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**Working Paper**

## Transport connectivity for remote communities in Scotland

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# **Transport Connectivity for Remote Communities in Scotland**

Discussion Paper

179

Roundtable

**James Laird**

Peak Economics,  
Inverness

# Transport Connectivity for Remote Communities in Scotland

Discussion Paper



**James Laird**

Peak Economics,  
Inverness

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## Introduction

People living in remote communities around the world face numerous challenges, and in this respect Scotland is no different. In the Highlands and Islands region of Scotland, those challenges include small scattered populations, a narrow range of education and career options, below average wage levels and productivity, higher costs of living, transport and digital connectivity issues and out-migration, particularly by young people. This can translate into an under-utilisation of workers' skills, a seasonality in job opportunities and a lack of full-time employment options (Highlands and Islands Enterprise, 2019).

While transport connectivity is in itself a challenge for remote communities, it also influences economic and social outcomes that are themselves viewed as challenges for such communities (e.g. employment, productivity, social interactions and healthcare). How transport services in remote communities are delivered and how government takes account of the concomitant economic and social outcomes in its decision-making are therefore of crucial importance.

Scotland is interesting to study in this regard as a number of innovative policies aimed at improving social and economic outcomes in remote communities have been introduced within the last decade. These include an air fare discount scheme for residents in remote communities giving residents in remote communities 50% off core air fares for certain eligible routes, reduced or zero air passenger duty at certain airports, Road Equivalent Tariff (RET) ferry fares on certain routes and reductions in the fuel excise duty. Scotland also uses a formal appraisal process, the Scottish Transport Appraisal Guidance (STAG), as a core part of its decision-making. Delivery agencies are split along the lines of mode, with the central and local governments each having different responsibilities.

A particular feature of remote communities is the interaction between the transport, health and education services. Arguably, STAG could foster more integration in the provision of these services. It is also criticised for giving user benefits too much weight – the Transport Economic Efficiency (TEE) element of the appraisal framework – and not giving sufficient emphasis to the creation of economic and social outcomes.

In the first section of this paper, remote communities in Scotland are profiled in terms of their economic and transport attributes, along with the delivery transport services available. In the second section, key transport policy changes that have affected remote communities since 2000 are highlighted, and potential future policy directions are discussed. In the third section, the appraisal guidance, STAG, is introduced and an application of it to an inter-island ferries project is discussed. Its limitations with respect to valuing employment growth and population retention are reviewed, with the conclusions detailed in the last section.

## Remote communities in Scotland

### Where remote communities are located

The OECD defines remote rural areas as areas with populations of less than 150 inhabitants per square kilometre more than 45 minutes of car travel from a populated centre of 50 000 or more in Europe and more than 60 minutes in North America (Brezzi, Dijkstra and Ruiz, 2011). This is not a definition used by the Scottish Government, which employs the terms remote and very remote to refer to settlements that are more than thirty and sixty minutes of car travel respectively from an urban area of 10 000 people or more. These settlements are then split into the sub-categories rural settlements (<3 000 people) and small towns (>3 000 people) (Scottish Government, 2018a).

The locations of these remote communities are illustrated in Figure 1. The dark green areas represent very remote rural areas, and the pink dots represent very remote small towns (Stornoway in the Outer Hebrides, Kirkwall in the Orkney Islands, Lerwick in the Shetland Islands, Rothesay on the Isle of Bute, Wick and Thurso in Caithness and Oban and Dunoon in Argyll and Bute). Almost all island communities and upland areas are classified as very remote. The remote areas act as a fringe between the very remote areas and the urban settlements.

The majority of these areas lie in a handful of local authority areas: Highland, Orkney Islands, Shetland Islands, Na h-Eileanan Siar and Argyll and Bute. Though a small number of very remote communities exist in some of the more central local authorities: North Ayrshire, Perth and Kinross and Stirling. In total 9.5% of the Scottish population live in remote or very remote communities, though the land area they inhabit covers 70% of Scotland (Scottish Government, 2018c; Scottish Government, 2018b).

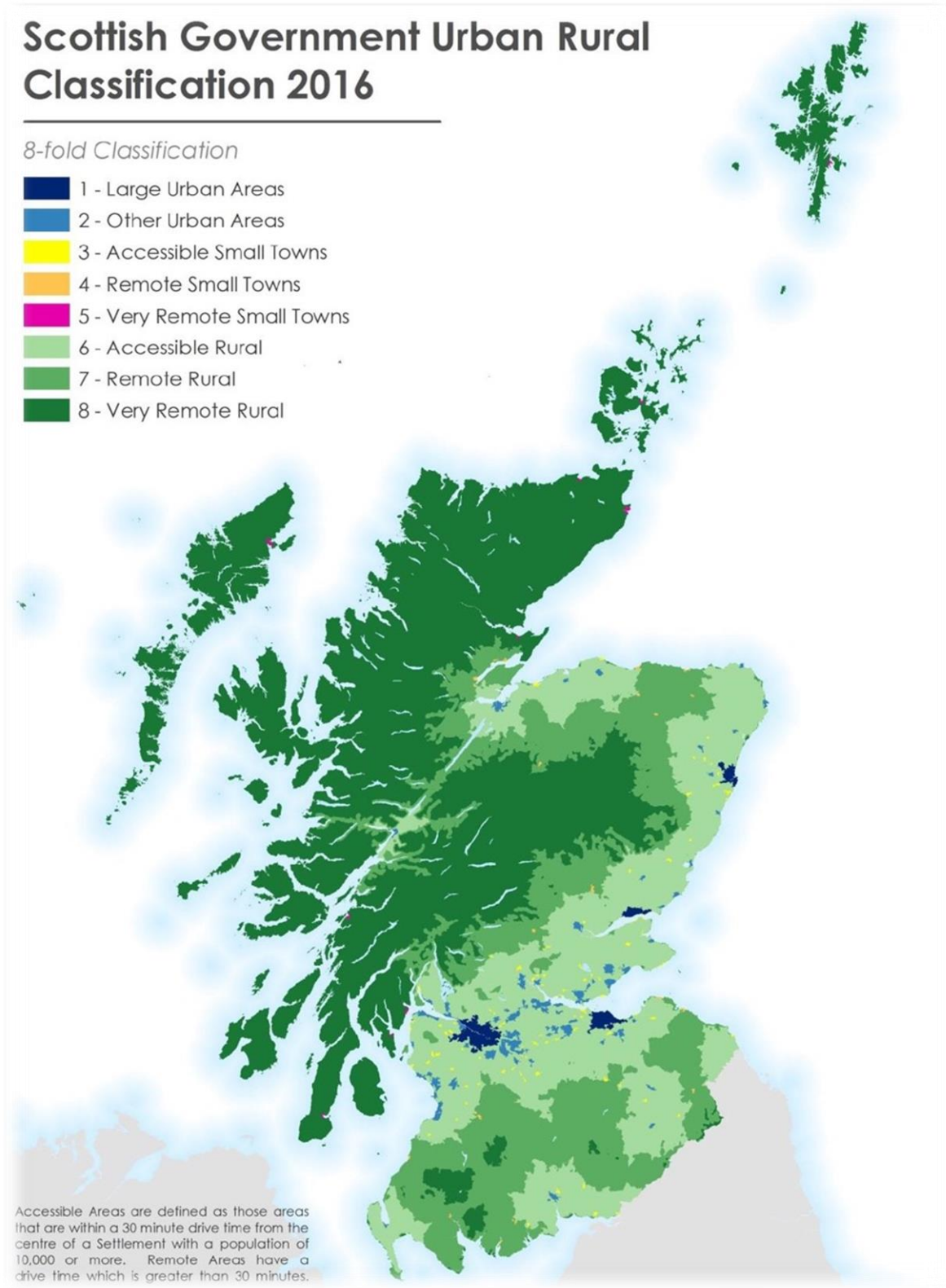
### Economic and demographic characteristics

A defining characteristic of remote and very remote communities in Scotland is they are predominantly sparsely populated (Copus and Hopkins, 2017). It is only the areas around the largest very remote small towns that have populations greater than 10 000 inhabitants.

The population in these sparsely populated areas has been declining over the last twenty five years – down 4% on average, compared to an increase of 7% for urban areas and 12% for accessible rural areas (Hopkins and Copus, 2018). A continuation of this trend suggests a 26% decline in rural population between 2016 and 2046. Though part of this is continued out-migration, a significant component is the legacy of past out-migration, which has led to a reduction in the number of young and working-age adults in sparsely populated areas (Copus, 2018). This contrasts with more accessible parts of the Highlands and Islands, where population is expected to grow – e.g. Moray, where population is expected to grow by 8.3% by 2040 (Highlands and Islands Enterprise, 2019). To maintain population levels would require net migration rates to sparsely populated areas of between 500 to 1 000 people per year. However, some sub-areas would require high net in-migration rates of about 10 migrants per year per 1 000 head of population to maintain population levels. To give that some perspective, in Scotland such rates have only been seen in the cities of Edinburgh and Stirling (Copus, 2018).



Figure 1. The urban-rural classification in Scotland



Source: Scottish Government (2018a).

For 2016, the employment rate in remote rural areas was 81%, compared to 76% in the rest of the country, and unemployment was 3%, compared to 5% in other areas (Kleinert et al., 2018). The high employment rates are partly a result of out-migration of those looking for work (Hodge and Monk, 1995; Laird and Mackie, 2014; Beale et al., 2018).

The largest sectors of the Scottish economy in terms of Gross Value Added (GVA) are public administration, and distribution, wholesale and retail. These two sectors form a larger proportion of remote economies than they do of urban economies. The latter sector encompasses transport, where costs are typically higher in remote regions, as well as tourism-related sectors (e.g. the hospitality industry). Employment in manufacturing, finance and business services is lower in remote regions, while it is higher in mining, agriculture and fishing. This dominance of tourism and primary sector businesses is common across many remote areas. Businesses in the Highlands and Islands in the main tend to be smaller than in Scotland as a whole, with 7.2 employees per firm, compared to 11 nationally. Self-employment stands at 11.2%, compared to 8.2% in the country overall, and part-time work accounts for 22.0% of the workforce, compared to 19.1% nationally (Highlands and Islands Enterprise, 2019). The rates are higher still in remote rural Scotland, with 22% of the working population self-employed and 31% employed part-time (Kleinert et al., 2018).

In the Highlands and Islands, GVA per capita is 95% of the national level, while pay levels are at 87% (Highlands and Islands Enterprise, 2019). As GVA per head and wages are even higher in the Highlands and Islands' towns Inverness and Moray, remote regions can be expected to have an even greater differential against the national level. In part this would be due to the different sectors that are found in remote regions when compared to urban areas and large cities, but productivity differences are also at play. At 17%, the gender pay gap is also largest in remote areas of Scotland (Kleinert et al., 2018).

## Household travel characteristics

By definition remote and very remote communities in Scotland are at least 30 minutes travel by car from an urban area of 10 000 people or more. A greater than 30-minute definition, however, masks the fact there are only four cities in Scotland with a population in excess of 100 000, and these are located in the Central Belt or on the east coast. These remote communities are therefore a long way from the major population centres. This can be seen in Figure 1. Travel to and from islands will necessitate ferry or air travel, while there are rail and bus connections on the mainland.

Households in remote and very remote communities in Scotland are characterised by high levels of car dependency. Some summary statistics in the 2017 Scottish Household Survey (National Statistics, 2018b) highlight differences between remote rural areas and remote small towns, with the latter tending to have services more conveniently located and some public transport options.

According to the survey, no less than 83.0% of adults have a driving licence in remote rural areas. The rate is 73.0% in remote small towns, while only 61.0% of adults have a driving licence in large urban areas. Moreover, only 13.0% of remote rural households do not have a car available, while 26.5% of households in remote small towns do not have a car available. This compares to 37.7% of households in large urban areas with no car available.

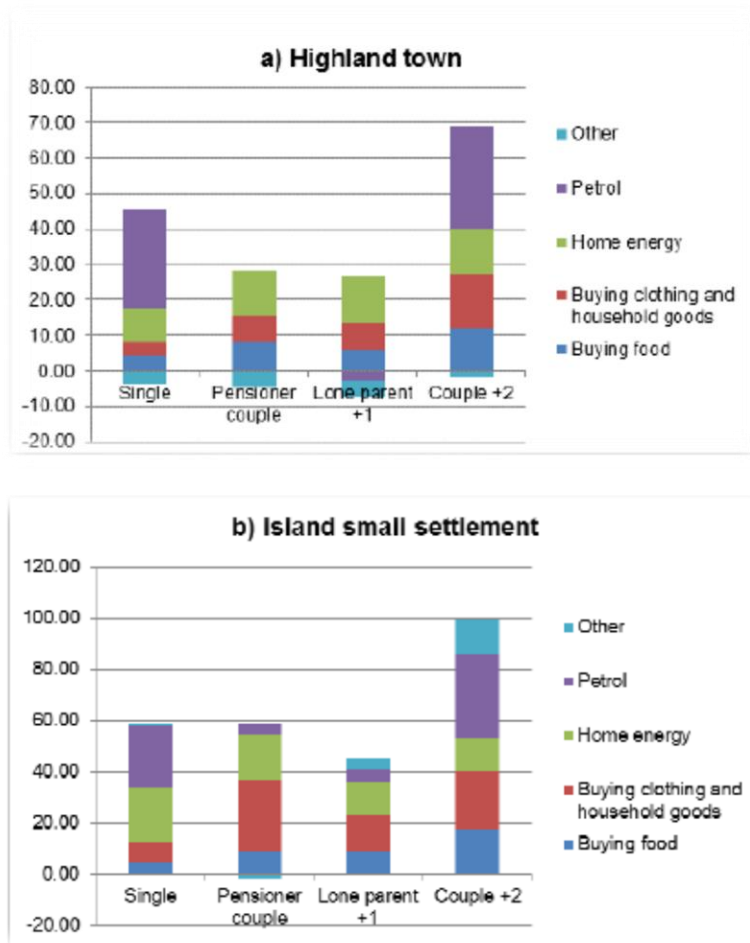
A mere 11% of households use the bus at least once a week in remote rural areas and small remote towns, compared to 43% of people in large urban areas.

A full 49.5% of households in remote rural areas had not walked as a means of transport in the seven days previous to being surveyed. This compares to 31.0% in remote small towns and 25.0% in large urban areas, while only 7.2% in remote small towns thought that and 4.0% in large urban areas.

The median trip distance surveyed was between 5 km and 10 km in remote rural households, between 1 km and 2 km in remote small town households and between 2 km and 3 km in large urban areas.

The cost of travel for households in remote communities compared to those in urban centres varies significantly according to household structure. For example, working-age households typically travel farther to access work and therefore experience higher costs. Highlands and Islands Enterprise (2016) estimates the minimum cost of living (i.e. for food, energy, transport and clothing) results in remote rural households spending between 10% and 30% more than households in urban parts of the UK. For single and working family households, petrol costs could comprise about 50% of these additional costs, primarily due to the distances travelled to access work. Potentially, if more jobs were located in remote rural areas or close to them, then these additional transport costs would be reduced. Figure 2 illustrates these differences by comparing the costs of living in a Highland town and a small island settlement with an English rural town for different household types.

**Figure 2. Additional costs per week in two Scottish communities compared to an English rural town (GBP per week additional)**



Source: Highlands and Islands Enterprise (2016).

## Delivery of transport services

The transport network in remote communities in Scotland is comprised of road, rail, bus, ferry and air routes, with the latter two used predominantly by island communities. The delivery of transport services to remote and very remote communities in Scotland is complex, fragmented and involves the UK Government, the Scottish Government, local authorities, the private sector and the health service.

### Road

Almost all remote communities in Scotland have access to the road network. The exceptions are some isolated and small communities (e.g. Inverie and Knoydart). There are no motorways serving or passing through remote or very remote areas, and the only dual carriageway roads are on parts of the route from central Scotland to Inverness. In remote communities there are also often only single track roads, with passing places for cars travelling in the opposite direction. Journey speeds are therefore slower than in other parts of Scotland. The network is invariably sparse, and diversionary routes can be very long. There are no road or bridge tolls in remote communities in Scotland.

The vast majority of the road network consists of local roads owned and managed by local authorities. However, the trunk road network also serves some remote and very remote parts of Scotland (Figure 3). This aspect of the road network is owned by the Scottish Government. Maintenance of the trunk road network is managed centrally by the national agency Transport Scotland, with contracts on a regional basis with private operating companies. There is only one island trunk road on Skye. The Skye Bridge fixed link was delivered using a private finance initiative (PFI) method, but the concessionaire has since been bought out by the Scottish Government, and tolls were removed. Other road improvements have been delivered by public authorities.

The UK Government has no ownership or management responsibilities on the Scottish road network, but has responsibility for regulatory (e.g. vehicle standards and signage) and taxation matters (e.g. the fuel tax and vehicle excise duty).

### Rail

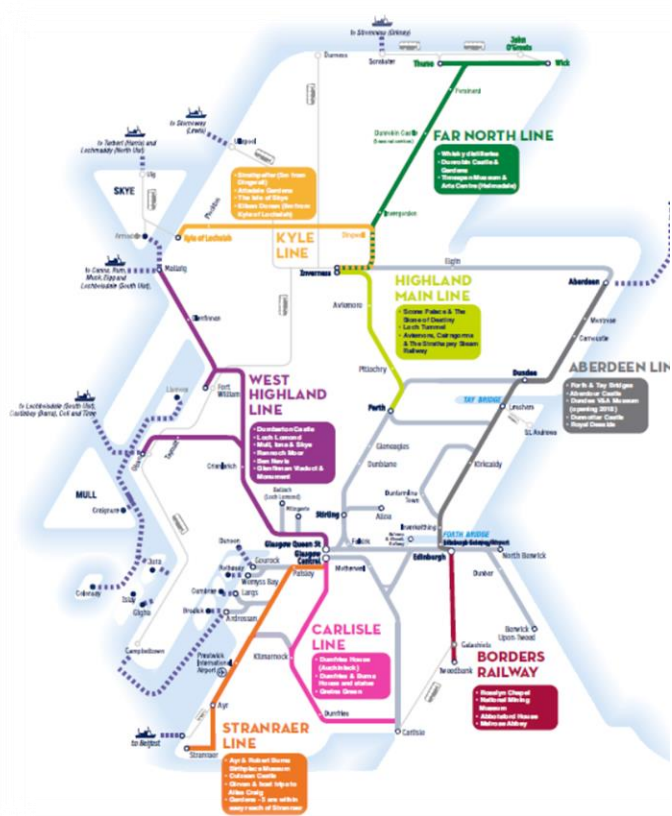
Like the trunk road network the rail network also serves some remote and very remote parts of Scotland (Figure 4). As can also be seen from this figure, the rail network typically serves the same settlements as the trunk road network, though there are a few exceptions. Service frequency is low, with about four trains a day on most lines, though the route to Oban has six trains a day. With very few exceptions, journey times are slower than by car. A Highland railcard giving a discount of up to 50% is available for residents in remote areas for use on lines passing through those areas (it is not available for general travel outside the remote lines).

The rail network is owned by Network Rail, which is wholly owned by the UK's Department for Transport (DfT). The Scottish Government has an advisory role and provides the funding for new infrastructure. Train services are operated under a franchise system by Scotrail (the franchise is currently held by Abellio, a Dutch company). Again, the Scottish Government provides guidance under the framework agreement and also provides the funding. The DfT is responsible for regulation of the rail network and the franchise framework. In remote areas local authorities have no involvement in running the rail network.

Figure 3. Trunk-road map of Scotland



Figure 4. Rail map of Scotland



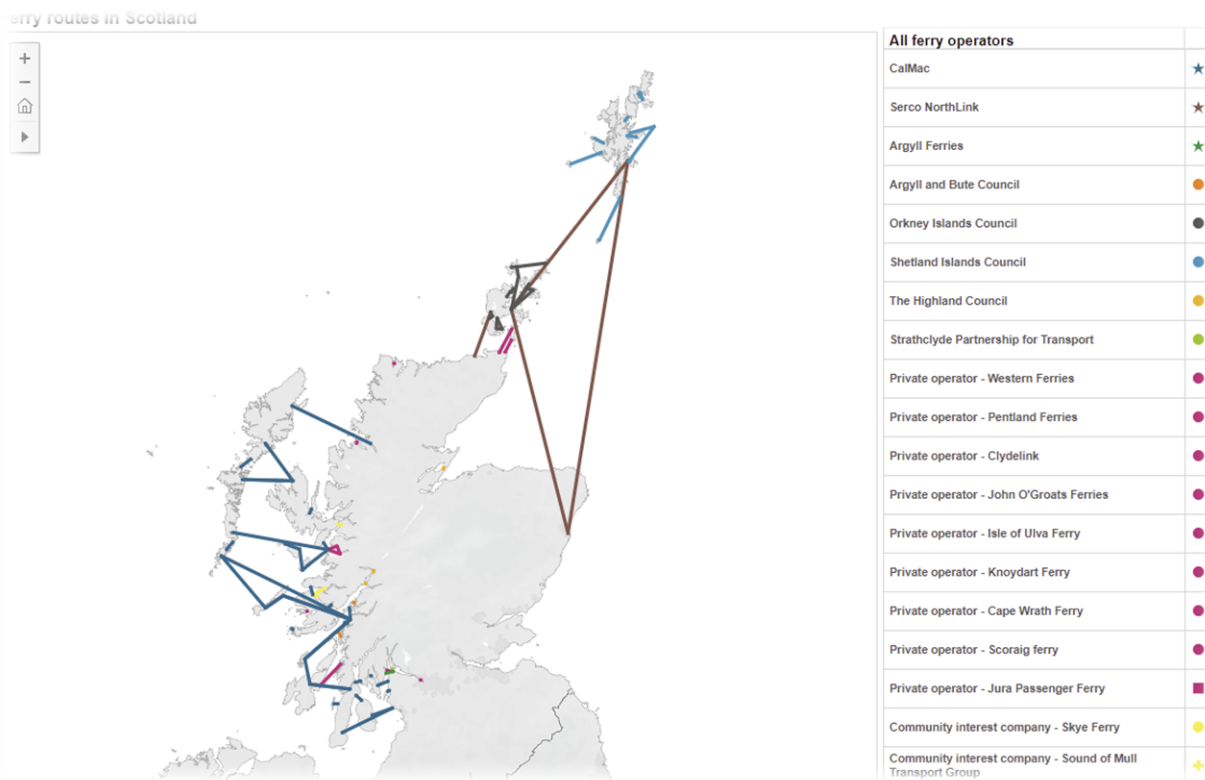
Sources: <https://trafficscotland.org/about/>, [https://www.scotrail.co.uk/sites/default/files/assets/download\\_ct/scottish\\_railway\\_journeys.pdf](https://www.scotrail.co.uk/sites/default/files/assets/download_ct/scottish_railway_journeys.pdf).

## Ferry

There are 134 ferry routes in Scotland, covering a mixture of long distance and local functions and using predominantly vehicle and passenger ferries. There are also some passenger-only, freight-only and tourist services. Most ferry companies are owned by the Scottish Government, with some inter-island operators owned by local authorities and a small number of private operators (Audit Scotland, 2017). Very often ferry services are the only link between an island and the rest of Scotland and as a result are viewed as a lifeline service. Service frequencies are typically low, with up to four services a day, though they vary significantly by island, with some islands only receiving one ferry service a day and other shorter and more local services having much higher frequencies. Probably the highest frequency is between the island of Bressay in the Shetland Islands to Lerwick, the capital of the Shetland Islands, with 22 sailings a day. For the majority of routes for which the Scottish Government has direct responsibility, Road Equivalent Tariff (RET) fares have already been introduced and reflected in the terms of public service contracts. On the vast majority of routes, RET fares represent a significant reduction in the price of ferry travel. The fare has two components: a fixed element to cover fixed costs such as harbour infrastructure and vessels and a distance-based component based on road-equivalent vehicle operating costs.

Historically, the Scottish Government is responsible for long-distance routes (e.g. from the mainland to the Outer Hebrides, Orkney Islands and Shetland Islands), and local authorities are responsible for the local services (e.g. inter-island services in the Orkney Islands and the Shetland Islands). However, the Scottish Government also manages a number of more local routes like Eriskay to Barra in the Outer Hebrides and to the Small Isles in the Inner Hebrides. Ferry routes to the islands originate from some of the railheads (e.g. Mallaig and Oban) but in other places serve islands from roads (e.g. Uig on Skye).

Figure 5. Ferry map of Scotland



Source: <https://www.audit-scotland.gov.uk/transport-scotlands-ferry-services>.

The Scottish Government provides the funding for infrastructure and services on the routes it has responsibility for. For the Clyde and Hebrides services (Figure 4), these are operated by CalMac Ferries Ltd. (CalMac), a company wholly owned by the Scottish Government. Private sector operators can now bid for these services when the franchise is renewed, but CalMac has successfully retained the franchise at the first tendering of the franchise in 2007 and its re-tendering in 2016. Caledonian Maritime Assets Ltd. (CMAL) owns the vessels and piers that the franchisee leases. CMAL is also wholly owned by the Scottish Government. Ferry services to the Orkney Islands and the Shetland Islands are covered by a separate franchise, Northlink, currently operated by SERCO, a private sector company. SERCO leases the vessels from CMAL and the piers from the relevant local authorities.

Local authorities own and operate the local ferry services in their respective authority areas: Highland, Orkney Islands, Shetland Islands and Argyll and Bute.

There also exist a small number of private sector ferry companies. These typically operate short routes. In some cases these companies operate in competition with the state subsidised routes. Examples are the routes to the Orkney Islands from the mainland and across the Clyde estuary to the west of Glasgow.

If necessary the Scottish Government will take over the running of council-operated services, but it requires an adjustment to the local-authority grant to reflect the reduced financial costs for the local authority and the increased financial costs borne by the Scottish Government (Transport Scotland, 2012).

Regulation on health and safety matters for ferries rests with the DfT and its executive agency, the Maritime and Coastguard Agency. The UK Government and the European Commission are responsible for competition policy regarding state involvement in operating ferry services.

## **Air**

As with other elements of the transport network, the air network comprises a mixture of long-distance services to Inverness, Aberdeen, Edinburgh and Glasgow, as well as local inter-island services in the Orkney Islands, Shetland Islands, Na h-Eileanan Siar and Argyll and Bute. The latter local services include a 1.5-minute scheduled flight between Papa Westray and Westray in the Orkney Islands and the only scheduled passenger service in the world that uses a beach as a runway on Barra in the Outer Hebrides in Na h-Eileanan Siar. Wick on the far north coast and Campbeltown on the Mull of Kintyre are the only mainland locations with services to Edinburgh and/or Glasgow. There are no services from the remoter parts of the mainland to Inverness.

Service frequency ranges between two and four services a day, with daily flights for some routes and only weekly flights for others. For the long-distance services from the Stornoway, Kirkwall and Sumburgh airports on the islands, it is possible to spend almost a full working day in either Glasgow, Edinburgh or Aberdeen by landing around 9a.m. and leaving around 6p.m. on any day of the week. The inter-island services differ in what is on offer. For some routes flights are only on certain days of the week, while others have daily flights. Return trips from the islands to the mainland or vice versa may therefore need to be linked with a ferry trip and/or an overnight stay in some circumstances.

For remote communities a discount of 50% on the core air fare is available on certain routes for residents of designated remote communities. These routes cannot be subject to a Public Service Obligation (PSO), i.e. they need to be commercial services. They are not available for business trips, aside from employees or volunteers of third sector organisations.

The island air services are seen as fundamental in the delivery of health and education services. The UK's National Health Service (NHS) is the largest business user of scheduled inter-island air services in Argyll and Bute. In 2004, 20% of the passengers on air services within the Highlands and Islands were patients or health professionals, while in Orkney trips related to education comprised 40% of the demand for inter-island air services (Laird, 2017).

Loganair delivers the majority of the air services in the Highlands and Islands (Figure 6). This is through a mixture of commercial and PSO services. The company delivers the PSO services for the Glasgow-based PSO routes and the Orkney inter-island air services. Airtask Group Limited delivers the PSO services out of Oban for Argyll and Bute and the Shetland inter-island services out of Tingwall (Figure 7).

Airports in remote communities in Scotland are owned directly or indirectly by the government. Local airports are typically owned by the local authorities, while the main airports are owned by the Scottish Government via Highlands and Islands Airports Limited (HIAL). Interestingly, when Inverness airport was re-developed in 1998, the new terminal building was delivered as part of a PFI scheme. The Scottish

Government bought the PFI concessionaire out eight years later in 2006, with HIAL having full control of all the airport infrastructure and its pricing since.

As with ferries, regulation on health and safety matters for air services rests with the DfT and its executive arm, the Civil Aviation Authority. The UK Government and the European Commission are responsible for competition policy regarding state involvement in operating air services.

Figure 6. Loganair route map

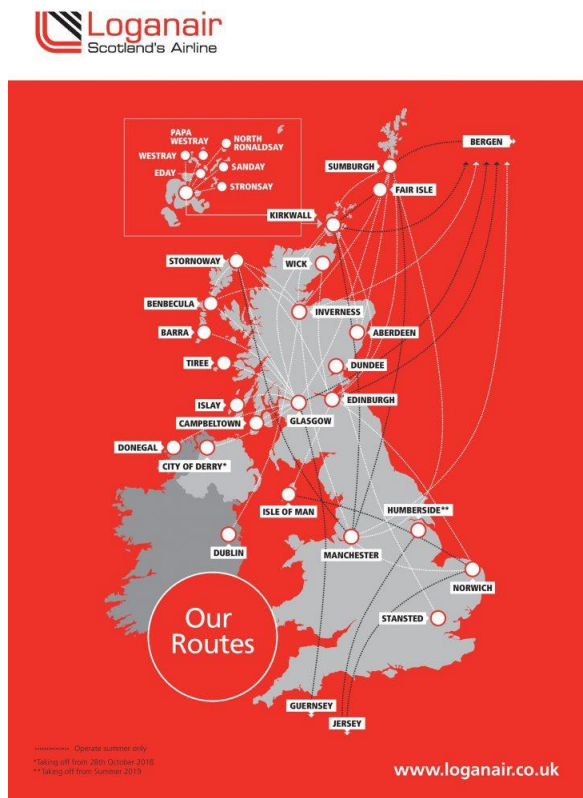
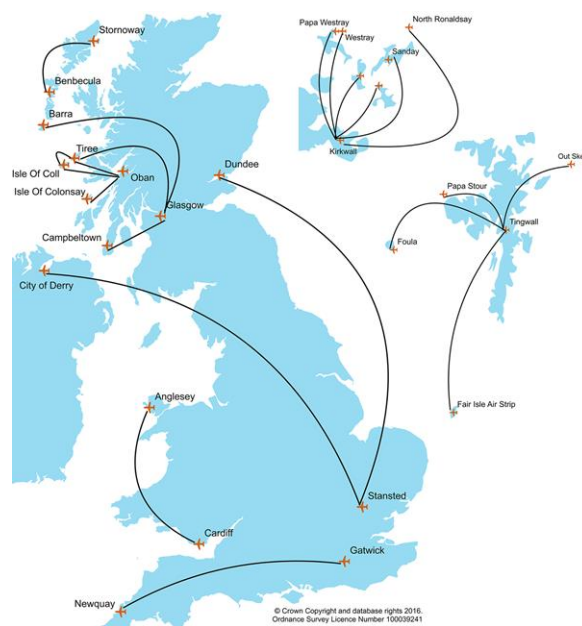


Figure 7. PSO air services in the United Kingdom



Sources: <https://www.loganair.co.uk/about/our-heritage/#1541676900095-dbd77e73-539f>, DfT.

## Bus

Bus services comprise a mixture of long-distance coach services and local services. These are either commercial operations or are subsidised services. Bus de-regulation in the UK means that local authorities can only step-in and subsidise a service if commercial companies fail to provide it. Local authorities are also responsible for the provision of bus shelters and bus lanes.

In instances where patronage is too low to justify even subsidised conventional scheduled services, authorities can provide demand responsive or dial-a-ride services using a mixture of bus and taxi providers. This may often entail community involvement (including volunteer drivers) and is sometimes referred to as community transport. There are also obligations on local authorities to provide transport services to school if the school is not within walking distance. The same goes for the health services if a patient has a medical need that requires their condition to be monitored (e.g. kidney dialysis) or they are not mobile



enough to travel any other way. The health and education services can therefore be involved in the provision of some forms of bus transport.

All bus service operators (including community transport operators) receive a bus service operators grant (BSOG), administered by Transport Scotland, the Scottish Government's transport agency. This is a distance-based grant, with additional premiums for environmentally friendly vehicles.

Subsidised bus services form a large proportion of the bus network in the Highlands and Islands, and frequencies away from the main routes are limited (HITRANS, 2018). Bus services (even low-frequency ones) are only available to a proportion of the population in remote communities. A full 30% of the population in remote rural areas reports no bus stop within a 15-minute walk of their house, with half of those reporting no available bus service (Scottish Government, 2011). The availability and nature of community transport options is mixed across the region; in some places it is available and in others it is not (HITRANS, 2018). There does not appear to be more specific off the shelf information identifying the extent to which bus services penetrate remote communities, and the exact types of services that are available.

There are no specific bus fare discounts for those living in remote communities, but the services are subsidised and other national fare discount schemes are available. These include the national concessionary travel pass for all citizens over 60 (free bus travel for bearers), a travel card for those aged 16 to 18, plus travel cards for the disabled and visually impaired.

Safety and environmental regulations for drivers and vehicles and the provision of timetable information are the preserve of the DfT. Enforcement of these regulations is the responsibility of the Traffic Commissioner for Scotland, an independent statutory regulator, with the support of the Driver and Vehicle Standards Agency (DVSA), part of the DfT.

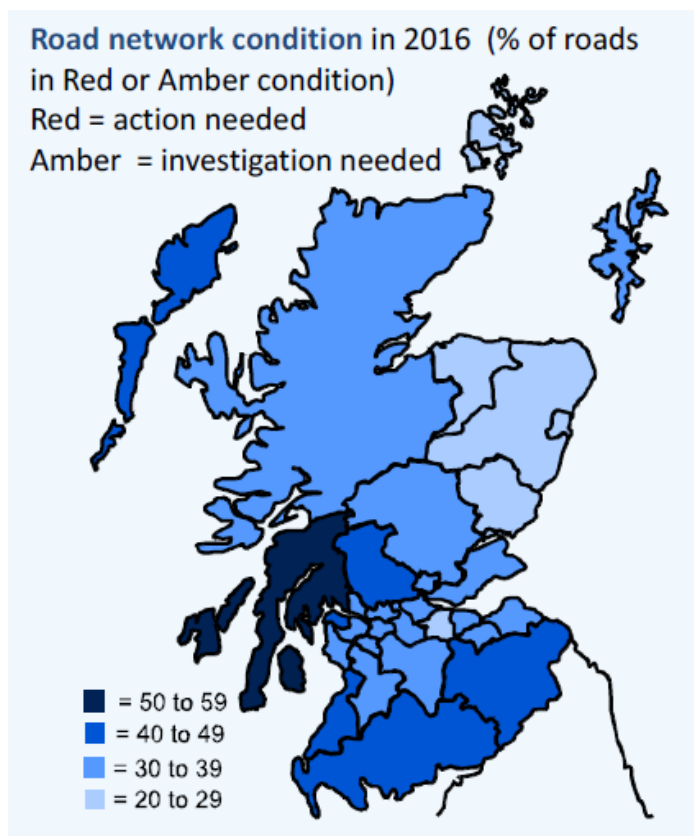
## Current transport challenges

The introduction alluded to some of the broad challenges faced by remote communities in Scotland. These include: small scattered populations, a narrow range of education and career options, below average wage levels and productivity, a higher cost of living, transport and digital connectivity issues, out-migration (particularly by young people) and under-utilisation of workers' skills. Seasonality in job opportunities and a lack of full-time employment options are also a reality.

Transport policy can affect many aspects of these challenges. It can also indirectly affect productivity, the cost of living and business and job locations. The transport system in remote communities is not, however, without its ongoing issues. The draft 2019 National Transport Strategy for Scotland (Transport Scotland, 2019) and the HITRANS regional transport strategy (HITRANS, 2018) identify the main issues facing remote communities in Scotland. These are summarised below.

Journey speeds in the remote and very remote parts of Scotland are slower than elsewhere. This is a function of the infrastructure available and its condition. In terms of existing infrastructure, there remain a number of single track roads serving remote communities, and there also remain some gaps in the air network where journey times are long, such as between Skye and the Central Belt. Significant portions of the HITRANS region's road network is in need of immediate maintenance. For example, 17% of all local roads in Argyll and Bute are categorised as in need of repair (red) from a maintenance perspective, while a further 39% are classified as in need of inspection (amber). This backlog of maintenance is highest in the remoter parts of Scotland, as can be seen in Figure 8. The age of the rail rolling stock and the ferry fleet (discussed below) also contribute to slower journey times by these modes.

Figure 8. Road network condition in 2016



Source: National Statistics (2017).

Some island communities also face the challenge of residents currently being unable to travel to and from Scotland’s cities in the same day for work due to journey times and scheduling.

Travel costs are a challenge in remote rural areas. Longer commutes, more expensive fuel and ferry trips all increase transport costs relative to mainland communities. Overnight stays, where day trips to Scotland’s cities are not possible, and a lack of integrated ticketing all add to further costs.

Many remote communities rely on lifeline transport connections, and it is important these connections are resilient and reliable. Resilience is particularly important, as in many cases diversionary routes/alternatives can be long or expensive. HITRANS reports there has been an increase in weather-related road, rail, ferry and air disruption in recent years due in part to the age of the transport assets. The rail rolling stock in use in the region is 30 years old, and of the 32 ferry vessels owned by CMAL, eight are more than 30 years old and a further 10 are between 20 and 30 years old. Aging ferries and shore infrastructure are particular issues for the local inter-island networks in the Orkney Islands and Argyll and Bute.

There are a multitude of actors responsible for delivering some aspects of transport services, with some inconsistency between modes. This lack of consistency can hamper the delivery of new infrastructure and services, ferry services being an example.

The National Concessionary Travel Scheme (free bus passes for citizens over 60) means there is a distributional issue for those who live in remote communities without access to bus services. HITRANS analysis indicates the average number of trips made in the Orkney Islands and in the Western Isles is 10%

of that made by residents of Edinburgh. This also implies an imbalance of funding, as more Scottish government money is spent subsidising transport in urban areas relative to remote areas (HITRANS, 2017).

Additionally, there has been declining budgets for subsidised bus services due to budgetary pressures on local authorities. As the subsidised services are typically in the remote communities, this has led to a reduction in bus services to remote communities. Since 2008 there has been a 16% reduction in bus service kilometres in the HITRANS area in comparison to 2014/15, which is greater than the 12% decrease across Scotland over the same time period.

Projections of declining population in remote areas will make it more challenging to deliver public transport services, either commercially or with minimal subsidy.

There is a need to reduce the carbon footprint of travel in remote communities. The long distances of travel and the reliance on ferry and air can make this challenging.

Digital and mobile phone connectivity can be a substitute for travel. There are, however, a number of gaps in coverage that disproportionately affect remote communities in Scotland.

In addition to the above challenges, transport demand levels in remote areas are highly seasonal and much lower than in more populated parts of the country. The high seasonality aspect of transport demand means that in the off-season there is a lot of under-utilised capacity in the transport system (e.g. on ferries and aeroplanes), while the opposite is the case during the peak season. Seasonality of demand for transport makes it challenging to determine what the appropriate provision of infrastructure should be. Low levels of transport demand also make it hard within a CBA transport-appraisal framework to justify investment. This is discussed further in Section 3.

## Transport policy for remote communities

### Governance

Responsibility for transport policy in Scotland is shared between different tiers of government (Annex 1). The underlying principle to this sharing is that of subsidiarity, i.e. transport issues should be dealt with at the most local level that is consistent with their resolution. Thus transport policy is devolved by the UK Government to Scotland, with matters such as cross-border services, border control, health and safety reserved to London. As has been seen in the previous section, within Scotland itself local services are predominantly the responsibility of local authorities, while strategic connectivity is the responsibility of Transport Scotland. Here strategic connectivity is primarily connectivity that extends beyond the range of trips to access local services and work (e.g. beyond travel to work areas), though there is no formal definition.

Of course, in reality strategic services serve some local needs, and some local services serve some strategic needs. Furthermore, in a region such as the Highlands and Islands some aspects of local or intra-regional connectivity involve long distances, such as connecting to the islands and across the Highland Council area, where journey's from Inverness can be up to three hours by car. Possibly reflecting this, the Scottish Government has responsibilities for ferry services to islands that are furthest from the mainland and also

to large islands close to the mainland (the trunk and motorway road network and the rail network penetrate the remoter parts of Scotland).

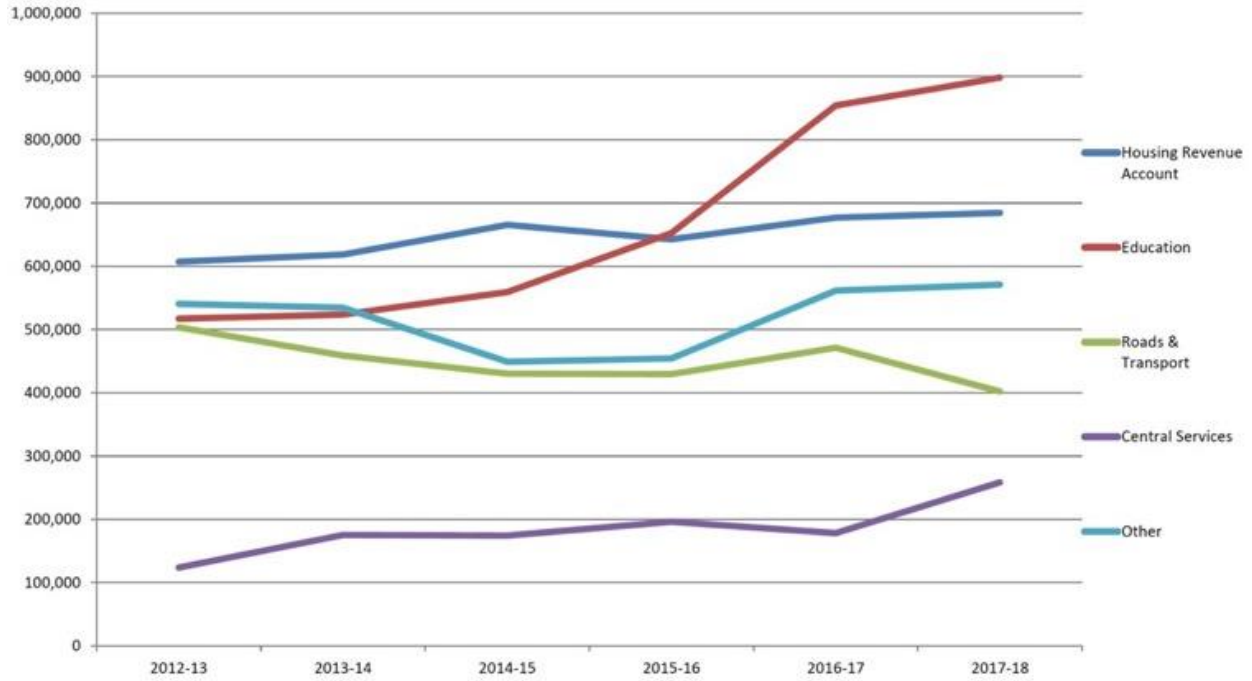
Unlike urban travel or travel within a larger metropolitan area, local travel in remote and very remote communities does require the use of strategic or certainly long-distance transport connections. The demarcation in the governance between different local authorities or between local authorities and central government can cause problems in the delivery of transport services that are fit for purpose. As a result of this there is a third tier of government in Scotland, that of Regional Transport Partnerships (RTPs). In the main, these statutory partnerships perform a coordinating role (they are considered in more detail in the next section).

Transport governance cannot be seen in isolation from other forms of local policy governance, including local government finances. When local government is reformed, transport governance is naturally reformed too. One of the biggest changes in local governance, and therefore transport governance, was the creation of the 32 local authorities in 1996 from the seven regions and three island councils. This breakup of the regions occurred, because it was felt that the regional authorities did not adequately cater for local needs. Another key recent reform within the Scottish local government landscape that has affected transport governance is that of the Single Outcome Agreements, which were introduced in 2008. With a Single Outcome Agreement local authorities receive a single block grant and manage their own budgets, deciding on where to allocate financial resources on education, social care, housing, transport, etc.

Local transport outcomes also are dependent on local government budgets. Since 2008 these have been falling in real terms. For example, between 2008-09 and 2015-16 total local government budgets across Scotland fell by an average of 6% in real terms (Campbell, 2015), with further reductions since then.

The combined impact of falling local authority budgets in real terms and the Single Outcome Agreements has been reduced capital and revenue expenditure on transport in real terms across all Scottish local authority areas. For example, nominal revenue expenditure on roads and transport net of government grants has remained broadly static since 2013-14 at about GBP 430 million (National Statistics, 2018a Table 1.2). This is despite cost increases over this period from factors such as inflation, causing revenue expenditure to fall in real terms. Capital expenditure on roads and transport has fallen much more dramatically (Figure 9). While these dates relate to local authorities in general, HITRANS's analysis indicates that the percentage reduction in transport expenditure has been greater in authorities with remote communities than it has been in Scotland as a whole (HITRANS, 2018).

Figure 9. Total local authority capital expenditure by service (all Scottish authorities)



Source: Chart 2.2, National Statistics (2018a).

The Scottish Government’s 2016 National Transport Strategy Refresh recognised the financial pressures local authorities are under. This was re-affirmed in draft 2019 National Transport Strategy (Transport Scotland, 2019). In 2016 the Scottish Government view was that in the face of these pressures, partnership working, based on trust and mutual respect (Transport Scotland, 2016b), was essential to deliver transport services. RTPs would have an important role to play in that partnership working. In the 2019 draft National Transport Strategy a more ambitious vision is set out, in which there would be a significant strengthening of governance at a regional level, with transport services being delivered at that level (Transport Scotland, 2019). This is, however, at an embryonic stage. The exact form and the funding arrangements for any new or reformed regional bodies have yet to be determined.

## Regional Transport Partnerships

The Regional Transport Partnerships (RTPs) were established in 2005, nine years after local government reform that broke up the seven regional authorities. Their formation was in recognition that local transport (e.g. commuting trips) often involves crossing local authority boundaries and that a regional approach to transport policy and delivery was needed. The RTPs’ boards comprise elected members from each of the different local authorities in their respective regions. In addition to these elected members, the boards also include non-councillor members or observers. There is some diversity in the RTPs, from RTPs which comprise quite a number of local authorities (e.g. the Edinburgh and Glasgow ones), to two which only comprise one local authority. Both of the single local authority RTPs lie at either end of the country (Dumfries and Galloway and the Shetland Islands), and there is limited local travel across local authority boundaries within these regions. HITRANS, the RTP for the majority of the remote and very remote communities in Scotland, our particular interest, comprises five local authorities.

Each of the RTPs can be incorporated in different ways. At their most simple (Model 1), they are a co-ordinating body, with their only statutory role being that of developing a regional transport strategy at set intervals. In this role they also assist in the transport planning process in terms of project development, with an aim of promoting economic development, sustainable travel and active travel/mode shift. Contrastingly, they can also be incorporated to operate all transport provisions within their constituent local authority areas (Model 3). This is the case for the Shetland Islands and the Glasgow metropolitan area – the latter previously had a Passenger Transport Executive responsible for the delivery of these services. Scottish Government can also transfer some of its delivery role to these Model 3s. In between these two forms, the Model 2 form of RTP can take on some limited delivery of transport services (e.g. negotiating and managing delivery of contracted bus services). Aside from the rather unique circumstances of the Glasgow local authorities and Shetland, there has been limited interest by either Scottish Government or local authorities on passing their transport delivery powers to the RTPs. In practice, therefore, the role of the RTPs has primarily been one of coordination between different local authorities on transport issues, with operational matters being delivered by local authorities or the Scottish Government.

These changes in governance structures have led to some commentary on the most appropriate form governance should have. Clearly the lack of any regional oversight following the 1996 reforms led commentators to argue that some sort of regional body was needed (Marsden and May, 2006). With the current governance structure some authors have argued that there is an “over-stuffing” and a lack of integration and clarity between different layers of government. This leads to difficulties in effectively taking action on transport issues, with ferry services being cited as an example. Some consolidation of local government leading to a more streamlined set of RTPs and aggregation of transport delivery roles to the RTPs have been suggested as solutions (HITRANS, 2018; CP1919+21 Consultancy, 2019; Nelson et al., 2019).

HITRANS has a good record in collaborative working between its different constituent local authorities. This stems back to the voluntary partnership that was established prior to when HITRANS became a statutory RTP in 2005. In part this is due the constituent local authorities’ willingness to work with each other. Shared interests around ferry and air travel in particular and the challenges of providing transport services in remote communities are a strong common theme between the different partnership members. Regional transport issues remain important to these remoter local authorities in Scotland, and this is evident in their continued willingness to engage in joint working as part of HITRANS (CP1919+21 Consultancy, 2019). The draft 2019 National Transport Strategy also sees an across-the-board strengthening of the role of regional bodies in the governance of transport services, though recognising there will be variations by region (Transport Scotland, 2019). The exact form of the regional bodies and their powers are yet to be determined.

For remoter communities it does therefore appear important to have a third regional tier of government between central government and local government, such as HITRANS. However, exactly what form the future governance structure that affects Scottish remote communities will have post the Local Governance Review or exactly which transport services should or will be delivered at a regional level continues to remain an area of debate. Funding and accountability of course remain key issues that need to be determined in the definition of any new powers for a regional body. With constrained local government budgets and transport competing with other local services (e.g. education, social care, waste collection, economic development, etc.), even with efficiency savings in the current partnership model or with a new regional model, the short term future is likely to remain challenging for the delivery of local and regional transport services in remote communities in Scotland.

## Interaction with public health and education

In very remote communities there is a high degree of inter-dependence between the delivery of transport services and the delivery of other public sector services, including health and education. As mentioned earlier, trips related to health and education form large components of the patronage for air services to/from the islands. The existence of the inter-island air services means efficiencies can be achieved in delivering health and education services through, for example, centralising activities with workers making day trips to islands. By using the air service, the health and education sector ensures its viability and therefore continued availability to local communities. If local government stops or reduces its subsidy on the air services, then this will impact the delivery of health and education services. It may not be possible to centralise activities as they have been. Correspondingly, if the health or education sectors alter their use of the air service, then this will also impact its viability and therefore the accessibility of the island for business and living. This symbiotic relationship is not just limited to air services. School bus contracts are an important element in remote rural bus business models. A change in school contracts can therefore undermine the viability of rural bus services. Local authority provided community transport initiatives in remote communities can be essential to access local healthcare services – particularly for the elderly and those without access to a car.

While this inter-dependence is recognised, there is a dearth of quantitative evidence on the financial and social savings to the health sector and the education sector of good transport connectivity (Laird, 2017). This is despite local education and transport services being supplied by the same local authority – albeit in different departments. With respect to community transport, while the legislative framework is viewed as appropriate (Nelson et al., 2019), the actual services on offer are in the main viewed as poorly coordinated (Mounce et al., 2018). Examples of joint working between different government sectors are therefore isolated, but where they occur they demonstrate significant cost savings can be achieved. Two good practice examples include an Argyll and Bute community transport scheme funded by the NHS, with some health appointments scheduled around the service, and Moray Council taking over the running of the NHS' patient transport service for patient transfer between cottage hospitals. The latter provides economies of scale through the sharing of resources with the existing Dial-a-Bus service. In terms of quantifying the benefits, a case study of five successful community transport schemes in the Highlands and Islands demonstrated significant cost savings for public sector agencies. For every GBP 1 spent by the public sector on community transport, the public sector saved GBP 2, with the health service as the primary beneficiary (Halden et al., 2012). On the other hand, there are examples where fragmented decision making by one agency has impacts elsewhere, for example, the decision by the health board in Shetland to use the ferry service to transport patients to Aberdeen rather than the air service (Laird, 2017) (the alternative would be the health board or the education department in the local authority providing transport for discretionary trips).

It does seem therefore that partnerships not only between the different layers of government but also between the different parts of the public sector are important in remote rural communities. Unfortunately, apart from isolated examples, there appears to be little formal co-ordination in Scotland between the different public agencies. Partly this may stem from a lack of a formal requirement for health, social services care and education units to consider the wider implications on the transport network of changes in their forms of delivery, aside from planning constraints when a new site is developed. As with all partnerships there is need for the different partners to recognise their mutual inter-dependence and to understand that through joint working they will make efficiency gains that can benefit society at large. It may be the case that government intervention will be required to make partnerships between the different public sector delivery arms happen.

## Government support measures for connectivity in remote communities

This section highlights a number of transport policies that have been implemented in Scotland relating to remote communities. There is a distinction made between policies that were in place in 2000, those that have been introduced since then and those currently under consideration or development.

### Established support measures prior to 2000

The government support measures in this section identify the situation prior to 2000. The measures include: PSO Scottish air services (Figure 7); the rail network (Figure 4), with services to remote communities being kept as they were during rail privatisation; and a well-established ferry network, which has been maintained but requires significant levels of government support (prior to 2000 the government directly owned and operated the majority of the ferry infrastructure and services, but due to the European Commission's competition regulation, it has owned it indirectly since 2000 via a company wholly owned by Scottish ministers). Another important measure is inter-island connectivity. In the 1990s three fixed links and two new ferry services were introduced in the Western Isles (Outer Hebrides), greatly improving inter-island connectivity. For the first time it was possible to travel by car from the length of the Western isles without having to go via the mainland. Lastly are scheduled air services within the Highlands and Islands, which were and still are exempt from Air Passenger Duty (APD) that is levied on all flights departing the United Kingdom.

### Support initiatives post 2000

This section focuses on the significant changes to government support measures. They are separated by type into subsidies and discounts to travellers, infrastructure and rolling stock investment, and regulation.

#### *Subsidies and discounts to travellers*

**Concessionary fares.** One of the Scottish Government's most significant initiatives was the national concessionary fares scheme. Funding is provided by the Scottish Government to local authorities for its administration. This allowed over 60s to travel anywhere in Scotland for free by bus. While not directed specifically at remote communities it has had a significant impact there, even though as evidenced earlier the benefits are not as great as elsewhere in Scotland due to the thinner bus networks. Since introduction the scheme has been enhanced so that it also includes local ferry travel for residents within their island group. Details vary by region: in the Strathclyde Passenger Transport area, National Entitlement Card [NEC] holders receive discounted ferry travel and residents of the Orkney Isles who are over 65 are entitled to a limited number of free trips between their island and the main island in Orkney, Orkney Mainland, and two free passenger-only return trips to the mainland for residents of the Western Isles, Orkney and Shetland.

**Air fare discount.** For remote communities, the Scottish Government introduced an air discount scheme for certain commercial routes serving remote communities representing 50% of the core air fare. These routes cannot be subject to a PSO.

**Road Equivalent Tariff (RET).** RET fares on Scottish Government supported ferry services represent a significant reduction in the price of ferry travel. The fare has two components, a fixed element to cover fixed costs such as harbour infrastructure and vessels and a distance-based component based on road-equivalent vehicle operating costs. The reduced fare only applies to vehicles, including commercial vehicles under six metres in length. Commercial vehicles over six metres in length still pay the same fare. After an



initial pilot study on the Western Isles (Outer Hebrides) in 2008, RET has gradually been rolled out to more and more routes. Fares on routes to the Shetland Isles were discounted in 2018, but there remain regulatory issues as to how to implement RET fares to the Orkney Isles due to the presence of a private sector competitor and the need to comply with EC laws relating to state subsidies.

**Rural Fuel Duty Relief Scheme.** In April 2015, petrol and diesel fuel sold in remote rural and island communities was subject to a GBP 00.05 (5 pence) reduction of the fuel duty. This measure was introduced by the UK Government and therefore also applies to remote communities in England.

**Skye bridge toll removal.** In 2004 the Scottish Government brokered a deal with the concessionaire of the Skye Bridge (a PFI scheme) to buy the concession out. The tolls were removed immediately. The tolls were seen as punitive, partly because the concessionaire was able to re-coup revenues that were expected to far exceed the costs of construction. Furthermore, this was the only example of where a bridge to an island was tolled. It is estimated that the concessionaire recouped more than double the construction cost within decade. The opposition to tolling in remote communities in Scotland and in Scotland in general is in contrast to its acceptance overseas (e.g. in Norway). It should be noted that in Norway the PFI contracts are designed in a way that prevents overly excessive revenue generation by the concessionaire.

### *Infrastructure and rolling stock investment*

**Air.** Inverness airport terminal building was built as a PFI contract in 1999. The concessionaire was charging punitive landing charges, and this was inhibiting the growth in air services and then indirectly the regional economy. The Scottish Government bought the concessionaire out in 2006. Like the Skye Bridge it is estimated the concessionaire received revenues that were many times what it had invested (in this case over a seven year period). Again, arguably, the monopoly situation of the transport infrastructure and the lack of controls within the contract to prevent excessive charges enabled the concessionaire to levy excessive charges.

**Maritime.** The Scottish Government is procuring two dual fuel ferries running on liquefied natural gas and low sulphur marine oil to serve Arran and the Outer Hebrides. The contract is worth GBP 97 million, however, cost overruns associated with the fuel technology suggest the ferries may cost more than double that. In a recent turn of events, the shipyard manufacturing the ferries has gone into insolvency with the Scottish Government now taking over the running of the shipyard. The insolvency is a direct consequence of the cost overruns.

**Rail.** The Scottish Government is investing in the main lines between Inverness and the Central Belt and Inverness and Aberdeen. Infrastructure improvements and upgraded rolling stock will provide longer trains, more services and journey-time reductions. This is at a cost of about GBP 60 million. With the Inverness to Aberdeen line, work will likely last for many years, with the long-term objective of achieving an hourly service and a journey time of two hours. These lines serve some remote communities directly but also allow onward travel to Scotland's cities for those who live in remote communities. The Scottish Government has also funded the upgrading of the sleeper rolling stock from Inverness and Fort William to London, available in 2019.

**Trunk roads.** Work has started on dualling the main roads from Inverness to the Central Belt (A9) and Aberdeen (A96). This will take many years to complete and represents a substantial investment by the Scottish Government. The A9 and A96 duallings are expected to cost about GBP 3 billion. Both roads serve some remote communities along the way but also provide onward connectivity for remote communities travelling to Scotland's main cities.

### *Policy and Regulation*

Since the turn of the century there has been a build-up of momentum regarding legislative changes relating to issues facing remote communities. This has led to formalising policy towards remote communities through the Ferry Services Plan from 2013-22 (Transport Scotland, 2012) and the National Transport Strategy (Transport Scotland, 2016b; Transport Scotland, 2019), where the recent draft for consultation includes a section on remote communities and the challenges they face. The Scottish Government passed the Islands Act in 2018. The objective of the act is to provide the right environment for sustainable growth and empower island communities. A direct consequence is all government policies need to be inclusive of island needs. Whether this legislation should be extended to include remote mainland communities is a subject of current debate. HITRANS, for example, considers it should (HITRANS, 2018).

Ferry service re-tendering is an emotive issue for remote communities, as the services being put out for tender are lifeline services. It creates uncertainty for these communities at the time of tendering. The Scottish Government position is they have to tender the ferry services to comply with EC law. However, there are currently ongoing enquiries with the EC as to whether the lifeline services can be exempt from re-tendering.

The Scottish Government is also currently working with the island councils of the Orkney Islands and the Shetland Islands to determine an optimum strategy for replacing the existing inter-island ferries, possible construction of fixed links and also improved connectivity to the mainland. How any recommendations arising from these studies will ultimately be funded has not yet been addressed. Part of the answer may be a transfer of responsibility to local ferry services away from local authorities. As these discussions will be occurring at the same time, the Scottish Government is also thinking about strengthening governance at a regional level. What shape any of this takes is open to discussion, but there is likely to be some regulatory reform that has an impact on remote communities.

### **Local versus strategic**

As can be seen from the above discussion, substantial investments have been made by the Scottish Government in transport policies that directly affect remote communities. With the exception of concessionary bus travel and the petrol and diesel fuel tax rebate though, these policies typically benefit the longer-distance traveller. This is because the Scottish Government is typically responsible for the strategic transport links. In contrast, at a local level transport budgets are being reduced in real terms, services cut and maintenance and renewal delayed. This is an issue, because there is a systematic variation with income and age in how people travel. Those with higher incomes travel farther and make more use of strategic transport links. The young, old and those on lower incomes tend to use local transport services. Thus, if this dichotomy between local and strategic transport investment continues there is the potential that a significant distributional issue in transport connectivity across different population demographics may become a future policy challenge in remote communities.

# Transport appraisal in Scotland

## The business case

UK Treasury sets the decision making requirements for all public sector expenditure across all sectors in the Green Book (HM Treasury, 2013, updated 2018). The Scottish Government therefore follows its guidelines. For investment decisions, a business case needs to be produced demonstrating a robust case for change. It comprises five separate cases:

- the strategic case, showing alignment with public policy objectives
- the economic case, demonstrating value for money
- the commercial case, showing commercial viability
- the financial case, demonstrating financial affordability
- the management case, showing the project is achievable.

The strategic context for the project is determined at the outset, with the scheme fleshed out and the Strategic Outline Case (SOC) is drawn up. Next, the scheme and the Outline Business Case (OBC) are prepared before the solution is procured and the Full Business Case (FBC) is laid out. Lastly, it is implemented and monitored throughout the project, with evaluation and feedback as it progresses.

As mentioned above, initially the focus is on the strategic fit of the projects. As the project becomes more developed each of the cases is developed further until the full business case stage is reached. All of the five separate cases are equally and fully developed. Following implementation, the project should be monitored and its success, in terms of meeting its objectives, evaluated.

## Scottish Transport Appraisal Guidance

The Scottish Transport Appraisal Guidance (STAG) provides guidance on the process for undertaking a transport appraisal. Alongside Transport Scotland's Land-use And Transport Integration in Scotland (LATIS) service it identifies data sources (including national and regional transport models), gives worksheets and provides values for assisting with an appraisal.

It is a requirement that an appraisal using STAG is undertaken when seeking government funding, support or approval for proposals that significantly change the transport system through, for example, creating a new asset, significantly enhancing an existing asset or changing an existing asset that materially impacts on its operation. It is not required for issues of maintenance or renewal.

STAG is an objective-led appraisal process that requires the stakeholders to assess the investment against local transport planning objectives and national objectives. It has four phases: Case for Change (or Pre-Appraisal), Part 1 Appraisal, Part 2 Appraisal and Post Appraisal. The principle of being objective-led rather than solution-led allows the appraisal of options against planning objectives, STAG Criteria and established policy directives. If undertaken correctly, it should provide a robust evidence base for decision makers.

In the pre-appraisal phase, an assessment of problems and opportunities is undertaken to define the baseline situation, generate a set of local transport planning objectives and a long list of transport

investment options. This pre-appraisal phase maps onto setting the strategic context for the project in the business case development process.

In the Part 1 Appraisal, the long list of options is assessed against the local transport planning objectives, the STAG criteria (i.e. environment, safety, economy, integration and accessibility), established policy directives, feasibility, affordability and public acceptability.

The outcome of this should be a short list of transport investment options tailored to the problems and needs of the communities. It should meet national objectives and the minimum criteria regarding feasibility, affordability and public acceptability. As such it can be seen that the Pre-Appraisal and Part 1 elements of STAG contribute very much to the Treasury's planning process of the strategic context of the project and the Strategic Outline Case (SOC).

In the Part 2 Appraisal there is a much more detailed appraisal of the short-listed options against the local transport planning objectives and the STAG criteria, as well as an assessment of the cost to government and risk and uncertainty.

The output of the Part 2 Appraisal would be the identification of a preferred option. Thus, the Part 2 Appraisal would be expected to flesh out the Outline Business Case (OBC). Within this framework, the STAG analysis would be expected to contribute significantly to the strategic and economic cases and less so to the commercial, financial and management elements.

A good scheme would be expected to pass all five elements of the business case, strategic, economic, commercial, financial and management). However, the economic case is based on a CBA, and the role of the latter in decision making in Scotland remains controversial (Roberston, 2019). This is also the case internationally as Beukers, Bertolini, and te Brömmelstroet (2012) and Mouter, Annema and van Wee (2013) show. While most people understand the need for some form of CBA, economists are in favour of significant weight being placed on the CBA in the decision making. Planners, on the other hand, would like to see less weight placed on CBA. In the United Kingdom, the Treasury sets the overarching appraisal guidelines for public sector expenditure, and they require a case to be made for the value for money (i.e. the economic case). However, there is recognition in the overarching CBA guidance (i.e. the Green Book) that decisions should also take into account benefits and costs that cannot be monetised. This implies the economic case does not have to be strong if there are methodological reasons why a weak economic case may arise.

Transport Scotland's position is consistent with the UK Treasury's position in that it does not make decisions based solely on the economic case. Rather, it is the full business case, which the STAG appraisal feeds into, that is considered for decision making. Despite this there remain concerns that where a strong economic case cannot be made due to methodological reasons, this will cast the transport investment in a negative light. How to go about resolving this discord in professionals' attitudes towards CBA in Scotland remains an area that requires more research effort. Some international commentators such as Mouter, Annema and van Wee (2013) from the Netherlands offer some solutions, albeit in their national contexts.

Relatively weak economic cases due to missing benefit items may arise in transport project appraisal in remote communities. There are a number of methodological factors that make the modelling of the full economic benefits of an investment in a remote community challenging. These include modelling-induced traffic, land-use change, network resilience, operating day and frequency improvements, defining the do-minimum counterfactual and wider economic benefits unique to remote communities. In the next section, each of these are discussed in more detail before briefly illustrating some of the transport appraisals that have been and are being undertaken.

## Remote communities, transport CBA and STAG

### Measuring transport benefits in remote communities

Transport CBA methods were originally developed and then honed with the appraisal of infrastructure projects on busy sections of the trunk and motorway road and rail networks. Since the early 2000s there has also been an increasing emphasis on the treatment of cities, with a particular interest in the productivity benefits arising through increased agglomeration and other measurable wider economic impacts.

These methods are then applied to transport projects in remote communities. However, transport projects in such communities have a number of distinguishing features that may mean such methods need enhancing (Laird and Mackie, 2009; Laird and Mackie, 2014). These features are discussed below, and the guidance, if any, offered by STAG is presented.

In remote areas where connectivity is poor and an investment is expected to give a step change in connectivity, high levels of induced demand can occur. This is particularly the case with the construction of fixed links, but can be generalised to all investments. Accurate modelling of the induced demand is essential to capture the benefits in a transport CBA of the investment. This can be particularly challenging where existing demand levels are low, populations are dispersed, land-use change might be expected and not all user costs are fully understood.

Low frequency public transport services are a characteristic of remote communities. Where service frequencies are low transport users have to adapt their activity schedule around the public transport timetable. These scheduling costs are welfare costs and should appear in the CBA. Where a transport investment increases the frequency of low frequency services and/or extends the operating day, activity scheduling benefits occur to transport users. These can be substantial but vary significantly with context (Jackson, Johnson and Nash, 2012; Laird, 2012). Additionally, at their most extreme low-frequency services can lead to accommodation and subsistence costs due to nights away from home.

STAG recommends including such scheduling benefits in an appraisal but does not provide any guidance on values that can be adopted. This is clearly a limiting factor for appraisals, as bespoke valuation surveys would be required.

Resilience and reliability, or the lack thereof, are issues facing remote communities. As discussed earlier, weather-related disruptions have increased in the remote areas, possibly connected to ageing infrastructure and ferries, as well as deferred maintenance. With long diversionary routes, disruption can be highly inconvenient. These uncertainties raise issues associated with reliability and resilience. Reliability is seen as random variations in day-to-day travel times, while resilience is seen more as outages of service. The literature on reliability is well developed, as it has a strong urban context. Resilience, on the other hand, is not well researched, and as it is network resilience that is most important for remote communities this state of knowledge creates challenges in appraisal.

In economic theory, the concept in the relevant literature that justifies including an additional resilience term in the CBA is the risk premium. The risk premium also underlies the concept of the value of an alternative transportation option even if that option is never used (e.g. a diversionary route). A risk premium would be more associated with making an existing route or service more resilient. There is a small evidence base on option values in transport, but these are primarily in an urban setting and for public transport services. Where rail connects remote small towns to larger towns or cities, the evidence base might be appropriate and the inclusion of option values can give rise to significant improvements in the value for money, particularly if demand levels and therefore user benefits are low. For example, Laird,

Geurs and Nash (2009) found option values far in excess of user benefits for a number of small-station openings in the north of Scotland – albeit in accessible rural locations. STAG provides values for option values for train and bus services that provide good commuting opportunities.

As far as the author is aware there have been no studies on the value of network resilience in remote communities. This remains an important evidence gap when improving resilience is a key objective of transport investment.

A lack of overtaking opportunities on single carriageway roads in remote communities can lead to a build-up of driver frustration and stress. In remote communities where single carriageway roads dominate, transport investments might not change the average speed substantially but can significantly improve the journey experience and quality.

In Scotland, a bespoke stated-preference survey derived values for improvements in overtaking opportunities (Murphy, Casey and McDonald, 2014). The use of microsimulation modelling of vehicle platooning and dispersion then allowed the value of reduced driver stress to be included in the appraisal of the dualling of the A9 Perth to Inverness. These benefits were large, at 37% of the travel-time savings benefits (Transport Scotland, 2016a).

These quality benefits are referred to in STAG, but there would be a need to undertake a valuation study as part of any appraisal, unless the results from the A9 study can be transferred.

Often the reason for transport investment in remote communities – particularly with significant investments – is land-use change. Ensuring population stability, and/or growing the economy and population is an objective of transport investment. There are two issues here. The first is modelling land-use change, that is quantifying what land-use change will occur, and the second is valuing the land-use change in the appraisal.

Land-use change is challenging to model. Modelling methods remain at the research frontier, and where they are being developed they typically focus on the urban setting. However, the value of land-use change is fully captured in user benefits, unless there is an externality or market failure (see also the discussion on the wider economic impacts). Such an externality exists associated with the attractiveness of a location (Bates, 2006; Geurs et al., 2010). The lack of research into the modelling and valuing of this change in attractiveness when land uses change has led to transport appraisal practice in England being undertaken using fixed land uses. This practice seems to have been adopted internationally (e.g. Australia and New Zealand). In Scotland, STAG is silent on whether fixed or variable land uses can be used for the calculation of user benefits, though there is an expectation on the analyst to demonstrate departures from standard practice (and arguably the Department for Transport's TAG guidance represents standard practice).

Therefore, aside from the difficulty in modelling land-use change, it does appear that in the appraisal practice of certain countries land-use change is not permitted in CBA. This then calls into question the representativeness of any CBA, particularly where the reason behind the transport investment is land-use change. This is not the case in Scotland as STAG is silent on the use of fixed or variable land uses in the CBA, though there is a requirement to justify the analytical approach adopted. Even so there are not any easy answers to this challenge of understanding and encapsulating the value of land-use change in CBA. This is a problem if the primary driving force behind transport investment in a remote community is land-use change.

The definition of the do-minimum or reference case is critical to any appraisal as it provides the baseline against which the monetised impacts of a policy intervention are measured. Defining a do-minimum/reference case is extremely problematic for appraisal of a potential discontinuation of lifeline services, as it is very difficult to establish the potential impacts of such decisions, both for connectivity and

the resulting land-use responses. This is problematic as unless the negative impacts in the do-minimum counterfactual are fully represented in the appraisal, then the benefits of the proposals cannot be quantified. Furthermore, analytical challenges also exist in capturing the negative user costs in CBA related to the loss of a lifeline service. While resource intensive, these valuation challenges are not insurmountable (Kouwenhoven et al., 2006).

Road route upgrades, rail investments and ferry investments experience these mutual inter-dependencies. The benefits of upgrading a pier might only be felt if a ferry service enhancement occurs. For some investments, these inter-dependencies are crucial for the project's success, but yet they may be excluded from the CBA as they are uncertain and dependent on decisions yet to be made. Closely related to the issue of programmatic appraisal is that of future proofing, i.e. constructing infrastructure now that will allow development or a service enhancement to occur at some point in the future even though it is not known that development or service enhancement will ever occur. Staying with the ferry example, an option in a pier replacement project may be to upgrade the pier to allow overnight berthing of a vessel at a much smaller marginal cost than upgrading the pier at some point in the future even if there are no committed plans to introduce a new vessel or adjust the ferry service timetable.

In both circumstances the CBA can be enhanced to incorporate these future benefits. Programmatic appraisal requires a risk assessment to be undertaken with modelling of future different scenarios, while future proofing requires the incorporation of a quasi-option value (as the academic literature calls it), which is also known as a real option value.

The broader economic benefits of a transport project in terms of economic growth, employment growth or retention and population growth or retention are invariably objectives of transport investment in remote communities. These broader benefits only have additional value in a transport CBA if a market failure exists. A market failure implies not all the social costs and benefits of the transport investment appear exclusively in the transport analysis. Wider economic benefits associated with job creation and increased economic output may need to be added in the CBA of transport projects in remote areas (Laird and Venables, 2017).

For remote communities Laird and Mackie (2014) identify wider economic benefits can be up to 60% of user benefits in the four Scottish case studies they examined. The primary source of benefits is that associated with job creation. They argue remote labour markets are thin and all workers face search costs; this gives employers market power. Therefore even if employment is displaced to remote communities from elsewhere a wider economic benefit occurs and should be calculated. Unfortunately, the evidence base on this is limited and to date no guidance exists on this wider economic benefit in Scotland or internationally (Wangsness, Rødseth and Hansen, 2017).

Another wider economic benefit of enhancing the transport network is associated with reducing unemployment (Wangsness, Rødseth and Hansen, 2017). Unemployment in remote communities in Scotland is typically low – due to out-migration – but in other countries it may be high, and this may form a wider economic benefit. In the UK context, the Treasury has not supported CBAs where reducing unemployment has been valued.

Moreover, expanding output in imperfectly competitive markets is recognised as creating a wider economic benefit internationally and forms part of the STAG guidance. Arguably in remote communities a lack of competition among suppliers can lead to local monopolies forming. In Scotland this is recognised in by STAG's requirement to use double the standard weighting when calculating the wider economic benefit of expanding output in imperfectly competitive markets. This additional weighting has been based on an analysis of the petrol retail market in the north of Scotland, of which there have been two investigations into competitive practices.

There could be a broader set of social benefits related to the wider objectives of population growth and/or retention. These do not seem to appear in any CBA guidelines, nor have any valuation studies attempted to value them. They can be split into two categories:

- *Welfare costs and benefits to households directly affected.* If transport services to a remote community are improved or lost, households may move into an area or be forced to leave. These migratory movements may change the viability of the community – this is an externality and would be additional to the transport user benefits. It is closely related to the attractiveness of a location, discussed earlier in the discussion on land-use change. It is also worth noting that some households may see increased accessibility and in-migration negatively as it can lead to changes in the make-up of the community.
- *Welfare value to society of having a dispersed population.* Many governments have explicit objectives of retaining populations of their remote regions, sometimes to preserve territorial integrity of a nation like in Japan or Norway. In Scotland, the political commitment to invest in transport services serving remote communities, the recent Islands Act and the current ministerial taskforce on population (required to consider how the benefits of population increase can be dispersed across all communities) demonstrate that Scottish society attaches value to the existence of its remote communities. This implies that there may be a wider social benefit from such policies. Although currently such a benefit is not included in any CBA studies, recent work in the environmental field valuing the non-use/existence values could be utilised as a source of a valuation method.<sup>1</sup> For example, the methodology used to value Stonehenge and its environs with respect to the A303 route upgrades could be drawn on.

### **Proportionate and holistic appraisal**

The preceding discussion highlights methodological reasons why the benefits measured in a CBA based solely on time savings and other standard user costs will be lower than they should be. Whether to expend the effort in measuring these additional benefits is a separate question, which is bound up within a discussion on the proportionality of appraisal. The evidence base for some of these characteristics and the methods needed to address them is at best limited and in places non-existent. They very much remain on the knowledge frontier. As such there is some uncertainty as to whether extra analytical effort required for their inclusion in the CBA would be proportionate to the appraisal, in terms of scale of effort and whether it will affect the outcome of choice of project alternative and the decision to invest. There is a case, though, for further research to investigate whether these benefits will materially affect an appraisal and if so whether practical and easily applied methods can be developed to allow for their inclusion.

It is also worth stating that a good appraisal considers all costs and benefits. There will undoubtedly be environmental implications of land-use change, and if land uses change then there will be population losses in some places if there are population gains elsewhere. The costs associated with any losses should be taken into account.

### **Some examples of Scottish transport appraisal in practice**

Transport appraisal practice in Scotland continues to evolve in response to efforts made to disseminate best practice, respond to criticisms and to reflect changes in Scottish Government and UK Government guidelines on public sector expenditure in general. Key aspects of the Scottish transport appraisal process as it applies to remote communities are: it is grounded in an assessment of need; it is objectives led; and



the investment decision is based on the whole business case and not just the CBA. These aspects are illustrated with some examples. Unfortunately, not all business cases are publicly available. It seems that early parts of the appraisal are available (the pre-appraisal/case for change and the STAG Part 1), but Outline Business Cases or the Final Business Cases of projects in remote communities have not been published.

### **Objectives-led**

The first Strategic Transport Projects Review (STPR1) published in 2008 set the Scottish Government's investment strategy with respect to mainland road/rail transport from 2012 to 2032. It included the key strategic corridors that give access and pass through remote communities. A long list of options was developed based on evidence of transport-related issues. The options were appraised against both transport planning objectives and wider national objectives and sifted through until a shortlist of 29 interventions was identified. These 29 included some of the projects mentioned earlier: dualling the A9 to Inverness and upgrades to the rail lines from the Central Belt and Aberdeen to Inverness. The list also included safety measures on Highland trunk roads. STPR1 effectively took the identified interventions up to the Strategic Outline Business Case/STAG Part 1 level. These interventions were taken forward in a phased manner, with each phase being supported by a comprehensive business case. Transport Scotland is now undertaking STPR2 to identify a list of priorities for transport investment over the next 20 years.

The inter-island ferries in the Orkney and Shetland Islands are, as has been discussed earlier, in need of renewal. Possibly for some islands they could also be replaced with a fixed link, and they also interact with the air services – which in places also need investment. Appraisal of this multimodal work is ongoing, but the Strategic Outline Business Cases (case for change/STAG Part 1s) have been published. As part of this transport planning objectives (TPOs) were developed for each island, based on assessment of problems and needs. Along with national objectives these were used to appraise the long list of potential options that were also generated through the STAG process.

### **The business case as a basis for the decision**

The entire business case forms the basis of the decision as to the selection of the preferred alternative, and the decision to invest. The decision is based on balancing the different elements – strategic considerations, value for money, etc. This can lead to the decision to invest in a project with a poor economic case. A good example of which is the Borders Rail project. This new rail line from Edinburgh to the Borders at its southern end touches into remote communities in the Borders. It's core benefit-cost ratio from the CBA was 0.5, but there were strong strategic arguments associated with re-generation and social inclusion that led to the decision to invest (Johnston and Causley, 2013).

The A9 dualling also has a relatively low benefit-cost ratio. It's core benefit cost ratio is 0.8, though this increases to slightly above 1.0 if driver frustration is included and wider economic benefits (Transport Scotland, 2016a). Again strong strategic arguments, linked back to the objectives-led STPR1 process and the high likelihood there are non-monetised benefits make the case for investment.

## Conclusions

The challenges facing remote communities in Scotland are similar to those faced by remote communities elsewhere: a lack of good employment opportunities, lower incomes, higher costs of living and difficulties accessing services. Population levels are low, the population is aging and there is out-migration – particularly by young people. In Scotland, transport services have historically received strong government support, and there exists a good legislative and regulatory framework for the delivery of transport services in remote communities. It is also now a requirement to consider the impact on island communities of all government policies. Evidence from Scotland is that regional working across local authorities is needed to resolve transport connectivity issues in remote communities.

In remote communities in Scotland there is also a strong inter-dependency between delivery of transport services and delivery of education and health services. However, there is limited co-ordination between these different public sector organisations. Case studies identify significant cost savings may be possible with better co-ordination. How to achieve this remains unresolved at the moment. It is also worth noting reform of local government and transport governance in Scotland is ongoing. Ultimately, any forthcoming reforms will impact on the delivery of transport services to remote communities.

The last twenty years has seen significant investments in transport connectivity to remote communities in Scotland. There are major upgrades underway to the core strategic road and rail network that serves the north of Scotland, Road Equivalent Tariff ferry fares, reduced air fares and some significant investment in new ferries. However, at the local transport level transport maintenance and renewals are being deferred, and there is limited capital investment. Arguably, these impacts have been strongest in the remotest communities. How to resolve this issue is a topic undergoing some debate. Part of the solution could be a significant strengthening of regional transport authorities regarding their role in the delivery of transport services.

The STAG appraisal process advocates a thorough bottom-up and objectives-led approach to identifying the preferred transport solution. Investment decision making is then based on a business case model, with five cases within it. While government is required to consider the value for money of an investment, it can take account of the alignment of the project with policy goals and whether benefits are missing from the economic case. There are therefore examples of where the Scottish Government has invested in projects which apparently have poor value for money but meet other policy goals. Despite this there is disquiet among some local stakeholders regarding the role of CBA in decision making. This is particularly the case in some remote communities, as there are a number of distinguishing features of transport projects in remote communities that are not easy to encapsulate in standard CBA methods. STAG offers some guidance on some of these aspects but not all. Some are technically challenging to achieve and may in fact require a level of analytical resource that is not proportionate to the appraisal. Others need a significant research effort to develop the appropriate methods and evidence base and are likely some years away from becoming a part of guidance even if the expert community has set about addressing these gaps. Directly acknowledging the limitations of CBA in the economic case is likely the best way forward in the immediacy.

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## Annex. Role and responsibilities of public sector agencies in delivering transport services

The following table is sourced from Scotland’s National Transport Strategy (Transport Scotland, 2016b).

**Table 1. The role and responsibilities of public sector agencies in the delivery of transport services in Scotland**

Organisation	Name	Summary of main responsibilities (some functions are shared with others)
European Union	European Parliament and European Commission	<p>EU consumer rights legislation effects</p> <p>Transport including aviation, coach, rail and ferry</p> <p>Working time directive on state-aid regulations</p> <p>Services of General Economic Interest (SGEI)</p> <p>Public service obligations/public service contracts</p> <p>Maritime cabotage regulations</p> <p>Regulation of road freight sector</p>
UK Government	UK Government /Department for Transport	<p>Road transport</p> <p>Rail transport, provision and regulation of railway services</p> <p>Marine transport, including navigational rights and freedoms</p> <p>Air transport – security, safety, air navigation and economic regulation</p> <p>Bus services/vehicles – some UK-level legislation applies</p> <p>Driver and Vehicle Standards Agency - transport of radioactive material, vehicle (construction and use) regulations, custodians of codes of practice, traffic commissioners and network rail</p> <p>Office of Road and Rail</p> <p>Transec</p> <p>Taxation</p> <p>A useful reference document is the HoC “Transport in Scotland” report:  <a href="http://researchbriefings.files.parliament.uk/documents/SN03192/SN03192.pdf">http://researchbriefings.files.parliament.uk/documents/SN03192/SN03192.pdf</a>.</p>

Organisation	Name	Summary of main responsibilities (some functions are shared with others)
Scottish Government	Scottish Government/ Transport Scotland	<p>Legislation</p> <p>National transport strategy</p> <p>Research and analysis in collaboration with local authorities, RTPs and others</p> <p>Strategic infrastructure investment along with RTPs, Councils others</p> <p>National concessionary bus travel schemes</p> <p>Sustainable and active travel policy and investment along with RTPs, councils</p> <p>Bus strategy and support, along with RTPs</p> <p>Councils</p> <p>Freight policy and freight mode shift grant schemes</p> <p>Support for lifeline air and ferry services along with RTPs, councils</p> <p>Route development on air services – air route</p> <p>Development fund</p> <p>Operation of some ferry ports</p> <p>Ports policy and legislation under the Harbours Act 1964</p> <p>Canals policy</p> <p>Rail: policy, infrastructure investment, awarder of and support for ScotRail and Caledonian sleeper franchises, specification and funding of network rail outputs, performance and service quality</p> <p>Road safety: education and publicity, road safety framework, Scottish road safety targets, policy, speed limits, drink and drug drive limit</p> <p>Blue Badge Scheme: policy and legislation</p> <p>Trunk road: policy, design and construction, maintenance, road safety for the trunk roads, safety camera programme</p> <p>Statutory consultee on strategic and local development plans and planning applications which impact on the trunk road</p> <p>Approver of changes to the strategic transport network</p> <p>Custodians of transport appraisal guidance</p> <p>Custodians of road design standards</p> <p>Traffic Scotland</p> <p>Traveline Scotland</p> <p>Scottish Enterprise and Highlands and Islands Enterprise</p> <p>Visit Scotland</p> <p>The Scottish Road Works commissioner</p> <p>Environmental management, including noise, air quality and climate change adaption</p>

Organisation	Name	Summary of main responsibilities (some functions are shared with others)
Regional Transport Partnerships	Seven statutory partnerships covering all of Scotland	Regional transport strategies (statutory) Can receive functions transferred to them from local authorities or Scottish Government Project development/delivery/funding Key agency in development planning Statutory role in community planning as community planning partner Regional promoter of economic development/sustainable and active travel/behaviour change/modal shift Regional modelling Operation of services (e.g. provision of bus and other transport services and in the case of SPT, the operation of bus stations and the Glasgow Subway)
Local Authorities	The 32 councils comprising local government in Scotland	Local roads maintenance Funding local and regional infrastructure projects Subsidising socially-necessary bus services (except where transferred to RTP) Influencing or managing local bus service provision through quality contracts, quality partnerships and ticketing schemes (except where transferred to RTP) Local concessionary travel schemes, taxi and private hire licensing regimes, preparation and delivery of local transport strategies having regard to statutory regional transport strategies Local transport infrastructure provision Operating council-owned bus stations, airports, ports and harbours in certain areas Funding voluntary sector transport work Funding for transport initiatives by third parties Statutory responsibility for local road safety – including accident investigation and analysis Traffic management – traffic regulation orders, road works, urban traffic control Funding and provision of internal ferry/air services Transport demand-management initiatives and measures Land-use planning consultee under roads Scotland Act Health and social care transport, schools transport Environmental management, including noise, air quality and climate change adaptation Community planning



Organisation	Name	Summary of main responsibilities (some functions are shared with others)
Other public bodies	Other public sector bodies	Statutory consultees Mobility and Access Committee for Scotland – advising Scottish Ministers on improving inclusive access to transport for disabled people. Scottish Ambulance Service – providing emergency and non-emergency transport to hospitals Police Scotland NHS Fire and Rescue Service National Parks

Source: Transport Scotland (2016b).

## **Transport Connectivity for Remote Communities in Scotland**

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This report looks at the transport challenges for remote areas in Scotland. It does so by examining innovative policies the government has developed to ensure communities on both the margins of the country and the economy are connected to the rest of the country. It takes a broad view of connectivity, examining the crucial role transport plays in the provision health and education services.

All resources from the Roundtable on Connecting Remote Communities are available at:

[www.itf-oecd.org/connecting-remote-communities-roundtable](http://www.itf-oecd.org/connecting-remote-communities-roundtable)

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