

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

Route Corridor Details	
Route Corridor Option	Route Corridor 2 - Glen Kinglas
Route Corridor Description	The Glen Kinglas route corridor 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 12 kilometres. The route corridor passes through similar terrain to that of the Rest and Be Thankful. Road structures and ground engineering measures would likely be required to fit the new road in the topography of the valley.
Rationale for Route Corridor	The Glen Kinglas route corridor was identified in the 'A83 Trunk Road Route Study, Part A - A83 Rest and Be Thankful' Report, published in 2013. This route corridor 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. For traffic travelling to/from the south this would also involve travelling along the A82 Trunk Road between Tarbet and north of Ardlui.
Geographic Context	The route corridor lies within the Argyll & Bute region, which comprises solely of the entirety of the Argyll & Bute local authority area. The route corridor end points are located a straight line distance of approximately 35-37 miles from the city of Glasgow. The south-west extents of the route corridor is situated at Butterbridge which is located between Cairndow and Arrochar on the A83 Trunk Road. The north-east extent of the route corridor is situated between Ardlui and Inverarnan on the A82 Trunk Road. The route corridor is located within the western extremities of the Loch Lomond and The Trossachs National Park (LLTNP). With respect to transport links, the route corridor joins the two aforementioned trunk roads and it also crosses the West Highland Line railway at its north-east extents.
Social Context	<p>Given the geographically remote nature of large areas of Argyll & Bute, reducing the duration of journey times and improving journey time reliability for both strategic and local traffic has the potential to impact positively on deprivation levels, both geographic and economic.</p> <p>The Scottish Index of Multiple Deprivation (SIMD) identifies concentrations of deprived areas across Scotland. Argyll & Bute consists of 125 data zones, with 10 data zones (8%) identified as being amongst the 15% most overall deprived data zones in Scotland. These are located in the region's 5 main towns - Helensburgh, Oban, Dunoon, Campbeltown and Rothesay. The Geographic Access to Services considers deprivation in terms of drive times and public transport times to a selection of basic services such as schools, health services and retail centres. Forty-eight (38%) of Argyll and</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

	<p>Bute's data zones are within the 15% most 'access deprived' data zones in Scotland – most of which are located outside the main towns.</p> <p>The region's population has been in decline for over a decade, against a backdrop of a population increase at the national level.</p> <p>Data from NHS Highland estimates that there are 26,000 referrals for Argyll & Bute patients each year, of which 44% are to hospitals within the region and 56% are to hospitals in the NHS Greater Glasgow and Clyde area. Disruption on the transport network can lead to missed appointments and have an adverse impact on patients' health and wellbeing.</p> <p>The region has twenty-three inhabited islands, more than any other local authority in Scotland, with seventeen percent of the regions' population inhabiting the islands. The A83 Trunk Road provides accessibility to services on the mainland via Kennacraig port, where ferry services depart to Islay with onward connections to Jura and Colonsay.</p>
Economic Context	<p>The A83 Trunk Road is one of only two east-west strategic trunk road network connections between Argyll & Bute and the central belt. The lack of a reliable strategic route linking Argyll & Bute with the rest of the country is understood to be constraining economic growth in the region. When the road connection via the A83 Trunk Road is severed, the impact on residents, visitors and businesses is severe due to the lack of alternative transport options.</p> <p>The A83 Trunk Road is known to carry goods of significant value to both the regional and national economy (including whisky and seafood). The A83 Trunk Road is also a key route for tourism, and a proposal to transform the Crinan Canal into a major tourism attraction in Mid-Argyll, could benefit significantly from improved resilience and / or access to the region. Anecdotal evidence suggests closures and restrictions cost the local economy £50k-£60k per day in addition to longer-term impacts on business investment within the region and, subsequently, the region's job market.</p> <p>Due to a large proportion of the region's geographic remoteness from the major economic centres of the central belt, only a few large scale, high skill industries are located within the area. The region's economy tends to be heavily influenced by sectors with lower growth, such as agriculture and public services. Given the focus on economic recovery post-COVID-19, enhanced connectivity for the Argyll & Bute region could contribute towards increasing inward investment and job opportunities for local communities. More reliable access for Bute and Cowal and Mid-Argyll, Kintyre and Islay has the potential to have a transformational effect on local/regional economies.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

Transport Planning Objectives		
Objective		Performance against planning objective
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.	<p>This route corridor offers enhanced resilience for both strategic A83 Trunk Road traffic accessing Cowal & Bute and Mid-Argyll, Kintyre and the Islands, and for local traffic travelling to / from and between key towns and communities within Argyll & Bute. The impact of landslide induced closures at the main landslide risk area on the A83 Trunk Road, at the Rest and Be Thankful, is effectively bypassed by this route corridor. Communities located within close proximity to Glen Croe, including Arrochar, Inveraray and Lochgoilhead, which are subject to the longest diversion routes during closure of the A83 Trunk Road at the Rest and Be Thankful, are likely to benefit significantly from the enhanced resilience provided by this route corridor</p> <p>In providing an additional route to the existing A83 Trunk Road (assuming it remains operational) enhanced resilience will be provided for large parts of Argyll & Bute, offering a more reliable connection between the region, the central belt and beyond.</p>
TPO2	Safety – positively contribute towards the Scottish Government’s Vision Zero road safety target by reducing accidents on the road network and their severity.	<p>Minor reductions in transport related casualties could, potentially, be realised as a result of reductions in vehicle kilometres associated with fewer landslide induced road closures and the associated long diversion routes for strategic traffic travelling to and from Argyll & Bute.</p> <p>While the A83 Trunk Road at the Rest and Be Thankful is operating under normal conditions, this route corridor would see reduced travel distances for those trips to/from the region and the A82 Trunk Road north, and during periods of closure the new route would provide a shorter diversion route for trips to the south. In addition, once the improvements to the A82 Trunk Road, Tarbet to Inverarnan section currently under development are implemented, this would result in safety benefits on this section of the trunk road network, which is known to have an accident history.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

TPO3	Economy – reduce geographic and economic inequalities within Argyll & Bute through improved connectivity and resilience.	This route corridor does not provide a significant change in connectivity when compared to the existing route, under normal operating conditions as the majority of traffic movements to/from the region are south towards Glasgow, therefore a corridor to the north does not benefit the majority of users.
TPO4	Sustainable travel – encourage sustainable travel to, from and within Argyll & Bute through facilitating bus, active travel and sustainable travel choices.	It is considered unlikely that this route corridor would have any significant impact on public transport usage, active travel, reducing transport poverty or reducing reliance on private cars. This is primarily due to the nature of the route corridor and the areas within which it is located. Investment in a new route corridor within the region would however provide an opportunity to include enhanced active travel provision as part of the design.
TPO5	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. An example of ecosystem service provision is improving water quality regulation.	The range and scale of potential environmental effects identified for this route corridor is such that it is likely that extensive environmental mitigation will be needed and there is the potential for a range of significant environmental impacts that could affect ecosystem service provision.

Existing Route Corridor Conditions		
Engineering	Route Corridor Length	The route corridor is approximately 12km long.
	Existing Roads	The route corridor intersects the A83 Trunk Road at its south-west extents and the A82 Trunk Road at its north-east extents. The route corridor does not intersect any Local Authority operated / maintained 'A' / 'B' / 'C' roads.
	Existing Accesses	A class road: 0 B class road: 0

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>C class road: 0 Unclassified road/direct access: 8</p> <p>Relative to the other route corridors, the low number of accesses noted above is attributed to the undeveloped, rural setting of the route corridor.</p> <p>All local accesses from the A83 in the area around Glen Croe would be retained should this route corridor be taken forward; however, the additional work to retain these accesses has not been included in the Preliminary Assessment of this route corridor.</p>
	<p>Topography and Land Use</p>	<p>The route corridor is rural in nature and ground levels along the centre of the route corridor rise gently from the existing A83 Trunk Road at Butterbridge, which is approximately 180m above ordnance datum, to the highest point along the centre of the route corridor at 320m above ordnance datum to the north of Loch Sloy. The route corridor reaches this elevation over approximately 5.5km. From the highest point at approximately 320m above ordnance datum the route corridor initially descends gently along the valley floor towards the A82 Trunk Road. It reaches a point approximately 0.5km to the north of Stob an Fhithich where the existing topography then descends steeply from approximately 250m above ordnance datum to the existing A82 Trunk Road and Inverarnan, the only settlement within the route corridor at a height of approximately 15m above ordnance datum.</p> <p>Land use within the route corridor includes residential and commercial properties at Inverarnan. There is also mixed/coniferous plantation woodland on the south side of Glen Kinglas at Abyssinia and at the northern end of Loch Sloy where it extends along the route corridor towards the north east. There is also evidence, based on available aerial imagery, of agricultural operations within the route corridor based on an area of agricultural fencing approximately 1km from the A83 Trunk Road and an agricultural building approximately 1.8km from the same location. There are several features within the route corridor associated with utilities and infrastructure; Loch Sloy, which is bound by a dam at its south-east end and fed by an extensive network of overground and underground infrastructure at both the northern and southern ends, and the Inverarnan 275kV/132kV substation at the north-eastern extent of the route corridor. A pair of high voltage electricity transmission lines also cross the corridor to the west of Loch Sloy and a further high voltage electricity transmission line also runs along the route corridor from Loch Sloy to the aforementioned substation at Inverarnan. The West Highland Line railway also passes through the route corridor and is located in land to the west of the A82 Trunk Road.</p>
	<p>Geology / Geomorphology</p>	<p>The route corridor follows the U-shaped valley of Glen Kinglas north-east, rising from Abyssinia to the north-west end of Loch Sloy. Numerous channels provide drainage pathways down the hillsides to the north-west and south-</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>east within Glen Kinglas. The north-west end of Loch Sloy marks a high point where three valleys diverge; Glen Kinglas to the south-west, the valley accommodating Loch Sloy which follows a north-west to south-east orientation down the valley towards Inveruglas, and a valley which accommodates the Srath Dubh Uisge. This valley falls quite gently at first until a steeper drop towards the existing A82 Trunk Road at Inverarnan. The north-west and south-east facing slopes flanking this valley are also occupied by channels providing drainage pathways to accommodate surface water run-off from the hillsides above.</p> <p>The superficial geology beneath the route corridor is mapped as comprising glacial Till – Diamicton along the majority of its length with localised pockets of River Terrace Deposits (gravel, sand, silt and clay). Glacial Till is generally confined to the valley floor along the full length of the route corridor, although it is also indicated to extend up the lower slopes, and across the south-east facing slopes of Maol Breach, Cnoc and Maol an t-Sratha to the north of Loch Sloy to approximately 600m above ordnance datum. Parts of the upper slopes have no deposits recorded, indicative of thin or absent superficial deposits.</p> <p>At the existing A83 Trunk Road at Butterbridge and along Glen Kinglas to the south-west end of the route corridor, the superficial geology is indicated to comprise Alluvium (gravel, sand, silt and clay) along the valley floor and flanked to the north and south by Hummocky (Moundy) Glacial Deposits (diamicton, sand and gravel). The resolution of geological mapping along the existing A83 Trunk Road appears to be greater than along the proposed route corridor so it is considered likely that the hummocky deposits continue further up into Glen Kinglas from the A83 Trunk Road tie-in, but these are not mapped.</p> <p>At the eastern end of the route corridor near Inverarnan there is no superficial cover mapped across a length of approximately 1km from between the hills of Garabal Hill and Stob an Fhithich down to the existing A82 Trunk Road. Within the valley of the River Falloch, significant deposits of Alluvium are mapped, with Hummocky (Moundy) Glacial Deposits indicated on the eastern and western margins of the valley.</p> <p>The route corridor is predominantly underlain by bedrock of Dalradian age comprising psammites and pelites of the Beinn Bheula Schist and the Ben Ledi Grit Formation, both belonging to the Southern Highland Group. To the north-west of the route corridor, the Garabal Hill-Glen Fyne Pluton is indicated to be present underlying the hillsides of Maol Breac. Igneous intrusions of various ages are mapped within the route corridor, including a concentration south-west of Inverarnan extending approximately 8km down the north-west side of the route corridor. These</p>
--	--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>intrusions are generally oriented east-west or north-northeast to south-southwest, occasionally cross-cutting and some with evidence of deformation.</p> <p>A significant fault is inferred following the northeast-southwest orientation of the valley along the full length of the route corridor, causing displacement of the igneous intrusions. A second fault splays off from the main fault west of Stoban Dubha orientated north-northwest. Other smaller faults splay off from the northern margin of the fault, generally following a north-south or south-west orientation.</p> <p>References:</p> <ul style="list-style-type: none"> • British Geological Survey, Geological Survey of Scotland, 1:63,360/1:50,000 geological map series. Accessed via BGS maps portal https://www.bgs.ac.uk/information-hub/bgs-maps-portal/, October to December 2020. • British Geological Survey, Onshore GeoIndex, https://mapapps2.bgs.ac.uk/geoindex/home.html, accessed October to December 2020. Datasets used include National Landslide Database (NLD), Mass Movement Deposits (1:50,000 scale), Superficial Deposits (1:50,000 scale), Bedrock Geology (1:50,000 scale), Linear Features (1:50,000 scale), Borehole Records. • British Geological Survey, The BGS Lexicon of Named Rock Units, https://webapps.bgs.ac.uk/lexicon/home.cfm. Accessed October to December 2020.
	Hydrology and Drainage	This is covered under 'Water Environment' in the 'Environment' part of this table.
	Structures	There are no existing structures in the route corridor.
Environment Considerations	Biodiversity, Fauna and Flora	<p>812.8ha of Glen Etive and Glen Fyne Special Protection Area (SPA) falls within the route corridor.</p> <p>2.9ha of Geal and Dubh Lochs Site of Special Scientific Interest (SSSI) and 40.7ha of Ben Vorlich SSSI fall within the route corridor.</p> <p>11 parcels of woodland listed on the Ancient Woodland Inventory (AWI) are within the route corridor.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

	Population and Human Health	<p>The route corridor is within a rural environment and without an existing public road as it follows the Kinglas Water watercourse. For approximately 5km of the northern section of the route corridor, it follows an existing access track towards the link to the A82 Trunk Road in the town of Inverarnan.</p> <p>The route corridor is rural in nature and the only settlement is Inverarnan, at the north-eastern extents of the route corridor. From aerial imagery, one other building is identifiable in along the route corridor adjacent to Kinglas Water.</p> <p>There are no known active travel routes within the route corridor, however there are Munros – Beinn Ime, Ben Vane, and Ben Vorlich – which are popular with hill-walkers.</p> <p>There are core paths in the wider surrounding area C204a-c (Glen Fyne, Cairndow) and C202 (Clachan, Cairndow (Tree house path)), which are north-west of the route corridor.</p> <p>Currently, accidents or incidents (e.g. roadworks, landslips, flooding) occurring on any part of the A83 and A82 Trunk Roads in Argyll and Bute can effectively cut off parts of the region for a period, significantly impacting residents, business and visitors due to the significant length of alternative routes and the travel times involved.</p>
	Water Environment	<p>The route corridor crosses or is in the vicinity of water bodies classified under the Water Framework Directive, including:</p> <ul style="list-style-type: none"> ▪ Two river water bodies, Carn Allt and Kinglas Water ▪ One loch water body, Loch Sloy <p>The route corridor also crosses approximately 30-40 minor watercourses.</p> <p>SEPA Flood Maps (SEPA, 2020) indicates that the route corridor may be at existing fluvial flood risk from Kinglas Water, three minor watercourses and Loch Sloy during a medium likelihood event (0.5% Annual Exceedance Probability (200-year) event).</p> <p>There are no designated sites protected for water environment interests within the route corridor.</p> <p>There are no Shellfish Water Protected Areas, Active Aquaculture Sites, CAR licenced fish farms and Classified Shellfish Harvesting Areas within the vicinity of the route corridor.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>The route corridor passes through two surface water Drinking Water Protected Areas.</p> <p>There are no bathing waters in the route corridor.</p>
	Soils	<p>Soil type within the route corridor is predominantly peaty podzols with alluvial soils and mineral podzols in the valley floor at Ardlui. The route corridor predominantly transects peat identified as Class 3 (not priority peatland habitat with carbon rich soils and some areas of deep peat) and Class 5 (no peatland habitat recorded, soils are carbon rich and deep peat) in the Carbon and Peatland 2016 Map. However, the route corridor also transects peat identified as Class 1 (nationally important carbon rich soils, deep peat and priority peatland habitat, areas likely to be of high conservation value) around Loch Sloy and at Glen Kinglas where the route corridor joins the A83 Trunk Road. Given the combination of soils, climactic conditions and topography the Land Capability for Agriculture (LCA) Class within the corridor is predominantly Class 6 (Class 6.2 and 6.3) with Class 5.3 on the more productive soils around Ardlui.</p> <p>There is a Geological Conservation Review (GCR) site (Garabal Hill to Lochan Strath Dubh-uisge) north-west of Ardlui and the route corridor intersects the southern edge of the site.</p> <p>The Land Capability for Forestry (LCF) class is predominantly Class F5 with sections of Class F6 and Class F7 and there are existing stands of commercial forestry in the section between Ardlui and Loch Sloy. The route corridor is not identified in the Argyll & Bute Council Woodland Forestry Strategy.</p>
	Air Quality	<p>The route corridor is rural in nature and the only settlement is Inverarnan, at the north-eastern extents of the route corridor. From aerial imagery, one other building is identifiable in the route corridor adjacent to Kinglas Water.</p> <p>There are no Air Quality Management Areas (AQMAs) in the route corridor, or in the Argyll and Bute council area and current and past annual assessments suggest that it will be very unlikely to be necessary to declare any AQMAs in the future based on current air quality objectives (Argyll & Bute Air Quality Annual Progress Report, 2020).</p> <p>Air quality in Argyll and Bute is considered to be generally very good and complies with all the air quality objectives for Scotland (Argyll and Bute Air Quality Annual Progress Report, 2020). Modelling results for sources of nitrogen dioxide and fine particulates in the Argyll and Bute Air Quality Annual Progress Report (APR) illustrate that background concentrations are very low, with the traffic considered as the main potential source of pollution in the absence of industry hotspots in the region. The Argyll and Bute APR did not identify any areas where air quality objectives may be under threat and where specific actions required to improve air quality.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

	Climatic Factors	<p>The baseline for climatic factors is not considered to differ greatly between the 11 route corridors. However, due to the northern location of this route corridor, it is considered to be more vulnerable to the impacts of climate change, such as landslides or flooding, due to the steep topography in the area.</p> <p>As identified in the 'Water Environment' section, the route corridor may be at risk of fluvial flooding from Kinglas Water, three minor watercourses and Loch Sloy.</p> <p>As identified in the 'Soils' section, the soil type in the area is predominantly peaty podzols with a high carbon sink value. There are significant quantities of forested land in the route corridor, including parcels of ancient woodland. Forested areas also have a carbon sink value.</p>
	Material Assets	<p>The route corridor contains a variety of natural material assets. As indicated in the Climatic Factors section, there are significant areas of forestry; including AWI within the route corridor and there are peat soils present, as described in the Soils section above.</p> <p>The route corridor is located in a rural environment with few built material assets. The existing A83 Trunk Road at the southern extent and the A82 Trunk Road at the northern extent are within the route corridor. The Loch Sloy/Awe SSE Hydro-electric scheme is located between Loch Sloy and Inveruglas within the corridor. The power station facility and the dam are category A and B listed buildings respectively. The West Highland Line railway also passes through the route corridor and is located in land to the west of the A82 Trunk Road. There is a car park at the Rest and Be Thankful Viewpoint where the B828 meets the A83 Trunk Road. The closest waste disposal facility to the route corridor are approximately 30km to the south, in Helensburgh.</p>
	Cultural Heritage	<p>There are two Listed Buildings on the northern boundary of the route corridor, at Inverarnan. One is Category B and the other is Category C. There are no other designated cultural heritage resources within the route corridor. The Butter Bridge Category B listed building is within 200m of the southern extent of the route corridor. The A83 Trunk Road follows the line of the Old Military Road, an undesignated cultural heritage resource.</p>
	Landscape and Visual Amenity	<p>The route corridor is situated entirely within the LLTNP boundary. The northern extent of the route corridor from its start point for approximately 2km is situated within the Loch Lomond National Scenic Area (NSA). A small part of the route corridor on the north-western slopes of Garabal Hill (524m AOD), approximately 1km long and 250m wide, is located within the Ben Lui Wild Land Area (WLA).</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>This route corridor is located within the Highland Summits Landscape Character Type (LCT) and Upland Glens - Loch Lomond & the Trossachs LCT.</p> <p>The route corridor appears to be aligned with existing access tracks, however the complex topography, the general absence of settlement or infrastructure and the resultant sense of place in the route corridor means that the receiving landscape is characterised by a degree of wildness and tranquillity.</p> <p>Land cover within the route corridor for this option comprises pockets of coniferous forestry, grassland/moorland, Loch Sloy reservoir and numerous watercourses. The hydroelectric infrastructure at the eastern end of Loch Sloy is outside of the route corridor.</p> <p>The southern tip of the route corridor is located along the Argyll Coastal Route and within the Argyll Forest Park. The route corridor is positioned and would likely be visible from the nearby popular hill walking summits (Ben Vorlich, Ben Vane and Beinn Ime).</p>
Traffic		<p>Annual average daily traffic (AADT) flow levels on the A83 Trunk Road in 2019 were 2,300 vpd (vehicles per day) on the stretch between Campbeltown and Tarbert and 4,400 vpd west of Tarbet, with the HGV percentage between 5% and 9%. At the Rest and Be Thankful, A83 Trunk Road traffic volumes were in the order of 4,500 vpd in 2019, with the HGV percentage around 9%, suggesting that, on average, around 400 HGVs pass through Glen Croe, on a daily basis. Additionally, around 17% of average daily traffic in 2019, on the A83 Trunk Road within Glen Croe (approximately 800 vehicles) was a light goods vehicle. Approximately 100 buses and coaches per day passed through Glen Croe via the A83 Trunk Road, in 2019.</p> <p>AADT flow levels on the A82 Trunk Road to the north of Tarbet were 4,000 vpd in 2018, with the HGV percentage between 4% and 7%.</p> <p>Travel routes to/from, and within, Argyll & Bute are highly seasonal, with greater volumes of people movements within the region during the summer months (predominantly as a result of increased visitor levels). Due to the geography and topography of the region, seasonal fluctuations in traffic volumes and the presence of slow-moving vehicles, travel times via the A83 Trunk Road between the key main towns/cities can be long relative to the distances involved and unreliable.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

Implementability		
Engineering	Topography and Alignment Considerations	<p>The topography at the south-west extents of the route corridor is likely to allow for desirable minimum alignment geometry to be achieved at or near existing ground levels and without the need for large embankments or cuttings. Achieving desirable minimum alignment geometry does however mean that several watercourse crossings are required. Due to the topography at the north-east extents of the corridor, it is not technically feasible to achieve desirable minimum alignment geometry at or near existing ground levels, and extremely deep cuttings would be needed to provide a road with earthworks slopes. However, provision of a tunnel approximately 7.5km long would allow for desirable minimum alignment geometry to be achieved where the most challenging topography is found in the route corridor.</p>
	Geology / Geomorphology Considerations	<p>The National Landslide Database records landslides to have occurred within the route corridor. It should be noted that additional landslides may have occurred which are not recorded within the database. Potential landslide hazards may require measures to protect any route alignment and this should be considered as part of detailed assessment should this route corridor be retained. The database records landslides to have occurred at the following locations:</p> <ul style="list-style-type: none"> • High on the slopes of Beinn Chorrnach to the south-east of the route corridor close to the A83 Trunk Road tie-in. • To the north of Butterbridge at the southern end of the route corridor tie in at the A83 Trunk Road. <p>Mass movement deposits are recorded on Creag Bhrosgan, north-west of the proposed route corridor tie-in with the existing A83 Trunk Road alignment. Aerial photography shows evidence of previous instability on the slopes of Beinn Chorrnach on the south-east side of Glen Kinglas between the eastern tie in to the A83 Trunk Road and Loch Sloy. The age of these features is not known. The toe of a mass movement deposit originating from the upper slopes of Stob Coire Creagach lies within the south-western corner of the corridor.</p> <p>An assessment of other potential issues including potentially difficult ground conditions is summarised below:</p> <ul style="list-style-type: none"> • The relatively low resolution of geological mapping means that potentially hazardous deposits such as peat, alluvium and mass movement deposits may not be recorded.

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<ul style="list-style-type: none"> • Potential presence of soft or loose deposits (alluvium and river terrace deposits). • Shallow rockhead and variability in rock strength due to the presence of igneous intrusions of high strength which may cause difficulties for shallow excavations and any tunnelled sections. • Faulting can create zones of weak and/or highly fractured rock which is a significant hazard when tunnelling or excavating cuttings. Conversely, faulting can also create zones of extremely strong 'welded' fault rock, which again would create difficulties for tunnelling or areas of cutting in relation to excavatability. • The presence of faults may provide a preferential pathway for groundwater flow, and groundwater may pose significant issues for excavation in cuttings and for tunnelling if the groundwater table is high.
	Hydrology and Drainage Considerations	This is covered under 'Water Environment' in the 'Environment' part of this table.
	Structures Considerations	<p>The following structures are likely to be needed for a new road within the route corridor.</p> <ul style="list-style-type: none"> • A tunnel approximately 7.5km long. • Approximately 4 no. new single-span watercourse bridge crossings. • Approximately 16 no. new culverts (box or large diam. pipe). <p>Constructability, operation and maintenance in relation to structures are discussed elsewhere within the document.</p> <p>Key issues associated with the likely structures are:</p> <p><u>Glen Kinglas Tunnel</u></p> <ul style="list-style-type: none"> • A tunnel is considered to be required to satisfy a practical road alignment through the route corridor. The tunnel would be approximately 7.5km in length with gradient typically around 4% descending from south-west to north-east. • It is initially considered that the tunnel may be constructed by a single bore providing a single carriageway with bi-directional traffic through the tunnel; however, there are important fire life safety, and associated ventilation and escape provisions, backed up by European and National highways standards that will govern the tunnel configuration.

		<ul style="list-style-type: none"> • For a single carriageway, bi-directional tunnel, these provisions are quite complex. The ventilation system must be in permanent operation and in the event of a fire, smoke and heat have to be removed from the tunnel using semi-transverse ventilation, which draws the smoke and heat into an overhead duct. In a long tunnel such as this, exhausts are likely to be required through intermediate shafts. Escape from the fire is also more problematic in that an escape duct has to be provided within the tunnel section. People trapped in the tunnel cannot be expected to be able to walk far through such a narrow duct, and so intermediate shafts or a parallel escape bore must be provided to facilitate escape to free air. Given the depth of intermediate shafts of 150m deep or more, lifts and a recovery suite at the shaft head would have to be provided. Alternatively, a parallel rescue bore could be constructed parallel to the main bore with enough space for rescue vehicles. • Accordingly, a twin bore, dual carriageway tunnel may be more appropriate. In such tunnels, in the event of a severe vehicle fire, longitudinal jet fan ventilation is ramped up to full strength to blow the smoke and heat in the direction of flow of traffic, away from vehicles queued behind the incident, while those ahead of the incident escape by continuing as normal. For those trapped in the tunnel, they can escape into the other non-incident bore through cross-passages, at say 100-300m intervals, and can be evacuated by rescue vehicles. Intermediate shafts would not typically be required other than to vent pollution. <p><u>Other Structures</u></p> <p>On the southern approaches to the tunnel in Glen Kinglas, the road alignment crosses a number of minor watercourses requiring single and multi-span bridges. The multi-span bridges would likely be steel composite construction on reinforced concrete piers/bankseats on piled foundations to rock. The single span bridges would likely be composite steel or composite concrete Y beam types on reinforced concrete abutments piled to rock.</p>
	Constructability Considerations	<p><u>Summary of Key Construction Works</u></p> <p>This route corridor connects the A83 Trunk Road at Glen Kinglas and the A82 Trunk Road north of Ardlui. Key works in the route corridor would involve construction of a new surface road for between approximately 3.5 and 4km alongside Kinglas Water leading to a tunnel approximately 7.5km long which is to be constructed under the mountain west of the A82 Trunk Road.</p>

		<p><u>Major Structures Constructability Considerations – Glen Kinglas Tunnel</u></p> <p>The northern portal is likely to be situated in proximity to the site of an electrical substation facility which may offer some space to establish the portal and working area to begin boring/blasting the tunnel from here. Access into the electrical substation may require some utility diversions, which could be pursued early in the process. The tunnel also passes underneath the West Highland Line railway parallel to the A82 Trunk Road, so liaison with Network Rail will be required during design and construction.</p> <p>Depending on capacity and practicality, there may be an opportunity to establish a rail siding and investigate delivery of materials and removal of excavated spoil from the tunnelling operation via the rail line. The existing A82 Trunk Road is already a busy route, with congestion due to space restrictions and accidents a frequent issue, therefore anything that can be done to remove construction traffic from the road would be advantageous. Without the use of the railway line it may be impractical to consider operating the tunnelling from the northern end of the tunnel.</p> <p>Construction to the south would be recommended to commence straight away to provide haul road access to the southern end of the new tunnel to enable the portal to be constructed and tunnelling to commence from this end. If tunnelling can be started at the northern portal this could enable work to commence from both ends if the selected method of tunnelling allows, for example drill and blast. The tunnelling work at this end would need to transport the material arising from the tunnel down to the A83 Trunk Road at the southern end of the route corridor for removal from site, which would mean a significant number of vehicles utilising the road. There is very likely to be a requirement to install ventilation shafts from the top of the mountain to the tunnel which would involve establishing a working area on top of the hill requiring a haul route to be established to move plant and equipment to the location. This would have a temporary additional impact to the landscape during operation which may remain for a period after construction has been completed.</p> <p>The tunnel could be advanced by drill and blast techniques or by using a large Tunnel Boring Machine (TBM).</p> <p>Whichever technique is used, short sections of cut and cover tunnel would be required at each portal location to form a vertical portal face in reasonably competent rock from which the tunnel can be advanced. At each drill-and-blast advance the flat-bottomed “horseshoe”-shaped excavation of newly cut rock would be evaluated by a geologist and strengthened using a combination of rock bolts and sprayed concrete (SCL), to form a stable primary lining before the next advance is drilled and charged with explosive. Although this may seem a slow and laborious process it can be an economic method to construct tunnels in rock. The tunnel can be completed more quickly if the drill-and-</p>
--	--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>blast sequence can be repeated at the opposite portal, or even from intermediate shafts. Once the tunnel is completed an in-situ cast secondary lining can be installed to form a durable final structure.</p> <p>Alternatively, the tunnel can be bored using a large Tunnel Boring Machine (TBM), starting at one end and boring the 7.5km of tunnel consecutively. Although this involves a large capital investment in a TBM and large site set-up at the portal locations, when compared with drill-and-blast, the final circular structural lining of pre-cast segments can be formed as the tunnel advances. The construction of a portal at the north-east end of the tunnel adjacent to the existing A82 Trunk Road is likely to be problematic given the potential issues of congestion associated with the presence of the road, the West Highland Line railway and the shoreline of Loch Lomond.</p> <p><u>Other Constructability Considerations – Road and Small Structures</u></p> <p>Construction of the new surface road in the valley floor is made more difficult by the relatively steep slopes on either side and the river in the valley floor. The route corridor also borders a SPA which could restrict options for the alignment or availability of haul roads. As a result it is likely that the road would be partially completed to the tunnel and then be used as a haul route to connect to the tunnel working area, with the road being completed once the main tunnel works are finished and the fit out and commissioning has commenced. This could potentially delay commencement of the tunnel works until the major earthworks for the surface road has been completed opening up the haul route to the southern portal, if works to the north are not considered feasible. Earthworks for the road are likely to be relatively substantial and may require slope stabilisation measures such as soil nailing to reduce potential cut volumes.</p> <p>This route corridor has advantages in that it is offline so traffic management requirements will be minimal, reducing impacts to road users. However, the construction of the tunnel is a significant undertaking which will extend the programme length and has the potential to result in substantial increases in traffic from site vehicles, in addition to supply of materials, equipment and resources to support the other elements. Also, the minor nature of the roads to the site may make use of equipment such as TBMs completely impractical due to delivery restrictions, limiting available options for tunnelling methods.</p>
Environment considerations	Biodiversity, Fauna and Flora	812.8ha of Glen Etive and Glen Fyne SPA falls within the route corridor. There could be temporary and permanent habitat loss within the SPA, which would be a major negative environmental effect. Disturbance to breeding golden eagle, a designated feature, could occur during construction and operation, which would be a major negative environmental effect.

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>2.9ha of Geal and Dubh Lochs SSSI and 40.7ha of Ben Vorlich SSSI fall within the route corridor. There could be temporary and permanent habitat loss within both SSSIs, including the loss of designated features of Geal and Dubh Lochs SSSI (tall herb ledge and upland assemblage) and Ben Vorlich SSSI (alpine flush, subalpine wet heath and tall herb ledge), which would be a major negative environmental effect. Moderate negative environmental effects could also occur as a result of nitrogen deposition.</p> <p>11 parcels of woodland listed on the AWI are within the route corridor. This could result in the loss of nationally important and irreplaceable habitat, which would be a major negative environmental effect and could require compensation.</p> <p>There is potential for effects on terrestrial and aquatic species from construction activities, as follows:</p> <ul style="list-style-type: none"> • Disturbance from noise and vibration and light pollution. • Injury or mortality from vegetation removal, vehicle movements, or becoming trapped in uncovered holes and pipes during construction. • Fragmentation and loss of habitat suitable for shelter, foraging and commuting. • Changes in water flow conditions from runoff, or alterations to watercourses and groundwater. <p>During operation, there is potential for habitat loss and fragmentation for protected species as a result of tree and vegetation clearance and loss of AWI.</p>
	Population and Human Health	<p>There is potential for localised noise and vibration effects on receptors within the route corridor during the construction phase. For example, noise nuisance and vibration caused by traffic and activities associated with construction works could result in general annoyance and/or sleep disturbance for local residents. During the operation phase, there is potential for receptors close to the route to experience noise and vibration impacts from vehicle traffic. While there are relatively few residential receptors within the route corridor, it is uncertain at this stage whether noise and vibration impacts on those receptors would be major during construction and operation.</p> <p>There is potential for other effects on population receptors resulting from construction traffic. Increased traffic volumes and construction activities could result in diversions and affect journey lengths for both vehicle travellers and non-motorised users (NMUs).</p> <p>The route corridor passes through a rural environment which does not currently have a carriageway/access. It is expected that the route corridor would also provide greater accessibility to hill-walking routes and core paths in the wider surrounding area, including C204a-c (Glen Fyne, Cairndow) and C202 (Clachan, Cairndow (Tree house path)).</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>The route corridor would provide a new link between the A83 Trunk Road and Inverarnan and potentially reduce the severity and/or incidence of severance issues however there is not expected to be a significant change in connectivity for residents, businesses and visitors in the route corridor and Argyll and Bute as a whole.</p> <p>There may be land-take from properties required to facilitate the operation of the route corridor.</p> <p>There is also potential for air quality effects which could affect human health; these are discussed further under Air Quality.</p>
	Water Environment	<p>Construction within the route corridor and operational structures and discharges may affect the hydromorphology and surface water quality of approximately two Water Framework Directive (WFD) classified river water body, one WFD loch and approximately 30-40 minor watercourses. Two surface water Drinking Water Protected Areas may also be affected.</p> <p>SEPA Flood Maps (SEPA, 2020) indicates that the route corridor may be at fluvial flood risk from Kinglas Water, three minor watercourses and Loch Sloy as identified on SEPA Flood Maps during a medium likelihood event (0.5% Annual Exceedance Probability (200-year) event).</p> <p>Construction and operation within the route corridor could result in major negative environmental effects on the water environment, subject to appropriate mitigation.</p>
	Soils	<p>The route corridor would potentially require road structures and ground engineering measures and a major negative effect is assessed. This recognises the route corridor is unlikely to avoid potential effects on the Garabal Hill to Lochan Strath Dubh-uisge GCR and Class 1 peatland habitat (nationally important and of high conservation value). Loss of existing commercial forestry and land identified as Potential within the Argyll & Bute Woodland Strategy is also likely to be unavoidable within the route corridor.</p>
	Air Quality	<p>There is potential for localised air quality effects on receptors within the route corridor during the construction phase: for example, dust generated from site activities and emissions from vehicular movements, which could result in annoyance for local residents.</p> <p>The route corridor does not follow an existing route and would therefore introduce traffic-related emissions to the area (e.g. carbon monoxide, sulphur dioxide, particulate matter) during operation.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>However, there are very few residential receptors within the route corridor and the existing air quality in the region is good, and with mitigation measures in place it is expected that any negative effects which do arise are likely to be minor.</p> <p>Potential air quality effects on ecological receptors are assessed under Biodiversity, flora and fauna.</p>
	Climatic Factors	<p>Construction of the route corridor would have major negative effects on climate due to the release of carbon emissions associated with the construction materials and installation process. The route corridor requires construction of approximately 12km of new carriageway, including an approximate 7.5km long tunnel west of the existing A82 Trunk Road. Construction of these elements would have a high embodied carbon content from material usage and earthwork treatment, particularly for the tunnel construction. There is approximately 4.8km of forestry area in the route corridor footprint: felling of these trees would release stored carbon.</p> <p>As indicated in the 'Water Environment,' sections of the route corridor are situated within or in close proximity to zones that may be at risk of fluvial flooding. The anticipated increase in severity and frequency of rainfall events caused by climate change could pose greater risk from flash-flooding of watercourses.</p> <p>As indicated in the 'Soils' section, the route corridor is primarily peat soils with a high carbon sink value. Construction of the route would degrade this peatland, releasing stored carbon and removing ground with a high carbon sequestration potential.</p> <p>Any felling required would also reduce the carbon sink value of forests within the route corridor. Woodland and Forestry Strategy areas, including existing planted woodland, potential, preferred and sensitive sites, need to be considered in the corridor selection process.</p> <p>Material requirements for construction of the route corridor would release carbon during manufacture and construction as set out below in the 'Material Assets' section.</p> <p>Once operational, forecast traffic levels (and associated vehicle-derived greenhouse gas emissions) are relatively low, for this route corridor, assuming the continued operation of the A83 through the Rest and Be Thankful.</p>
	Material Assets	<p>The route corridor is entirely off-line within Glen Kinglas valley, providing a link between the existing A83 Trunk Road at Butterbridge and follows the valley floor, heading north-east towards Loch Sloy. Effects on the hydro-electric</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

		<p>station at Loch Sloy would likely be avoided within the route corridor. Construction would require usage and manufacture of built material assets, notably for the following activities:</p> <ul style="list-style-type: none"> • Approximately 12km of new single carriageway. • A tunnel in the region of 7.5km in length. • Numerous structural crossings of watercourses. <p>As indicated in the Climatic Factors section, the route corridor could result in major negative environmental effects on natural material assets, including peat soils and forestry.</p>
	Cultural Heritage	<p>Due to the low numbers of known cultural heritage resources in the route corridor, it is anticipated that a road alignment could be developed to avoid major effects on these.</p>
	Landscape and Visual Amenity	<p>There is potential for effects on the special qualities of the LLTNP and the Loch Lomond NSA, the local landscape character and views from Highland summits within the route corridor due to the construction and operation of a road and supporting infrastructure.</p> <p>The introduction of the new carriageway, traffic, tunnel portals and potential ventilation shafts from the mountain tops to the tunnel with associated haul routes and loss of existing vegetation would have adverse effect on the landscape character and visual amenity of the area and the sense of remoteness, naturalness and wildness in the Ben Lui Wild Land Area on the slopes of Garabal Hill.</p>
Traffic	Traffic Flows	<p>Given the relatively minor connectivity changes provided by implementing this route corridor, changes in traffic levels are likely to be low, in terms of traffic reduction on the existing A83 Trunk Road through the Rest and Be Thankful. This route corridor is proposed to be constructed through a glen which currently has no route, therefore will introduce traffic to the area. The majority of trips to/from the region are to the south towards Glasgow, rather than to the north on the A82 Trunk Road therefore this corridor is not an attractive option for the majority of users.</p> <p>Should the A83 Trunk Road at the Rest and Be Thankful be closed to traffic, this route corridor would result in increases in the level of traffic using the A82 Trunk Road, north of Tarbet.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

	Accidents	<p>Minor reductions in transport related casualties could, potentially, be realised as a result of reductions in vehicle kilometres associated with fewer landslide induced road closures and the associated long diversion routes for strategic traffic travelling to and from Argyll & Bute. While the A83 Trunk Road at Rest and Be Thankful is operating under normal conditions, this route corridor would see reduced travel distances for those trips to/from the region and the A82 Trunk Road north, and during periods of closure the new route would provide a shorter diversion route for trips to the south. In addition, this option includes improvements to the A82 Trunk Road Tarbet to Inverarnan section, which would result in safety benefits on this section of the trunk road network, which is known to have an accident history.</p>
Operational Considerations		<p>From a Trunk Road operation perspective, the main operational considerations within the route corridor are the risk of flooding and/or landslides, based on the steep topography. The valley floor within the corridor where a road is more likely to be routed has a maximum elevation of approximately 320m above ordinance datum, with significant peaks to the north-west and south-east providing shelter. This means it is likely that snow accumulates within the route corridor during the winter months, with potential winter resilience operational issues.</p> <p>Proposed Glen Kinglas Tunnel</p> <ul style="list-style-type: none"> • There is a need for regular inspection and maintenance of such tunnels. A tunnel manager, tunnel safety officer and a tunnel design & safety consultative group (TDSCG) must be set up early in the design process and continue through operation. The location and type of tunnel operations centre would need to be reviewed and investigated further, depending on the final location and length of tunnel provided. • A sufficient power supply will be required to allow operation of the tunnel ventilation system and any other systems, particularly those required in the event of an emergency incident. • The use of the tunnel by vehicles carrying potentially hazardous materials or dangerous goods (such as fuel tankers) is largely dependent on fire safety and ventilation, and may require a tunnel ventilation system that allows for a larger design fire size. The risk profile associated with the long 4% gradient may mean that dangerous goods vehicles need to be escorted through the tunnel in a convoy. It should be noted that a twin bore dual carriageway tunnel configuration is considered likely to result in fewer road traffic accidents (due to no bi-directional traffic flow), theoretically attracting a lower risk of emergency incidents.

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

	<ul style="list-style-type: none"> For a twin bore dual carriageway configuration, vehicle cross-overs may need to be provided at intervals if practicable, as per recommendation from the European Directive EUD 2004/54 EC. In addition, lay-bys should be provided at intervals. The development of any tunnel design should be informed by consultation with emergency services and other relevant stakeholders and guided by European and National Standards to ensure that appropriately robust measures in the event of an emergency incident are put in place.
Financial Considerations	The estimated cost range of a scheme within this route corridor is approximately £1.18Bn- £1.56Bn.
Estimated Time to Completion	It is estimated it would take approximately 12 years to achieve a fully operational scheme in this route corridor.
Public Acceptability	Consideration of the feedback received during the public consultation held during September / October 2020 shows that there were more statements of opposition to this route corridor than supportive comments.

STAG Criteria		Assessment Summary
Criteria		
Environment		Refer to Implementability Assessment – Environment
Safety		Refer to Implementability Assessment – Accidents
Economy	Transport Economic Efficiency	<p>This route corridor does not provide a significant change in connectivity for areas of Argyll & Bute, when compared to the existing route, under normal operating conditions, and is unlikely to provide any significant benefits associated with journey time savings.</p> <p>A high-level cost-benefit analysis undertaken for the different route corridor options proposed suggests that, assuming normal operation of the existing A83 Trunk Road, the benefit to cost ratio for the proposed route corridor is expected to be very low. Quantification of the economic benefits of the scheme will require further analysis of the cost of closures to the economy.</p>
	Wider Economic Impacts	As a result of the enhanced resilience provided through mitigating landslide induced closures and, subsequently, increased business confidence and associated inward investment, this intervention has

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria		
Criteria		Assessment Summary
		<p>the potential to provide a positive contribution towards wider economic impacts within the wider Argyll & Bute region.</p> <p>While this route corridor address issues with resilience, poor reliability and long journey times come about, not only because of issues with resilience at the Rest And Be Thankful. Even under normal operating conditions i.e. when the A83 Trunk Road is fully open to traffic, journey times for both strategic and local traffic using the A83 Trunk Road can be variable, due to slow moving vehicles and tourist/visitor traffic.</p> <p>The current road network and lack of suitable alternative routes inevitably mean that many areas would remain remote even if resilience issues at the Rest and be Thankful were overcome. This suggests that wider economic impacts, simply from removing the risks of landslides or A83 Trunk Road route closures, at the Rest and Be Thankful, potentially may be modest.</p> <p>It is also worth noting that, while rural depopulation (a significant issue within Argyll & Bute) is linked to wider economic outcomes, indications are that headline economic conditions are not the main driver of this. Transport interventions could likely play a part in arresting population decline, but only if considered alongside an integrated package of economic, cultural and social regeneration measures. A package of measures of this type, coupled with upgraded access to Kintyre, Bute and Cowal, has the potential to arrest population decline and reinvigorate local communities within Argyll & Bute.</p>
Integration	Transport Integration	<p>An integrated transport system aids accessibility by connecting people to opportunities and goods to markets. This route corridor may provide multi-modal opportunities to enhance transport integration.</p> <p>The intervention provides the opportunity to enhance linkages to walking and cycling routes and core paths. As part of the design process, it will be ensured that NMU facilities provided as part of the intervention address the needs of recreational walkers, cyclists and equestrians, as well as, to a more limited extent in this corridor, commuters.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria	
Criteria	Assessment Summary
	<p>The intervention will provide enhanced resilience and potential journey time reliability benefits for buses and coaches travelling via the A83 Trunk Road. In the context of providing reliable journey times, the length of improvement in the A83 corridor, compared to the overall corridor length, is small. Therefore, although corridor improvements at the Rest and be Thankful will make the route available more often, it will not necessarily provide a step change in overall journey time reliability. The resilience provided may provide bus and coach operators with an opportunity to review timetables, translating to more efficient operations and, potentially, a change in service frequency and the number of communities served.</p> <p>Landslide induced incidents on the A83 Trunk Road at the Rest & Be Thankful can lead to road closures and diversions. Should the Old Military Road also be closed, the diversionary route for A83 traffic between Tarbet and Inveraray is approximately 25 miles longer in length than if using the A83. Depending on journey origin and destination, the longest diversion length experienced by travellers would be over 60 miles. The improved resilience may contribute towards a reduction in the variability of bus journey times and the likelihood of full closures, leading to service cancelations. This may also provide a health and welfare benefit to bus drivers, due to the reduction in instances where bus services are force to travel via longer diversion routes.</p> <p>This route corridor is not expected to have any material impact on the perception of a seamless public transport journey, as interchange and ticketing will not be affected to any great extent. However, interchange with bus services travelling on the A83 Trunk Road, due to the reduction in cancelled or delayed services discussed above, may be more reliable.</p> <p>The intervention, through the enhanced resilience provided, will enable more efficient opportunities for freight transport, facilitating more efficient and effective transportation of goods of significant value to the regional and national economies, including high value aquaculture produce and whisky.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria		Assessment Summary
Criteria		
	Transport and Land Use Integration	<p>The main aspect of appraisal within the transport and land-use integration criteria is identifying and mitigating any conflicts between the intervention and land-use planning policy and environmental designations.</p> <p>If selected as the preferred route corridor, a strategic assessment of the impact of the route corridor on the environment would be carried out in the Strategic Environmental Assessment (SEA). More detailed Environmental Impact Assessment would be carried out as part of the DMRB Assessment Process.</p> <p>The route corridor is expected to support enhanced accessibility to and from developments in the wider region, and may support investment decisions in Argyll & Bute, more generally.</p>
	Policy Integration	<p>The route corridor contributes to strategic policy objectives set by the Scottish Government and Transport Scotland. A wide range of national and regional level policies from various plans, programmes and strategies have been reviewed, including Argyll and Bute's Local Development Plan, its' Strategic Environmental Assessment and the LLTNP Local Development Plan. The various relevant policies contained within these documents have been taken into account in the TPOs, the existing corridor conditions and the implementability assessment. No over-riding conflicts have been identified and, in specific instances, the route corridor may contribute towards the delivery of specific policies.</p> <p>The A83 Trunk Road was identified in Transport Scotland's STPR as a route requiring network optimisation through route management and targeted investment. Transport Scotland's emerging STPR2 continues to appraise the need for investment in improved access to Argyll & Bute.</p> <p>It is likely that this route corridor will contribute positively to the NTS2 vision and several of the underpinning priorities and outcomes, including 'takes climate action' and 'helps deliver inclusive economic growth'. Achieving positive outcomes against several of the priorities and outcomes, however, will be dependent on the quality and nature of the infrastructure provided, particularly related with the facilitation and promotion of travel via active modes.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria	
Criteria	Assessment Summary
	<p>This route corridor is likely to contribute positively towards the NPF3 vision, in terms of delivering 'a successful, sustainable place', 'a low carbon place' 'a natural resilient place' and 'a connected place'. NPF3 recognises that Scotland's varied coast and islands have an exceptional, internationally recognised environment and notes the opportunity to secure growth from renewable energy generation as well as other key economic sectors including tourism and food and drink (of key importance to the regional economy). It is recognised that infrastructure investment, including improved transport links are required to bring employment, reverse population decline and stimulate demand for development and services in rural areas.</p> <p>This route corridor is likely to contribute positively towards key objectives as set out within Argyll & Bute's Local Development Plan. An intervention within this route corridor will likely assist in the improvement of:</p> <ul style="list-style-type: none"> - Argyll and Bute's connectivity, transport infrastructure, integration between land use, transportation and associated networks. - Argyll and Bute's main towns and key settlements, as increasingly attractive places where people want to live, work and invest. - the economic and social regeneration of smaller rural communities. - the continued diversification and sustainable growth of Argyll and Bute's economy, with a particular focus on sustainable assets in terms of renewables, tourism, forestry, food and drink, including agriculture, fishing, aquaculture and whisky production. - addressing climate change impacts and reducing the region's carbon footprint. <p>This route corridor is likely to contribute positively towards the strategic principles set out within the LLTNP Local Development Plan. An intervention within this route corridor will contribute to the National Park by aiding the delivery of 'a successful, sustainable place', 'a low carbon place', 'a natural, resilient place' and 'a more connected place'.</p> <p>While the route corridor is likely to largely fit with policies related with transport based emissions, the nature of the construction and engineering activities required to deliver this route corridor are likely to result in significant emissions, on the basis of existing technologies. It is anticipated, however, that efficiencies in construction practices and the materials used, could be identified e.g. sustainably</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria	
Criteria	Assessment Summary
	<p>sourced materials, with a lower embodied carbon content. This would aid in ensuring that any emissions associated with construction activities are minimised, as far as practicably possible, making best use of advances in emerging decarbonisation technology.</p> <p>It is expected that the route corridor would be delivered in-line with measures, as set out within the Scottish Government’s ‘Update to the Climate Change Plan’ (2018 – 2032), and associated documents, including the emerging findings from the ‘Deep Decarbonisation Pathways for Scottish Industries: Research Report’ relating with the decarbonisation of industry, including the construction sector.</p> <p>A further assessment of carbon, and opportunities for carbon reduction in design, would be considered in later stages of the project assessment process.</p>
Accessibility and Social Inclusion	<p>Community Accessibility</p> <p>It is considered unlikely that this route corridor would have any significant impact on public transport usage, reducing transport poverty or reducing reliance on private cars. This is primarily due to the nature of the route corridor and the areas within which it is located.</p> <p>There exists an opportunity, through the infrastructure provided, to positively impact on the level of active travel undertaken within the route corridor. While there is the potential for local trips to be made via active modes, and for additional trips to be generated resulting from increased use of the infrastructure provided by visitors and tourists, it is unlikely, however, that the future level of active travel trips within the corridor would be significant.</p> <p>This route corridor provides a potential opportunity for the provision of enhanced parking facilities, improving access to the scenic area within which the route corridor sits. This could provide enhanced access to the natural environment for those wishing to park and proceed via active modes.</p> <p>Potential enhancements in resilience provided as a result of mitigating landslide induced closures could aid community accessibility, through better, more reliable access to services, both locally and further afield.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria	
Criteria	Assessment Summary
Comparative Accessibility	<p>Due to the rural nature of the Argyll & Bute region, the distances between key towns and a lack of suitable public transport services (in some areas) car ownership levels are greater than the national average. Due to the current high dependency for travel by car, the scale of accessibility benefits that would be delivered to this main user group through delivery of an intervention within this route corridor include more reliable journeys to employment opportunities, recreation, education and health services located both within and outwith the region.</p> <p>Visitors and leisure users would also likely benefit from NMU infrastructure provided, linking to core paths, existing cycle networks, outdoor activities and viewpoints. The design of such infrastructure should ensure that local communities benefit fully from such facilities and are not adversely impacted by them.</p> <p>Freight users may see health and wellbeing benefits from the enhanced resilience provided by this route corridor, with fewer closures resulting in the need for lengthy diversion routes, which can add a significant duration to journeys, contributing towards driver fatigue and stress. Given the rural nature of the region, journeys made using the A83 Trunk Road, may already be several hours in length. Positive impacts can be expected, in terms of mitigating impacts on socially excluded groups - Argyll & Bute has a higher proportion of older residents than the national average. Enhanced resilience may provide more reliable access to key services, including healthcare.</p> <p>This route corridor could contribute to reducing economic and geographic deprivation for currently socially disadvantaged groups (Argyll & Bute has several areas within the 10% most deprived communities in Scotland) through the improvement of accessibility and the enhancement of business confidence driving an associated increase in inward investment and jobs.</p>

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas
Assessment Summary

Transport Planning Objectives		Assessment						
Objective		Major Negative	Moderate Negative	Minor Negative	Neutral	Minor Positive	Moderate Positive	Major Positive
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.					✓		
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.				✓			
TPO5	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.	✓						

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

Implementability		RAG Rating		
		RED	AMBER	GREEN
Engineering	Topography and Alignment Considerations			GREEN
	Geology / Geomorphology Considerations	RED		
	Structures Considerations	RED		
	Constructability Considerations	RED		
Environment	Biodiversity, Fauna and Flora	RED		
	Population and human Health		AMBER	
	Water Environment	RED		
	Soils	RED		
	Air Quality		AMBER	
	Climatic Factors	RED		
	Material Assets		AMBER	
	Cultural Heritage		AMBER	
	Landscape and Visual Amenity	RED		
	Traffic	Traffic Flows	RED	
Accidents				GREEN
Operational Considerations		RED		
Financial Considerations		RED		

Access to Argyll & Bute (A83) Strategic Environmental Assessment & Preliminary Engineering Services
Route Corridor Preliminary Assessment
Route Corridor 2 – Glen Kinglas

STAG Criteria		Assessment						
Criteria		Major Negative	Moderate Negative	Minor Negative	Neutral	Minor Positive	Moderate Positive	Major Positive
Environment		Refer to Implementability Assessment – Environment						
Safety		Refer to Implementability Assessment – Accidents						
Economy	Transport Economic Efficiency	✓						
	Wider Economic Impacts					✓		
Integration	Transport Integration				✓			
	Transport and Land Use Integration				✓			
	Policy Integration				✓			
Accessibility and Social Inclusion	Community Accessibility					✓		
	Comparative Accessibility					✓		