

Environmental Statement

2. SCHEME DESCRIPTION

2.1 Introduction

The purpose of this chapter is to describe the Scheme Objectives, the Scheme development process and the Scheme design.

The route corridor identified for the study runs from approximately 500m south west of Dutch House Roundabout to approximately 500m north east of Bogend Toll and is shown on Figure 1.1 – Location Plan. The corridor spans the A77 by 500m either side of the road, and includes access to the Pow and Dow's Burns along the length of the corridor and to Coodham Lake and Woods.

2.2 Scheme Objectives

The main objective of the Scheme is to reduce the number and severity of accidents within the study area. It is apparent from the accident statistics that a substantial reduction could be achieved by closing the central reserve openings, providing grade separated junctions at selected locations and closing many of the remaining junctions and accesses onto the A77 to remove opportunities for conflicting vehicle movements.

The Design of the Scheme is to be 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. Accordingly, the Objectives set out in the Scheme Brief are as follows, nested in the five main objectives:

2.2.1 Safety

- Reduce accidents on the A77 between Dutch House Roundabout and Spittalhill Interchange at reasonable cost, without incurring undue delay to road users;

2.2.2 Accessibility

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

2.2.3 Economy

- Maintain the asset value of the A77 route;
- Achieve good value for money for both taxpayers and transport users: and

2.2.4 Environmental Impact

- Mitigate the environmental impact of the works where possible.

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In addition, local objectives for the Scheme have been determined through review of the South Ayrshire Council (as Local Authority) Structure Plan, Local Plan and Local Transport Strategy:

2.2.5 Integration

- To take cognisance of current planning strategies, potential development opportunities within the A77 corridor and the effects of any additional residential development planned adjacent to the Scheme corridor;

2.2.6 Accessibility

- To work in partnership with the needs of public transport and public transport operators to reduce operating costs and increase passenger journeys in line with current South Ayrshire targets; and

2.2.7 Environmental Impact

- To address the needs of local residents and to minimise disruption and inconvenience to those residents and businesses located within the vicinity.

2.3 Scheme Selection

To date, the Scheme has been through an initial STAG Part 1 Appraisal process to examine outline improvement strategies, a DMRB Stage 2 Scheme Options Assessment and subsequent Value Review and Scheme Review to identify a Preferred Scheme.

2.3.1 STAG Part 1 Appraisal

South Ayrshire Council and their predecessors, Clyde Local Authority Consortium and Strathclyde Regional Council, had previously undertaken a significant amount of assessment work on this section of the A77. Prior to the DMRB Stage 2 Assessment, a STAG (Scottish Transport Appraisal Guidance) Part 1 Appraisal was carried out to review and summarise the concepts identified in the various previous studies and these, and other concepts, were examined against the Scheme Objectives in order to recommend those worthy to be taken forward to the Stage 2 Assessment. Eight strategies were generated and appraised, namely:

- Do nothing;
- Do minimum – closure of central reserve gaps;
- New local collector/distributor road between Spittalhill and Dutch House and removal of all junctions with the A77;
- At-grade roundabout(s) on the A77;
- Combination of at-grade roundabout and grade separation;
- Discrete grade separation of existing major junctions, with minor junctions and accesses retained;
- Discrete grade separation of existing junctions plus associated link roads, with majority of accesses removed; and

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- Linked grade separated junctions with improved local road network, with majority of accesses removed.

The Appraisal found that two strategies – Discrete Grade Separation and Linked Grade Separation - could achieve the Scheme Objectives and it was recommended that these be taken forward for more detailed investigation and assessment.

2.3.2 DMRB Stage 2 Scheme Assessment

Two Scheme Options were developed for the Discrete Grade Separation and the Linked Grade Separation strategies to a sufficient level of design for assessment purposes, to allow comparison to be made between the two strategies, so that a Preferred Scheme could be identified. The 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 Options and the methodology and findings of the Stage 2 Assessment are described in full in the Scheme Options Assessment Report, Part 1 – Engineering, Traffic and Economic Assessment and Part 2 – Environmental Assessment. The indicative Scheme Options are shown in Figure 2.1 – Discrete Grade Separation and Figure 2.2 – Linked Grade Separation respectively.

Scheme Option 1 – Discrete Grade Separation

Option 1 essentially comprised the closure of all the central reserve openings, the construction or improvement of three significant junctions plus the provision of associated new local link roads to allow the closure of the majority of existing direct accesses. A new full movement compact grade separated junction at Symington Road South replaced the two existing Symington Road North and South junctions. Similarly, a new full movement compact grade separated junction improved the existing at-grade junction at Bogend Toll, while the existing full movement junction with the C138 Underwood side road was replaced with a 'left in/left out' priority junction on the southbound carriageway of the A77. This Option resulted in the concentration of most turning traffic onto the Underwood, Symington and Bogend Toll junctions. The new discrete Link Roads provided to replace the closed direct accesses were not through routes but simply acted to connect properties to the local road network, which in turn fed into the grade separated junctions.

Scheme Option 2 – Linked Grade Separation

As for Option 1, Option 2 comprised the closure of all the central reserve openings, the grade separation of existing junctions plus the provision of associated new local link roads and the closure of the majority of existing direct accesses. The essential difference was that Option 2 combined the grade separation of the Underwood and Bogend Toll junctions with significant improvements and additions to the local road network to create a loop linking the Underwood junction through Symington to the Bogend Toll junction. The two existing Symington Road North and South junctions were closed. In addition to the benefits provided by Option 1, Option 2 created an alternative route between Underwood Junction and Bogend Toll to segregate local traffic, particularly agricultural vehicles, from the trunk road traffic.

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Assessment Findings

The Stage 2 Assessment concluded that Option 1 – Discrete Grade Separation was preferred overall in terms of engineering, operational, traffic, economic and environmental issues, providing the best value for money while addressing all the Scheme Objectives. Neither option had a significant environmental impact, however the larger extent of Option 2 resulted in a greater impact overall.

2.3.3 Value Review

Scott Wilson presented the findings of the Stage 2 Report to Transport Scotland in March 2006 and recommended that Scheme Option 1 – Discrete Grade Separation be taken forward for further development and full Stage 3 Scheme Assessment. Transport Scotland agreed Option 1 to be the preferred strategy but instructed that a Value Review exercise be carried out to assess options for reducing the Scheme Cost Estimate before proceeding further.

A Value Management Workshop was subsequently held to discuss potential savings and decisions were made as regards elements that should be retained or could be deleted and actions were agreed to investigate options in more detail. The objectives and outcome of the workshop and the subsequent development and assessment of savings options are recorded in detail in the Stage 2 – Scheme Options Assessment, Value Review Report. The resultant Option, which the report concluded met the Scheme Objectives, essentially comprised:

- Closure of all central reserve gaps to remove right-turn manoeuvres;
- Provision of compact grade separation at Symington and Bogend Toll to cater for the major traffic turning movements, with associated closure of existing Symington Road North junction;
- Retention of existing at-grade junctions at Underwood and Helentongate as 'left in/left out' only; and
- Rationalisation of the remaining minor junction and direct accesses and provision of new side roads towards reducing conflicting vehicle movements and improving ease of access to the dual carriageway.

2.3.4 Scheme Review

On 26 October 2006, the Minister for Transport announced the plan to introduce a 50mph speed limit over the extent of the Scheme and made a commitment to 'review with Transport Scotland the current trunk road programme, with a view to bringing forward work on Symington and Bogend Toll'. In the light of this announcement, Transport Scotland tasked Scott Wilson to prioritise delivery of a Scheme that removes right-turn manoeuvres and provides the two grade separated junctions for the major turning movements, thereby achieving the primary Scheme Objective to reduce the number and severity of accidents within the study area.

As a consequence, the design layout shown in Figure 2.3 – The Scheme is the proposal that is the subject of this Environmental Statement.

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2.4 The Recommended Scheme

The Recommended Scheme essentially comprises the closure of all central reserve openings, the conversion of existing at-grade junctions at Symington South and Bogend Toll into grade separated junctions by the provision of overbridges and rationalisation of nearby at-grade junctions and accesses by the provision of new side roads or accesses.

2.4.1 Main Carriageway

The existing A77 dual carriageway will be retained in its existing cross section and alignment.

The cross section of the road does not comply with current standards, however existing development adjacent to the A77 restricts the potential for significant improvement without impacting these mostly residential properties. The carriageways are typically 7.3 metres wide with kerbed edge treatment and no hardstrips. The central reserve is typically 4.5 metres wide but widens to up to 9 metres in places to accommodate right turning lanes at some junctions and accesses. There is a wire-rope safety fence in the central reserve over the full length of the Scheme and this will be made continuous wherever the existing openings are to be closed.

Throughout the study area, the horizontal alignment is characterised by large radius curves joined by straights and is therefore considered to be good. Starting from Dutch House Roundabout, the A77 is generally straight for approximately 4.0km before turning slightly to the north to reach the Spittalhill interchange. In comparison, the vertical alignment is typically to a lower Standard. Initially, the A77 is generally flat towards Bocket, before steepening to around 2.5% for the ascent to a local crest near to Hansel Village. Following a brief slackening of the grade, the ascent resumes at a typical gradient of 2.0% to the high point near the Symington North Junction. The A77 is then generally flat through to Bogend Toll before gently falling away towards the Spittalhill Interchange.

2.4.2 Section – Dutch House Roundabout to Underwood Junction

Starting at Dutch House Roundabout at the south end of the Scheme, central reserve openings will be closed opposite accesses on the southbound carriageway to Bocket Farm and Rosemount and at the C138 road to Underwood and opposite two field accesses on the northbound. These access points plus the access at Hillhouse Farm, which does not have a central reserve opening, will be retained to act as 'left in/left out'. Access to and from the opposite carriageway will be via the adjacent Dutch House Roundabout and Symington Junction as appropriate.

2.4.3 Section – Hansel Village

The existing accesses at Hansel Village (north and south entrances) and to the adjacent Langlands property will be retained on the southbound carriageway to act as 'left in/left out', as will the access to Low Wexford Farm on the northbound carriageway. Of these access points, only the south entrance to Hansel Village currently has an associated opening in the central reserve and this will be closed.

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Again, access to and from the opposite carriageway will be via the adjacent Dutch House Roundabout and Symington Junction as appropriate.

2.4.4 Section – Symington and Helentongate

The two existing junctions at Symington are both to be closed and be replaced by the provision of a single compact grade separated junction near Symington Road South. A new overbridge will allow a direct connection to the southbound carriageway. The new junction is located entirely on open agricultural land. Symington Road South will be realigned to connect into the new junction and the remaining section towards the A77 will be retained for access to the properties near the existing junction. Symington Road North will similarly be retained for access to various properties.

A new side road will be provided between the three properties at Trynlaw and Symington Road North to allow the closure of the direct access on the northbound carriageway immediately north of the Symington Junction. New private accesses will also be provided from the Symington Junction to Jeanfield Farm and to Helentongate Farm Compound corresponding with the closure of existing accesses on the southbound carriageway.

The new roads and accesses are all on open agricultural land and are at or near to existing ground level where possible, however embankments up to 8.5 metres high are required for the overbridge and its approaches.

The central reserve openings will be closed at both existing Symington junctions, the Helentongate junction and opposite the access to the Helentongate Farm Compound. Only the Helentongate junction on the southbound carriageway and an access at Danepark on the northbound will be retained as 'left in/left out' on this section. Access between Danepark and the southbound carriageway will be via Dutch House Roundabout and Symington Junction as appropriate, while access between Helentongate and the northbound carriageway will use the Symington Junction and Bogend Toll Junction.

There will be a bus turning facility provided off Symington Road North in Symington village, occupying recreational ground at Shaw Park to allow bus services to enter and leave the village via the new junction.

2.4.5 Section – Whitelees and Bogend Toll Junction

The existing crossroads between the A77 and B730 will be upgraded to a compact grade separated junction by the addition of a connector loop and overbridge to link the B730 to the east and west of the A77 and the closure of the central reserve opening. The existing B730 connections to the A77 will be retained to operate as 'left in/left out' on both the northbound and southbound carriageways. The connector road will be located to the south of the existing junction where it makes use of the existing A77 cutting to minimise earthworks such that the resulting embankments are typically up to 5.5 metres high. Roundabouts will be provided on the B730 east and west to form junctions with the connector road.

A new side road will connect the small Whitelees residential area to the Bogend Toll junction, allowing the closure of the existing Whitelees junction and the direct

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accesses to Balbir's Restaurant and the properties of 38 and 40 Kilmarnock Road on the southbound carriageway.

The existing access to Muirend House will be retained as 'left in/left out' on the northbound carriageway. To the north of Bogend Toll, the existing access to Coodham East Lodge will also be retained as 'left in/left out' on the northbound carriageway while a small opening in the central reserve will be closed opposite a disused access track on the southbound carriageway.