A BETTER FUTURE
FOR
SCOTLAND'S WEST COAST FERRIES

A response to the Scottish Government's
Islands Connectivity Plan

By

PEDERSEN
CONSULTING

8 Drummond Road, Inverness, IV2 4NA Scotland
Telephone 01463 241107, Mobile 07753 882199
e-mail roy@pedersen.org.uk

Acknowledgemens

Many people, too numerous to mention individually, have contributed over several years to what has evolved into the content of this report. To these, Pedersen Consulting wishes to give grateful thanks for the insights they have provided both in the needs and aspirations of our island communities and regarding the economics, policies, practices and management of ferry systems worldwide.

Most recently, however, a special appreciation needs to be recorded for the assistance given by an informal group of associates who have the best interests of our island communities at heart and who wish to see a better and more cost-effective future for our west coast ferry services than that currently in prospect. They bring a wide range of professional expertise including those of the naval architect, shipbuilder, ship manager, ship broker, maritime economist, community development specialist and much else. Some prefer not to be named, but of those I can name, an enormous debt of gratitude is owed to Professor Alfred Baird, Stuart Ballantyne, Arthur Blue, Bob Haddow, Joe Read and Robert Tryhall for their insightful help in identifying and researching key issues that have enabled coverage to be as well rounded as reasonably possible.

It is our sincere hope that these efforts will bring about the kind of radical change in Government policy that is so desperately needed to create a much more responsive and efficient state supported ferry provision than hitherto, so to enable our island communities to thrive.

Roy Pedersen
Inverness
March 2024

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Contents

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This submission is in response to Transport Scotland's draft public consultation on its Islands Connectivity Plan (ICP). It addresses the issues raised, identifies current deficiencies and sets out better solutions for the future, with regard to state funded Clyde and Hebrides ferry services.

Persisting with the current and manifestly dysfunctional policy of the state procuring large, inefficient ships, manned by large live-aboard crew complements, operating on longer routes than necessary, running to overly complex labour-intensive terminals, will increase the already high financial cost to the Scottish taxpayer. This will reduce funding that could otherwise go to financially strapped health and education services while diminishing the well-being of the island communities served.

If, on the other hand, policy is changed as recommended in this submission to adopt the more cost-effective and 'greener' practices of simpler ferries, with less numerous live-ashore crew complements, operating where feasible on shorter crossings; service frequencies, capacity and revenue will be much enhanced, costs greatly reduced and island communities' social and economic well-being improved.

To achieve the required shift in strategy, a fundamental rethink of ferry policy and practice is required as spelled out in this submission. Implementing this different way of doing things, which follows best international and domestic practice, will necessitate strong ministerial direction accompanied by a change in management structure and in personnel to players, familiar with best practice and motivated by best value, to take the necessary action.

The prize will be greatly improved connectivity to enable our island and peninsular communities to flourish, while freeing up around £100 million operating subvention annually of precious taxpayer funds to support Scotland's struggling public services. Failure to grasp this opportunity will inevitably result ever more public money being poured into a dysfunctional system while our island communities' decline.

BACKGROUND

It is sometimes assumed by the public that Caledonian Macbrayne, shortened to CalMac, is the be all and end all of Scottish ferry provision. There are in fact ten all-year vehicle ferry operators providing scheduled passenger and vehicular services in Scottish waters. While CalMac is the largest in terms of fleet size and number of routes, the others collectively carry some 60% of the total traffic.

Of the ten operators, four are local authorities that underwrite any operational deficit (collectively around £36million per annum), four are commercial private operators that operate at a profit, pay taxes and are unfunded by the public purse, one (Serco Northlink) is a commercial management company funded to operate ferries on behalf of the Scottish Government, and then there is the state-owned David MacBrayne Group (DMG) which owns the subsidiary operating company CalMac Ferries, also funded to operate ferries on behalf of the Scottish Government. The CalMac and Northlink vessels and some of the terminals to which they operate are owned by state owned Caledonian Maritime Assets Ltd. (CMAL) and leased to the operators – a cumbersome arrangement unique to Scotland. There are in addition a seasonal private local authority, funded and a community owned vehicle ferry in operation.

In short, Scottish vehicle ferry provision is highly varied in both levels of service and productivity. On both counts the CMAL/DMG/CalMac system figures very poorly in terms of high cost to the taxpayer and indifferent quality of service. The claim that this state of affairs has damaged the economies and social well-being of a number the communities that the CalMac/CMAL system purports to serve is difficult to deny.

To understand how this has come about, it is necessary to consider the historical context.

THE MALAISE AND HOW IT DEVELOPED

The combination of inconvenient schedules, capacity constraints, unreliability and very high levels of public subvention to support CalMac's operation is symptomatic of a long-standing malaise that successive governments over several decades have failed to address, or have actually exacerbated. How this has come about is a somewhat complex story, but it boils down to a clash between two conflicting philosophies on the provision of maritime links to and from our island and remote peninsular communities. This conflict of ideas can be said to have come to a head in the years following the publication of the report of the Highland Transport Board in 1967[1].

The Highland Transport Board

The report recommended the proven Norwegian concept of connecting island and isolated mainland communities with the national road network by means of simple and economical "drive-through" vehicle ferries with minimal crewing, operating on the shortest feasible crossings, resulting thereby in low operating costs, high frequency of service from early till late at low fares, enabling ferries to perform as closely as possible to bridges. In this way, the economies and social well-being of island and remote communities is boosted.

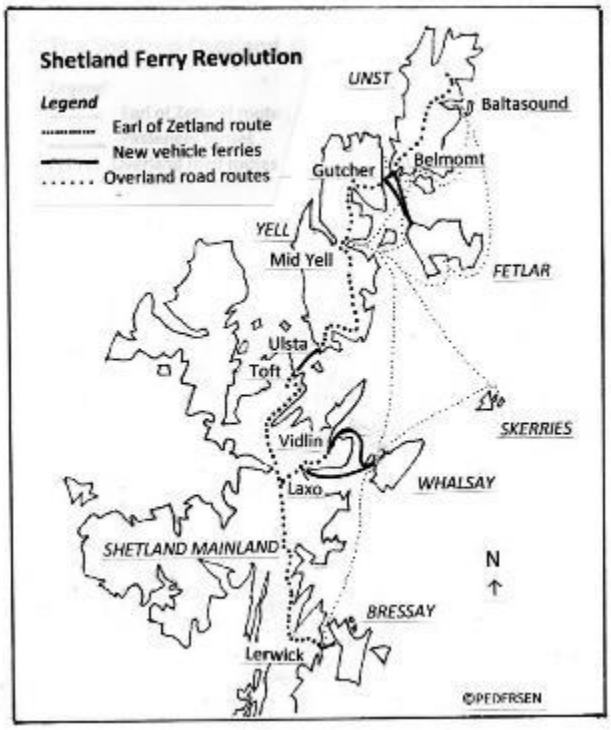
In Scotland the rapid post-war growth in road motor transport had led to the partial replacement of traditional derrick loading of vehicles by specialised side-loading sea-going car ferries equipped with hoists to enable vehicles to drive on and off at all states of the tide at conventional piers. This brought a significant improvement in capacity, but with a relatively slow loading and discharge process. A typical Norwegian drive-through ferry would have a live ashore crew of between six and ten and operate to unmanned "lock-on" linkspans, whereas a Scottish car ferry of equivalent size typically had a live-aboard crew of 20 to 30 and also required shore personnel to berth and unberth the vessel. The difference in capital and operating cost per unit carried (i.e. productivity) was marked, as illustrated in the Norwegian/Scottish comparison below:

Norway 1954 – Gudvangen 30 cars, 10 crew
Drive-through at 'lock-on' linkspans

Scotland 1954 – Arran, 30 cars, 20 crew
Side-loading at conventional piers by hoist

[1] Report of the Highland Transport Board – Highland Transport Services, DAFS, HMSO, 1967

Shetland Revolution



Around this time, the derrick-loading mail ship *Earl of Zetland*, operating thrice weekly between Lerwick and Shetland's North Isles, was due for replacement. The then Scottish Office offered to finance a replacement side-loading car ferry, of the *Arran* class, operating to a similar schedule as that of the *Earl*, which would as formerly have necessitated a two-night stay in Lerwick for islanders travelling there for business or social purposes. Zetland County Council, however, strongly rejected this offer and, supported by Highland Transport Board, proceeded between 1972 and 1975 to create a Norwegian style fleet of simple drive-through (3 crew) ferries operating frequently from early till late to new unmanned "lock-on" terminals, to provide convenient low-cost island-hopping connections with the Shetland Mainland at any time of the day or evening. Within a year of full implementation, passenger traffic had increased nine-fold and vehicular traffic by no less than 434-fold, such was the transformational impact of the Norwegian model.

The Islay Overland

The Highland Transport Board had also recommended a similar "overland" island-hopping arrangement for Islay, Jura and Colonsay, whereby ferries of the Shetland/Norwegian type would operate on frequent short crossings between Keills on the mainland and Lagg on Jura and then between Feolin, Jura and Port Askaig, Islay, with an onward connection to Colonsay. This would have offered much increased capacity and a hitherto undreamed-of number of travel options for islanders. Failure to finance the necessary linking road upgrades, however, and pressure from David MacBrayne to retain a vehicle carrying variant of the traditional long infrequent route found favour with the Scottish Office. The Islay Overland was killed off.

Western Ferries

In 1967, however, a new company, Western Ferries, ordered new basic Norwegian style ships, constructed a new terminal at Kennacraig and in 1978 *Sound of Islay* commenced a twice daily ro-ro (roll on-roll off) ferry service to Port Askaig, Islay with a connecting shuttle ferry to Jura. Freight rates were slashed. With the introduction of the larger *Sound of Jura* in 1969, the frequency was increased to thrice daily. The new service was an immediate and profitable success, totally outclassing the MacBrayne service. By 1973, Western Ferries extended their operations by creating a short frequent Norwegian style drive through ferry

service between McInroy's Point, Renfrewshire and Hunter's Quay, Cowal. The new service was in competition with the existing Gourock – Dunoon service operated by the then newly created state owned Caledonian MacBrayne (CalMac) that had by that time converted the operation to a somewhat awkward form of ro-ro, but whereas four crew operated each of the Western Ferries ships, CalMac's *Glen Sannox* had a crew of 27.

It might have been assumed that the government of the day would have enthusiastically embraced and extended the demonstrably beneficial and cost-effective *modus operandi* of Western Ferries and Zetland County Council, soon to become Shetland Islands Council, but this was not the case. There ensued, instead a state backed campaign, in the west, to kill off efficient unsubsidised and tax paying Western Ferries by introducing a new fast vessel, *Pioneer*, on the Islay route with heavily subsidised predatory pricing. Notwithstanding the superior productivity of Western Ferries six crew *Sound of Jura* (*Pioneer* had a crew of 21), in the end Western Ferries was driven off the Islay route. The Cowal service not only survived, but went from strength to strength, to become Scotland's busiest internal ferry route, in the end seeing off the CalMac competition, by virtue of vastly superior productivity.

Caledonian MacBrayne

Created in 1973 by amalgamating Clyde and Kyle ferry services of the Caledonian Steam Packet Co. (CSPCo.) and most of the West Highland services of David MacBrayne, Caledonian MacBrayne (CalMac) was intended to be self-financing from the fare box. A small rump of "unprofitable" services remained to be operated by the subsidised David MacBrayne Ltd. All of this came under the auspices of the bus dominated Scottish Transport Group which was owned by Scottish ministers. In practice the shipping element was a take-over by the CSPCo, one of whose characteristics was secrecy and suppression of data to avoid public scrutiny.

CalMac embarked on a programme of conversion of its traditional mail ship and cargo ship operation to ro-ro, although it continued to retain the management style of a 19th century shipping company. What emerged were three distinct types of provision:

1. Short frequent crossings operated on a turn-up-and-go basis by a smaller class of vehicle ferry manned by three or four live-ashore crew. In that shore facilities are unmanned; this provision is similar to Norwegian practice. The main differences are that the vessels operate to slipways rather than lock-on linkspans and the operating hours are less than normal in Norway. Passengers and vehicles are shipped and landed over the ships' ramp. CalMac class these as "minor routes" although several are among the busiest in the CalMac network.
2. Mainly, although not exclusively, longer routes operated by large open-water formerly class IIA, now Europe class B, ROPAX vessels, manned by large live-aboard crew complements of typically around 25-30, some 40% of whom provide a range of heavily subsidised catering and retail facilities. Berthing is labour-intensive involving heaving lines, running bow and stern ropes and/or springs. The ship's ramp lowers on to the shore-operated link span to load and discharge vehicles. Passengers embark and disembark separately via the ship's side, in some cases involving cumbersome

covered walkways. CalMac class these as “major routes”, although in some cases, annual carryings are light.

3. Then there are a few atypical solutions, namely, the Small Isles service provided MV *Loch Nevis* designed to operate to both link span (at Mallaig) and slipways on the islands; Europe class C ro-ro ships operating to Rothesay, Armadale and, most recently, on a Mull supplementary service, plus the Dunoon and Kilcreggan passenger only services.

Increasing Deficits

The requirement that CalMac be self-funding was soon found to be in vain. The idea was that profitable services would cross-subsidise those that were loss making. For a time, there were nominally profitable routes, notably, Kyle – Kyeleakin, Ardrossan – Brodick and Oban – Craignure. These profits were, however, insufficient to cover the collective losses elsewhere. In fact. within two years, by 1975, a deficit of £3.25 million was posted being 32% of gross revenue. This was met by government subvention, as has been the case every year since that time, except that the level of state operating subsidy had risen inexorably by 2022 to the £157 million *per annum* and for some time there have been no profitable services. The following table, that converts past subsidy levels into the present value of the pound, illustrates the trend.

Year	Subsidy *£k*	Present value *£k*	% of revenue
1975	3,250	32,130	32%
2011	69,300	106,029	54%
2022	156,772	156,772	69%

As will be noted, there has been a massive FIVEFOLD INCREASE IN SUBSIDY IN REAL TERMS towards CalMac’s operations in the half century since the company’s formation, when one might have expected traffic growth and productivity gains to have *reduced* losses. The increase is partly explained by a number of factors:

- Prior to the tendering of the CalMac contract at the turn of the millennium, reported operating subsidy levels were fairly stable in real terms, but in fact they understated the true level of state subvention as they did not take account of generous capital grants towards the cost of new vessels
- Tendering, the creation of CMAL, and the inclusion of vessel leasing charges for the first time in 2004 as part of the costs to which the operating subsidy applied.
- Reduction of passenger and car fares with the introduction of RET (road equivalent tariff) between 2008 and 2015, which, while bringing about an increase in traffic, resulted in a decline in revenue partly aggravated by capacity constraints.

These factors, undoubtedly account for some of the increased level of state funding towards CalMac’s operation, but there are more fundamental factors in play.

Productivity Deficiency

The main reason for the disproportionate increase in state subventions to CalMac (and NorthLink) is the high cost of operating the larger "major" vessels of the fleet on the open water Europe class B routes. These ships exhibit particularly poor productivity (that is to say cost in relation to performance). This is attributable to a number of well-publicised factors that are ignored in the ICP, but are summarised as follows:

a) The large monohull major vessels, even those currently building, are of inefficient old-fashioned, high displacement, fuel thirsty design
b) Several routes are longer and less frequent than they could be, resulting in high operating cost, limited capacity and reduced connectivity
c) The ratio of passenger capacity to cars on these vessels is usually around seven to one when three or four to one would normally be sufficient to cater for demand, even for exceptional peaks. This means that passenger accommodation is generally, voluminous, often spread over two decks rather than one which increases gross tonnage, windage and reduces deadweight (payload). This adds to capital cost, port charges, as well as the complexity of evacuation in emergency
d) Unutilised passenger capacity increases crew requirement, exacerbated by the provision of full meal catering even on several relatively short routes which actually abstracts from the income of land-based businesses that could offer better unsubsidised services. Such large crew complements (typically around 25 to 30, instead of 10 to 14 that would normally be adequate, with two and a half crews per ship, account collectively for very high costs.
e) Crew on the "major" vessels are required to live on-board even where the route is relatively short and the ship ties up at night, such that on-board accommodation, effectively a fairly lavish hotel, further increases superstructure size, hence vessel displacement, which again increases capital and operating costs and can impede vessel manoeuvrability in adverse weather due to the windage created by excessive top hamper.
f) In the event of breakdown, heavy oil engines can be difficult of access, expensive and time-consuming to repair, due to large superstructure,.
g) Productivity is further diminished by the prevailing labour-intensive design and operation of terminals used by these vessels, which is costly in terms of capital and running costs and slows berthing.

For all the high cost of operating these vessels, their service frequencies tend to be low and capacities constrained while in a number of cases inconvenient schedules tend to diminish community benefit. All this flies in the face of the principles set out in the report of the Highland Transport Board which stressed the desirability of simple and economical ferries with minimal crewing, operating on the shortest feasible crossings as demonstrated in Scotland by Western Ferries and Shetland Islands Council and more recently Pentland Ferries, which see later below.

The ICP notes correctly that, "costs of providing ferry services are high and rising – this is creating an affordability challenge for both the Scottish Government and local authorities. We are in a period of sustained financial challenge, and it will be unsustainable to continue to increase funding of ferry services at the same rate as has been done in recent years. The successful implementation of this Islands Connectivity Plan can only be achieved by establishing a secure and sustainable long-term financial foundation for our ferry networks."

This report attempts to demonstrate how the Scottish Government's financial concerns in this regard can be addressed by creating better services through much more cost-effective practices and policies, better ship designs and improved management of design. Some recent difficulties are addressed first.

Blunders, Obfuscation and Misinformation

It is clear that over the last half century and more a series of wrong-headed decisions by civil servants, officials of CalMac and its predecessors and, in the last twenty years in particular, CMAL, endorsed by ministers of all political persuasions, have been responsible for the dire condition of Scotland's state funded ferry services today. The above-mentioned deliberate undermining of Western Ferries efficient and profitable Islay operation, in favour of a wasteful state-owned alternative, is but one early example. The question emerges: were these unfortunate decisions the result of ignorance, incompetence or something more insidious? A few examples of such blunders over the last decade or so illustrate the problem.

The Ferguson Fiasco

The fiasco of unprecedented delays and cost over-runs in building hulls 801 and 802, now *Glen Sannox* and *Glen Rosa*, at Ferguson Marine (Port Glasgow) Limited are well documented. When terminal modifications required to accommodate these out-of-scale vessels are added in, the total cost for the project is estimated at not far short of half a billion pounds.

As conceived, the Ferguson vessels were supposedly models for carrying forward the Vessel Replacement and Deployment Plan (VRDP), however their specifications proved to be barriers to these very aims from inception. If the design and its ramifications for termianl re-configuration were rolled out, to replace the outdated ferries across Scotland, the capital and operating costs would have been astronomical and all for minimal if any improvement in connectivity. There seems little doubt that entrusting design to CMAL in this and other cases, as will be illustrated below, has been improvident, particularly as opportunities have been missed along the way to have secured far more cost-effective solutions, as later described.

Even before the first steel was cut, it was pointed out to officials by the independent members of the then Expert Ferry Group that these ships were ill-suited to the stations to which they were to be allocated. *Glen Rosa*'s specified capacity for 1,000 passengers (now reduced to 852) and 34 crew for the then intended Little Minch services, on which no sailing has ever exceeded 312 passengers, would occasion incredulity, were it not actually

envisaged. In the case of the Arran service, the new £30 million Brodick terminal is untenable in moderate easterly winds of 30 or so knots, while Ardrossan Harbour, necessitating modifications estimated to be in excess of £30 million, and with a tricky tight right hand turn to access the berth, is also problematic and remains unresolved for this class of vessel due to over-size and windage caused by excessively high superstructure.

All of this could have been avoided if, in a presentation of vessel options for the Arran service, CMAL had not erroneously quoted an 98-car catamaran design proposed by Messrs Sea Transport Solutions of Queensland, Australia as being unsuitable in that she had a deadweight of only 200 tonnes, so supposedly limiting carrying capacity to just four commercial vehicles. In fact, the deadweight of this proven and robust design is 440 tonnes which is more than adequate for virtually any CalMac service and it could have been supplied within two years at a cost of around £12 million without the requirement for major terminal modification.

In other words, two such vessels could have been provided for £24 million, be more economical to operate and have superior sea-keeping, manoeuvrability and environmental qualities, at a twentieth the £500 million cost of the Fergusons vessels. Furthermore, such vessels, which are commonplace worldwide, would represent a step-change in providing much reduced capital and operational cost coupled with markedly higher performance, if adopted not only for Arran, but other stations such as Mull, Islay, etc. CalMac and especially CMAL, seem oblivious to the concept of value for money and show insufficient understanding of the usage of ship design to overcome difficulties rather than play into difficulties created by their approach to design. A comparison between the proposed catamaran and *Glen Sannox* is illustrated below:

Catamaran, 74m x 22m, 762 pax, 98 cars, 14 crew, cost £12m (Far East), £25m (Europe), power 3,800kW, speed 17 knots

***Glen Sannox*, 94m x 17m, 1,000 pax, 130 cars, 34 crew, est. cost £175m, power 5,900kW, speed 16.5 knots**

This whole affair smacks not only of failure to select optimum design specifications, but a reckless failure to control costs. To misapply such very large sums of public money must surely be a matter of deep concern. The question remains as to how and when those involved will be held to account?

The Pentland Firth Comparison

Perhaps the most telling 21st century comparative example of the cost effectiveness of the short crossing/minimal crewing principle in Scottish waters is to be found on the Pentland Firth. For centuries the short crossing to Orkney was across the turbulent firth from at or near John O'Groats to the nearest Orkney landfall at Burwick, South Ronaldsay with a regular oar and sail mail ferry operating thereon from 1496 until 1858 when it was superseded by a steamship service on the much longer daily return passage between Scrabster – Scapa (for Kirkwall) and Stromness. The Scrabster – Stromness route, with Scapa dropped at the outbreak of the Second World War, has been in operation to this day, currently with a twice daily return vehicle ferry service operated by Serco NorthLink under contract to the Scottish Government with an annual subsidy of an estimated £10 million.

In 2001, after constructing terminals at Gills Bay (Caithness) and St Margaret's Hope (South Ronaldsay), Andrew Banks, owner of Pentland Ferries, commenced a profitable thrice daily return vehicle ferry service initially with second hand vessels. This was achieved without any public funding and indeed in the face of official obstruction including refusal by Orkney Islands Council to allow Pentland Ferries to use Council owned Burwick which would have offered an even shorter passage than St Margaret's Hope. In 2009 Pentland Ferries introduced the custom-built catamaran *Pentalina* on the route, designed by Messrs Sea Transport Solutions. Patronage soared, such that by 2019, Pentland Ferries, with not a penny of public funding, were carrying the majority of passengers, cars and commercial vehicles across the firth, in the face of heavily subsidised competition from NorthLink's *Hamnavoe* which was originally designed to CalMac's specification. The table below compares the characteristics and performance of the two operations.

	Hamnavoe	***Pentalina***
Build Cost	£28m	£7m
Cars	98	78
Passengers	600	350
Crew	28	11
Passage distance ml	28	15
Engine power kW	8,680	3,700
Service speed knots	16	16
Litres fuel per trip	2757	708
CO2 emissions per car space	118	34
Return trips per day (max)	3	4
Vehicle capacity per day	588	624
Annual subsidy	c£10m	Zero

It will be observed that for a quarter of the capital cost and about a third of the fuel/emissions, *Pentalina* provides more vehicular capacity and travel options on the shorter route with less than half the crew and requiring no subsidy. This performance could be improved further if access to Burwick and the shorter passage distance it offers were permitted.

While the benefit of the shorter route is manifest, *Pentalina* also demonstrates the vastly superior cost effectiveness of a well-designed medium speed catamaran compared with a traditional monohull. Monitoring of service reliability also shows the benefits of *Pentalina's* design with less superstructure, lower less windy profile, in exhibiting better reliability and sailing more often in adverse weather conditions than high-sided monohull *Hamnavoe*. With *Pentalina*'s quadruple screws and easily accessed relatively small diesel engines, downtime due to breakdown is reduced as an engine can be changed overnight.

If the principle of selecting the shortest feasible crossing and much more cost-effective catamarans were extended to other services, several tens of millions of pounds could be saved while more frequent, cheaper, faster overall journeys could be offered, providing significantly greater capacity to cater for the increased traffic so generated.

Islay

MV *Hebridean Isles* (507 pax, 68 cars, 24 crew), built in 1984, is due for replacement. A CMAL/Transport Scotland webinar presentation took place in the spring of 2021 to consider options for a proposed new Islay ferry. In practice, CMAL had already selected their preferred design without a proper use of 'costed options' when forming the requirements and with no process of 'requirement scrutiny', which resulted in a monohull with a capacity for 350 pax, 107 cars and no less than 27 live aboard crew. Why such a large crew complement on a day boat that ties up a night when *Hebridean Isles* with a larger passenger complement, had three less crew?

The table below gives a breakdown of the proposed crew list.

1. Master	15. Motorman 1
2. Chief Officer	16. Motorman 2
3. 2nd Officer	17. Chief Steward
4. 3rd Officer	18. 2nd Steward
5. Bosun	19. Chief Cook
6. Carpenter	20. 2nd Cook
7. Seaman 1	21. SCR 1
8. Seaman 2	22. SCR 2
9. Seaman 3	23. SCR 3
10. Seaman 4	24. SCR 4
11. Seaman 5	25. SCR 5
12. Chief Engineer	26. SCR 6
13. 2nd Engineer	27. SCR 7
14. 3rd Engineer	

Why the requirement for a 3rd officer, a 3rd engineer and why so many SCR (catering/retail) personnel for a two-hour crossing? This would almost seem to be the provision for a vessel working long international voyages. Railway or bus journeys of up to two or three hours are apt comparators for appropriate catering service levels and staffing.

The internationally agreed determinants of the minimum numbers required for safe manning of a vessel are: sufficient personnel to undertake safe navigation, berthing and unberthing of the vessel and its safe evacuation in emergency. As part of these duties this complement should manage the efficient loading and discharge of vehicles, embarkation and disembarkation of passengers and have a care for the safety and well-being of all on board. For an efficiently designed Class B, home trade open water ferry with a capacity in the 80 to 120 car/250 to 450 pax range, the normal safe manning complement would be within the range 10 to 14 persons and such is the typical total number of crew on ferry vessels operating on other services comparable to those operated by CalMac. Indeed, it is understood that the safe manning figure for the Islay vessels currently building is 13.

In seeking to understand the rationale behind the highly inflated crewing levels designed into these ships, beyond the normal level for vessels of the Islay ferries' capacity, one of the most puzzling aspects is the extraordinarily high muster list, which under international SOLAS rules sets out the duties of each listed member of the crew in the event of an emergency. It appears that the muster list on the Islay Class vessels is around 21, when other operators can provide this cover within the agreed safe manning levels – 13 in the case of the Islay vessels. No satisfactory explanation has been given for the proposed muster levels at twice this number.

It was noted that the proposed new vessel was deeper of draft than previous ships and that, accordingly, Kennacraig terminal would have to be dredged to accommodate her. It was then asked by participants at a webinar, why a catamaran, of shallower draft, had not been selected as an option, bearing in mind proven cost-effectiveness. Vague and tenuous reasons were offered as to why a catamaran design had been considered, but rejected.

On pursuing this after the webinar and asking for sight of the general arrangement of the catamaran that had allegedly been considered, a period of evasive answers ensued until, eventually a GA drawing appeared, apparently created after the event. The design was described by one experienced naval architect as infantile. CMAL's concept of a catamaran had a draft of no less than 5 metres, which compares with 2.8 metres for *Pentalina*'s 98 car successor *Alfred* which had been built for £14 million. Monohulls, require water ballast to keep them upright, but catamarans are inherently stable and require no water ballast which results in lower displacement, shallower draft and better fuel economy for a given deadweight. In this case, it was suspected that CMAL had tabled an immature and invalid design to discredit a catamaran option. It has puzzled observers as to why CMAL are so pointedly and stubbornly opposed to well-designed catamarans of the Sea Transport Solutions type. It has been suggested that this may be down to a conflict of personalities and to CMAL's need to defend its limited expertise in Naval Architecture and design management as evidenced by the expensive experience of 801/2. If so, it is surely highly improper that such deficiencies in defiance of the public need and unsupported by professional performance in ship design and procurement should result in needless expenditure of hundreds of millions of public pounds for an inferior product.

In view of the elderly and unreliable state of the CMAL/CalMac fleet, four new "standardized" monohulls of this Islay class were ordered from the Turkish Cemre Marin Endustri yard at around £50 million apiece. However, standardization, as recommended in the ICP, without careful formation of requirements, supported by requirement scrutiny and 'costed options' based on best international and domestic practice can merely result in repetition of the same expensive and unsatisfactory mistakes as have plagued the Scottish state-run ferry sector over the last half century. New vessels will of course be welcome in so far as they will augment the failing CalMac fleet, but how much more satisfactory it would have been if efficient catamarans had been in the mix at a fraction of the capital and operating cost.

The Lofoten Comparison

While it can be argued that many Norwegian ferry crossings are in sheltered fjords, this is by no means the case with the ferries operated by Torghatten Nord to Norway's Lofoten Islands. The passage between Bodø and the island of Moskenes (population 1,263), one of the southern Lofoten islands, takes 3 hours and 15 minutes and that to and from the isolated island of Røst (population 498), the southernmost of the Lofoten group, takes 3 hours and 45 minutes. In both cases the passage is exposed to the open Atlantic where sea states are at least as challenging as the Sea of the Hebrides and indeed more so.

A number of more or less standard type of ferries are employed on the service, of which the Norwegian MV *Landegode* is an example. These vessels are similar in size to CalMac's *Clansman* or *Hebrides* and designed for rather similar duties, but with a markedly different specification. As illustrated below:

Clansman	
Length o.a.	99 m
Beam	15.8 m
Max Draught	3.2 m
Dwt;	777 tonnes
Main engine power	8,000KW
speed	16.5 knots
Pax / cars:	638 / 90
Crew:	28

Landegode	
Length o.a.	96 m
Beam	16.97 m
Max Draught	4.2 m
Dwt;	650 tonnes
Main engine power	5,250KW
speed	16.5 knots
Pax / cars:	390 /120
Crew:	12

Bearing in mind that *Clansman*'s huge passenger capacity is NEVER utilised, *Landegode* has superior vehicle capacity for considerably less power, emissions and less than half the crew and operates to unmanned terminals. This represents a saving of some £2.5 million per annum in the wage bill alone. In approximate terms, when multiplied by the ten major ships of the CalMac fleet, if Norwegian crewing and terminal manning were applied here, the annual saving would be some £25 million. And that is before further savings that could accrue from less labour-intensive terminals and selecting shorter routes are taken into account, which see later.

Mull

The current service between Oban and Craignure (Mull) has long been inadequate on grounds of poor frequency, irregularity, unreliability, lack of capacity, poor public transport connections and a restricted operating day. A further concern is poor value for public money. The main vessel *Isle of Mull* has a capacity for 962 passengers and 65 cars and has a crew complement of 28 of whom almost half provide a catering service, considered unnecessary for a 50-minute crossing. Because of her length, the vessel is unable to berth overnight at Craignure thus in the past preventing year-round commuting between Mull and Oban. A supplementary summer service has been provided the smaller MV *Coruisk*.

When plans were announced to replace *Isle of Mull* with a *Glen Sannox* class vessel and create a terminal building of 1,500-person capacity (half the population of Mull), the Mull and Iona Ferry Committee balked at the proposal and explored alternatives. The resulting report[2] recommended a two 80 car, 400/450 pax, 10 crew catamaran clock-face hourly service from 06:00 until 21:00 (later at weekends), reduced to every two hours in winter with a single ship. Such a service, crewed by islanders living on Mull, would not only double capacity, increase patronage and revenue and would revolutionise Mulls connectivity and be provided at less cost. It was suggested that a community company take over the service, thereby relieving the Scottish government of the capital cost of new vessels. This proposal was turned down flat by ministers as it breached their policy of no de-bundling of the CalMac (CHFS) contract – an inversion of normal practice in any democracy, whereby policy reflects public needs rather than public needs being distorted to suit arbitrary policy.

An opportunity to advance the scheme for a year-round island focussed service to Oban by a much more cost-effective type of vessel without the need for major terminal reconfiguration emerged when an off-the-shelf 60 metre catamaran was identified, then building in Indonesia and available for around £10 million. With some £2 million of modifications, this 80 car, 16 knot vessel would have been ideal and compliant for year-round service on the Oban-Craignure route. With prompt action, it could have been delivered and in service, in 2021. This was seen a golden and low-cost opportunity to provide Scottish Government with evidence of a positive and practical approach to improve matters including ability to berth overnight at Craignure thereby facilitating MIFC's long-campaigned for 'island focussed' service, low capital and running cost, superior survivability, sea-keeping, berthing and reliability would provide a prototype for a second bespoke larger catamaran at circa £15 million to replace time-expired MV *Isle of Mull*. The design was in full accordance with IMO (International Maritime Organisation) standards and sellers Messrs STS/Sealease made it clear that there were no technical or classification issues barring purchase of this catamaran. Unfortunately, discussions with CMAL proved to be extremely difficult due to what appeared to be deliberate obstruction and refusal to deal constructively with the seller, which halted progress in bringing the project to fruition. One of the many manufactured objections was

[2] Transforming Mull's Connections, An options Assessment Undertaken for Mull and Iona Ferry Committee, by Pedersen Consulting, November 2021

that the vessels crew accommodation was not up to CalMac's requirements (although it could have been so modified).

Meanwhile to provide an alternative supplementary vessel CMAL purchased the smaller, slower (12 knots), Norwegian 34 car ferry *Utne*, which needed significant reconstruction to comply with CMAL's requirements, even although *Utne*, now renamed *Loch Frisa*, has no crew accommodation at all, a requirement that CMAL/CalMac had previously said was essential. To further underline the absurdity of the decision, whereas in Norway, *Utne* was operated by a crew of four with no shore personnel, *Loch Frisa* has a crew of seven and requires four shore personnel at Craignure and at least as many at Oban to berth her and oversee loading and discharge of vehicles and passengers – such is the appalling productivity of CalMac's operation. The perversity of this decision is illustrated in the table below:

	Utne/Loch Frisa	***Indonesian Catamaran***
Price	**£9million (with mods)**	£12 million (with mods)
Price per car space	£265,000	**£150,000**
Car capacity	34	**80**
Passenger capacity	195	**Circa 300**
Speed	12 knots	**16 knots**
Able to berth overnight on Mull	Yes	**Yes**
Large enough to run solo in winter	NO.	**Yes,**
Routes it can operate	Mull, Armadale, Clyde (class C)	**ALL routes (class B)**
Maximum wave height	2.5m	**4m**
On-board crew cabins?	NO – crew must live ashore	**YES, if required.**
MCA compliant?	**YES – with modification**	**YES – with modification**
Age	Six years old	**Newly Built**
Able to operate to CalMac piers	**Yes**	**Yes**
Able to operate to CalMac passenger access systems	NO	**Yes (after modifications priced above)**
Can increase route car capacity in summer	NO – DECREASE capacity	**Yes – More capacity than *Utne* AND *Isle of Mull***

The Minor Routes

CalMac's 16 "minor" ferries operate on a turn-up-and-go basis by live-ashore crews of three or four on short crossings to unmanned slipways. They form a separate fleet with virtually no interface with the "major" vessels. The minor vessels are certainly much cheaper to run compared with their large sisters and require on average markedly less subsidy per unit

carried. In this respect, they have, much in common with the efficient Shetland Islands Council and Western Ferries systems apart from the fact that the latter operate to Norwegian style “lock-on” linkspans as distinct from CalMac’s slipways. The advantages of the linkspan are:

- Better geometry allowing a smooth transition from shore to ship without sudden changes in gradient.
- No need for heavy ship mounted ramps. The linkspan is locked on to the ship by tooth and a hinged flap.
- The locking on ensures a safe connection that self-adjusts to the movement of heavy vehicles and to adverse swell conditions.
- The vessel is in an almost constant position in relation to the aligning structure regardless of the state of the tide, which facilitates battery charging between runs.
- The underwater hull form can be designed for fuel efficient operation and higher speed.

With slipways, the awkward geometry between the steep down grade of the slipway and the upgrade of the ship’s ramp can cause low slung vehicles or coach overhangs to ground unless heavy folding ramps are mounted on the vessel fore and aft thereby reducing deadweight. In swell conditions the ramp can be prone to surge and seas can break over the slipway which can be a safety concern. The position of the vessel in relation to the aligning structure varies with the state of the tide (inhibiting battery charging) and, to engage with the slipway, the hull form is necessarily blunt which reduces both fuel efficiency and speed. One other difference between the CalMac minor routes is limited hours of operation, while the comparators operate from early till late by employing two shifts. Collectively, these deficiencies of the CalMac slipway system add to costs and degrade service quality.

The Hybrid Electro-diesel Ferries

In 2012 CMAL commissioned a new small hybrid ferry *Hallaig*, which was powered by a combination of batteries and diesel engines. In most other respects *Hallaig* was a typical CalMac 43m, 9 knot minor ferry with a capacity for 150 pax, 23 cars operated by a crew of four. She was hailed as a major advance towards a net zero carbon future, the idea being that the ship would run on batteries charged from a shore power point with the diesels as a back-up. Her cost was £10 million. Two further sister ships were built subsequently at a cost of circa £12 million apiece.

A year after *Hallaig*’s introduction, Western Ferries commissioned two new somewhat larger 50m, 12 knot diesel ferries to their standard design – *Sound of Seil* and *Sound of Soay*. They had capacity for 220 pax, 40 cars, also with a crew of four. They cost £4 million apiece, that is to say A QUARTER OF THE PRICE PER CAR SPACE of *Hallaig*. When overall diesel consumption was measured, it was discovered that the hybrid diesel consumption was 3.89 litres per car space per hour compared with *Sound of Seil*’s 1.83 litres per car space per hour. Thus, the WESTERN FERRIES SHIPS CONSUMED HALF THE DIESEL per unit than the hybrid vessel and they were 3 knots faster.

In seeking to understand why the expensive hybrids are so poor in terms of environmental performance, it appears that, as the berthing position of the ship varies with the tide, recharging only takes place at night rather than between runs, such that the batteries run out of power half way through the working day. Diesels then have to take over. Furthermore, with the increased draft due to the weight of the batteries and heavy ship mounted ramps together with the blunt hull form, the diesel consumption per car space is significantly higher than the sleek-hulled Western Ferries vessels.

Once again because of a simplistic and rigid approach to forming requirements and poor design management, CMAL had poured money into a sub-optimal solution, thereby confirming the oft quoted claim that, "If there's an awkward and expensive way of doing things, CMAL'll find it".

The Root Cause

Over the last half century and more, Transport Scotland and its Scottish Executive and Scottish Office predecessors have consistently sought to kill off independent innovative schemes which aimed to improve on existing ferry provision by providing more cost-effective services. Where such schemes *have* been able to overcome official obstruction, they have flourished and brought unprecedented quality of access to the communities they serve, to wit, Shetland North Isles, Western Ferries Clyde, Pentland Ferries, all at less or no cost to the public purse. Unfortunately, other potentially beneficial cost-saving schemes have failed to materialise due to official blockage.

This raises the question as to why Scottish officialdom, in the face of solid evidence-based experience, so consistently thwarts enterprising innovators, but pours huge sums of public money into a failing system in which any sense of value-for-money or community benefit seems to be ignored. Arrogance of the "we are the professionals" kind, while denigrating anyone with counter proposals, has long been at play among the parties controlling the CMAL/CalMac system, when plainly their claimed expertise has at times been woefully deficient. This is not to say that there are not well-meaning and capable individuals working within the system, but that the system itself is institutionally flawed and dysfunctional.

It seems that a set of vested interests are at play that conspire, unwittingly or otherwise, to work against the national interest and against the interests of the communities they have been charged with serving. These are:

- The management personnel of CMAL and the David MacBrayne Group/CalMac, motivated by professional self-preservation and possibly self-aggrandisement and are therefore, resistant to any more efficient new approach or rival operator, that might diminish their empire.
- The labour unions understandably seeking to maximise and protect taxpayer funded jobs, generous terms and conditions and strongly preferring to deal with one large

and “tame” nationalised entity than several smaller de-bundled entities whose management may be harder nosed and more financially prudent.

- Officials of Transport Scotland, as supposed protectors of public funds, who, as generalists, are inexpert in ferry economics and community development, are thus instinctively protective of the *status quo*. They are unable or unwilling to challenge CalMac/CMAL’s labyrinthine defensive arguments forcibly enough to highlight their dismissing of alternative successful and more affordable practices.
- Ministers, who normally have little, if any, understanding of ferry operations or maritime economics, are dependent on officials to guide them, tend to be conflict averse and are tempted to seek quick (but often long-term disastrous) political fixes that become someone else’s responsibility after they have moved on.

Each of the first three above interests have privileged access to ministers and each have been brought to bear on the drafting of the Clyde and Hebrides Ferry Services (CHIF) contracts under which CalMac operates. The specification is drawn so tightly such that the same inefficient ships must be employed, on the same routes to the same schedules, at the same fares and charges, employing the same crews on the same conditions, so that there is no scope at all for innovation and efficiency gains.

While this cosy relationship exists between ministers, civil servants, CMAL, CalMac and the unions, there is what appears to be a marked distance in the relationship with other operators, especially the private operators, who are often ignored in official reports or obliquely referred to as “a private operator” or “a competitor”, as though they were some sort of distasteful aberration. Bearing in mind that most of these other operators, pay taxes, are not a burden on the public purse and their service quality and reliability are better than CalMac’s, it is CalMac and CMAL that are aberrations.

Surely in fairness and in the national interest, government ferry policy should treat all operators and island communities with equal respect and consideration, whether directly funded by the state or not. In that light, the mantras that “we must protect our public services” and “there shall be no de-bundling or privatisation”, ignores the fact that the byzantine state owned CMAL/CalMac system is delivering a poorer public service at much greater cost than more efficient and innovative independent operators. The losers are other public services – education, health, etc. who are starved of the funds that are diverted to this expensive dysfunctional sacred cow while our island communities suffer from its inefficiencies.

There is a better way. How this can be achieved is described in the next section

HOW TO FIX IT

As the current Clyde and Hebrides Ferry Services (CHFS) contract of August 2016 between Scottish ministers and CalMac Ferries Ltd for provision of ferry services, expires on 1st October 2024, this is a propitious time to consider how, in due course, more effective arrangements may be devised for the longer term, the better to meet the requirements of island communities. At this late stage in the drafting process, it is simply recommended for the present that sufficient flexibility be built into the contract to allow changes to be made during the course of its validity. The contract is after all, between the government and its own agencies, so that what the government makes, it can unmake.

Simpler Ships

The high cost of building and operating the "major" vessels of the CalMac fleet due, among other things, to the misguided methods of forming 'requirements' without proper 'costed options (exacerbated by CMAL's insistence on producing flawed ship deigns), unnecessarily large complements of live-aboard crew, over provision of catering and retail personnel and old-fashioned operating methods, have been referred to above.

Future policy should exploit proven best practice by commissioning simpler more cost-effective vessels, including the introduction of efficient drive-through catamarans, with live-ashore crew complements of typically between 10 and 14.

Simplified terminals

Equally expensive and wasteful are the inefficient terminal arrangements used by the "major" ships where, leaving aside bridge personnel, it can take six or more persons to berth and unberth a ship, added to which are others marshalling traffic, adjusting walkways, converting vouchers, selling and checking tickets.

Much of this can be eliminated, by adoption of "lock-on" linkspans, operated by one on-board hand. Clearly marked marshalling lanes and on-line ticked sales, supplemented by on-board ticket checks and sales. Such measures should render most shore personnel unnecessary. It is important that foot-passengers be embarked and landed over the linkspan simultaneously with vehicles via a safely fenced off foot passenger lane, such that all land/ship movement is on one level. This, speeds up boarding, disembarking, aids accessibility for those with reduced mobility, so long as there are on-board lifts to access the passenger lounge. The cessation of side loading of passengers will also simplify and greatly reduce the cost of terminal construction when new terminals are required where routes are shortened. The savings in cost of these measures will be substantial.

By already featuring most of the above, the operation of slipways on minor routes is much more efficient in terms of berthing and traffic handling, but their disadvantages, particularly in terms of poor geometry and vessel hull form have been noted above. A gradual conversion to lock-on linkspans and more efficient vessels would rectify these shortcomings. The financial saving would be through more fuel efficient and faster ferries.

The ICP mentions standardisation of ships and terminals, which in principle is a sound idea, so long as the standards are cost-effective and based on sservice requirements developed by a rigorous process including, proper use of 'costed options' to guide decisions as described above. To base standards on current CMAL/CalMac practice would be expensive folly.

The Islands (Scotland) Act 2018

Since the underlying reason for state support of ferry services should exclusively be to aid the economic and social well-being of our island and remote peninsular communities, a good place to start in considering a better way forward for Scotland's state supported ferries is with the Islands (Scotland) Act of 2018.

The Scottish Government undertook a consultation to support the development of the National Islands Plan as set out in Part 2 of the Act whereby the main "improving outcomes" sought for island communities were:

> Increasing population levels,
> Improving and promoting—
> (i) sustainable economic development,
> (ii) environmental wellbeing,
> (iii) health and wellbeing, and
> (iv) community empowerment,
> Improving transport services,
> Improving digital connectivity,
> Reducing fuel poverty,
> Ensuring effective management of the Scottish Crown Estate
> Enhancing biosecurity

The study, Ferries and The Islands Plan[3], noted that, that in a several cases, ferry services do not support these aims and appear to be damaging to island economies or their social well-being as well as they could be, Mull being such a case.

The Mull Case

As described above, the evidence-based proposal by the Mull and Iona Ferry Committee for a community owned two catamaran clock face ferry service between Craignure and Oban was rejected by ministers, on the grounds that it breached the Government's arbitrarily policy of no de-bundling. This decision not only thwarted an opportunity to revolutionise Mull's connectivity beyond anything hitherto available, but could have been implementable quickly while saving large sums of public money. The decision to reject this project, flew slap in the face of the improving outcomes sought in Government's own Islands Act. If empowered to improve Mull's transport services, the ferry committee's policy of Mull based on-shore crewing, would of itself have increased population and boosted the local economy, with the crews and their families spending in local shops and business and contributing to school roles, health and recreational facilities. It is indeed difficult think of a project that is a

[3] Ferries and the Islands Plan, October 2019, by Pedersen Consulting

better fit to the aims of the Islands Act. The Scottish Government's response begs the question: is the act simply a worthy but empty homily or is it to be taken as a genuine plan for action.

One distinguishing and important feature of the Mull ferry project is that the ferries be operated by a community enterprise, as distinct from privatisation, about which the Scottish Government are apparently phobic. There is considerable and long-standing experience of successful community enterprises in the Highlands and Islands that have in many instances empowered communities to transform their conditions for the better, from the community co-operatives created in the 1970s and 80s to the numerous community land buy-outs, many supported by Highlands and Islands Enterprise (HIE). The proposed Mull community ferry could follow such a model, but would contract an experienced ship management company to handle the technical aspects of the operation. Such an arrangement would seem to be ideal as a model for such island communities as wished to pursue it. How such initiatives might be detached from the CHFS contract is now considered.

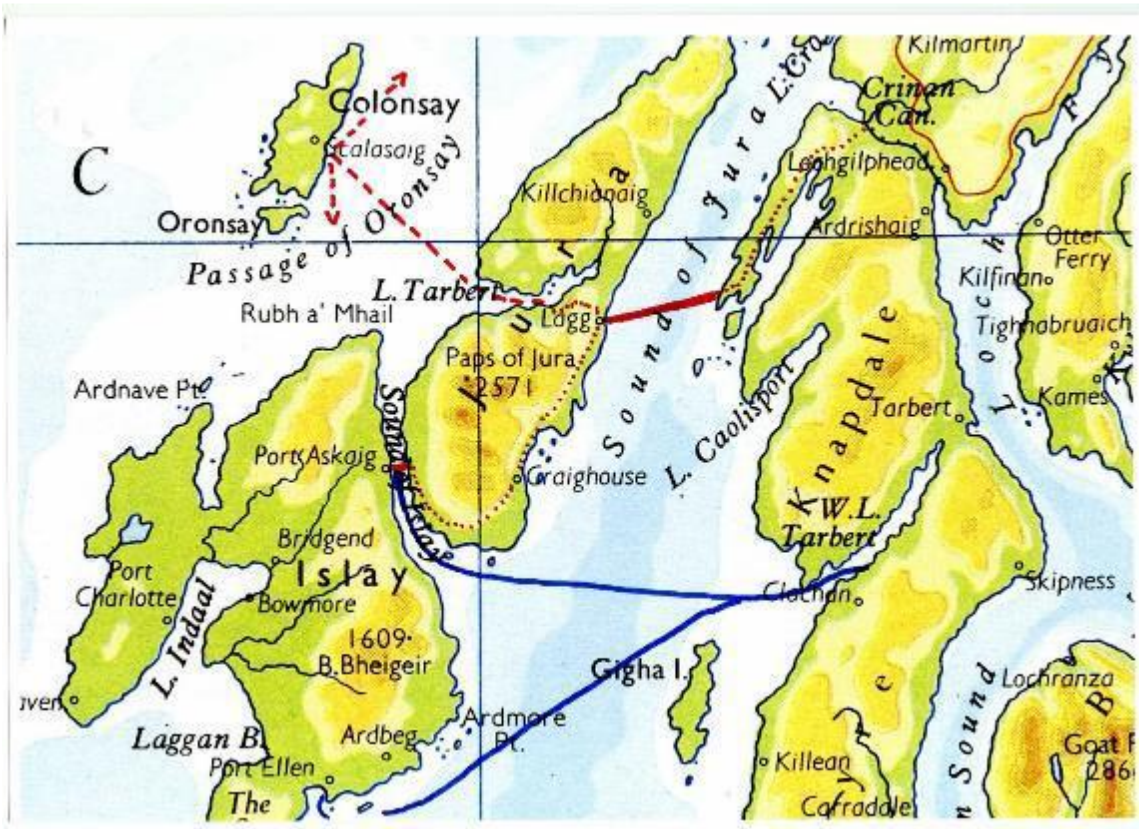
Shorter Crossings

Transporting a vehicle on a sea-going vehicle ferry is several times more costly, produces several times more CO2 and is half to a third slower than a vehicle travelling under its own power by road. This means that, reducing the length of a ferry passage (that is to say the 'impedance' effect) and increasing the road portion of the overall journey, has the multiple benefits of reducing the overall journey, time, cost and CO2 emissions while increasing the frequency, capacity, patronage and revenue of the service.

There are many examples of how route shortening has brought such multiple benefits, the previously mentioned Shetland council ferries example being a case in point. Another is the case of the Sounds of Harris and Barra. There had long been pressure, since the 1970s to institute short, frequent vehicle ferry services across these sounds, so to create a spinal road connection linking Lewis/Harris, Uists and Barra. The then Scottish Office pointed out that demand on the thrice weekly long ferry links was extremely low, which made the concept difficult to justify. When, in the end, a frequent vehicle ferry was provided on the Sound of Harris, demand soared well beyond official expectations and greatly exceeded the capacity of the vessel provided, such that a larger 5 crew 34 car ship *Loch Portain* had to be commissioned. A similar phenomenon took place on the Sound of Barra when a frequent ferry was also instituted there. In each case the creation of these shorter more frequent crossings has brought about a step-change in connectivity.

There are a number of opportunities significantly to reduce costs, while increasing frequency, capacity, patronage and revenue of vehicle ferry connections by selection of shorter crossings than currently extant. Such improvements will invariably support the "improving outcomes" for island communities sought in the Islands Act. Short crossing opportunities are now listed together with additional capital works that may be required to bring them about.

Islay and Jura Overland



As recommended by the Highland Transport Board, a short frequent crossing of the Sound of Jura (shown in red on the map) between Keills (Knapdale) and Lagg (Jura) and another of the Sound of Islay between Feolin (Jura) and Port Askaig (Islay), using Jura as a land bridge between the two, would not only offer more journey opportunities and capacity than the current long routes, but would slash emissions from 150kg CO2 per car to 20kg CO2 per car and would be half an hour faster from Bowmore to Lochgilphead.

The capital and operating cost of 40 car, four crew vessels would be about one eighth per ship that of the vessels currently building. The terminals would also be relatively inexpensive on account of the low tidal range in these locations.

The annual savings in operating costs, less revenue of some £15 million per annum, or some £450 million over 25 years. This would be more than enough to cover the expenses of upgrading the very substandard roads on Jura (see illustration right) and Knapdale and

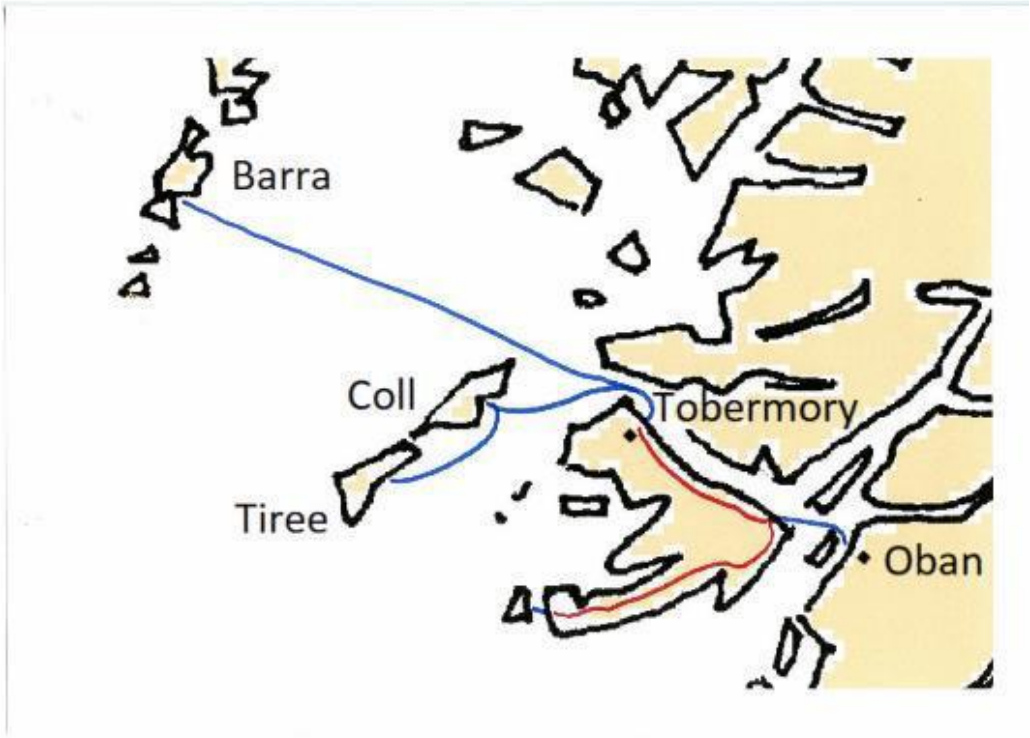
building housing, probably in a new settlement at Lagg, for the, initially 10 Jura crew, later to increase to 20, with a two-ship Sound of Jura operation, which with accompanying families would represent an increase in Jura's population of around 20%. Of course, the "improving outcome" of increasing island population, cannot be achieved without increasing the housing stock.

Port Appin – Point (Lismore)

The current perverse arrangement for Lismore, with a costly low frequency vehicle ferry on the long route and an inexpensive passenger ferry on the short route is the wrong way round from both an economic and community benefit perspective. A small two crew vehicle ferry on the Port Appin – Point crossing would not only be less costly, more frequent and quicker than the present arrangement to both users and the public authorities, but would offer many more travel opportunities. A supplementary fast passenger operation between Achnacroish (Lismore) and Oban (see section later on fast passenger routes) would offer a much speedier 20-minute crossing at marginal cost compared with the current 55 minutes.

Mull Land-bridge

Assuming the introduction of a clock face Craignure – Oban vehicle ferry service, the opportunity arises to create more frequent and capacious connections to Coll, Tiree and Barra by instituting Tobermory as landfall for services to and from these islands and thence to the Scottish mainland by using Mull as a land bridge. As with the Shetland North Isles island -hopping operation, where 22 minutes are allowed to transit Yell, a similar smooth, no waiting, arrangement should be instituted for booked through traffic on the Mull transit.



Under such an arrangement, a thrice daily connection from Tiree and Coll would be available for the first time, such that a daily return from the islands to Oban and further afield would be possible with ample time for business, health or social purposes. It would also be possible

for islanders to travel to or from any part of the Scottish mainland any day without the need for an overnight stay which is currently impossible. The type of vessel envisaged would have a capacity for around say 60 cars and 200 passengers with an island-based crew of eight to ten working shifts, which would boost Tiree's population by about 15%. This arrangement would allow a very considerable saving in ship capital and operating costs and emissions while increasing capacity and resilience to weather interruption by being better able to take advantage of weather windows. The main capital infrastructure expenditures required would be an upgrade of the road on Mull between Salen and Tobermory, a ferry terminal at Tobermory and the construction of a sheltered harbour at Tiree so that the ship can be based there – essential to achieve early out-bound departures from the islands and late inbound arrivals. Such a facility would be costly, but would of course have multiple economic and community benefits besides serving as a sheltered ferry port, also being available for fishing craft, yachts and possibly the smaller class of cruise ship, all of which would offer new economic opportunities for Tiree in fulfilment of the Islands Act's improving outcome of sustainable economic development.

An illustrative ferry schedule is shown below:

Tiree	*dep*	06:00	12:00	18:00
Coll	*dep*	07:00	13:00	19:00
Tobermory	*arr*	08:15	14:15	20:15
Oban	*arr*	x	x	x
Oban	*dep*	z	z	z
Tobermory	*dep*	08:45	14:45	20:45
Coll	*arr*	10:00	16:00	22:00
Tiree	*arr*	11:00	17:00	23:00

x = connection arrives Oban approximately 1hr 30 minutes later

z = connection departs Oban approximately 1hr 45mins earlier

The rationale for Barra is similar to the proposal for Tiree and Coll above, in that a Tobermory landfall and using Mull as a land bridge would enable a double return trip daily with a Barra based and crewed vessel working shifts. This will again enable day return journeys to Oban with ample time for business, health or social purposes and the ability to travel to or from any part of the Scottish mainland without the need for an overnight stay.

Castlebay	*dep*	07:00	15:00
Tobermory	*arr*	10:00	18:00
Oban	*arr*	x	x
Oban	*dep*	z	z
Tobermort	*dep*	10:30	18:30
Castlebay	*arr*	13:30	21:30

x = connection arrives Oban approximately 1hr 45 minutes later

z = connection departs Oban approximately 1hr 30mins earlier

The Little Minch

The splitting of the Lochmaddy and Tarbert (Harris) ferry crossings into two much more frequent and regular services will remove current capacity constraints and other inconveniences due to current irregular scheduling. Such a move also offers an opportunity for route shortening for a Lochmaddy landfall at the former steamer piers at either Dunvegan or Loch Poolteil (Miavaig, Glendale).

Dunvegan is sheltered and was the traditional mail port for Uist and would offer reduced steaming distance of 24 miles, as compared with 31 miles in the case of Uig. Loch Poolteil offers an even shorter passage of 19 miles (just over an hour's steaming), but is a more exposed location and, as it would require a road upgrade, may be regarded as a longer-term objective. If in the first instance a terminal were installed at Dunvegan, a shorter passage time from 1hr 45 mins to 1hr 25 mins would be achieved. If subsequently, a terminal were constructed at Loch Poolteil, a passage time of 1hr 5mins would be achievable as well as a much more frequent service of greater capacity. Dunvegan would remain as a relief port in the event of adverse weather.

Below is the kind of schedule that could be achieved in summer with two-shift shore-based crews.

Lochmaddy	*dep*	07:30	11:00	13:30	17:00	20:30
Loch Poolteil	*arr*	08:35	11:05	14:35	18:05	21:35
Loch Poolteil	*dep*	09:15	11:45	15:15	18:45	22:15
Lochmaddy	*arr*	10:20	12:50	16:20	19:50	23:20

It should also be possible to shorten the Tarbert services by creating a Skye landfall at Dùn Tuilm in the shelter of Eilean Thùilm. This landfall also affords a passage length of 19 miles or 1hr 5 mins steaming. As with Loch Pooltiel, a more frequent and regular service of greater capacity would be possible offering a hitherto unimaginable quality of connectivity for the Outer Hebrides. An identical timetable to that suggested above for Lochamaddy would be possible with Tarbert and Dùn Tuilm substituted for Lochmaddy and Loch Poolteil.

On the map on the previous page, the current long Uig routes are shown in blue and the short routes in red, with Dunvegan short-terms or relief route shown in a dashed line.

Burwick – Gills Bay

Although out with the Clyde and Hebrides area covered by this paper, the Pentland Firth has similarities with and relevance to West coast ferry issues. It is worth noting that, to date, Orkney Islands Council has refused Pentland Ferries access to Burwick. Such access would enable the creation of a clock face schedule from early till late with two catamarans along the lines set out above for Mull. This would more than double the current combined capacity of NorthLink and Pentland Ferries and render the Stromness – Scrabster connection redundant with a saving of about £10 million annually.

A separate paper is planned regarding the Northern Isles.

The Workforce

An important issue covered by this report is the over-provision of personnel on CalMac's major vessels and at many of the terminals to which they operate. Reducing the number of employees, albeit over time, is of course a sensitive issue and will be a matter of concern for the labour unions involved.

At a time of full employment nationally, however, it makes little policy sense for scarce public funds to be devoted to unnecessary ferry jobs when other parts of the public and private sectors are struggling to recruit or in the case of the health and education services, for example, are short of funds to do so. It is true that the skills of seafarers may not be an exact match with the skills sought in other parts of the public service, but one area where there is an exact match is in the hospitality industry, post Brexit, where hotels, restaurants, etc., particularly in the Highlands and Islands, would no doubt greatly welcome the skills of any catering and retail personnel displaced from ferry work. Such a transfer could have the benefit of contributing to the Islands Act's improving outcomes of growing island population and economies.

The main constraint to be addressed in this regard is lack of housing and the need, therefore, to build suitable accommodation for the projected increase in island populations. Resolution of the housing issue is beyond the scope of this paper, but it may be that a special scheme may be required, as, for example, was put in place in the 1970s to support developments at Dounreay, Invergordon, Corpach, etc.

Fixed links

Shorter more frequent ferry routes improve connectivity across water because they are more road or bridge like than long infrequent crossings. The best of all solutions is a continuous road giving unlimited connectivity. Since 1940, 23 fixed links have replaced water crossings in Scotland. In that context, the intention as stated in the ICP to consider fixed links across the Sounds of Harris and Barra is long overdue, having been mooted at least 20 years ago. This will the bring a new focus to the importance of shortening and increasing the importance and frequency of the Little Minch ferry crossings as the Outer Hebrides will

become in effect one island. It may be possible in the process to tap tidal stream energy, so long as east-west navigation is maintained through the sounds.

The ICP mentions the possibility of an undersea tunnel to Mull. Such tunnels are commonplace in Norway and the Faeroe Islands. For comparison the 11.2 km (7 miles) Faroese Eysturoyartunnilin cost £320 million, or about £45 million per mile. The Norwegian 14.4km (9 mile) Ryfylke twin bore tunnel near Stavanger cost £672 million, or about £40 million per mile per bore. A tunnel between Kerrera to the vicinity of Grasspoint (Mull) including approaches would probably be a little less than seven miles. Together with a link between the mainland and Kerrera, the cost of a Mull fixed link, if built by competent engineers, experienced in Scandinavian tunnel boring techniques, may be estimated at around £400 million – roughly the likely final combined cost of *Glen Sannox* and *Glen Rosa*. Tunnels do have running and maintenance costs, but these are less than ferry operations. A toll of say £15 per car (higher for a commercial vehicle, coach, etc.) raising perhaps £3 million annually, would cover such costs and possibly go some way to covering some of the interest costs on capital, depending on traffic volumes.

In the event that a Mull tunnel is seriously contemplated, and bearing in mind the time to plan and construct such a project, it will be necessary meantime to put in place a good frequent ferry provision, along the lines recommended above.

There may be other tunnel, bridge or causeway links that merit consideration and possibly of higher priority than Mull:

- Pentland Firth to Orkney.
- Sound of Jura and Sound of Islay
- Gunna Sound linking Coll and Tiree
- Kyles of Bute
- Port Appin – Lismore

Fast Passenger Routes

In many coastal and island regions, it is commonplace for fast passenger craft to connect coastal communities with regional centres on a multi-port basis, as in the Norwegian example illustrated below.

Such services are often designed to interface with landward bus connections. Apart from the advantage of speed, such services can be a very cost-effective means of relieving congested vehicle ferries of peak foot-passenger overburden. These vessels normally have a crew of three.

There are a number of locations where deployment of such fast craft could be beneficial:

- Sound of Mull: Tobermory – Lochaline – Oban – Lismore. This would enable a one-hour Tobermory – Oban journey compared with the current 2hr 45 min ferry bus combination and also much improved Lochaline and Lismore links to Oban.
- Sound of Sleat: Mallaig – Glenelg – Kyle (possibly extended to Applecross – Raasay – Portree). This would create several useful links including connecting the railheads of Mallaig and Kyle to provide summer circular tour possibilities.

Dunoon – Gourock is an odd case in that the passenger service is nowadays speed restricted, whereas in the past large 20 knot turbine steamers were scheduled 15 minutes depart, depart. Easing of the speed limit would enable Dunoon and Kilcreggan to be served adequately by one fast vessel.

Landward Links

The ICP aim to improve opportunities for people to travel to and from islands without their own vehicle is worthy, but it presents challenges, in deeply rural areas distant from the urbanised Central Belt. The example of say Lochmaddy to Glasgow by public transport necessitates a total journey of over ten hours, including 7hr 45 minutes sitting on a coach and currently involving either a very early start or a very late arrival. If, however, the journey was from say Solas (west side of North Uist) to say Braemar, this is impossible to achieve by public transport in one day and challenging in two. That is why, in the rural Highlands and Islands, in many cases, the flexibility of the car or pick-up and its ability to carry luggage or supplies is virtually indispensable. For such journeys, too, cycling is exclusively for the ultra-fit and hardy, especially in winter.

Route shortening, however, does offer opportunities for improved coach connections. As it becomes economic to take a coach on short ferry crossings, the Islay overland would offer the possibility to run a coach two or three times a day from Port Ellen via the two short crossings to Glasgow without the need to transfer luggage during change of mode. Likewise with the Mull land-bridge, it would be feasible to run a coach from Tobermory to Glasgow in connection with the Tiree and Barra sailings.

Net Zero

More fuel-efficient diesel catamarans and route shortening will, as demonstrated by Pentland Ferries, significantly reduce CO2 emissions per unit carried. The quest is on, however, to achieve as close as possible to Zero carbon for Scotland's ferries.

For shorter passages in the medium-term, batteries operating electric propulsion systems offer the most promising avenue, albeit backed up by diesel. To be effective, it is essential, in contrast to CMAL/CalMac's hybrid ferries, that batteries be re-charged between runs to prevent the battery running out of charge half way through the operating day. To achieve this, slipway terminals should be converted to lock-on linkspan operation to enable fast automatic plug-in at a fixed point at the berth between runs at any state of the tide.

For longer passages, green hydrogen, seems like the most feasible option for achieving net zero. The most interesting example is Tromsø-based ferry operator Torghatten Nord AS, 15-year agreement to develop and operate two hydrogen-powered ferries for its Vestfjorden route between Lofoten and Bodø. These crossings, as already alluded to, involve circa 100 km open ocean passages above the Arctic Circle and is considered Norway's most challenging ferry crossing.

A hydrogen supply deal has been signed with GreenH AS, to develop infrastructure for the production, distribution and supply to the new ferries of green hydrogen from renewable energy. The agreement is to deploy two new 120 metre hydrogen-fuelled RoPaxes from October 2025 until 2040.

Each ferry, illustrated below, will cost £31 million and have a capacity for 120 cars and 599 passengers. It will operate year-round and will require 5-6 tonnes of green hydrogen daily. The units will also be able to utilize other fuels, but a minimum 85% of the two ferries' energy consumption should be green hydrogen.

The relative cost differences between the new CMAL Islay class ferries currently building and the Torgatten hydrogen-electric ferries also currently building is particularly instructive as set out below, courtesy of Joe Read, Chair of Mull and Iona Ferry Committee:

	CMAL Islay Ships	*Torgatten Hydrogen*
Capital unit cost	£50 million	£31 million
Car capacity	107	120
Cap £ / car space	£467,000	£258,000
Daily op hours	14	22
Cap/car space/hr	£91	£32
Crew	27	12
Crew cost p/a	£3.9 million	£1.6 million
Crew/car space/hr	£7.13	£1.62

It will be noted that the capital cost per car space per hour of the Norwegian vessel is about one third that of the CMAL Islay ferries and that per operating hour, the crew cost per car space is less than a quarter that of the Scottish quartet. Such economy of investment is achieved while emitting virtually no CO2 while on passage.

Fares and Charges

The study, the Future Transport Provision in the Western Isles[4] tested elasticity of demand based on price and frequency of service and established that frequency was at least as important as price in terms of traffic generation. While the price elasticity of demand is significant as regards passengers and cars, freight demand is price inelastic. In other words, while reducing prices stimulated passenger and car traffic, it had little or no traffic generational effect on freight traffic conveyed by commercial vehicles, nor does it make any material difference to the price of goods delivered to or from the islands. For that reason, RET does not and should not apply to commercial vehicles.

The extension of RET for passengers and cars to services operated by CalMac Ferries had a number of consequences. The increased patronage, by tourists' cars and camper vans in particular on some routes exceeded the capacity of vessels to cope such that local residents could not book space for essential journeys. In some cases, the decision by visitors to take cars, where they may otherwise have left them behind, resulted in a decreased patronage of island bus services. As has been suggested in the ICP, RET or similar fare discounts should be applied only to passengers who are island residents. More commercial fares should apply to non-residents.

For Scotland's ferries the adoption of some form of demand management charging is well worth considering. One example of such a scheme is that operated by Red Funnel between Southampton and the Isle of Wight. An October Saturday booking in 2019 for one car plus driver can vary between £25.75 and £48.50 depending on time of travel and whether a saver or flexi ticket. Some aims to be considered in introducing such a scheme in Scotland could be:

[4] Future Transport Provision in the Western Isles, January 2003, by TRI Maritime Research Group, Napier University Business School and Pedersen Consulting

- Maximising revenue to reduce subsidy levels, thereby releasing funds for education and health
- Higher fares at times of peak demand especially to enable tourism to contribute to, rather than abstract from the economy
- Higher fares for camper vans and caravans as users are likely to spend less on island facilities
- Surcharging for use of a premium or 1st class on-board lounge on longer routes
- Reduced fares for island residents especially the low paid

One downside of present arrangements is that Government ferry fares schemes have been focused only on services subsidised directly by it – namely – CalMac and NorthLink. This can undermine more efficient tax paying private operators that provide reliable services at reasonable prices without any Government financial support at all. If more market orientated fares were to be aimed at tourists, non-island residents and hauliers, it would make sense for reduced fares to be available to all island residents regardless of who the operator might be. This may best be achieved by using the National Entitlement Card (bus pass). It should be possible for such cards to be made available to any person with a permanent island address and for the licence number of any car registered at an island address to an island resident keeper to be added to the keeper of such a car's card. In this way islanders and their cars could secure an agreed discount on ferry charges pertaining to their island or archipelago. Such a card, could also be used for islander air travel discount. If, in time, a full smart travel card system is created Scotland-wide for use on all or most forms of public transport, the above functions could readily be incorporated.

A De-bundled Tendering System

The applicability to Scotland of the Norwegian authorities' policy of short frequent ferry crossings utilising simple vessels with minimal crews to unmanned lock-on linkspan terminals has been described above. What is equally applicable is Norway's tendering system. Under this system, individual routes, or small groups of routes (connections in Norwegian parlance) are tendered separately and periodically on a phased basis so that only a few routes are tendered in any one year. Four or five large competing companies bid for the routes as they come on the market. Unlike the cumbersome and inefficient Scottish system, in which a separate state-owned entity (CMAL) rents the vessels to the operator, the Norwegian ferry operators bring their own vessels, thereby relieving the authorities of diverting public funds to cover the huge capital cost of ships.

In light of Norwegian experience, the statement in the ICP that the Scottish Government is "committed to awarding the next CHFS contract as a single bundle" on the grounds that it "will provide resilience through the operator's ability to move vessels and crew around the network" needs to be challenged. There are in effect ten Scottish bundles, of which the CHFS is but one, albeit the largest, but it performs among the WORST in terms of resilience. Western Ferries, for example, has virtually 100% reliability while operating a single route with its four efficient vessels. Indeed, the removal of say the Craignure – Oban service from

the CHFS system, as desired by the Mull and Iona Ferry Committee, would actually reduce the disruption of robbing one service to plug a deficiency elsewhere.

The “no de-bundling” mantra is a serious mistake, that not only creates difficulties reflecting badly on politicians, and has led to worsening productivity, increased public funding and on indifferent service due to refusal to countenance more efficient alternatives. Where other operators with better ideas have persevered, against official obstruction, much superior services have resulted and at no cost to the public purse.

To allow experience to be gained, it is, therefore, recommended that a gradual step by step tendering out of routes be instituted over a period of say ten to fifteen years (as distinct from a single big bang reorganisation) initially to communities where there is a desire to take on and procure their ferry service under contract to Scottish Government. CalMac would of course be free to compete, but where better community benefit and control is manifest, as sought in the Islands Act’s improving outcome of community empowerment, that should be given special weighting in a similar manner to state supported community land buy-outs.

An obvious pioneer de-bundled contract would be the Craignure – Oban route, as proposed by the Mull and Iona Ferry Committee which at a stroke would double capacity and frequency and at much less cost to the taxpayer. The incoming operator would of course have to be given sufficient time to finance and acquire vessels prior to commencement of the contract. As experienced were gained, other Mull connections, such as the Lochlaine, Iona, Kilchoan and possibly Lismore (vehicle ferry) and Coll and Tiree could be tendered and added to the Mull operation.

Other CHFS bundles could include:

- Ardrossan – Brodick (three vessels, preferably efficient catamarans)
- Upper Firth of Clyde, Kyles of Bute, Lochfyne and Lochranza, commencing with Rothesay, to which other routes could be added
- Islay, Jura overland and Colonsay – subject to road improvements on Jura and Knapdale
- Fast craft Sound of Mull and Lismore
- Mallaig – Armadale, Small Isles, Inverie, Raasay
- Fast craft Sound of Sleat
- Western Isles crossings

Operators may of course be permitted to bid for more than one bundle, which will enable them to create a fleet of sufficient size to cover breakdowns and other unexpected contingencies.

Anticipated Outcomes

The two principal outcomes sought as a result of the above suite of recommendations for improving ferry connectivity to our west coast islands are:

1. thriving island communities as defined in the improving outcomes set out in the Islands (Scotland) Act of 2018, and
2. that this be achieved in as cost-effective manner as possible to reduce the call on public funds

In addressing the first of the above, the study Ferries and the Islands Plan estimated that 500 plus potential island-based crews amount to a wage bill of some £25 million. As there would be opportunities also to victual and bunker the vessels locally, a substantial financial contribution would be injected into island economies. Adding in crews' families implies on-island location of 1,300 persons. As some islanders are already employed on ships with live-aboard accommodation, then to calculate the additional island population increase attributable to shore-based crewing, the total should be reduced by an estimated 40%, bringing the revised total to around 800. That is to say 800 additional island residents attributable directly to island-based crewing of vessels formerly undertaken by ships with live-aboard crews. A conservative economic multiplier of 1.3 would indicate a further 230 jobs created, which, when associated families are added, results in some 390 residents additional to crews and their families. Thus, island-based crewing on this basis would add a total of some 1,200 persons to the populations of the islands involved and make a significant contribution to the Islands Plan 'improving outcome` of 'increasing population levels.

Clearly if ships crews are to be based on and live as part of island communities, they will need to be housed, so that increased island housing stock will have to be, planned, facilitated and self-funded. The benefit of crews and their families living ashore on the island that they serve is that they will be part of community life; they will shop locally, their children will attend the local school and the families will have the opportunity to participate in the social activities of the community, creating a bond between crews and community that is often absent at present. All of the above together with the increased frequency and capacity of ferry services as recommended will bring in its train other desired outcomes of improved transport services, sustainable economic development, health and wellbeing, and community empowerment, if services were community owned.

It is suggested in the ICP, that some future traffic reduction may be anticipated as a result of what may be described as more internalised island economies. If, however, the key improving outcome of the Islands Plan of increased island population is realised, such a reduction seems improbable. If for example the west coast islands' population were increased by 10%, this suggests a requirement for some 3,000 additional houses and perhaps 500 commercial premises, for which, almost all of the building materials would have to be imported. This together with associated overall increased economic activity, suggests a general increase in traffic over time. The best way of providing the concomitant increased ferry capacity, while reducing costs and environmental damage, is to adopt the

simpler vessel, short, frequent crossing policy as set out in the above pages. Failure to do so will result either in increased public subvention or failure or the Islands Plan or both.

In considering the financials of the recommended programme, the capital and operating costs of different vessel types and *modus operandi* are known. By applying price, frequency and passage time elasticities of demand, it is also possible to estimate patronage and revenue. Such calculation is relatively straightforward, although time consuming. It is beyond the scope of this paper to carry out such an exercise, but, if approached we would be happy to do so, in collaboration with Transport Scotland. However, a broad-brush estimate suggests that, if the measures outlined in this paper were applied, and the beneficial `improving outcomes` achieved, the overall operating subsidy for services to the island and peninsular communities currently served by CalMac could be reduced by around £100 million to a figure of around £50 million. In addition, de-bundling with operators bringing their own vessels would wholly remove the need for government capital funding of vessels, bringing a saving of an average of perhaps a further £50 million per annum. There would, however, be a requirement to cover the capital cost of road improvements and marine works associated with route shortening carried out over a period of say ten to fifteen years.

Management and Delivery

The recommendations summarised above are designed to improve island connectivity while significantly reducing the cost to the taxpayer. They represent a radical departure from the current direction and *modus operandi* of Scotland's state funded west coast ferries. The greatest challenge in implementing such a programme is countering the entrenched and mutually-reinforcing attitudes within the vested interests that control the current system, for whom such change may be anathema.

It has been suggested in some sources that CMAL be merged with Transport Scotland. Bearing in mind CMAL's abysmal track-record and the dependence hitherto of Transport Scotland officials on CMAL's dubious advice, such a move would, if anything make matters worse.

What is required is for Transport Scotland to be opened up to wider professional and more independent advice and a broader view of what is possible in terms of improving both connectivity and productivity. Instead of seeking to preserve the current manifestly feather bedded and dysfunctional system, officials should instead be focussed on facilitating the improved connectivity of our island and peninsular communities in the most cost-effective manner, regardless of who the ferry operator may be. A well-chosen advisory board of experts, independent of DMG/CalMac and CMAL, should be put in place to guide ministers and officials on policy and practical implementation.

Brexit and the concept of de-bundling ferry operations to entities that bring their own ships, renders the ship leasing function of CMAL unnecessary, in which case, ownership of the ships currently operated by CalMac should be transferred from CMAL to CalMac. In due course the ships operated by Serco NorthLink, should likewise be disposed of (sold), if

appropriate to the incoming operator of the next Northern Isles contract. The ship owning function of CMAL should then be shut down. Ideally in time also, terminal ownership and operation should if possible be transferred either to more local entities, be they local authorities, suitably funded to take them on, or more localised community ownership, or to the operators themselves for the duration of their contract, after which CMAL should be wound up in toto.

The future function of Transport Scotland, should then be to maintain a strategic overview of *all* Scotland's ferry services and, over time on a staggered basis, to tender out routes or small groups of routes as may strike the best balance between community and taxpayer advantage as outlined in this paper. In view of Transport Scotland's longstanding close relationship with CMAL and CalMac, it might be advantageous for another official and more disinterested body, like say HITRANS, experienced in letting transport operator tenders and with an intimate knowledge of island communities, to undertake the tendering on the Government's behalf. In either event, CalMac would stand to remain as a significant, if slimmed down operator, but would have to prove its efficiency against competitive bids over time on a route-by-route basis, disposing of redundant tonnage in those cases in which it no longer operated a route.

All this will not happen without capable and informed ministerial direction and leadership. It will require a steady political nerve, but the prize will be greatly improved connectivity to enable our island and remote peninsular communities to flourish, while freeing up large sums of precious taxpayer funds to support Scotland's struggling public services. Failure to grasp this opportunity will inevitably result ever more public money being poured into a dysfunctional system while our island communities' decline.

CONCLUSION

This submission is in response to Transport Scotland's draft public consultation on its Islands Connectivity Plan (ICP). It addresses the issues raised, identifies current deficiencies and sets out better solutions for the future, with regard to state funded Clyde and Hebrides ferry services.

Persisting with the current and manifestly dysfunctional policy of the state procuring large, inefficient ships, manned by large live-aboard crew complements, operating on longer routes than necessary, running to overly complex labour-intensive terminals, will increase the already high financial cost to the Scottish taxpayer. This will reduce funding that could otherwise go to financially strapped health and education services while diminishing the well-being of the island communities served.

If, on the other hand, policy is changed as recommended in this submission to adopt the more cost-effective and 'greener' practices of simpler ferries, with less numerous live-ashore crew complements, operating where feasible on shorter crossings; service frequencies, capacity and revenue will be much enhanced, costs greatly reduced and island communities' social and economic well-being improved.

To achieve the required shift in strategy, a fundamental rethink of ferry policy and practice is required as spelled out in this submission. Implementing this different way of doing things, which follows best international and domestic practice, will necessitate strong ministerial direction accompanied by a change in management structure and in personnel to players, familiar with best practice and motivated by best value, to take the necessary action.

The prize will be greatly improved connectivity to enable our island and peninsular communities to flourish, while freeing up around £100 million operating subvention annually of precious taxpayer funds to support Scotland's struggling public services. Failure to grasp this opportunity will inevitably result ever more public money being poured into a dysfunctional system while our island communities' decline.

Roy Pedersen
April 2024

Pedersen Consulting
Lochlann
8 Drummond Road
Inverness
IV2 4NA

Tel: 01463 241107
Mob: 07753 882199
Email: roy@pedersen.org.uk