THE FUTURE OF FERRY SERVICES IN THE HIGHLANDS & ISLANDS

A Development Strategy

Transport Research Paper 6

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HIGHLANDS AND ISLANDS DEVELOPMENT BOARD

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1 INTRODUCTION

1.1 The debate on appropriate and equitable methods of charging ferry services in Scotland has come to the forefront of public interest on a number of occasions since the end of the Second World War. In its final report in 1967 the Highland Transport Board examined three possibilities: (i) the provision of free ferries; (ii) comparison with actual charges on roads through charges per passenger-mile or per ton-mile; and (iii) the 'mainland comparison' whereby ferry charges "should not be materially in excess" of charges to such distant mainland points as Thurso.

1.2 HIDB, as successor to the Highland Transport Board, advocated the treatment of sea links as trunk or principal roads with charges made as for travel on those notional roads. From early in 1968 to April 1972 protracted discussions and correspondence with the Scottish Office took place but agreement was not found possible on the principle that ships and terminals should form part of the trunk road system and should be charged accordingly.

1.3 HIDB continued to refine its ideas on ferry charges and in December 1974, in direct response to a request from the then Chairman of the Scottish Transport Group, submitted "Roads to the Isles", a study of Sea Freight Charges in the Highlands and Islands, to the Scottish Office. In that paper, which was subsequently published, the Board recommended that the role of ferries as an element of the road system should be formalised by the establishment of a "Road Equivalent Tariff" (RET) whereby charges would be calculated by a formula incorporating vehicle length, length of crossing, vehicle operating cost and a toll factor. The two main effects of RET would have been to reduce commercial vehicle rates substantially and to create an equitable, easily understood system of charging. This recommendation was turned down by the Secretary of State because, given the present operating patterns, the level of subsidy required would have been unacceptably high and the level of charges would not be strictly related to the costs of providing the services.

1.4 While the principle of RET was not acceptable to the Government it attracted a favourable comment from ferry users, particularly from the three Islands Councils and Argyll and Bute District Council, all of which have high dependence on ferry services. Two authorities have referred to the Board's proposals in statutory documents. In its Statement of Intent on Transport Policies contained in the Transport Policies and Programmes report for 1975 the Western Isles Islands Council included as its formal policy to "continue to support actively the introduction of Road Equivalent Tariff on STG ferries". The Orkney Islands Council, in its second TPP, 1976 referred to its conditions for the acceptability of the Government's proposals for internal ferry services including "that the external sea route should be accepted as an extension of the trunk roads system". It must be recorded that not all local authorities have welcomed the RET proposal, Strathclyde Regional Council, for example, has viewed the proposal with considerable reserve and has made extensive, constructive criticisms in detail.

1.5 Interest in Road Equivalent Tariff has been maintained aided by expressions of interest in the Transport Committe of the EEC under Mr John Corrie which reported favourably on the use of RET in 1976. At the time of writing a consultative document has been issued by the Scottish Office and upon consideration of representations a decision will be made as to what form and what rate of implementation of RET will be introduced. In the meantime, the subsidy given to Scottish Transport Group ferry services has been fixed in monetary terms between 1978 and 1980 with the inevitable corollary of regular increases in charges which across all routes have been broadly in line with the rate of inflation. These increases have continued to be bitterly resisted by island authorities and businessmen but it is clear that the operators have had very little room to manoeuvre particularly at a time when capital and energy costs have been high.

1.6 HIDB's primary responsibility for economic and social development leads to our support for a transport system which minimises the barriers to the desired movement of goods and people. The impact of transport improvements depends on the two principal effects: firstly, the costs of transport services; secondly, the quality of the services. The cost of ferry journeys lies not only in the fares charged but in the cost of time spent by drivers and travellers.

1.7 Discussion of the quality of a transport link must be more directly related to the level and conditions of the services provided. A wide range of factors contribute to the quality of a service - frequency, regularity, flexibility of schedules, speed, capacity to handle special loads - large, small or awkward - safety and comfort. The introduction of roll on/roll off vehicle ferries has greatly reduced the interruption caused by transhipment and changing modes. However, journeys by sea ferries are still less frequent, less regular, slower and less flexible than journeys of similar length by road. For example, an important barrier exists when there is little flexibility or choice available. This tends to occur when a transport link runs infrequently. The more frequently a service runs, the more able are potential travellers to plan their journey to fit in with other plans and connections.

1.8 If the level of these direct and indirect costs of a ferry system were to be reduced this would increase the welfare of people living in the islands and those visiting the islands. However, equally important from the standpoint of social and economic development is the generation of traffic from dynamic factors such as changing attitudes to travel and a higher rate of employment growth. Bringing islands closer to the national economy will involve short-term costs if locally produced goods or services are subject to competition from the mainland but in the medium and long-term the benefits to the majority of the community will outweigh the costs.

1.9 Adopting the goal of long-term growth emphasises two aspects of the concept of the road equivalence:

(a) ensuring the comparability of costs between travel by road and ferry;
(b) ensuring that access via ferries comes as close as possible to that by road in quality, for example, in terms of frequency, convenience and comfort.

The HIDB continues to support the reduction of ferry charges in real terms. Whatever the outcome of the Scottish Office review of RET, it is clear that, at the determined level of subsidy, it will be essential in the interests of maintaining charges at tolerable levels that the services should become as cost-effective as is possible. It is hoped that the ideas put forward in this

report will in the medium and long-term lower the cost of implementing RET by encouraging greater cost-effectiveness in the provision of services and will in addition improve the accessibility of those services to the travelling public.

1.10 In summary, the HIDB proposals are for a radical restructuring of all Scottish ferry services by a long-term programme of reinvestment in vessels, terminals and related facilities;

(a) the shortest practicable sea-routes to be introduced on a few services and the concomitant need for road improvements accepted;
(b) a series of standardised vessels to be introduced on all but a few long routes as ferries are replaced.
(c) standardised linkspans of two basic types to be introduced at the majority of ports;
(d) capacity, wherever feasible, to be gained through frequency of service rather than size of vessel;
(e) construction costs for vessels and linkspans to be held, by careful design, to a minimum consistent with comfort, safety and performance requirements;
(f) operating costs such as fuel and crew, to be kept as low as practicable;
(g) Road Equivalent Tariff to be attained in due course on all roll on/roll off ferries;
(h) the allocation of certain routes to operators to be by means of tenders for a period of operation to standards established by the Scottish Office;
(j) subsidies to be allocated by route rather than by groups of routes or by operator;
(k) annual reporting by all ferry operators of operating costs, allocation of overheads etc, to be mandatory and to accord to a standard format established by the Scottish Office.

1.11 Finally, it is stressed that HIDB's proposals in detail are intended to stimulate thought and action. A draft version of this report was circulated for comment to operators, central and local government, and related bodies. From comments received it is clear that there are many ideas for improvement in ferry services which are complementary to ours. Any implementation of these proposals will require detailed consideration and consultation, but the needs of development in the Highlands and Islands call for an early review of long term plans for the key links provided by ferry services.

2 PRESENT PROBLEMS

2.1 As the graphs in HIDB Transport Research Paper 2 "International Ferry Comparison" show, there are great variations in the relationship between charges and distance and between passengers, cars and commercial vehicles on all Scottish routes. In general terms commercial vehicle rates are high by international standards and passenger fares low. By far the highest RO/RO rates are on the Scrabster/Stromness route which has received an element of subsidy only within the past year under a scheme introduced on Orkney and Shetland services whereby certain commodities receive subsidy from central government, whereas on the Islay routes rates are relatively low reflecting in part the effect of compeition. RET, as a system of regulated fares, seeks to place the system of fares on a consistent basis and related to other forms of transport.

2.2 In his rejection of the Road Equivalent Tariff proposal in 1975 the Secretary of State argued that charges must be directly related to the cost of providing the services. While this is a tenable point of view charges under the system prevailing appear to be quite unrelated to costs. This may be illustrated by analysis of cost data provided by the Scottish Transport Group to the Select Committee on Nationalised Industries for the year 1974. At that time all subsidised ferry services of STG were concentrated under David MacBrayne Ltd with the commercially viable services remaining under the control of Caledonian MacBrayne Ltd. In 1974 all services showed an operating deficit and in the following year the Secretary of State began the subsidisation of Caledonian MacBrayne's services which has continued and increased periodically to the time of writing.

2.3 The following table contrasts the services attracting the largest subsidy in 1974 with those having the smallest deficit:

ROUTE	OPERATOR	GROSS REVENUE	NET DEFICIT	REVENUE/DEFICIT RATIO
Mallaig-Portree-Small Isles	D M Ltd	29,000	123,000	1 : 4.24
Oban-Colonsay	D M Ltd	18,000	64,000	1 : 3.55
West Loch Tarbert-Port Ellen	C M Ltd	163,000	295,000	1 : 1.81
Oban-Craignure	C M Ltd	369,000	133,000	1 : 0.36
Ullapool-Stornoway	C M Ltd	543,000	215,000	1 : 0.39

SOURCE: Second Report, Select Committee on Nationalised Industries, 1974. P.xxxiv.

2.4 While this six-year old evidence supports the claim that charges were not related to costs, it also emphasises the problem posed by lack of information. The 1974 figures elicited by a House of Commons Committee are still the only published data on revenue and deficit available by route from the largest public sector ferry operator in Scotland. Data on the operating costs of individual ships are not published regularly by an Scottish operator in either the public or private sectors.

2.5 This information deficiency, which virtually precludes any serious constructive criticism, is in sharp contrast to the mandatory annual reporting system in Norway which is described in the HIDB research paper "The Norse Way". (Transport Research Paper 1 : HIDB, April 1977, p 4).

2.6 Without accurate and detailed information on capital and operating costs, it is difficult to see how the basic requirements of ferry users as to fares and charges can ever be met. Users seek fares and charges at as low a level as is feasible and they also wish to see equitable distribution of charges between services. It is HIDB's contention that open reporting of costs by all operators would do much to protect operators from the flood of critical comment which follows every increase in charges. If users see that ferry operations are cost-effective, that charges are fair as between one route and another, and that available subsidies are fairly distributed, they are likely to accept increases in charges due to factors beyond operators' control such as fuel costs and general inflation.

2.7 We have commented in our reponse to the Scottish Office Consultative Paper on Sea Transport to the Scottish Islands on the question of how a fare structure could be devised to reflect Road Equivalent Tariff. This paper will look at the present level of cost-effectiveness and will consider a long-term policy intended to put all ferry operators on the same basis of charges and of subsidisation and to encourage the utmost cost-effectivensss. It will be argued that only through such a radical long-term policy can ferry services be improved and charges brought to a level which is perceived as reasonable and equitable by users.

2.8 In presenting the proposals in this paper it is necessary to look some distance ahead. A plan which involves some major changes to the current structure cannot be introduced at a stroke. It should also be remembered that great strides have been taken by the existing authorities and operators to introduce roll-on/roll-off services. Indeed it has been their willingness to introduce new services using existing or modified facilities which has led to the variety of loading arrangements which hampers interchangeability of vessels. Yet looking ahead there are powerful reasons for believing that the current system cannot be allowed to evolve. Firstly, prospects for development on the islands will increasingly require access to resources and markets throughout Britain and in Europe. Secondly, rising fuel and labour costs will tend to push up the costs of ferry operators faster than general inflation to a point where they can no longer be offset by increased efficiency within the present system.

3 THE APPROACH TO COST EFFECTIVENESS

3.1 The more cost-effective a transport system is, the lower fares are likely to be. Even if the result of the Scottish Office review is a commitment to full RET, lower costs of operation will accelerate implementation of that objective. This paper considers where divergences from cost effectiveness are most likely to occur. Our research into Norwegian experience and practice in Scotland and elsewhere suggests four areas critical to cost effective performance:

(a) Replacement, where possible, of long sea links by road construction or improvement and the shortest practicable high-frequency RO/RO ferry link.
(b) Employment of efficient, standardised ferries with low cost characteristics operating to standard terminals of simple design and unmanned wherever possible.
(c) Adoption of operating practices designed to keep labour costs to a minimum and to secure route capacity by frequency of trips rather than by the size of ferry vessels, and
(d) The establishment of a disciplined system of control and subsidisation by central government.

These critical areas are examined in more detail in following chapters.

3.2 Major changes have taken place in Highlands and Islands services of both the public and private sector opeators. For example, with the exception of the Orkney North and South Isles, all islands with a population of more than 250 have a vehicle ferry service of some sort, as do a number with lesser population. There remain, however, seven distinct types of terminal and many different ship types and while many of these are compatible there is inevitably some interference with the free interchangeability of equipment. There are moreover a number of vessels which exhibit relatively poor capacity in relation to capital and running costs, levels of manning and awkward or inappropriate terminal arrangements. These vessels, it should

be noted, are not in each case the older vessels but include some of relatively recent construction. There are also a number of long sea routes remaining in existence for historical and other reasons where shorter routes could possibly have replaced them.

3.3 Although overall planning has not been comprehensive, some progress has been made towards concentration upon short, frequent routes which carry substantial traffic volumes and are operated with exemplary efficiency. The Shetland Overland, Kyle-Kyleakin and MacInroy's Point - Hunter's Quay ferries illustrate this approach by three different operators. There remain, however, a number of routes on which losses are high in proportion to benefits and on which there is scope either for replacement by road-linked short crossings or some cheaper alternative. It is primarily with regard to these routes that we seek radical improvement.

3.4 In preparation for the examination of these difficult matters HIDB has carried out extensive research in Norway, with its vitally important ferry system, and in several other countries with respect to charges and subsidies. In order to free this report from the weight of research findings the Board has published four Transport Research Papers, as follows:

TRP 1 The Norse Way - A Study of Norwegian Ferry Operations, April 1977;

TRP 2 International Ferry Comparisons - Ferry Charges and Subsidies in the Highlands and Islands, Europe and North America, July 1977. Supplement January 1978;

TRP 3 Standardising of Ferries in Norway - A Translation of NOU 1974 : 50. Standardisering av Ferjer, October 1977.

TRP 4 The MRF Report - a translation of the major report prepared for the Norwegian County of More and Romsdal - 1978.

Copies of all these papers may be obtained from the Policy and Research Division of the Board except for TRP 4 which is a long, highly technical document of interest to specialists only. They may also be consulted in the Board's library.

3.5 Norwegian experience has assisted HIDB in arriving at the views expressed in this report. However, many of the details of Norwegian practice cannot be transposed into Scottish ferry services since physical and marine conditions, safety regulations and the relative importance of ferries in the national transport system all vary significantly between the two countries. Furthermore there are important differences in central and local government organisation and in financial practice. It is therefore the basic principles of the Norwegian approach which we believe to be worthy of careful consideration in Scotland.

3.6 This report does not examine in detail vessels, terminals, costs and the reduction of routes to the shortest crossing. The intention is to indicate the principles with appropriate examples in order that thorough consideration can be given by those directly responsible. It is also emphasised that the components of any ferry system are interdependent. The HIDB views on a fleet of standardised vessels on existing routes would not by itself produce optimum benefits since on some services shorter routes are required to permit increased frequency and to encourage traffic generation. It is in our view the combination of shorter routes, increased frequencies, standardised

TABLE A
VEHICLE FERRY ROUTES IN SCOTLAND (WITH TERMINAL TYPES)
(See Chapter 5)

ROUTE NO	ROUTE	ROUTE LENGTH Km	SUMMER FREQUENCY	OPERATOR	NORMAL VESSELS (AND NORMAL RELIEF)
	Smooth Water Routes - DOT Class V Certificate:				
1	Renfrew (SE) - Yoker (SE)*	1	Shuttle	CPA	Renfrew (Erskine)
2	Gourock (CC) - Dunoon (CS)	7	Shuttle	STG	Juno, Jupiter
3	MacInroy's Point (FC) - Hunter's Quay (FC)	4	Shuttle	WF	Sound of Sanda, Sound of Scarba, Sound of Shuna
4	Colintraive (SE)	1	Shuttle	STG	Broadford, Portree (Bruernish)
5	Corran (SQ) - Ardgour (SQ)	1	Shuttle	HRC	Lochaber (Glen Mhor)
6	Kyle of Lochalsh (SE) - Kyleakin (SE)	1	Shuttle	STG	Kyleakin, Lochalsh (Bruernish)
7	Kylesku (SQ)	1	Shuttle	HRC	Maid of Glencoul (Queen of Kylesku)
8	S Kessock (SQ) - N Kessock (SQ)	1	Shuttle	HRC	Rosehaugh (Eilean Dubh)
	Partially Smooth Water Routes - DOT Class IV Certificate:				
9	Wemyss Bay (CC) - Rothesay (CS)	11	7/day	STG	Saturn
10	Largs (SE) - Cumbrae (SE)	2	Shuttle	STG	Isle of Cumbrae (Kilbrannan, Largs, Portree)
11	Stromness (P) - Lyness (P) Flotta (P) Longhope (P)	24	1/day	OIS	Lyrawa Bay
12	Kirkwall (P) - Rousay (P) - Wyre (P) - Egilsay (P)	20	1/week	OIS	Islander (Orcadia)
13	Kirkwall (P) - Shapinsay (P)	8	1/week	OIS	Islander (Orcadia)
14	Lerwick (NS) - Bressay (NS)	1	12/day	SIC	Grima
15	Toft (NS) - Ulsta (NS)	4	17/day	SIC	Fivla, Thora
16	Belmont (NS) - Gutcher (NS)	2	12/day	SIC	Geira
	Short Rough Water Routes - DOT Class VIa Certificate:				
17	Claonaig (SE) - Lochranza (SE) (seasonal)	8	8/day	STG	Rhum
18	Port Askaig (SE) - Feolin (SE)	1	10/day	WF	Sound of Gigha
19	Cuan (SQ) - Luing (SQ)	1	Shuttle	SRC	Belnahua, Maid of Luing
20	Lochaline (SE) - Fishnish (SE)	3	22/day	STG	Coll (Bruernish)
21	Mallaig (P) - Armadale (P) (seasonal)	8	5/day	STG	Pioneer
22	Glenelg (SQ) - Kylerhea (SQ) (seasonal)	1	Shuttle	McK	Glenmallie
23	Sconser (SE) - Raasay (SE)	3	3/day	STG	Raasay
24	Kyles Scalpay (SE) - Scalpay (SE)	1	9/day	STG	Morvern
25	Laxo (NS) Vidlin (NS) - Whalsay (NS)	6	11/day	SIC	Fygla
26	Gutcher (NS) Belmont (NS) - Fetlar (NS)	7	3/day	SIC	Geira
43	Kennacraig (CC) - Gigha (P)	22	1/day	SRC	Kilbrannan

* not operating in the Highlands and Islands

/Long

ROUTE NO	ROUTE	ROUTE LENGTH Km	SUMMER FREQUENCY	OPERATOR	
	Long Rough Water Routes - DOT CLASS IIa Certificate:				
27	Ardrossan (CC) - Brodick (CC)	21	5/day	STG	Clansman (Caledonia)
28	Kennacraig (CC) - Port Ellen (CC)	53	3/day	STG	Iona
29	Kennacraig (CC) - Port Askaig (CC)	46	2/day	WF	Sound of Islay
30	Oban (CC) - Colonsay (P)	59	3/week	STG	Columba
31	Oban (CC) - Craignure (CC)	16	6/day	STG	Caledonia
32	Oban (CC) - Lismore (P/SE)	11	2/day	STG	Eigg
33	Oban (CC) - Tobermory (P) - Coll (P) - Tiree (P)	95	4/week	STG	Columba (Iona)
34	Oban (CC) - Castlebay (P) - Lochboisdale (CC)	144	1/day	STG	Claymore
35	Uig (P) - Lochmaddy (P)	47	9/week	STG	Hebrides (Columba)
36	Uig (P) - Tarbert (P)	43	9/week	STG	Hebrides (Columba)
37	Lochmaddy (P) - Tarbert (P) (Summer only)	46	2/week	STG	Hebrides
38	Ullapool (CC) - Stornoway (CC)	84	2/day	STG	Suilven (Clansman)
39	Scrabster (CC) - Stromness (CC)	46	2/day	P&O	St Ola (Clansman)
40	Kirkwall (P) - Eday (P) - Stronsay (P) - Sanday (P) Westray (P) - Papa Westray (P)	69*	4/week	OIS	Orcadia (Islander)
41	Kirkwall (P) - N Ronaldsay (P)	55	1/week	OIS	Orcadia (Islander)
42	Aberdeen (CC) - Lerwick (CC)	337	2/week	P&O	St Clair

* Half round trip

Operators

STG - Scottish Transport Group
P&O - P&O Ferries
WF - Western Ferries
OIS - Orkney Islands Shipping Company
CPA - Clyde Port Authority
HRC - Highland Regional Council
SIC - Shetland Islands Council
SRC - Strathclyde Regional Council
McK - M A MacKenzie

vessels and terminals which will, over a long period contribute to the reduction of fares towards RET levels.

4 FERRY ROUTES

EXISTING ROUTES

4.1 A total of 43 Scottish passenger and vehicle ferry routes has been identified and classified into routes operating in smooth waters, routes operating in partially smooth waters, short distance routes operating in rough waters and long distance routes operating in rough waters. This classification is significant because the status of the plying limits for vessels on a particular route determines the type of passenger certificate required by the vessel and this in turn can influence operating costs. A ship permitted by the Department of Trade to ply in rough waters in winter is likely to be more expensive to construct and to operate, have a larger crew and have a lower passenger capacity than one of similar size restricted to smooth or partially smooth waters in summer. A diagram showing the present route pattern and the smooth and partially smooth water areas appears as Figure 1. A list of the routes is given in Table A showing terminal type, passage distance, daily frequency, operator and vessels normally employed.

4.2 Analysis shows that of the 43 routes some 60% are less than 16kms in length, 38% run exclusively in smooth or partially smooth waters as defined by the DOT. An additional 26% of the 43 are short routes, less than 10kms, which although not in smooth or semi-smooth waters qualify for the more lenient DOT class VIa passenger certificate. The balance of 36% represents rough water routes on which the more rigorous class IIa certificate applies.

Towards the total current volume of traffic carried, the short routes are much the most important contributors, Gourock-Dunoon and Kyle-Kyleakin both carry more than 200,000 vehicles per year compared with 20,000-25,000 vehicles on each of the Stornoway-Ullapool, Uig triangle and Pentland Firth routes, which are the busiest of the long routes.

4.3 In addition to the routes described there is currently one international route operating between Scrabster and Faroe. A number of freight only Ro/Ro services also operate to Orkney and Shetland and elsewhere.

THE THEORY OF RO/RO OPERATION IN THE HIGHLANDS & ISLANDS

4.4 Before suggesting detailed changes in routes it will be useful to consider the theory of Ro/Ro ferry operation in relation to the road network.

4.5 Ro/Ro vehicle ferries are clearly recognised as an integral element in the road system. Roads are, however, more efficient movers of traffic than ferries since they are available at all times and may be used without the penalty of waiting at terminals. The strategy most likely to lead to improved efficiency, and therefore to reduced ferry costs, is to reduce the length of the ferry passage to the shortest practicable distance in order that frequencies of sailing may be increased. The more frequent the ferry sailing the more nearly the services becomes road equivalent in convenience. The period of waiting tends to be shorter, the distance of slow sea travel is reduced and the frequency allows greater flexibility to fit with other travel arrangements. Experience suggests that it is frequency of service which generates increased traffic and, at the same time, allows capacity to be offered without high levels of investment in large ferries and the cost of operating with their relatively high fuel consumption and crewing levels.

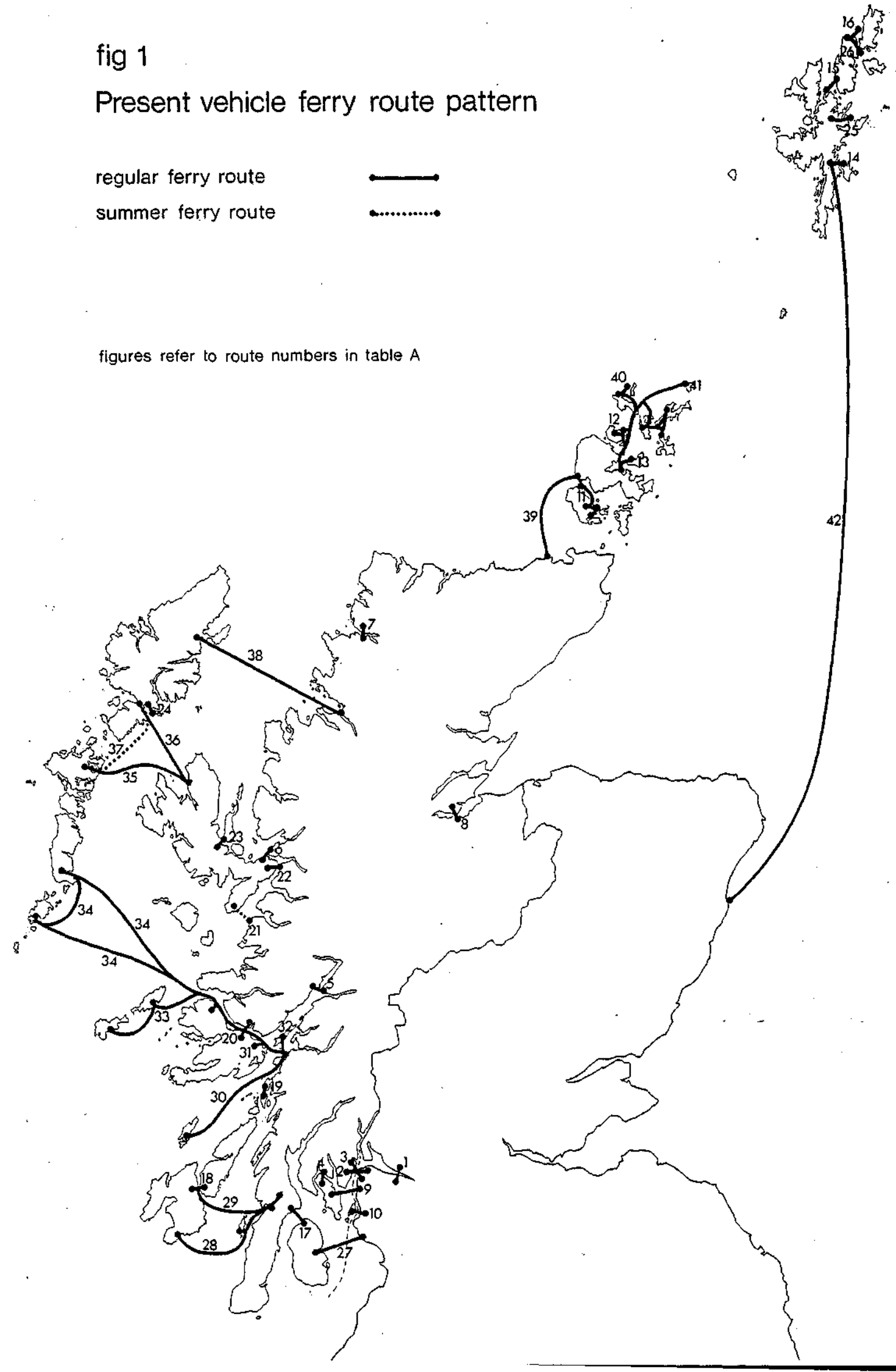
fig 1

Present vehicle ferry route pattern

regular ferry route

summer ferry route

figures refer to route numbers in table A



Against those savings, however, must be set the cost of capital works in new or improved roads and their maintenace.

4.6 The ultimate objective on appropriate routes is to replace ferry crossings by roads, bridges, causeways or tunnels, eliminating any restriction on use. It is interesting to record that in the Highlands and Islands since the 1939-45 war ferries and shipping services have been eliminated by construction of the Churchill Barriers (Orkney), North Ford Causeway (Benbecula), Burra Bridges (Shetland), Muckle Roe Bridge (Shetland), Kinlochmoidart/Lochailort Road, Ballachulish Bridge and North Applecross Road. There is one major project currently under construction, the Kessock Bridge.

4.7 Direct evidence of the effect of the introduction of Ro/Ro is difficult to come by. One example within the Board's area is that of the Shetland North Isles route. The so-called "overland" was recommended by the Highland Transport Board in 1967 and was subsequently implemented by the Zetland County Council. The old thrice weekly mail boat "Earl of Zetland" was replaced with a system of five short, frequent ferry links to Unst, Yell, Whalsay, Fetlar and Bressay in a manner similar to equivalent services in Norway. There are five identical drive-through 80ft vessels which with a crew of four plus two relief men and having a car capacity of twelve or a weight limit to 50 tons with a maximum of 93 passengers. The ferries used ten unmanned Norwegian-type terminals which were largely constructed in Shetland by the Council's staff. Despite relatively low charges, the subsidy in 1979-80 was only of the order of £350,000 which also included support for three small mail boats for the islands of Foula, Fair Isle and Skerries. The success of the Shetland system may be judged by the healthy, rapidly rising level of vehicular traffic generated by the 4,000 or so inhabitants of the five islands which, it is emphasised, are relatively unaffected by North Sea oil development which has concentrated in the Sullom Voe, Lerwick and Sumburgh areas of the main island of Shetland.

4.8 Looking back at the report of the Highland Transport Board, we see that they seriously underestimated the benefits and success of the Shetland Overland route. The Board were not alone in that the consultants to Zetland County Council found their estimate of traffic on the Islands' ferry system exceeded by as much as 200% in the first year of operation.

4.9 The Shetland ferry system experience is supported by a number of similar rapid increases in traffic on Norwegian ferries reported during our research. We believe the experience to be typical of the result of introducing Ro/Ro ferries on shorter routes, at increased frequency and at the lowest, practicable cost.

4.10 Not only do destinations benefit from Ro/Ro operations over shorter routes but people in the land areas over which traffic has been diverted to ferry terminals have new economic opportunities to extract trade from passing traffic by selling fuels, meals, accommodation and general goods. On the shorter routes which the Board has in mind, such stimulus would be of additional benefit as it would fall in relatively depressed areas such as Mull, West Skye and Harris. It is not possible to estimate the number of new jobs which would be established following the shortening of some of the ferry routes, but the essential point is that however few the jobs they would be largely in areas where every single job is of considerable importance to the future health of an exposed and fragile community.

4.11 It will be noted that the Board is no longer recommending the "Jura Overland" as the main ferry route to Islay. Such a route would be of great

advantage in Jura but the difficulties and high cost of road construction, particularly to the terminal at Keills, involving substantial works in the area of Knapdale Forest have reluctantly led to the conclusion that the original proposal is not practicable in the timescale of these proposals.

The long route to Islay is not entirely satisfactory when the overland potential exists offering similar journey times and much lower ferry charges. Operators and the local authority may wish to consider the advantages of a service via Keills and Lagg restricted to cars and light vans, perhaps operating during the summer only. Such a service, operated with a ferry on a summer certificate would make only limited demands for road improvements in both Knapdale and Jura. Heavy goods vehicles would continue to use the main service from Kennecraig throughout the year.

CHANGES PROPOSED IN FERRY ROUTES

4.12 Relatively few changes are seen as necessary to make the route pattern more cost effective by shortening certain routes and generally increasing sailing frequency on most of the routes. The majority of the routes willl remain as shown on Figure 1 but the following are recommended for changes designed to maximise the road component of any journey and to make increased frequency of ferry services practicable.

TABLE B

RECOMMENDED SHORTER ROUTES

From	To	Distance kms	Replacing	Distance kms	Roadworks
Glendale	Lochmaddy	30	Uig-Lochmaddy	51	B884 improve 16km
Lochmaddy	Leverburgh	24	Lochmaddy-Tarbert	44	B859 spot improvements
Ludaig	Eoligarry	9	Lochboisdale-Castlebay	36	Local improvement 8km
Tobermory	Tiree	54	Oban-Tiree	96	None
Tobermory	Coll	34	Oban-Coll	71	None
Scrabster	Lerwick	225	Aberdeen-Lerwick	337	A9 improvements programme
Howton	Lyness	10	Stromness-Lyness	18	A964 new approach 1km

4.13 Among the ferry routes described in Table A and shown on Figure 1 are four which have limited Ro/Ro facilities at present but which do not appear to justify the installation of linkspans and the introduction of standard ferries. These islands - Raasay, Lismore, Luing and Gigha - have small populations and limited economic activity and are well served under existing procedures and plans for investment. The Island of Iona, which now has a restricted Ro/Ro ferry serving residents and essential visitors, falls into the same category.

4.14 In addition to the routes described in Table A there are a number of locally important minor routes, mostly to islands with a population less than 250 persons. These are services to:-

Berneray	Inverie	Rousay
Colonsay	Kerrera	Small Isles
Fair Isle	Mingary	Skerries
Foula	Papa Stour	Ulva
Vatersay		

There could be several responses to the longer term future of all these services under arrangements made by regional councils with their responsibility for the co-ordination of public transport. Demand and cost will influence the solution on each route but among available technologies are launches, barges, landing craft and adapted motor fishing vessels, low-cost ferries are not necessarily inferior as may be seen at Scalpay and Eriskay, two prosperious islands served until very recently by simple, cheap ferries.

4.15 Table E, immediately after para 5.12 of this report, summarises the future route pattern recomended by HIDB, excluding those minor routes mentioned in paras 4.13 and 4.14. That table also indicates the type and number of vessels which are suggested as appropriate for each route. In the longer term more radical changes in the structure of routes may become feasible, egs links within the Western Isles, Coll to Tiree and the link to Colonsay.

ROADWORKS

4.16 The introduction of the shorter sea routes recommended will involve relatively few major roadworks. All the sites suggested for new ferry terminals are served by roads but some of these are single-track of fairly low standard with inadequate passing places and insufficient strength for regular use by large comercial vehicles.

4.17 It must not be thought that roads to all ferry terminals must necessarily be of a very high standard. Obviously roads to key ports such as Scrabster or Ullapool must be capable of carrying large traffic flows including many heavy vehicles. The road to the terminals suggested at Glendale and Ludaig will never take very large traffic flows although the construction standard must be adequate for the largest size commercial vehicle. We have considered sailing frequency on these shorter routes and based on those calculations we estimate the maximum number of vehicles to and from the ferry terminal at Glendale, for example, would be no more than 224 car equivalents daily. Traffic will, furthermore, be moving in small groups at relatively wide intervals. To and from Glendale maximum flow would be 28 car equivalents in each direction every $3\frac{1}{2}$ to 4 hours. These figures suggest that traffic will be well within SDD standards for single-track roads. We therefore recommend that Glendale be served by either a high standard single-track road with long frequent passing places or a simple double track road. The road to Ludaig requires upgrading, some widening and the introduction of adequate passing places. Minor improvements are also required to the proposed terminal at Leverburgh in Harris.

4.18 We have examined the estimated cost of relevant roadworks included in the 1978/83 TPPs of Strathclyde and Highland Regional Councils and have arrived at an indicative cost of upgrading single track roads to simple double track roads at 1979 prices. That standard is higher than HIDB recommends to the terminals and there should, therefore, be adequate allowance for any special difficulties. In the following table we have allowed £164,500 per kilometre plus an allowance for bridges where these are of consequence. For construction in the Western Isles we have used an estimte from the 1976 TPP increased to allow for inflation in costs to 1979.

TABLE C

ESTIMATED COST OF ROADWORKS

Ferry Terminal	Road to be Upgraded	Estimated Cost	
		£	
Glendale	16 kms	2.63m	3-5 kms on peat
Leverburgh	Minor improvements	0.11m	Road to pier
Ludaig) Eoligary)	8 kms	0.53m	

4.19 It should be noted that the move of the Tiree/Coll terminal from Oban to Tobermory would not require additional roadworks since Strathclyde Regional Council is already reconstrucing the Craignure to Tobermory road to the required standard. It is because these roadworks have been undertaken that the Board recommends Tobermory as the embarkation point for Coll and Tiree in preference to Loch Tuath which in theory would provide still shorter sailing distances but would require heavy investment in new road construction.

5 TERMINALS AND VESSELS

TERMINALS

One of the features of Scottish ferry services is the wide variety of types of terminal in use. The salient points of each are as follows:

5.1 (a) End Loading Slipway (SE)

There are several varieties of slipway, the simplest being a beach level concrete hard against which vessels, such as shallow draft landing barges, may run. A more common form is a concrete ramp running down fromthe shore at about 12½% gradient. The ship runs in against the ramp and a hinged ship-mounted ramp provides the bridge over to the slipway from the ship. Sometimes an aligning structure is provided for the vessel to lie against when the bow or stern ramp is on the slipway. These slipways are relatively inexpensive and are perfectly adequate in sheltered water. They do, however, tend to be difficult for low slung vehicles and present some element of danger, particularly where drivers have to back off single ended vessels without turntables on to the slipway.

(b) Quarter Loading Slipway (SQ)

These terminals involve a long inclined jetty running down into the water against which the vessel can berth, its position on the jetty being determined by the state of the tide. Vehicles are loaded and discharged by means of a hinged ramp mounted on the vessels quarter. This again is a suitable arrangement in relatively sheltered water and

is moderate in cost although very long, articulated vehicles may have some difficulties because of the rather sharp angles through which vehicles have to turn.

(c) Conventional Pier (P)

A conventional pier may be used for the movement of vehicles by means of a crane mounted either on the ship or on shore or by a ship-mounted elevator. Many conventional piers exist and the benefit of this type of terminal is, of course, that existing facilities can be used. However, this is a slow, labour-intensive way of handling vehicles and in any quantity is not a manner to be recommended.

(d) Cross Channel Terminal (CC)

These terminals are in common use at ports which handle large vehicle flows. The vehicles are loaded and discharged by means of a long ramp mounted in the bow or stern of the vessel. This ramp is lowered on to a heavy, self-supporting linkspan adjusted by powerful machinery to suit the state of the tide. An aliging structure is used for the vessel to lie against while at the linkspan. This is the most expensive type of manned terminal but there is no limit to the size of ferry which can be accommodated at it and it is completely satisfactory in operation.

(e) The Side Loading Variant (CS)

This is a variant of the cross channel terminal but with the axis of the linkspan at right angles to the centre line of the vessel. The vehicles are thus loaded or discharged by means of a ramp monted at the side of the ship. This type of terminal is awkward and slow for very large volumes of vehicles or for long or low slung vehicles.

(f) Norwegian Standard (NS)

This type of linkspan is that used in the Shetland islands. It is a light linkspan supported at its outer end on a ledge in the bow or stern of the vessel to which it is firmly locked while vehicles are being loaded. Light hydraulic or electric gear operated from the vessel adjusts the linkspan level prior to berthing. Some form of aligning structure is required but the costs of the NS type are considerably less than those of the CC type because of the lightness of the structure and in some cases the ability to use a shorter link-span taking advantage of the sheer of the vessel's car deck. This type of terminal is limited to vessels with up to about 70 cars capacity. It has the advantage that no permanent shore staff are required since the whole operation is controlled from the vessel.

(g) The Flotation Chamber Variant (FC)

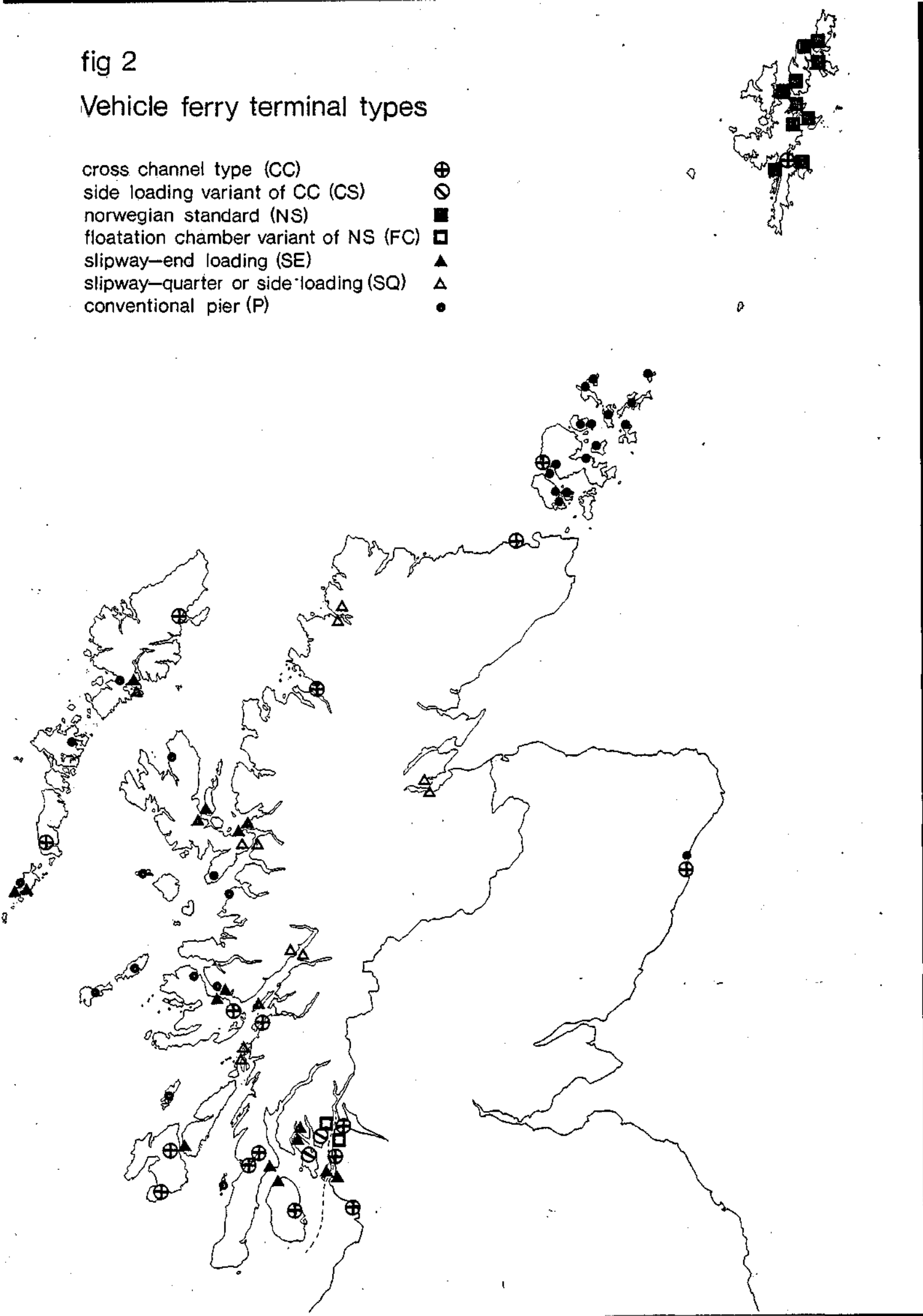
These terminals are similar to the NS type but ompressed air in a flotation chamber is used to adjust the levels as opposed to above ground machinery in the Norwegian Standard type.

5.2 Diagrams showing the location and distribution of the existing terminal types are provided at Figure 2.

fig 2

Vehicle ferry terminal types

cross channel type (CC) ⊕
side loading variant of CC (CS) ⊘
norwegian standard (NS) ■
floatation chamber variant of NS (FC) □
slipway—end loading (SE) ▲
slipway—quarter or side loading (SQ) △
conventional pier (P) ●



5.3 There are thus seven different and largely incompatible vehicle ferry terminal types in Scotland. Not only does this hamper interchange of vessels on each route, but many of the existing systems are awkward and slow for vehicles to negotiate and do not permit the loading of all types of road vehicle. Some are particularly expensive in terms of capital and running costs. Apart from routes where traffic is very light HIDB regards the following as the pre-requisite physical requirements for vehicle ferry terminals:

(a) safe and easy for vehicles to negotiate at all states of tide;
(b) readily usable by all types and sizes of road vehicle;
(c) arranged for quick access and egress to speed ship turnaround;
(d) standardised, to permit the interchangeability of ships;
(e) minimum capital and running costs consistent with meeting the first four requirements.

5.4 In assessing the various types of terminal HIDB has concluded that three types are particularly well-suited to requirements in the Highlands and Islands. These are the Cross Channel type, the Norwegian Standard type and the Flotation Chamber variant of the Norwegian Standard. Which type should be used depends largely upon location and the volume of traffic which is to be handled. Decisions can best be made by those installing linkspans but every effort should be made to avoid the expensive Cross Channel type unless it is clear that the Norwegian Standard cannot meet local conditions. The Board agrees that the end loading slipway can be satisfactory for certain types of service in sheltered waters with limited tidal range.

5.5 HIDB has commissioned a general arrangement design for a Norwegian Standard type terminal suitable for installation in Scotland. This design is not reproduced in this report but is available for inspection in the Board's library. (See footnote to para 5.19).

SHIPS

5.6 The wide variety of vessels operating existing ferry services in Scotland is illustrated in the following table.

TABLE D
SCOTTISH FERRY VESSELS

Name of Vessel	Car Cap	Max Pass Cap	Best Pass Cert	Terminal Type (see paras 5.1 - 5.5)	Weight Limits (tons)	Operator
(a) Roll Through						
Double ended ferries						
Erskine (CH)	030	N/A	Nil	SE	32+	CPA
Isle of Cumbrae	020	650	IIa	SE	32+	STG
Kyleakin	28	200	V	SE	32+	STG
Locnalsh	28	200	V	SE	32+	STG
Maid of Glencoul	16	116	V	SQ	32	HRC
Renfrew (CH)	030	N/A	Nil	SE	32+	CPA
Rosenaugh	20	150	V	SQ	16	HRC
Sound of Sanda	17	345	IV	FC	32+	WF
Sound of Scarba	22	200	V	FC	32+	WF
Sound of Shuna	25	200	V	FC	32+	WF

(b) Roll Through
Uni-directional vessels

Belnahua	9	50	VIa	SQ	13	SRC
Caledonia	40	650	IIa	CC	32+	STG
Clansman	60	870	IIa	CC	32+	STG
Fivla	12	30	VIa	NS	32+	SIC
Fygla	12	30	VIa	NS	32+	SIC
Geira	12	30	VIa	NS	32+	SIC
Grima	12	30	VIa	NS	32+	SIC
Iona*	47	554	IIa	CC/CS/P	32+	STG
Lyrawa Bay ◊	12	60	IV	(NS)/P	32+	OIC
St Clair	230		IIa	CC	32+	P&O
ST Ola	90	400	IIa	CC	32+	P&O
Suilven	120	408	IIa	CC	32+	STG
Thora	12	30	VIa	NS	32+	SIC

(c) Stern Loading Vessels

Glen Sannox *	55	1100	IIa	CC/CS/P	32+	STG
Juno :+:	40	674	IV	CC/CS	32+	STG
Jupiter :+:	40	687	IV	CC/CS	32+	STG
Pioneer *	30	273	IIa	CC	32+	STG
Sound of Islay	22	90	IIa	CC	32+	WF
Saturn :+:	40		IV	CC/CS	32+	STG
Claymore *	47	500	IIa	CC/CS/P	32+	STG

(d) Bow Loading Vessels

Broadford	10	60	V	SE	16	STG
Bruernish	5	164	VIa	SE	20	STG
Canna	5	50	VIa	SE	20	STG
Coll	5	125	V	SE	20	STG
Coruisk	5	70	IV	SE	15	STG
Eigg	5	164	VIa	SE	20	STG
Kilbrannan	5	148	VIa	SE	20	STG
Largs	5	77	IV	SE	15	STG
Morvern	5	148	VIa	SE	20	STG
Portree	10	60	V	SE	16	STG
Raasay	5	164	VIa	SE	20	STG
Rhum	5	164	VIa	SE	20	STG
Sound of Gigha	8	28	VIa	SE	32	WF
Eilean na h-Oige	4	35	VIa	SE	16	WIC

(e) Side Loading by Elevator

Columba	50	870	IIa	P	22	STG
Hebrides	50	600	IIa	P	22	STG

(f) Other Small Vehicle Ferries

Eilean Dubh (Q)	6	100	V	SQ	10	HRC
Glen Mallie (t)	6	12		SQ	4	McK
Gleann Mhor (t)	6	80	V	SQ	6	HRC
Glenahulish (t)	6	48	V	SQ	7	HRC
Lochaber (t)	9	100	V	SQ	8	HRC
Queen of Kylesku (t)	8		V	SQ	14	HRC

(g) Lift on Lift Off Vessels

Lochmor	winter	36	IIa	P	2	STG
	summer	100				
Islander		12		P	7	OIS
Orcadia		358	IIa	P	5	OIS

(h) Awaiting Disposal

Arran (STG)

Footnote

o - also ship mounted crane
* - also side loading with elevator
:+: - also side loading with linkspan
(t) - turntable type
(CH) - chain ferry
(q) - quarter ramp

Letters indicating terminal type cross refer with Chapter 5

Operators

CPA - Clyde Port Authority
HRC - Highland Regional Council
McK - M A MacKenzie
OIS - Orkney Island Shipping Co
P&O - P & O Ferries
SIC - Shetland Islands Council
SRC - Strathclyde Regional Council
STG - Scottish Transport Group
WF - Western Ferries
WIC - Western Isles Islands Council

5.7 It is very difficult to judge the efficiency of any particular Ro/Ro ferry design, although research carried out in Norway suggests that three cost categories can be examined.

(a) Hull costs, which are more or less proportional to the area prescribed by the length and breadth of the vessel.
(b) Propulsion costs, which are more or less proportional to engine power, and
(c) Crew costs which are more or less proportional to the numbers of crew members.

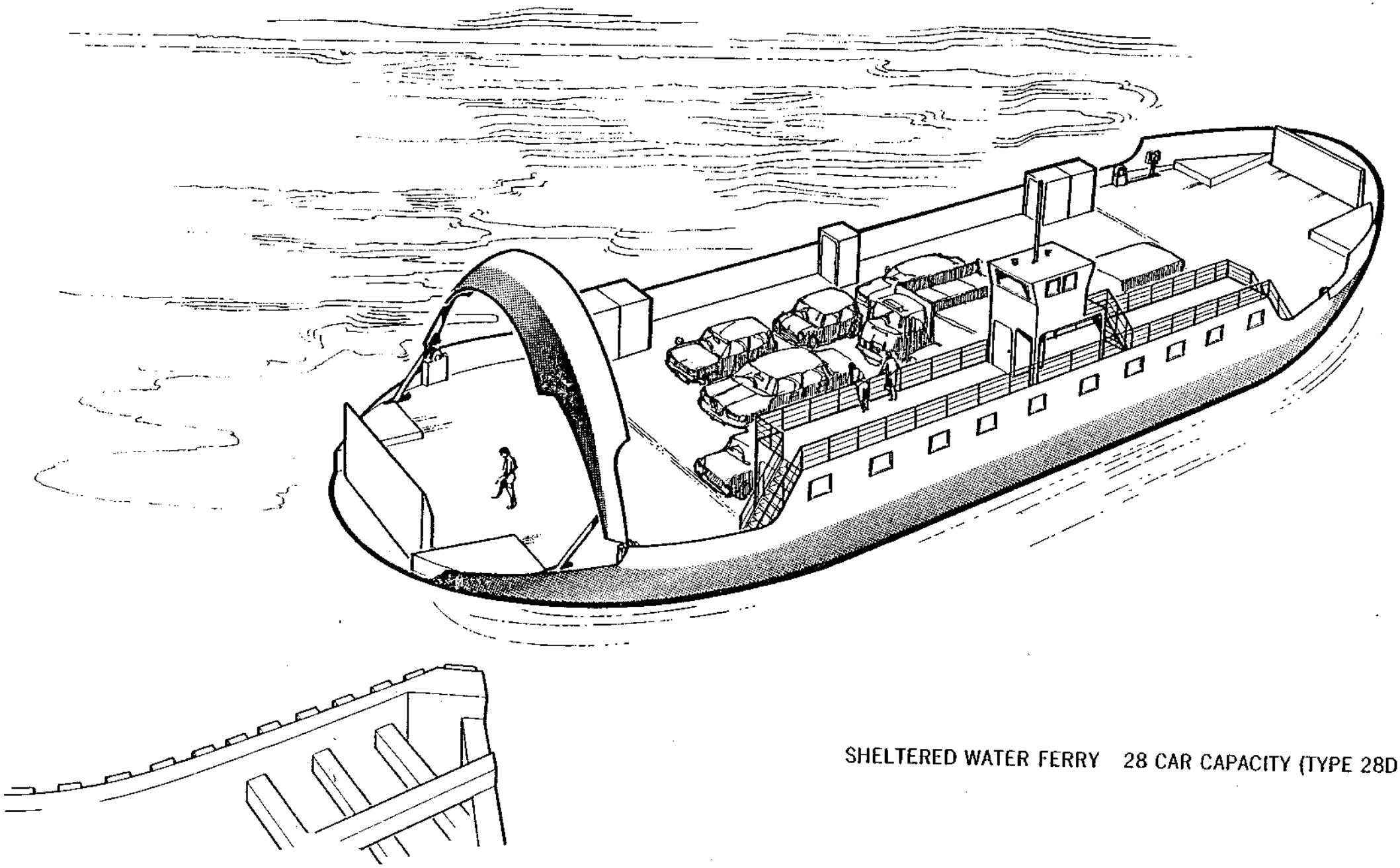
HIDB has examined each of the vessels currently operating in the Highlands and Islands against these three factors and is surprised at the apparently wide range of relative efficiency which the analysis reveals. It is not our intention to read too much into this analysis. We appreciate that there are factors which distort efficiency indicators, for example a vessel may have what appears to be excessive horse power but may have been so fitted in order to maintain a higher than average cruising speed over a relatively long voyage, or again a level of crewing may seem to be higher than necessary but is in fact dictated by duty time considerations, Department of Trade requirements and factors which are to come extent outside the immediate control of the operator. However, the Board draws attention of ferry operators to apparent discrepancies and urges them to make every effort to ensure that on all three of the above factors, vessels which are commissioned in future are carefully designed to maximise cost-effectiveness both as to hull size, engine power and manning level.

5.8 In the light of our research it is suggested that essential criteria for efficient, cost-effective Ro/Ro ferries can be formulated. They are:-

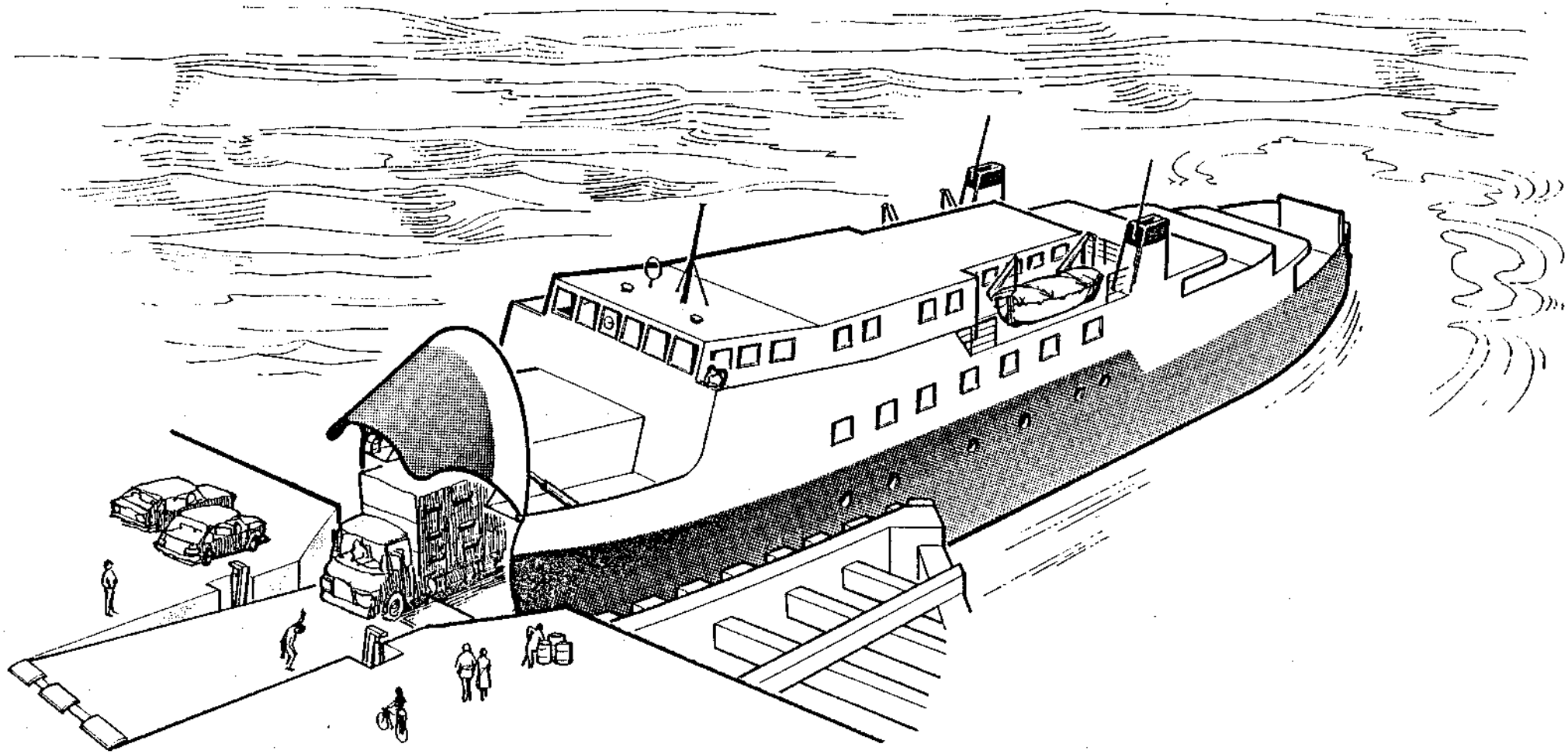
(a) seaworthy vessels designed to meet DOT requirements and suitable for the water in which they ply;
(b) vessels readily usable by all types and sizes of road vehicles;
(c) vessels arranged for quick access and egress of vehicles to speed ship turnaround preferably by means of a roll-through system;
(d) vessels of standard design or at least with complete interchangeability and compatible with all terminals to which they may serve;
(e) capital and running costs kept to a minimum by means of, inter alia,

(i) the use of as much of the main deck as is practicable for the carriage of vehicles;
(ii) the location of passenger and crew accommodation below the main deck whenever possible. Passenger accommodation should be comfortable, well ventilated and lit, particularly if located on the lower deck;
(iii) the avoidance of excessive engine power and the installation of rugged, simple machinery and methods of propulsion; and
(iv) the use of automation wherever appropriate, for example, in bridge control of engines in order to reduce crew workload and crew size.

5.9 HIDB has concluded that five types of ferry could be designed to meet all requirements of Highlands and Islands services in accordance with the



SHELTERED WATER FERRY 28 CAR CAPACITY (TYPE 28D)



ROUGH WATER FERRY 28 CAR CAPACITY (TYPE 28R)

criteria set out above except those to Stornoway, Stromness and Lerwick. The types which we see as necessary are:

(a)	a 12-car capacity sheltered water ferry	(Type 12S)
(b)	a 20-car capacity open water ferry;	(Type 20R)
(c)	a 28-car capacity open water ferry;	(Type 28R)
(d)	a 20-car capacity double-ended ferry;	(Type 20D)
(e)	a 28-car capacity double-ended ferry.	(Type 28D)

In an effort to ensure that vessels of these characteristics could be designed to be suitable for Scottish conditions and regulations, the Board commissioned Y-ARD Limited, Naval Architects of Glasgow, to prepare general arrangement drawings and indicative capital and operating costs and crewing requirements for all these standard types with the exception of the 20 car, double-ended vessel. Again, the detailed work is not published in this report but is available in the HIDB Library for consultation. (Outline Specifications. Y-ARD Ltd : Feb '78 (4 volumes).

The characteristics of these four ferry types may be summarised as follows:-(a) Principal Dimensions and Capacity:

Type	Length Overall (metres)	Beam (metres)	Depth (metres)	Draft (metres)	Speed (knots)	Cars	Passengers
12S	26.5	8.0	3.2	2.0	9.5	12	90
20R	35.0	9.5	3.8	2.6	10.0	20	50 (winter) 150 (summer)
28R	45.0	10.3	4.2	3.0	12.0	28	80 (winter) 200 (summer)
28D	44.0	10.5	4.0	2.5	11.0	28	200

(b) Manning:

Crew members will vary on identical vessels depending on their operating routes and the determination made by D of T following inspection and the operators' proposals. The manning range is estimated as follows:

12S - 3 to 4; 20R - 7 to 9; 28R - 8 to 10; and 28D - 4 to 6.

(c) Capital and Operating Costs:

Y-ARD Ltd have prepared cost estimates for the four ferry types as follows:

Capital Costs at January 1980

Type	Basic Cost £	Bow Thruster £	CP Prop £	Total Cost £
12S	720,000	-	-	720,000
20R	1,500,000	33,000	52,000	1,585,000
28R	2,100,000	39,000	65,000	2,204,000
28D	1,560,000	-	-	1,560,000

Operating Costs at January 1980

COSTS (£'000)

	Ferry Design	12 S		20 R		28 R		28 D	
	Item	Minimum Crew (3)	Maximum Crew (4)	Minimum Crew (7)	Maximum Crew (9)	Minimum Crew (8)	Maximum Crew (10)	Minimum Crew (4)	Maximum Crew (6)
1	Fuel and Lub Oil	30.1	30.1	83.9	83.9	139.9	139.9	84.3	84.3
2	Crew	65.8	68.1	122.0	155.2	136.9	166.9	70.6	108.2
3	Insurance	9.4	9.4	22.2	22.2	25.0	25.0	17.2	17.2
4	Repair and Maintenance	6.2	6.2	12.3	12.3	19.0	19.0	12.3	12.3
5	Stores	6.2	6.2	9.1	9.1	9.1	9.1	6.2	6.2
6	Relief Ship	12.2	12.4	25.6	29.0	33.7	36.7	19.8	23.6
7	Radio Equipment	4.1	4.1	7.4	7.4	7.4	7.4	7.4	7.4
		134.0	136.5	282.5	319.1	371.0	404.0	217.8	259.2
	Ship Cost*	84.6	84.6	186.2	186.2	259.0	259.0	183.0	183.0
	Terminal Cost**	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0
Total Annual Cost		259.6	262.1	509.7	546.3	671.0	704.0	441.8	483.2

NOTE: Management and overheads were not included in the costs presented in February 1978; neither are they included in the costs shown above. If it is desired to introduce them Y-ARD suggest a notional £15,000 for the 12 S, £20,000 for the 20 R, £22,300 for the 28 R and £18,400 for the 28 D vessel types

* Capital Recovery Factor, 10%, 20 years

** Capital Recovery Factory, 10%, 40 years based on Capital cost of £400,000

5.10 Each ferry type will be of robust construction and will be designed to give long, low-maintenance service. Lloyd's requirements will control the design but areas likely to be subject to heavy wear will be substantially strengthened over those requirements. Passenger accommodation will usually be below the main deck but will be designed to give complete, comfortable seating in attractive, well-ventilated surroundings. The ferries will not be as large as many of those they will replace and may not always be as comfortable in rough weather. The vessels will, of course, comply with all safety requirements as a condition of their operating certificates from D of T and will be in every way well-found, seaworthy vessels. The appearance of typical ferries is illustrated in sketches by the designers of the rough water and sheltered water ferries, each of 28 car capacity.

5.11 It is stressed that the Board does not seek to introduce these relatively small vessels on the longer, arterial routes to Shetland, Orkney and Lewis. When the vessels serving these routes, St Clair, St Ola, and Suilven need replacement, they will no doubt be designed to meet the peculiar requirements of the longer route in question.

TABLE E

SUMMARY OF LONG TERM RECOMMENDED ROUTES AND FERRY VESSELS FOR SERVICES UNDER HIDB PROPOSALS

ROUTES (see Table A & Fig 3)				SHIPS (see Para 5.9)		
Route Number	Replaces Route (see Fig 1)	From	To	Ferry Type	Number of Ships Summer	Winter
2		Gourock	Dunoon	28D	3	2
4		Colintraive		20D	1	1
5		Corran	Ardgour	20D	1	1
6		Kyle of Lochalsh	Kyleakin	28D	2	1
9		Wemyss Bay	Rothesay	28D	1	1
10		Largs	Cumbrae	20D	1	
				12S		1
	11	Howton	Longhope	12S	1	1
12	13, 40 & 41	Orkney North Isles		20R	1	1
14		Lerwick	Bressay	12S	1	1
15		Toft	Ulsta	12S	2	1
16		Belmont	Gutcher	12S	1	1
17		Claonaig	Lochranza	12S	1	
18		Port Askaig	Feolin	12S	1	1
20		Lochaline	Fishnish	12S	1	1
21		Mallaig	Armadale	20R	1	
24		Kyles Scalpay	Scalpay	12S	1	1
25		Vidlin	Whalsay	12S	1	1
26		Gutcher	Fetlar	12S	1	1
27		Ardrossan	Brodick	28R	2	1
28		Kennacraig	Port Ellen	28R	1	*
29		Kennacraig	Port Askaig	28R	1	*
31		Oban	Craignure	28R	1½	1
	33	Tobermory	Tiree/Coll	20R	1	1
	34	Oban	Castlebay	28R	½	½
	35 & 37	Glendale	Lochmaddy & Leverburgh	28R	1	1
35A (new)		Ludaig	Eoligarry	12S	1	1
36		Uig	Tarbert	28R	1	1
38		Ullapool	Stornoway		'Suilven'	
39		Scrabster	Stromness		'St Ola'	
	42	Scrabster	Lerwick		'St Clair'	
43		Kennacraig	Gigha	12S	1	1

* winter requirement on both routes combined not in excess of 1 Type 28R ferry

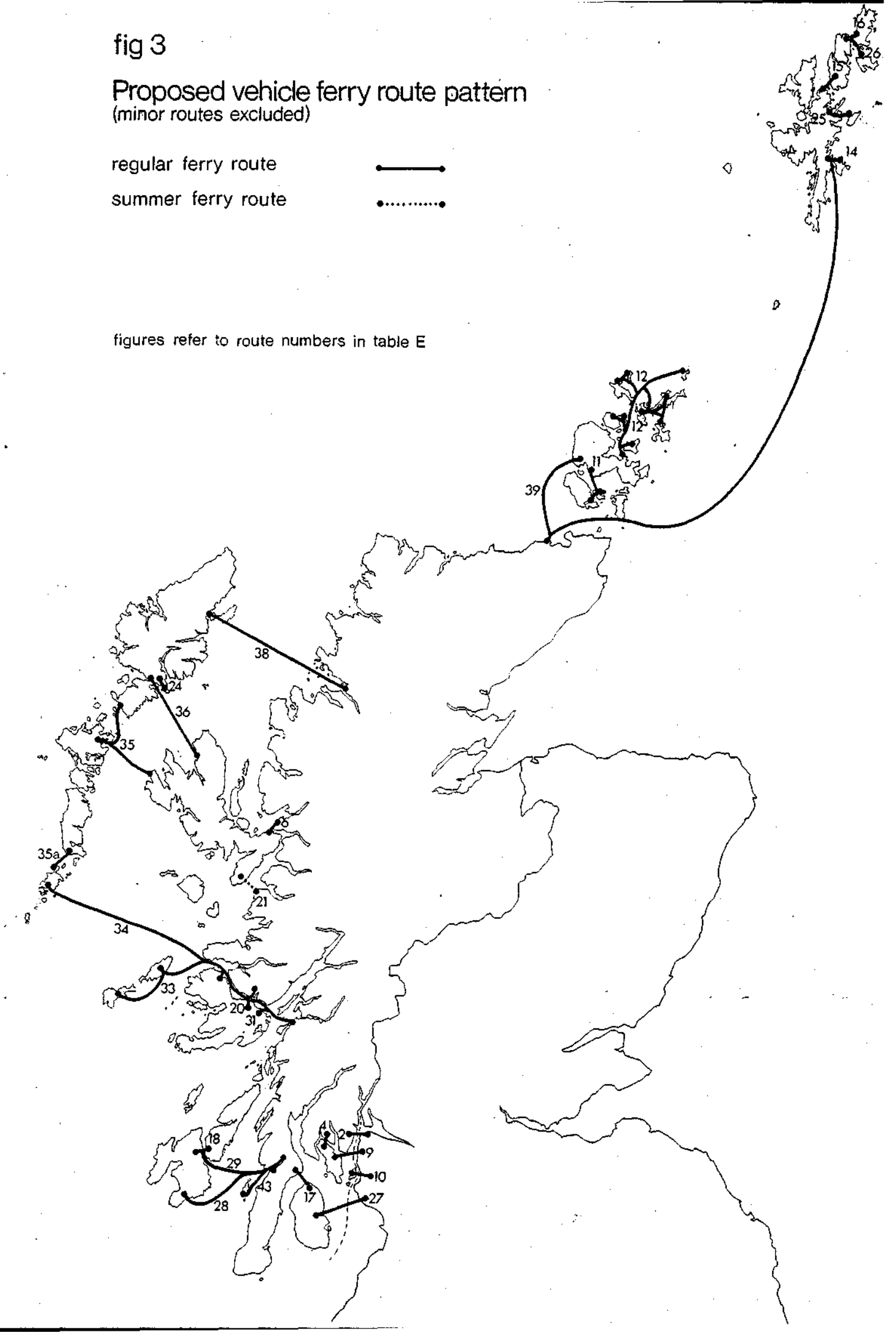
fig 3

Proposed vehicle ferry route pattern
(minor routes excluded)

regular ferry route

summer ferry route

figures refer to route numbers in table E



5.12 Hovercraft, Hydrofoils and Catamarans

The suggestion for standard ferry designs would be for othodox Ro/Ro vessels of conventional design. The Board has considered the use of more up-to-date vessels in the form of hoverdraft, hydrofoils and catamarans. For use on the main ferry system we conclude that there would be either severe limitations on vehicle carrying capacity or very high capital and operating costs should these types of craft be introduced. The high costs in particular would not be consistent with the objectives which the Board seeks in the long-term evolution of the ferry system. However, in the special circumstances of one or two routes there could well be a place for experiment. For example, the crossing of the Sound of Harris direct from Harris to North Uist/Berneray may only be feasible for a catamaran, especially designed to take advantage of its very shallow draft and yet with an ability to carry a small number of light vehicles. Another possible application of the catamaran would be to operate a fast passenger-only service to certain islands, Colonsay is one possibility - augmented by a motor fishing vessel freight service running from another port such as Oban. This MFV would, of course, be adapted to carry a very small number of vehicles on its aft deck sufficient for the demands of the island population.

6 COSTS AND CHARGES

6.1 Very little is known about the current costs of providing the present ferry services throughout the Highlands and Islands. As already mentioned, none of the operating companies publish data on such matters as fuel costs, crewing costs, maintenance and repair costs. No costs are published setting out the relative operating performance of each vessel. The Scottish Transport Group publishes annually an overall statement of cost, in 1978, which is the latest year available, the total cost of services operated by that company amounted to £11.678m, total revenue was £8.13m, leaving the short-fall met by subsidy from central government of £3.635m. Similar figures are not available from the other two larger companies operating in the Highlands and Islands.

6.2 The problems facing the operators are real. The expected long term increase in fuel and labour costs will mean that even with a subsidy maintained at constant real value, it will be difficult to keep the increase in fares below the level of general inflation. Conversely, a government intending to raise the real level of subsidy may be faced -will be at certain times - with increasing the real level of subsidy without reducing the level of fares. The Board believes that the proposals in this paper will present the opportunity to reduce system costs. This is not a short-term measure but can be completed over a period of years, accelerated if necessary by sales of second-hand vessels.

6.3 It is difficult to demonstrate a direct comparison between the Board's long term proposals and the current situation. This is because of differences between present and proposed route patterns and the lack of breakdown of costs in the present ferry services. An indication of the effectiveness of the proposals may be gained from analysis of published data on the operations of Caledonian MacBrayne Ltd in comparison with costs provided by the Board's consultants, Y-ARD Ltd.

The Annual Report of the Scottish Transport Group for 1978 (the latest available at the time of writing) reveals the total working expenses on shipping operations as £11,678,000. This is broken down as follows:

	%	£
Salaries, wages, NI, pensions	45	5,255,100
Fuel and power	11	1,284,580
Stores and services	36	4,204,080
Depreciation	8	934,240

these figures can be compared with the theoretical cost of running all Cal Mac services using the standard vessels proposed by the Board at 1978 costs as determined by Y-ARD Ltd. The fleet required would be:-

Type 12S	-	7 ships
Type 20D	-	2 ships
Type 20R	-	3 ships
Type 28D	-	6 ships
Type 28R	-	8 ships
Cross Channel	-	1 ship (Suilven)

The total annual cost of operations in 1978 would have been: *

Type	Number	Unit Cost (£'000)	Total (£'000)	
12S	7	177.2	1,240.4	
20D	2	350.0	700.0	
20R	3	363.0	1,089.0	
28D	6	323.0	1,938.0	
28R	8	460.0	3,680.0	
Cross Channel	1	-	1,200.0	(HIDB estimate)
		TOTAL:	9,847.400	

Y-ARD's costs allow two crews for each vessel. To this an additional half-crew per ship has been added increasing the total cost by £937,330 to £10,784,730. This sum is £893,270 less than the cost of Cal Mac operations during the year. It is when the Y-ARD figures are broken down, however, that a striking difference emerges. Ship costs, that is servicing loan charges on new construction, amounts to £4,038,700 on the 27 ships in the fleet. This represents no less than 37% of annual operating costs compared with only 8% allowed in the STG cost breakdown. This is only partially accounted for by the fact that Cal Mac's fleet of 35 ships is a mixture of new and old vessels whereas the Y-ARD figures are for new construction throughout.

* Y-ARD include terminal costs. It is not clear whether these are included in the STG figures.

The rest of the difference is apparently accounted for by capital grants for new construction made to the operators. Should similar Central Government or EEC grants be made for the fleet proposed by the Board, annual operating costs would show substantial reductions in the cost of the standard fleet designed by Y-ARD Ltd.

6.4 The Board has for over a decade argued for a road equivalent tariff (RET) which is now under active consideration by Government. In its response to the recently issued Consultative Paper, the HIDB has expressed views on the implementation of RET. However, it is useful to recapitulate the advantages of such a system. (Sea Transport to the Scottish Islands - HIDB Response, April 1980).

(a) RET will lead to lower fares and thus to a general reduction in the cost of goods imported to the islands. It will also lead to increased competitiveness of establishments exporting from the islands, and will stimulate the flow of tourists.

(b) RET, being distance-related will be perceived as an equitable system of charging island residents.

(c) As a system of regulated fares, their level will be set by the Government after determining the level of subsidy.

(d) It will be a responsibility of Government and operators to ensure the costs of operation are kept at a minimum. This is a recognition that market forces and price competition are not powerful incentives to efficiency where competition exists on only a few routes.

6.5 The cost to the public sector of introducing RET for all vehicles at the level of the road equivalent "running" costs will be a major obstacle to its introduction. The Board believes that the longer term prospect of cost reductions from the ideas in this paper should offer a major source of reassurance to the concern expressed by the Secretary of State about the costs of introducing RET.

7 ASPECTS OF IMPLEMENTATION

7.1 There is a division in responsibility for transport policy related to ferries between Scottish Office and local authorities. Scottish Office pays subsidies under the Highlands and Islands Shipping Services Act 1960 to Scottish Transport Group, responsible for the services of Caledonian MacBrayne Ltd, and to the Orkney Islands Shipping Company. In addition, since September 1979 there has been a subsidised freight scheme on the services operated by the North of Scotland Orkney & Shetland Shipping Company to Orkney and Shetland. The amount going to STG in 1980 will be £5m, to OISC £0.7m and the estimated cost of the new freight subsidy in a full year is £1.6m. On STG and OISC subsidised routes Scottish Development Department review capital expenditure on new vessels. Local authorities have powers under the Local Government (Scotland) Act 1973 to give transport subsidies on ferry routes or to operate ferry services directly.

7.2 Implementation of a development scheme for ferry services may need consideration of a more integrated system of responsibility for capital expenditure on vessels, running subsidies and terminals. Within Argyll & Bute and Cunninghame Districts, the responsibility for ferry services, it may be argued, could devolve on Strathclyde Regional Council. The Council's

broad responsibilities would create a number of advantages in relating ferry services to other social and planning priorities in the region. On the other hand, there are a number of arguments for maintaining responsibility for financing and supervising the ferry system at a Scottish level. Many of the major routes are inter-authority; there are advantages in reviewing all major rates in the ferry system as a whole; it may be difficult to conclude an agreement to give local authorities the means to disburse the financial assistance now channelled through Scottish Office. If, however, the responsibility for supervising a new system of RET subsidy and developing plans for the future of the ferry system is placed on Scottish Development Department it would require additional manpower and an enlarged section dealing with this question.

7.3 There have been proposals in the past for a separate authority dealing with ferry services in the Highlands and Islands. We would not favour such an authority running ferry services as operators but there would be advantages in a separate body responsible for regulating the standards and charges of operators and financing an RET-based system of fares with an annual subsidy from Government. It might also take over responsibility for terminals and financing their modification to compatibility with new vessel designs. Further, if its terms of reference were so framed, it could provide a much needed push behind a scheme to develop ferry services.

7.4 On balance, there should be considerable reluctance in creating a separate authority independent of central and local government. The first priority should be to investigate how the existing levels of government could adapt to the planning, regulating and financing burdens of a new system. In summary, the following paragraphs indicate some of the requirements of a ferry policy unit.

7.5 The scheme proposed will require a major investment programme on vessels, terminals and roadworks. Our contention has been that without reinvesting in the system as a whole, each set of decisions are so constrained as to ensure that the outcome will be sub-optimal. Such a programme must, however desirable it may be, be carried out over a period of time. A staged programme for standardised vessels could provide work for smaller Scottish shipyards with benefits which might include reductions in the cost of vessels and be a basis for export demand for these types. Attention must also be paid to the fact that much of the investment on the 'mainland' will be for the benefit of island communities, indeed in many cases communities in the jurisdiction of other local authorities. There must in the first instance be co-ordination and agreement between local authorities and between them, prospective operators and central government.

STATISTICS

7.6 We have already referred to the lack of good statistics on costs, traffic and levels of subsidy. This lack is an obvious handicap to anyone carrying out an analysis of Scottish shipping services. Detailed statistics are collected by most operators and although some operators are willing to disclose them the largest, STG, has never made public the kind of detailed statistics which would be so useful. As it is the public which ultimately foots the bill for ferry subsidies, through taxation, it does not appear unreasonable that they should know how effectively their money is being spent.

MONITORING

7.7 For the purpose of monitoring performance, setting annual subsidies, informing the public, educating the next generation of decision makers and providing good research material, the following is suggested as the minumum data which should be collected in standard format and published:

(a) Traffic: route by route for cars, goods vehicles, buses, other vehicles and passengers, with some indication of seasonality.

(b) Operating costs and revenues: route by route in detail, overhead allocation to routes.

(c) Ship Costs: vessel by vessel listing such items as wages, overtime, social security payments, taxes, victualling, fuel, maintenance, repairs of specified kinds, telephone and radio charges, insurance, charter fees, interest, depreciation, capital costs.

(d) Ship Specifications: Ship by ship dimensions, passenger and vehicle capacities, weight and axle limits, free height over deck, engine make and horse power, speed, fuel consumption, manning operating costs, number of days in route service, under repair, on charter etc.

(e) Other Items: such as restaurant and shop costs and revenues, ancillary activities.

As previously mentioned, we believe that the provision of standard statistics annually should be a condition of route allocation to each operator of subsidised ferry services.

ASSISTANCE FROM EUROPE

7.8 We believe the special problems of islands in Scotland would form a good basis for application to the European Community for financial assistance. This may be as a Regional Development Grant or special assistance under a programme for improving transport infrastructure. The European Parliament has been made aware of those special problems on several occasions. A recent example is the 1979 report of the Committee on Regional Policy, Regional Planning and Transport - (Working Documents 1979-80, Document 113/79. para 32 et seq) - for which Mr John Corrie was rapporteur. The report explains that " for the peripheral maritime regions - and in particular for island communities - the cost of transport may become of paramount importance, since it may well serve to tip the balance unfavourably in a decision on the location of a new industry, or operate to the detriment of the profitability of existing industries. Another important factor to be taken into account is the effect of high transport costs on the lives of the inhabitants of peripheral maritime regions."

The report goes on to advocate the subsidisation of transport undertakings in disadvantaged regions, possibly through the introduction of Road Equivalent Tariffs. It also welcomes the creation of a committee to study transport infrastructure projects of community interest.

In November 1979 the Commission's Green Paper, on "The Role of the Community in the Development of Transport Infrastructure" was published - (EEC Document COM(79)550 final). This is a consultative document and it will obviously be some time before any proposals of the Commission are drafted. The paper's identification of criteria for transport infrastructure of Community concern and its mention of a 'financial instrument' exclusively for transport infrastructure clearly indicates, however, the trend of current thinking.

ROUTE LICENSING

7.9 The proposal for a new method of regulation and planning has been favoured by the Board for a number of years. The inclusion of a proposal for a route licensing system in the recent Consultative Paper was a welcome extension of this debate. The main justification for such a system is that the volume of traffic on most ferry routes does not support efficient competition. Two operators in free competition will in most cases add to the cost of providing the service and split a thin, highly seasonal demand between them. Regulated competition will allow a choice between operators who offer the best combination of service and charges by allocating routes for a limited number of years. Such a choice must, however, be supported by a system of checking and control to ensure that the proposed service lives up to the specification. Such systems are common in transport planning overseas and used in areas such as broadcasting in the UK.

7.10 The significance of such a change should not be underestimated. In particular the length of life of capital assets would make frequent changes subject to wasteful costs. We would favour a normal period of contract of 14 years subject to review after 7 years. If the terminals were in common public sector ownership, the principal costs would be of vessels. Although 14 years is not the full physical life of a ferry, it may be closer to its economic life and there is an active second-hand market for ships. In addition the system would be complementary to the year-by-year review of costs and charges required to determine the level of subsidy required for the operation of RET.

CONCLUSION

7.11 We should reiterate that this document is not a plan for the future of the ferry system in that it can be directly implemented. The Board believes that it is a sound basis for discussion and planning and has put it forward because the initiative required to set that discussion and planning in motion in a comprehensive way does not appear to be forthcoming from other sources at present.

There are past and current examples of consultation about new vessels and facilities on particular routes but frequently the options have been highly constrained. Similarly to argue for a reappraisal of the system is not per se to criticise the existing operators who, it has been made clear, have made considerable improvements to the services, often under difficult circumstances. However, the present Government's objective of improving conditions in island areas will require more than marginal improvements. The Board very much hopes that planning for major improvements and resources for their implementation will be set in motion soon.

Policy and Research Division
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