

3 Alternatives Considered

3.1 Introduction

- 3.1.1 This chapter summarises the alternative strategic options considered at SEA (Transport Scotland, 2013) and PES (Transport Scotland, 2014) stage, the preliminary sifting and screening of potential mainline route alignments and grade separated junction options, and then the resulting DMRB Stage 2 assessment of the retained mainline route, grade separated junction options and side road options (Jacobs, 2016). Chapter 4 (Iterative Design Development) provides an overview of the iterative design process, and sets out the key environmental constraints and considerations that informed the final DMRB Stage 3 design.
- 3.1.2 The proposed scheme for Pitlochry to Killiecrankie as assessed in this DMRB Stage 3 Environmental Statement comprises online widening of the existing A9 at the southern and middle sections (ch0 to ch4400), an offline alignment in the northern section (ch4400 to ch6700) and two grade separated junctions (Pitlochry South and Pitlochry North). This is a result of decisions made following consideration of a range of alternative alignment options.

3.2 Strategic Environmental Assessment (SEA)

- 3.2.1 The A9 PES and A9 SEA, which provided an equivalent assessment to the DMRB Stage 1 level of consideration for the A9 dualling programme, considered three high-level, strategic alternative dualling options, as summarised in Table 3.1.

Table 3.1: Strategic level Alternative Dualling Options

Strategic Option	Description
Online Widening	Dualling along the existing A9 single carriageway sections, to tie in with the existing dualled sections
Online widening & Offline Dualling	Dualling along the existing A9 route, with near offline dualling where constraints dictated
Alternative route(s)	Dualling via alternative routes to the existing A9.

- 3.2.2 The studies identified that online widening, generally following the route of the existing A9, was the most suitable option. Online widening was identified as a 200m wide corridor centred on the existing A9 that could be extended locally, depending on constraints encountered at later design and environmental assessment stages. Additionally, a number of locations were identified where further consideration of localised offline sections should take place.
- 3.2.3 The online widening recommendation, with localised offline sections, was consistent with the topographical, environmental, and physical constraints around the existing A9, including designated sites. It was on this basis that development of mainline alignment and junction options for the DMRB Stage 2 assessment was progressed. Plans illustrating the online widening options for Pitlochry to Killiecrankie developed prior to initial sifting exercises and subsequent DMRB Stage 2 assessment, are available on Transport Scotland’s website (Transport Scotland, 2014).

3.3 Sifting of Preliminary Mainline Alignments

Overview

- 3.3.1 Within the online widening corridor identified in the A9 PES and SEA there are many potential alignments that could theoretically be taken forward. Early in the DMRB Stage 2 process, these were reduced to a subset of route options that could then be subject to design development and further assessment.
- 3.3.2 During the DMRB Stage 2 process, a review of the A9 PES and SEA assessments enabled the identification of potential mainline alignment options. A preliminary engineering design was then developed for each of these alternatives, applying a standard road cross-section and earthworks slope gradients, informed by available topographical survey information.

- 3.3.3 A number of sub-option alternatives were developed for various sections of the mainline alignments, and subject to high-level assessment against current dualling design standards and constraints. Environmental constraints considered comprised:
- Community & Private Assets: land-take, property demolition, and development sites;
 - Geology, Soils and Groundwater: geological SSSIs, Geological Conservation Review (GCR) sites and known contaminated land sites;
 - Road Drainage and the Water Environment: watercourse crossings and SEPA 1:200-year flood extents;
 - Ecology and Nature Conservation: ecological designations (SAC, SSSI), designated woodland (Ancient Woodland Inventory and National Woodland Survey of Scotland) and protected species;
 - Landscape and Visual: landscape designations and character areas, landscape elements, visual receptors;
 - Cultural Heritage: Scheduled Monuments, Listed Buildings, Battlefields, Conservation Areas and Gardens and Designed Landscapes;
 - Air Quality, Noise and Vibration: distance to receptors; and
 - Effects on All Travellers: impacts on Core Paths, Local Paths, Rights of Way, National and Regional Cycle Routes.

- 3.3.4 Throughout this ES, references are made to chainage (shortened to 'ch', for example ch1500), which is a reference to the number of metres from the starting point of the proposed scheme, from south to north. The proposed scheme commences at ch90 (from ch0-ch90 there may be minor improvement works to existing dual carriageway, which do not form part of the proposed scheme or DMRB Stage 3 assessment).

DMRB Stage 2 Mainline Sifting Outcomes

- 3.3.5 The results of the sifting assessment are described below. These results were reviewed by Jacobs' project team (engineering design and environmental) and Transport Scotland in a sifting assessment workshop in February 2015, the key outcomes of which are described below.
- 3.3.6 To facilitate further sifting of northbound and/or southbound widening options, the route was considered as three sub-option sections to allow a combination of two or more of the simple mainline options. These sections were:
- Section 1 - ch0 to ch1400;
 - Section 2 - ch1400 to ch4000; and
 - Section 3 - ch4000 to ch7200.
- 3.3.7 The review of the 'simple' mainline options produced during the DMRB Stage 1 by the A9 PES and SEA assessments were as follows:
- Option A – Parallel widening of the carriageway northbound;
 - Option B – Parallel widening of the carriageway southbound;
 - Option C – Symmetrical widening of the carriageway;
 - Option D – Offline option within Section 2;
 - Option E – Offline option within Section 3;
 - Option F – Offline option within Section 3; and
 - Option G – Offline option within Section 3.

- 3.3.8 The 'simple' options were reviewed within the Phase 1 sifting assessment in February 2015. Due to predicted disruption to traffic during construction and increased construction complexity associated with widening both sides of the existing structures across Loch Faskally, Foss Road and the River

Tummel, the symmetrical widening option of the A9 carriageway (Option C) was discounted from further consideration.

- 3.3.9 A new Option H was added following the Phase 1 sifting workshop in February 2015 and the mainline Options further considered at the Phase 2 sifting workshop held in April 2015. Option H is an offline option within Section 3 that moved the carriageway further east than Option E to reduce the impact on Faskally Wood.
- 3.3.10 Using the negative assessment method, which highlights where options are least likely to meet the objectives and limitations of the Scheme Brief, in accordance with DMRB Scheme Assessment Reporting TD 37 paragraph 4.3, Option D, Option E and Option F were then sifted out together with Option B within Sections 1 and 3, and Option A within Section 3, due to them being significantly less advantageous than the remaining options on the basis of engineering, environmental and economic criteria.
- 3.3.11 The Phase 2 sifting assessment reviewed the mainline alignment options against the three sections, it was discussed and agreed that a 'best fit' hybrid option using both northbound and southbound widening should be considered for Section 2.
- 3.3.12 This additional mainline option was presented at a technical meeting with Transport Scotland on the 28 May 2015 and it was agreed that this hybrid option be retained and that Option A and B in Section 2 be sifted out.
- 3.3.13 The outcome of these considerations was to define 13 sub option sections, which were then assessed against topographical constraints and the environmental constraints listed in paragraph 3.3.3.
- 3.3.14 The sifting assessment and discussions during consultation concluded that ten of the options were considerably less advantageous in comparison with three options and were consequently sifted out of the assessment in agreement with Transport Scotland during the sifting workshops and technical meetings. The three options (Options 1, 2A and 2B) and additional side road options were taken forward for further consideration in the DMRB Stage 2 assessment and were presented via public exhibitions held on 15, 16, 29 and 30 of July 2015 and also at a community engagement events held on 03 and 04 of February 2016. These are described further in Section 3.5 (DMRB Stage 2 Assessment of Route Options) of this chapter.

3.4 Sifting of Preliminary Junction Layouts

Overview

- 3.4.1 Following the identification of the mainline route options for Pitlochry and Killiecrankie, sifting of potential grade separated junction layouts was undertaken.
- 3.4.2 A Junction and Access Strategy, developed during DMRB Stage 1 by the PES/SEA assessment identified options for the existing junction arrangements at Pitlochry South and Pitlochry North. It stated that both junctions should be retained and either brought up to current standards or approvals for Departures from Standard sought since current geometric standards do not meet existing design requirements specified within DMRB for a Category 7A road. The junction sifting process is summarised below, with further information provided in Section 3.5 (DMRB Stage 2 Assessment of Route Options) of this chapter on the junction options taken forward.

Junction Sifting Outcomes

- 3.4.3 The Sifting of Indicative Route and Junction Options Report considered the mainline options proposed by the PES/SEA throughout DMRB Stage 1 and developed junction options in relation to these.
- 3.4.4 One of the mainline options included an offline option (Option D) that was developed for Section 2 (ch1400 and ch4000). This offline option was initially developed to enable a grade separated junction option to be considered adjacent to C452 Foss Road Junction. This mainline option was assessed, without a grade separated junction, during the Phase 1 Sifting Workshop February 2015 before being sifted out from further consideration at the Phase 2 Sifting Workshop in May 2015, due to its

environmental impact and taking into account that a grade separated junction, at this location, was not required in accordance with the Junction and Access Strategy.

- 3.4.5 The existing Pitlochry South Junction is a grade separated junction, however does not provide full movements in all directions as it only has a northbound diverge and southbound merge and does not meet current design standards for a Category 7A road. The DMRB Stage 1 assessment proposed to retain this junction and provide minor improvements however recognised that options would be limited due to significant constraints in the area.
- 3.4.6 The DMRB Stage 1 findings and the proposed mainline options allowed the development of a wider range of preliminary junction layouts for the Pitlochry North Junction. Three different types of junctions – loop, bespoke and diamond - were evaluated against the mainline options within Section 3 (Options G and H) and subsequently six preliminary junction options were proposed for Pitlochry North.
- 3.4.7 These six options were presented at the Sifting Workshop in May 2015 in order to identify and suspend options from further consideration. The workshop found that three of these options for Pitlochry North were significantly less advantageous in comparison with the other three. A further junction option was identified at the workshop and was developed and presented at a technical meeting with Transport Scotland on the 28 May 2015. At this meeting it was discussed and agreed that this option be retained and that one of the other junction options be sifted out from further consideration.
- 3.4.8 The results of the sifting process allowed three options (Route 1, 2A and 2B) to progress into DMRB Stage 2 assessment (Pitlochry to Killiecrankie) for further consideration. The options were also presented via public consultation events, meeting at local community events and with direct communication via mail/email.
- 3.4.9 One additional mainline option was developed during the Value for Money Workshop on the 03 March 2016 whereby a combination of retaining walls and soft slopes would replace the viaduct structure within Option 2B. This alternative solution, Route Option 2B (RW), would not affect the horizontal or vertical alignment of the mainline, junctions or associated side roads.
- 3.4.10 Additionally, a number of Tier 2 side road options were considered during the DMRB Stage 1 sifting process, which included Mainline Option 1 with two side road options and Mainline Options 2A and 2B with six side road options.
- Option 1-1 – Mainline Option 1 – Side Road Option 1 (Side Road A);
 - Option 1-2 – Mainline Option 1 – Side Road Option 2 (Side Roads A and C);
 - Option 2-1 – Mainline Options 2A and 2B – Side Road Option 1 (Side Road A);
 - Option 2-2 – Mainline Options 2A and 2B – Side Road Option 2 (Side Road B);
 - Option 2-3 – Mainline Options 2A and 2B – Side Road Option 3 (Side Roads A and B);
 - Option 2-4 – Mainline Options 2A and 2B – Side Road Option 4 (Side Roads A and C);
 - Option 2-5 – Mainline Options 2A and 2B – Side Road Option 5 (Side Roads B and C); and
 - Option 2-6 – Mainline Options 2A and 2B – Side Road Option 6 (Side Roads A, B and C).
- 3.4.11 Side Road A was a Western Parallel Road providing left-in/left-out access at Clunie connecting to C452 Clunie-Foss Road and replacing the existing junction to east of A9 at C452 Clunie-Foss Road. Side Road B was an Eastern Parallel Road located further south than the existing junction providing left-in/left-out access connecting to C452 Clunie-Foss Road. Side Road C was a left-in/left-out junction on the southbound carriageway at C452 Foss Road replacing the existing junction at this location.
- 3.4.12 A Tier 2 Side Road Options Sifting Workshop was held in November 2015 and the outcomes were reported in a Sifting of Indicative Tier 2 Side Road Options Summary Report (Jacobs, December 2015). One additional side road option was identified at the Workshop (Option 7) that was developed and assessed then presented at a subsequent technical meeting in November 2015. This option was

then suspended from further consideration, as it was significantly less advantageous than the other remaining options given an increased gradient and landscape and visual impact.

- 3.4.13 Considering the side road options, a total of seven route options emerged from this DMRB Stage 1 sifting assessment. These options remained available for further consideration at DMRB Stage 2 Assessment:
- Option 1 with Side Road Option 1;
 - Option 2A with Side Road Option 1;
 - Option 2A with Side Road Option 2;
 - Option 2B with Side Road Option 1;
 - Option 2B with Side Road Option 2;
 - Option 2B (RW) Side Road Option 1; and
 - Option 2B (RW) Side Road Option 2.

3.5 DMRB Stage 2 Assessment of Route Options

- 3.5.1 DMRB Stage 2 seeks to identify factors including: environmental, engineering, economic and traffic advantages, disadvantages and constraints associated with selected route options. This section summarises the DMRB Stage 2 process for Pitlochry to Killiecrankie.
- 3.5.2 The DMRB Stage 2 assessment process included desk-based assessment, site surveys, public consultation, and input from a range of statutory and non-statutory consultees and stakeholders. Public consultation was undertaken, including public exhibitions and community engagement events presenting the route options and the potential impacts these would be likely to have on the environment. Feedback on the options and information on the local area obtained from these public exhibitions and community engagement events was taken into consideration during the development of the DMRB Stage 2 options and, ultimately, formed one part of the selection criteria in the selection of a preferred route option.
- 3.5.3 As part of the DMRB Stage 2 assessment process, Value for Money and Preferred Route Workshops were also held with the project team and Transport Scotland to inform selection of a preferred route option to be taken forward to DMRB Stage 3.
- 3.5.4 As set out in paragraph 3.4.13, a total of seven options were identified and evaluated at DMRB Stage 2 for this 6.7km section of the A9. The route options considered are shown on Figures 3.1 to 3.3 and summarised below.

Route Options 1, 2A and 2B

- 3.5.5 The dual carriageway proposed for each of the route options comprised two lanes in each direction, separated by a 2.5m central reserve (with widening for visibility where required), and 2.5m verges (also widened for visibility where required). In terms of alignment, the routes were considered in three sections, as set out in Table 3.2.
- 3.5.6 Between ch0 and ch3400 all options were identical, consisting of online widening to the northbound and/or southbound carriageway of the existing A9 carriageway. For the northern section (ch3400 to ch6700) Option 1 was offline to the west and both Options 2A and 2B offline to the east of the existing A9 carriageway, although Options 2A and 2B had different forms for the Pitlochry North Junction as illustrated in Diagrams 3 and 4.

Table 3.2: Proposed Route Option Alignments

Chainage (ch)	Alignment of Route Option Widening		
	Option 1	Option 2A	Option 2B
ch0 (start of project) to ch1700	northbound		
ch1700 – ch3400	hybrid (both sides)		
ch3400 – ch6700 (end of project)	offline to west	offline to east	

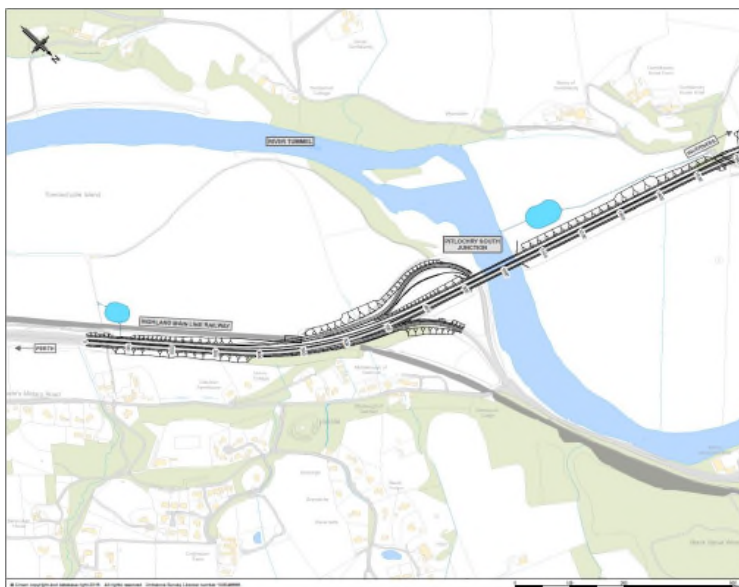
Junctions and Road Connections

3.5.7 Each of the proposed options included grade separated junctions at Pitlochry South and Pitlochry North. The alternative junction options considered for Pitlochry South and Pitlochry North are discussed in paragraphs 3.5.8 to 3.5.14 and shown on Diagrams 1 to 4.

Pitlochry South Junction

3.5.8 All proposed mainline options at DMRB Stage 2 included this grade separated junction at Pitlochry South which retains a similar layout to the existing junction. Whilst the junction is grade separated it did not allow full movements in all directions as it only had a northbound diverge and southbound merge. The northbound diverge allowed travellers to exit the A9 onto the A924 via an existing underbridge and the southbound merge allowed travellers heading towards Perth to join the A9 carriageway from the A924. Pitlochry South Junction proposed a minor re-alignment of the slip roads to meet DMRB design standards for merges and diverges, and to tie in the proposed mainline alignment. Diagram 1 shows the Pitlochry South Junction layout proposed at DMRB Stage 2.

Diagram 1: Proposed Pitlochry South Junction



Pitlochry North Junction Route Option 1

3.5.9 The proposed grade separated junction option at Pitlochry North provided full movement for both northbound and southbound traffic. Northbound travellers wishing to exit the A9 would follow the proposed new bridge over Loch Faskally before taking the northbound diverge onto a loop arrangement into the Pitlochry North Underbridge that emerged at a junction. Traffic turning right would join the existing A924 leading them to the North of Pitlochry, while turning left at the junction would have lead back under the A9 to the B8019. Under this arrangement, travellers wishing to join the A9 in the direction of Inverness would have connected via the northbound merge under the Pitlochry North Underbridge.

- 3.5.10 Southbound traffic wishing to exit the A9 would travel via the new southbound slip road leading to a T-Junction at the A924. This option retained the existing Clunie Bridge providing a slip road to southbound traffic wishing to join the A9 at this location. Diagram 2 shows the junction layout for Pitlochry North Junction for Route Option 1 proposed during DMRB Stage 2.

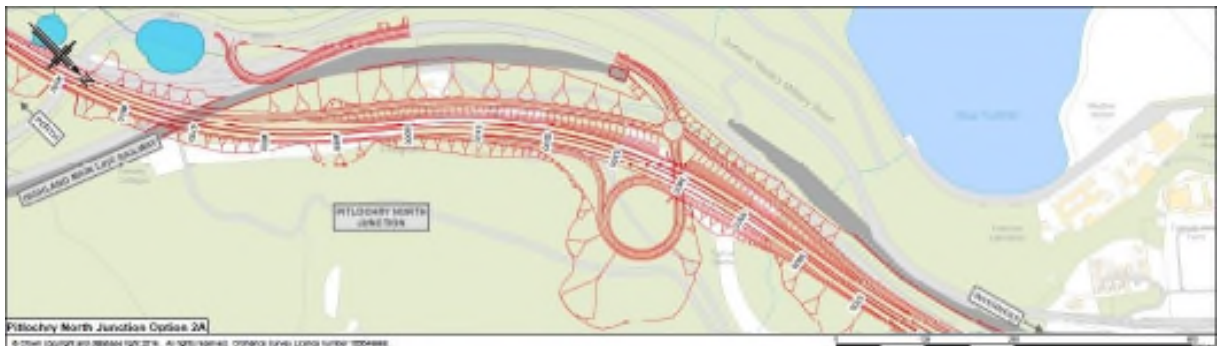
Diagram 2: Proposed Pitlochry North Junction Option 1



Pitlochry North Junction Route Option 2A

- 3.5.11 Option 2A was a grade separated junction providing full movement for both northbound and southbound traffic. This junction would be to the east of the existing A9. Northbound travellers wishing to join or exit the A9 would connect to a new roundabout which would utilise a stretch of existing A9 to connect to the B8019 and A924 local roads.
- 3.5.12 Under this option southbound travellers, joining or exiting, would do so by accessing this same roundabout via a loop arrangement and the Pitlochry North Junction Underbridge. Diagram 3 shows the layout for Pitlochry North Junction for Route Option 2A proposed during DMRB Stage 2.

Diagram 3: Proposed Pitlochry North Junction Route Option 2A



Pitlochry North Junction Route Option 2B

- 3.5.13 Option 2B was a grade-separated junction providing full movement for both northbound and southbound traffic. This junction varied from 2A as it incorporated at grade junctions, between the slip road and the side road network. The proposed A9 would be supported by a viaduct to minimise the footprint of this option. This junction also incorporated the existing A9 to the B8019 and the A924 local roads. Route Option 2B (RW) proposed an identical design to Option 2B except it replaced the viaduct with retaining walls.
- 3.5.14 The southbound slip roads would be formed parallel to the A9 carriageway. Option 2B required the construction of a viaduct due to the distances between the slip roads and the A9. Diagram 4 shows the junction layout for Pitlochry North Junction Option 2B proposed during DMRB Stage 2.

Diagram 4: Proposed Pitlochry North Junction Route Option 2B



DMRB Stage 2 Findings

- 3.5.15 Option 2B (RW) with Side Road Option 2 was selected as the preferred route option to be taken forward to DMRB Stage 3. A brief summary of the decision process taking into account engineering, environmental and traffic and economic considerations is provided in the following paragraphs.
- 3.5.16 To recommend an overall preferred option for the project, three recommendations between the different options were made. These were:
- Recommendation 1 – Mainline to the West (Route Option 1) vs Mainline to the East (Route Options 2A, 2B & 2B (RW));
 - Recommendation 2 – Side Road Option 1 vs Side Road Option 2; and
 - Recommendation 3 – Pitlochry North Junction Bespoke (Route Option 2A) vs Pitlochry North Junction Diamond (Route Option 2B or 2B (RW)).

Recommendation 1

- 3.5.17 From an engineering perspective, Route Option 1 required the construction of a new dual carriageway structure approximately 550m in length over Loch Faskally which was not required under Route Options 2A, 2B or 2B (RW), making it less preferred in this regard. Route Option 2B required the construction of a viaduct approximately 1km in length. Neither Route Option 2A nor 2B (RW) required a new structure of this scale and complexity, albeit Route Option 2B (RW) did include significant lengths of retaining earth wall associated with the Pitlochry North Junction.
- 3.5.18 From an engineering perspective, all options required an import of material, however Route Options 1 and 2A required significantly more import than Route Option 2B or Route Option 2B (RW). Route Option 1 was considered to have a greater impact than competing options in terms of traffic management during construction. Subject to the final construction sequence and approach, this option could potentially have required the temporary closure of the B8019 between Pitlochry and Killiecrankie, which carries approximately 1800 vehicles per day, or significant additional temporary works. If the B8019 was required to be temporarily closed, vehicles could have diverted via the Aldclune Junction to the north of the scheme, albeit this would require a detour of approximately 14km.
- 3.5.19 From an environmental perspective, Route Option 1 resulted in the demolition of three properties (Tigh na Beith, East Lodge and The Gatehouse) and an outbuilding. Route Options 2A, 2B and 2B (RW) required the demolition of two properties (Tigh na Beith and Craiglunie) and an outbuilding. Route Option 1 had a greater impact on Faskally Wood (Dunmore) and on the commercial, amenity and recreational uses that the forest supports than Route Options 2A, 2B or 2B (RW). The offline alignment and the additional bridge across Loch Faskally associated with Route Option 1 would have resulted in more extensive earthworks and associated changes to landform south of Loch Faskally. In addition, greater impacts were associated with Route Option 1 than Route Options 2A, 2B or 2B (RW) on Pitlochry Estate at Creag na Ciche and the locally valued and popular recreational area at and around Faskally Wood, which provides the location for the Enchanted Forest annual event. Route Option 1 also had increased visual impacts due to the visibility of the additional large bridge structure

across Loch Faskally and the traffic passing over it. Mitigating measures were unlikely to significantly reduce the impacts of this option given the limited separation distance.

- 3.5.20 Route Option 1 was considered to have the highest potential impact in ecology terms mainly due to the new structure across Loch Faskally which would result in a greater area of habitat loss along the internationally important River Tay SAC than for Options 2A, 2B or 2B (RW), albeit of the same significance category. In addition, the orientation of the bridge resulted in greater fragmentation of the large area of long-established woodland of plantation origin north of Loch Faskally, when compared to Options 2A, 2B or 2B (RW).
- 3.5.21 Route Option 1 had a potential impact on Greengates Cottage Stone Circle Scheduled Monument (Asset 306) which is approximately 150m from the existing A9 east of Pitlochry North Junction, which Route Options 2A, 2B or 2B (RW) did not.
- 3.5.22 Route Option 1 was considered to have a greater potential impact (severance of paths) on NMUs using paths 84, 86, and 89 in Faskally Woods than Route Options 2A, 2B or 2B (RW) regardless of the associated side road option identified. Route Option 1 severed core paths 84 and 86 through Faskally Wood resulting in loss of sections of these core paths and requiring diversions and/or replacement sections of path to be developed at DMRB Stage 3.
- 3.5.23 From a cost perspective, Route Option 1 and Route Option 2B were significantly more expensive than Route Option 2A or Route Options 2B (RW), regardless of the side road option selected.
- 3.5.24 Based on the differences noted above, it was recommended that Route Option 1 was considered less preferential to Route Option 2A, 2B & 2B (RW), and Route Option 1 was therefore removed from further consideration.

Recommendation 2

- 3.5.25 From an engineering perspective, Side Road Option 2 required the construction of a retaining wall approximately 400m in length up to 6m in height which was not necessary under Side Road Option 1, however, greater earthworks were required for Side Road Option 1.
- 3.5.26 From an environmental perspective, Side Road Option 1 was more intrusive in terms of landscape impacts, when compared to Side Road Option 2, which following mitigation (sensitive grading of earthworks and the establishment of replacement planting) would have had potential impacts reduced from Slight/Moderate to Slight significance. The visual impacts of Side Road Option 1 were slightly more significant than for Side Road Option 2 between Balmore and the Clunie Underbridge. This was due to the side road passing through the eastern edge of Pitlochry Estate and involved extensive earthworks and woodland loss which would be viewed by nearby residents such as those at Tombane and Cluniemore House.
- 3.5.27 From a traffic perspective, Side Road Option 1 resulted in a 17km diversion via Ballinluig Junction for vehicles travelling from the north and turning onto the C452 Clunie-Foss Road. Side Road Option 2 resulted in a maximum 4km diversion for traffic travelling from the C452 Clunie-Foss Road and travelling towards the north.
- 3.5.28 Based on the differences noted above, it was recommended that Side Road Option 1 was considered less preferential to Side Road Option 2, and Side Road Option 1 was therefore removed from further consideration.

Recommendation 3

- 3.5.29 From an environmental perspective, the earthworks for Route Options 2B and 2B (RW) to the north of Loch Faskally were slightly smaller in size than those for Route Option 2A and these options avoided operational disturbance to bats in the vicinity of the junction which would result from the roundabout lighting associated with Option 2A. The significance of potential impact on the Lower Highland Glens Landscape Character Area was lower for Route Options 2B and 2B (RW) than Route Option 2A (Moderate versus Moderate/Substantial).

- 3.5.30 From a cost perspective the estimated gross project costs were:
- Route Option 2A with Side Road Option 2 - over £170m;
 - Route Option 2B (RW) with Side Road Option 2 - estimated to be slightly less than 2A; and
 - Route Option 2B with Side Road Option 2 - over twice as much as Options 2A and 2B (RW).
- 3.5.31 Route Option 2B (RW) was a value engineered variant of Route Option 2B with no significant differentiator between options in terms of environment or traffic. From an engineering perspective, the viaduct associated with Route Option 2B required complex construction techniques which were not required with Route Option 2B (RW), however Route Option 2B (RW) required additional fill material when compared to Route Option 2B. However, the overriding difference between these options was cost, with Route Option 2B costing significantly more than Route Option 2B (RW), therefore Route Option 2B (RW) was preferred given its significantly lower cost.
- 3.5.32 Therefore, a decision remained to be made between Route Options 2A and 2B (RW). As there was a slight preference for Route Options 2B (RW) from an environmental perspective, it was therefore recommended at the preferred route workshop that Route Option 2B (RW) be identified as the emerging preferred solution.

Emerging Preferred Route Recommendation

- 3.5.33 Based on the above decision making process, the recommended emerging preferred route option was Route Option 2B (RW) with Side Road Option 2.

3.6 Development of the Proposed Scheme Design

- 3.6.1 On the basis of the Pitlochry to Killiecrankie DMRB Stage 2 assessment and the outcome of the recommendations agreed at the Preferred Route Workshop it was recommended that Option 2B (RW) with Side Road Option 2 would be taken forward as the preferred route for DMRB Stage 3 assessment.
- 3.6.2 During the DMRB Stage 3 assessment, the preferred route for Pitlochry to Killiecrankie was subject to further refinement as more detailed survey information was gathered. The DMRB Stage 3 provided enhancements to the mainline, junctions and side road designs as presented in the DMRB Stage 2 Report. The DMRB Stage 3 assessment also included the development of access tracks and accommodation works, drainage and earthworks design and the incorporation of environmental mitigation to reduce impacts on the environment.
- 3.6.3 The development and design of the Pitlochry to Killiecrankie scheme within DMRB Stage 3 assessment is described in Chapter 4 (Iterative Design Development) and Chapter 5 (The Proposed Scheme).

3.7 References

Jacobs (2016) (*on behalf of Transport Scotland*). A9 Dualling Programme: Pitlochry to Killiecrankie – DMRB Stage 2 Scheme Assessment Report

Transport Scotland (2013) A9 Dualling: Strategic Environmental Assessment (SEA).

Transport Scotland (2014). DMRB Stage 1 Assessment. A9 Dualling: Preliminary Engineering Support Services (PES)