



Access to Argyll and Bute (A83)

Strategic Environmental Assessment & Preliminary Engineering Services

Preliminary Assessment Workshop Report

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18/03/21

Transport Scotland

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Jacobs AECOM



Access to Argyll and Bute (A83)

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Appendix A. Workshop Presentation Slides

1. Introduction

1.1 Background

- 1.1.1 An Access to Argyll and Bute (A83) Preliminary Assessment Workshop was held on the 16th December 2020 with representatives of Transport Scotland and their consultants, Jacobs Aecom. This workshop followed a period of preliminary assessment work that was undertaken on route corridors 1 to 11. These route corridors had previously been identified through the second Strategic Transport Projects Review (STPR2) consultation.
- 1.1.2 The workshop was held virtually using Microsoft Teams with presentation slides used to share the key information points during the workshop. The presentation slides are included as Appendix A of this report. Draft Assessment Summary Tables (ASTs) for each route corridor were shared with Transport Scotland in advance of the workshop for information.
- 1.1.3 A Preliminary Assessment Report will be prepared which will include the ASTs and it is proposed that the ASTs and any other supporting information will be included as appendices to that Preliminary Assessment Report. This workshop report will also be included as an appendix to the Preliminary Assessment Report.

1.2 Workshop Objectives

- 1.2.1 The purpose of the workshop was to review the ongoing preliminary assessment work to identify if route corridors could be removed from further consideration at this stage. This would then facilitate more detailed consideration of any route corridors retained, through the Strategic Environmental Assessment (SEA) and associated Engineering, Traffic and Economics Assessment (PES), to allow a recommendation on a preferred route corridor to be made by Spring 2021.
- 1.2.2 The workshop was structured to allow each discipline to outline the key issues associated with the route corridors, the overall assessment that had been undertaken on the route corridors and to explain the rationale behind the draft recommendations for removing certain route corridors and retaining the remaining route corridors.

2. Workshop Discussion Points

2.1 Workshop Part 1 - Overview of Route Corridor Options

2.1.1 The workshop commenced with an overview of the route corridors that had been identified. A brief description of the geographical context of each route corridor was provided and the key points of interest for each route corridor option were noted such as topography and major structures requirements.

Actions

2.1.2 As this part of the workshop was introductory in its nature, there were no actions arising.

2.2 Workshop Part 2 - Roads : Overview of Key Issues

Key Points

2.2.1 The next set of presentation slides focussed on the key issues from a roads perspective. Issues in relation to the alignment that might be achievable with respect to surrounding constraints such as topography, waterbodies and the built environment were noted.

2.2.2 A question was asked about structures and their clearance requirements. The response outlined that these are based on the requirements for marine vessels (some ultra large) through the area associated with Coulport, Faslane and the Finnart oil terminal in Loch Long. These require a 75m minimum clearance with Jacobs Aecom recommending an additional 5m for deck deflection and 5m for any gantries that may be present below the deck during maintenance.

2.2.3 A question was asked about the tidal range in Loch Long, Gare Loch and the like. The response noted that there is a significant tidal range. Generally, designs are based on the high water springs level and clearance is measured against this.

Actions

2.2.4 Transport Scotland (TS) asked at this point if a copy of the presentation slides could be shared following the workshop. It was agreed that these would be shared.

2.3 Workshop Part 3 - Structures : Overview of Key Issues

Key Points

2.3.1 The next set of presentation slides focussed on the key issues from a structures perspective. Each route corridor was considered in turn with examples of existing structures from across the world that would be of a similar magnitude to that required within the route corridors provided in the presentation slides.

2.3.2 It was highlighted that at the Firth of Clyde crossing at Dunoon, within Route Corridors 6 and 7, that there is not really any opportunity to reduce the span of the bridge. It was also noted that structure landing points within close proximity of Dunoon would not be appropriate. It was agreed that if this route corridor were to be taken forward, a more appropriate structure landing point would be to the south of Dunoon.

2.3.3 It was mentioned that ice is a hazard on the Queensferry Crossing, so operational issues associated with weather conditions need to be considered for the fixed link crossings. Operations associated with the Glen Mallan Ministry of Defence jetty and other naval sites in the area can happen with 24 hours' notice and construction disruption could cause issues for these operations. TS asked about the acceptability of tunnels rather than bridges at many of the locations discussed, given the public consultation comments about the inclusion of tunnels. Tunnels were covered later in the geotechnical section of the workshop.

2.3.4 A question was raised about the need for deflector structures for viaducts to protect them from landslips. The difficulty to quantify loads associated with landslide debris and their impact on either piers or

deflector structures including direct impact forces and abrasion was mentioned. The discussion noted that landslides at the Rest and Be Thankful (R&BT) include very large boulders of significant weight and would require ongoing maintenance to account for removal of very large boulders and repairs. Repeatability of events will cause issues with the risk of another event while repairs are being made.

Actions

- 2.3.5 There were no immediate actions identified in relation to structures.

2.4 Workshop Part 4 - Geotechnical : Overview of Key Issues

Key Points

- 2.4.1 The next set of presentation slides focussed on the key issues from a geotechnical perspective. A summary of landslide hazard locations was provided, and other geohazards were noted as well as further information on ground conditions including structural geology. This part of the presentation also focussed on the possible locations for tunnels and key issues associated with their design, construction and operation.

- 2.4.2 It was commented by Jacobs Aecom that space to deploy a Tunnel Boring Machine (TBM) can be created by drill and blast initially.

- 2.4.3 A question was raised about geology and fault lines, and whether there are any issues with earthquakes. The response highlighted that this would have to be considered for all tunnels. A question about if tunnels would be lined for ingress of water was also asked. The response noted that the decision would be influenced by rock mass structure and groundwater assessment and whether if possible, the tunnel drainage could accommodate this flow.

- 2.4.4 TS asked if there is anything showing the extents of tunnels vs bridges when considering extended sections of tunnels to achieve required road alignment. Jacobs Aecom responded that plan and long sections were being developed to demonstrate these areas. An example was provided at Loch Long highlighting the changes in elevation required if you were to employ a tunnel at this crossing location.

- 2.4.5 A question was then raised about the possibility to use immersed tube tunnels and their viability. The response confirmed that they would be also be challenging to design and construct. Immersed tube tunnels are typically suited to relatively shallow depths of water (invert depths rarely more than 30-40 metres) and where the seabed can be dredged; construction of the tunnel would involve tunnel sections being sunk into a pre-prepared, dredged trench. The fixed link crossing locations are generally deeper than this maximum depth, for example Loch Long is in excess of 90m deep in places, with variable bathymetry/topography, and are generally also within areas of shallow bedrock/limited superficial cover. Submerged floating tube tunnels adopt a similar approach but the tunnel sections float above the seabed, below ship draughts and with tethering to the bed using cables. Such a method is not appropriate at crossing locations subject to submarine traffic and the challenges in relation to bathymetry/topography also apply.

Actions

- 2.4.6 It was agreed to create drawings showing a comparison between bridge and tunnel extents to assist with crossing decisions. A drawing highlighting the issue of acceptable vertical alignment within the tunnel, seabed depth and surrounding topography would also be beneficial.

2.5 Workshop Part 5 - Environmental : Overview of Key Issues

Key Points

- 2.5.1 The next set of presentation slides focussed on the key issues from an environmental perspective. A summary of the environmental constraints that are located within the route corridors was provided. This

included where constraints associated with Cultural Heritage, Biodiversity, Soils, Landscape and Visual, Material Assets & Climate Change, Water Environment and Population and Human Health were found in a route corridor.

2.5.2 TS asked a question concerning if any of the route corridors are very similar and has the mitigation of impacts on constraints been considered. The response was that it has not been considered at this level of assessment. However, it was recognised that some route corridors contained constraints that would clearly be more difficult to mitigate than other route corridors. For example, some route corridors contain considerable numbers of environmental assets which would be very difficult to mitigate, or the importance and unique nature of some environmental assets also made them either impossible or very difficult to mitigate, e.g. internationally designated biodiversity sites, areas of peat and ancient woodlands. The highest number of environmental constraints overall were found to be in Route Corridors 2, 3, 8a, 8b, 9, 10, 11, with Route Corridors 5, 6 and 7 having the next highest number. Route Corridors 1 and 4 were assessed to have the least environmental constraints.

2.5.3 It was highlighted that for some route corridors (8a, 8b and 9), including on the Isle of Bute, widening the road within existing sections could have significant impacts on adjacent cultural heritage resources. Some route corridors were also assessed to have the potential to cause significant negative impacts on biodiversity, such as Natura 2000 sites, Ancient Woodland Inventory sites and Sites of Special Scientific Interest (SSSIs).

2.5.4 It was noted that Route Corridor 1 contains far fewer designated environmental sites than the other route corridors, except for Beinn an Lochain SSSI, which is located at the western end of the corridor. The environmental constraints identified in Route Corridor 1 were thought to be more easily mitigated through design development than would be the case if some of the other route corridors (listed above) were selected.

Actions

2.5.5 TS asked for plans to show constraints against these corridors. These would be needed to support the Preliminary Assessment Report.

2.6 Workshop Part 6 - Traffic : Overview of Key Issues

Key Points

2.6.1 The next set of presentation slides focussed on the key issues from a traffic perspective. This included existing traffic flows to the region and the extent to which proposed new route corridors into Argyll and Bute would take traffic off the current route of the A83 Trunk Road through Glen Croe.

2.6.2 TS raised a question concerning if there is enough information in the ASTs to demonstrate what kind of businesses have developed around each of the corridors until now. It was noted that there is currently a preliminary assessment of the wider economic impacts and tourism baseline being undertaken.

2.6.3 A question was then asked regarding the retention of the A83 Trunk Road within Route Corridor 1 if other corridors are progressed. Jacobs Aecom responded that the majority of the route corridors would not be considered as replacements to the A83 Trunk Road but as means to improve connectivity and provide economic benefits to Argyll and Bute. The alternative route corridors attract traffic from the A83 Trunk Road to varying degrees but no route corridors would provide the most desirable route for all traffic. As such, it is considered that to maximise the connectivity benefits of the scheme, a route along the existing A83 Trunk Road corridor would need to remain operational. The wider corridors would therefore provide an alternative route to the A83 Trunk Road in addition to improving connectivity for some traffic.

Actions

- 2.6.4 The preliminary assessment of the wider economic impacts and tourism baseline was to be circulated once complete.

2.7 Workshop Part 7 - Public Consultation Feedback

Key Points

- 2.7.1 The next set of presentation slides focussed on the results of the public consultation that had been undertaken in the Autumn of 2020. This included a summary of the most frequently raised public issues / public priorities, what benefits had been noted by the public associated with each route corridor, concerns raised by the public, and general levels of support / opposition for each route corridor.
- 2.7.2 TS raised the question of what can be taken from the public consultation in terms of the preliminary assessment. The response was that we can look at the perceived benefits of the route corridors that respondents have brought out in their feedback as well as their concerns, to inform assessments. Alternative options have also been suggested that are being reviewed further. It was also noted that feedback was considered when finalising the scheme objectives.

Actions

- 2.7.3 The Consultation Report is to be concluded as a priority in preparation for publication.

2.8 Workshop Part 8 - Ongoing Work

Key Points

- 2.8.1 The next set of presentation slides noted the elements of work that are still ongoing. This relates to elements of ongoing design refinement within several of the route corridors, refinements to cost updates, public consultation feedback being analysed, tourism and wider economic benefit work to supplement the assessment and the preparation of technical papers to support the preliminary assessment where required.

Actions

- 2.8.2 Ongoing work to be completed in order that the preliminary assessment could be concluded.

2.9 Workshop Part 9 - Overall Assessments and Discussion on Preferred Route Corridor

Key Points

- 2.9.1 The next set of presentation slides provided a summary of the route corridor assessment with respect to previously agreed criteria. These were:
- Scheme objectives assessment;
 - Implementability criteria assessment; and
 - STAG criteria assessment;

-
- 2.9.2 Public consultation feedback including alternatives proposed was also considered.
- 2.9.3 Draft recommendations were also made for discussion, which are described in Chapter 3 of this report.
- 2.9.4 TS raised a question about the costs of tunnels and how they might align with other TS projects that had considered tunnels within their scope. It was agreed that this would be reviewed.
- 2.9.5 It was noted that if Route Corridor 1 was to be taken forward, then further information about risks associated with possible route options within the route corridor would be needed.
- 2.9.6 It was noted by Jacobs Aecom that the potential alignment/route options within Route Corridor 1 have different implementability, operation and maintenance requirements which could be considered further.
- 2.9.7 A review of alternative proposals put forward by the public has highlighted several new route corridors within proximity of Route Corridor 1.
- Actions
- 2.9.8 It was agreed that the tunnelling team to review costs against other projects for consistency in approach.
- 2.9.9 The review of alternative proposals put forward by the public which highlighted several new route corridors within proximity of Route Corridor 1 was discussed further. It was agreed that these new route corridors should be considered.

3. Workshop Findings

3.1 Background

3.1.1 This section of the workshop report summarises the draft recommendations that were identified for discussion at the workshop.

3.2 Route Corridors 2 and 3

3.2.1 It was recommended that Route Corridors 2 and 3 be discounted based on the following:

- They provide few traffic benefits compared to the existing A83 Trunk Road.
- Impacts on Glen Etive and Glen Fyne SPA, GCR and peat.
- There is a significant cost relative to the potential traffic benefits.
- There is a long time for completion.
- Poorest performing against scheme objectives.

3.3 Route Corridor 6

3.3.1 It was recommended that Route Corridor 6 be discounted based on the following:

- It provides few traffic benefits compared to existing A83 Trunk Road.
- There is a significant cost relative to the potential traffic benefits.
- There is a long time for completion.
- Performance against scheme objectives is not favourable relative to the transport and economic benefits, cost and time for completion.
- There is potential for significant environmental impacts without corresponding benefits.

3.4 Route Corridors 8a, 8b and 9

3.4.1 It was recommended that Route Corridors 8a, 8b and 9 be discounted based on the following:

- They provide few traffic benefits compared to existing A83 Trunk Road.
- There is potential for significant impacts on listed buildings.
- There is a significant cost relative to the potential traffic benefits.
- There is a long time for completion.
- Performance against scheme objectives is not favourable relative to the transport and economic benefits, cost and time for completion.
- There is potential for other significant environmental impacts without corresponding benefits.

3.5 Route Corridor 10

3.5.1 It was recommended that Route Corridor 10 be discounted based on the following:

- It provides few traffic benefits compared to existing A83 Trunk Road.
- Fixed link location has significant impacts on Helensburgh and likely to be relocated closer to Route Corridor 4.
- There is a significant cost relative to the potential traffic benefits.
- There is a long time for completion.
- Performance against scheme objectives is not favourable relative to the transport and economic benefits, cost and time for completion.
- There is potential for other significant environmental impacts without corresponding benefits.

3.6 Route Corridor 11

3.6.1 It was recommended that Route Corridor 11 be discounted based on the following:

- Fixed link location has significant impacts on Helensburgh and likely to be relocated closer to Route Corridor 5.

3.7 Route Corridor 1

3.7.1 It was recommended that Route Corridor 1 be retained based on the following:

- It is likely that a solution can be delivered most quickly and cost effectively.
- The environmental impacts within Route Corridor 1 will be significantly less.
- There are some engineering complexities, particularly geotechnical and structural but potentially less and different than other corridors which have major challenges with bridges at upper limits of technology and tunnels.
- Traffic and safety benefits are not significant overall, but improved resilience is noted.
- Scheme objectives show some benefit, although other corridors may perform better except in relation to environmental benefits.

3.8 Route Corridors 4, 5 and 7

3.8.1 It was recommended that Route Corridors 4, 5 and 7 potentially be given further assessment based on the following:

- Potentially greatest resilience benefits, particularly Route Corridors 5 and 7.
- Potentially greatest traffic and economic benefits although effects uncertain due to limitations in current traffic and land use modelling.
- Cost and time for completion are significant, so not a deliverable solution in the short term, but may deliver greatest long-term benefits.

- Significant engineering complexity, particularly Route Corridor 7.

3.8.2 There was a discussion regarding the extremely high cost and timescale for implementation, and potential impacts and benefits of the route corridors and whether further assessment was justified. There was also discussion about the potential for some internal connectivity benefits to be achieved through minor upgrades of the wider trunk road network in the region.

3.9 Overall Workshop Recommendation

3.9.1 The emerging recommendation of the workshop was to retain Route Corridor 1 subject to completion of the areas of ongoing work that were discussed during the workshop. These tasks are:

- Preparation of a technical note covering bridges within the route corridors to support the assessment.
- Preparation of a technical note covering tunnels within the route corridors to support the assessment.
- Conclusion of the wider economic impacts work to supplement the assessment.
- Conclusion of the tourism work to supplement assessment.
- Conclusion of the public consultation feedback analysis and reporting.

3.9.2 It was also noted that further consideration of the technical risks associated with possible route options within Route Corridor 1 would be needed.

3.9.3 It was agreed that these areas of ongoing work were to be completed before a recommendation on a preferred route corridor could be finalised.

4. Workshop Logistics

4.1 Agenda

4.1.1 Table 4.1 below provides the agenda for the workshop.

Table 4.1 : Workshop Agenda

Item	Time	What	Who
Safety moment	0900 – 0905	Safety moment	David Allen
Overview of corridor options	0905 – 0930	*Overview in Infracore/ProjectMapper of 11 route corridors and indicative routes	Ritchie Clift
Roads overview of key issues	0930 – 0950	*Overview of road alignment issues for route corridors – not a detailed blow by blow account, but to get the key issues across	Ritchie Clift
Structures overview of key issues	0950 – 1010	*Overview of key structures related issues for route corridors – not a detailed blow by blow account, but to get the key issues across	John Redpath
Geotechnical overview of key issues	1010 – 1030	*Overview of key geotechnical and tunnels related issues for route corridors – not a detailed blow by blow account, but to get the key issues across	Matthew Sullivan
Comfort break	1030 – 1035		
Environment overview of key issues	1035 – 1115	*Overview of key environmental constraints and related issues for route corridors – not a detailed blow by blow account, but to get the key issues across	Pete Simpson / Steve Isaac
Traffic overview of key issues	1115 – 1130	*Overview of existing traffic and effects of different route corridors	Michael Rice
Public consultation feedback	1130 – 1200	*Overview of public comment on priorities/scheme considerations, alternatives and preferences	Sally Hopkins
Ongoing work	1200 – 1210	Overview of work remaining to complete preliminary assessment	David Robertson
Overall Assessments and discussion on preferred corridor	1210 – 1255	Scheme objectives assessment Overall Implementability assessment STAG criteria Consideration of whether there is sufficient information to confirm a (draft) recommendation	Andy Mackay / David Robertson + Michael Rice/Steve Isaac re objectives
Actions / AOB	1255 – 1300	Confirmation of actions, way forward, AOB	All

4.2 Participants

4.2.1 The following participants attended the workshop:

Table 4.2 : Workshop Participants

Name	Organisation/Role
Transport Scotland	
Jo Blewett	Head of Design/Project Director
Gordon Ramsay	Project Manager
Kirsty Kelly	Major Projects Programme Manager

Name	Organisation/Role
Sam MacNaughton	Stakeholder Manager
Sinead Thom	Environment Manager
Jacobs	
Andy Mackay	Project Director
David Robertson	Project Manager
Ashleigh Ferrario	Programme & Budget Manager
Sally Hopkins	Stakeholder Manager
Ritchie Clift	Roads and Infrastructure Lead
John Redpath	Structures Lead
Matthew Sullivan	Geotechnical Lead
Pete Simpson	Environment Lead
Steve Isaac	SEA Lead
Mark Uren	Water Environment Lead
Andrew Picken	Water Environment Lead
Michael Rice	Transport & Economics Lead
Chris Holt	Geotechnical
David Allen	Highways Support
Kyle Wilson	Highways Support
Matthew Boyle	Highways Support
Ian Griffin	Flood Risk Lead
Ian Thompson	Stakeholder Support

Appendix A. Workshop Presentation Slides

Access to Argyll and Bute (A83) Project

Preliminary Assessment Workshop

16th December 2020



Safety Moment



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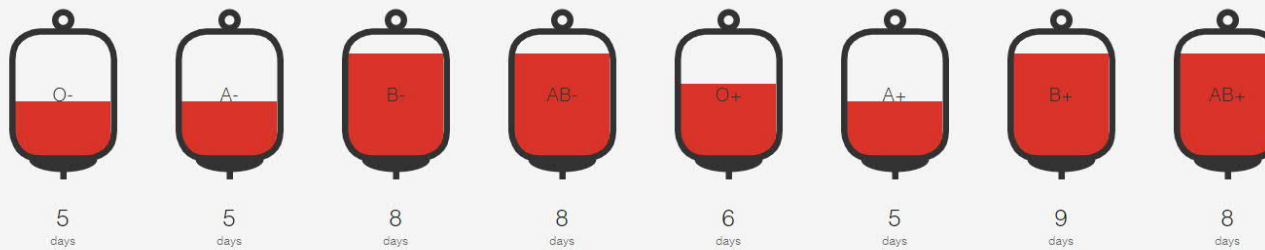
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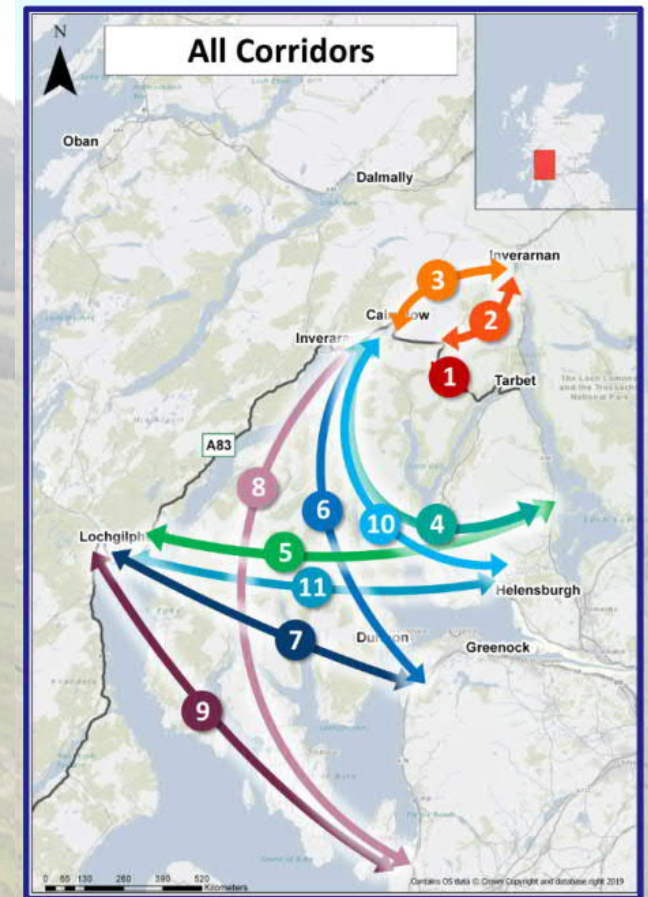


We aim to retain 6 days of stocks at any time in order to meet the requirements of patients in Scotland.



Overview of Corridor Options

- 11 Route Corridors identified through STPR2.
- Generally 2km wide study area.
- Localised amendments identified for a number of corridors as we have looked at these in more detail.
- At least one indicative alignment has been created for each route corridor to further inform design teams of issues / challenges / opportunities that exist within each route corridor.



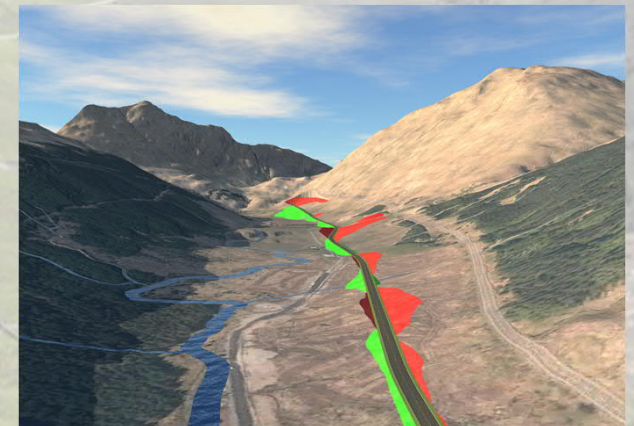
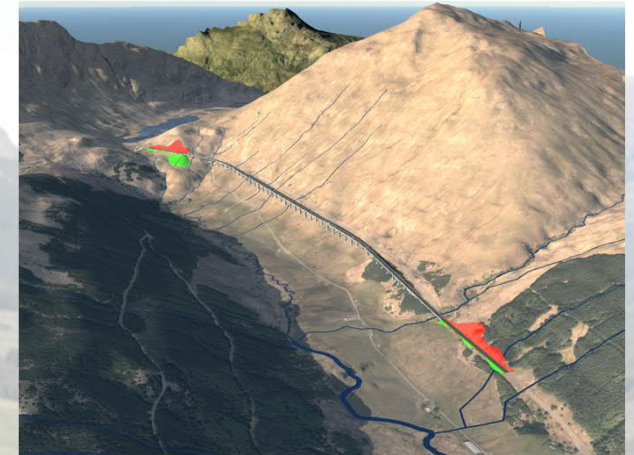
Overview of Corridor Options

Route Corridor 1 – Glen Croe

- Steep side slopes on both sides of the valley with extensive rock outcrops.
- Multiple watercourses and a loch – Loch Restil.
- Significant increase in elevation at northern end of the Glen.
- Evidence of flooding in south-east end of Glen Croe – current Old Military Road tie in.



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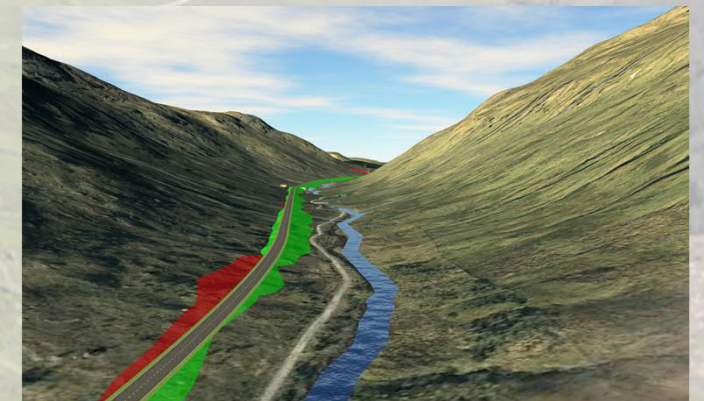
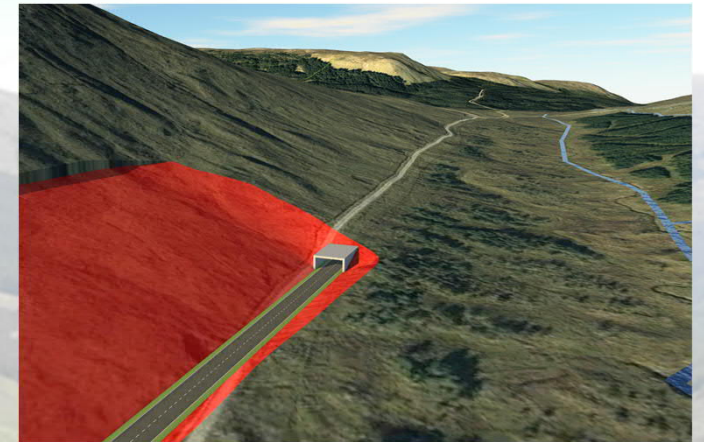
Overview of Corridor Options

Route Corridor 2 / 3 – Glen Kinglas / Glen Fyne

- Topography at north-east end of the route corridor requires long tunnels.
- Steep slopes either side of the valleys.
- Many watercourses present in corridor.
- River Fyne locate in Corridor 3.



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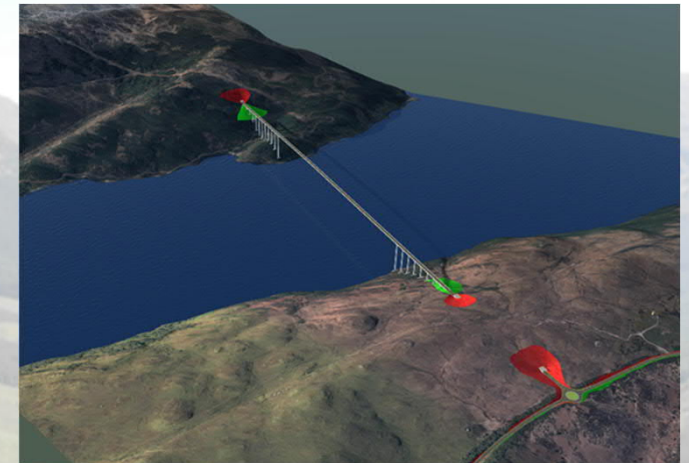
Overview of Corridor Options

Route Corridor 4 / 5 – A82 to Cairndow / Lochgilphead

- Large crossing of Loch Long and Loch Fyne (C5 Only)
- Topography requires tunnels between Loch Long and Loch Eck.
- Steep slopes adjacent to Loch Eck.
- Significant topographical constraints exist between Dalinlongart and Otter Ferry.



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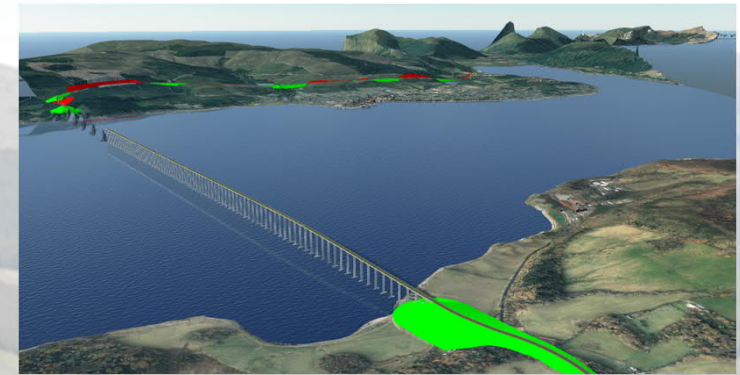
Overview of Corridor Options



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Route Corridor 6 / 7 – Inverclyde to Cairndow / Lochgilphead

- Large crossing of the Firth of Clyde.
- Urban areas including Dunoon between Bullwood and Dalinlongart.
- Corridor 6 travels north following Corridor 4
- Corridor 7 travels west following Corridor 5



Overview of Corridor Options

Route Corridor 10 / 11 – Helensburgh to to Cairndow / Lochgilphead

- Large crossings over Gare Loch and Loch Long (10/11)
- Settlements of varying size on both sides of the lochs with adjacent steep slopes
- Corridor 10 heads north following Corridor 4
- Corridor 11 heads west following Corridor 5



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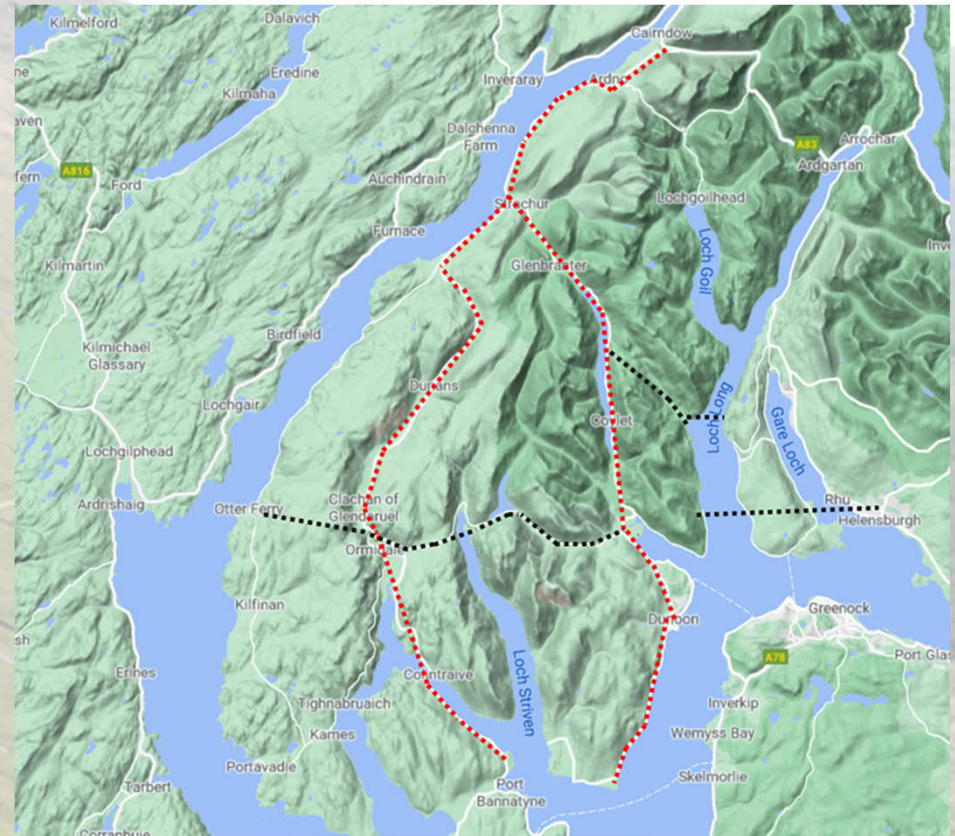
Roads - Overview of Key Issues



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General Summary:

- Valleys/lochs generally run north-south with hill/mountain ranges in between.
- Corridors utilising red routes are generally more horizontally constrained.
- Corridors utilising black routes are generally more vertical constrained.



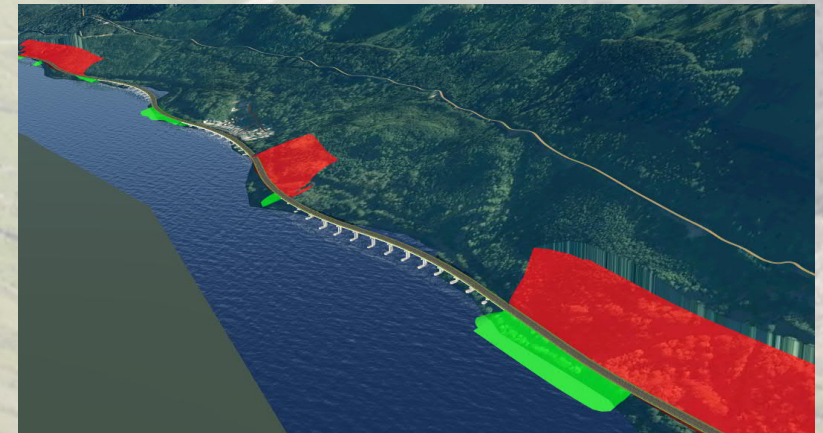
Roads - Overview of Key Issues



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Banks of Loch Eck (Corridors - 4/5/6/8b/10)

- Similar topography to A82 Tarbet to Inverarnan
- Highly constrained to the west by Loch Eck and to the east by steep slopes.
- Numerous existing sub-standard curves on the A815.
- Vertical alignment constrained throughout by topography.
- Several small communities along this length of the A815.



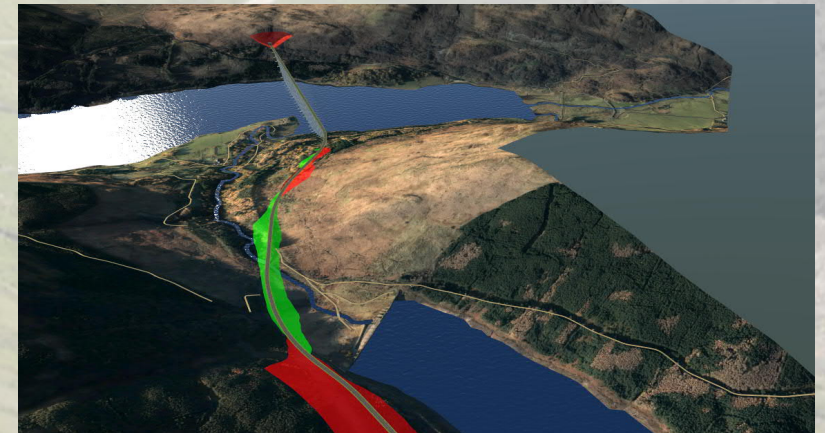
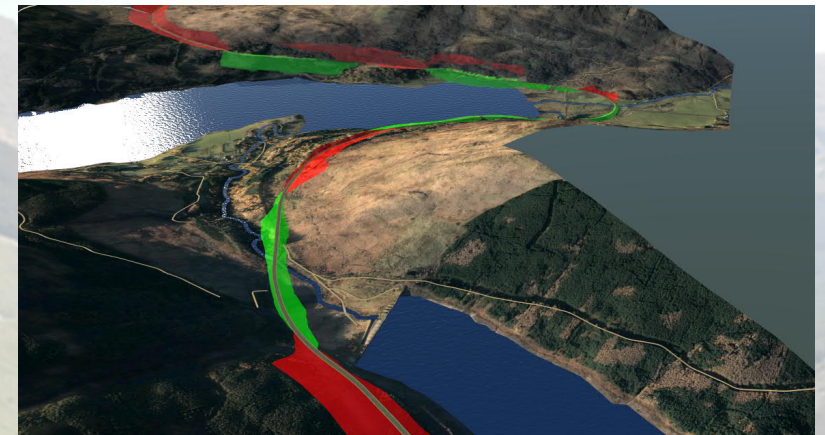
Roads - Overview of Key Issues



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Dalinlongart to Otter Ferry (Corridors - 5/7/9/11)

- Constrained throughout by adjacent steep slopes, water bodies and infrastructure.
- Primarily sub-standard curves on B836 and C11.
- Vertical alignment constrained throughout.



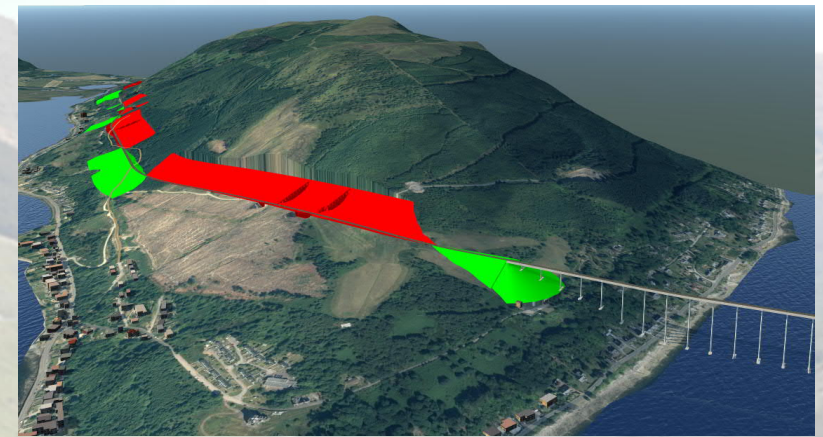
Roads - Overview of Key Issues



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Helensburgh to Ardentinn/Kilmun (Corridors - 10/11)

- Settlements at Helensburgh, Rhu, around the Rosneath Peninsula and at Ardentinn/Kilmun.
- Constrained by Gare Loch and Loch Long and adjacent steep slopes.
- Vertical alignment constrained by required clearance at bridge crossings.



Structures - Overview of Key Issues

- Corridor 1: Multispan viaducts, debris deflectors and flow shelters.
- Corridors 4 – 11: Long span cable supported bridges.
- Geometry: High slender deck clearance, high towers, deep water.
- Navigation: Ship collision, MOD requirements.
- Design: Aerodynamics and wind resilience, foundations.
- Construction: Marine control, segment lifting times especially Gare Loch and Loch Long.



Structures - Overview of Key Issues



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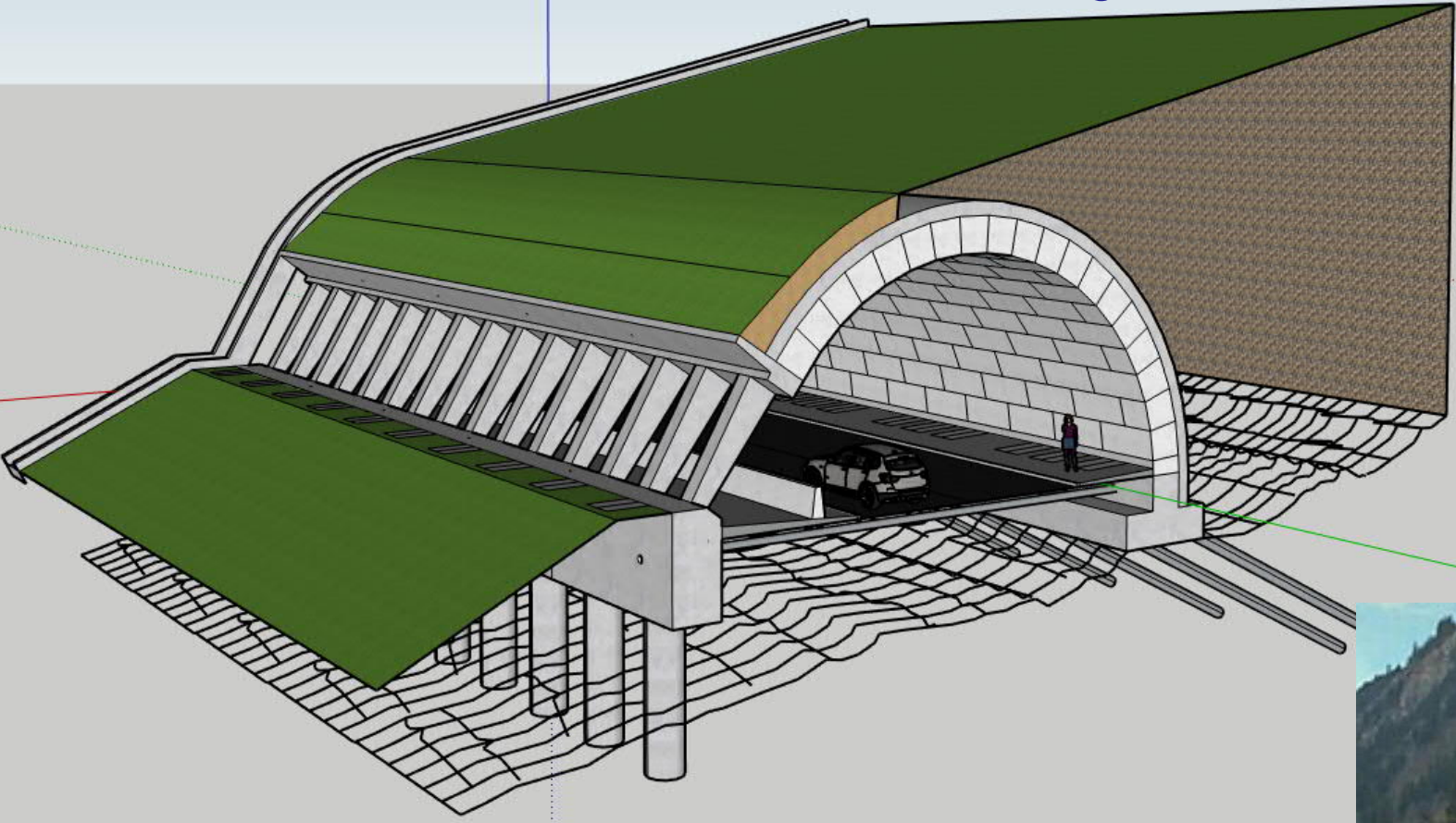
- Corridor 1:
Example of a
sidelong
multispan
viaduct –
Yellow option.

Structures - Overview of Key Issues



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- Corridor 1:
Debris flow shelter –
Brown Option.



Hardanger Bridge - Norway



- Length 1,380m
- Main span 1,310m
- Clearance 55m
- Deck width 20m



- Corridors 4 and 5: Loch Long Crossing
- Model: Hardanger Bridge, Norway



Google

Structures - Overview of Key Issues



- Corridors 5, 7 and 11:
Loch Striven Crossing
- Model: Skarnsund Bridge,
Norway
- Length 1,010m
- Main span 530m
- Clearance 45m
- Deck width 13m

Structures - Overview of Key Issues



- Corridors 6 and 7: Firth of Clyde - Dunoon
- Model: Queensferry Crossing, Scotland
- Length 2,638m
- Main span 2 x 650m
- Clearance 48m
- Deck width 40m

Structures - Overview of Key Issues

By François Roche from Paris, France - originally posted to Flickr as Pont de Normandie from above, CC BY 2.0, <https://commons.wikimedia.org/w/index.php?curid=10638312>



- Corridors 5, 7, 9 and 11:
Loch Fyne
- Model: Pont de Normandie, France
- Length 2,143m
- Main span 856m
- Clearance 52m
- Deck width 24m

Structures - Overview of Key Issues



- Corridors 8a, 8b, 9, 10 and 11: Firth of Clyde, Ardmaleish, Loch Long (S)
- Model: Xihoumen Bridge, China
- Length 2,588m
- Main span 1,650m
- Clearance 50m
- Deck width 2 x 11.5m

Geotechnical Overview of Key Issues

Landslide hazard – summary of locations

Location	Corridors
Rest & Be Thankful plus other slopes in Upper Glen Croe & Lower Glen Croe	1
Glen Kinglas	1, 2
Glen Kinglas in vicinity of A83/A815 junction	4, 6, 8a, 8b, 10
Glen Fyne	3
Glen Finart	4, 5, 10
Loch Eck and Glenbranter	4, 6, 8b, 10
Loch Fyne on northwest facing slopes between Strachur and Cairndow	4, 6, 8a, 8b, 10
Between Dalinlongart and Loch Tarsan	5, 7, 11
Loch Striven at its north end west of Balliemore	5, 7, 11



Geotechnical Overview of Key Issues

Landslide hazard – RAG rating

Rating	Description
Green	Route corridor passing through terrain with no known history of landslide events. No clear evidence of instability and/or the presence of other significant geotechnical hazards.
Amber	Route corridor with sections passing through terrain where localised landslide events are known to have occurred. Considered to be susceptible to instability and/or other significant geotechnical hazards may be present.
Red	Route corridor with sections passing through terrain where widespread and/or frequent landslide events are known to have occurred. Evidence of continuing instability and/or the presence of other significant geotechnical hazards.



Geotechnical Overview of Key Issues

Other potential geohazards identified locally:

- Peat deposits.
- Soft compressible ground.

And more generally:

- Potential for washout due to fluvial or coastal erosion.



Geotechnical Overview of Key Issues

Bedrock Geology

Variable rock strength with implications for:

- Excavatability (temporary excavations, cuttings, tunnelled sections).



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Geotechnical Overview of Key Issues

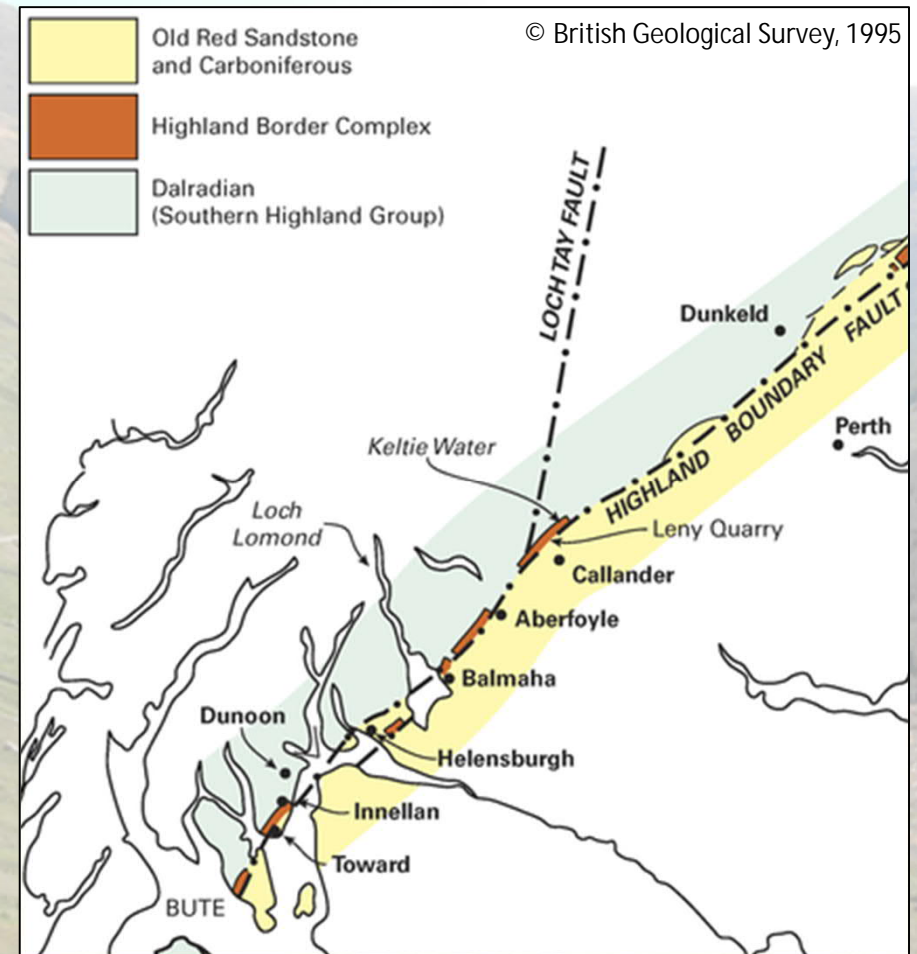
Structural Geology

Extensive faulting (notably the Highland Boundary Fault) with implications for:

- Bearing capacity for structures and pile design.
- Excavatability of rock.
- Groundwater management.



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Geotechnical Overview of Key Issues

Tunnels

- Possible locations across most corridors (except 6, 8a and 8b) to offer practical solutions to deliver road alignments.
- For fixed link crossings, importance of gradient, topography and bathymetry.
- Modelled options of variable length (typically 1km to 10km).



Geotechnical Overview of Key Issues

Tunnels

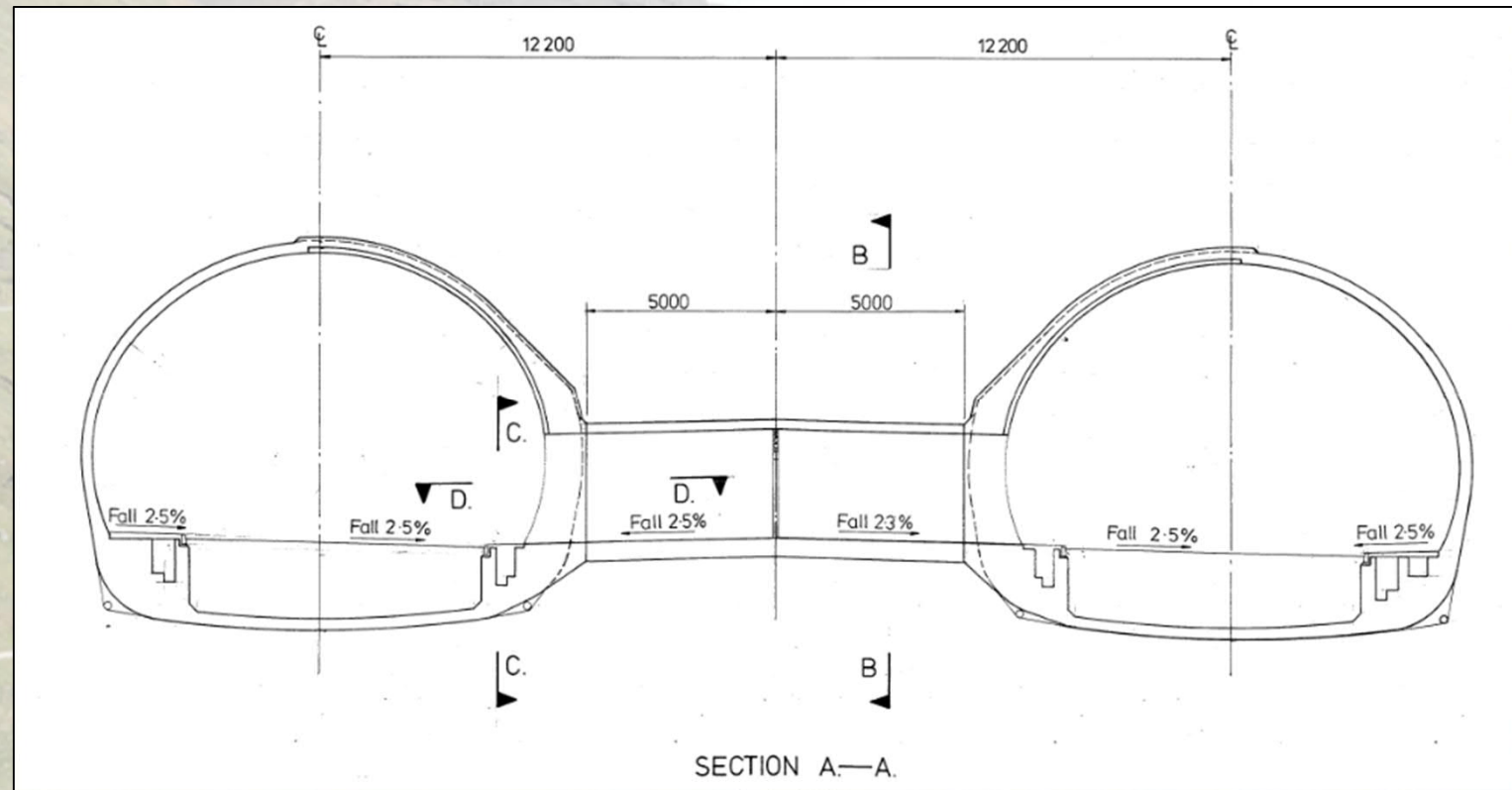
Tunnel design and configuration driven by:

- Fire life safety.
- Tunnel ventilation.
- Escape.



Geotechnical Overview of Key Issues

Tunnel configuration –
twin bore, dual c/w
uni-directional



Geotechnical Overview of Key Issues

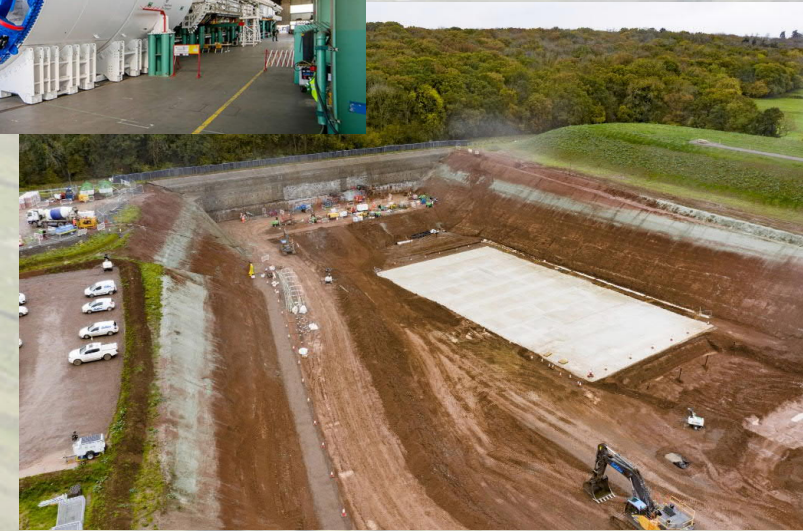
Tunnel construction:
Drill & Blast

vs.

Tunnel Boring Machine



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Geotechnical Overview of Key Issues

Tunnel operation:

- Tunnel design and safety consultative group (TDSCG), tunnel manager, tunnel safety officer, tunnel operations centre.
- Location of emergency services in event of incident.
- Power for ventilation and other systems.
- Transport of hazardous materials or goods.



Environmental Overview of Key Issues



Summary - highest number of environmental constraints in route corridors 2, 3, 8a, 8b, 9, 10, 11, with corridors 5,6 and 7 having the next highest number.

By environmental topic, the highest numbers of constraints are:

Cultural heritage - Corridors 8a, 8b and 9 (Listed Buildings, Scheduled Monuments, Conservation Areas, GDLs).

Biodiversity - Corridors 2, 3, 4, 6, 8a, 8b and 10 (SPA, AWI, SSSIs).

Soils - Corridors 2 and 3 (high value peat, GCR sites)



Environmental Overview of Key Issues



By environmental topic, the highest numbers of constraints are:

Landscape and visual - all corridors, but most landscape impacts could be reduced with mitigation. Existing roads and smaller footprints preferred.

Material Assets and Climate Change - Corridors 5, 9, 10 and 11

Water environment – shorter routes crossing fewer watercourses and floodplains more advantageous than the longer routes with significantly higher numbers of crossings.

Population and human health - Corridors 8a, 8b, 9 and 11



Traffic Overview of Key Issues

Daily traffic flows:

- A83 Trunk Road at the RABT = 4,500-5,000
- To/from the Cowal peninsula = 2,000
- To/from the Kintyre peninsula = 2,500 - 3,000
- Most trips from Argyll and Bute are towards Glasgow / central belt
- Cowal peninsula also served by ferry service (services every 20-30mins during day)
 - Gourock – Dunoon (passenger only)
 - Hunters Quay – McInroy's Point (vehicles and passengers)



Traffic Overview of Key Issues

- Assumed A83 Trunk Road at the RABT remained open to understand level of shift to new routes / corridors.
- Corridor 1 – no traffic change.
- Corridors 2 and 3 – majority of trips are to the south.
- Corridors linking to Cowal only (4,6,8,10), provide a southern route, therefore attract usage, however, only benefit less than half of users at the A83 RABT.
- Corridors linking both Cowal and Kintyre provide more direct links for the majority of users (5,7,9,11)
- Best performing corridors serve both peninsulas and feed into central belt closer to existing demand (i.e. 5 and 11)



Traffic Overview of Key Issues



- All corridor route options would result in improved transport resilience for the region.
- Removal of safety risks associated with landslides.
- Traditional traffic economics unlikely to present a positive economic case due to relatively low traffic levels and cost of improvements.
- Wider economic benefits of some wider corridor options likely (long term benefits).



Public Consultation Feedback

- Over 650 responses received to interim public consultation.
- Open questions – to highlight issues or constraints to be taken into account in design/assessment work; any feedback in general terms or specific to certain options.
- Analysis of feedback ongoing.
- Number of respondents reported to have expressed an opinion/raised a particular issue is taken from number of comments to which relevant code is applied based on interpretation of feedback.



Public Consultation Feedback

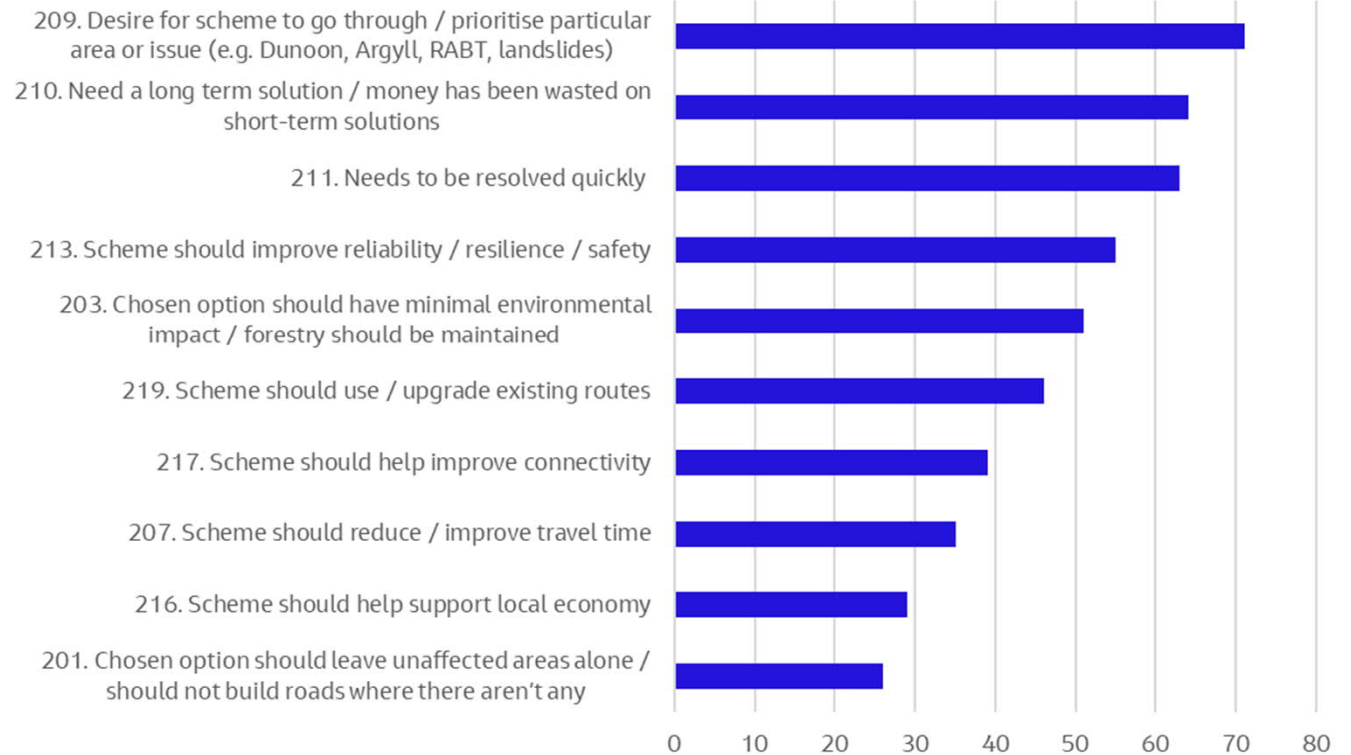
Consideration and priorities for the scheme overall - key recurring themes

Feedback on further assessment included:

- Environmental
- NMU needs
- Traffic forecasting
- Cost-benefit/whole life costs/economic impact
- Impacted communities
- Cultural heritage features
- Tender process



Most frequently raised issues and priorities in Category 2



Public Consultation Feedback

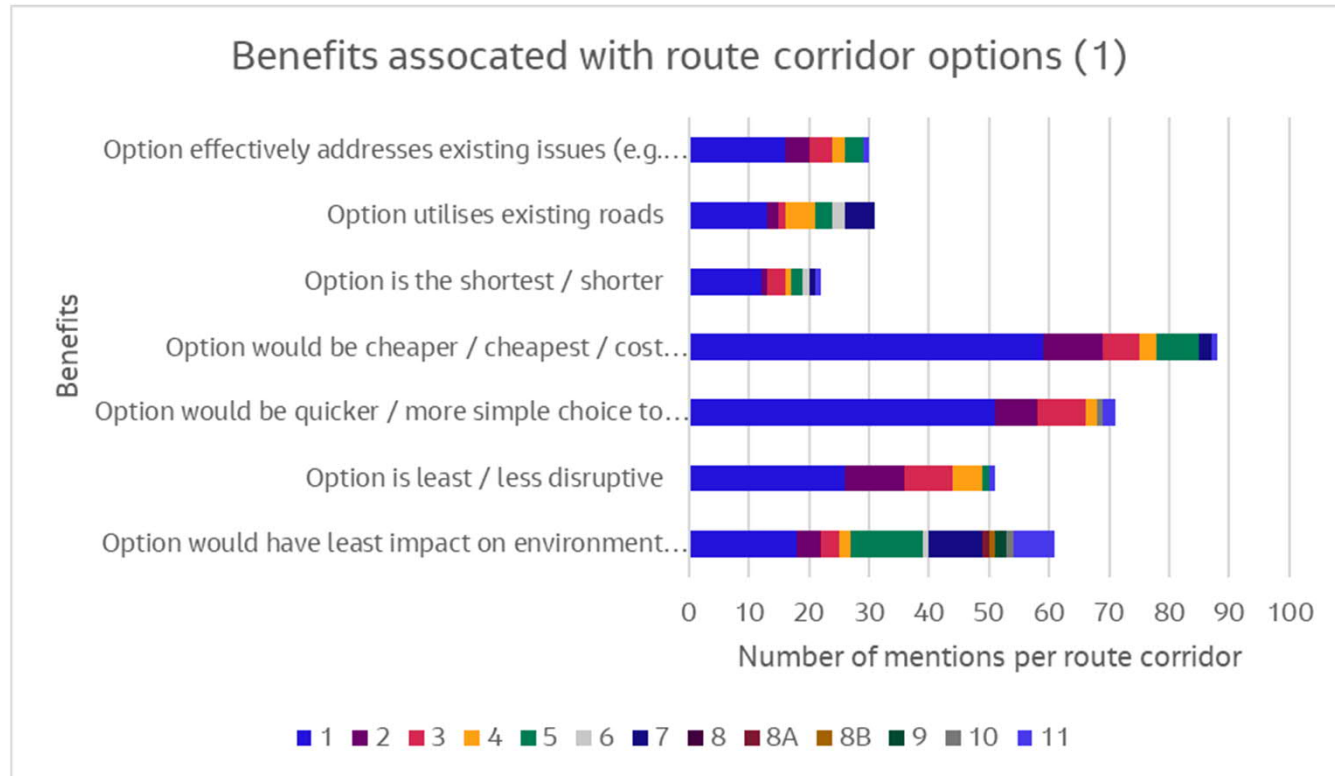
There were more comments relating to Corridor 1 for most of these benefits but also in varying degrees to the other options as well.

Corridors 2 and 3 were identified as being quicker, cheaper and less disruptive in a number of comments.

Corridor 4 was identified as utilising existing roads and being less disruptive.

Corridors 5 and 7 were thought to have less impact on the environment.

Some benefits seen as interrelated – an option using existing roads could be cited as making it quicker/cheaper to implement as well as less disruptive.



Public Consultation Feedback

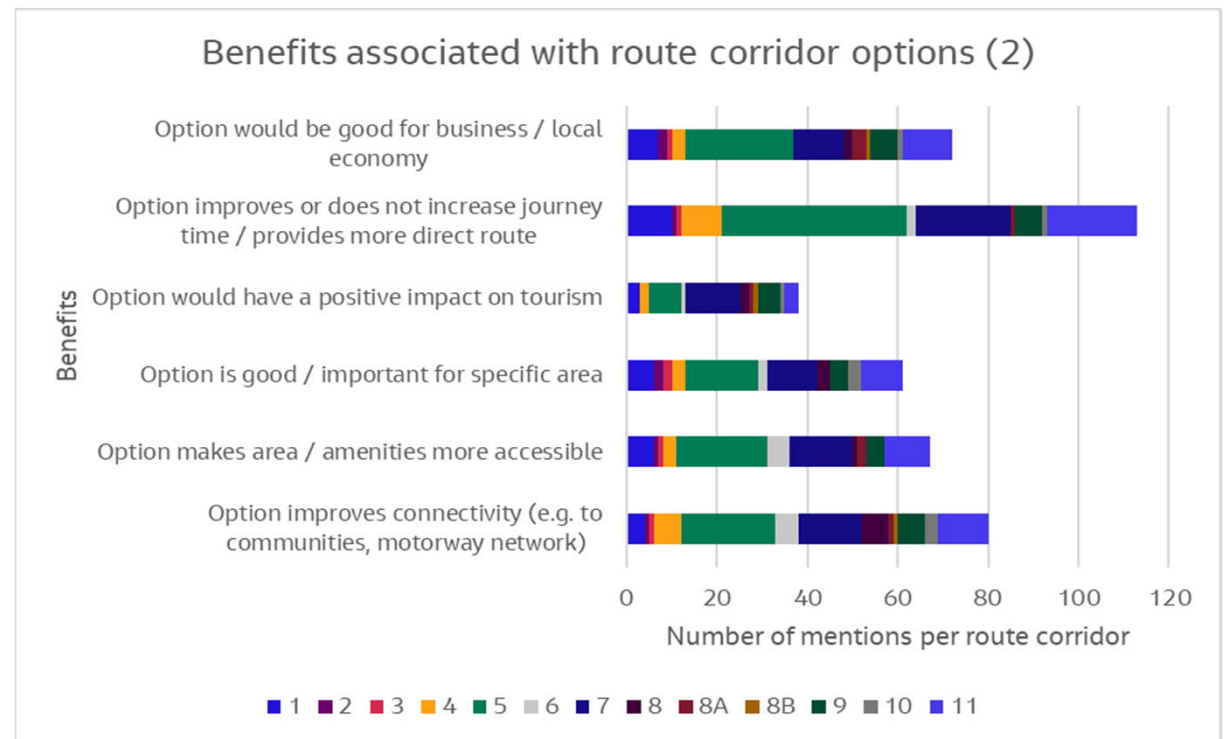
Other benefits vary more across the corridor options:

Access and connectivity benefits, benefits to specific areas (including tourism and the local economy) and not having a negative impact on journey times were identified in Corridors 5, 7 and 11

Other benefits noted were reducing congestion – Corridors 5 and 7

Supporting future development in an area including housing and infrastructure – Corridors 5 and 7

Allowing for a future link to Northern Ireland – Corridor 7



Public Consultation Feedback



A range of concerns were expressed to a varying degree on a number of the corridors.

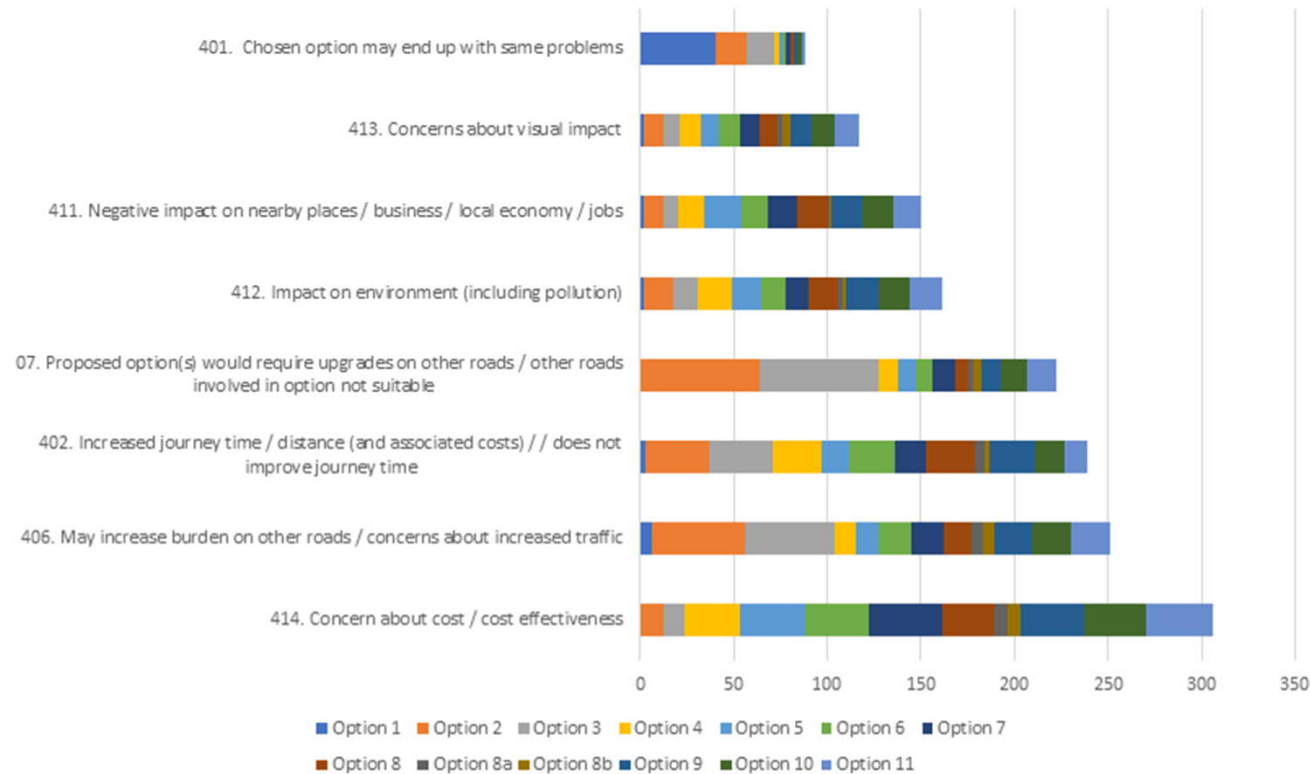
Concern over the cost/cost effectiveness was noted by a number of respondents across most of the corridors.

Concerns were identified that corridors 2 and 3 would require upgrades on other roads or that the other roads would not be suitable

The burden on other roads and concerns about increased traffic levels were raised on all options, in particular corridors 2 and 3.

Concern over options ending up facing the same issues as the A83 were raised in relation to corridors 2 and 3, but more commonly for corridor 1.

Concerns by route corridor option



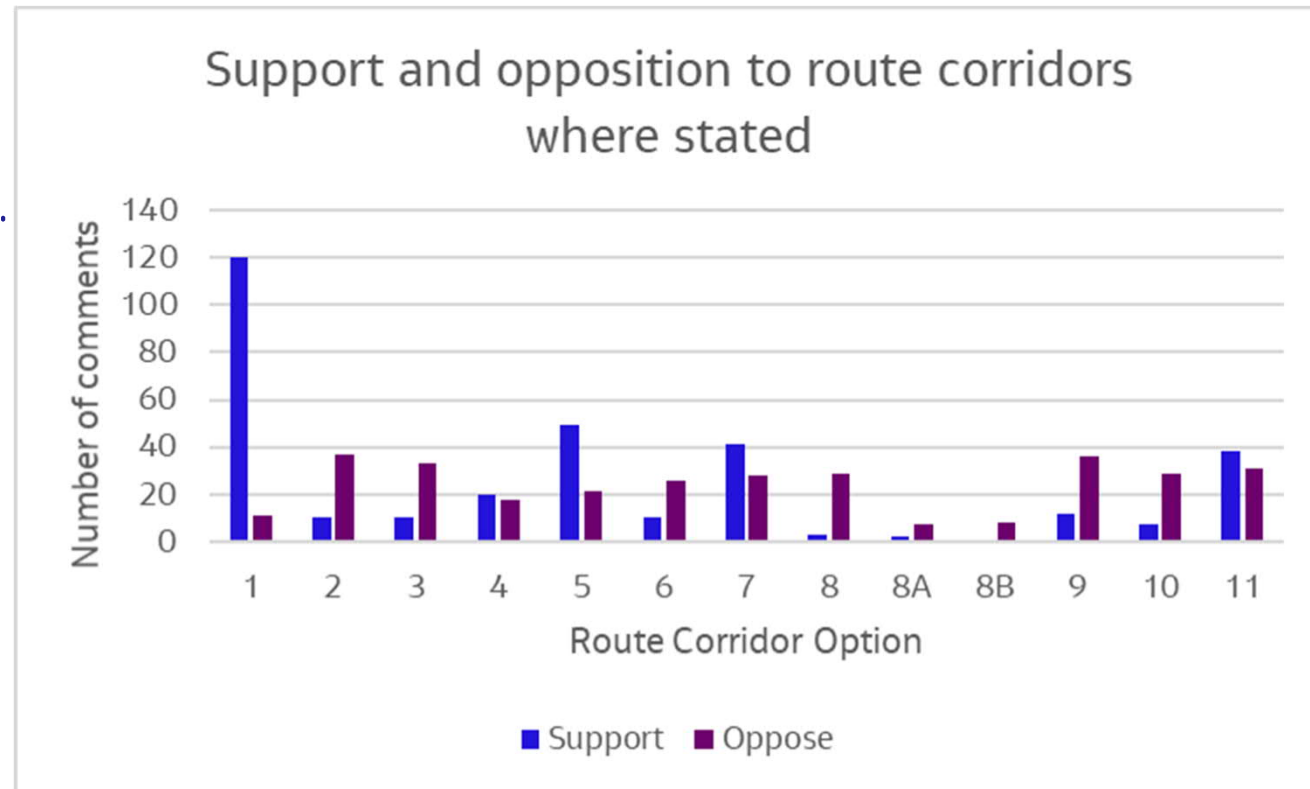
Public Consultation Feedback

Preference or opposition to the corridors where respondents chose to mention a specific corridor.

Corridor 8 had two variants and this differentiation was not always noted.

Corridors 1, 4, 5, 7 and 11 drew more support than opposition when specifically mentioned.

Corridors 2, 3, 6, 8, 9 and 10 drew more opposition than support when specifically mentioned.



Ongoing Work

- Refinement of route corridor extents to include most appropriate fixed link crossing locations.
- Refinement of indicative alignment options within route corridors to avoid most populated / constrained locations. Towns of Dunoon and Rothesay as examples of this.
- Indicative corridor costs to be updated based on above refinements.
- Minor refinements to assessment text required as a result of above.



Ongoing Work

- Bridges paper being prepared to support assessment.
- Tunnels paper being prepared to support assessment.
- Wider Economic Benefits work to supplement assessment.
- Tourism work to supplement assessment.
- Public consultation feedback being analysed.



Overall Assessments and discussion on preferred corridor

Scheme Objectives

Objective		Corridor											
		1	2	3	4	5	6	7	8a	8b	9	10	11
TPO1	Resilience – reduce the impact of disruption for travel to, from and between key towns within Argyll & Bute, and for communities accessed via the strategic road network	+	+	+	+	+++	+	+++	+	+	+	+	+++
TPO2	Safety – positively contribute towards the Scottish Government's Vision Zero road safety target by reducing accidents on the road network and their severity	+	+	+	+	++	0	++	0	0	+	+	++
TPO3	Economy – reduce geographic and economic inequalities within Argyll & Bute through improved connectivity and resilience	+	+	+	++	++	++	++	++	++	++	++	++
TPO4	Sustainable travel – encourage sustainable travel to, from and within Argyll & Bute through facilitating bus, active travel and sustainable travel choices	0	0	0	+	+	+	+	+	+	+	+	+
TPO5	Environment – Protect the benefits local communities and visitors obtain from the natural environment by enhancing natural capital assets and ecosystem service provision through delivery of sustainable transport infrastructure	-	---	---	---	---	---	---	---	---	---	---	---



Overall Assessments and discussion on preferred corridor

Scheme Objectives

- Operationally all corridors deliver increased resilience
- Corridors 5, 7 and 11 provide a shorter alternative route, attracting more traffic from the A83 and connecting more to the local road network, delivering greater resilience, reducing the effects of impacts at the A83
- Corridors 4 and 9 will attract traffic from the A83 to a lesser extent, delivering resilience and an alternative route to the A83
- Corridors 1, 2, 3, 6, 8 and 10 will have least benefit to A83 traffic in reducing journey times compared to the existing situation, but still improve resilience



Overall Assessments and discussion on preferred corridor

Scheme Objectives

- All corridors deliver some improvement in safety, although material benefits are less likely for Corridors 6 and 8. Corridors 2 and 3 also connect to the A82 which has a higher accident rate
- All corridors will benefit the economy through improved resilience, with shorter, more attractive routes potentially having greater benefits
- Corridors 4 to 11 provide more opportunities to benefit sustainable travel
- Corridors 2 to 11 have the potential for a range of significant impacts that could affect ecosystem service provision due the scale of infrastructure, potential for effects on sites of environmental importance and extent of mitigation needed



Overall Assessments and discussion on preferred corridor

Implementability

Implementability		Corridor												
		1	2	3	4	5	6	7	8a	8b	9	10	11	
Engineering	Topography and alignment considerations	A	G	G	R	R	A	R	A	A	R	R	R	
	Geology / Geomorphology considerations	R	R	R	A	A	A	A	A	A	G	A	A	
	Hydrology and Drainage considerations	Refer to Water Environment Section												
	Structures considerations	A/R	R	R	R	R	R	R	R	R	R	R	R	R
	Constructability considerations	A/R	R	R	R	R	R	R	R	R	R	R	R	R
Environment	Biodiversity, fauna and flora	A	R	R	R	R	R	R	R	R	R	R	R	
	Population and human health	A	A	A	R	A	A	A	A	A	A	A	A	
	Water environment	A	R	R	R	R	R	R	R	R	R	R	R	
	Soils	A	R	R	A	A	A	A	A	A	A	A	A	
	Air quality	A	A	A	A	A	A	A	A	A	A	A	A	
	Climate	A	R	R	R	R	R	R	R	R	R	R	R	
	Material assets	A	A	A	A	A	A	A	A	A	A	A	A	
	Cultural heritage	A	A	A	A	R	R	R	R	R	R	R	R	
Traffic	Landscape and visual amenity	A/R	R	R	R	R	R	R	R	R	R	R	R	
	Traffic Flows	A	A	A	A	G	A	A	A	A	A	A	G	
	Accidents	G	G	G	G	G	A	G	A	A	G	A	G	
Operational considerations		A	R	R	A	A	A	A	A	A	A	A	A	
Financial considerations		TBC	R	R	R	R	R	R	R	R	R	R	R	
Time for Completion		A	R	R	R	R	R	R	R	R	R	R	R	
Public Acceptability		G	R	R	A	G	R	A	R	R	R	R	A	



Overall Assessments and discussion on preferred corridor

Implementability - Engineering

- The topography influencing the standard of route alignment within the corridors is most challenging in Corridors 4, 5, 7, 9, 10 and 11 with potential for extensive departures from standard, although more detailed route development would be needed to confirm extent and significance
- The geotechnical issues potentially affecting route options are greatest in Corridors 1, 2 and 3, but topography in corridors and poor ground in some will present a range of geotechnical issues for route design
- All corridors require major structural solutions to address topographical, geotechnical or major crossings challenges, with some corridors requiring major bridge crossings and/or tunnels. This also impacts constructability.



Overall Assessments and discussion on preferred corridor

Implementability - Engineering

- Corridor 10 and 11 fixed link crossing at Helensburgh has major constraints and potential for significant impacts on Helensburgh requiring crossing to be closer to Corridor 4
- Corridor 6 and 7 fixed link crossing at Dunoon has major constraints and likely to require crossing to the south with western bypass of Dunoon, however, major technical challenges for the Firth of Clyde crossing
- Corridor 8b fixed link crossing has major constraints and potential for significant impacts at Rothesay requiring crossing to be located further north of Port Bannatyne



Overall Assessments and discussion on preferred corridor

Implementability - Environment

- Proximity of listed buildings to Corridors 8 and 9 is a significant issue affecting any widening of significant parts of the existing roads in the corridor and likely to involve off-line sections if route upgrading to a higher standard is required.
- Corridors 2 and 3 affect Glen Etive and Glen Fyne SPA which may be difficult to justify, other corridors potentially affecting SPA likely to avoid direct impact by route design.
- Least biodiversity constraints in Corridor 1, although Beinn an Lochain SSSI is present at western extent of corridor at Loch Restil and covers A83.
- High value peat and GCR within Corridors 2 and 3.
- Ancient Woodland along significant lengths of Corridors 4, 5, 6, 7, 8, 9, 10.



Overall Assessments and discussion on preferred corridor

Implementability - Traffic

- Corridor 1 in traffic terms represents the existing corridor and flows will generally be as existing.
- Corridors 2, 3, 6, 8a, 8b and 10 would not attract significant traffic from the A83, so would not realise significant traffic benefits.
- Corridors 4, 7, and 9 may attract traffic from the A83, although the extent would need more detailed analysis to determine benefits.
- Corridors 5 and 11 would attract the greatest volumes of traffic from the A83 indicating the routes are likely to realise the greatest levels of traffic benefits.
- Accident benefits would be realised by all corridors, broadly in line with the traffic benefits through reduced distances travelled on the network.



Overall Assessments and discussion on preferred corridor

Implementability - Time and Cost



Assessment	Corridor											
	1	2	3	4	5	6	7	8a	8b	9	10	11
Time	7 - 10 years	12 years	12.5 years	16 - 17 years	16 - 17 years	16 - 17 years	16 - 17 years	16 - 17 years	17-18 years	17-18 years	15 years	15 - 16 years
Cost - Low	£268M	£1.18Bn	£1.62Bn	£3.34Bn	£6.74Bn	£5.79Bn	£8.73Bn	£7.03Bn	£8.01Bn	£9.30Bn	£5.45Bn	£7.96Bn
Cost - High	£613M	£1.56Bn	£2.14Bn	£4.40Bn	£8.87Bn	£7.62Bn	£11.49Bn	£9.24Bn	£10.53Bn	£12.24Bn	£7.18Bn	£10.47Bn

note - assumes works delivered concurrently; if multiple contracts required delivered in sequence, timescales and costs for corridors 4 to 11 increase

Time for Completion	Years
1	7 - 10 years
2	12 years
3	12.5 years
10	15 years
11	15 - 16 years
4	16 - 17 years
5	16 - 17 years
6	16 - 17 years
7	16 - 17 years
8a	16 - 17 years
8b	17-18 years
9	17-18 years

Cost Ranking Lowest to Highest	Low	High
1	£268M	£613M
2	£1.18Bn	£1.56Bn
3	£1.62Bn	£2.14Bn
4	£3.34Bn	£4.40Bn
10	£5.45Bn	£7.18Bn
6	£5.79Bn	£7.62Bn
5	£6.74Bn	£8.87Bn
8a	£7.03Bn	£9.24Bn
11	£7.96Bn	£10.47Bn
8b	£8.01Bn	£10.53Bn
7	£8.73Bn	£11.49Bn
9	£9.30Bn	£12.24Bn



Overall Assessments and discussion on preferred corridor

STAG Criteria



STAG Criteria		Corridor											
Criteria		1	2	3	4	5	6	7	8a	8b	9	10	11
Environment		Refer to Implementability Assessment – Environment											
Safety		Refer to Implementability Assessment – Accidents											
Economy	Transport Economic Efficiency	---	---	---	---	---	---	---	---	---	---	---	---
	Wider Economic Benefits	+	+	+	+	++	+	++	0	0	+	0	++
	Economic Activity and Location Impacts	+	+	+	+	++	+	++	0	0	+	0	++
Integration	Transport Integration	0	0	0	0	+	0	+	0	0	+	0	+
	Transport and Land Use Integration	0	0	0	-	--	-	--	-	-	--	-	--
	Policy Integration	0	0	0	0	0	0	0	0	0	0	0	0
Accessibility and Social Inclusion	Community Accessibility	+	+	+	++	++	++	++	++	++	++	++	++
	Comparative Accessibility	+	+	+	++	++	++	++	++	++	++	++	++



Overall Assessments and discussion on preferred corridor

STAG Criteria

- Environment – refer to implementability assessment
- Accidents – refer to implementability assessment
- TEE – Poor economic performance expected for all corridors
- Wider Economic Benefits – TBC
- Integration – TBC
- Accessibility and Social Inclusion – all options provide some benefit, with improved connectivity of Corridors 4 to 11 offering greater potential for benefits.



Overall Assessments and discussion on preferred corridor

Public Consultation Feedback

- Feedback on:
 - Timely and long term solution needed
 - Reliability, resilience, safety, connectivity, travel time should all be improved
 - Environmental impacts should be kept to the minimum
 - Local economies should be supported by the solution
- Comments on corridors relate to:
 - Concerns about resilience
 - Comments on corridors proposed
 - Impact on existing roads
 - Impact on marine traffic
 - Disruption and construction impacts
 - Impact on businesses
 - Impact on the environment
 - Concern about time and cost
- Various alternatives suggested



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Overall Assessments and discussion on preferred corridor

Recommendations – Corridor 2 and 3: Discount

- Provides few traffic benefits compared to existing A83
- Impacts on Glen Etive and Glen Fyne SPA, GCR and peat
- Significant cost relative to the potential traffic benefits
- Long time for completion
- Poorest performing against scheme objectives



Overall Assessments and discussion on preferred corridor

Recommendations – Corridor 6: Discount

- Provides few traffic benefits compared to existing A83
- Significant cost relative to the potential traffic benefits
- Long time for completion
- Performance against scheme objectives is not favourable relative to the transport and economic benefits, cost and time for completion
- Potential for significant environmental impacts without corresponding benefits



Overall Assessments and discussion on preferred corridor

Recommendations – Corridors 8a, 8b and 9: Discount

- Provides few traffic benefits compared to existing A83
- Potential for significant impacts on listed buildings
- Significant cost relative to the potential traffic benefits
- Long time for completion
- Performance against scheme objectives is not favourable relative to the transport and economic benefits, cost and time for completion
- Potential for other significant environmental impacts without corresponding benefits



Overall Assessments and discussion on preferred corridor

Recommendations – Corridor 10: Discount

- Provides few traffic benefits compared to existing A83
- Fixed link location has significant impacts on Helensburgh and likely to be relocated closer to Corridor 4
- Significant cost relative to the potential traffic benefits
- Long time for completion
- Performance against scheme objectives is not favourable relative to the transport and economic benefits, cost and time for completion
- Potential for other significant environmental impacts without corresponding benefits



Overall Assessments and discussion on preferred corridor

Recommendations – Corridor 11: Discount

- Fixed link location has significant impacts on Helensburgh and likely to be relocated closer to Corridor 5



Overall Assessments and discussion on preferred corridor

Recommendations – Corridor 1: Retain

- Likely a solution can be delivered more quickly and cost effectively
- Environmental impacts within Corridor 1 will be significantly less
- Engineering complexity, particularly geotechnical and structural but potentially less and different than other corridors which have major challenges with bridges at upper limits of technology and tunnels
- Traffic and safety benefits not significant overall, but improved resilience
- Scheme objectives show some benefit, although other corridors may perform better except in relation to environmental benefits
- Wider economic benefits – tbc



Overall Assessments and discussion on preferred corridor

Recommendations – Corridors 4, 5 and 7: Potentially Do Further Assessment

- Potentially greatest resilience benefits, particularly corridors 5 and 7
- Potentially greatest traffic and economic benefits although effects uncertain due to limitations in current traffic and land use modelling
- Cost and time for completion are significant, so not a deliverable solution in the short term, but may deliver greatest long term benefits
- Significant engineering complexity, particularly Corridor 7
- Wider economic benefits - tbc



Overall Assessments and discussion on preferred corridor

Alternatives Suggested by the Public

Alternative	Comment
501. Tunnel / query as to why this has not been included in options - included	Included in assessment
502. Plant trees	For future stages of development
503. Roof / canopy	Included in assessment
504. Viaduct / elevated road / road on stilts	Included in assessment
505. Ramp	Included in assessment
506. Increased frequency / reliability of ferry service / utilise existing ferry connections	Outwith scope of current assessment
507. Suggested different locations for links / bridges / route	Refer to next slide
508. Suggested additional features of design not directly related to purpose of scheme (e.g. safe laybys, charging points)	For future stages of development
509. Suggestion(s) given by respondent would be cheaper / cost efficient	Further information required
510. Suggestion(s) given by respondent do not add burden to diversion routes / other roads	Further information required
511. Suggestion(s) given by respondent reduce damage to landscape / environment	Further information required
512. Suggestion(s) given by respondent would be simpler / quicker to implement	Further information required
513. Suggestion(s) given by respondent would attract people to area	Further information required
514. Suggestions relating to grazing animals	For future stages of development
515. Suggestions to improve public transport alongside roads	For future stages of development
516. Repurpose existing A83 (including walking / cycling or tourist route)	For future stages of development



Overall Assessments and discussion on preferred corridor

Alternatives Suggested by the Public

No.	Corridor	Suggestions - Notes	Submission No.	Comments	Actions
1	1	Tunnel existing road - viaduct up the glen - avalanche sheds - route to A815	97, 181, 206, 229, 241, 249, 270, 275, 308, 314, 317, 336, 371, 377	Similar to Corridor 1 options	No further actions proposed
2	1	Ardgartan/Succoth - Tunnel Glen Croe to Glen Kinglass (Butterbridge)	65, 75, 76, 77, 78, 79, 80, 162, 224, 317, 325, 493, 515, 532, 627, 646	Similar to Corridor 1 options	No further actions proposed
3	4	Road to Helensburgh rather than MOD road	106	A814 use part of Corridor 10 and 11	No further actions proposed
4	4	Alternatively through Hells Glen B839 via Drimsynie and Carrick Castle	112	Topography would likely be a significantly challenging factor. Likely a shorter route, but there are no other immediately obvious benefits to using this alternative route over the current proposal.	No further actions proposed
5	4	From bridge over Loch Long alternatively direct to A815 instead of via Ardentinny	336	More similar to Corridors 10 and 11	No further actions proposed
6	4&5	Bridge over from Coulport/Peaton Layo to Ardentinny	433	More similar to Corridors 10 and 11	No further actions proposed
7	4, 5 & 10	Connection to Carrick castle to join these options	72, 207	Similar to number 4 above	No further actions proposed
8	6 & 7	Dunoon crossing further north and south - make use of Warden bank and Lunderston bay. Cross at Inverkip	17, 82	Further south of Corridor 6 and 7 at present	Consider as part of any future fixed link study
9	6 & 7	Tunnel Cloch Point/Gourock to Dunoon	75, 76, 77, 78, 79, 80, 108	Tunnel unlikely to be possible due to the topography and depth of the sea bed.	Tunnels considerations being documented
10	6 to 11	Route improvements to east side of route options, network linking - A8 corridor through Inverclyde	82	Requests new link to M8 instead of using A8 corridor	Consider as part of any future fixed link study
11	7	Additional route south to Isle of Bute off of option 7	29, 197	Extension of corridor with additional component rather than being essential as an alternative corridor	No further actions proposed
12	10 & 11	Use Option 4&5 up to Garelochhead instead and then connect at Roseneath	113	Merges the Corridor 10 and 11 crossing with the A82 approach for Corridor 4/5.	No further actions proposed
13	New	Bridge crossing to the north of Holy Loch or using Spango valley as approach to Cloch Point	17	Significantly longer corridor than current proposal to land south of Dunoon near Bullwood. No obvious advantage. Approach to the Cloch essentially as proposed.	No further actions proposed
14	New	Road from Inveruglas/Sloy up the valley (south of Loch Sloy) and tunnel under Beinn Ime - Butterbridge	421, 466, 493, 516, 646	New corridor to A82. Terrain not as severe as Corridor 2 or 3, but still challenging.	Possibly explore at next stage
15	New	Consider existing ferries at end of M8/A8	73	Outwith scope of current project	No further actions proposed



Overall Assessments and discussion on preferred corridor

Alternatives Suggested by the Public

Suggestions - Notes	Submission No.	Comments	Actions
Portavadie - Tarbert	161	Much further south than other corridors, no obvious connectivity benefits compared to other corridors in terms of resilient alternative to the existing road	No further actions proposed
Portavadie - Tarbert	194, 203, 422	Submission 194 suggest improvements to ferry routes and bus timetables which is out with the scope of the project. 203 suggest a bridge from Tarbert to Portavadie or bridges to Arran and then the west coast of the mainland. The topography would be challenging to Portavadie, and crossing of Loch Fyne very long. Also significantly further south so connectivity benefits not clear relative to other corridors. 422 appears to suggest improvement of ferry crossings which is outwith the scope of the project.	Further discussion required.
Portavadie peninsula over to Port Bannatyne/Rothesay	352	Extension of corridor with additional component rather than being essential as an alternative corridor	No further actions proposed
Portavadie - Tarbert	421	Would provide alternative route to the A83 in an extended Corridor 1	Possibly explore at next stage
Portavadie - Tarbert	524	Would provide alternative route to the A83 in an extended Corridor 1	Possibly explore at next stage
Portavadie - Tarbert	573	Submission sets out three stages: A - Upgrade of the A82 from Arden to Gareloch (similar to Corridors 10/11) B - Similar to 4 above, with a bridge to Carrick and improvements via B839 C - Similar to current Corridor 11 Generally covered by the current options, with no real benefit identified by using Hells Glen/B839 given the difficulties already experienced in Corridor 4.	No further actions proposed



Overall Assessments and discussion on preferred corridor

Alternatives Suggested by the Public: No 19 – Glen Loin



TRANSPORT
SCOTLAND
CÒMHDHAIL ALBA



Overall Assessments and discussion on preferred corridor

Alternatives Suggested by the Public: No 20 – Coilessan Glen

