

# **Norwegian Ferries**

A comparison with Scotland

by

Roy Pedersen

Presented to the SAPT on 3 September 2025

# Part 1 - *Norwegian Ferry Policy*











Moss

Dronningen

Kystutrustningskip / Coastal passenger steamship  
651 brt / grt  
L: 79,3 ft B: 27 ft  
Trippel dampmaskin / Triple Steam Engine  
Værk / Builder: Poulsen Jernskipsbyggeri  
Rederi / Owners: Jernskipsbyggeri  
Skala / Model scale: 1:100

DS Dronningen  
1871  
1871



## *Moss*

Hjuldampskip / *Paddle steamer*

189 brt / grt

L: 195 ft B: 18 ft

Verft / Builder: Caird & Co, Greenock, 1855

Rederi / Owners: Dampskibet Moss, Moss

Dampmaskiner / Steam Engines: 2 x 50 NHK/NHP, 14 kn

Skala / Model scale 1:48

Hjuldampskipet *Moss* gikk i rute mellom Oslo, Moss og Kristiansand med mellomsteder fra 1855 til 1871. Med sine 14,5 knop var det et av Norges hurtigste dampskip. Via England ble skipet solgt til Stettin i 1871 og omdøpt *Der Kaiser*. Opphugget i 1900.

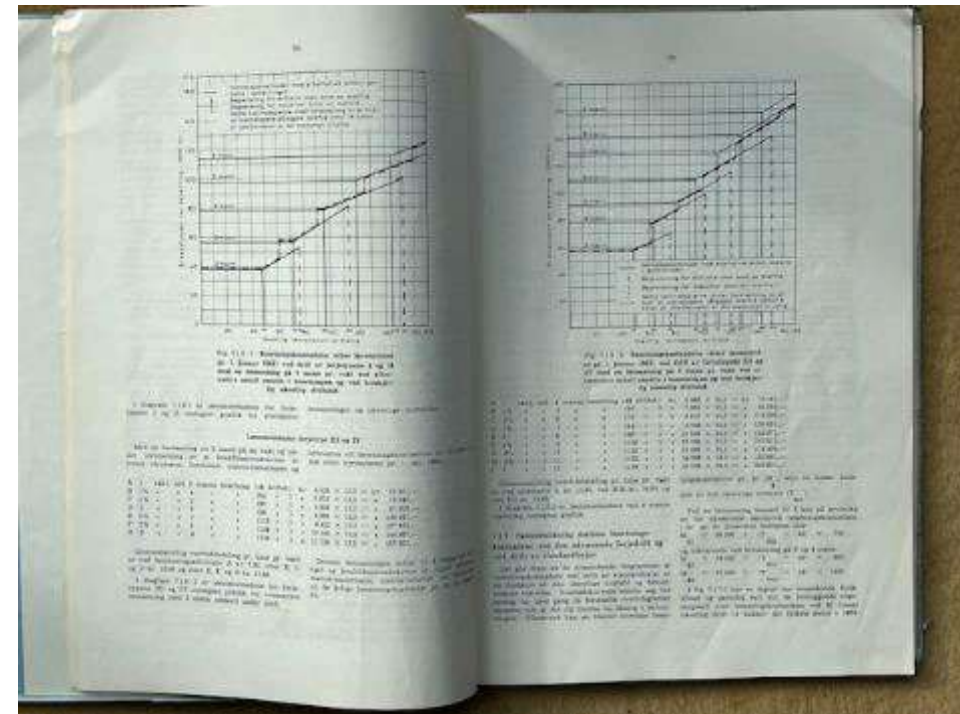
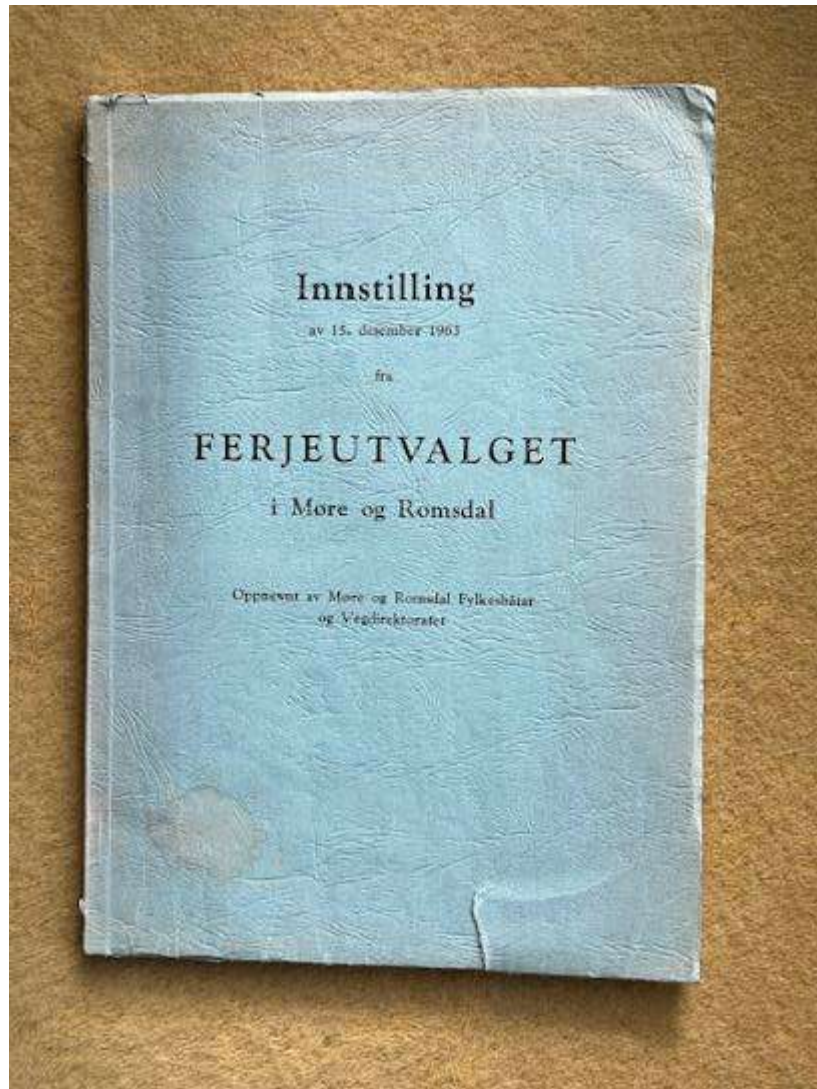
*Paddle steamer Moss shuttled between Oslo, Moss and Kristiansand with intermediate calls from 1855 till 1871. At 14,5 knots she was one of Norway's fastest steamers at the time. Sold via England to Stettin in 1871, and renamed Der Kaiser. Scrapped in 1900.*







# The MRF Report 1963



## Main Findings:

Ferries part of the road system, shortest frequent crossings, simple ships, minimal crewing, crew live ashore, lock-on linkspans, ship and land passengers over the linkspan.



# The Norse way

1954 Shipping cars, different approaches. Note balanced linkspan

Norway, *Gudvangen*, 300 pax, 30 cars

40.1m x 9.5m x 2.3m, 11.5 knots, 10 crew



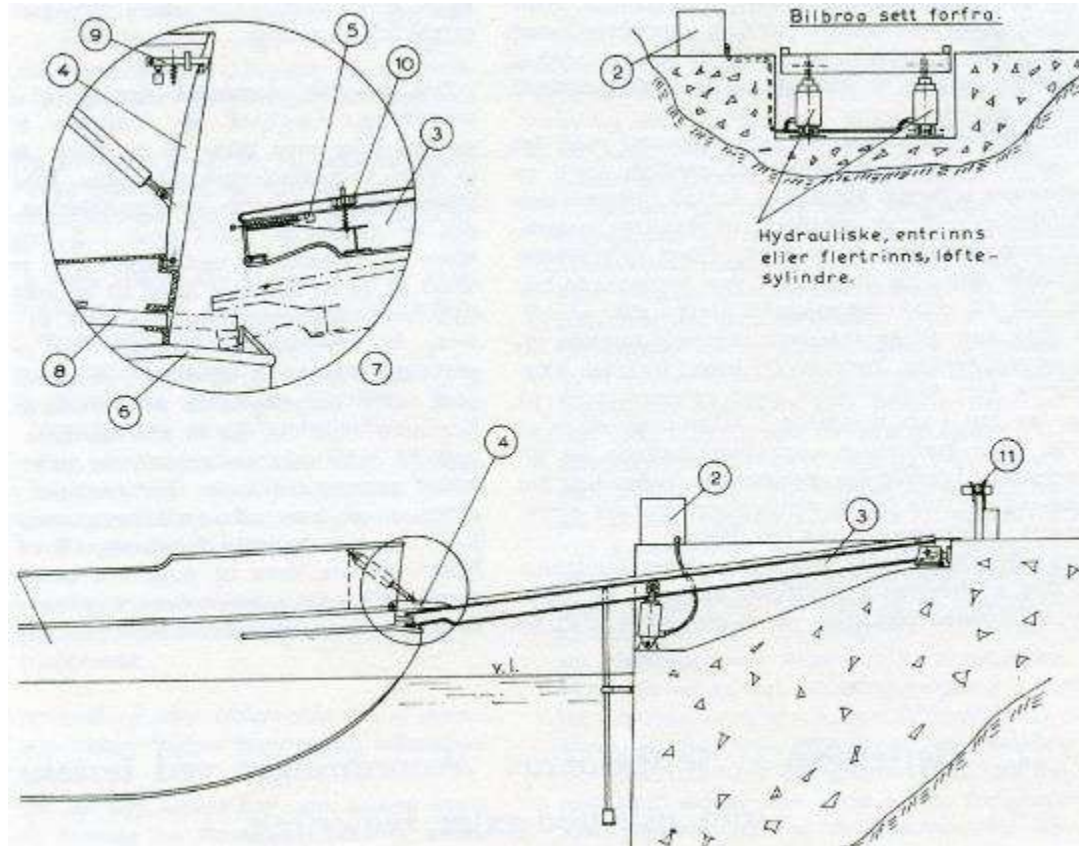
Scotland, *Arran*, 399 pax, 30 cars

57m x 11m x 2.3m, 15.5 knots, 20 crew





# The Lock-on Linkspan



- Linkspan rests on ship ledge
- Locked in place with short ramp
- 5% sheer fore and aft allows smooth transition between ship and linkspan
- One man on board operation; no mooring lines required; no shore personnel required
- No heavy ship-mounted ramps

# Norwegian Vehicle Ferry Connections Today

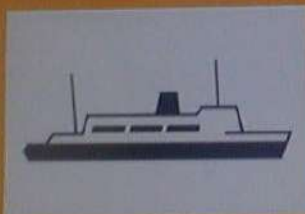


- High degree of standardisation and interchangeability
- Frequent services from early till late, many 24/7
- Shore based crews working shifts
- Individual routes or small groups of route tendered separately
- Five main operators
- Electric replacing diesel
- Increasingly replaced by fixed links





Områder



Moss



















There are over 900 road tunnels in Norway with total length exceeding 750 km. Here are the longest Sub-sea tunnels

Name	Opening Year	Length (m)	Depth (-m)
<a href="#">Ryfylke Tunnel</a>	2019	14,400	292
<a href="#">Karmøy Tunnel</a>	2013	8900	139
<a href="#">Bømlafjord Tunnel</a>	2000	7888	260
<a href="#">Eiksund Tunnel</a>	2008	7765	287
<a href="#">Oslofjord Tunnel</a>	2000	7230	134
<a href="#">North Cape Tunnel</a>	1999	6871	212
<a href="#">Byfjord Tunnel</a>	1992	5875	223
<a href="#">Hitra Tunnel</a>	1994	5645	264
<a href="#">Hundvåg Tunnel</a>	2020	5500	94.5

# Open Water Solutions

**Lofoten route 3½ hours – Islay Route 2 hours**

**Norway, *Landegode*, 390 pax, 120 cars  
96m x 17m x 4.2m, 18 knots, 12 crew**



**Scotland, *Isle of Islay*, 450 pax, 100 cars  
95m x 17m x 4m, 16 knots, 27 crew**







# *Net Zero: Battery Electric Ferry - Iceland*

- The Vestmannaeyjar islands (Iceland) ferry *Herjólfur* runs smoothly on electricity, resulting in major fuel cost savings and reduced emissions.
- Under favorable conditions, the ship runs on electricity alone, c100,000 kWh weekly plus from nil to c2.5t diesel. Without electricity, the vessel would require c35t of diesel/week.





# *Fast Pax Cats*

- 35 Knots, 3 crew
- Numerous multi-port routes linking regional centres with coastal communities











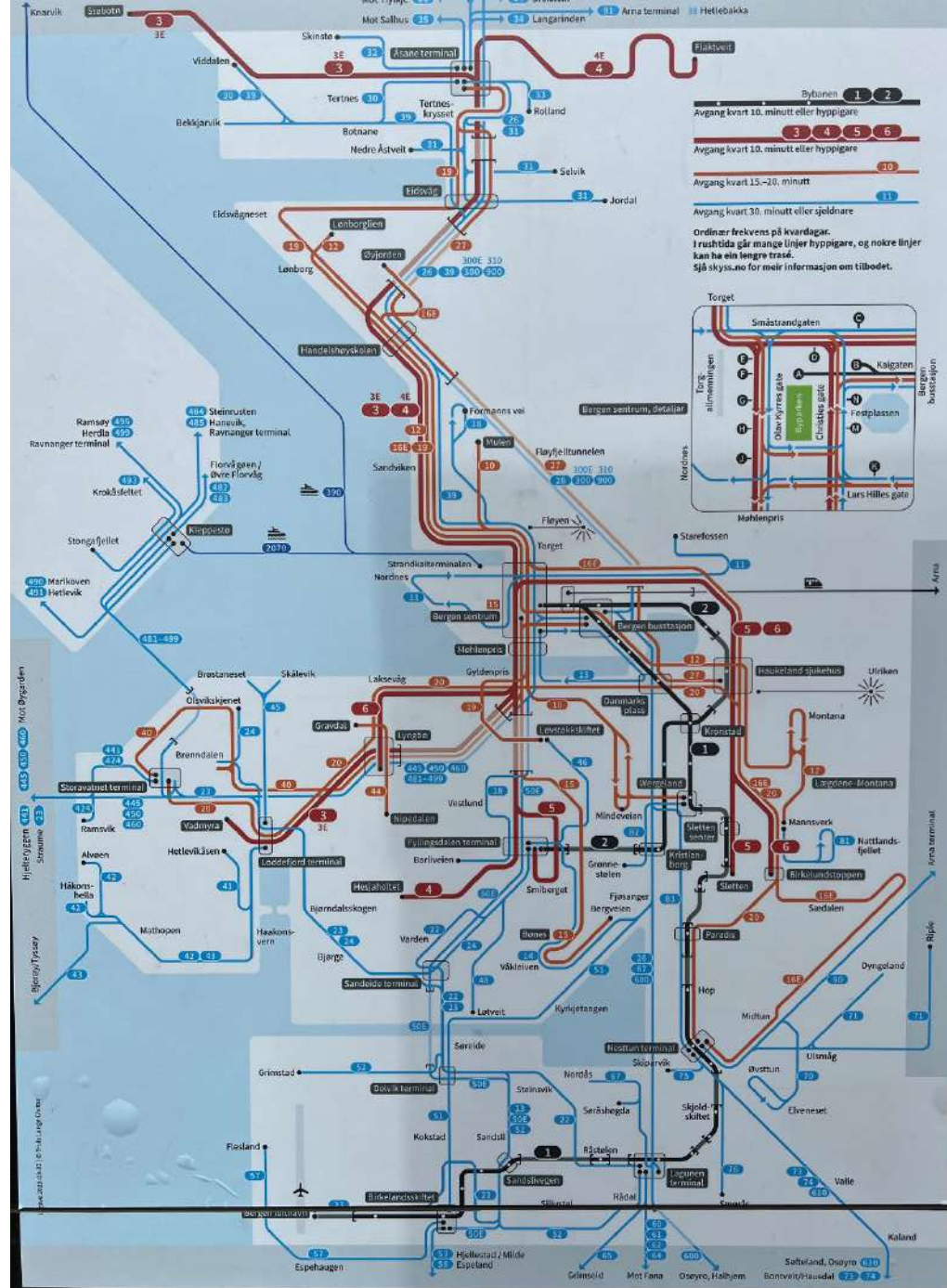














# Rutetabell – 07. 01.19 – 31.12.19

Billetter kan kjøpes om bord og hos Turistinformasjonen i Bergen.

Fra Rosendal	Mandag – Fredag		Tor-Fre	Vinter 1/1-30/4 og 1/10-31/12		Sommer 1/5-30/9			
				Lørdag	Søndag	Lørdag	Søndag		
Buss fra Odda	05.50	13.15	16.55	07.50	15.35	07.50	15.35	07.50	15.35
Buss fra Husnes	06.07	13.35	17.45	-	15.40	-	15.30	-	15.40
Rosendal	06.30 a	-	-	-	16.10	-	-	-	16.10
Snilstveitøy	06.35 a	-	-	-	16.15	-	-	-	16.15
Rosendal	06.50	14.25	18.40	09.00	16.35	09.00	16.35	09.00	16.35
Snilstveitøy	-	*	-	*	-	*	*	*	-
Malkenes	07.18 b	14.55	19.10	09.30	17.03	09.30	17.03	09.30	17.03
Os	-	15.15 *	19.30	-	17.23 *	-	17.23 *	-	17.23 *
Flesland	08.10 c	15.55 c	-	10.20 c	18.00 c	10.20 c	18.00 c	10.20 c	18.00 c
Bergen	08.35	16.20	-	10.45	18.25	10.45	18.25	10.45	18.25

Fra Bergen	Mandag – Fredag		Tor-Fre	Lørdag	Søndag	Lørdag	Søndag		
Bergen	08.50	16.30	-	15.45	18.45	11.00	18.45	11.00	18.45
Flesland	09.15 c	16.55 c	-	16.10 c	19.10 c	11.25 c	19.10 c	11.25 c	19.10 c
Os	09.50 *	17.30	19.45	16.45 *	19.45	12.00	19.45	12.00	19.45
Malkenes	10.10	17.50 b	20.05	17.05	20.05	12.20	20.05	12.20	20.05
Snilstveitøy	-	-	*	*	*	*	*	*	*
Rosendal	10.45	18.25	20.35	17.40	20.40	12.55	20.40	12.55	20.40
Rosendal	10.45	18.25	-	-	-	-	-	-	-
Snilstveitøy	10.50	18.30	-	-	-	-	-	-	-
Rosendal	10.55	18.35	-	-	-	-	-	-	-
Buss til Odda	11.00	18.35	-	17.40	20.45	14.40	-	13.38	20.45
Buss til Husnes	10.45	18.35	-	17.54	21.30	-	-	14.02	21.30

\* Anløp dersom passasjerer til stedet. Passasjerer fra stedet kan bestille båten pr. telefon 98 24 15 30, minimum 30 min. før avgang.

a Mandager og onsdager. Bestilling på tlf. 98 24 15 30 innen 18.30 dagen før.

b Buss fra Ølve (veikrysset i Teigen) kl 06.30.

Busskorrespondanse til Ølve kl 17.50.

c Busskorrespondanse til/fra Flesland flyplass.

På våre nettsider, [rodne.no](http://rodne.no), finner du informasjon om:

- Takster
- Vilkår og rabatter
- FAQ (Ofte spurte spørsmål)
- Barn (7-12 år) som reiser alene (Plass må bestilles 1 dag før avreise, registreringsskjema må fylles ut.)

Korresponderende bussruter kan ha andre ruter på bevegelige helligdager, se [skyss.no](http://skyss.no)

## Helligdager 2019:

Se [rodne.no](http://rodne.no) for ruteendringer på helligdager.



Tlf: 98 24 15 30

Trådløst nettverk om bord, gratis oppkobling.



Rødne Fjord Cruise – på fjorden siden 1956.

Tlf. 51 89 52 70

E-post: [mail@rodne.no](mailto:mail@rodne.no)

[rodne.no](http://rodne.no)



















### HOVED DIMENSJONER:

Lengde o.a.	25,50 m
Lengde p.p./vl	23,80 m
Bredde o.a.	7,80 m
Dybde til h-dekk	2,50 m
Dypgang	0,95 m
Passasjerantall	145
Tonnasje	176 grt

### MAIN DIMENSIONS:

Length o.a.	25,50 m
Length p.p.	23,80 m
Breadth o.a.	7,80 m
Depth	2,50 m
Draught	0,95 m
Passengers	145
Tonnage	176 grt

















**FJORD FSTR**



# Fjord FSTR Kristiansand - Hirtshalls

- Built by Austal
- Length 110 metres x beam 31 metres
- Service speed 37 knots
- 2 hours 25 minutes passage time
- 1200 pax
- 410 cars
- 30 large commercial vehicles
- 16 charging stations



# Impact of Norwegian Methods

- The shortest feasible vehicle ferry crossings
- Simple ships, minimal (live ashore) crewing, working shifts
- Terminals unmanned or minimal manning
- High frequency, high capacity, operating from early till late
- Reduced operating cost, reduced emissions
- Attracts a high level of patronage and increased revenue
- Fast passenger catamarans link coastal communities
- Aids local economic and social well-being

## Part 2

# *Other Norwegian Public Transport*

















**SAMMEN ER VI STERKE**

NSOR  
Scandinavian  
Housing & Flanges













**DESIGN: "MM 35 PE"**

**CLASS:**

NO CLASS BUILT ACCORDING TO:  
 DNV-GL 1A LC, PASSENGER CRAFT, BATTERY (POWER)  
 SHORE POWER, EQ, RS(nor), RECYCLABLE  
 HULL REINFORCED ACCORDING TO DNV-GL ICE-C

**AUTHORITY:**

NORWEGIAN MARITIME AUTHORITY  
 "FARTSOMRÅDE 2 / TRADE AREA 2"

**MAIN DIMENSIONS:**

LENGTH OVER ALL	35.00 m
LPP (DNV GL)	34.99 m
LPP (LOAD LINE)	33.60 m
BREADTH, MOULDED	8.00 m
DEPTH, MOULDED	3.80 m
SCANTLING DRAUGHT	2.20 m
SUMMER DRAUGHT	-2.10 m
FRAME DISTANCE	0.50 m
PASSENGERS (INCL. CREW)	354

SHIP'S NAME	OSLOFJORD 1
PORT OF REGISTRY	HANGØYFEST
SHIP'S CALL SIGN	L181R
SHIP'S IMO NUMBER	IMO 9814802
BUILDING YARD	SEVENE SHIPYARD
KEEL LAYING DATE	2021.04.14
COMPLETED	2022.02.20

**SHIP'S EQUIPMENT FOR THE PASSENGER AND CREW**  
 EQUIPMENT FOR THE PASSENGERS AND CREW

























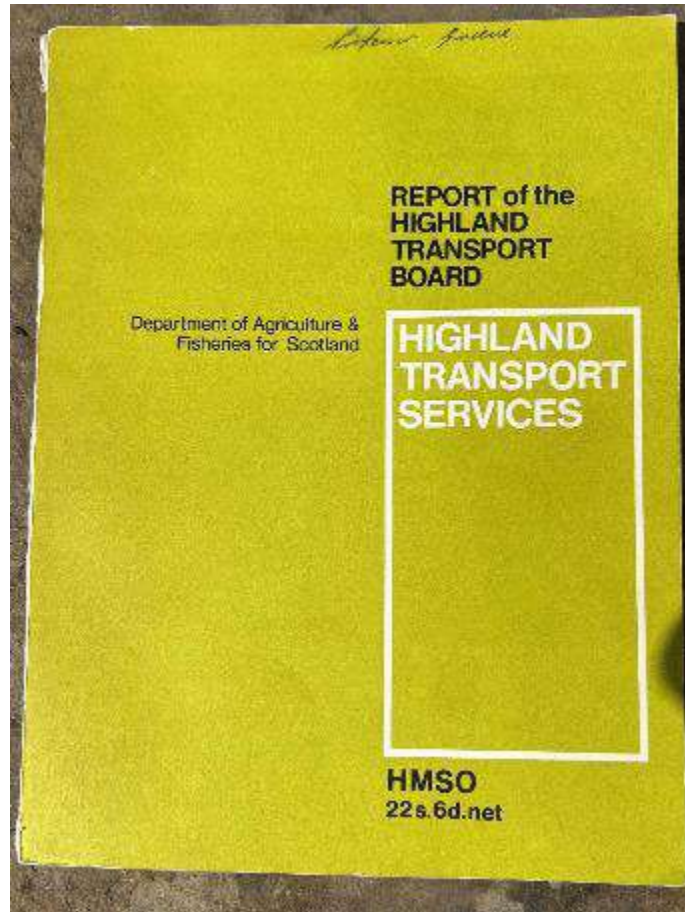


## Part 3

*Scotland getting it right &  
wrong*



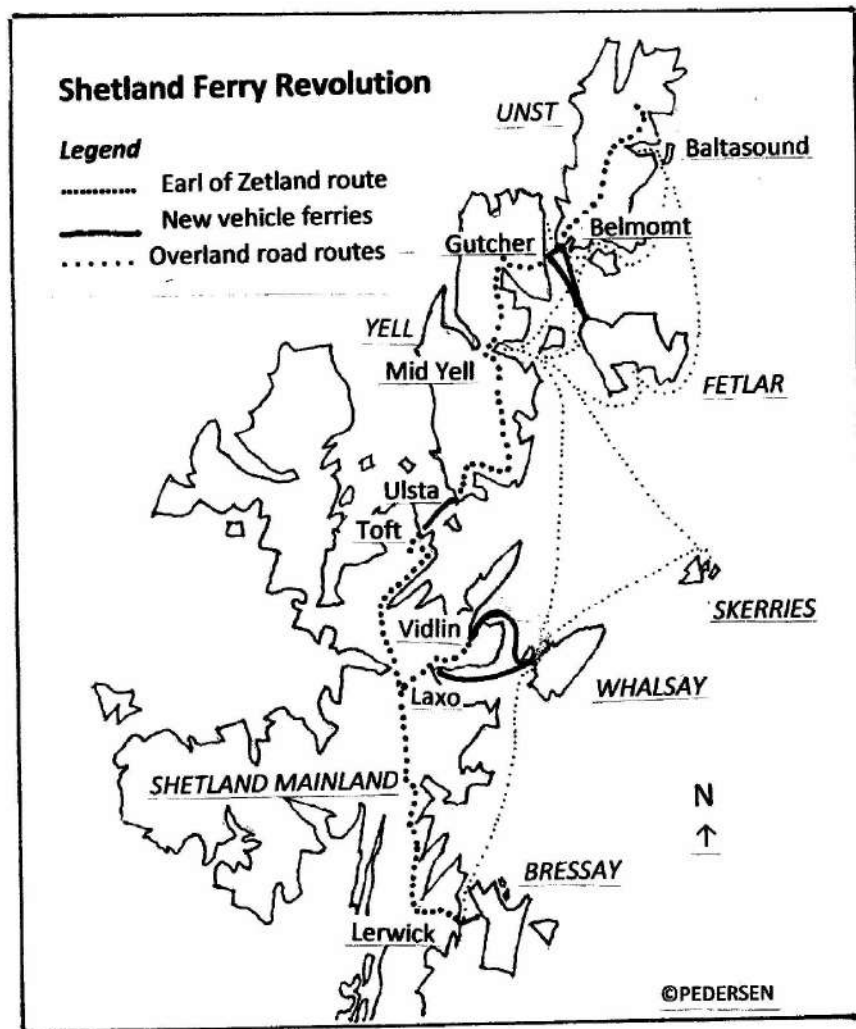
# The Highland Transport Board Report 1967



- The board noted Norwegian vehicle ferry experience and sought advice from Mr K H Oppegaard.
- He advised on possible adoption of Norwegian type ferries for Islay, Jura, Colonsay, Gigha, Barra, S Uist and also Shetland.
- A vehicle ferry should act as close as possible to a bridge between island and mainland.

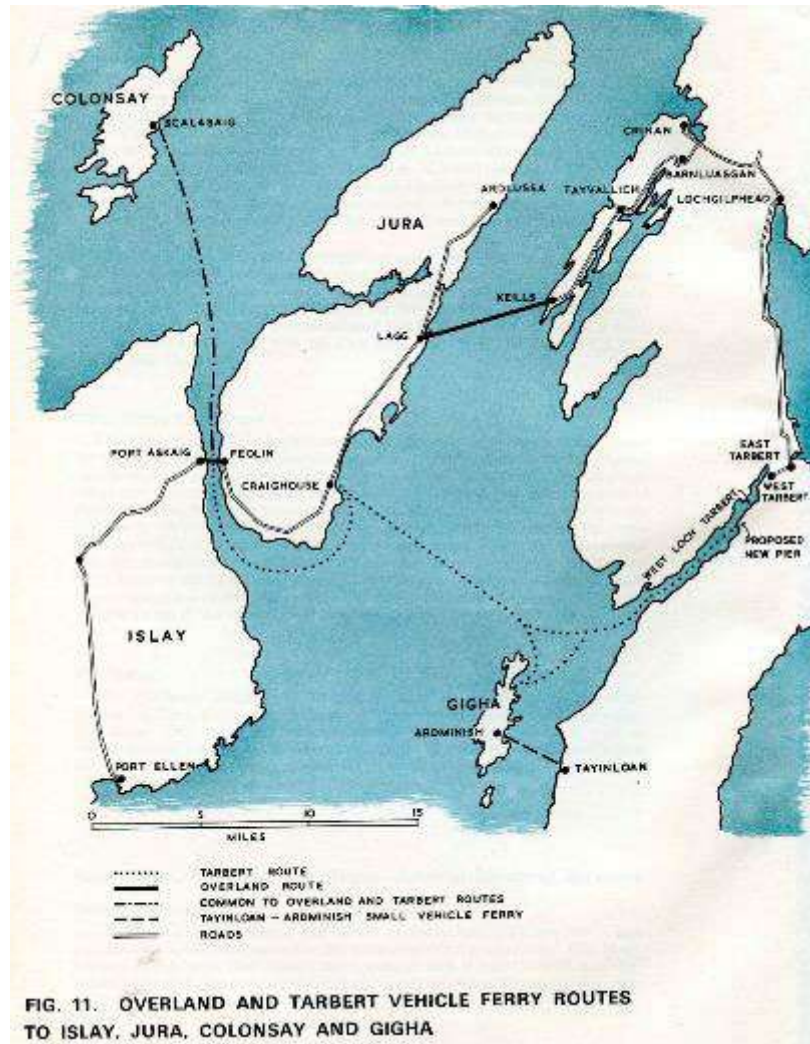


# First Scottish Uptake – Shetland





# The Islay/Jura Overland Proposal



- Two or three small ferries would provide a much more frequent, less costly service and about twice the capacity of one larger vessel on the East Loch Tarbert route.
- The scheme would however require major road upgrades, which proved a stumbling block.



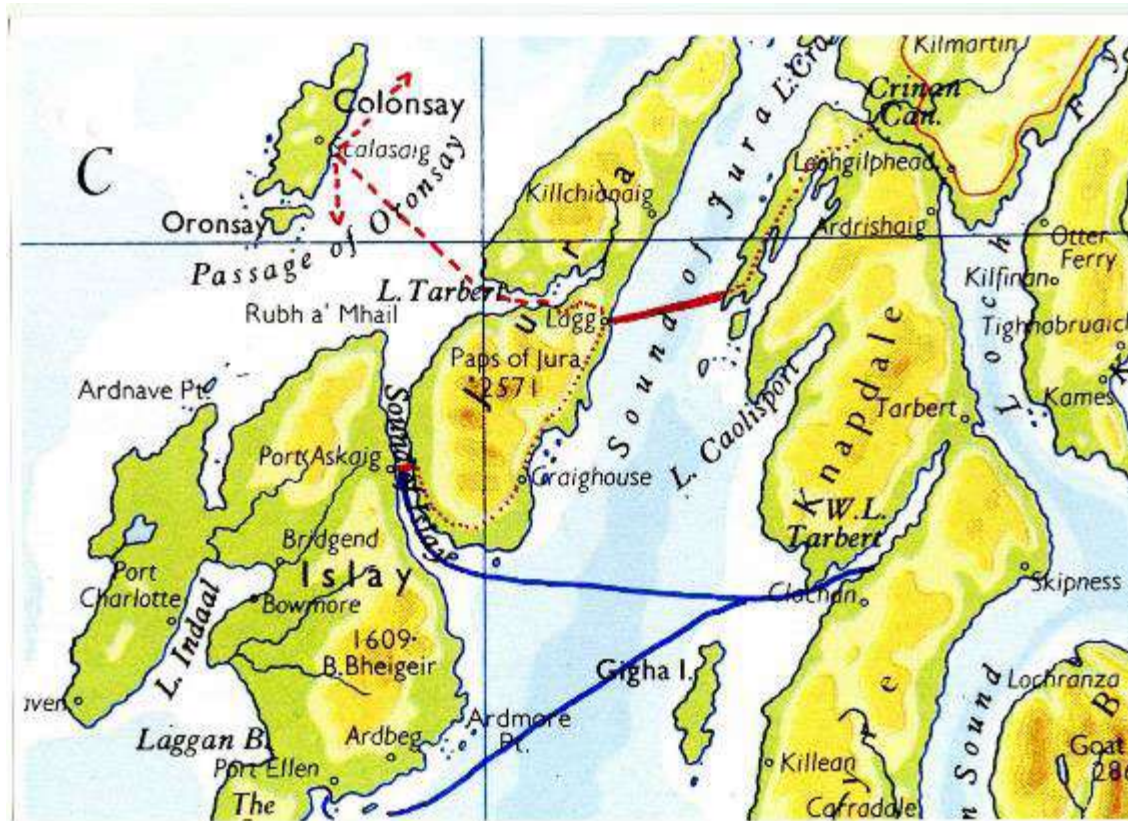
# Islay/Jura Overland

## Overland route in RED

## Oversea route in BLUE

## Phase one: cars and light commercials

## Phase two: all vehicles



## Islay Overland Comparisons

### Current Roads with Minor Upgrades

<i>Overland</i>	<i>Road Miles</i>	<i>Time Mins</i>	<i>CO2/car kg</i>
Port Ellen - Port Askaig	21	35	1.65
Terminal wait time		15	
Ferry Passage		10	5.00
Feolin - Lagg	17.5	25	1.37
Terminal Wait time		15	
Ferry Passage		30	11.00
Keills - Lochgilphead	18	30	1.41
<b>Totals</b>	<b>58.5</b>	<b>160</b>	<b>20.44</b>

**Via Kennacraig**

Termina: wait time	30	
Port Ellen - Kennacraig	130	150.00
Kennacraig - Lochgilphead	19 27	2.12

**Totals**

<b>Totals</b>	<b>19</b>	<b>187</b>	<b>152.12</b>
---------------	-----------	------------	---------------

### *Bowmore - Lochgilphead*

Time hrs

Via Port Ellen	03:20
Via Port Askaig	03:10
Via Overland	02:50



# The Challenge – Road Upgrades

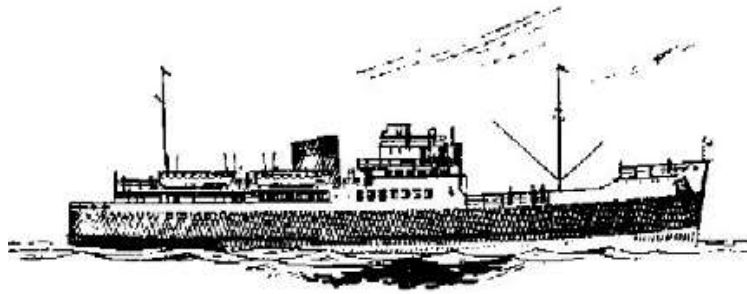
**A816 Feolin-Ardlussa Jura (left)**

**The last mile to Lagg Pier (right)**





# The Demise of Traditional Multi-port Services



- *Earl of Zetland* Shetland N Isles
- Outer Isles mail (Armadale & Uig)
- Sound of Mull (OB-Craignure)
- Clyde long-distance cruising
- Ardrishaig mail service
- Portree mail service (replaced by overland via Kyle-Kyleakin)
- Stornoway mail service (UL-SY)
- Etc.



# Western Ferries Step In

## Completely unsubsidised



***Sound of Jura* (left) 6 crew**  
**Clyde ferries (Below) 4 crew**



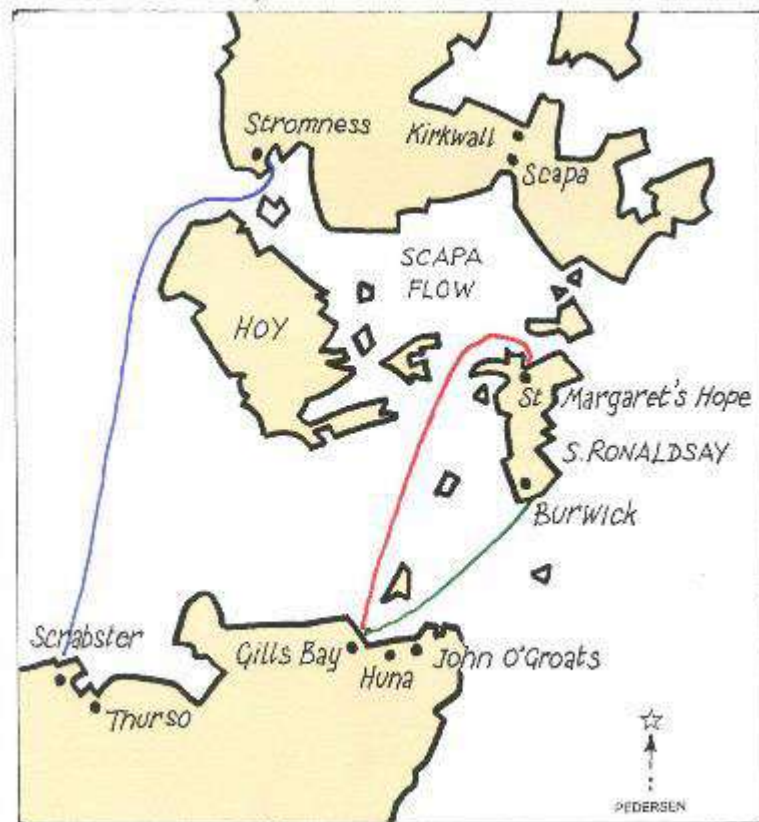


# Pentland Firth Debates

Scrabster-Stromness (St Ola) **BLUE**

Shortest Crossing Burwick **GREEN**

Pentland Ferries **RED**





# Islay/Jura Overland Cost/Benefit Estimates

## **25 year costs**

- 25 year total oversea cost (less revenue) = c£500m
- Cost of minor road upgrades = c£40m (phase one)
- Cost of full road upgrades = c£300m (phase two)
- 25 year total small (40 car) ferry cost less revenue = c50m

## **Benefits of the Overland**

- Phase one doubles capacity and frequency for cars, shorter overall journey times, much lower emissions and less cost to users.
- Full implementation doubles capacity and quadruples frequency for all vehicles, even shorter overall journey times.
- Possible to run through bus Port Ellen-Glasgow.



# Shuttle Ferries and Slipways

## Partial adoption of Norwegian Principles

***Loch Portain, 49m x 14.1 x 1.5m draft,  
146 pax, 34 cars, 10.5 knots, 5 crew***



- Existing crossings developed, e.g. Kyle-Kyleakin, Corran, Colintrave
- New crossings created, e.g. Fishnish-Lochlaine
- Sounds of Harris and Barra surprise reluctant officials
- Minimal live-ashore crewing, but limited hours of operation
- Turn up an go, no shore personnel
- Slipways poorer geometry than lock-on linkspans and necessitate heavy on board ramps



# The Strange Case of the Electro-diesels

Both ships built 2013

***Lochinvar*, £12m, 23 cars, 9 knots,  
Diesel/car space/hour 3.89 litres**



***Sound of Seil*, £4m, 40 cars, 12 knots,  
Diesel/car space/hour 1.83 litres**



# RO RO Ineficiencies

***Norway: Utne, 4 crew, nil shore staff, total 4***



***Scotland: Loch Frisa, 7 crew, 5 shore staff Mull, 6 shore staff Oban, total 18***





# Arran – Catamaran or Monohull?

## Guess which CMAL selected?

**Catamaran, 74m x 22m, 762 pax, 98 cars, 14 crew, cost £15m (Far East), £25m (Europe), power 3,800kW, speed 17 knots**



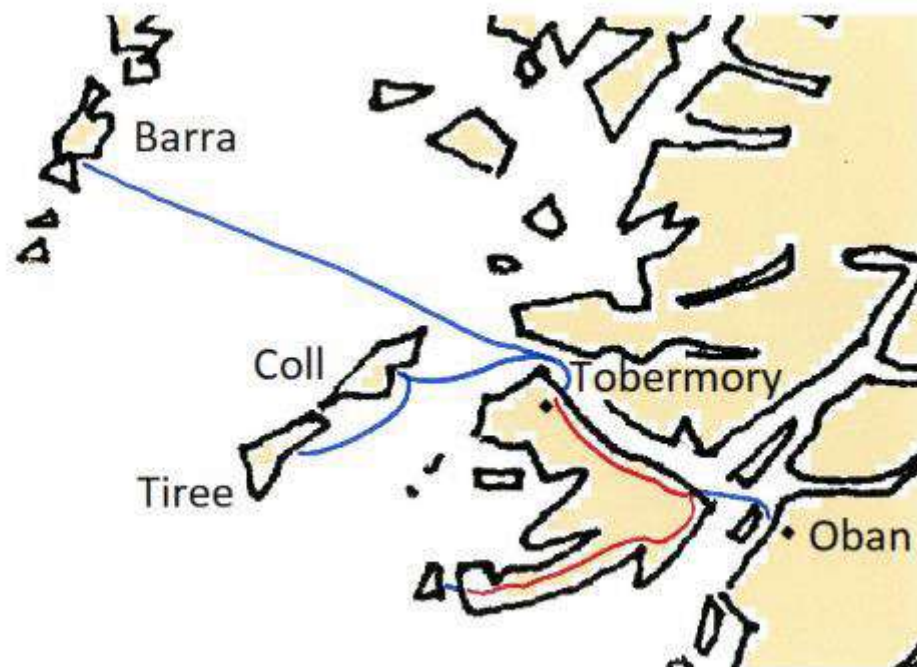
***Glen Sannox, 94m x 17m, 1,000 pax, 130 cars, 34 crew, estimated cost £175m, power 5,900kW, speed 16.5 knots***



# Mull Land Bridge

Mull land bridge **RED**

Ferry connections **BLUE**



## The Barra Connection

Castlebay	<i>dep</i>	07:00	15:00
Tobermory	<i>arr</i>	10:00	18:00
Oban	<i>arr</i>	x	x
Oban	<i>dep</i>	z	z
Tobermory	<i>dep</i>	10:30	18:30
Castlebay	<i>arr</i>	14:00	22:00

x = connection arrives Oban 1hr. 45 min. later

z = connection departs Oban 1 hr. 30 mins. earlier

## The Tiree and Coll Connection

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

x = connection arrives Oban approx 1hr. 30min. later

z = connection departs Oban approx 1hr. 45min. earlier



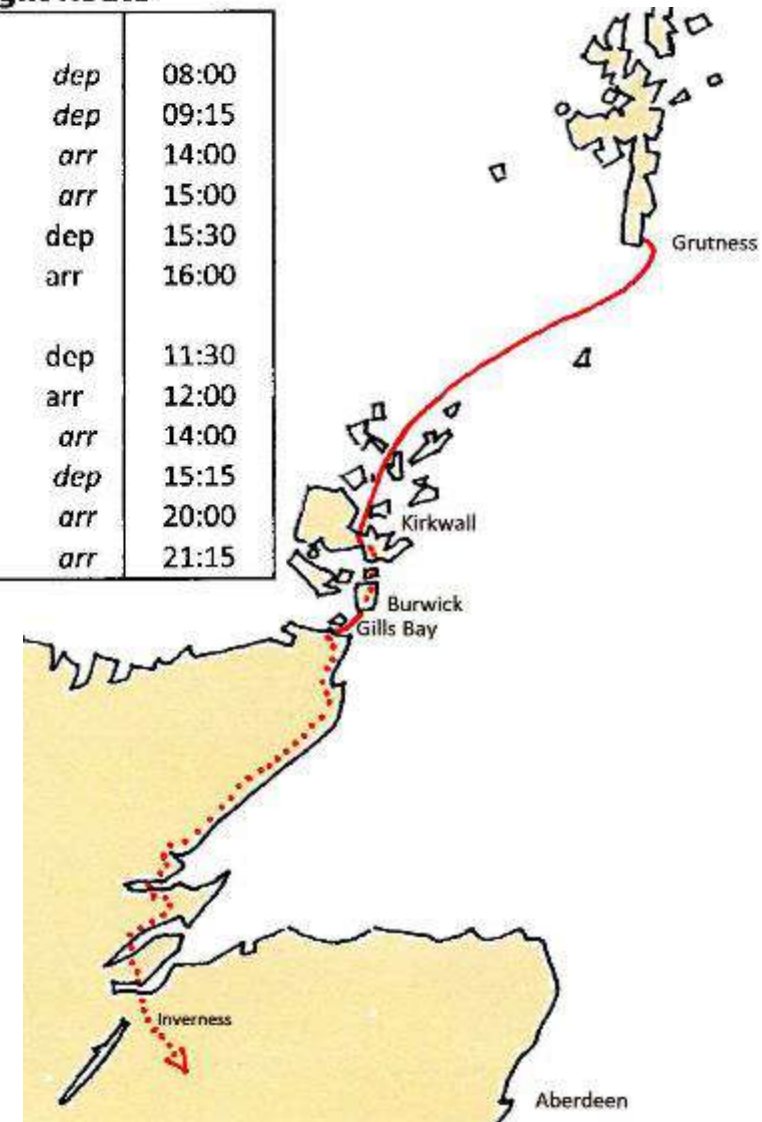
# Shetland Daylight

Offers daylight travel between Shetland and the Central Belt.  
One sixth the emissions.



*The Shetland daylight Route*

Lerwick Bus	dep	08:00
Grutness	dep	09:15
Kirkwall	arr	14:00
Bus to Burwick	arr	15:00
Burwick	dep	15:30
Gills Bay	arr	16:00
Gills Bay	dep	11:30
Burwick	arr	12:00
Bus to Kirkwall	arr	14:00
Kirkwall	dep	15:15
Grutness	arr	20:00
Lerwick Bus	arr	21:15



# Fast Pax Opportunities

*Multi-port cruising re-born*

**Wightrider II, 1,900 kW, 22 knots, 26 knots max, 260 pax 4 crew, 148 pax 3 crew, 5 crews, 2 shifts, 4 days on, 2 days off**



## ***Sound of Mull Fast Service***

Tobermory	dep	07:00		14:00	
Lochaline	dep	07:40		14:40	
Craignure	dep	-	09:40	14:15	17:45
Oban	arr	08:15	10:05	15:40	18:05
Oban	dep	08:30		16:30	
Lismore	dep	08:40		16:40	
Oban	arr	08:50		16:50	
Oban	dep	09:10	11:40	17:10	18:20
Craignure	arr	09:35	12:05	17:35	
Lochaline	arr		12:25		18:55
Tobermory	arr		13:00		20:35

## ***Portree Fast Service***

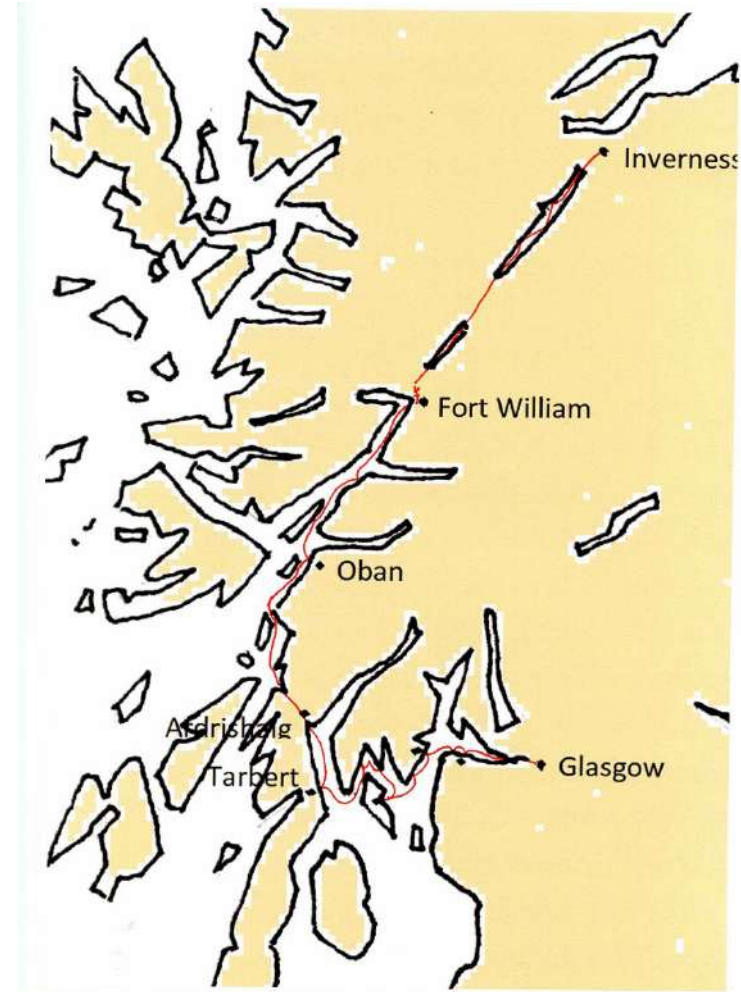
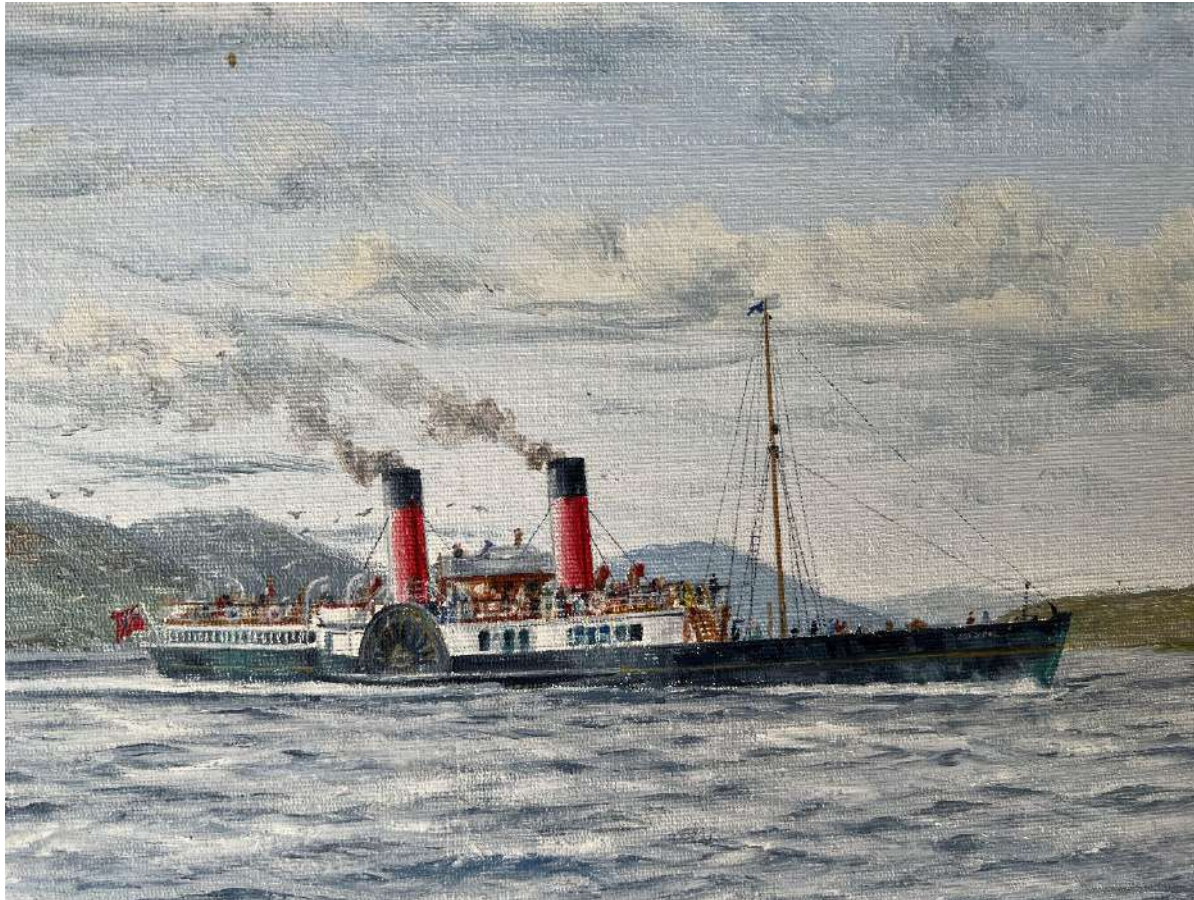
Mallaig	dep	10:30
Glenelg	dep	11:20
Kyle	dep	11:40
Applecross	dep	12:00
Raasay	dep	12:40
Portree	arr	13:05
Portree	dep	14:55
Raasay	dep	15:20
Applecross	dep	16:00
Kyle	dep	16:20
Glenelg	dep	16:40
Mallaig	arr	17:30



# The Royal Route Then

***Columba*, 2,116 pax, 74 crew**

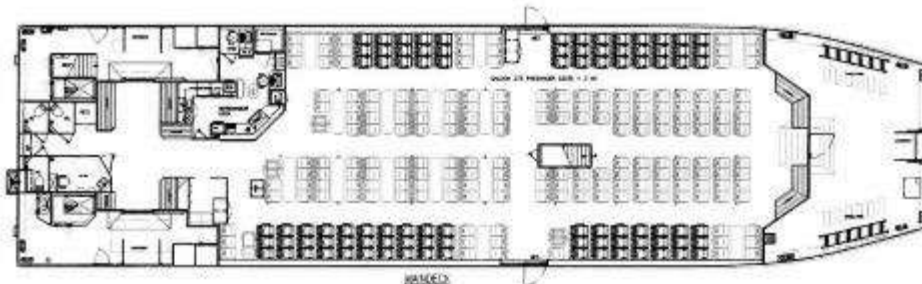
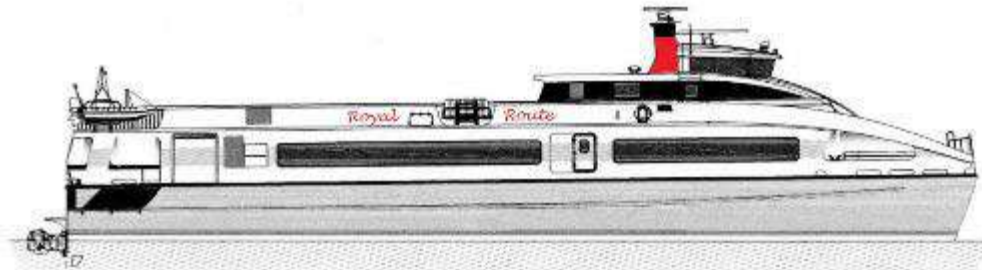
***Chevalier*, 1,074 pax, 24 crew**



# Royal Route Revived

*A pipe dream ??*

Swift ships, 1,900 kW, 22 knots service, 26 knots max, 260 pax, 4 crew. Not competitive with coach on price, therefore, marketed as special experience. Would it be viable?



## The Royal Route Revived

Glasgow (train)	dep		08:56	14:50
Wemyss Bay	dep		10:00	15:55
Rothsay	dep		10:25	16:20
Tighnabruaich	dep		11:05	17:00
Tarbert	arr		12:00	17:55
Ardrishaig	arr		12:40	
<i>Coach to Crinan</i>				
Crinan	dep		15:00	
Easdale	dep		15:55	
Oban	dep	07:30	16:30	
Lismore	dep	07:15	16:40	
Fort William	arr	08:55	17:55	

Fort William	dep		09:00	18:00
Lismore	dep		10:15	19:15
Oban	dep		10:30	19:25
Easdale	dep		12:05	
Crinan	arr		12:00	
<i>Coach to Ardrishaig</i>				
Ardrishaig	dep		13:10	
Tarbert	dep	07:40	13:40	
Tighnabruaich	dep	08:45	14:45	
Rothsay	dep	09:25	15:25	
Wemyss Bay	arr	09:45	15:45	
Glasgow (train)	arr	10:44	16:47	



# Glory Days Once More

- More connections
- More efficient ships
- More capacity
- Less emissions
- Less subsidy
- More prosperous vibrant island communities

*What's not to like?*

