Access to Argyll and Bute (A83)

Strategic Environmental Assessment & Preliminary Engineering Services

Preliminary Assessment Report

A83AAB-JAC-GEN-XX_XX-RP-CH-0002 | C01

18/03/21

Transport Scotland

TS/MTRIPS/SER/2018/11

Jacobs AECOM

TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

Access to Argyll and Bute (A83)

Project No:	A83AAB
Document Title:	Strategic Environmental Assessment & Preliminary Engineering Services - Preliminary Assessment Report
Document No.:	A83AAB-JAC-GEN-XX_XX-RP-CH-0002
Revision:	C01
Document Status:	A1 – Accepted - Brief
Date:	18/03/21
Client Name:	Transport Scotland
Client No:	TS/MTRIPS/SER/2018/11
Project Manager:	D. ROBERTSON
Author:	R.CLIFT
File Name:	A83AAB-JAC-GEN-XX_XX-RP-CH-0002.docx

Jacobs U.K. Limited
95 Bothwell Street
Glasgow, Scotland G2 7HX
United Kingdom
T +44 (0)141 243 8000
F +44 (0)141 226 3109
www.jacobs.com

Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
C01	18/03/21	Issued to Transport Scotland for Publication	R.C.	S.B.	D.R.	D.R.

Contents

1. Introduction

1.1 Overview

1.1.1 Following recent landslide events in August 2020, Jacobs Aecom were commissioned by Transport Scotland to undertake a Strategic Environmental Assessment (SEA) and provide Preliminary Engineering Services (PES) as part of a Design Manual for Roads and Bridges (DMRB) Stage 1 Assessment to identify a preferred route corridor for access to Argyll and Bute.

1.1.2 The SEA and PES assessment is being carried out in two stages:

- Preliminary assessment (this report) – an initial assessment considering 11 route corridor options with the objective of identifying if route corridors can be removed from further consideration at this stage to allow more detailed consideration of those route corridors remaining to allow a recommendation on the preferred route corridor. The 11 route corridors are shown below in Figure 1.1.
- Detailed assessment – an assessment in line with the DMRB of the route corridors taken forward from the preliminary assessment. The detailed assessment will be in line with DMRB Stage 1 for the engineering aspects and the SEA will consider environmental aspects.

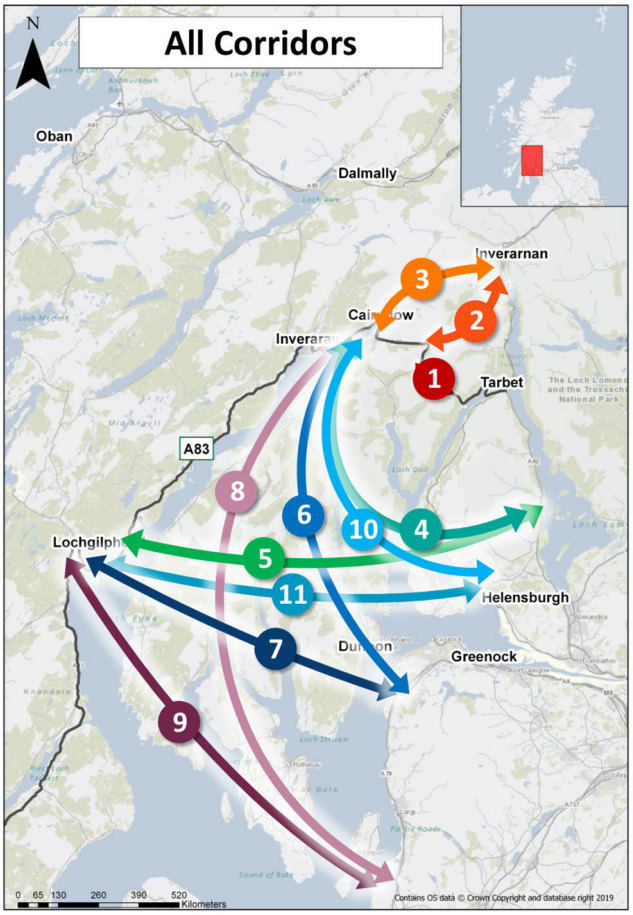

Figure 1.1: Access to Argyll and Bute (A83) Route Corridor Options

1.1.3 The preliminary assessment stage included a workshop with representatives of Transport Scotland and their consultants, Jacobs Aecom to review the ongoing preliminary assessment work to identify if route corridors could be removed from further consideration at this stage. A separate report detailing the workshop can be found in Appendix A.

1.2 Background

Previous Studies

1.2.1 Transport Scotland undertook the Scottish Road Network Landslides Study (2005) following a large number of landslides in the form of debris flows in 2004 that intersected the strategic trunk road network. The findings of this study were used to develop the 'Scottish Road Network Landslides Study: Implementation' report published in 2008. The report recognised that it is not possible to prevent landslide events from occurring and some may occur in such proximity as to affect the operation of the trunk road network.

1.2.2 The report was undertaken to identify key areas to allocate resources to reduce exposure of road users to landslide hazards and/or reduce the physical hazard. From the study the A83 Trunk Road between Ardgartan and the Rest and Be Thankful was placed within the "High/Very High" hazard assessment category. As part of a hazard reduction approach to the A83 Trunk Road at the Rest and Be Thankful, some preventative measures were implemented where debris flow barriers and fences were installed and some of the culverts upgraded. The Old Military Road was also opened as an Emergency Diversion Route to provide a short-term alternative route in the event of a road closure to the A83 Trunk Road at the Rest and Be Thankful.

1.2.3 In 2012 Transport Scotland undertook a study of the A83 Trunk Road to identify and appraise potential options to help minimise the effects of road closures with the road continuing to be affected by landslide events. The 'A83 Trunk Road Route Study, Part A - A83 Rest and Be Thankful', report was published in February 2013 where this examined a range of potential long-term solutions to help resolve the road closure issues at the Rest and Be Thankful. The options reviewed ranged from new routes within Glen Croe incorporating multi-span viaducts and debris shelters to less heavily engineered hazard reduction measures. Taking account of the extent of landslides at the time, this report concluded that the installation of additional hazard reduction measures such as debris flow barriers, hillside drainage at and under the road and planting of vegetation on the up slope should be implemented.

1.2.4 Initial work to identify route corridors to be considered for the project was commenced as part of the second Strategic Transport Projects Review (STPR2). This work aimed to work towards early advice on the merit of different route corridor options to address the problems associated with the A83 Trunk Road taking cognisance of the particular constraints at the Rest and Be Thankful.

1.2.5 At a meeting of the A83 Task Force on 27 August 2020, the Cabinet Secretary for Transport, Infrastructure and Connectivity confirmed he had instructed officials at Transport Scotland to accelerate work to consider alternative infrastructure options for the A83 Trunk Road with a dedicated team to do more detailed assessment work in parallel with the Strategic Transport Projects Review.

2. Access to Argyll and Bute (A83) Objectives

2.1 Overview

2.1.1 It was considered that a set of scheme specific Transport Planning Objectives were necessary to facilitate development and assessment of the project proposals. The scheme objectives are specific to the road network and, as set out in Chapter 4 of the Case for Change report they:

- align with the outcomes sought by the study;
- are based on a comprehensive understanding of problems and opportunities; and,
- lend themselves to inform a clear and transparent appraisal of the performance of the scheme options.

2.2 Identification of Problems and Opportunities

2.2.1 To inform development of scheme objectives, problems and opportunities relating to the strategic road network have been considered based on the following sources, which together form a review of existing policy and strategy documents, data analysis and stakeholder engagement:

- STPR2 Initial Appraisal: Case for Change Argyll & Bute Region;
- Argyll and Bute Transport Connectivity and Economy Research Report, HIE, June 2016;
- Argyll the Natural Choice – Argyll's proposed Rural Growth Deal;
- Access to Argyll public consultation Autumn 2020; and,
- A83 Trunk Road Route Study Report Part A and Part B, 2013.

2.2.2 Problems and opportunities have been identified within the following categories:

- Connectivity;
- Travel times and reliability;
- Resilience;
- Safety; and,
- Sustainable travel & the environment.

2.2.3 The problems and opportunities identified are included in Appendix B, grouped together into the above categories and an additional criteria of economic growth based on a specific proposal from the proposed Rural Growth Deal.

2.2.4 It is apparent from the review that there are a number of overlapping problems on the strategic road network that span a number of these categories and the overarching problems and opportunities can therefore be summarised as follows:

2.2.5 Connectivity issues due to long distances that have to be travelled to access and travel across the Argyll and Bute region;

- Connectivity issues due to gaps in the active travel network;
- Long and unreliable journey times and safety risks due to constraints and standard of the road network;
- Poor resilience of the road network due to the effects of landslides and accidents with lengthy diversion routes and periods of road closures;

- Conflicts between fast and slow moving vehicles and limited overtaking opportunities affecting journey times and safety;
- Vehicle speeds at sections of road with speed limit with safety risks; and,
- The rate of Killed and Seriously Injured (KSI) accidents on several sections of the trunk road network within the region exceeds national averages.

2.2.6 In addition to reviewing the documentation referred to in paragraph 2.2.1, cognisance has also been taken of the consultation held on the 11 route corridor options for the project in September and October 2020. Over 650 responses were received from the public and other stakeholders. A separate consultation report has been produced which summarises the feedback received and specific outcomes sought. Feedback from the Access to Argyll public consultation can be summarised as follows:

- The chosen option should have minimal environmental impact.
- The chosen option should be the most cost-effective solution.
- The scheme must be developed quickly.
- A long-term solution is needed.
- The scheme should allow for a phased development.
- The existing A83 Trunk Road should be maintained and kept open during construction.
- The scheme should take account of climate change.
- Views of local communities should be considered.

2.3 Scheme Specific Transport Planning Objectives

2.3.1 The scheme specific transport planning objectives (TPO) developed from the review of problems, opportunities and public consultation feedback are:

- TPO 1 – Resilience

  Reduce the impact of disruption for travel to, from and between key towns within Argyll and Bute, and for communities accessed via the strategic road network.

- TPO 2 – Safety

  Positively contribute towards the Scottish Government's Vision Zero road safety target by reducing accidents on the road network and their severity.

- TPO 3 – Economy

  Reduce geographic and economic inequalities within Argyll and Bute through improved connectivity and resilience.

- TPO 4 – Sustainable travel

  Encourage sustainable travel to, from and within Argyll and Bute through facilitating bus, active travel and sustainable travel choices.

- TPO 5 – Environment

  Protect the environment, including 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.

2.4 Mapping to STPR2 National and Regional Objectives

2.4.1 Mapping of the scheme specific transport planning objectives to the STPR2 objectives, the proposed Rural Growth Deal key drivers and the NTS2 National Policy Aims is shown below. The latter sets out the vision for Scotland's transport system for the next 20 years, underpinned by four priorities: Reduces Inequalities, Takes Climate Action, Helps Deliver Inclusive Economic Growth and Improves our Health and Wellbeing, each with three associated outcomes.

Table 2.1: Mapping Scheme Specific Transport Planning Objectives to STPR2 Objectives

STPR2 Objectives	Regional Sub-Objectives	TPO1	TPO2	TPO3	TPO4	TPO5
A sustainable strategic transport system that contributes significantly to the Scottish Government's net zero emissions target.	• RSO1: Reduce the consumption of fossil fuels from the strategic transport system in Argyll & Bute and support a shift to more sustainable modes of transport, including shared transport.				✔	
	• RSO2: Increase the share of active travel to, within and through the main settlements in the region for shorter, everyday journeys.				✔	
	• RSO3: Increase the share of public transport to, within and through the main settlements in the region by providing viable alternatives to single occupancy private car use.				✔	
	• RSO4: Reduce emissions generated by the strategic transport system.				✔	
An inclusive strategic transport system that improves the affordability and accessibility of public transport.	• RSO5: Increase public transport share by improving the connections at transport interchanges, and recognising needs of remote communities.				✔	
	• RSO6: Improve mobility and inclusion, recognising the needs of remote communities in Argyll & Bute, and disadvantaged and vulnerable users.					
	• RSO7: Reduce transport poverty in Argyll & Bute with a focus on increasing travel choice in the top 15% most access deprived zones in Scotland.			✔		
	• RSO8: Reduce the reliance on private car for access to key centres for healthcare, employment and education, with a focus on shared transport in targeted areas.				✔	
A cohesive strategic transport system that enhances communities as	• RSO9: Reduce the adverse impacts of the strategic transport system on communities by embedding place-making principles in the strategic transport system.					✔

STPR2 Objectives	Regional Sub-Objectives	TPO1	TPO2	TPO3	TPO4	TPO5
places, supporting health and wellbeing.	• RSO10: Increase the share of active travel to, within and through the main settlements in the region for shorter, everyday journeys to key attractors.				✔	
	• RSO11: Reduce demand for unsustainable travel arising from nationally significant growth areas, taking cognisance of Local Development Plans and the emerging NPF4.					
An integrated strategic transport system that contributes towards sustainable inclusive growth in Scotland.	• RSO12: Increase sustainable access to labour markets and key centres for employment, education and training.				✔	
	• RSO13: Increase competitive transport access between Argyll & Bute and key markets, by reducing costs and improving journey time reliability for commercial transport between Argyll and the central belt.	✔		✔		
	• RSO14: Increase resilience of accesses to key domestic and international markets to encourage people to live, study, visit and invest in Argyll & Bute.	✔		✔		
	• RSO15: Make better use of existing transport infrastructure in Argyll & Bute through the adoption of beneficial innovations, particularly those contributing to sustainable public/shared transport.					
	• RSO16: Increase the mode share of freight by sustainable modes, by improving the sustainable intra and inter region movement of goods on, and between, the mainland and islands.					
A reliable and resilient strategic transport system that is safe and secure for users.	• RSO17: Improve travel times and reliability on the transport system in Argyll & Bute, taking cognisance of the potential for future growth in key sectors, including marine sciences, forestry, tourism, aquaculture, and the wider food and drink sector.					
	• RSO18: Improve resilience from disruption on the strategic transport system in Argyll & Bute to strengthen connectivity within, and to/from, the region.	✔		✔		

STPR2 Objectives	Regional Sub-Objectives	TPO1	TPO2	TPO3	TPO4	TPO5
	• RSO19: Reduce transport related causalities in line with reduction targets, with a particularly focus on the A82, A83 and A85.		✔			
	• RSO20: Improve resilience through climate change adaptation within the management and maintenance of Argyll & Bute's strategic road, rail, ferry and aviation infrastructure.	✔		✔		✔
	• RSO21: Improve actual and perceived personal security on the transport system, particularly on parts of the transport network with poor mobile coverage.				✔	

Table 2.2: Mapping Scheme Specific Transport Planning Objectives to Rural Growth Deal Key Drivers

Rural Growth Deal Key Drivers	TPO1	TPO2	TPO3	TPO4	TPO5
Growing: doing more of what works; making more of our natural and built resources.			✔		✔
Attracting: additional skills, training and learning opportunities; new residents, visitors and businesses.			✔	✔	
Connecting: our high value business sectors with national and international business markets; our local economic successes with national strategic priorities.	✔		✔	✔	

Table 2.3: Mapping Scheme Specific Transport Planning Objectives to NTS2 National Policy Aims

National Policy Aims		TPO1	TPO2	TPO3	TPO4	TPO5
Priorities	Outcomes					
Takes climate action	Will adapt to the effects of climate change.				✔	✔
	Will help deliver our net-zero target.				✔	
	Will promote greener cleaner choices.				✔	
Promotes equality	Will provide fair access to services we need.			✔		
	Will be easy to use for all.					
	Will be affordable to all.					
Improves our health & wellbeing	Will be safe and secure for all.		✔			
	Will enable us to make healthy travel choices.				✔	
	Will help make our communities great places to live.			✔	✔	✔

National Policy Aims		TPO1	TPO2	TPO3	TPO4	TPO5
Priorities	Outcomes					
Helps our economy prosper	Will get us where we need to get to.	✔		✔	✔	
	Will be reliable, efficient and high quality.	✔		✔	✔	
	Will use beneficial innovation.					

3. Design Basis and Assessment Methodology

3.1 Design Basis

3.1.1 The assessment primarily focuses on route corridors which are generally 2km wide, apart from localised areas where local conditions have meant it worth adjusting the route corridor width. To further inform certain assessment criteria it was considered appropriate to develop indicative alignments within the route corridors.

3.1.2 This particularly facilitated assessment of potential design concepts and understanding of the potential environmental and engineering challenges and possible solutions that may be required to overcome these at the location of fixed link crossings. Fixed link crossings across waterbodies are required within many of the route corridors and for the purposes of assessment it has been assumed that these would be provided by bridges given the challenging shoreline topography and bathymetry (depth to sea bed) but tunnels could also be viable in some cases. For details of the fixed link crossing proposals refer to Appendices F and G.

3.1.3 The creation of indicative alignments also facilitated the assessment of challenging topography in some route corridors, in particular hilly or mountainous terrain with notable level differences over short distances. This facilitated consideration of whether viaduct structures or tunnels would necessarily provide a road with compliant horizontal and vertical alignment geometry in terms of the standards in the DMRB.

3.1.4 While many of the route corridors do contain existing roads, which could be improved to suitable trunk road standards and utilised, a variety of engineering solutions, including bypasses, new routes, structures and tunnels, were considered where appropriate, in order to understand the constraints and potential implications of providing possible route options within each route corridor.

3.1.5 These have been described throughout the Assessment Summary Tables (ASTs) which are contained in Appendix D.

3.1.6 For the purposes of the preliminary assessment, the following assumptions have been made for a potential road alignment:

- The carriageway type will be a rural all-purpose single carriageway (S2 as per CD 127 of the DMRB) comprising a 7.3m wide carriageway with 1m hard strips and 2.5m verges on either side;
- A design speed of 100kph will be adopted; and,
- Any designs should aim to be designed in accordance with the DMRB.

3.1.7 Due to the early stage of the assessment, all assumptions relating to, and design work undertaken for each route corridor is indicative and would be further developed during subsequent stages of design development and assessment if the route corridor is taken forward.

3.1.8 Technical notes providing further background details on tunnels and bridges within the route corridors are included in Appendix F and Appendix G respectively.

3.2 Assessment Methodology

Overview

3.2.1 The assessment first sets out the evidence base for problems and opportunities linked to the A83 Trunk Road, drawing on relevant data analysis, policy review and stakeholder engagement. This was described in Chapter 2 of this report.

3.2.2 The assessment of each route corridor is based on:

- consideration of performance against scheme specific Transport Planning Objectives (TPOs);
- an assessment of implementability considering engineering, environmental, traffic and economic criteria; and
- performance against Scottish Transport Appraisal Guidance (STAG) criteria.

3.2.3 ASTs were prepared to facilitate comparative assessment and identification of route corridors that could be removed from further consideration.

Route Corridor Details

3.2.4 To introduce the assessment, the first part of the ASTs provides the following information:

- A brief route corridor description;
- The rationale for the route corridor;
- The route corridor's Geographic context;
- The route corridor's Social context; and
- The route corridor's Economic context.

Transport Planning Objectives

3.2.5 As noted earlier in this report, five scheme specific TPOs were identified. The ASTs provide both a description of the performance of the route corridor against each TPO and an assessment of the corridors using a seven-point scale as noted below:

- Major Positive
- Moderate Positive
- Minor Positive
- Neutral
- Minor Negative
- Moderate Negative
- Major Negative

Existing Route Corridor Conditions

3.2.6 The assessment is aided and informed by an understanding of the existing conditions within the route corridor, including constraints. This involved a desktop study considering the engineering, environmental and traffic conditions. The next part of the ASTs describe the engineering, environmental and traffic conditions. The sub-headings under each area of consideration are shown in Table 3.1.

Table 3.1: Existing Route Corridor Conditions

Engineering	Environmental Considerations	Traffic Considerations
Corridor Length	Biodiversity, Fauna and Flora	Traffic Data
Existing Roads	Population and Human Health	
Existing Accesses	Water Environment	
Topography and Land use	Soils	
Geology/Geomorphology	Air Quality	

Engineering	Environmental Considerations	Traffic Considerations
Structures	Climatic Factors	
	Material Assets	
	Cultural Heritage	
	Landscape and Visual Amenity	

3.2.7 As this is a consideration of the existing conditions, there is no assessment on a point scale needed.

Implementability

3.2.8 An assessment of implementability, considering engineering, environmental, traffic and economic criteria was carried out. This was a predominantly qualitative assessment against DMRB Stage 1 criteria, although where readily available, quantitative details were provided. The sub headings under each area of the implementability study are shown in Table 3.2. Comment on potential public acceptability was made based on feedback from the public consultation carried out in Autumn 2020, although as this was not a specific question in the public consultation it did not form part of the overall assessment. Instead, public consultation was used to inform objective setting and development and assessment of options.

Table 3.2: Implementability Considerations

Engineering	Environmental Considerations	Traffic Considerations
Topography and Alignment Considerations	Biodiversity, Fauna and Flora	Traffic Flows
Geology / Geomorphology Considerations	Population and Human Health	Accidents
Structures Considerations	Water Environment	
Constructability Considerations	Soils	
	Air Quality	
	Climatic Factors	
	Material Assets	
	Cultural Heritage	
	Landscape and Visual Amenity	
Operational Considerations		
Financial Considerations		
Estimated Time to Completion		
Public Acceptability		

3.2.9 The assessment against implementability used a three-point scale as follows:

- Red
- Amber
- Green

STAG Assessment

3.2.10 An assessment of the likely performance of route corridors against the STAG criteria of Economy, Integration and Accessibility & Social Inclusion was undertaken, reporting the assessment outcomes as set out in the STAG guidance for Part 1 Appraisals. With respect to the Environment STAG criterion, this was considered to have been adequately assessed under 'Implementability Assessment – Environment'.

Similarly, for the Safety STAG criterion, this was considered to have been adequately assessed under 'Implementability Assessment – Accidents'.

3.2.11 The sub headings under each criterion of the STAG Assessment are shown in Table 3.3.

Table 3.3: STAG Assessment

Economy	Integration	Accessibility and Social Inclusion
Transport Economic Efficiency	Transport Integration	Community Accessibility
Wider Economic Impacts	Transport and Land Use Integration	Comparative Accessibility
	Policy Integration	

3.2.12 The ASTs provide both a description of the performance of the route corridor against each of the criteria noted above and an assessment of the corridors using a seven-point scale as noted below:

- Major Positive
- Moderate Positive
- Minor Positive
- Neutral
- Minor Negative
- Moderate Negative
- Major Negative

3.3 Preliminary Assessment Workshop

3.3.1 The preliminary assessment included a workshop with representatives of Transport Scotland and their consultants, Jacobs Aecom to review the ongoing preliminary assessment work and to identify if route corridors could be removed from further consideration at this stage.

3.3.2 A separate report detailing the workshop can be found in Appendix A.

4. Route Corridors Considered

4.1 Description of Route Corridors Included / Rationale for their Inclusion

4.1.1 The preliminary assessment considered 11 route corridors which were developed from various sources. The following sections provide a description of each route corridor and the rationale for their inclusion in the preliminary assessment.

4.1.2 The sections below include a list of the major structures considered for each of the route corridors. The preliminary assessment of the route corridors reviewed the major structures in each option including the large fixed link crossings and locations where tunnels are required. For the fixed link crossings consideration was given to using either bridges or tunnels and where these have been deemed appropriate, both options have been assessed and detailed within the ASTs within Appendix D. Where tunnels are not considered appropriate for the fixed link crossings the reason is detailed in the tables below and within Appendix F.

Route Corridor 1

4.1.3 Route Corridor 1 generally follows the existing A83 Trunk Road, starting just south-east of the junction between the A83 Trunk Road and the Old Military Road. It typically follows the route of the existing A83 Trunk Road as it rises through Glen Croe and then past Loch Restil. The route corridor ends where the A83 Trunk Road passes by the south-west end of Glen Kinglas. The route corridor is approximately 6.0km long.

4.1.4 The route corridor was identified in the 'A83 Trunk Road Route Study, Part A - A83 Rest and Be Thankful' Report, published in 2013. It currently provides an access route into Argyll and Bute and within the route corridor there are options available to improve the existing road or provide off-line routes to address the landslide risk.

4.1.5 Table 4.1 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.1: Route Corridor 1 Major Structures

Major Structures	Notes
Green Route Option	
Approx. 0.2km long viaduct	Spans between 40 and 70m, refer to Appendix G for details.
Approx. 0.3 km long bridge / viaduct	Spans between 40 and 70m, refer to Appendix G for details.
Yellow Route Option	
Approx. 1.8 km long viaduct	Spans between 40 and 70m, refer to Appendix G for details.
Brown Route Option	
Approx. 1.3 km long debris flow shelter	Refer to Appendix G for details.
Purple Route Option	
Approx. 1.2 km Tunnel at High Glen Croe	A tunnel at the northern end of Glen Croe, refer to Appendix F for details.
Pink Route Option	
Approx. 2.9 km Tunnel under Beinn Luibhean	A tunnel that passes through high ground to the east of the existing A83 Trunk Road, refer to Appendix F for details.

4.1.6 The location and extents of Route Corridor 1 are shown in Figure C1 in Appendix C.

Route Corridor 2

4.1.7 Route Corridor 2 is off-line within Glen Kinglas and follows the wider valley floor from the A83 Trunk Road west of the Rest and Be Thankful, heading generally north-east towards Loch Sloy, then again generally north-east towards the A82 Trunk Road north of Ardlui. The overall length of the route corridor is approximately 12km and passes through similar terrain to that of the Rest and Be Thankful.

4.1.8 The route corridor was identified in the 'A83 Trunk Road Route Study, Part A - A83 Rest and Be Thankful' Report, published in 2013. It is considered to offer a potential alternative access route into Argyll and Bute, bypassing the main landslide risk area on the A83 Trunk Road at the Rest and Be Thankful.

4.1.9 Table 4.2 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.2: Route Corridor 2 Major Structures

Major Structures	Notes
Approx. 7.5 km tunnel under high ground within Glen Kinglas	A tunnel that passes through high ground and under the West Highland Line railway, refer to Appendix F for details.

4.1.10 The location and extents of Route Corridor 2 are shown in Figure C1 in Appendix C.

Route Corridor 3

4.1.11 Route Corridor 3 is off-line within Glen Fyne and follows the wider valley floor from the A83 Trunk Road at the head of Loch Fyne, heading generally north-east towards Allt na Lairige reservoir, then again generally north-east to the A82 Trunk Road near Inverarnan. The overall length of the route corridor is approximately 14.5km and passes through similar terrain to that of the Rest and Be Thankful.

4.1.12 The route corridor was identified in the 'A83 Trunk Road Route Study, Part A - A83 Rest and Be Thankful' Report, published in 2013. It is considered to offer a potential alternative access route into Argyll and Bute, bypassing the main landslide risk area on the A83 Trunk Road at the Rest and Be Thankful.

4.1.13 Table 4.3 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.3: Route Corridor 3 Major Structures

Major Structures	Notes
Approx. 0.16 km long viaduct	Two span viaduct, refer to Appendix G for details.
Approx. 9.3 km tunnel under high ground within Glen Fyne	A tunnel that passes through high ground and under the existing West Highland Line railway, refer to Appendix F for details.

4.1.14 The location and extents of Route Corridor 3 are shown in Figure C1 in Appendix C.

Route Corridor 4

4.1.15 Route Corridor 4 is a combination of new offline carriageway and online upgrading works which generally follows the existing road network with a new fixed link crossing at Loch Long. The route corridor follows the existing A817 and A814 roads from the A82 Trunk Road to Whistlefield (near Garelochhead) and

then crosses Loch Long with a new 1.6km fixed link crossing to Barnacabber. It then generally follows the existing C09 and A815 roads to tie back into the A83 Trunk Road at Cairndow. The length of the route corridor where no road currently exists is approximately 5.5km with the full route corridor is approximately 58km in length. Construction is required in the vicinity of the Ministry of Defence (MOD) bases of Faslane and Coulport with a section of the proposed route corridor utilising the MOD owned road.

4.1.16 The route corridor was identified in the 'A83 Trunk Road Route Study, Part A - A83 Rest and Be Thankful' Report, published in 2013. It is considered to offer a potential alternative access route into Argyll and Bute bypassing the main landslide risk area on the A83 at the Rest and Be Thankful and connecting to the main route to the central belt via the A82.

4.1.17 Table 4.4 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.4: Route Corridor 4 Major Structures

Major Structures	Notes
Approx. 0.38 km tunnel on the eastern approach to Loch Long	A tunnel that passes through high ground to the east of Loch Long, refer to Appendix D for details.
Approx. 1.6 km bridge over Loch Long	Approximate 1.6km long (1.2km main span) suspension bridge proposed, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients is less feasible with a tunnel under Loch Long compared to a bridge. This is a result of the ground topography beyond the shores and the bathymetry of the loch. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 4 at this location rather than a tunnel.
Tunnel on western approach to Loch Long	There are two localised alignment options considered in the route corridor at this location which pass through high ground to the west of Loch Long, refer to Appendix D for details. Alignment 1 would require: A tunnel approximately 4,500m long. The western approach to the Loch Long bridge from Glen Finart, refer to Appendix F for details. A tunnel approximately 3,100m long. Under Larach Hill between Glen Finart and the A815 at Whistlefield, refer to Appendix F for details. Alignment 2 would require: A more direct tunnel, approximately 6,700m long between the western approach to the Loch Long bridge and the A815 at Whistlefield, refer to Appendix F for details.
Approx. 0.4 km viaduct at Cairndow	Spans between 40 and 70m, refer to Appendix G for details.

4.1.18 The location and extents of Route Corridor 4 are shown in Figures C2.A, C2.B and C2.D in Appendix C.

Route Corridor 5

4.1.19 Route Corridor 5 is a combination of new offline carriageway and online upgrading works which follows

the existing road network with new fixed link crossings at Loch Long and Loch Fyne. The route corridor follows the existing A817 and A814 roads from the A82 Trunk Road to Whistlefield (near Garelochhead) and then crosses Loch Long with a new 1.6km fixed link crossing to Barnacabber. The route corridor then generally follows the existing C09 and A815 roads to Dalinlongart and the existing B836, A886, C11 and B8000 roads to Otter Ferry, on the eastern shore of Loch Fyne with an approximate 3.0km fixed link crossing tying into the A83 Trunk Road near Port Ann. The length of the route corridor where no road currently exists is approximately 5.5km with the full route corridor approximately 76km in length. Construction is required in the vicinity of the MOD bases of Faslane and Coulport with a section of the proposed route corridor utilising the MOD owned road.

4.1.20 The route corridor was initially identified by the Cowal Fixed Link working group and was subsequently considered as a potential route corridor by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute by bypassing the main landslide risk area on the A83 at the Rest and Be Thankful and connecting to the main route to the central belt via the A82 Trunk Road.

4.1.21 Table 4.5 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.5: Route Corridor 5 Major Structures

Major Structures	Notes
Approx. 0.38 km tunnel on the eastern approach to Loch Long	Tunnel that passes through high ground to the east of Loch Long, refer to Appendix D for details.
Approx. 1.6 km bridge over Loch Long	Approximately1.6km long (1.2km main span) suspension bridge proposed, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients is less feasible with a tunnel under Loch Long compared to a bridge. This is a result of the ground topography beyond the shores and the bathymetry of the loch. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 5 at this location rather than a tunnel.
Tunnel on western approach to Loch Long	There are two localised alignment options considered in the route corridor at this location which pass through high ground to the west of Loch Long, refer to Appendix D for details. Alignment 1 would require: A tunnel approximately 4,500m long. The western approach to the Loch Long bridge from Glen Finart, refer to Appendix F for details. A tunnel approximately 3,100m long. Under Larach Hill between Glen Finart and the A815 at Whistlefield, refer to Appendix F for details. Alignment 2 would require: A more direct tunnel, approximately 6,700m long between the western approach to the Loch Long bridge and the A815 at Whistlefield, refer to Appendix F for details.
Approx. 0.82 km bridge over Loch Striven	Approximately 820m long (500m main span) cable stayed bridge proposed, refer to Appendix G for details.

Major Structures	Notes
Approx. 1.45 km tunnel under high ground west of Loch Striven	A tunnel that passes through high ground west of Loch Striven, refer to Appendix F for details.
Approx. 4.4 km tunnel under high ground west of Ballochandrain.	A tunnel that passes through high ground west of Ballochandrain, refer to Appendix F for details.
Approx. 3.0 km bridge over Loch Fyne	3,000m long mixed bridge form comprising a reinforced concrete spine box form or composite steel box girder approach viaduct and a 1,600m long (1,100m main span) cable stayed bridge, refer to Appendix G for details
Approx. 3.0 km tunnel under Loch Fyne (Alternative to the bridge referred to in above row)	An alternative to the bridge over Loch Fyne, refer to Appendix F for details.

4.1.22 The location and extents of Route Corridor 5 are shown in Figures C2.A, C2.B and C2.C in Appendix C.

Route Corridor 6

4.1.23 Route Corridor 6 includes a connection from the A78 Trunk Road to Cowal via an approximate 3.9km fixed link crossing of the Firth of Clyde and upgrades along the A815 route corridor, to its connection with the A83 Trunk Road at Cairndow. The approximate overall length of the route corridor is 51km. The fixed link crossing over the Firth of Clyde will present considerable challenges as this area is used by large marine vessels as well as MOD submarines which are based at Faslane and Coulport. The structure will require to span a deep section of the Firth of Clyde as well as have adequate clearance for large marine vessels.

4.1.24 The route corridor was initially identified by the Cowal Fixed Link working group and was subsequently considered as a potential route corridor by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute bypassing the main landslide risk area on the A83 at the Rest and Be Thankful to provide access to the central belt via Inverclyde and the A78 Trunk Road and M8 motorway.

4.1.25 Table 4.6 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.6: Route Corridor 6 Major Structures

Major Structures	Notes
Approx. 3.9 km bridge over Firth of Clyde	Suspension bridge proposed (2 x 900m main spans), refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Firth of Clyde compared to a bridge. This is a result of the ground topography beyond the western shore and the bathymetry of the Firth of Clyde. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 6 at this location rather than a tunnel.
Approx. 0.4 km viaduct at Cairndow	Multi span viaduct, spans between 40 and 70m, refer to Appendix G for details.

4.1.26 The location and extents of Route Corridor 6 are shown in Figures C3.A and C3.C in Appendix C.

Route Corridor 7

4.1.27 Route Corridor 7 includes a connection from the A78 Trunk Road to Cowal via an approximate 3.9km fixed link crossing of the Firth of Clyde and upgrades along the A815 corridor between Dunoon and Dalinlongart. The route corridor then generally follows the existing B836, A886, C11 and B8000 roads to Otter Ferry, on the eastern shore of Loch Fyne where an approximate 3.0km fixed link crossing of Loch Fyne ties into the A83 Trunk Road at Port Ann. The approximate overall length of the full route corridor is 44km in length. The fixed link crossing over the Firth of Clyde will present considerable challenges as this area is used by large marine vessels as well as MOD submarines which are based at Faslane and Coulport. The structure will require to span a deep section of the Firth of Clyde as well as have adequate clearance for large marine vessels.

4.1.28 The route corridor was initially identified by the Cowal Fixed Link working group and was subsequently considered as a potential route corridor by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute bypassing the main landslide risk area on the A83 at the Rest and Be Thankful to provide access to the central belt via Inverclyde and the A78 Trunk Road and M8 motorway.

4.1.29 Table 4.7 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.7: Route Corridor 7 Major Structures

Major Structures	Notes
Approx. 3.9 km bridge over Firth of Clyde	Suspension bridge proposed (2 x 900m main spans), refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Firth of Clyde compared to a bridge. This is a result of the ground topography beyond the western shore and the bathymetry of the Firth of Clyde. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 7 at this location rather than a tunnel.
Approx. 0.82 km bridge over Loch Striven	Approximately 820m long (500m main span) cable stayed bridge proposed, refer to Appendix G for details.
Approx. 1.45 km tunnel under high ground west of Loch Striven	A tunnel that passes through high ground west of Loch Striven, refer to Appendix F for details.
Approx. 4.4 km tunnel under high ground west of Ballochandrain.	A tunnel that passes through high ground west of Ballochandrain, refer to Appendix F for details
Approx. 3.0 km bridge over Loch Fyne	3,000m long mixed bridge form comprising a reinforced concrete spine box or composite steel box girder approach viaduct and a 1,600m (1,100m main span) cable stayed bridge, refer to Appendix G for details
Approx. 3.0 km tunnel under Loch Fyne (Alternative to the bridge referred to in above row)	An alternative to the bridge over Loch Fyne, refer to Appendix F for details.

4.1.30 The location and extents of Route Corridor 7 are shown in Figures C3.A and C3.B in Appendix C.

Route Corridor 8 (8a and 8b)

4.1.31 Route Corridor 8 has two sub-corridors, 8a and 8b. Both are a combination of new offline carriageway and online upgrading works which generally follows the existing road network, with new fixed link crossings to the Isle of Bute and Cowal. Both 8a and 8b follow a similar corridor and include a connection from the A78 Trunk Road in North Ayrshire to the Isle of Bute via a 3.0km and 2.53km fixed link crossing between the mainland (within the vicinity of Portencross) and the Isle of Bute via Little Cumbrae Island before diverging on different routes to Cowal. Route Corridor 8a has a 0.7km fixed link crossing between the Isle of Bute and Cowal (within the vicinity of the Colintraive to Rhubodach ferry crossing), and 8b has a 2.25km fixed link crossing between the Isle of Bute and Cowal (within the vicinity of Ardmaleish to Ardyne Point). From east to west, a new section of carriageway will be required between the A78 Trunk Road and the fixed link crossing to the Isle of Bute. Once on the Isle of Bute, the route corridor then generally follows the existing B881, A844 and A886. Once on Cowal, route corridor 8a generally follows the A886 again and thereafter the A815 to tie back into the A83 Trunk Road at Cairndow, while 8b generally follows the existing B881, A844 and A815 past Dunoon, meeting route corridor option 8a again at the junction with the A886 near Strachur, to then tie back into the A83 Trunk Road at Cairndow. The approximate length of the route corridor for both 8a and 8b where no road currently exists is approximately 6.7km with the full route corridor approximately 90km and 76km in length for 8a and 8b, respectfully. The fixed link crossings to the Isle of Bute will provide significant technical challenges. This area is used by large marine vessels as well as MOD submarines which are based at Faslane and Coulport.

4.1.32 The route corridor was identified by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute bypassing the main landslide risk area on the A83 at the Rest and Be Thankful to provide access to the central belt via North Ayrshire and the A78 Trunk Road confirms which major structures are assessed in the AST within this route corridor.

4.1.33 Table 4.8 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.8: Route Corridor 8 Major Structures

Major Structures	Notes
Approx. 3.0 km bridge over Firth of Clyde (8a and 8b)	Suspension bridge between the coast at Portencross to the southern shore of Little Cumbrae Island, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Firth of Clyde compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the Firth of Clyde. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 8 at this location rather than a tunnel
Approx. 2.53 km bridge over Firth of Clyde (8a and 8b)	Suspension bridge between Little Cumbrae Island and the southern coast of Bute, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Firth of Clyde compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the Firth of Clyde. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included

Major Structures	Notes
	in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 8 at this location rather than a tunnel.
Approx. 0.7 km bridge over Kyles of Bute (8a)	Multi span concrete box girder bridge proposed, refer to Appendix G for details.
Approx. 2.25 km bridge over Kyles of Bute (8b)	Suspension bridge proposed, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Kyles of Bute compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the waterbody. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 8b at this location rather than a tunnel.
Approx. 0.4 km viaduct at Cairndow (8a and 8b)	Multi span viaduct, spans between 40 and 70m, refer to Appendix G for details.

4.1.34 The location and extents of Route Corridor 8a and 8b are shown in Figures C4.A to C4.E in Appendix C.

Route Corridor 9

4.1.35 Route Corridor 9 is a combination of new offline carriageway and online upgrading works which generally follows the existing road network with new fixed link crossings to the Isle of Bute and Cowal. The route corridor includes a connection from the A78 Trunk Road in North Ayrshire to Cowal via a 3.0km and 2.53km fixed link crossings between the mainland (within the vicinity of Portencross) and the Isle of Bute via Little Cumbrae Island and a 0.7km fixed link crossing between the Isle of Bute and Cowal (within the vicinity of the Colintraive to Rhubodach ferry crossing). From east to west, a new section of carriageway will be required between the A78 Trunk Road and the fixed link crossing to the Isle of Bute. Once on the Isle of Bute the route corridor then generally follows the existing B881, A844 and A886. Having crossed to Cowal the route corridor continues to generally follow the A886 up to Ballochandrain. Thereafter the route corridor generally follows the C11 and B8000 to Otter Ferry, on the eastern shore of Loch Fyne where an approximate 3.0km fixed link crossing ties into the A83 Trunk Road at Port Ann. The length of the route corridor where no road currently exists is approximately 6.7km with the full route corridor approximately 63km in length. The fixed link crossings to the Isle of Bute will provide significant technical challenges. This area is used by large marine vessels as well as MOD submarines which are based at Faslane and Coulport.

4.1.36 The route corridor was initially identified by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute bypassing the main landslide risk area on the A83 at the Rest and Be Thankful to provide access to the central belt via North Ayrshire and the A78 Trunk Road.

4.1.37 Table 4.9 below confirms which major structures are assessed in the AST within this route corridor.

Table 4.9: Route Corridor 9 Major Structures

Major Structures	Notes
Approx. 3.0 km bridge over Firth of Clyde	Suspension bridge between the coast at Portencross to the southern shore of Little Cumbrae Island, refer to Appendix G for details.

Major Structures	Notes
	Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Firth of Clyde compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the Firth of Clyde. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 9 at this location rather than a tunnel.
Approx. 2.53 km bridge over Firth of Clyde	Suspension bridge between Little Cumbrae Island and the southern coast of Bute, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under the Firth of Clyde compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the Firth of Clyde. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 9 at this location rather than a tunnel.
Approx. 0.7 km bridge over Kyles of Bute	Multi span viaduct, comprising steel composite box girder bridge proposed, refer to Appendix G for details.
Approx. 4.4 km tunnel under high ground west of Ballochandrain.	A tunnel approximately 4,400m long passes through high ground west of Ballochandrain, refer to Appendix F for details
Approx. 3.0 km bridge over Loch Fyne	Bridge form comprising a reinforced concrete spine box or composite steel box girder approach viaduct and a 1,600m (1,100m main span) cable stayed bridge, refer to Appendix G for details
Approx. 3.0 km tunnel under Loch Fyne (Alternative to the bridge referred to in above row)	An alternative to the bridge over Loch Fyne, refer to Appendix F for details.

4.1.38 The location and extents of Route Corridor 9 are shown in Figures C4.A to C4.C in Appendix C.

Route Corridor 10

4.1.39 Route Corridor 10 links the A814 and A818 at Helensburgh to the A83 Trunk Road at Cairndow via Cowal and the provision of fixed link crossings at Gare Loch and Loch Long. The route corridor connects the A814 and A818 to Cowal via approximately 1.5km and 2.6km fixed link crossings either side of the Rosneath Peninsula and the route corridor generally follows the B833 whilst on the Rosneath Peninsula. Having crossed Loch Long on the western side of the peninsula, the route corridor generally follows the existing A880, C09 and A815 to tie back into the A83 Trunk Road at Cairndow. The approximate overall length of the full route corridor is 50km in length. The fixed link crossing over Gare Loch and Loch Long will present considerable challenges as both lochs are used by large marine vessels as well as Ministry of Defence (MOD) submarines which are based at Faslane and Coulport.

4.1.40 The route corridor was identified by the Cowal Fixed Link working group and has subsequently been considered as a potential route corridor by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute bypassing

the main landslide risk area on the A83 at the Rest and Be Thankful and connecting to the main route to the central belt, the A82 via the A814 from Helensburgh.

4.1.41 Table 4.10 confirms which major structures are assessed in the AST within this route corridor.

Table 4.10: Route Corridor 10 Major Structures

Major Structures	Notes
Approx. 1.5 km bridge over Gare Loch	Cable stayed or suspension bridge proposed (900m main spans), refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under Gare Loch compared to a bridge. This is as a result of the rising ground topography beyond the shores on the Helensburgh side of the Loch. A very steep road gradient would be needed to achieve a tie in to existing ground levels near the shore. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 10 at this location rather than a tunnel.
Approx. 2.6 km bridge over Loch Long	Suspension bridge proposed, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under Loch Long compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the loch. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 10 at this location rather than a tunnel.
Approx. 1.87 km tunnel west of Loch Long	The southern of two tunnels on west side of Loch Long, refer to Appendix F for details.
Approx. 1.68 km tunnel west of Loch Long	The northern of two tunnels on west side of Loch Long, refer to Appendix F for details.
Approx. 3.1 km tunnel under Larach Hill	A tunnel that passes through high ground at Larach Hill, refer to Appendix F for details.
Approx. 0.4 km viaduct at Cairndow	Multi span viaduct, spans between 40 and 70m, refer to Appendix G for details.

4.1.42 The location and extents of Route Corridor 10 are shown Figures C5.A, C5.B and C5.D in Appendix C.

Route Corridor 11

4.1.43 Route corridor links the A814 and A818 at Helensburgh to the A83 Trunk Road on Kintyre via Cowal and the provision of fixed link crossings at Gare Loch, Loch Long and Loch Fyne. The route corridor connects the A814 and A818 to Cowal via approximately 1.5km and 3.0km fixed link crossings either side of the Rosneath Peninsula and the route corridor generally follows the B833 whilst on the Rosneath Peninsula. Having crossed Loch Long on the western side of the peninsula the route corridor generally follows the existing A880 to Ardbeg and the A815 to Dalinlongart, before then following the B836, A886, C11 and B8000 to Otter Ferry on the eastern shore of Loch Fyne. A 3.0km fixed link crossing

of Loch Fyne ties into the A83 Trunk Road near Port Ann. The approximate overall length of the full route corridor is 49km in length. The fixed link crossing over Gare Loch and Loch Long will present considerable challenges as both lochs are used by large marine vessels as well as Ministry of Defence (MOD) submarines which are based at Faslane and Coulport.

4.1.44 The route corridor was identified by the Cowal Fixed Link working group and has subsequently been considered as a potential route corridor by Transport Scotland's STPR2 team through further consultation. It is considered to offer a potential alternative access route into Argyll and Bute and is therefore considered as part of this preliminary assessment.

4.1.45 Table 4.11 confirms which major structures are assessed in the AST within this route corridor.

Table 4.11: Route Corridor 11 Major Structures

Major Structures	Notes
Approx. 1.5 km bridge over Gare Loch	Cable stayed or suspension bridge proposed (900m main spans), refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under Gare Loch compared to a bridge. This is as a result of the rising ground topography beyond the shores on the Helensburgh side of the Loch. A very steep road gradient would be needed to achieve a tie in to existing ground levels near the shore. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 11 at this location rather than a tunnel.
Approx. 3.0 km bridge over Loch Long	Suspension bridge proposed, refer to Appendix G for details. Achieving a tie into existing ground levels in the route corridor with appropriate road gradients, is less feasible with a tunnel under Loch Long compared to a bridge. This is as a result of the ground topography beyond the shores and the bathymetry of the loch. A tunnel would likely be a longer structure than a bridge at this location. This is shown in the plan and long section drawings included in Appendix F. Consequently a bridge was considered in the AST for Route Corridor 11 at this location rather than a tunnel.
Approx. 0.82 km bridge over Loch Striven	Cable stayed bridge proposed (500m main span), refer to Appendix G for details.
Approx. 1.45 km tunnel under high ground west of Loch Striven	A tunnel that passes through high ground west of Loch Striven, refer to Appendix F for details.
Approx. 4.4 km tunnel under high ground west of Ballochandrain.	A tunnel that passes through high ground west of Ballochandrain, refer to Appendix F for details
Approx. 3.0 km bridge over Loch Fyne	3,000m long mixed bridge form comprising a reinforced concrete spine box or composite steel box girder approach viaduct and a 1,600m (1,100m main span) cable stayed bridge, refer to Appendix G for details
Approx. 3.0 km tunnel under Loch Fyne (Alternative to the bridge referred to in above row)	An alternative to the bridge over Loch Fyne, refer to Appendix F for details.

4.1.46 The location and extents of Route Corridor 11. are shown in Figures C5.A to C5.C in Appendix C.

5. Public Consultation

5.1 Background

5.1.1 A public consultation was undertaken in September and October 2020. In excess of 650 responses were received which included many suggestions as to how to improve access to Argyll and Bute. The list of these suggestions is included in Appendix H of this report and full details of the findings of the consultation is included in the Access to Argyll and Bute Consultation Report.

5.1.2 Whilst many of the responses received included suggestions that are either out of the scope of the project or would be considered at later stages of scheme design development and assessment, there were a number of suggestions that proposed alternative route corridors, that were substantially different to the initial eleven route corridors. These are described in the following sections and the performance of each route corridor has been assessed against the criteria detailed within Assessment Methodology section 3.2. The results of these route corridor assessments is provided in the assessment summary tables contained in Appendix D.

5.2 Public consultation route corridor variations

5.2.1 In addition to the 11 route corridors listed above, four additional route corridors were proposed by members of the public through the consultation held in September and October 2020. As these route corridors are in close proximity of Route Corridor 1, they have consequently been named 12 to 15 for the purposes of the preliminary assessment and this report. A description of each is provided below.

Route Corridor 12 – A82 Inveruglas to A83 Butterbridge

5.2.2 Route Corridor 12 is an off-line option which generally heads west from the A82 Trunk Road at Inveruglas to the A83 Trunk Road at Butterbridge. The route corridor follows Inveruglas Water and Allt Coiregorgain adjacent to Ben Vane west, where it then crosses the bealach between Beinn Chorranach and Beinn Ime and follows Allt Beinn Ime to the A83. The overall length of the route corridor is approximately 8.2km and passes through similar terrain to that of the Rest and Be Thankful.

5.2.3 Table 5.1 below confirms which major structures are assessed in the AST within this route corridor.

Table 5.1: Route Corridor 12 Major Structures

Major Structures	Notes
Approx. 8.1 km tunnel under high ground	A tunnel that passes through high ground and under the existing West Highland Line railway west of Inveruglas, refer to Appendix F for details.

5.2.4 The location and extents of Route Corridor 12 are shown in Figure C.6 in Appendix C.

Route Corridor 13 – Glen Loin

5.2.5 Route Corridor 13 is an off-line option within Glen Loin and follows the wider valley floor from the A83 Trunk Road at Arrochar, heading north towards Loch Sloy following the Three Lochs Way. At the head of the glen, the corridorturns west following Inveruglas Water and Allt Coiregorgain across the Arrochar Alps towards the A83 Trunk Road at Butterbridge. The overall length of the route corridor is approximately 11.1km and passes through similar terrain to that of the Rest and Be Thankful.

5.2.6 Table 5.2 confirms which major structures are assessed in the AST within this route corridor.

Table 5.2: Route Corridor 13 Major Structures

Major Structures	Notes
Approx. 1.27 km viaduct within Glen Loin	Multi span viaduct proposed, spans between 40 and 70m, refer to Appendix G for details.
Approx. 0.32 km viaduct within Glen Loin	Multi span viaduct proposed, spans between 40 and 70m, refer to Appendix G for details.
Approx. 4.0 km tunnel under section of high ground	A tunnel that passes through high ground at west end of route corridor, refer to Appendix F for details.

5.2.7 The location and extents of Route Corridor 13 are shown in Figure C.7 in Appendix C.

Route Corridor 14 – Coilessan Glen

5.2.8 Route Corridor 14 is a combination of new offline carriageway and online upgrading works. The route corridor starts at the A83 Trunk Road at Ardgartan to the east of the A83 at Rest and Be Thankful, where it heads south along the west side of Loch Long before turning west at Coilessan Glen and following the Cowal Way to Lochgoilhead. It then heads north, generally following the B839 to the junction with the B828. At this point, the corridor heads north west, continuing to follow the B839 up Gleann Beag or Hell's Glen to where it meets with the A815 near Ardno. Subsequently, it turns north east to Cairndow, generally following the A815. The overall length of the route corridor is approximately 8.6km.

5.2.9 Table 5.3 below confirms which major structures are assessed in the AST within this route corridor.

Table 5.3: Route Corridor 14 Major Structures

Major Structures	Notes
Approx. 0.57km viaduct east of River Goil	Multi span viaduct proposed, spans between 40 and 70m, refer to Appendix G for details.
Approx. 5.6 km tunnel under high ground at Coilessan Glen	A tunnel that passes through high ground at Coilessan Glen, refer to Appendix F for details.
Approx. 2.0 km tunnel under high ground at Hell's Glen	A tunnel that passes through high ground at north-west end of Hell's Glen, refer to Appendix F for details.
Approx. 0.4 km viaduct at Cairndow	Multi span viaduct, spans between 40 and 70m, refer to Appendix G for details.

5.2.10 The location and extents of Route Corridor 14 are shown in Figure C.6 in Appendix C.

Route Corridor 15 – Arrochar to Butterbridge

5.2.11 Route Corridor 15 is an off-line corridor option that starts at the A83 Trunk Road at Arrochar and heads north west towards the A83 Trunk Road at Butterbridge. Heading north from Arrochar, the route corridor follows part way up Glen Loin past Succoth before turning in a north west direction where it crosses Beinn Narnain and Beinn Ime in the Arrochar Alps. The overall length of the route corridor is approximately 8.6km and passes through similar terrain to that of the Rest and Be Thankful.

5.2.12 Table 5.4 below confirms which major structures are assessed in the AST within this route corridor.

Table 5.4: Route Corridor 15 Major Structures

Major Structures	Notes
Approx. 7.0 km tunnel under high ground at Glen Loin	A tunnel that passes through high ground west of Glen Loin, refer to Appendix F for details.

5.2.13 The location and extents of Route Corridor 15 are shown in Figure C.7 in Appendix C.

.

6. Scheme Specific Transport Planning Objectives Assessment

6.1 Summary

6.1.1 Each route corridor was assessed against the five identified TPOs - Resilience, Safety, Economy, Sustainable Travel and Environment, developed specifically for the project (see Chapter 2 for details), using a seven-point scale, as shown below in Table 6.1. The TPO Assessment for Route Corridors 1 to 11 are summarised below in Table 6.2 and Route Corridors 12 to 15 in Table 6.3. A description of the performance of each route corridor against the TPO objectives is provided in the assessment summary tables contained in Appendix D.

6.1.2 Each route corridor was rated against the criteria using a combination of professional judgement and assessment experience drawn from projects of a similar nature.

Table 6.1 : Scheme Specific TPO Assessment Rating

Major Positive	Moderate Positive	Minor Positive	Neutral	Minor Negative	Moderate Negative	Major Negative
+++	++	+	0	-	--	---

Table 6.2 : Scheme Specific TPO Assessment Table Route Corridors 1 to 11

Transport Planning Objectives (TPOs)		Route Corridor Assessment Summary											
Objective		1	2	3	4	5	6	7	8a	8b	9	10	11
TP01	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.	++	++	++	++	+++	++	+++	+	+	++	++	+++
TP02	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	++	+	++

Transport Planning Objectives (TPOs)		Route Corridor Assessment Summary											
Objective		1	2	3	4	5	6	7	8a	8b	9	10	11
TP03	Economy – reduce geographic and economic inequalities within Argyll & Bute through improved connectivity and resilience.	+	+	+	++	++	++	++	++	++	++	++	++
TP04	Sustainable travel – encourage sustainable travel to, from and within Argyll & Bute through facilitating bus, active travel and sustainable travel choices.	0	0	0	+	+	+	+	+	+	+	+	+
TP05	Environment – Protect the environment, including 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.	-	---	---	---	---	---	---	---	---	---	---	---

Table 6.3 : Scheme Specific TPO Assessment Table Route Corridors 12 to 15

Transport Planning Objectives (TPOs)		Route Corridor Assessment Summary			
Objective		12	13	14	15
TP01	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.	++	++	++	++
TP02	Safety – positively contribute towards the Scottish Government's Vision Zero road safety target by reducing accidents on the road network and their severity.	+	+	+	+

Transport Planning Objectives (TPOs)		Route Corridor Assessment Summary			
Objective		12	13	14	15
TP03	Economy – reduce geographic and economic inequalities within Argyll & Bute through improved connectivity and resilience.	+	+	+	+
TP04	Sustainable travel – encourage sustainable travel to, from and within Argyll & Bute through facilitating bus, active travel and sustainable travel choices.	0	0	0	0
TP05	Environment – Protect the environment, including 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	---	---	---	---

7. STAG Criteria Assessment

7.1 Summary

7.1.1 Each route corridor was assessed against a range of Economic, Integration and, Accessibility and Social Inclusion criteria, using a seven-point rating mechanism, shown in Table 7.1. The STAG assessment for Route Corridors 1 to 11 are summarised in Table 7.2 and Route Corridors 12 to 15 in Table 7.3. The full details of the assessment ratings are provided in the assessment summary tables contained in Appendix D.

7.1.2 Each corridor was rated against the criteria using a combination of professional engineering judgement and assessment experience drawn from projects of a similar nature.

Table 7.1 : STAG Criteria Assessment Rating

Major Positive	Moderate Positive	Minor Positive	Neutral	Minor Negative	Moderate Negative	Major Negative
+++	++	+	0	-	--	---

Table 7.2 : STAG Assessment Summary Route Corridors 1 to 11

STAG Criteria		Route Corridor Assessment Summary											
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 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
	Community Accessibility	+	+	+	++	++	++	++	++	++	++	++	++

STAG Criteria		Route Corridor Assessment Summary											
Criteria		1	2	3	4	5	6	7	8a	8b	9	10	11
Accessibility and Social Inclusion	Comparative Accessibility	+	+	+	++	++	++	++	++	++	++	++	++

Table 7.3 : STAG Assessment Summary Route Corridors 12 to 15

STAG Criteria		Route Corridor Assessment Summary			
Criteria		12	13	14	15
Environment		Refer to Implementability Assessment – Environment			
Safety		Refer to Implementability Assessment – Accidents			
Economy	Transport Economic Efficiency	---	---	---	---
	Wider Economic Impacts	+	+	+	+
Integration	Transport Integration	0	0	0	0
	Transport and Land Use Integration	0	0	0	0
	Policy Integration	0	0	0	0
Accessibility and Social Inclusion	Community Accessibility	+	+	+	+
	Comparative Accessibility	+	+	+	+

8. Implementability Criteria Assessment

8.1 Summary

8.1.1 Each route corridor was assessed against a range of Engineering, Environment, Traffic, Operations and Maintenance, Financial and Public Acceptability criteria, using a three-point Red-Amber-Green (RAG) based scale, as shown in Table 8.1. The implementability assessment for Route Corridors 1 to 11 are summarised in Table 8.2 and Route Corridors 12 to 15 in Table 8.3 The full details of the assessment ratings are provided in the assessment summary tables contained in Appendix D.

8.1.2 As each assessment criterion is independent, individual scoring criteria were developed. These are contained with Appendix E.

Table 8.1 : Implementablity Assessment Rating

Green	Amber	Red

Table 8.2 : Implementability Assessment Summary Route Corridor 1 to 11

Implementability Criteria		Route Corridor Implementability Assessment Summary											
		1	2	3	4	5	6	7	8a	8b	9	10	11
Engineering	Topography and alignment considerations												
	Geology / Geomorphology considerations												
	Structures considerations	Note[1]											
	Constructability considerations	Note[1]											
Environment	Biodiversity, fauna and flora												
	Population and human health												
	Water Environment												
	Soils												
	Air quality												

Implementability Criteria		Route Corridor Implementability Assessment Summary											
		1	2	3	4	5	6	7	8a	8b	9	10	11
	Climatic Factors												
	Material assets												
	Cultural heritage												
	Landscape and visual amenity												
Traffic	Traffic Flows												
	Accidents												
Operational Considerations													
Financial Considerations		Note[2]											

Note[1] – Scored red if a route option with a tunnel is considered.

Note[2] – Cost range of route options spans green and amber bands.

Table 8.3 : Implementability Assessment Summary Route Corridor 12 to 15

Implementability Criteria		Route Corridor Implementability Assessment Summary			
		12	13	14	15
Engineering	Topography and alignment considerations				
	Geology / Geomorphology considerations				
	Structures considerations				
	Constructability considerations				
Environment	Biodiversity, fauna and flora				
	Population and human health				
	Water Environment				
	Soils				
	Air quality				
	Climate				
	Material assets				

Implementability Criteria		Route Corridor Implementability Assessment Summary			
		12	13	14	15
	Cultural heritage				
	Landscape and visual amenity				
Traffic	Traffic Flows				
	Accidents				
Operational Considerations					
Financial Considerations					

9. Findings of Assessment

9.1 Roadworks

9.1.1 The topography throughout the region is challenging. Any of the route corridors that require new road connections come with a need for bridges or tunnels to navigate the steep gradients. There are also a number of route corridors that require new or upgraded roads running in close proximity to lochs.

9.2 Structures

9.2.1 Due to the topography within the region all of the proposed route corridors will require bridges or structures with the majority of these constructed in challenging terrain. For the route corridors which have proposed fixed link crossings (Route Corridors 4-11), then this will require large and complex structures over the waterbodies and substantial engineering works.

9.3 Tunnels

9.3.1 The topography within the region is challenging and as a result, a number of the route corridor options require the use of tunnels to overcome the terrain and provide new road connections through the corridor.

9.4 Constructability

9.4.1 The remoteness of the region coupled with the topography, landslide risk, and complex engineering works required for items such as the fixed link crossings and tunnels, results in all of the proposed route corridor options having considerable constructability challenges. A number of the route corridors extend over large distances with long lengths of online upgrading works, which will bring additional challenges in constructability and are likely to result in notable disruption during the construction phase.

9.5 Geotechnical

9.5.1 The terrain throughout much of the region is susceptible to landslide hazard, particularly in areas where relatively steep slopes rising to significant elevations are present. This affects all route corridors to varying degrees. Route corridor 1 is considered to be subject to the highest landslide hazard susceptibility, largely due to the unique conditions at the Rest and Be Thankful but also due to the potential hazard on the other slopes above Glen Croe.

9.6 Environment

9.6.1 Constraints within the study area for the route corridors - for example, internationally and nationally designated sites - present a risk to the consentability of the scheme due to the potential for irreversible significant impacts. The difficulty in reducing significant impacts to an acceptable level could result in failure to meet environmental targets and non-compliance with legislation. Table 9.1 sets out the SEA topics and the key environmental constraints in each route corridor.

Table 9.1: Key Environmental constraints in each route corridor

SEA Topic	Key Environmental Constraints
Cultural Heritage	The highest number/ density of cultural heritage resources and potential constraints are found in Route Corridors 8a, 8b and 9 and would be difficult to avoid. There are also a high level of cultural heritage constraints for Route Corridors 5, 6, 7, 10 and 11. For Route Corridors 12-15, the most significant cultural heritage constraints were identified in Route Corridor 14.

SEA Topic	Key Environmental Constraints
Biodiversity	Potential for significant loss of habitat from internationally designated ecological sites Glen Etive and Glen Fyne Special Protection Area (SPA) for Route Corridors 2, 3, 4, 6, 8a, 8b and 10. Route Corridor 1 presents the fewest biodiversity constraints, however the potential loss of nationally designated Beinn an Lochain Site of Special Scientific Interest (SSSI) habitat could still be significant. Major negative impacts were predicted for biodiversity for Route Corridors 12-15.
Soils	Potential for loss of high value (Class 1 and 2) peat and Geological Conservation Review (GCR) sites in Route Corridors 2 and 3. Minor negative or uncertain adverse impacts were identified for soil resources in Route Corridors 12-15.
Landscape and visual	Major negative impacts are predicted for all route corridors but most - if not all - landscape impacts could be significantly reduced with mitigation. Existing routes and smaller footprints are preferred. Major negative impacts are predicted for landscape and visual amenity for Route Corridors 12-15.
Material Assets and Climatic Factors	There would be a relatively high level of material usage and associated carbon for route corridors 6, 7, 8a, 8b, 9, 10 and 11, with 9 to 11 performing the worst. For Route Corridors 12-15, the most significant material assets and climate constraints were identified in Route Corridors 14 and 15.
Water Environment	The shorter route corridors crossing fewer watercourses and floodplains are more advantageous (Route Corridors 1 – 3) than the longer routes with significantly higher numbers of crossings. Major negative impacts are predicted for water environment for Route Corridors 12-15.
Population and Human Health	Route Corridors 8a, 8b, 9 and 11 are least favourable in terms of potential construction impacts such as dust and noise and vibration, or longer term disturbance to settlements (there are a larger number of settlements or greater population density within these route corridors). Minor negative or uncertain adverse impacts were predicted for Population and Human Health for Route Corridors 12-15.

9.6.2 In summary, Route Corridors 2, 3, 8a, 8b, 9, 10, 11 presented the most numerous and difficult to mitigate environmental constraints, with Route Corridors 5, 6 and 7 having the next highest level of environmental constraints. These route corridors contained environmental constraints that were either designated for their importance, had a high degree of sensitivity, or were clustered in such a way that avoidance or mitigation would be very difficult to achieve. They were therefore expected to present the highest risk in terms of consentability. The remaining route corridors, 4 and 1, were expected to present a medium risk of consentability, with Route Corridor 1 having the lowest risk of all route corridor options. The four route corridors that arose from public consultation were also assessed to have a high or medium risk of consentability. For Route Corridors 2 to 11, the most significant environmental constraints were identified for the climatic factors, biodiversity, water environment, soils, cultural heritage and landscape and visual amenity SEA topics.

9.6.3 For the four route corridors that arose from public consultation, the most significant and difficult to mitigate environmental constraints were identified for corridors 14 and 15. Either minor negative or moderate (or above) adverse constraints were predicted for all four variants and no positive effects were predicted.

9.6.4 For the four route corridors that arose from public consultation, the most significant environmental constraints were identified for the climatic factors, air quality, biodiversity, water environment and landscape and visual amenity SEA topics.

9.7 Economics

9.7.1 In traditional economic terms none of the route corridor options will provide a positive return on investment but the more transformational options (Route Corridors 4-11) which provide additional links into Argyll and Bute are significantly underperforming due to their comparatively greater costs. In order to quantify the wider benefits of these options multi-modal transport and land use modelling would be required. At this stage of the assessment process, in-line with STAG, wider economic impacts are assessed on a qualitative basis only. Based on this qualitative assessment, it is considered that the inclusion of wider economic impacts is unlikely to provide a positive economic return for these route corridors.

9.8 Risks and Opportunities

Topography

9.8.1 The topography influencing the standard of route alignment within the route corridors is most challenging in Route Corridors 4, 5, 7, 9, 10 and 11 with potential for extensive departures from standard from the DMRB, although more detailed route development would be needed to confirm extent and significance.

Geotechnical

9.8.2 The geotechnical issues potentially affecting route options are greatest in Route Corridors 1, 2, 3, 13 and 14 but dealing with undulating topography in all route corridors and localised poor ground conditions will present a range of geotechnical issues for route design.

Structures

9.8.3 All route corridors require major structural solutions to address topographical, geotechnical or major crossings challenges, with some route corridors requiring major bridge crossings and/or tunnels. This also impacts constructability. Refer to Appendix F and G for details of the bridges and tunnels proposed.

9.8.4 Route Corridors 10 and 11 which require a fixed link crossing of Gare Loch at Helensburgh has major constraints and potential for significant impacts on Helensburgh requiring the crossing to be closer to Route Corridor 4.

9.8.5 Route Corridors 6 and 7 include a fixed link crossing in proximity of Dunoon which presents a major constraint and likely to require crossing to the south with a western bypass of Dunoon, however, major technical challenges for the Firth of Clyde crossing would remain.

9.8.6 Route Corridor 8b fixed link crossing has major constraints and potential for significant impacts at Rothesay requiring a crossing to be located further north of Port Bannatyne.

Environmental

9.8.7 Proximity of listed buildings to Route 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. For the four route corridors that arose from public consultation, the most significant cultural heritage constraints were identified in Route Corridor 14.

9.8.8 Route Corridors 2 and 3 affect Glen Etive and Glen Fyne SPA which may be difficult to justify, with other route corridors potentially affecting the SPA likely to avoid direct impact by route design.

9.8.9 Major negative impacts were predicted for biodiversity for the four route corridors that arose from public consultation. Route Corridor 1 had the fewest biodiversity constraints overall, although Beinn an Lochain SSSI is present at the western extent of the corridor at Loch Restil and is adjacent to the A83 Trunk Road.

9.8.10 Ancient Woodland is located along significant lengths of Route Corridors 4, 5, 6, 7, 8, 9, 10.

9.8.11 There is high value peat and GCR within Route Corridors 2 and 3.

9.8.12 Major negative impacts are predicted for water environment for the four route corridors that arose from public consultation.

9.8.13 For the four route corridors that arose from public consultation, the most significant material assets and climate constraints were identified in Route Corridors 14 and 15.

9.8.14 Major negative impacts are predicted for all 15 route corridors, but most - if not all - landscape impacts could be significantly reduced with mitigation.

Traffic

9.8.15 Route Corridor 1 in traffic terms represents the existing corridor and flows will generally be as existing.

9.8.16 Route Corridors 2, 3, 6, 8a, 8b, 10, 12, 13, 14 and 15 would not attract significant traffic from the A83 Trunk Road, so would not realise significant traffic benefits.

9.8.17 Route Corridors 4, 7, and 9 may attract traffic from the A83 Trunk Road, although the extent would need more detailed analysis to determine benefits.

9.8.18 Route Corridors 5 and 11 would attract the greatest volumes of traffic from the A83 Trunk Road indicating the routes are likely to realise the greatest levels of traffic benefits.

9.8.19 Accident benefits would likely be realised by the majority of the route corridors. This is dependent on the overall reduction in distances travelled on the road network. For those route corridors that offer an alternative route longer than the current A83 Trunk Road or diversion route, it is unlikely accident benefits, to any significant level, would be realised.

10. Preliminary Assessment Results and Recommendation

10.1.1 Following the initial assessment work progressed, the workshop held with Transport Scotland, and the completion of further work undertaken following the workshop, the emerging recommendation was confirmed as follows.

10.1.2 It is recommended that route corridor 1 be retained as the preferred route corridor 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 route corridors which have major challenges with bridges at the 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 route corridors may perform better except in relation to environmental benefits.

10.1.3 Route corridors 4, 5 and 7 were identified in the preliminary assessment workshop as being potentially considered for further assessment, but these are discounted as there aren't sufficient advantages to offset the disadvantages compared to Route Corridor 1. The following points are noted with respect to Route Corridors 4, 5 and 7:

- Extremely high cost and timescale for implementation compared to Route Corridor 1.
- There is further engineering complexity compared to Route Corridor 1.
- Potential for some internal connectivity benefits to be achieved through minor upgrades of the wider trunk road network in the region.

10.1.4 Route Corridors 12 – 15, which were proposed by the public are recommended to be discounted as they do not offer any advantages over Route Corridor 1. The following points are noted with respect to Route Corridors 12 - 15:

- Cost and time for completion are greater than Route Corridor 1.
- There is further engineering complexity compared to Route Corridor 1.