costs incurred after the pre-tender economic assessment have been included in the comparison.

Adjustments for Retail Price Indices and discount rates to both the predicted and out-turn costs have been made, taking expenditure by year into account, to convert the figures to a common 'present value year' for prices and values – either 1998 or 2002 depending on the 'present value year' used in the pre-tender economic assessment.

Data Sources

Predicted Project Costs	Obtained from the pre-tender economic assessment undertaken during the project's preparation.
Out-turn Costs	Obtained from out-turn cost records.

B.9 VALUE FOR MONEY

Initial Indications

Based on the evaluation of economic benefits and project costs outlined in sections 3.6 and 3.8 respectively, a judgement in terms of the potential impact on the projects' value for money has been made.

The value for money of a project is considered to be greater than predicted where the economic benefits have been under predicted and the project costs over predicted. Conversely, the value for money of a project is considered to be lower than predicted where the economic benefits have been over predicted and the project costs under predicted.

Where both the economic benefits and project cost have been under predicted or over predicted, a judgement has been made with regards to the likely overall impact on value for money.

Data Sources

Predicted NPV and BCR	Obtained from the pre-tender economic assessment undertaken during the project's preparation.
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B.10 ACHIEVEMENT OF OBJECTIVES

Initial Indications

The evaluation includes an indication of how the project is progressing towards achieving its objectives. Where specific indicators to measure the project's performance against its objectives have not been developed, an indication of how the project is progressing towards achieving its objectives is based on the pre opening data available, supplemented by post opening data collected as part of the evaluation.

Data Sources

Objectives	Confirmed from reported Scheme Assessment Reports or Route Action Plan, where applicable.
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