

3 Consideration of Alternatives

3.1 Introduction

3.1.1 This chapter describes the various stages of route option evaluation that have been undertaken during the development of the proposed scheme, in terms of traffic, economic and engineering feasibility, and the environmental assessment. The chapter summarises the following:

- previous work commissioned by Transport Scotland and others relating to a new road connecting the A96 Aberdeen – Inverness Trunk Road and the A9 Perth – Inverness Trunk Road, including the A9/A96 Connections Study;
- an overview of the assessment work undertaken in the selection of the preferred option; and
- design development of the preferred option.

3.1.2 This chapter is supported by the following figure, which is cross referenced where relevant:

- Figure 3.1 (Consideration of Alternatives - DMRB Stage 2 Route Options).

3.2 A9/A96 Options Studies

3.2.1 Previous studies have been undertaken by a number of different parties, which have considered, in different levels of detail, the issues associated with improving of the existing transport network between the A9 and A96. The main conclusions of these studies in relation to the A9/A96 connection are summarised below. The route option assessment process has taken into consideration the outcomes of these previous studies, reports and consultations.

The A96 Growth Corridor Development Framework (The Highland Council 2007)

3.2.2 This planning framework was approved by The Highland Council in September 2007 and formed supplementary planning guidance to the approved Development Plan for the area until adoption of the Highland-wide Local Development Plan in April 2012 and the subsequent Inner Moray Firth Local Development Plan in 2015. The A96 Growth Corridor Framework was developed in consultation with local stakeholders and included an indicative line for a preferred trunk road link between Inshes and Smithton as part of the East Inverness Development Framework.

The Strategic Transport Projects Review (STPR) (Jacobs, Faber Maunsell, Grant Thornton and Tribal Consulting 2008)

3.2.3 The Strategic Transport Projects Review: Environmental Report was published in December 2008 and sets out the Scottish Government's 29 transport investment priorities over the period to 2032. It recommended a number of road and rail-based interventions to take forward on the Aberdeen to Inverness corridor. Specific trunk road interventions that emerged from the review included upgrading the A96 between Inverness and Nairn to dual carriageway and included a new link road connecting the A96 and A9 (South of Inverness) (Intervention 18).

Inverness Trunk Link Road – East Link Summary Status (The Highland Council 2009)

3.2.4 This report summarised work undertaken by The Highland Council and concentrated on the development of the eastern section of the proposed Inverness Trunk Link Road, a proposed link between the A9 at Inshes and the A96 at Smithton. It included a STAG Part 1 appraisal of options, which assessed each option for engineering, environmental, traffic and economic criteria.

A9, A96 Inverness, Nairn Strategic Corridor Options Study Stage 1 DMRB Route Options Assessment – Existing Conditions Report (Atkins 2010a)

3.2.5 This report provided information relating to the engineering condition of the existing road network between the A9 at Inshes and the A96 east of Nairn. As the report focused on the existing network it did not include any discussion of transport improvement options.

A9, A96 Inverness, Nairn Strategic Corridor Options Study Environmental and Planning Constraints – Preliminary Assessment (Atkins 2010b)

- 3.2.6 This report was prepared broadly in parallel with the Existing Conditions Report (see above) and presented an assessment of the existing environment and environmental constraints within the study area.

A9, A96 Inverness, Nairn Strategic Corridor Options Study Geotechnical Preliminary Sources Study Report (Atkins 2010c)

- 3.2.7 This report was again prepared broadly in parallel with the two reports discussed above and presented the findings of an assessment of the existing ground conditions. Recommendations were limited to the extent of ground investigation potentially required for different options.

Highland-wide Local Development Plan April 2012 (The Highland Council 2012)

- 3.2.8 This included an indicative line for the connector road from Inshes on the A9 to Smithton on the A96 under Section 11. It stated that the developer must reserve land for the potential route of the A9/A96 Inshes to Smithton scheme. The Plan stated that '*...all proposed new roads are indicative and are subject to detailed consideration by Transport Scotland*'.

A9/A96 Connections Study, Transport Appraisal Report (Jacobs 2016)

- 3.2.9 Transport Scotland examined the wider context of the A9/A96 looking at problems, opportunities and issues concerning traffic between Inshes, Raigmore and Longman junctions in Inverness in an effort to develop a potential solution to the congestion and journey time reliability issues that exist at these three junctions. The A9/A96 Connections Study was carried out in line with the principles of Scottish Transport Appraisal Guidance (STAG) which looks at all modes of transport including walking, cycling and public transport.
- 3.2.10 The study reviewed a number of individual options relating to various locations within the area (e.g. Longman Junction, Stevenson Road to Culloden Road, Inshes to Smithton Link Road and Longman to Smithton Link Road). Following an initial sifting exercise the remaining options were packaged together into combined options to be taken forward for a detailed appraisal (Options A, B, C and D). The final report recommended the grade-separation of the Longman junction and proposed two possible options (Options C and D) for a single carriageway link road connecting the A96 at Smithton across to the A9 at Inshes.
- 3.2.11 The A9/A96 Connections Study was published in March 2016. Following this, Transport Scotland commissioned Jacobs to undertake a DMRB Stage 2 option assessment for a single carriageway road connection between the A9 at Inshes and the A96 at Smithton (see Section 3.3). The grade-separation of the Longman junction was not included within the scope of this assessment and is being taken forward separately.

3.3 DMRB Stage 2 Options Appraisal

Sifting of Indicative Options Report (2016)

- 3.3.1 Following on from the A9/A96 Connections Study, Option C and D were further assessed and refined into nine sub-options. The identification of these sub-options was based on preliminary analysis and engineering judgement, and gave consideration to the following:
- environmental constraints;
 - engineering constraints; and
 - traffic operational performance.
- 3.3.2 The sifting exercise for these sub-options concluded that three route options (re-named as Options 1, 2 and 3) would be progressed to the formal DMRB Stage 2 assessment process. Each of these options

would have an alternative alignment close to Ashton Farm known as variant A or B, identified through the sifting exercise.

DMRB Stage 2 Assessment (2017)

- 3.3.3 A DMRB Stage 2 route option assessment was undertaken to assess the difference between Options 1, 2 and 3 and their associated A and B variants. The DMRB Stage 2 report documented the factors taken into account in the assessment, considering the scheme objectives and the engineering, environmental, traffic and economic advantages/disadvantages and constraints associated with each.
- 3.3.4 Initially, the route between A96 Smithton Junction and Cradlehall Roundabout was common to all three route options. However, the presence of a scheduled monument immediately to the north of the Highland Main Line resulted in the development of two variant alignments that either passed or bisected this feature. In turn, the route alignment then would either pass to the east or west of Ashton Farm. These alternative alignments were labelled the A and B variants of each option. The A variant passed between the elements of the scheduled monument and to the west of Ashton Farm, while the B variant passed the monuments to the south then to the east of Ashton Farm.
- 3.3.5 Option 1A/B and Option 2A/B would commence at the Inshes Retail Park roundabout on the western side of the A9. Option 3A/B would connect to the local road network at the B9006 Culloden Road and U1058 Caulfield Road North junction and include the addition of a parallel structure next to the existing Inshes Overbridge and its approaches, to accommodate two lanes of traffic in each direction. All of the route options and their variants would tie into The Highland Council's proposed Inshes Junction Improvements - Phase 2 project and to the proposed A96 Dualling Inverness to Nairn (including Nairn Bypass) grade separated junction at Smithton at the north-eastern end of the scheme.
- 3.3.6 The alternative route Options 1,2 and 3, considered as part of the DMRB Stage 2 assessment are shown on Figure 3.1, with full details provided in the DMRB Stage 2 Scheme Assessment Report (Jacobs 2017).

Assessment Summary and Recommendation

- 3.3.7 The engineering assessment concluded that there were no potential impacts so significant that a route option should be discounted on the basis of any individual engineering criteria. The construction activities required for the route options are conventional civil engineering operations, though some of the criteria would present engineering challenges, including flood mitigation north of the Highland Main Line Railway, import of fill material and construction activity disruption on the local road network.
- 3.3.8 The environmental assessment concluded that there were no potential impacts so significant that a route option should be discounted on the basis of individual environmental criteria. All of the route options had potential for some adverse and positive impacts on the environment.
- 3.3.9 For the traffic and economic assessment, all route options were found to reduce traffic levels on the trunk road network while facilitating access to and accommodating traffic growth associated with the Inverness East development proposals. It was concluded that all route options provided good value for money, with Benefit to Cost Ratios (BCR) at least greater than 3.2 in the low and high growth scenarios.
- 3.3.10 The preferred option recommendation took into account the scheme objectives and the Scottish Government's appraisal criteria, together with the findings of the DMRB Stage 2 assessment. Feedback following the exhibitions held in August 2016 was also considered during the option assessment process.
- 3.3.11 A Stage 2 Scheme Options Assessment Value for Money (VfM) Workshop was held on 28 June 2017, facilitated by Capital Value & Risk Limited. At this workshop, the project team reported the assessment outcomes from the DMRB Stage 2 work using the Scottish Government's appraisal criteria for the assessment of trunk road schemes:
- economy – supporting sustainable economic activity in appropriate locations and getting good value for money;
 - safety – to improve safety for all road users;

- environment – protecting the built and natural environment;
- integration – ensuring that all decisions are taken in the context of the integrated transport policy; and
- accessibility and social inclusion – improving access to everyday facilities for those without a car and reducing community severance.

3.3.12 On the basis of the DMRB Stage 2 assessment, the outcome of the VfM workshop, and subsequent actions to address the workshop actions, the conclusion of the option assessment process was that Option 3 was the best performing route option overall. This was due to the following:

- Option 3 showed an increased safety benefit over Options 1 and 2. This was due to a slight increase in vehicle kilometres travelled in Options 1 and 2.
- Options 1 and 2 were expected to have greater adverse noise impacts than Option 3 due to the new road alignment between Cradlehall roundabout and Inshes Retail Park.
- Option 3 was assessed and having the least impact upon landscape character and visual amenity; it avoided the necessity for major road embankments to the west of Cradlehall Roundabout which Options 1 and 2 would require.
- Option 3 would increase the capacity of Inshes Overbridge to two lanes in each direction avoiding significant impact on the operation of the Inshes Retail Park and the Dell of Inshes road network.
- Options 1 and 3 were predicted to have lower impact on ecology and nature conservation, with all options having the potential to effect habitat for bats and badgers.
- Option 3 was not expected to impact key historic building elements of Castlehill House (Category B listed building).
- Option 3 was assessed as requiring the least volume of material import as it did not require major road embankments over Culloden Road and the A9. Option 3 also had the lowest estimated scheme cost.
- Option 3 was expected to have the least impacts overall on community and private assets as it would not result in any property demolitions and had less land-take, and impacted fewer land interests.

3.3.13 Option 3 would better assist The Highland Council in its aim to encourage more active travel and sustainable transport modes by managing network capacity. The areas in which Option 3 performed less favourably are outlined in DMRB Stage 2 Scheme Assessment Report (Jacobs 2017) and were considered further during the DMRB Stage 3 assessment, in order to reduce the potential impact of the proposed scheme.

3.3.14 The DMRB Stage 2 Scheme Assessment Report was published in October 2017, and the preferred option to be taken forward for DMRB Stage 3 design and assessment (Option 3) was announced. The preferred option included variants 3A and 3B, which would be reviewed during the early design development at DMRB Stage 3. This was to allow further consultation and consideration of the proposed scheme with The Highland Council's Inverness East Development Brief (2018), which had not been published at that stage.

3.4 Post DMRB Stage 2: Proposed Scheme Design Option Variants

Comparative Assessment – A/B Variant (2018)

3.4.1 As part of the early design development at DMRB Stage 3, a review of variants A and B was undertaken, taking into account consultation feedback from the statutory consultees and landowners as well as the public feedback received following the public exhibitions held in October and November 2017. A key aspect of this further review was to allow further consideration of how the proposed scheme integrates into the indicative masterplan within the Inverness East Development Brief. A recommendation was then made regarding the variant that should form the preferred option for the proposed scheme.

3.4.2 The conclusions of the comparative variant assessment were as follows:

- Variant B was preferable to variant A in terms of its lower potential impact on nationally important cultural heritage features (Scheduled Monument 'Ashton Farm Cottages, ring ditch 415m SW and pit circles 460m WSW of'). Historic Environment Scotland (HES) confirmed a preference for variant B.
- Variant B integrated better than variant A with land use for future development as described in The Highland Council's draft Inverness East Development Brief. The Highland Council confirmed a preference for variant B.
- Variant B when compared to variant A, minimised severance of existing agricultural landholdings and would require less prime agricultural land.
- There were no overarching features or benefits identified for variant A as sufficient to outweigh the above factors which favour variant B.

3.4.3 It was therefore recommended that Option 3B be progressed through DMRB Stage 3 design and assessment. Public drop in sessions were held on 16 May 2018 at Raigmore Community Centre and on 17 May 2018 at Smithton-Culloden Free Church to provide an update on the proposed scheme development.

3.5 References

Reports and Documents

Atkins (*on behalf of Transport Scotland*) (2010a). A9, A96 Inverness, Nairn Strategic Corridor Options Study Stage 1 DMRB Route Options Assessment – Existing Conditions Report.

Atkins (*on behalf of Transport Scotland*) (2010b). A9, A96 Inverness, Nairn Strategic Corridor Options Study Environmental and Planning Constraints – Preliminary Assessment.

Atkins (*on behalf of Transport Scotland*) (2010c). A9, A96 Inverness, Nairn Strategic Corridor Options Study Geotechnical Preliminary Sources Study Report.

Jacobs, Faber Maunsell, Grant Thornton and Tribal Consulting (*on behalf of Transport Scotland*) (2008). Strategic Transport Projects Review: Environmental Report.

Jacobs (2016) (*on behalf of Transport Scotland*). A9/A96 Connections Study – Transport Appraisal Report.

Jacobs (2017) (*on behalf of Transport Scotland*). A9/A96 Inshes to Smithton DMRB Stage 2 Scheme Assessment Report.

The Highland Council (2007). The A96 Growth Corridor Development Framework.

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The Highland Council (2012). Highland-wide Local Development Plan (HwLDP).

The Highland Council (2018). Inverness East Development Brief.