

2 Scheme Description

2.1 Introduction

The purpose of this chapter is to describe the Scheme objectives, the Scheme development processes and the Scheme design.

The section of the A96 identified for this study is approximately 1.2km in length. It falls from Lhanbryde to a low point, 200m east of the Threapland Garden Centre access, at Loch Oire road junction. The road then climbs as it heads east towards Fochabers while following a right hand curve through the Threapland Junction. This section of the A96 is shown on the Location Plan in Figure 1.1.

2.2 Scheme Objectives

The high level of traffic using the A96, combined with the sub-standard road geometry at Threapland, has led to a poor accident record with 29 accidents, including one fatality, recorded in the past 10 years. The primary aim of the Scheme is to reduce the number and severity of accidents within the study area. It is apparent from accident statistics that a substantial reduction could be achieved by closing strategic junctions on the A96, improving driver sightlines and upgrading certain junction layouts to decrease the possibility of conflicting vehicle movements. On achieving the primary aim it will naturally follow that all other scheme objectives will be satisfied.

The Design of the Scheme is in accordance with the Government's appraisal criteria for the assessment of trunk road schemes, namely, to take account of integration, economy, safety, environmental impact and accessibility. The Objectives set out in the Scheme Brief are as follows:

Safety

Reduce accidents on the A96 at Threapland by improving the standard of the junction and its approaches at a reasonable cost without incurring undue delay to road users.

Accessibility

Wherever practicable, incorporate measures for non-motorised users. In particular, cycling proposals shall be designed in accordance with 'Trunk Road Cycling Initiative' that supports the Sustrans Millennium National Cycle Network.

Economy

Maintain the asset value of the A96 route and achieve good value for money for both taxpayers and transport users.

Environmental Impact

Mitigate the environmental impact of the new works where practicable.

Integration

To take cognisance of local objectives for the Scheme, determined through review of the Moray Council (as Local Authority) Structure Plan, Local Plan and Local Transport Strategy.

2.3 Scheme Selection

To date, the Scheme has been subject to a:

- Scottish Transport Appraisal Guidance (STAG) Appraisal to examine outline improvement strategies;
- Design Manual for Roads and Bridges (DMRB) Stage 2 Scheme Options Assessment;
- Value Review to identify a Preferred Scheme;
- Risk Analysis to identify potential risks and mitigate these where possible; and
- Stage 1 Road Safety Audit to identify any road safety issues.

2.3.1 STAG

Scottish Transport Appraisal Guidance (STAG) is a document to aid transport planners and decision-makers in the development of transport policies, plans, programmes and projects. The structure and breadth of the Guidance make it suitable for application across a wide spectrum of transport planning areas.

STAG is a two-part appraisal (Part 1 and Part 2) process intended to minimise wasted effort by early testing of options against the Government Objectives prior to more detailed design analysis of options that demonstrate an ability to address the objectives of the scheme. Part 1 is the initial appraisal and broad assessment of impacts, designed to decide whether a proposal meets the planning objectives, fits with relevant transport, land use and other policies and hence should proceed to Part 2. Part 2 is the detailed appraisal against the Government's Objectives outlined above in Section 2.2.

The application of STAG to road schemes set out in Appendix D7 of the Guidance states that 'All major road projects are required to be subject to full STAG Appraisal'. The Guidance also states 'for smaller road schemes estimated to cost less than £5M where a multi-modal solution is evidently and demonstrably not applicable, a full STAG Appraisal may not be appropriate'. The A96 Threapland Junction Improvement scheme falls into this category and it was agreed at the Inception Workshop that it would be treated as such.

Since the location of the Scheme had been decided, and most of the preliminary engineering, environmental, traffic and economic assessments had already been carried out under the A96 Route Action Plan (RAP) Study, Scott Wilson and Transport Scotland agreed that the requirements for a Part 1 STAG appraisal had effectively been covered. Consequently it was confirmed that a review of STAG was all that was required.

The STAG review concluded that two options, online and offline, fulfil the scheme objectives and should be taken forward for detailed investigation and assessment.

2.3.2 DMRB Stage 2 Scheme Assessment

The two scheme options were developed, for the online and offline strategy, to a sufficient level of design for assessment purposes to allow comparisons to be made in order to identify a preferred scheme. This assessment was carried out in accordance with the requirements for Stage 2 Assessment given in the Design Manual for Roads and Bridges, (DMRB) Standard TD 37, 'Scheme Assessment Reporting'.

The scheme options, methodology and findings of the Stage 2 Assessment are explained in the Stage 2 Assessment Report (S100630/REP/16).

Option 1 – 'Online'

This option incorporates improvements to the vertical geometry of the A96 with substandard crest and sags in the carriageway being removed thus increasing stopping sight distances through the junction. The current horizontal alignment will remain unaltered.

The existing Threapland junction arrangement would be upgraded to comply with current DMRB standards, with the south leg junction moving 85m west of the existing north junction in order to create a more satisfactory and safer right-left stagger. The existing junctions at Loch Oire Road and the current Threapland junction south leg will be stopped up. Further junction improvements will be gained with the introduction of a ghost island on the A96, to assist right turning traffic movements and reduce vehicle conflicts with mainline traffic. Junction visibility and stopping sight distances will be vastly improved by an increase in verge width and cutting back of side slopes with the existing carriageway cross section being amended to meet the standards of the single S2 carriageway.

Cycle provisions will be made available through the use of Loch Oire road and associated cyclepaths.

Option 2 – 'Offline'

This option involves improving vertical alignments and, unlike Option 1, the horizontal alignment of the A96 along with verge widening to provide desirable stopping sight distances. As with Option 1 the junction improvements would remain the same, incorporating a ghost island, with the only significant difference in layout being the horizontal curvature at Threapland junction increasing from a radius of 615m to a desirable minimum of 1020m. This increase in the horizontal radius will have the effect of repositioning the mainline of the A96 further south. This requires more land take than the online option and repositions the road closer to residential properties as well as the Site of Special Scientific Interest (SSSI), Loch Oire. A significant number of mature trees in the area will be affected with the need to remove a part of a woodland area to the south of the existing A96 carriageway.

The Loch Oire road junction on the A96 would be stopped up with access being provided for cyclists and pedestrians.

The Offline Option evaluated in the Stage 2 assessment is illustrated in Figure 1.4

2.3.3 Assessment Findings

The Stage 2 Assessment concluded that Option 1 – Online option, was preferred overall in terms of engineering, operation, traffic, economy and environmental issues. This provides the best value for money, with the capital cost of the online option being significantly less than that of the Offline option, while also addressing all of the Scheme Objectives.

Although neither option has significant environmental impacts, the Online option will have marginally less due to the online nature of the proposals, as the Offline option would be in closer proximity to residential properties and Loch Oire SSSI.

As part of the DMRB Stage 2 process a Traffic and Economic assessment was undertaken, this concluded that the online option had a higher Benefit to Cost Ratio (BCR). This higher value is more satisfactory as this will provide the greatest number of user benefits with regards to scheme cost.

With both options addressing all the key objectives and being comparable from an engineering point of view the reasoning behind the decision to select the online option was primarily due to the benefits of lower capital cost, higher BCR and a slightly reduced environmental impact.

2.3.4 Value Review

In November 2006 the proposed options were evaluated at a Value Management Workshop attended by representatives of Transport Scotland and Scott Wilson. The workshop's purpose was to verify scheme objectives were being achieved, reach agreement on the preferred option and assess the risks in line with the requirements of Transport Scotland's Value for Money Manual. An independent consultant, having had no previous involvement in the project, facilitated the proceedings.

All workshop attendees were provided with a comprehensive information pack summarising the findings of the Stage 2 Assessment. An appraisal scoring system was developed and agreed based on the objectives defined as being applicable to the project. Each objective was weighted in terms of its particular relevance. Following open discussion the attendees then agreed relevant scores allowing the Options to be directly compared quantitatively.

Using this process Option 1, the Online Option, emerged as the preferred option to be taken forward to Stage 3 Assessment.

The key reasons behind the decision to adopt this arrangement were as follows: -

- The improved online option was found to score best in terms of the Value for Money process outlined in the Value for Money Manual. After NESA (Network Evaluation from Surveys and Assignments) analysis this option scored a high Benefit to Cost Ratio (BCR) with a value of 3.94 compared to that of 3.03 for the 'offline' option. The Total Scheme cost Estimate for the 'online' option is also more than £1m less than that of the 'offline' option.
- In terms of Environment the 'online' option will create less risk to Loch Oire SSSI and the surrounding watercourses and also has little chance of uncovering archaeological artefacts due to less land take.
- The option fulfils the Primary aim of reducing accidents by improving safety at Threapland junction.

2.3.4 Selection of Preferred Option

In August 2007 Scott Wilson reported their conclusions to Transport Scotland, at a presentation to the key Investment Decision Makers, recommending that the online option be developed as the preferred scheme layout. This recommendation was based on the overall layout, the economic benefits along with the good safety and environmental advantages.

Transport Scotland accepted this recommendation and subsequently Scott Wilson was then instructed to develop the preferred scheme towards preparation of draft orders.

2.3.5 Scheme Development

Consultations

Consultations have taken place, throughout the entire Scheme development and design process, with residents, landowners, local businesses, bus companies and local community groups in order to gather opinions and any possible recommendations with regards to operation of the Scheme. Where practicable, amendments have been made to the Scheme design to accommodate any relevant issues that have been raised during these consultations.

Project Risk Analysis & Management Workshop

As part of the continued development, a workshop was convened in November 2007 to undertake a risk analysis and management review of the proposed Scheme. The Workshop objectives were to present the preferred scheme, identifying the scope, engineering and environmental constraints, capital cost breakdown and overall programme in order to undertake a:

- Structured identification and assessment of potential risks associated with delivery of the scheme.
- Initial quantified risk assessment (QRA) in terms of probability and cost impact range (minimum, most likely, maximum) so that the risks can be analysed in order to compare against the current risk allowance for the scheme.
- Review these risks to assess the potential for mitigation and allocation between Employer and Contractor
- Confirm any actions arising and agree a way forward.

As a result of this Workshop those risks that were considered to be high or medium were reviewed to ascertain what management measures could be undertaken to reduce the likelihood or impact of the risk. Consideration was given to: avoidance, mitigation and transference to the appointed main contractor. Actions were then identified for the appropriate risk management activity.

Stage 1 Road Safety Audit

A Stage 1 Road Safety Audit was undertaken in accordance with HD19/03 'Road Safety Audit' from the Design Manual for Roads and Bridges (DMRB). The audit took into account the Institution of Highways and Transportation (IHT) document 'Collision Prevention and Reduction' (published June 2007) in which it is stated "...auditors and designers can work together to deliver safe, innovative schemes...by auditors giving careful thought to the

assessment and management of risk...” Road Safety Audits are intended to ensure that operational road safety experience is applied during the design and construction process in order that the number and severity of accidents is kept to a minimum.

This audit was essential, as it would identify any increase in land requirements necessary for any road safety issues to be implemented before draft Orders were published.

The subsequent Road Safety Audit Report (S100630/REP/29) describes the aspects of the Scheme that gave rise to road safety concerns and, where possible, suggested modifications that would improve the road safety of the resultant scheme. The risk associated with each identified problem (i.e. the hazard) was assessed in terms of the potential severity of injury and the likelihood of occurrence, both on a scale of low, medium or high. The results were then incorporated into the Scheme design.

It is now this preferred scheme that is the subject of this Environmental Statement.

2.4 The Scheme

The recommended scheme increases safety at Threapland junction by upgrading the junction itself, improving driver visibility by widening verges and cutting back slopes, stopping up particular junctions and improving facilities for non-motorised users. This introduces safer traffic movements through the junction and its approaches and increases safety for all road users.

2.4.1 A96 Carriageway

The existing A96 will be widened to accommodate 1m hardstrips on both sides; along with a minimum verge of 3.5m and will provide a DMRB standard S2 carriageway for a distance of approximately 1.2km. The carriageway will be further widened, locally at Threapland junction, in order to provide ghost island markings enabling the provision of right turning lanes for vehicles travelling in both directions. The substandard sag to the east of the garden centre will be removed by raising the carriageway with visibility further increased with the removal of vegetation and the cutting back of slopes where necessary. The horizontal alignment of the road will be unaffected. A substandard crest to the east of Threapland junction will be upgraded to provide a crest conforming to current standards. This will lead to improved stopping sight distances throughout the junction approaches and hence further increase driver safety.

2.4.2 Threapland Junction

The north leg of Threapland junction will be upgraded, locally at its junction with the A96, to comply with current DMRB standards.

The existing south leg will be stopped up with a new south leg repositioned to the west of the north leg providing a more satisfactory right-left stagger. There is currently no street lighting in the proximity of the junction and it is not deemed necessary to provide this.

2.4.3 Loch Oire Road

The existing access to Loch Oire Road within the Scheme will be stopped up. This will again improve safety by eliminating possible vehicle conflicts at this junction. Traffic will be required to use the upgraded Threapland junction to access Loch Oire Road.

2.4.4 Non Motorised Users

As part of ongoing scheme design and development, provisions for cyclists and pedestrians have been enhanced since the DMRB Stage 2 Assessment Process. These involve the provision of a shared cyclepath/footpath on both sides of the A96 carriageway. An uncontrolled crossing facility will also be provided to enable pedestrians and cyclists to cross the A96 carriageway more safely.

2.4.5 Sustainable Drainage Scheme (SuDS)

Although there was no specific drainage system sufficiently developed during the Stage 2 scheme assessment process it was recognised that any proposed drainage system should take into account best practice SuDS.

A SuDS system was incorporated into the proposals during the early part of the Stage 3 process. This drainage system consists of filter drains on appropriate sides of the A96 and associated side roads and toes of embankments.

The surface water received by this drainage system will collect in a retention pond to be constructed on the north side of the A96 offering a further level of treatment before outfalling into the existing Loch Oire outfall drainage ditch. These drainage details can be seen in Figure 2.1.

2.4.6 Construction

The main activities to be carried out during construction are as follows:

Works by Statutory Undertakers

Several public utilities are affected by these proposals and protection or diversion of apparatus is required in order for the works to be constructed. These works are to be completed prior to the start of the main contract works. As existing public utilities are situated in the existing Loch Oire Road and the Threapland junction south leg, maintenance access will be preserved.

Site clearance

This involves clearance of verges and any land affected by the works. This will mainly include clearance of gorse scrub, hedges, trees and existing post and wire fences.

Provision of Temporary Site Compound

A site compound will be required for the works to provide welfare facilities and offices for the contractor and engineers on site. The location for this compound will be confirmed by the appointed Contractor prior to commencement of works.

Earthworks

Topsoil stripping and bulk earthworks are required. The main earthworks required are the cutting back of existing ground to provide a minimum of 3.5m verges, provision of sufficient visibility at Threapland junction and also for the construction of embankments, particularly where the carriageway is to be raised. Cuttings will be profiled at 1 in 3 to minimise the need for soil stabilisation. Where possible material excavated on site will be reused on site in areas of fill.

Drainage

As mentioned previously a SuDS compliant drainage system is to be incorporated with a retention pond constructed to the north of the A96 and west of Threapland junction. This will further enhance the local aesthetics by providing a natural looking environmental feature.

Roadworks

Disruption during the roadworks will be kept to a minimum. Lane closures and single way working will be required. A temporary carriageway to the north of the A96 carriageway will be provided to safely re-route traffic during removal of the existing substandard sag which involves a rise in existing carriageway level to a maximum of approximately 2.5m. Access to Threapland Garden centre and local properties will be maintained at all times with local diversions of traffic positively discouraged.

Landscaping and ecology

Tree and hedge planting will take place as part of the works as well as any necessary environmental mitigation required, including that related to protected species.

Construction is currently proposed to commence in mid-2009, subject to the statutory processes, and is due to last eight months. After the substantial completion of the works the standard one-year period of maintenance will be observed by the main contractor, after which maintenance will be passed on to the relevant authorities.