A96 Dualling Hardmuir to Fochabers

Detailed Options Assessment
Pairwise Round 1 Workshop Report

A96PHF-MMS-GEN-00000-RP-PM-00004

Mott MacDonald
Sweco

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Appendix A Workshop Presentation

1. Introduction

Pairwise Round 1 Workshop for the A96 Dualling Hardmuir to Fochabers scheme was held on 12 January 2018 at Transport Scotland, Glasgow with representatives from Transport Scotland (TS) and their scheme consultants Mott MacDonald Sweco (MMS).

The objective of the workshop was to present a series of paired elements in three specific areas and ratify which elements were taken forward in the preferred option selection process.

This is the report from the workshop comprising background information about the scheme and the assessment process, agenda, workshop issues, attendees, presentation material and assessment outputs.

2. Workshop Information

The following sections provide background details about the A96 Dualling Hardmuir to Fochabers scheme and information required for the workshop session.

2.1 Background

Transport Scotland is progressing a programme to upgrade the A96 between Inverness and Aberdeen to dual carriageway standard by 2030. The route is approximately 160km (99 miles) long, of which 138km (86 miles) is currently single carriageway.

Following the Strategic Assessment (Stage 1), the A96 Dualling Programme has been divided into sections (i.e. individual schemes within the overall dualling programme) for further assessment at Design Manual for Roads and Bridges (DMRB) Stages 2 and 3 (route options assessment and preliminary design).

The Hardmuir to Fochabers Scheme (Western Section) will provide a new A96 dual carriageway between the tie-in of the Inverness to Nairn (including Nairn Bypass) Scheme at Hardmuir (east of Auldearn) to the east of Fochabers - approximately 46km (28 miles). MMS were appointed in June 2016 to take forward the design and assessment of this section.

A Stage 1 Handover workshop was held on 19 July 2016 and an Inception workshop was held on 30 September 2016. Scheme objectives were agreed at the Inception workshop. Since appointment and following these workshops MMS have commenced the identification of possible options and assessment of same as part of their DMRB Stage 2 tasks as indicated in Figure 2.1 below.

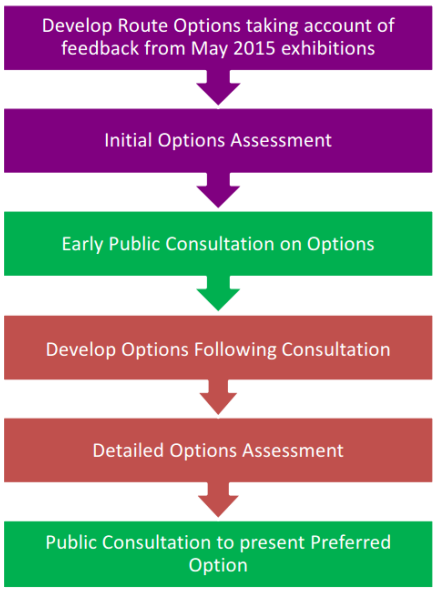


Figure 2.1 DMRB Stage 2 Process for A96 Dualling Hardmuir to Fochabers

An Options Sifting Workshop was held on 19 April 2017 to conclude the initial options assessment task. The workshop resulted in the de-selection of several poorer performing options prior to presentation of route options at public exhibitions between 19 and 22 June 2017 to gain vital feedback from the public. Detailed Options Assessment commenced following the consultation and this resulted in the Pairwise Round 1 comparisons contained in this report.

2.2 Scheme Objectives

The scheme objectives, which were agreed at the inception stage, are as follows:

1. To improve the operation of the A96 and inter-urban connectivity through:
   1.1. Reduced journey times;
   1.2. Improved journey time reliability;
   1.3. Increased overtaking opportunities;
   1.4. Improved efficiency of freight movements along the transport corridor; and
   1.5. Reduced conflicts between local traffic and other traffic in urban areas, and strategic journeys.

2. To improve safety for motorised and non-motorised users through:
   2.1. Reduced accident rates and severity;
   2.2. Reduced driver stress; and
   2.3. Reduced non-motorised user conflicts with strategic traffic in urban areas.

3. To provide opportunities to grow the regional economies on the corridor through:
   3.1. Improved access to the wider strategic transport network; and
   3.2. Enhanced access to jobs and services.

4. To facilitate active travel in the corridor;

5. To facilitate integration with Public Transport Facilities; and

6. To avoid significant environmental impacts and, where this is not possible, minimise the environmental effects on:
   6.1. Communities and people in the corridor; and
   6.2. Natural and cultural heritage assets.

2.3 Assessment Process

Introduction

This workshop report provides details of the various assessments undertaken in three specific areas of the A96 Dualling Hardmuir to Fochabers scheme. Selecting a preferred element within each of these areas will allow the options work to progress to further assessments and ultimately the preferred option decision for the scheme. The locations of these areas are shown in Figure 2.2 below and are:

- Pairwise A: on the Red route involving elements R2 and R3;
- Pairwise B: on the Orange route involving elements O2 and O3; and
- Pairwise C: on the Red route involving elements R8 and R9.

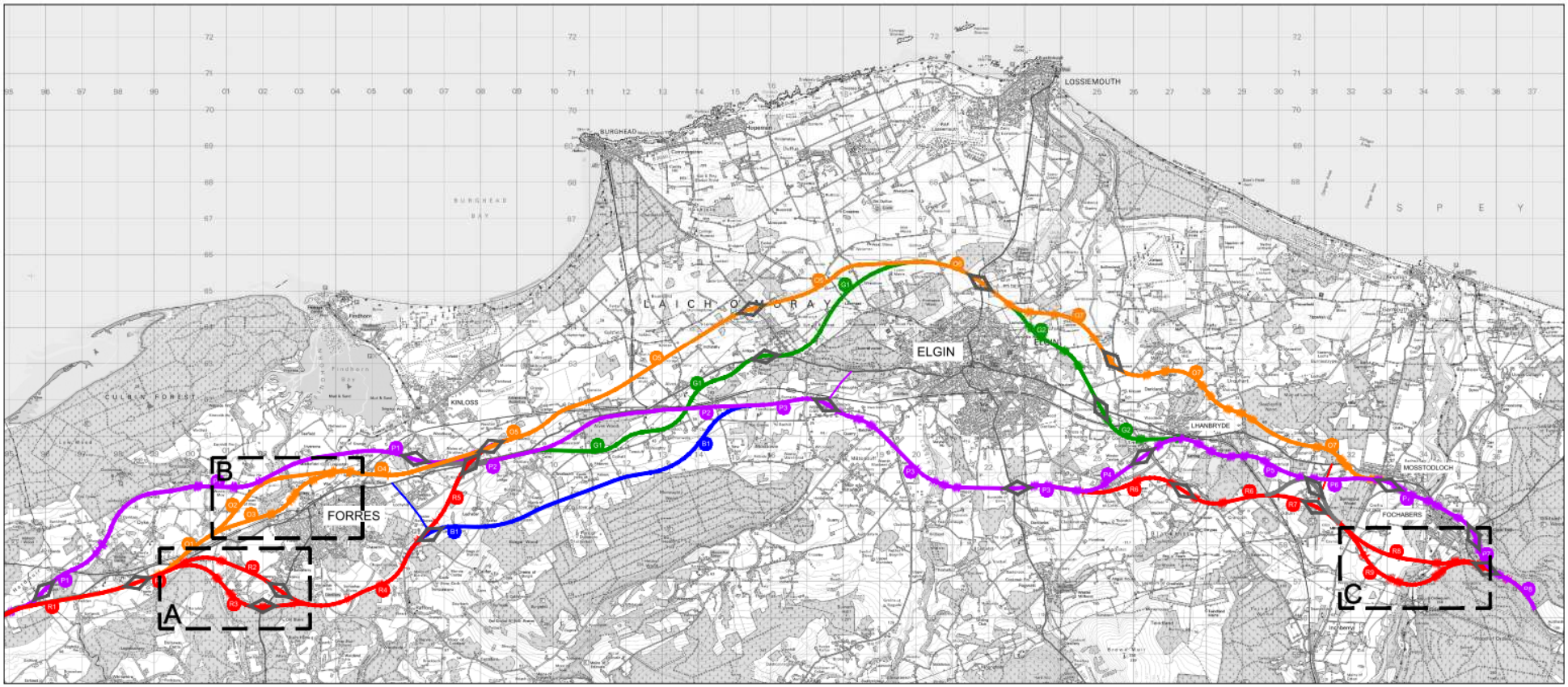


Figure 2.2

Further details of engineering constraints, environmental factors and traffic economic performance are shown in Appendix A

Options Design Development

All of the options displayed at public exhibitions in June 2017 are being developed taking into account:

- feedback from consultations (public, statutory bodies, landowners, etc);
- three-dimensional geometric design of mainline, junctions and side roads;
- consideration of Non-Motorised Users (NMUs);
- preliminary drainage design;
- outputs from flood models to identify suitable structural forms for major river crossings;
- optimisation of junction locations using the A96 CRAM traffic model; and
- interaction with environmental / landscape specialists in optimising alignments and junction layouts.

Engineering Assessment

All designs are in accordance with DMRB[1] guidance and no departures from standard are required for any of the options under consideration at this stage. The cost estimates prepared for each design provide the main differentiating factor between elements in engineering terms. It is considered that all elements can be developed using value engineering to reduce the costs and this will be carried out on the preferred option at DMRB Stage 3.

Traffic / Economic Assessment

Forecast traffic flows for each pairwise section have been produced to inform noise and air quality assessments. Traffic model outputs for the do-minimum (no scheme) and do-something (with scheme) scenarios have been used to calculate benefits of journey time savings (using TUBA) and accidents savings (using COBALT). The element with the best value for money has been identified by comparing the additional benefits and additional costs between each pair being assessed.

Environmental Assessment

The approach to environmental assessment has been adapted from Environmental Impact Assessment (EIA) methodology, drawing on relevant guidance from DMRB Volume 11 and other good practice guidance including Interim Advice Notes. The principles of the EIA assessment provide a robust basis for examination of the pairwise elements and their comparative performance. The assessment has been structured according to the 12 key environment topics drawn from DMRB which are reported in two groupings shown in the following table.

[1] http://www.standardsforhighways.co.uk/ha/standards/dmrb/index.htm

Topic	Group
Air Quality	Communities and People
Noise and Vibration	
People and Communities	
Agriculture, Forestry and Sporting	
Policies and Plans	
Materials	
Visual Effects	
Cultural Heritage	Natural and Cultural Heritage
Landscape	
Nature Conservation	
Geology, Soils, Contaminated Land and Groundwater	
Road Drainage and the Water Environment	

Environment Topics and Groups for Detailed Options Assessment

The significance of an environmental effect results from the interaction between its magnitude (which is related to the extent of the physical change, its spatial extent, duration and frequency) and the value of the resource or the number and sensitivity of those people who might be affected. Effects have been categorised into:

- none or negligible: no detectable change to the environment;
- minor: a detectable but non-material change to the environment;
- moderate: a material and important but non-fundamental change to the environment;
- major: a fundamental change to the environment and a principal consideration.

Effects categorised as being moderate or major (adverse or beneficial) are considered to be significant.

Assessment Framework

The engineering, environmental and traffic/economic findings and key differences have been drawn together into a multi-disciplinary framework for determining the element to be taken forward for each pairwise comparison. The following colour coding has been used to indicate preferences for each paired element:

	Clear preference
	Slight preference
	No clear preference

Figures 2.3, 2.4 and 2.5 show the comparison frameworks tabled at the workshop.

Topic and Assessment Indicator	Pairwise Element R2	Pairwise Element R3	Preference		Comment / Summary of Key Differences
Engineering Assessment					
- Cost estimate difference (2014 prices)	£12M more than R3	£12M less than R2		R3	Preference for R3
Environmental Assessment – Communities and People					
- Air Quality	• Approx. 1,800 receptors predicted to experience minor (non-significant) beneficial effects on local air quality (reduced NO_2 and PM_{10} concentrations) • <100 receptors predicted to experience minor (non-significant) adverse effects on local air quality (increased NO_2 and PM_{10} concentrations)	• Approx. 1,800 receptors predicted to experience minor (non-significant) beneficial effects on local air quality (reduced NO_2 and PM_{10} concentrations) • <100 receptors predicted to experience minor (non-significant) adverse effects on local air quality (increased NO_2 and PM_{10} concentrations)			**No preference** since differences between effects are negligible in terms of numbers of receptors and all predicted effects are non-significant
- Noise & Vibration	• Approx. 240 dwellings with predicted significant adverse traffic noise impacts, <10 dwellings with significant beneficial traffic noise impacts (compared with opening year do minimum)	• Approx. 130 dwellings with predicted significant adverse traffic noise impacts, <10 dwellings with significant beneficial traffic noise impacts (compared with opening year do minimum)		R3	**Preference for R3** due to fewer adverse noise impacts (non-mitigated at this stage). Additional potential residential receptors affected by R2 if LDP housing sites in Forres are built out
- People & Communities	• Reduction in amenity on 13 NMU routes, of which eight would have increased journey length • No land take from residential property. Alteration to route serving 10 properties with increased journey time due to Feddan to Dalvey Road realignment • A loss of approx. 17ha of woodland used by the community and alterations to access to the woodland areas for NMUs, particularly within Fairyhills Wood	• Reduction in amenity on 11 NMU routes, of which seven would have increased journey length • Land take from Riverview Caravan Park and Limekilns Cottage access. Altered access for a further approx. 80 properties (in addition to those for R2) through the stopping up of Mundole Road resulting in longer journey times to the south • A loss of approx. 29ha of woodland used by the community and alterations to access to the woodland areas for NMUs particularly within Limekilns Wood	R2		**Preference for R2**. R2 and R3 result in reduced amenity and increased journey lengths for some NMU routes. R3 is in close proximity to the caravan park and stopping up of Mundole Road in R3 results in an increase in journey length for more residents than for R2. R3 also results in a greater loss of woodland used by the community than R2
- Agriculture, Forestry and Sporting	• Land take from six farm / forestry units with a loss of approx. 52ha of agricultural land, approx. 41ha of which is prime land. Major adverse effects at Mundole Farm	• Land take from six farm / forestry units with a loss of approx. 26ha of agricultural land, approx. 22ha of which is prime land. Major adverse effects at Mundole Farm		R3	**Preference for R3** which results in less high value agricultural land being lost
- Policies & Plans	• Potential for conflict with 15 LDP policies • Moderate land take from housing/small business opportunity site in Forres	• Potential for conflict with 16 LDP policies • Minor land take impact on designated amenity site in Mundole		R3	**Preference for R3** which has less land take from designated LDP sites
- Materials	• Materials required for road pavement (4.6km mainline & 1.2km side roads), earthworks (approx. 0.8Mm³) and structures (deck area approx. 7,300m²)	• Materials required for road pavement (4.6km mainline & 0.4km side roads), earthworks (approx. 0.5Mm³) and structures (deck area approx. 6,800m²)		R3	**Preference for R3** due to lower material requirement for structures and earthworks
- Visual Effects	• Significant adverse visual effects predicted on residential receptor groups at four locations and on some NMU routes and local roads	• Significant adverse visual effects predicted on residential receptor groups at two locations and on some NMU routes and local roads. Effects in some locations contained by topography and woodland		R3	**Preference for R3** as visual effects more contained by topography and screening
Overall – Impacts on Communities and People	***R2 Element closer to Forres including some planned residential areas, with predicted traffic noise impacts more extensive than for R3. R2 has less loss of woodland used by the community, but greater loss of prime agricultural land than R3. Topography of R3 also allows for better screening of the road than for R2***			**R3**	***Preference for R3 primarily due to lower noise and visual impacts than R2, less impact on LDP sites and less agricultural land lost***
Environmental Assessment – Natural and Cultural Heritage					
- Cultural Heritage	• Predicted significant effect on Darnaway Castle GDL as route crosses edge of designated area, and impacts directly on two regionally significant archaeological sites	• Predicted significant effect on Darnaway Castle GDL as route crosses edge of designated area		R3	**Preference for R3** which avoids direct effects on regionally important archaeological sites
- Landscape	• Significant adverse residual landscape effects predicted from changes to, and loss of, landscape features and impact from elevated infrastructure	• Significant adverse residual landscape effects predicted from change to spatial character, woodland loss and impact from elevated infrastructure			**No preference** identified by the landscape assessment
- Nature Conservation	• Greater distance from Darnaway & Lethen Forest Special Protection Area (SPA) than R3 (approx. 700m to SPA boundary) • Loss of approx. 17ha ancient woodland and approx. 4.5ha native woodland	• Potential likely significant effect (LSE) to Darnaway & Lethen Forest SPA from disturbance (approx. 100m to SPA boundary) • Loss of approx. 27.5ha ancient woodland and approx. 1ha native woodland	R2		**Preference for R2** with less loss of ancient woodland and less potential for LSE on Darnaway & Lethen Forest SPA
- Geology, Soils, Contaminated Land & Groundwater	• Potentially significant contamination and unexploded ordnance issues associated with former Forres RAF base	• Potential contamination associated with former Forres RAF base (more distant from potential unexploded ordnance than R2)		R3	**Preference for R3.** R2 has greater potential to encounter contamination and unexploded ordnance
- Road Drainage & Water Environment	• No predicted material changes in flood levels • Minor effect on river geomorphology at Findhorn crossing	• No predicted material changes in flood levels • Geomorphological effects on Findhorn not predicted to be significant		R3	**Preference for R3** as crossing point of River Findhorn has potentially lower morphological effects (but neither significant)
Overall – Impacts on Natural and Cultural Heritage	***R2 has significant effects on cultural heritage (GDL and regionally important sites) and both options significantly affect landscape character. Potentially significant contamination and unexploded ordnance risks are greater for R2 than R3. Significant effects from loss of ancient woodland are greater for R3 which is also closer to the Darnaway and Lethen Forest SPA than R2***				***No preference. R3 has fewer effects on archaeology & lower contamination and ordnance risk however R3 has greater potential for LSE (although there is potential to mitigate LSE) and greater loss of ancient woodland***
Traffic / Economic Assessment					
- Traffic assessment	Effective transfer of traffic from existing network, very similar to R3	Effective transfer of traffic from existing network, very similar to R2		R3	R3 provides best value
- Additional Cost (PVC)	£6M (Discounted value – scheme construction 2027 – 2030)	-			
- Additional Benefit (PVB)	-	£1M (Discounted value – 1st scheme year is 2030)			
- Best Value	-	£7M			

Figure 2.3 Pairwise A Assessment – Comparison Framework

Topic and Assessment Indicator	Pairwise Element O2	Pairwise Element O3	Preference		Comment / Summary of Key Differences
Engineering Assessment					
- Cost estimate difference (2014 prices)	£54M more than O3	£54M less than O2		O3	Preference for O3
Environmental Assessment - Communities and People					
- Air Quality	• Approx. 900 receptors predicted to experience minor (non-significant) beneficial effects on local air quality (reduced NO_2 and PM_{10} concentrations) • <50 receptors predicted to experience minor (non-significant) adverse effects on local air quality (increased NO_2 and PM_{10} concentrations)	• Approx. 900 receptors predicted to experience minor (non-significant) beneficial effects on local air quality (reduced NO_2 and PM_{10} concentrations) • <50 receptors predicted to experience minor (non-significant) adverse effects on local air quality (increased NO_2 and PM_{10} concentrations)			**No preference** since differences between effects are negligible in terms of numbers of receptors and all predicted effects are non-significant
- Noise & Vibration	• Approx. 90 dwellings with predicted significant adverse traffic noise impacts, approx. 180 dwellings with significant beneficial traffic noise impacts (compared with opening year do minimum)	• Approx. 170 dwellings with predicted significant adverse traffic noise impacts, approx. 120 dwellings with significant beneficial traffic noise impacts (compared with opening year do minimum)	O2		**Preference for O2** due to fewer adverse noise impacts (non-mitigated at this stage). No difference when future housing sites are considered however O3 is closer to Forres and existing transport corridors
- People & Communities	• Reduction in amenity on seven NMU routes • No direct land take or alterations to access to property • A loss of approx. 1ha of woodland used by the community	• Reduction in amenity on 11 NMU routes, of which four would have increased journey length including for children using paths to access schools from Broom of Moy area • Land take from grounds of Greshop House. Altered route to vehicle access serving nine properties • A loss of <1ha of woodland used by the community	O2		**Preference for O2** which avoids the effects on properties (Greshop House land take and changes in vehicle access to properties) and avoids the diversion of NMU routes used to access Forres from Broom of Moy area for NMUs on O3
- Agriculture, Forestry and Sporting	• Significant effects predicted on four farm units • Land take from six farm / forestry units and a loss of approx. 41ha of agricultural land, approx. 36ha of which is prime quality agricultural land	• Significant effects predicted on two farm units • Land take from six farm / forestry units and a loss of approx. 32ha of agricultural land, approx. 29ha of which is prime quality agricultural land		O3	**Preference for O3** due to less land take than O2, slightly less loss of high agricultural value land and fewer farm units significantly affected
- Policies & Plans	• Potential for conflict with 12 LDP policies	• Potential for conflict with 13 LDP policies			**No preference**. Options predicted to have very similar policy issues
- Materials	• Materials required for road pavement (4.7km mainline only), earthworks (approx. 1.3Mm³) and structures (deck area approx. 13,400m²)	• Materials required for road pavement (4.6km mainline & 0.8km side roads), earthworks (approx. 0.9Mm³) and structures (deck area approx. 10,400m²)		O3	**Preference for O3** due to less material requirement for structures and earthworks
- Visual Effects	• Significant adverse visual effects predicted on residential receptor groups at 12 locations and on key NMU routes including core paths and the Moray Coastal Trail	• Significant adverse visual effects predicted on residential receptor groups at 12 locations and on key NMU routes including core paths and the Moray Coastal Trail. Located close already developed areas and existing transport corridor		O3	**Preference for O3** which results in fewer overall adverse visual effects and is located closer than O2 to already developed areas
Overall – Impacts on Communities and People	***O2 Element further than O3 from Forres, with greater effects on agriculture. More receptors affected on O3 by noise than O2 (closer to Forres). O2 predicted to have fewer effects on property and access than O3 but O3 has fewer adverse visual effects and lower materials requirements than O2***				***No clear preference for people and property (O3 is closer to Forres and follows the urban edge)***
Environmental Assessment – Natural and Cultural Heritage					
- Cultural Heritage	• No significant effects	• Predicted significant effect on setting of category B listed Greshop House and loss of one regionally significant archaeological site	O2		**Preference for O2** which avoids significant setting effects on listed Greshop House
- Landscape	• Significant adverse residual landscape effects predicted from road and structures whose vertical scale contrasts strongly with flat landscape	• Significant adverse residual landscape effects however road in proximity to northern edge of Forres		O3	**Preference for O3** which relates better in character to the landscape of northern edge of Forres
- Nature Conservation	• Option avoids direct loss of designated woodland (<1ha other woodland affected)	• Loss of approx. 0.1ha ancient woodland and approx. 0.5ha native woodland			**No preference**. Both options cross the Findhorn and would result in the minor loss of some woodland
- Geology, Soils, Contaminated Land & Groundwater	• Potentially significant contamination associated with former landfill • Risk of effect on hydrogeology and water supplies, including wells at Broom of Moy	• Risk of effects on hydrogeology and water supplies, including Benromach Distillery		O3	**Preference for O3** due to likely scale of remediation to mitigate potentially significant contamination risks on O2 associated with former landfill
- Road Drainage & Water Environment	• No predicted material changes in flood depths • Minor (non-significant) permanent effect on river geomorphology at River Findhorn crossing • No significant effects predicted on water quality; potential risk of contamination from former landfill	• No predicted material changes in flood depths • No significant effects predicted on water quality; no identified risk of contamination		O3	**Preference for O3** as crossing point of River Findhorn has potentially lower geomorphological effects. No identified risk of contamination in proximity to O3
Overall – Impacts on Natural and Cultural Heritage	***O2 predicted to have more significant effects on landscape character than O3. Potential for greater risks from contamination associated with former landfill on O2 than O3. O3 has significant effects on listed building and on landscape character although route follows existing transport corridor more closely than O2***			**O3**	***Preference for O3 due to better landscape fit of O3 and less geo-environmental and hydrological risks associated with former landfill***
Traffic / Economic Assessment					
- Traffic assessment	Effective transfer of traffic from existing network, very similar to O3	Effective transfer of traffic from existing network, very similar to O2		O3	O3 provides best value
- Additional Cost (PVC)	£27M (Discounted values – scheme construction 2027 – 2030)	-			
- Additional Benefit (PVB)	-	£4M (Discounted values – 1st scheme year is 2030)			
- Best Value	-	£31M			

Figure 2.4 Pairwise B Assessment – Comparison Framework

Topic and Assessment Indicator	Pairwise Element R8	Pairwise Element R9	Preference		Comment / Summary of Key Differences
Engineering Assessment					
- Cost estimate difference (2014 prices)	£61M less than R9	£61M more than R8	R8		Preference for R8
Environmental Assessment – Communities and People					
- Air Quality	• Approx. 350 receptors predicted to experience minor (non-significant) beneficial effects on local air quality (reduced NO_2 and PM_{10} concentrations) • <10 receptors predicted to experience minor (non-significant) adverse effects on local air quality (increased NO_2 and PM_{10} concentrations)	• Approx. 350 receptors predicted to experience minor (non-significant) beneficial effects on local air quality (reduced NO_2 and PM_{10} concentrations) • <10 receptors predicted to experience minor (non-significant) adverse effects on local air quality (increased NO_2 and PM_{10} concentrations)			**No preference** since differences between effects are negligible in terms of numbers of receptors and all predicted effects are non-significant
- Noise & Vibration	• Approx. 70 dwellings with predicted significant adverse traffic noise impacts, <10 dwellings with significant beneficial traffic noise impacts (compared with opening year do minimum)	• Approx. 30 dwellings with predicted significant adverse traffic noise impacts, <10 dwellings with significant beneficial traffic noise impacts (compared with opening year do minimum)		R9	**Preference for R9** due to fewer adverse noise impacts (non-mitigated at this stage). R8 is slightly closer to receptors in Fochabers
- People & Communities	• Reduction in amenity on 18 NMU routes, of which seven would have increased journey length • No land take from residential properties • A loss of approx. 10ha of woodland used by the community and alterations to NMU access in woodland areas, particularly in Castle Hill & Slorach's Wood	• Reduction in amenity on 23 NMU routes, of which eight would have increased journey length • Potential land take from grounds of residential property at Upper Ordiequish • A loss of approx. 22ha of woodland used by the community and alterations to NMU access in woodland areas, particularly in Castle Hill and Slorach's Wood	R8		**Preference for R8** with fewer significant effects on NMU routes, no land take from residential property and less loss of woodland areas used for recreation
- Agriculture, Forestry and Sporting	• Land take from five farm / forestry units and a loss of approx. 20ha of agricultural land, c6ha of which is prime quality agricultural land, and a loss of approx. 10ha of commercial forestry	• Land take from five farm / forestry units and a loss of approx. 20ha of agricultural land, approx. 7ha of which is prime quality agricultural land, and a loss of approx. 22ha of commercial forestry	R8		**Preference for R8** due to less loss of commercial forestry
- Policies & Plans	• Potential for conflict with 13 LDP policies	• Potential for conflict with 12 LDP policies			**No preference**. Options predicted to have similar policy issues
- Materials	• Materials required for road pavement (3.5km mainline & 2km side roads), and structures (deck area approx. 34,000m^2); export for earthworks (approx. 0.1Mm^3)	• Materials required for road pavement (4km mainline & 1.4km side roads), and structures (deck area approx. 47,000m^2); export for earthworks (approx. 0.9Mm^3)	R8		**Preference for R8** due to lower material requirement for structures and earthworks
- Visual Effects	• Significant adverse visual effects for residential receptor groups at five locations and on key NMU routes including Speyside Way	• Significant adverse visual effects for residential receptor groups at six locations and on key NMU routes including Speyside Way			**No preference**. No significant difference in visual effects
Overall – Impacts on Communities and People	***R8 route closer to Fochabers than R9 with slightly more receptors predicted to have adverse noise impacts. R8 has fewer effects on NMUs and loss of woodland used by the community 2.5unity than R9. R9 has potential land take from the grounds of one property, greater effects on commercial forestry and requires more materials than R8***		**R8**		***Preference for R8 due to fewer effects on NMUs and recreation than R9 and avoids land take from residential property. R8 has reduced materials requirement***
Environmental Assessment – Natural and Cultural Environment					
- Cultural Heritage	• Significant effect on setting of one listed building (burial ground, Dipple)	• No significant effects		R9	**Preference for R9** which is more distant from burial ground at Dipple than R8
- Landscape	• Significant adverse residual landscape effects and direct effect on northern edge of Speyside AGLV	• Significant adverse residual landscape effects including from large cutting near Ordiequish and direct effect on Speyside AGLV. Route intrudes further into AGLV than R8	R8		**Preference for R8** due to less incursion into AGLV and less landscape intrusion at Ordiequish from earthworks
- Nature Conservation	• Potential for likely significant effects (LSE) from disturbance to River Spey Special Area of Conservation (SAC) (and SSSI) • Loss of approx. 7ha ancient woodland and approx. 0.5ha native woodland	• Potential for LSE from disturbance to River Spey SAC (and SSSI) • Loss of approx. 21ha ancient woodland	R8		**Preference for R8** with significantly less loss of ancient woodland than R9. Potential to mitigate LSE on River Spey SAC for both options
- Geology, Soils, Contaminated Land & Groundwater	• Effects on hydrogeology and private water supplies, including Spey Abstraction Scheme (direct effect on at least eight abstraction wells; upgradient of approximately two thirds of scheme)	• Effects on hydrogeology and private water supplies, including Spey Abstraction Scheme (direct effect on at least two abstraction wells; upgradient of entire abstraction scheme and the Ordiequish Galleries)			**No Preference.** Consultation with Scottish Water concluded at this stage there is no preference between the options, as both would require complex mitigation
- Road Drainage & Water Environment	• No predicted material changes in flood depths • Risk of significant effect on river geomorphology at River Spey crossing on large meander bend, potentially requiring stabilisation works	• No predicted material changes in flood depths • Geomorphological effects on River Spey not predicted to be significant		R9	**Preference for R9** due to lower risk of fluvial geomorphological effects on River Spey
Overall – Impacts on Natural and Cultural Heritage	***Significant effects on landscape character predicted for R8 and R9 although R9 is more intrusive in the landscape and on the designated AGLV. Complex mitigation required for replacement water supply on R8 and R9. There is significant loss of ancient woodland for R9 (greater than R8). R9 has lower risk of effects on river geomorphology than R8***		**R8**		***Preference for R8 which has lower ecological and landscape effects than R9. R9 has less cultural heritage effect and lower geomorphology risks than R8***
Traffic / Economic Assessment					
- Traffic assessment	Effective transfer of traffic from existing network, slightly higher than R9	Effective transfer of traffic from existing network, slightly lower than R8	R8		R8 provides best value
- Additional Cost (PVC)	-	£31M (Discounted values – scheme construction 2027 – 2030)			
- Additional Benefit (PVB)	£17M (Discounted values – 1st scheme year is 2030)	-			
- Best Value	£48M	-			

Figure 2.5 Pairwise C Assessment – Comparison Framework

3. Workshop Participants, Agenda and Outputs

3.1 Workshop Participants

Alasdair Graham	TS – A96 Dualling Programme Sponsor
Craig Cameron	TS – A96 Dualling Programme Manager
John MacIntyre	TS – A96 Dualling Hardmuir to Fochabers Project Manager
Adam Gould	TS – A96 Dualling Hardmuir to Fochabers Assistant Project Manager
Angus Corby	TS – Landscape Adviser
Sinead Thom	TS – Environmental Adviser
Maeve Glover	TS – Environmental Adviser
Jim Brown	TS – Bridges
Iain Scott	MMS - Contract Director
Mike Hodgson	MMS - Contract Manager
Steve Wallace	MMS – Roads and Infrastructure Manager
David Webster	MMS – Roads and Infrastructure Manager
Tara O'Leary	MMS – Deputy Traffic and Economics Manager
Annie Say	MMS – Environment and Landscaping Manager
Henry Collin	MMS – Deputy Environment and Landscaping Manager
Ronan Lyng	MMS – Senior Roads Engineer
Gordon Gray	MMS – Senior Roads Engineer

3.2 Workshop Agenda

Timings of the day were flexible but all items of the agenda were completed.

Time	Item
09:30	Introductions and Background
09:40	Workshop Process and Assessment Methods
10:00	Pairwise A (R2 v R3)
11:00	Coffee
11:15	Pairwise B (O2 v O3)
12:30	Lunch
13:15	Pairwise C (R8 v R9)
14:15	Workshop Summary and Findings

Appendix A contains the Workshop Presentation.

3.3 Workshop Outputs

Each pairwise assessment was discussed at the workshop and Figures 3.1, 3.2 and 3.3 summarise the findings for each pairwise assessment.

Topic	Preference		Comments
Communities & People		R3	Preference for R3 primarily due to lower noise and visual impacts than R2, less impact on LDP sites and less agricultural land lost
Natural & Cultural Environment			No preference. R3 has fewer effects on archaeology & lower contamination and ordnance risk however R3 has greater potential for LSE (although there is potential to mitigate LSE) and greater loss of ancient woodland
Engineering (cost)		R3	Preference for R3 as cost is £12M less
Traffic / Economic (NPV)		R3	R3 provides best value
Overall Preference		**R3**	**R3 is preferred**

Figure 3.1 Pairwise A Assessment - Summary

Topic	Preference	Comments
Communities & People		No clear preference for people and property (O3 is closer to Forres and follows the urban edge)
Natural & Cultural Environment	O3	Preference for O3 due to better landscape fit of O3 and less geo-environmental and hydrological risks associated with former landfill
Engineering (cost)	O3	Preference for O3 as cost is £54M less
Traffic / Economic (NPV)	O3	O3 provides best value
Overall Preference	**O3**	**O3 is preferred**

Figure 3.2 Pairwise B Assessment - Summary

Topic	Preference		Comments
Communities & People	R8		Preference for R8 due to fewer effects on NMUs and recreation than R9 and avoids land take from residential property. R8 has reduced materials requirement
Natural & Cultural Environment	R8		Preference for R8 which has lower ecological and landscape effects than R9. R9 has less cultural heritage effect and lower geomorphology risks than R8
Engineering (cost)	R8		Preference for R8 as cost is £61M less
Traffic / Economic (NPV)	R8		R8 provides best value
Overall Preference	**R8**		**R8 is preferred**

Figure 3.3 Pairwise C Assessment - Summary

The output from the workshop was that Route elements R3, O3 and R8 were to be taken forward to the next stage of assessment to identify the preferred option for the A96 Dualling Hardmuir to Fochabers scheme. Route elements R2, O2, and R9 were removed from further consideration.

A number of general comments were raised during the workshop following which responses were drafted and captured as recorded below.

General Comments Raised

1. All the elements have been designed to standard. If value engineering was applied throughout, would there still be clear preferences for the selected elements?
   Response: Following the workshop an exercise to identify any areas where significant cost savings could be gained through value engineering techniques was undertaken. This established if there would be a significant change to the preference scoring for

each pairwise comparison. The results of this exercise are reported in questions 5,6 and 8.

2. It was noted that the 2017 EIA Regulations potentially introduce new/amended topics for environmental assessment.
   Response: The current Stage 2 work is representative of the range of topics and key environmental impacts to be considered for the options assessments. At Stage 3, which involves the preferred option assessment, the structure of the EIA Report will reflect the requirements of the Regulations and any guidance from Transport Scotland.

Pairwise A Comments Raised

3. It was noted that R3 comes close (approximately 100m) to the Darnaway and Leven Forest SPA designation.
   Response: This was acknowledged. MMS explained that the SPA extends over a larger area approximately 10km to the south. The drawing included in Annex A of this report has been revised since the workshop to indicate the extensive nature of this designation which is a large area stretching further to the south of Forres.

4. Does the R3 route pass through lands owner by the caravan park at Mundole?
   Response: The land labelled as caravan park / caravan site on the ordnance survey mapping is part of Mundole Farm and not under the ownership or usage of the caravan park. The drawing included in Annex A of this report has been updated to indicate the extents of Riverview Caravan Park.

5. What areas of the designs could be subject to cost savings and would there be a change in the workshop findings?
   Response: Some savings could be gained through earthworks design however this applies equally to both R2 and R3 and therefore there is no change to the clear preference for the R3 element in this pairwise comparison.

Pairwise B Comments Raised

6. What areas of the designs could be subject to cost savings and would there be a change in the workshop findings?
   Response: On O2 the number of bridges east of the River Findhorn could be reduced by providing a parallel road adjacent to the dual carriageway. However, the net cost saving for this is considered to be relatively small and therefore the clear preference for O3 in both engineering and overall terms is maintained.

Pairwise C Comments Raised

7. It was noted that both R8 and R9 pass through the Speyside Area of Great Landscape Value (AGLV) designation.

Response: Noted. The AGLV extends approximately 62km to the south (the report drawing has been updated to better indicate that R8 and R9 are at the northern extent of the AGLV).

8. What areas of the designs could be subject to cost savings and would there be a change in the workshop findings?
   Response: On R9 the deck width assumed for the Spey Crossing could be reduced in width and whilst still achieving acceptable forward visibility around the parapet and central safety barrier. This could save approximately £23M. No equivalent savings were identified for R8. The cost differential between R8 and R9 when considered in value engineering terms is therefore £38M. Given this difference both the engineering and overall clear preferences for R8 is maintained.

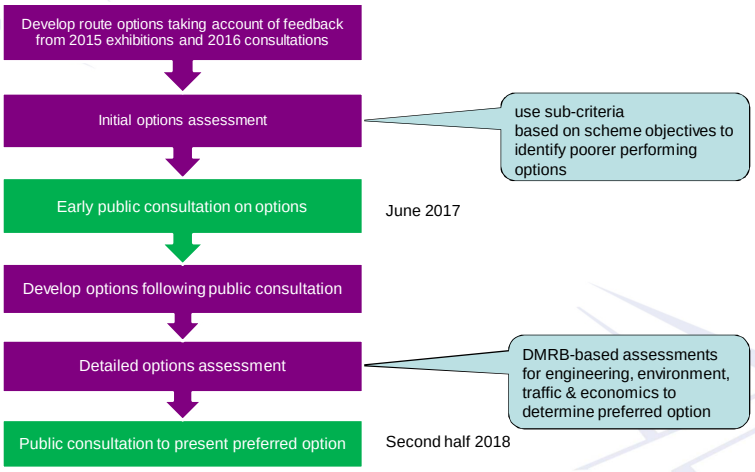
Appendix A

Workshop Presentation

A96 Dualling
Hardmuir to Fochabers
DMRB Stage 2
Pairwise Round 1 Workshop
12 January 2018

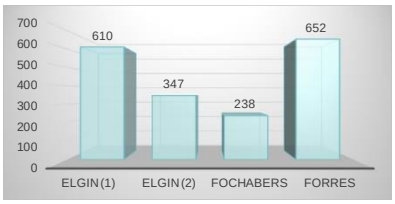
Mott MacDonald
Sweco

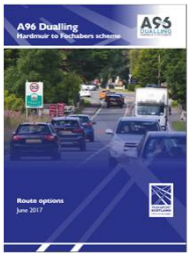
Background - Approach to Route Selection



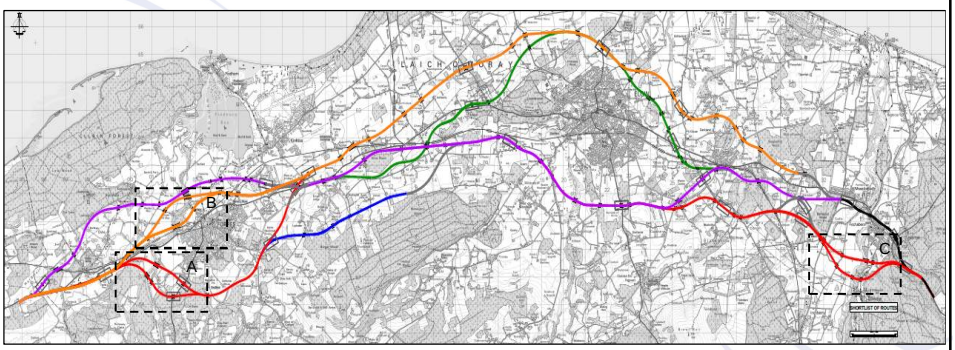
Route Option Exhibitions

- Exhibitions held 19-22 June 2017
- Over 1,800 Attendees
- Approx 750 Responses





Route Options for Public Consultation showing Pairwise Round 1 Locations



Workshop Process

- To present a series of paired elements in three specific areas;
- The workshop objective is to ratify which elements are taken forward in the preferred option selection process;
- The decisions are informed by :
  - engineering assessments;
  - traffic / economic assessments; and
  - environmental assessments.
- The reason(s) for selecting a particular element is documented in the workshop handbook.

Assessment Methods

Engineering Assessment

- The development of the designs is in accordance with the DMRB.
- River crossings have been designed to avoid significant flood impacts.
- Cost estimates provide the main differentiating factor between elements.

Traffic / Economic Assessment

- Forecast traffic flows for each pairwise section have been produced to inform noise and air quality modelling.
- Traffic model outputs for the do-minimum (no scheme) and do-something (with scheme) scenarios have been used to calculate benefits of:-
  - journey time savings (using TUBA) and
  - accidents savings (using COBALT).
- By comparing the additional benefits and additional costs the element with the best value for money can be identified.

Environmental Assessment

Adapted from Environmental Impact Assessment (EIA) methodology, drawing on relevant guidance from DMRB Volume 11.

The assessment is structured according to the key environment topics drawn from DMRB which are reported in two groupings:

- Communities and People
- Natural and Cultural Heritage

The significance of an effect results from the interaction between its magnitude and the value of the resource or the number and sensitivity of those people who might be affected. Effects are categorised into:

- none or negligible: no detectable change to the environment
- minor: a detectable but non-material change to the environment
- moderate: a material and important but non-fundamental change to the environment
- major: a fundamental change to the environment and a principal consideration

Effects categorised as being moderate or major are considered to be significant.

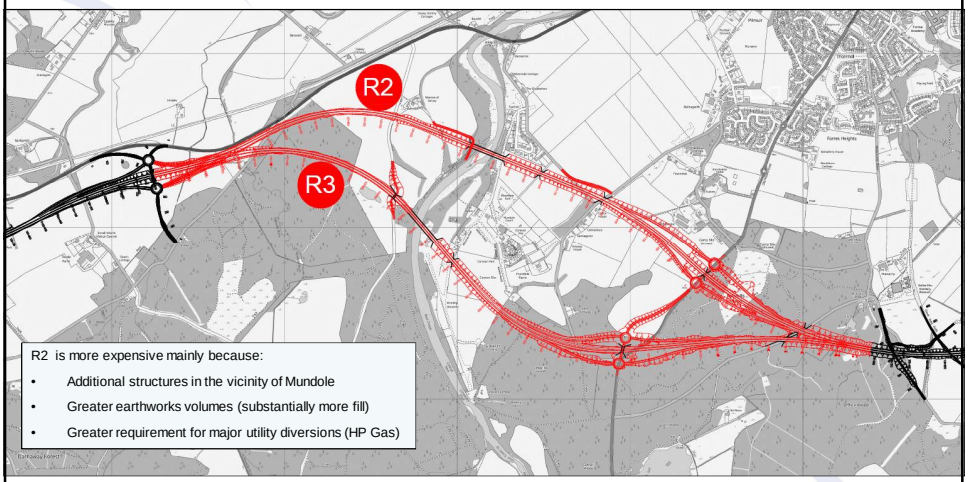
Assessment Framework

The engineering, environmental and traffic/economic findings are drawn together into a multi-disciplinary framework for determining the option to be taken forward for each pairwise comparison. The following colour coding has been to indicate preferences for each paired element:

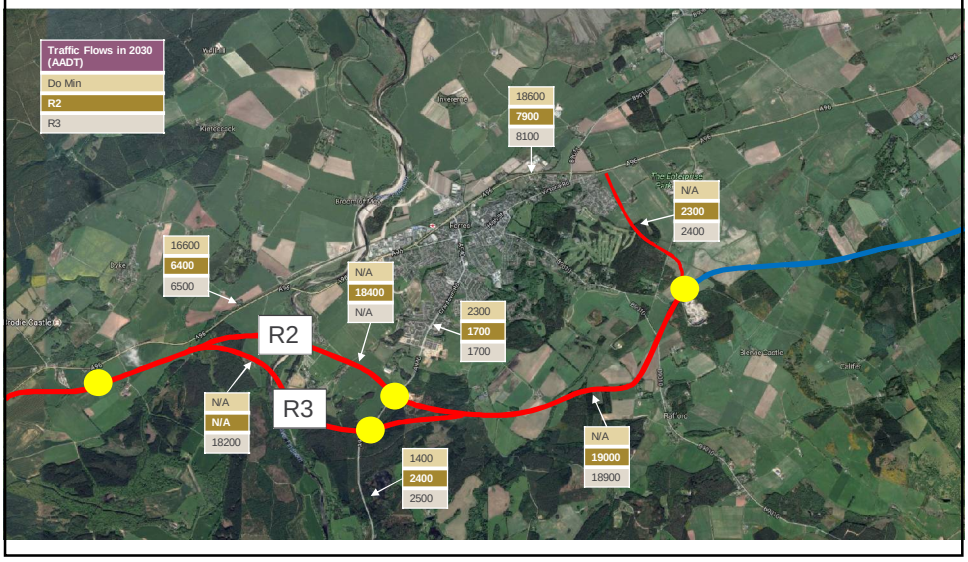
	Clear preference
	Slight preference
	No preference

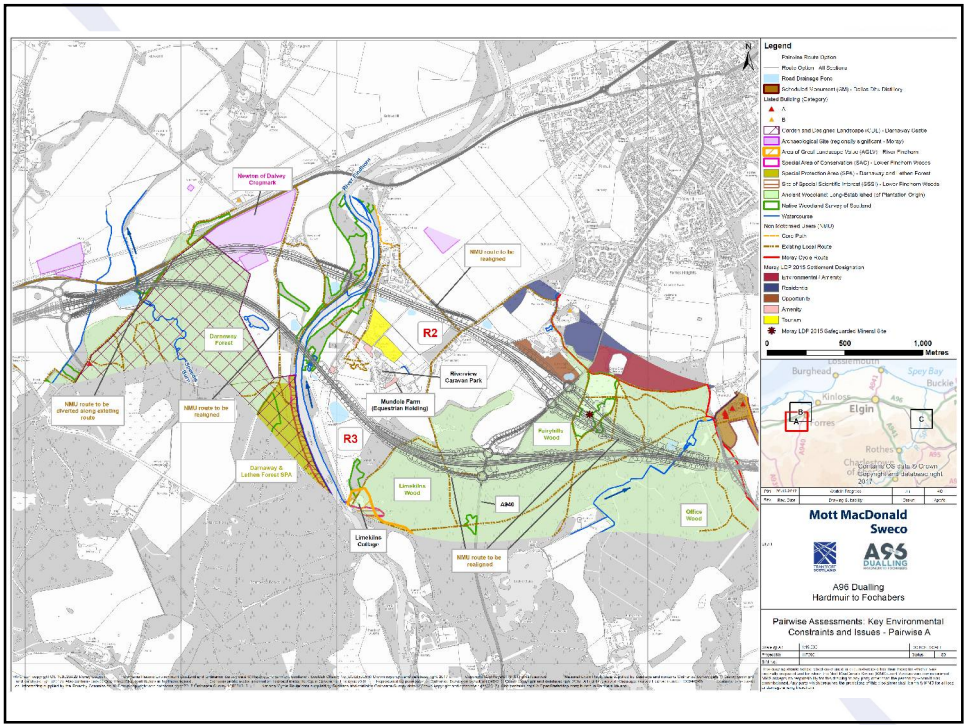
Pairwise A
R2 vs R3

R2 estimated cost =	£114M
R3 estimated cost =	£102M



Pairwise A Economics	Additional Cost (PVC)	Additional Benefit (PVB)	Best Value
R2	£6M		
R3		£1M	£7M





Typical landscape character of the Pairwise A study area

Pairwise A – Air Quality & Noise

Topic	R2	R3	Preference
Air Quality (Opening Year)	• Approx 1800 receptors with minor beneficial change • <100 receptors with minor adverse change	• Approx 1800 receptors with minor beneficial change • <100 receptors with minor adverse change	No preference
Noise & Vibration (Opening Year)	• Approx 240 dwellings with significant adverse traffic noise impacts • <10 dwellings with significant beneficial traffic noise impacts	• Approx 130 dwellings with significant adverse traffic noise impacts • <10 dwellings with significant beneficial traffic noise impacts	R3

Pairwise A – People & Communities

Topic	R2	R3	Preference
People & Communities	• Reduced amenity on 13 NMU routes, of which eight would have increased journey length • Alteration of route serving 10 properties • Loss of approx 17ha woodland used by community & adverse effect on local paths in Fairyhills Wood	• Reduced amenity on 11 NMU routes, of which seven would have increased journey length • Alteration of route to approx 90 properties & minor land take from caravan park • Loss of approx 29ha woodland used by community	R2
Agriculture, Forestry & Sporting	• Loss of approx. 52ha agricultural land of which approx. 41ha prime land • Adverse effects on six farm/forest units, major effect at Mundole	• Loss of approx 26ha agricultural land of which approx 22ha prime land • Adverse effects on six farm/forest units, major effect at Mundole	R3

Pairwise A – Policy, Materials & Visual Effects

Topic	R2	R3	Preference
Policies & Plans	• Land take from LDP allocation for housing & small business opportunity site at Forres	• Slight land take from LDP designation for amenity site at Mundole	R3
Materials	• Materials required for pavement (4.6km mainline & 1.2km side roads), earthworks (0.8Mm^3) and structures (deck area 7,300m^2)	• Materials required for road pavement (4.6km mainline & 0.4km side roads), earthworks (0.5Mm^3) and structures (deck area 6,800m^2)	R3
Visual	• Significant adverse visual effects on residential receptor groups at four locations and on four key NMU routes	• Significant adverse visual effects on residential receptor groups at two locations and on three key NMU routes	R3

Pairwise A – Communities & People: Summary

Topic	Preference		Reasons
Air Quality			No significant effects
Traffic Noise		R3	Clear difference in adverse traffic noise effects
People & Communities	R2		Smaller loss of woodland used for recreation and fewer property accesses affected
Agriculture		R3	Lower loss of prime quality land
Policies & Plans		R3	Less effect on designated development sites in Moray LDP
Materials		R3	Less material requirement, particularly earthworks
Visual		R3	Visual effects more contained
Overall – Communities & People		R3	Clear preference for R3 which is situated further from communities and people receptors

Pairwise A – Cultural Heritage, Landscape & Nature Conservation

Topic	R2	R3	Preference
Cultural Heritage	• Predicted significant effects on Darnaway Castle GDL and two regionally significant archaeological sites	• Predicted significant effect on Darnaway Castle GDL	R3
Landscape	• Significant adverse landscape effects	• Significant adverse landscape effects	No preference
Nature Conservation	• Loss of approx 17ha ancient woodland and approx 4.5ha native woodland	• Disturbance to Darnaway Forest SPA • Loss of approx 27.5ha ancient woodland and approx 1ha native woodland	R2

Pairwise A – Geology & Water

Topic	R2	R3	Preference
Geology, Soils, Contaminated Land & Groundwater	• Potentially significant contamination and unexploded ordnance issues associated with former Forres RAF base • Significant effects on hydrogeology/water supplies	• Potential contamination associated with former Forres RAF base • Significant effects on hydrogeology/water supplies	R3
Road Drainage & Water Environment	• No significant flood effect • Potential effect on river geomorphology at Findhorn crossing	• No significant effects	R3

Pairwise A – Natural & Cultural Environment: Summary

Topic	Preference		Reasons
Cultural Heritage		R3	Less effect on regionally significant archaeology
Landscape			Changes to spatial character, woodland loss and elevated structures
Nature Conservation	R2		Less ancient woodland loss and more distant from Darnaway & Lethen Forest SPA with potential to mitigate for LSE
Geology, Soils, CL & Groundwater		R3	Further from potential sources of contamination and unexploded ordnance at former military airfield
RDWE		R3	Lower risk of morphological effects at river crossing
Overall – Natural & Cultural Environment			On balance no preference - R3 has fewer effects on cultural heritage and contaminated land but R3 affects more ancient woodland and is closer to the SPA than R2

Pairwise A - Framework

Topic	Preference		Comments
Environment - Communities & People		R3	Clear preference for R3 which is situated further from communities and people receptors
Environment - Natural & Cultural Heritage			On balance no preference - R3 has fewer effects on cultural heritage and contaminated land but R3 affects more ancient woodland and is closer to the SPA than R2 (but potential to mitigate LSE)
Engineering (cost)		R3	Preference for R3 as cost is £12M less
Traffic / Economic (NPV)		R3	R3 provides best value
Overall Preference		**R3**	**R3 is preferred**

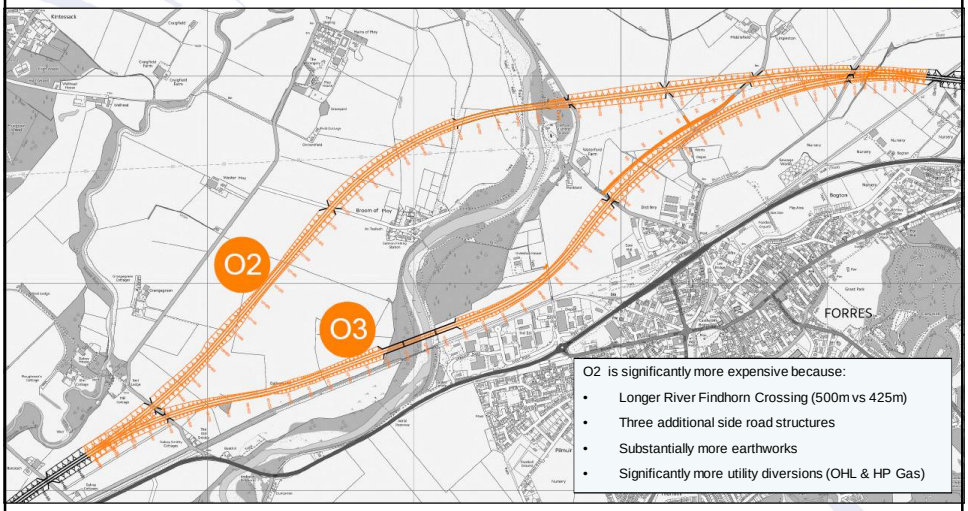
Pairwise B
O2 vs O3

O2 estimated cost = £171M

O3 estimated cost = £117M

A96 DUALLING HARDMUIR TO FOCHABERS

TRANSPORT SCOTLAND COMHDHAIL ALBA



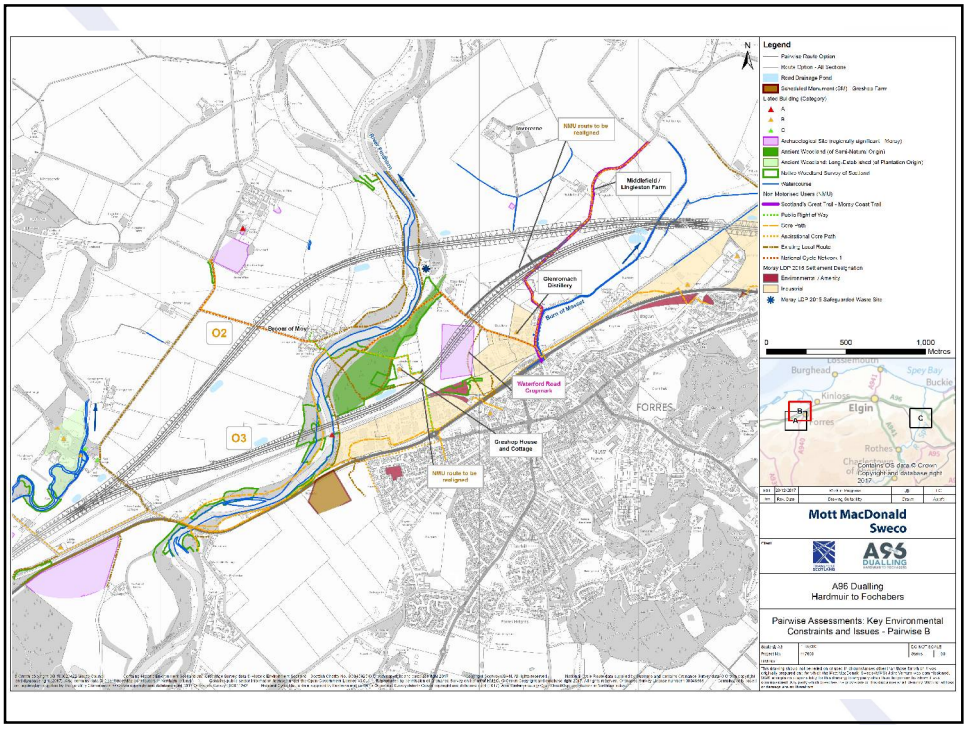
O2 is significantly more expensive because:

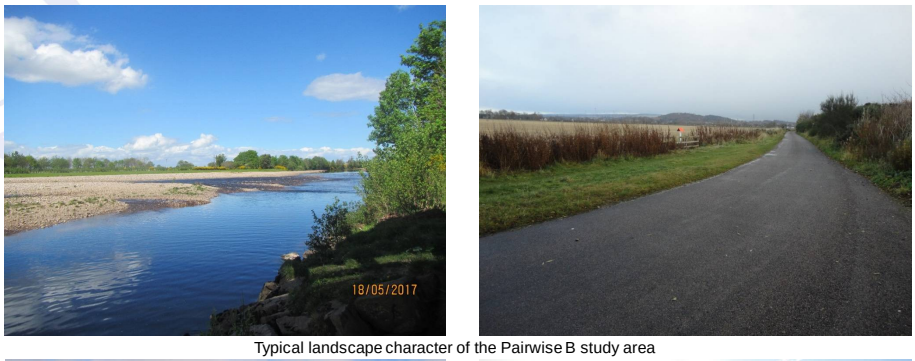
- Longer River Findhorn Crossing (500m vs 425m)
- Three additional side road structures
- Substantially more earthworks
- Significantly more utility diversions (OHL & HP Gas)

Pairwise B Economics	Additional Cost (PVC)	Additional Benefit (PVB)	Best Value
O2	£24M		
O3		£4M	£28M

A96 DUALLING HARDMUIR TO FOCHABERS

TRANSPORT SCOTLAND COMHDHAIL ALBA





Typical landscape character of the Pairwise B study area

Pairwise B – Air Quality & Noise

Topic	O2	O3	Preference
Air Quality (Opening Year)	• Approx 900 receptors with minor beneficial change • <50 receptors with minor adverse change	• Approx 900 receptors with minor beneficial change • <50 receptors with minor adverse change	No preference
Noise & Vibration (Opening Year)	• Approx 90 dwellings with significant adverse traffic noise impacts • Approx 180 dwellings with significant beneficial traffic noise impacts	• Approx 170 dwellings with significant adverse traffic noise impacts • Approx 120 dwellings with significant beneficial traffic noise impacts	O2

Pairwise B – People & Communities

Topic	O2	O3	Preference
People & Communities	• Reduced amenity on 7 NMU routes • Loss of approx 1ha woodland used by community	• Reduced amenity on 11 NMU routes, of which four would have increased journey length • Alteration of route to nine properties & land take from grounds of Greshop House • Loss of <1ha woodland used by community	O2
Agriculture, Forestry & Sporting	• Loss of approx 41ha agricultural land of which approx 36ha prime land • Adverse effects on six farm units, significant effect on four units	• Loss of approx 32ha agricultural land of which approx 29ha prime land • Adverse effects on six farm units, significant effect on two units	O3

Pairwise B – Policy, Materials & Visual Effects

Topic	O2	O3	Preference
Policies & Plans	• Potential for conflict with 12 LDP policies	• Potential for conflict with 13 LDP policies	No preference
Materials	• Materials required for road pavement (4.7km mainline), earthworks (1.3Mm^3) and structures (deck area 13,400m^2)	• Materials required for road pavement (4.6km mainline & 0.8km side roads), earthworks (0.9Mm^3) and structures (deck area 10,400m^2)	O3
Visual Effects	• Significant adverse visual effects on residential receptor groups at 12 locations and on four key NMU routes	• Significant adverse visual effects on residential receptor groups at 12 locations and on three key NMU routes • Closer to existing urban edge and transport corridor	O3

Pairwise B – Communities & People: Summary

Topic	Preference		Reasons
Air Quality			No significant effects
Traffic Noise	O2		Clear difference in adverse traffic noise effects
People & Communities	O2		Fewer effects on private properties and their means of access
Agriculture		O3	Less prime quality land affected and fewer effects on farm units
Policies & Plans			No significant effects
Materials		O3	Lower material requirement, particularly for earthworks
Visual Effects		O3	Less extensive effects on visual receptors
Overall – Communities & People			On balance no preference - O2 is further from concentrations of people and property but has greater effects on agriculture, materials and visual receptors than O3

Pairwise B – Cultural Heritage, Landscape & Nature Conservation

Topic	O2	O3	Preference
Cultural Heritage	• No significant effects	• Significant effect on setting of category B listed Greshop House & loss of one regionally significant archaeological site	O2
Landscape	• Significant adverse landscape effects • Vertical scale contrasts strongly with flat landscape	• Significant adverse landscape effects • In proximity to northern edge of Forres	O3
Nature Conservation	• Avoids direct loss of designated woodland	• Loss of 0.1ha ancient woodland and 0.5ha native woodland	No preference

Pairwise B – Geology & Water

Topic	O2	O3	Preference
Geology, Soils, Contaminated Land & Groundwater	• Potential contamination associated with former landfill • Effects on hydrogeology and water supplies, including wells at Broom of Moy	• Effects on hydrogeology and water supplies, including at Benromach Distillery	O3
Road Drainage & Water Environment	• No significant flood effect • Potential effect on river geomorphology at River Findhorn crossing	• No significant effects	O3

Pairwise B – Natural & Cultural Environment: Summary

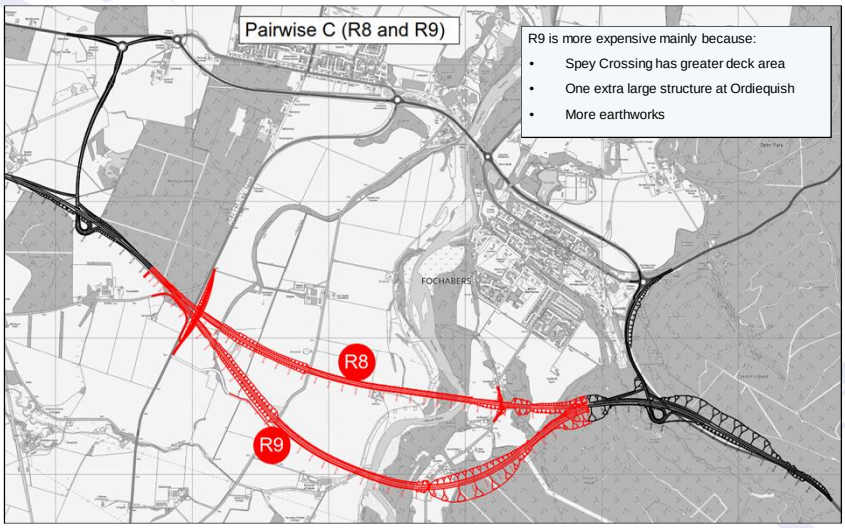
Topic	Preference		Reasons
Cultural Heritage	O2		Avoids significant setting effects on Greshop House
Landscape		O3	Closer in character to urban edge of Forres
Nature Conservation			No significant difference in effects
Geology, Soils, CL & Groundwater		O3	Further from potential sources of contamination at former landfill site on Waterford Road
RDWE		O3	Lower risk of morphological effects at river crossing
Overall – Natural & Cultural Environment		O3	On balance preference for O3 due to fewer effects on landscape and lower environmental risk

Pairwise B - Framework

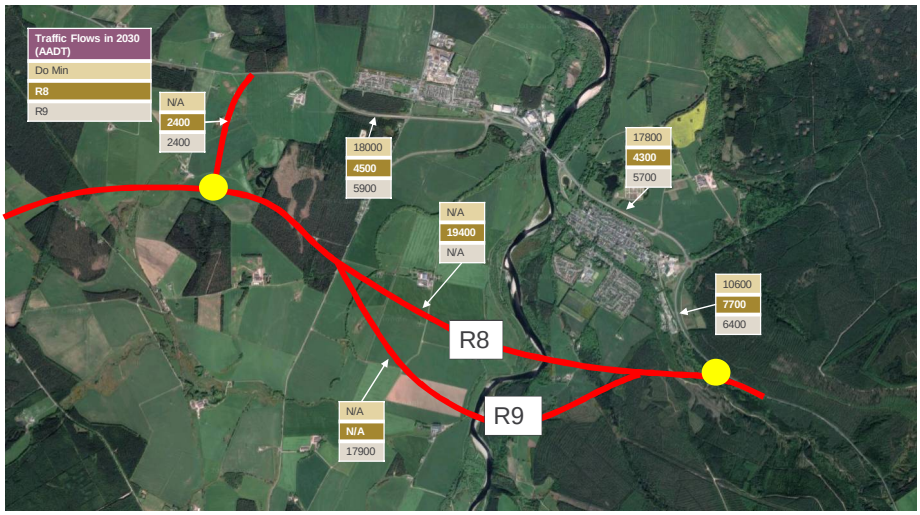
Topic	Preference		Comments
Environment - Communities & People			On balance no preference - O2 is further from concentrations of people and property but has greater effects on agriculture, materials and visual receptors than O3
Environment - Natural & Cultural Heritage		O3	On balance preference for O3 due to fewer effects on landscape and lower environmental risk
Engineering (cost)		O3	Preference for O3 as cost is £54M less
Traffic / Economic (NPV)		O3	O3 provides best value
Overall Preference		**O3**	**O3 is preferred**

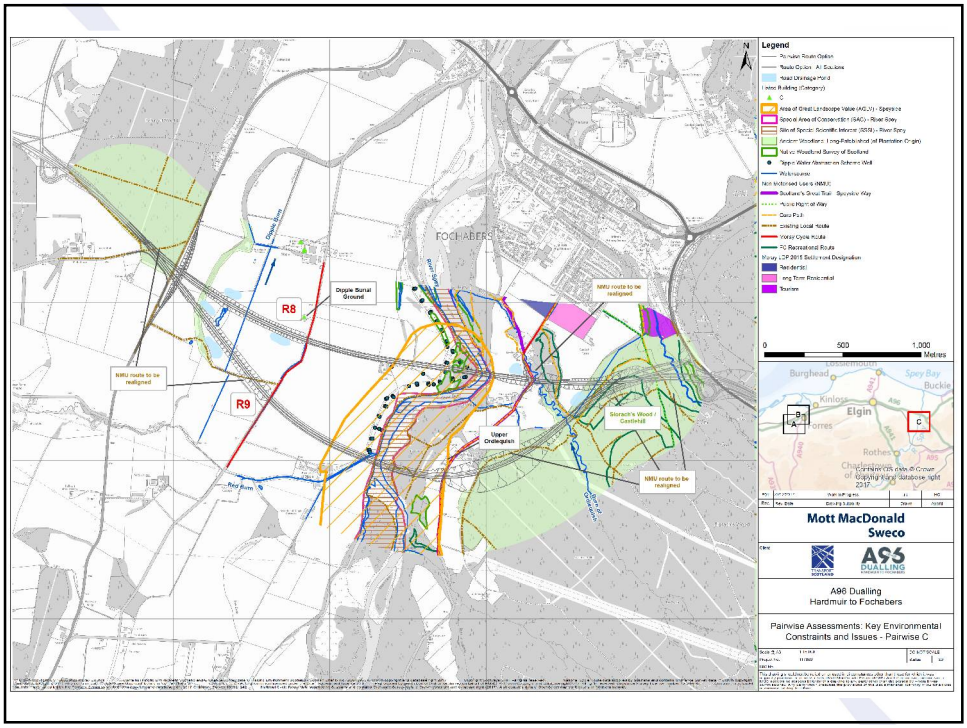
Pairwise C
R8 vs R9

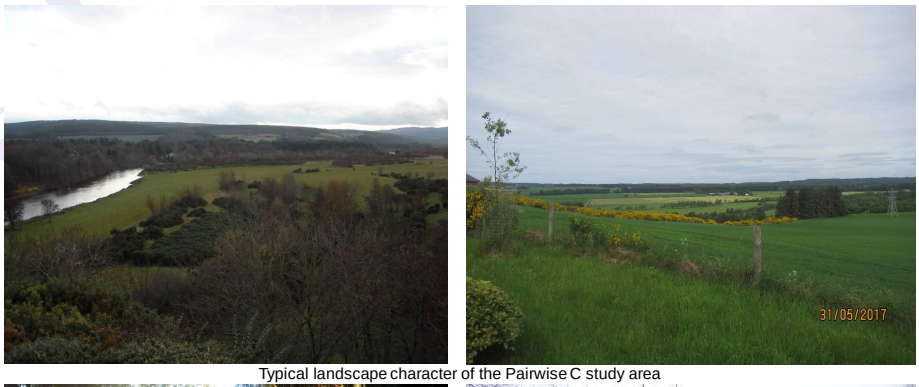
R8 estimated cost =	£109M
R9 estimated cost =	£170M



Pairwise C Economics	Additional Cost (PVC)	Additional Benefit (PVB)	Best Value
R8		£17M	£48M
R9	£31M		







Typical landscape character of the Pairwise C study area

Pairwise C – Air Quality & Noise

Topic	R8	R9	Preference
Air Quality (Opening Year)	• Approx 350 receptors with minor beneficial change • <50 receptors with minor adverse change	• Approx 350 receptors with minor beneficial change • <50 receptors with minor adverse change	No preference
Noise & Vibration (Opening Year)	• Approx 70 dwellings with significant adverse traffic noise impacts • <10 dwellings with significant beneficial traffic noise impacts	• Approx 30 dwellings with significant adverse traffic noise impacts • <10 dwellings with significant beneficial traffic noise impacts	R9

Pairwise C – People & Communities

Topic	R8	R9	Preference
People & Communities	• Reduced amenity on 18 NMU routes, of which seven would have increased journey length • Loss of approx 10ha woodland used by community	• Reduced amenity on 23 NMU routes, of which eight would have increased journey length • Land take from one residential property • Loss of approx 22ha woodland used by community	R8
Agriculture, Forestry & Sporting	• Loss of approx 6ha prime agricultural land and approx 9ha commercial forestry • Adverse effects on five farm / forest units	• Loss of approx 7ha prime agricultural land and approx 23ha commercial forestry • Adverse effects on five farm / forest units	R8

Pairwise C – Policy, Materials & Visual Effects

Topic	R8	R9	Preference
Policies & Plans	• Potential for conflict with 13 LDP policies	• Potential for conflict with 12 LDP policies	No preference
Materials	• Materials required for road pavement (3.5km mainline & 2km side roads), earthworks (0.1Mm^3) and structures (deck area 34,000m^2)	• Materials required for road pavement (4km mainline & 1.4km side roads), earthworks (0.9Mm^3) and structures (deck area 47,000m^2)	R8
Visual Effects	• Significant adverse visual effects on residential receptor groups at five locations and key NMU routes including Speyside Way	• Significant adverse visual effects on residential receptor groups at six locations and NMU key routes including Speyside Way	No preference

Pairwise C: Communities & People: Summary

Topic	Preference		Reasons
Air Quality			No significant effects
Traffic Noise		R9	Difference in adverse traffic noise effects
People & Communities	R8		Fewer effects on private property and woodland used by community
Agriculture	R8		Lower loss of commercial forestry
Policies & Plans			No significant effects
Materials	R8		Lower material requirement, particularly earthworks
Visual Effects			
Overall – Communities & People	R8		Fewer direct effects on private properties, commercial and recreational woodland, and less material intensive

Pairwise C – Cultural Heritage, Landscape & Nature Conservation

Topic	R8	R9	Preference
Cultural Heritage	• Adverse effect on setting of listed Dipple Burial Ground	• No significant effects predicted	R9
Landscape	• Significant adverse landscape effects • Direct effect on northern edge of Speyside AGLV	• Significant adverse landscape effects • Greater intrusion into AGLV and more significant cutting than for R8	R8
Nature Conservation	• Disturbance to River Spey SAC and SSSI • Loss of 7ha ancient woodland and 1ha native woodland	• Disturbance to River Spey SAC and SSSI • Loss of 21ha ancient woodland	R8

Pairwise C – Geology & Water

Topic	R8	R9	Preference
Geology, Soils, Contaminated Land & Groundwater	• Effects on hydrogeology and private water supplies, including Spey Abstraction Scheme	• Effects on hydrogeology and private water supplies, including Spey Abstraction Scheme	No preference
Road Drainage & Water Environment	• No significant flood effect • Potential effect on river geomorphology at Spey crossing	• No significant flood effect	R9

Pairwise C – Natural & Cultural Environment: Summary

Topic	Preference		Reasons
Cultural Heritage		R9	Avoids significant setting effects on Dipple Burial Ground
Landscape	R8		Avoids very extensive cut in hillside east of Spey and less intrusion to AGLV
Nature Conservation	R8		Lesser effect on ancient woodland. Potential to mitigate for LSE on Spey SAC for both options
Geology, Soils, CL & Groundwater			Complex/extensive mitigation of Dipple Abstraction Scheme for R8 and R9
RDWE		R9	Lower risk of geomorphological effects at river crossing
Overall – Natural & Cultural Environment	R8		R8 has lower ecological and landscape effects but R9 has less cultural heritage effect and lower geomorphology and hydrogeology risks

Pairwise C - Framework

Topic	Preference		Comments
Environment - Communities & People	R8		Fewer direct effects on private property, commercial and recreational woodland, and less material intensive
Environment - Natural & Cultural Heritage	R8		R8 has lower ecological and landscape effects but R9 has less cultural heritage effect and lower geomorphology risks
Engineering (cost)	R8		Preference for R8 as cost is £61M less
Traffic / Economic (NPV)	R8		R8 provides best value
Overall Preference	**R8**		**R8 is preferred**