Community Needs Assessment Methodology

Final Report

On behalf of **Transport Scotland**

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Overview

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Transport Scotland is currently developing the Islands Connectivity Plan (ICP), which will replace the Ferries Plan 2013-2022. Central to the ICP will be a set of 'Community Needs Assessments' (CNA), which will provide a consistent means of identifying the current level of ferry service provision received by an island or peninsular community, any problems associated with this and, where relevant, options for service improvements or reductions. Given the centrality of the CNA process to determining future service provision, it is essential that each assessment is based on a robust methodology.

For the original Ferries Review and resultant Ferries Plan 2013-2022, the assessment of required service provision was undertaken using the Routes and Services Methodology (RSM). The RSM was a six-step process that aimed to identify whether gaps exist in the current level of ferry service provision and, where gaps were identified, generate, develop and appraise options to address these gaps. In line with best practice, Transport Scotland evaluated the application of the RSM at the end of the Ferries Plan period, building on feedback from stakeholders and consultants with direct experience in its application. Whilst the RSM as originally constituted served a purpose, a range of limitations were identified in its application, including:

- From a purely appraisal perspective, the approach outlined in the Scottish Transport Appraisal Guidance (STAG) requires that any investment proposal is defined through an objective-led approach, starting with problems and opportunities and using these as the basis of defining Transport Planning Objectives (TPOs) against which options are appraised. The RSM methodology adopted a different approach, starting with a top-down statement of service based on given indicators, thus giving rise to a risk of misalignment between need and actual service provision.
- Several of the RSM indicators used did not robustly capture the needs of a community, e.g. population and crossing time, and indeed served to lock-in many of the outcomes of the RSM at an early stage. Moreover, 'dependencies' such as commuting have emerged around the ferry service which currently exists and could be materially different with a different ferry service. However, the RSM did not recognise this and indeed locked-in current community characteristics.

- The RSM process did not specify quantitative bandings for allocating a specific dependency to an island. For example, there were no fixed rules to state that islands with say >50% commuting should be scored as an 'A', 35%-49% a 'B' and so on. As a result, the allocation of an island to an RSM 'pot' required an element of judgement and as such was a subjective process, with scope for variation between assessments. Moreover, despite using a four-tier ranking, there were only two possible outcomes – an island either did or did not have a dependency – and thus there was no difference between 'A and B' or 'C and D' scores in practice.
- Finally, the RSM defined service levels – in terms of the number of sailing days, service frequency and length of operating day – were largely detached from operational realities around crewing hours, vessel deployment and management of capacity etc.
- Stakeholder feedback highlighted the requirement to assess against other identified needs which were not specifically included in the original RSM methodology. These were:
    - Reliability
    - Resilience
    - Capacity
    - Connecting and onward travel
    - Wider socio-economic needs and alignment with the National Transport Strategy 2 and the National Islands Plan.

Building on this feedback and the lessons learned, Transport Scotland has commissioned Stantec UK Ltd to develop a revised method for undertaking the CNA component of the ICP. The new method is intended to retain the principles of the RSM but further develop the analytical approach to address the issues with the original method identified above. It will sit beneath the strategic framework defined in the ICP.

Report Structure

The purpose of this commission is to provide a guide to Transport Scotland officials, local authorities and consultancies carrying out CNAs. Whilst developed for the purposes of assessing communities served by the Clyde and Hebrides Ferry Services (CHFS) and the Northern Isles Ferry Services (NIFS), the methodology could also be applied to local authority networks, as per the previous RSM.

This new guidance is set out in Chapter 2. This chapter has been written as a standalone guidance paper which can extracted and shared with parties undertaking a CNA.

Chapter 3 sets out our wider thoughts on how the information gathered through the CNA process can be collated, reported and used to inform routes monitoring and investment planning. It is not anticipated that Chapters 1 or 3 of this report would be issued alongside the new guidance, rather they are for internal use by Transport Scotland.

Community Needs Assessment - Guidance Paper

Overview

Transport Scotland is currently developing the Islands Connectivity Plan (ICP), which will replace the Ferries Plan 2013-2022. Central to the ICP will be a set of 'Community Needs Assessments' (CNA), which will provide a consistent means of identifying the current level of ferry service provision received by an island or peninsular community, any problems associated with this service in meeting the needs of the community and, where relevant, options for service improvements or reductions.

What is the purpose of this guidance paper?

The purpose of this guidance paper is to ensure that a consistent analytical approach to assessing community needs and developing options is adopted**.** This will facilitate comparability and overall network and investment planning.

It is though important to note that, whilst the paper establishes a consistent analytical approach to conducting CNAs, it generally avoids defining a formulaic approach to carrying out each individual CNA. Potential data sources and indicators are outlined in the sections which follow, but each island and peninsular community has its own unique characteristics and it is the role of the party carrying out the CNA to tailor the analysis to the community in question.

Who should use this guidance paper?

This guidance paper has been developed specifically for the undertaking of CNAs relating to the Transport Scotland contracted ferries networks – i.e., the Clyde and Hebridean Ferry Services (CHFS) and the Northern Isles Ferry Services (NIFS).

However, the approach set out would support Scottish Transport Appraisal Guidance (STAG) studies and business cases undertaken by local authorities in relation to their own services.

Background and Context

The 'exam question' here is to set out the current and future 'needs' of ferry dependent island and peninsular communities in terms of their ferry service (Community Needs Assessment) and align this with an appropriate level of service, in the process identifying potential under or over-provision of services compared to

the service currently provided on the route. Note that, for brevity, the term ‘island’ is used forthwith and all references to islands also apply to peninsular communities, unless otherwise stated.

Scotland’s ferry services perform four main roles:

- Meeting the travel needs of island residents.
- Meeting the travel needs of visitors to the islands.
- Meeting the supply-chain needs of islands in terms of inbound supplies and raw materials and outbound exports.
- Supporting business travel and services delivered to islands by mainland suppliers, particularly in smaller communities.

To determine whether island needs are being met or not, a six-stage process is proposed. These steps are summarised below and are set out in more detail thereafter.

Step 1 – Allocation of current service to one of seven defined `Route Service Levels` (summer / winter).

Step 2 – Analysis of connectivity provided by the current service (summer / winter).

Step 3 – Analysis of the performance of the current service – carryings, capacity, performance and connectivity.

Step 4 – Narrative and, where appropriate, indicators around travel by island residents, leisure visitors / tourists, the island supply-chain and service delivery.

Engagement point: confirm understanding of operational situation and community needs.

Step 5 – Gap analysis

If no gaps identified CNA concludes at Step 5.

Step 6 – Option generation and appraisal / business case scoping.

Engagement point: present the options and proposed next steps and seek feedback from communities.

Steps 1: Route Service Level

In order to provide a degree of structure to the process, a 'Route Service Level' typology has been developed within which every route can be allocated to a 'level' based on current supply-side arrangements, i.e., number of vessels and crews. This provides a consistent means of comparing all routes across the network in terms of the service offered in the present day.

The Below sets out the incremental 'Route Service Levels' which have been developed for this methodology:

Level A. Shared single vessel, single crewed - the operating day of a single crewed vessel is limited to the maximum hours that can be delivered by a single crew within the hours of work regulations and crew contractual agreements. For example: Several routes in Orkney including: Rousay, Egilsay and Wyre; Stromness - Graemsay / Hoy; and Houton – Lyness / Flotta.

Level B. Shared single vessel, with more than a single crew - more than a single crew' is where a small number of additional crew are added to the complement to extend the operating day. However, this falls short of a full extra crew. For example: Uig – Tarbert / Lochmaddy (summer, currently).

Level C. Dedicated single vessel, single crewed. For example: Various 'small vessel' routes in the CHFS network, e.g., Sconser - Raasay, Tayinloan - Gigha etc.

Level D. Dedicated single vessel with more than a single crew. For example: Colintraive – Rhubodach, which uses a shift system to offer an extended operating day

Level E. Two dedicated vessels, each with a single crew. For example: Wemyss Bay – Rothesay.

Level F. Two dedicated vessels, with one operating with more than a single crew. For example: Several routes on the Shetland inter-island network, e.g., Symbister – Laxo / Vidlin.

Level G. Two dedicated vessels, with both operating with more than a single crew. For example: CalMac Ferries Ltd (CFL) Gourock – Dunoon route.

The allocation of each route to a level would have to be undertaken for the summer and winter timetable as these can vary significantly between routes. Differences from core winter provision associated with drydock / refit cover should also be drawn out where appropriate.

The service frequency which can be provided will be a reflection of: (i) crossing and turnaround time; and (ii) the number of vessels operating. The number of connections per day will be a reflection of the service frequency and the length of the operating day (itself determined by the crewing arrangement). The direction of travel of the first and last sailing can be influenced by the location of crew residences (for vessels where the crew do not live aboard), the availability of overnight berths and indeed the ability for a vessel to safely lie overnight at a given port.

In assigning a route to a level, it is important to engage with the relevant operator to understand any other constraints out with crewing which may shape how a route operates (e.g., overnight berthing arrangements, tidal conditions, vessel classification etc).

Step 2: Analysis of connectivity provided by the current timetabled service

For any route (or routes, where an island is served by more than one route, e.g., Mull) being assessed, it is essential to understand what the ferry service enables for passengers and freight, based in the first instance on the current published summer and winter timetables. It should be noted that timetables on routes can be affected by various external factors such as vessel maintenance, tidal restrictions etc. The focus should be on the 'standard' timetable, but factors which routinely affect how a route operates should be identified and discussed, for example the tidal restrictions on the Sound of Harris service or the refit timetable on internal services in Orkney. This can be most easily understood through the development of a set of route connectivity indicators, as follows:

- Length of operating day (i.e., the elapsed time between the first departure and last arrival of the ferry service).
- Time of the first sailing from the island.
- Time of the last departure to the island.
    - And hence maximum time on mainland per day.
- Time of the first sailing from the mainland.

- Time of the last sailing to the mainland.
  - And hence maximum time on island per day.
- The ability to make a meaningful day-return trip to mainland / island without one or more overnight stays. The extent to which the day return trip offered is 'meaningful' will depend on the travel needs of each community and will be considered further in Step 4. Note, on routes such as Stornoway – Ullapool, it is technically possible to make a day return trip to Lewis, but time on island is limited to the turnaround time of the vessel (i.e., it arrives at 13:10 and departs at 14:00). The focus therefore has to be on the ability to make a 'meaningful' day return trip – the extent to which this is the case will vary by island and is a matter of judgement.
- Total ferry connections per day (i.e., frequency), split by direction.
- Connecting bus and rail services (departures and arrivals) – these can be shown graphically as part of a combined ferry / rail / bus timetable or in tabular format. Any other connecting transport options such as e.g., car or bike hire should also be listed.
- Public transport and car-based connectivity mapping, showing mainland onward travel times in colour contours based on selected ferry arrivals.

The above analysis should be undertaken separately for both the summer and winter timetable.

The route connectivity indicators provide a consistent basis around which a route narrative can be built. This narrative should also include:

- Commentary on any air-based connectivity where appropriate. This includes scheduled commercial flights (e.g., Stornoway – Glasgow) and Public Service Obligation flights (e.g., from the Inner Hebrides to Oban).
  - On most islands, flights serve a different market need or provide a specific service such as travel-to-school or island service delivery that the ferry delivers less well or not at all. It is important through the research and any engagement to understand the markets served as fully as possible, as well as any constraints on air service operation.
- For peninsular communities, where there is an alternative road route to the ferry, commentary on how the two interact for personal, business, leisure, supply-chain and service delivery travel.

It should be noted that understanding the respective use of air and ferry services (and road-based routes where appropriate) may require bespoke primary research with communities and stakeholder interviews. This should be assessed on a case-by-case basis.

The combination of Steps 1 and 2 effectively set out the ferry service supply-side in terms of the assets and resources used and the connectivity that these enable.

Step 3: Analysis of the performance of the current service

This step considers the performance of each route in terms of reliability (cancellations), punctuality (running to timetable) and capacity utilisation (the ability to travel with a vehicle) and provides commentary on underlying causes and consequences for island communities. Given the impact of the COVID-19 pandemic, it is recommended that all detailed analysis includes data to capture the pre-pandemic position, the pandemic itself and the emerging post-pandemic position.

To inform this, 10 years of sailing-by-sailing data will be required, which is available for both the CHFS and NIFS networks. Such data are also available for local authority services, but the extent and format varies.

Note that the data itemised below is that which would be available for CFL routes. Serco NorthLink Ferries (SNF) data are broadly similar but there are some differences in how it is reported, which would need to be accounted for in any CNA for the Orkney and Shetland Islands.

Route performance - reliability and punctuality

The following indicators have been developed in relation to punctuality and reliability, with the required data shown in italics below. These indicators should be presented for the route(s) in question and the average for selected comparable routes (e.g., on the Clyde and Hebrides network, the route comparison could be based on other 'Major vessel' and 'Small vessel' routes as defined by CFL or geographic groupings of routes). For each indicator, the data should be presented in the CNA, accompanied by an explanatory narrative and statement of any major operational or supply-side changes which may impact upon it. For example, on the Stornoway – Ullapool route, cancellations reduced significantly when MV *Loch Seaforth* commenced operation of the overnight freight service.

- How has punctuality and reliability changed over time?
  - 10-year time series showing annual proportion of scheduled sailings:

        - Cancelled.
        - Diverted, where appropriate.
        - Level 1 lateness (definition varies by route length).
        - Level 2 lateness (definition varies by route length).
- How does reliability and punctuality vary across the year?
    - Monthly operator performance statistics, for the most recent year (unless that year is an obvious outlier) split by:
        - Cancelled.
        - Diverted, where appropriate.
        - Level 1 lateness (definition varies by route length).
        - Level 2 lateness (definition varies by route length).
- Why are sailings cancelled?
    - 10-year time series showing reasons for cancellation.
- Is the impact of weather increasing?
    - 10-year time series showing proportion of sailings cancelled due to adverse weather.
- Why are sailings delayed?
    - 10-year time series showing reasons for delay.
- How many days per month does the 'normal' timetable operate?
    - For the most recent year, analyse performance data to identify how many days across the year the published timetable has been operated to schedule.

The above indicators can be used to inform a narrative around route performance and the factors which contribute towards cancellations and late running, e.g., deployment of a particular vessel or delayed turnarounds in peak summer etc.

Route carryings and capacity utilisation

Carryings

In order to provide context for the capacity utilisation analysis, there is benefit in setting out the aggregate trend for each route in terms of carryings – this should be built-up from published data sources such as Scottish Transport Statistics and

sailing-by-sailing data over a circa ten-year period. The following indicators have been developed in relation to carryings, with the required data shown in italics below:

- How have passenger and vehicle carryings changed over time?
  - 10-year time series (a longer time-series could be used where appropriate, for example where a new vessel was introduced at or just before the start of the 10-year period).
  - Presented in absolute terms and indexed to e.g., 2013.
  - For routes on the CHFS network, a statement of the year in which Road Equivalent Tariff was introduced should be provided.
- How have coach and commercial vehicle (CV) carryings (absolute numbers and lane metres) changed over time?
  - 10-year time series (a longer time series could be used where appropriate).
  - Presented in absolute terms and indexed to e.g., 2013.
  - Ideally these data would also disaggregate motorhomes – some CFL datasets do provide this and should be obtained if possible.
- How do passenger and car carryings vary across the year?
  - Monthly carryings statistics for the most recent year.
  - Ratio of 'deep' winter (i.e., November to February inclusive) to peak summer (i.e., July and August) carryings for cars, CVs and coaches.
- How do passenger and car carryings vary by day of the week?
  - Sailing-by-sailing data for the most recent calendar year used to calculate % travel by day of the week.
  - Carryings should be shown separately for each direction to pick-up peak travel days.
  - Ratio of vehicles to passengers.

Capacity utilisation

The ability to secure a vehicle booking (and cabin booking on SNF) on the ferry is an issue of primary concern for many island residents and businesses. The passenger certificate of most vessels means that passenger capacity is rarely a problem on most routes, although there are isolated sailings which are fully booked. It is therefore important that detailed analysis of vehicle-deck capacity utilisation is

undertaken (analysis of passenger utilisation can be undertaken where it adds value).

That said, the analysis undertaken needs to be proportionate to the extent of the potential problem – on some routes, vehicle-deck capacity will:

- Rarely, if ever, be a problem.
- Be concentrated in a specific season – on most routes, this will be in summer but the reduction in services in the winter timetable, vessel redeployment during drydock periods or winter operating restrictions does cause capacity issues on some routes.
- Be concentrated on a specific sailing or day.
- Be a problem on most sailings.

Vehicle-deck utilisation

Vehicle-deck utilisation is the main area of interest from a capacity perspective, as it is the component of capacity which is most frequently under pressure on ferry services throughout Scotland. Ideally, the analysis would be split by periods of:

- Normal timetabled operations.
- Disruption (requiring a cross-reference with the performance data introduced above).

However, vehicle deck utilisation is currently difficult to calculate precisely. Note, on the Clyde and Hebrides network, outputs from the new booking system – Ar Turas – may simplify the process of calculating vehicle deck utilisation. If this is the case, this guidance paper will be updated at the appropriate juncture. The current data are complex and inexact, as e.g., on the CHFS network:

- Reported carryings data records only ‘cars’ plus CVs / CV lane metres and coaches / coach lane metres - ‘cars’ includes vans, some campervans, trailers, caravans etc, so ‘Car lane metres (LM)’ are not known and have to be estimated.
- Wider vehicles can straddle two lanes, leading to dead space on the vehicle deck. A sailing may therefore appear to have deck space from an LM perspective, but this deck space cannot be used.
- Deployment or otherwise of mezzanine decks affects total lane metre capacity and is not systematically recorded – this can sometimes be inferred from the data though.

- Report vessel carrying capacity has been eroded as vehicles get larger.
- Whilst a diminishing problem as vessels are gradually replaced, vessel deadweight limitations can also be an issue. In such instances, the vehicle deck may not be full in terms of LM usage but, because a weight threshold has been reached, no other vehicles can be carried.
- Attempted but failed bookings, stand-by lists etc. are not systematically recorded so any suppressed demand is not known.

Acknowledging the above caveats, it is possible to build-up analysis of estimated vehicle deck utilisation (load factors) from sailing-by-sailing data. The following indicators have been developed in relation to carryings, with the required data shown in italics below:

- How much capacity is there across the year?
  - Aggregate figures showing the proportion of sailings within set load factor bandings of <25%, 25%-50%, 50%-75%, 75%-90%, >90% across the year, by season etc. This can be for all sailings or by individual sailing (e.g., the weekday 07:00 departure from Stornoway).
  - Development of a 'loadings calendar' (or equivalent) showing load factors for each day of the year (within set bandings of <25%, 25%-50%, 50%-75%, 75%-90%, >90%) by direction for every day of the year. These can be set up to show maximum, mean, median or total daily load factors or load factors on any specific sailing and can be tailored to the route in question.
  - This can be for the most recent calendar year or for a longer time series, as appropriate for the route in question.
- How often is capacity a problem?
  - Development of 'box and whisker' load factor charts – these can be by month, season, week, day and / or sailing.
  - This can be for the most recent calendar year or for a longer time series, as appropriate for the route in question.

Passenger utilisation

Passenger utilisation is fairly straightforward to calculate – i.e., it is the passenger carryings on any individual sailing as a proportion of the vessel's passenger certification and / or maximum passenger capacity for that sailing where variable passenger certificates are used. Equivalent indicators to those developed for vehicle

deck utilisation could be developed for passenger utilisation. However, in the interests of proportionality, it is recommended that effort is targeted at routes and / or individual sailings where this is understood to be a problem, which are currently relatively few and far between.

Cabin utilisation

Equivalent analysis could also be undertaken with regards to cabin and sleeping pod utilisation on SNF sailings. It should though be noted that the analysis will show the number of cabins booked as a proportion of the total, which is one measure of utilisation. However, it is common on SNF services for the cabins themselves to be under-utilised (e.g., a four-berth inside cabin booked by a single occupant) and the data will not readily capture this, although the discontinuation of shared cabins makes this less of an issue than it once was.

The output of this step will be a clear set of current route performance metrics which will provide some quantification of how well the service is meeting the needs of the island in terms of reliability, punctuality and the ability to travel with a vehicle and / or secure sole occupancy accommodation when travelling on SNF.

Step 4: Narrative and indicators around travel by island residents, visitors and the island supply-chain

Step 4 is the first step in the process which focuses specifically on the travel needs of each community, although it should be noted that these are not defined in a formulaic way. Whilst Steps 1-3 develop comparable indicators across all routes, this step must consider the particulars of each community individually. This section sets out some of the issues that should be considered in relation to each segment of demand. Potential indicators are provided where appropriate but these will not tell the full story and must be supplemented by proportionate research on each community.

It is highly recommended that at least some primary research is carried out to understand resident and potentially visitor travel to and from an island. Whilst the type and extent of this research will be dependent on available information and data, an understanding of basic resident travel behaviour through an online survey should be considered an absolute minimum requirement.

Island Context

To provide context and inform the potential island drivers of demand for ferry travel, the key features of the community in question should be set out / mapped, including provision for:

- Delivery of the various forms of health and social care services (e.g., health visitors / nurse / GP / cottage hospital / general hospital / dentist etc).
- Primary, Secondary and Tertiary Education.
- Retail: food and non-food.
- Fuel: petrol, diesel, electric vehicle charge points etc.
- Personal services: e.g., banking, post office etc.
- Leisure: e.g., swimming pool, cinema etc.
- Key industries, particularly those which place a significant demand on the ferry service (e.g., manufacturing and construction).
- Any other service of relevance to the island in question, e.g., veterinary practice, Council offices, utilities, trades etc.

This can be done through a combination of desk-based research and any primary research or stakeholder engagement undertaken.

The availability of services and opportunities on-island is largely shaped by the size of the permanent island population and the proximity (or otherwise) of such services on the 'mainland' (which in some cases will be another island). The way in which people access services will be combination of:

- (a) On island – from a provider / supplier permanently based there.
- (b) On island – from a provider / supplier travelling to the island, or delivered to the island .
- (c) Off-island travel – by ferry.
- (d) Off-island travel – by air.

For each service on each island, the means by which these are delivered / accessed should be established. Where services are only provided off-island, the location of these should be noted and supplemented by a commentary on travel options and journey times.

There is also benefit in reviewing the relevant Local Development Plan and / or engaging with the local authority / Community Planning Partnerships, Highlands and Islands Enterprise and island stakeholders (including haulage firms, developers, trade bodies etc) to understand any forthcoming developments or projects that would have a significant bearing on the ferry service, e.g., windfarm construction, new school or hospital projects etc.

Ferry Service Role(s)

Any island's relationship with its ferry service will be largely dictated by a number of factors as set out below in terms of the ferry service role(s). For each community, these should be considered in turn in a narrative, supported by quantitative indicators where these can be developed and are meaningful. The below highlights the different roles played by an island ferry service.

The 'needs' of island residents to travel for regular, day-to-day activities, such as commuting, education, shopping etc:

- Islands with larger populations naturally host a greater range of public services and other services (i.e., they are largely self-contained). In the largest islands, there will therefore be very low ferry travel volumes for day-to-day purposes.
- Where islands have lower populations, short crossing times and where their mainland landfall is or is near to a town of some significance / a transport hub, there will be higher levels of day-to-day travel, including potentially commuting, as the services offered on the mainland are less likely to be provided on-island.
- It is not possible to make a meaningful day trip to the mainland from some islands. In these cases, very few trips will be made for day-to-day purposes, or a range of travel purposes will be combined in a small number of less frequent trips incorporating one or more overnight stays.
- Where crossing times are short, and islands are connected to centres of population / commerce, there may be a case to run services into the evening to allow island residents to better access these services.

The 'needs' of island residents to travel for more occasional activities, e.g., visiting friends and relatives:

- For more self-contained islands, holiday, leisure and visiting friends and relatives (VFR) journeys will form the majority of trips made. This will often coincide with the demand for tourism travel to the island. There will evidently be marked summer / winter variation here.

- In many cases, ‘chained trips’ will be common, where an island resident will undertake multiple activities on a single trip.
- For islands with higher levels of ferry travel for day-to-day use, these journeys will form a far lower proportion of travel.
- Any island air service will also be used for these trips by some people although this may be cost prohibitive for others.

The island supply-chain arrangements for inbound supplies and the export of goods:

- Larger islands with a full range of facilities will require a retail and public sector supply-chain (e.g., Lewis), like any bigger town.
- Less populous islands will have more informal supply chains or will see individuals travelling to the mainland themselves for goods and services.
- Islands with very low populations and long crossing times which preclude day-to-day travel will see some services delivered by the service provider travelling to the island for a number of days per month (particularly where there is an air service).
- Some islands will import more raw materials than others to supply indigenous industry, e.g., Islay.
- Some islands will have a higher ‘export intensity’ of physical goods and products than others, e.g., Orkney and Shetland.

The volume and nature of tourism to the island:

- Tourism levels vary widely across the network.
- Those with short crossing times and close to centres of population or tourism will see greater numbers of day-trip visits (e.g., Bute, Mull etc). There may be a case to run services into the evening to facilitate the day-tripper market (as happens on e.g., Cumbrae).
- Large numbers of day-trippers associated with ‘weather peaks’ may inhibit travel by residents, a particularly common feature on the Firth of Clyde routes.
- A day-trip to some islands is not possible (other than by air) so most ferry-based tourism will involve an overnight stay.

As part of the strategic network for through traffic**:**

- Some routes act as a ‘through’ route in terms of the wider road network rather than as a single in-out access to an island or peninsula, e.g., Tarbert (Loch Fyne) – Portavadie.

- For an island where two ferry crossings are required to reach the Scottish mainland, e.g., Jura – Port Askaig – Kennacraig.

Potential areas of research (and where appropriate, potential indicators) to inform these ferry 'service roles' are set out below. It should be noted that the potential indicators set out should not be prescriptively applied but are intended to guide the type of analysis that could be undertaken depending on the nature of the community in question.

Island resident regular day-to-day travel

Regular travel undertaken by island residents will typically comprise:

- Part-day journeys, typically for leisure, shopping, personal business (including health), sport, visiting friends and relatives – the extent of this will depend on provision on-island (which will be set out above).
- Longer / full-day journeys, typically for employment and education.
    - Where an island is within commuting distance of a major employment or tertiary education centre, it is reasonable to expect the ferry service to facilitate daily 09:00-17:00 commuting. There is however a maximum commuting time beyond which people will not typically regularly travel.

The commentary in this section should draw upon: travel behaviour research; the 'island context' set out earlier in this section; economic and demographic data where available; and carryings data as a means of understanding the scale and nature of regular travel.

Potential Indicators

- The number of jobs within say 60 or 90 minutes drive and public transport) of an island port (including any check-in time) would be an indicator of the potential for commuting. In Scotland in 2019, 91% of commuting trips were less than 60 minutes and 97% were less than 90 minutes (DfT Table TSGB0110b, derived from Labour Force Survey). If this is a significant number and the number of jobs on-island is low, then this would indicate the potential for viable commuting. BRES data can be used to inform this, with the caveat that this reports workplace jobs at datazone level, which can be a coarse measure in rural areas.
- A 'regular travel requirement' indicator could be developed based on (i) the range of day-to-day services and other services available on-island and (if available) (ii)

the percentage of ferry users who make at least say three return ferry journeys per week.

Evening Services

On shorter routes, the main decision point is whether the route is operated on the basis of a single crew day (Service Levels A, C and E identified in 'Step 1') or uses a different crewing model to extend services into the evening. Islands with short journey times to population centres may merit evening services for example, allowing them to access the evening social / sporting economy there (potentially also providing an economic benefit to these centres without displacement from the island community (assuming no similar facilities exist there). Conversely the withdrawal of evening services could negatively affect the town's evening economy.

Potential Indicator

- For relevant island communities, it may be appropriate to benchmark the island's ferry service against the level of public transport connectivity (time of last bus, journey times, fares etc) provided for mainland settlements a comparable distance away from the town in question to establish the degree to which the island is disadvantaged in terms of access to the evening economy.

Island resident more occasional travel

As crossing times increase, island residents' use of the ferry will be more occasional, e,g., heath trips; visiting friends and family; sport (spectating / participating); holidays; shopping trips for major, occasional purchases; business trips; and commuting to e.g., offshore jobs.

With respect to more occasional travel, the 'need' here is that the ferry service should:

- Allow people to reliably (recognising that, on some occasions, weather will prevent or delay travel even with the highest quality vessel and infrastructure) make essential journeys say within plus or minus one day of their preferred travel date.
- Provide meaningful connectivity where practicable with national bus and rail connections.

The extent and purpose(s) of more occasional travel could only be defined through a survey of island residents, supported by reference to the 'island context' set out earlier in this section.

Island supply-chain

The island's population will generally dictate the level of retail and other services provided and hence the volume of goods brought in to meet the direct needs of residents. Island-based industries will have an impact on the import of raw materials and the export of products and goods. There are three main components to the island supply-chain:

- **Imports** – will reflect:
  - The scale of on-island public services (including retail).
  - Imports to support on-island industry.
- **Exports** – will reflect:
  - The presence of exporting industry.
- **Service based activity** – e.g., Scottish Water, BT Openreach etc.

The extent and importance of each of these components including narrative on the type of import / export (e.g., fuel, gas, food, newspapers, waste, livestock etc) should be explored through desk-based research, stakeholder engagement and analysis of the route carryings data (Step 3).

Potential Indicators

As the movement of freight is inelastic and essentially non-discretionary, the best indicators would be the measures of actual freight carried. The following indicators should be considered:

- Operator booking data (if available) may provide a breakdown of the balance of island export / import and the extent of empty running in one direction.
- Annual CV LM per head of population.
- Average CV LM per week.
- Ratio of cars to commercial vehicles (i.e., the absolute number of vehicles) monthly and annually.

Tourism

This will establish how important tourism is to the island and the impact of tourism on the ability of residents to travel. Day trip and overnight stayers will have different requirements – the presence of day-trippers will largely reflect crossing times, tourist attractions on-island and the proximity of major centres of population or other centres of tourism. Day trippers could potentially justify evening sailings to allow a full day on the island, which would benefit the evening economy.

For some islands, the ferry service acts as a 'cap' on car-based tourism numbers and the number of cars going to the island closely mirrors the number of cars leaving the island over an in-season week. This will be heavily influenced by weekend ferry services coinciding with established holiday changeover patterns. Car-based tourism is typically a significant proportion of tourism in many islands given the dispersed nature of self-catering accommodation in particular and the need to carry families, pets, luggage, outdoor equipment etc.

There has been a significant increase in tourists travelling in motorhomes and campervans in recent years in both owned and hired vehicles. These vehicles can take up a significant volume of deck space.

Whilst the cap imposed by ferry capacity could be seen as an effective barrier against 'over-tourism', particularly with respect to island road infrastructure, it may also be seen as an inhibitor by the local tourism sector. The island's tourism offer (including accommodation) will generally reflect this 'cap'.

With respect to tourism, the 'need' here is that the ferry service is:

- Reliable enough so that tourism is not deterred.
- Potentially expanded to facilitate more sustainable / higher levels of tourism.
    - This could be through increased frequency, deployment of additional or larger vessels at peak periods (either through cascades within the existing fleet or the introduction of new vessels over time) or through improved public transport links.

It should be noted that data on tourism volumes in Scotland, in general, and tourism in the islands in particular, is currently very poor.

Potential indicators

- Ratio of (i) shoulder (April-June, September, October) and (ii) peak (July, August), to Winter (November to March) car and passenger carryings plus equivalent data for the relevant airport if available.
    - High ratios indicate high levels of tourism, although these figures do conflate resident and visitor holiday travel
- Recording of motorhome / campervan carryings where the data allows this.

Through Traffic

This ferry service role should be covered by narrative in relation to how the ferry facilitates through traffic, the journey time savings offered, resilience benefits etc.

Output of Step 4

The output of 'Step 4' should be a clearly elaborated statement of current community travel needs, informed by cross-references to Steps 1-3 and the indicators where this is appropriate. This should combine the insights gained from the operator data, desk-based research and any primary research to provide a sense of how the community functions and the role of ferry (and air) services therein.

Step 5: Gap analysis

This step draws together Steps 1-3 (which consider how ferry services are supplied, used and perform) with Step 4 (which sets out community needs). The objective here is to determine whether there is a misalignment between the needs of the community and the ferry service(s) provided – i.e., a 'gap'. All routes serving an island should be considered in the CNA. Indeed, in cases where there are dependencies or complementarities between routes, there would be value in undertaking a mini-network based CNA rather than analysing a given island in isolation. It is again important to emphasise that this cannot be a formulaic exercise but should be based on the specific needs of each community and the transport problems that they face – this is consistent with the STAG guidance.

Given the significant variation in the scale and uses of different routes across the Scottish ferry networks, the identification of problems (or 'gaps') at the route level requires a systematic approach which:

- Considers each element of the service / connectivity to ensure that all relevant 'gaps' have been identified.

- In order to provide a focus for future option generation, undertakes a predominantly qualitative assessment of the relative magnitude of each problem (as evidenced by the data and any consultation that has been undertaken – i.e., the outputs from Step 4).

The following assessment scale will be used when identifying the extent of the problem / 'gap':

- Neutral
- Minor problem / gap
- Moderate problem / gap
- Major problem / gap

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This step is predominantly focused on the service rather than infrastructure and operational issues, although the service is obviously defined by these factors to some degree. Using the outputs from Steps 1-4, the gap analysis should focus on three service components - connectivity, capacity and performance. For each of these 'components' several sub-components are defined and should be assessed individually to complete the gap analysis:

- Connectivity:
  - Number of operating days.
  - Length of operating day, including first and last sailing.
  - Variation in timetable by day, week and / or season.
  - Convenience of timetable (for e.g., day-trips, travelling at anti-social hours etc).
  - Frequency.
  - Onward public transport connections.
- Capacity:
  - Passenger (where appropriate).
  - Vehicle deck.
  - Sleeping accommodation (where appropriate).
- Performance:
  - Reliability.

- Punctuality.

Having undertaken this analysis:

- Where one or more 'gaps' are identified (e.g., poor reliability, lack of capacity etc or indeed over-provision of services etc). these should be identified and progressed to Step 6.
- Where no evidenced 'gaps' are identified, no further action is required at this stage – the route would thereafter be considered as part of the wider monitoring of network performance.

Step 6: Option generation and appraisal / business case scoping

This final step in the process is concerned with addressing gaps in service provision (under or over-provision) through generating options and scoping the level of proportionate appraisal / business case development that would be required to progress these options. In some cases, an improvement could be delivered through the bi-annual timetable setting process or a simple single stage business case where a small investment is required. Other service changes may require a more detailed appraisal or programme or project business case (e.g., a major service increase or reduction; a new vessel etc). This will have to be determined on a case-by-case basis in each CNA.

The option generation should be split into revenue and capital measures, with the approach adopted for each set out below.

Option Generation

Revenue measures

Revenue measures could be used to address identified gaps with respect to connectivity.

The following potential 'gaps' exist from a connectivity perspective and should be considered for both the summer and winter timetable periods (note that, for each of the below 'gaps', the opposite could also be true in the event of 'over-provision' being identified – e.g., the operating day is too long):

- The service operates on too few days.
- The operating day is too short.

- The first sailing of the day is too late.
- The last sailing of the day is too early.
- The service is not frequent enough.
- Different timetables operate on different days / weeks etc.
- The timetable is inconvenient / does not support socially or economically beneficial travel.

Whilst not connectivity issues *per se*, the following 'gaps' can be a product of the level of connectivity (and in particular frequency) offered:

- Insufficient (or excessive) passenger, vehicle or accommodation capacity.
- Poor punctuality, where there is evidence that delays are caused by extended vessel turnaround due to high-capacity utilisation (primarily on the vehicle deck).
- Poor / no integration with onward public transport connections.

Step 1 of the process defined 'Route Service Levels' based on the number of vessels operating on a route and how these vessels are crewed. Having allocated a route to the appropriate level, the option generation and development should therefore identify:

- Potential variations within the levels, where appropriate.
- Whether there is an evidence-based case to progress through one or more additional 'levels' (up or down).

For each option, an indication of the impact on the following should be established:

- Number of vessels.
    - As new vessels enter the fleet, there may periodically be opportunities to increase frequency through cascading vessels to a route without significant capital expenditure – such opportunities are however irregular.
- Number of crew shifts required and associated crew complement.
- Qualitative description of the change in operating costs and carbon emissions
- Number of connections per day / week.
- Length of operating day.

With respect to potential over-provision, the only realistic available indicator of over-provision is low usage on successive sailings, particularly on the same day, i.e., a revealed preference that the sailings are perhaps unnecessary.

Capital measures

Whilst 'gaps' in terms of capacity could potentially be addressed through a change in 'Route Service Level' (i.e., a revenue funded measure which provides more capacity through additional sailings), it may also become evident that the 'gap' can only be closed through a capital investment in vessels and / or associated infrastructure. Where this is the case (and significant investment is implied), the CNA should not attempt to resolve this but should scope the necessary business case work (incorporating STAG) to progress a solution.

It is important to note that the case for any investment in new vessels to address capacity or reliability issues should align with the Transport Scotland Sustainable Investment Hierarchy established in the National Transport Strategy 2 (see image inset), which is a key part of STAG. This hierarchy establishes a structured set of steps to be followed when planning investment in transport provision, with 'targeted infrastructure improvements' the final step once all other options have been exhausted.

Options Summary

At the conclusion of Step 6, a clear summary of options developed should be set-out, together with a recommendation as to how these should be progressed within the context of Transport Scotland's appraisal and business case guidance. This would either take the form of the recommendation to develop:

- For minor operational changes such as small timetable amendments, an internal case for approval within Transport Scotland
- For proposals focused on primarily revenue measures only, a single stage business case based on a light touch STAG appraisal. The project business case consists of three stages – Strategic, Outline and Final / Full. For relatively low-cost investments for which firm prices are available, it is possible to prepare a single stage business case – this is known as a Business Justification Case (BJC).
- For larger interventions where capital investment is required, a full three stage business case incorporating a STAG approach

It should be noted that any business case should look beyond ferry services alone and consider options in relation to road (for peninsular communities), air services and fixed links.

When should communities and stakeholders be engaged?

In addition to any primary research and stakeholder engagement undertaken as part of the CNA, there are two gateway points in the CNA at which communities and stakeholders should be engaged – at the end of:

- Step 4, to confirm that the understanding of the current operational situation and community needs are well understood.
- Step 6, to present the options / proposed next steps and seek feedback from communities.

The type and scale of engagement should be proportionate and agreed with Transport Scotland for each CNA, but could take the form of:

- Face-to-face public drop-in sessions.
- One-to-one stakeholder interviews.
- Online engagement using a platform such as ArcStory Map, with an embedded survey.

Reporting

The CNA should conclude with a succinct report setting out all six steps of the process and any actions emerging from it. This report should be written such that it can inform much of the Strategic Dimension and the early sections of the (Socio) - Economic Dimension of any later business case.

Routes Monitoring and Investment Planning

Overview

Whilst the desire is for the CNA process to be undertaken at the island level, it is essential that the outcomes of each CNA is reconciled into a network-wide or indeed national 'Routes Monitoring and Investment Planning' process. We have identified below a number of steps that could be taken to provide Transport Scotland with value for money in undertaking the CNA process and which could be used to inform future routes monitoring and investment planning.

Combining Steps 1-3 of the CNA

Taken together, the outputs of Steps 1-3 of the CNA will provide a benchmark set of route supply and demand indicators. These can be used to support the analysis of need and the generation, development and appraisal of options for each island, as well as wider network planning. They would also be of value in bespoke business cases such as that recently prepared for the redevelopment of Port Ellen, as well as for the operator.

Reflecting the above, these steps should ideally be undertaken for all routes in a single tranche of work, with an annual update programme. This could be presented in an e.g., centrally held PowerBI database. This approach would require some up-front time and effort to establish the database architecture but would considerably simplify regular updates and would also negate the need for such work to be undertaken on individual projects (including individual CNAs). It would also readily inform the evaluation of new investments.

This database could then be drawn on by individual CNAs and for general network planning.

Investment Planning Pipeline

An outline of the potential process to develop an 'Investment Planning Pipeline' is set out below and could be further developed if desired:

- Undertake baseline CNA for all routes as set out above (steps 1-6).
- Categorise routes into red / amber / green in terms of 'potential need for investment' from a revenue-based option perspective.

- Undertake a similar red / amber / green review from a capital and asset life expiry (infrastructure and vessels) perspective and align with the route service level.
- Develop, prioritise and agree an Appraisal / Business Investment Pipeline.
- For the highest priority items in the pipeline:
    - Undertake a brief scoping exercise to consider, agree and set out the next steps (which should be informed by each CNA).
    - For incremental changes, conclude a single stage business case (if required) and implement the change.
    - For more significant changes:
        - Undertake a 'Programme Strategic Business Case (SBC)' (broadly STAG) which considers both infrastructure and the service – this could cover a single route or a mini-network where this is more appropriate.
        - Undertake a 'Programme Outline Business Case (OBC)' to determine and agree the preferred package of measures (still at a relatively high level).
        - Undertake more detailed Project OBCs for individual infrastructure investment (e.g., each harbour, vessel), drawing material and an unambiguous and uncontested rationale directly from the Programme SBC and OBC.
        - Undertake Project FBCs for each infrastructure investment once tendered prices have been received.

Routes Monitoring

The Pipeline should ideally be informed by regular route-based monitoring, as follows:

- Undertake Steps 1-3 of the CNA, ideally annually or at the end of the summer and winter timetable periods.
- Review the red / amber / green ratings from a service perspective, reflecting any changes over the previous period (whether driven by background change or new investment).
- Review the red / amber / green ratings from an infrastructure perspective.
- Review the Investment Planning Pipeline based on the above steps and any feedback obtained from communities through, for example, Ferry User Groups.