

New Electric Corran Ferry



CMAL

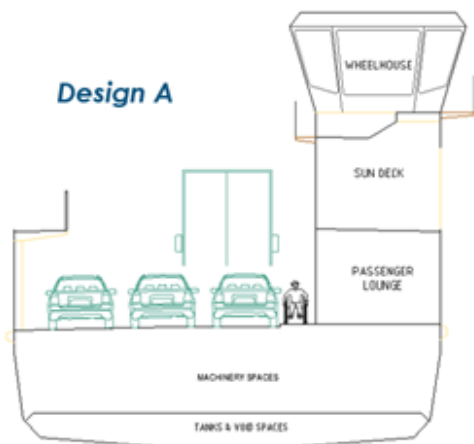
Caledonian Maritime Assets Ltd
Stòras Mara Calleannach Eò



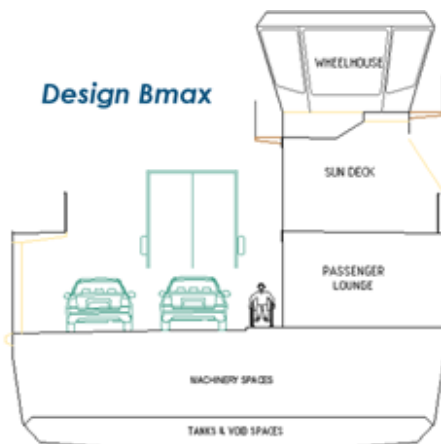
Small Vessels Replacement Programme

- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 emphasises the necessity to reduce emissions and pursue low carbon infrastructure solutions, with electric power the preferred option for short ferry crossings.
- We have therefore joined Caledonian Maritime Assets Limited (CMAL) [Small Vessels Replacement Programme](#) which will provide standardised, state-of-the-art ferries with electric zero emission operation on various CalMac operated routes along the West Coast of Scotland.
- As part of the SVRP a design has been prepared for the new Corran Ferry (Design C) with a full tender specification in place ready to be submitted to a ship builder.

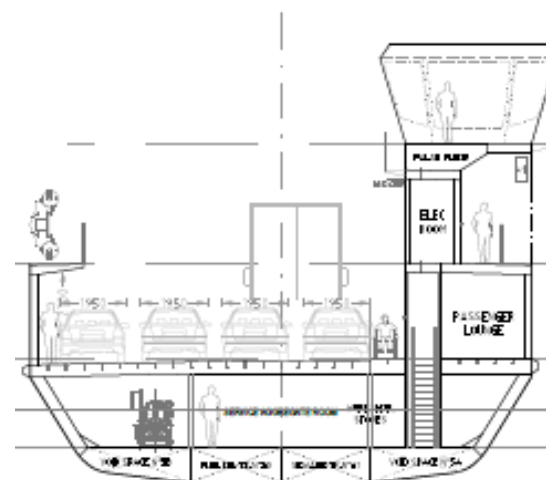
The three design variants are:



Design A (24 PCU) CMAL



Design Bmax (16 PCU) CMAL



Design C (32 PCU) Highland Council



New Electric Corran Ferry



- Design C has solely been designed for the Corran-Ardgour route. The hull form for design C differs slightly from design A and B and is wider to account for the harsh water current speeds experienced in the Corran narrows (i.e., manoeuvrability has been prioritised over straight line running).
- However, this would not provide any issues if the Design C vessel was later implemented into the Clyde and Hebrides Ferry Service (CHFS) fleet.
- Electric powered vessel technology will minimise operational carbon emissions in line with Highland Council policies and the Scottish Government's commitment of achieving net zero by 2045.
- In the event of a failure of shore power, the vessel will have a built in back up diesel generator that will be used to charge the batteries, which would allow daily operation to commence. The back-up diesel generator will also be used to assist for longer transits to dry-dock.
- The design of the new Corran Ferry will have a capacity for 32 cars (4 more than the current main vessel the MV Corran) which allows for the current average size and weight of cars and foreseeable future increases.
- It is hoped that we can deliver the new ferry as quickly as possible, however we have not yet determined a preferred procurement strategy and are exploring all the options in this respect and will issue a news release in due course.

Current Operating Profile

- All-electric operation has been one of the key elements for the new Corran Ferry ship design, noting that the service across the Corran narrows is extremely busy, thus, daily energy demand is quite significant.
- The short ferry link across the Corran Narrows connects Ardgour with Nether Lochaber with a route length of 475 m.
- The ferry operation is highly impacted by the strong tidal currents through the Narrows which can reach up to 5 – 6 knots. This has a significant impact on ship handling, especially on the Nether Lochaber side where the streams run closely to the berthing / slipway area. In addition, strong north-easterly winds add to the navigational challenges.
- The service is operated all-year round 15 hours per day, from 6:30 a.m. to 9:30 p.m. During most times of the year the ferry is shuttling back and forth and up to 86 crossings (or 43 roundtrips) are operated during the busiest summer days.

Future Operating Profile

- The proposed new Corran ferry will be operated from new 1:8 slipways (currently 1:10) which will be constructed at new locations. The new route will run through slacker waters on the Nether Lochaber side which should reduce the operational impact of the tidal streams in the future.
- The target for the new Corran ferry design is that it can still complete 43 roundtrips within 15 hours. Operations will be changed from quarter point to straight drive-through (Ro-Ro) loading in line with CalMac ferries.
- All design 'Round Trips' are based on worst conditions plus a 30% sea margin.

Evaluated Batteries

- The operational endurance of 3 exemplary battery chemistries have been evaluated as below –

	Battery type
1.	LFP - Lithium Iron Phosphate
2.	NMC - Nickel Manganese Cobalt
3.	LTO - Lithium Titrates Oxide

- Final battery type will be subject to the procurement process.

Battery Evaluation Conclusion

- The battery evaluation indicates that a full day of all-electric operation with 43 roundtrips will be achievable with both the proposed LFP and NMC battery systems.
- The proposed LTO system may become a workable solution when two ferries would be operated along a timetable with departures offered in 15-minute intervals, i.e. each ferry would need to operate only 30 roundtrips per day.
- The new Corran Ferry design all-electric propulsion set-up will provide very quick power availability all year round which will help to increase the efficiency during manoeuvring.

New Corran Ferry Design



New Electric Corran Ferry



MV Corran



Maid of Glencoul

Main Particulars & Capacities	New Electric Corran Ferry	Maid of Glencoul (1975)	MV Corran (2000)
Length Overall	49.90m	32.00m	42.00m
Beam	14.96m	10.00m	13.40m
Draught (Max)	2.14m	1.2	1.80m
Design Speed	9.0 knots	8.0 knots	9.0 knots
PAX Capacity	150	116	150
PCU's	32	14	28
HGV's	2	0	2

Zero Emission Propulsion Concept

Lithium-Ion Batteries

- Approximately 7MWh of batteries split into 4 separate banks for redundancy
- Batteries have been sized to cover all operating days throughout the year

Electric Propulsors

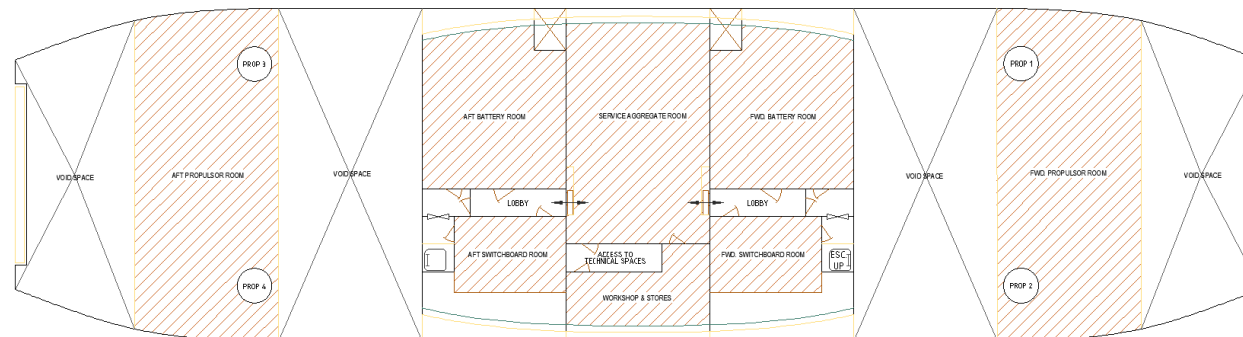
- 4 x 187kW propulsors (azimuth thrusters or cycloidal propellers) with premium efficiency propulsion motors
- Both offer high levels of manoeuvrability, high levels of revers thrust and low response time from ahead to full astern
- 4 propulsors instead of 2 will improve course keeping and provide added redundancy

Back Up Diesel Generator

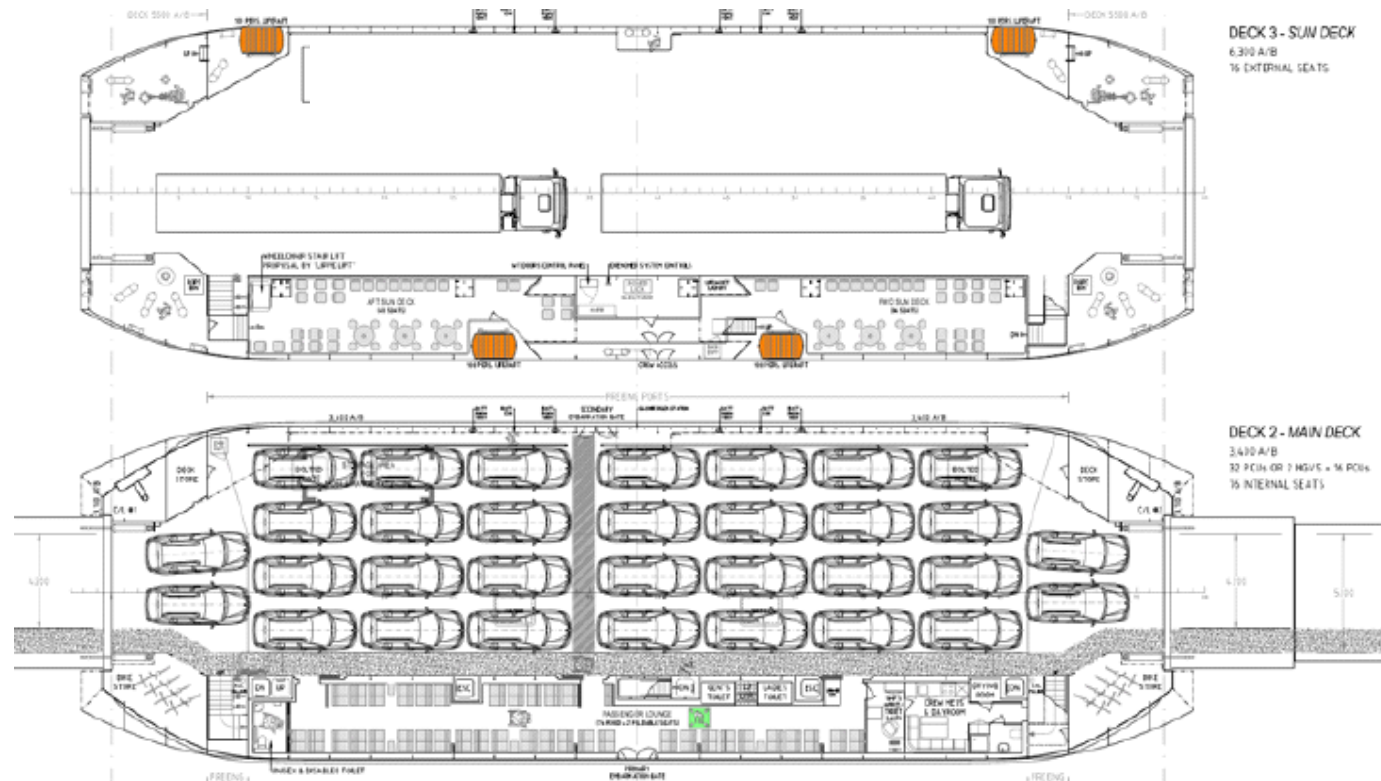
- 1 x 374kW Diesel Generator Using low Sulphur Marine Gas Oil (<0.1%)
- Will only be used in the case of emergencies or for extending the vessels range (i.e., transit to and from dry-dock or extended sailing day)
- The back up diesel generator will be capable of lasting for the full timetable

Shore Supply Connections

- 1000A (415V, 3 Phase, 50Hz) connections to allow vessel to plug in overnight and charge batteries
- Charging is planned during an 8-hour overnight window



Ferry Design - Deck Layout



The new electric vessel will be the primary vessel and will have capacity to take 32 cars (4 more than the MV Corran) or 16 cars + 2 HGV's.

Shore Power Works

- It is essential that shore power is provided at the new overnight berth to charge the batteries onboard the vessel overnight.
- This will allow the vessel to achieve zero emission operation during the day for the full timetable.
- A shore power supply of 1000A (720kVA, 415V, 3 phase) will be installed on the overnight berth at Ardgour to charge the batteries onboard the vessel overnight.
- Feasibility studies have already been carried out by the electricity suppliers to provide the required power at the overnight berth.



Examples of Shore Charging Devices

Environment and Efficiency Benefits

- Full-electric machinery concepts offer (close to) **zero emissions operation**, not least thanks to very low grid emissions resulting from Scotland's high renewable energy share
- This new Corran vessel will align with the Highland Council's **net zero strategy** and Scotland's national legally binding target to become Net Zero by 2045.
- Full-electric propulsion will provide very quick power availability all year round which will help to increase the **efficiency** during manoeuvring
- **Energy efficiency** of the total electric system grid-to-propeller on the new vessel is more than twice as high as the efficiency of the MV Corran diesel ferry (tank-to-propeller)
- Operations will be changed from quarter loading to straight drive-through loading (Ro-Ro) which will enable **faster** loading with better ramp alignment for large commercial vehicles (HGV).

Corran Ferry Infrastructure Improvement Scheme

Programme The current programme dates are as follows:

Activity	Start	Finish
Detailed Design	28/02/24	07/02/25
EIA, Marine Licence & Planning Applications	15/03/24	07/02/25
Marine Licence Consent	24/02/25	26/07/25
Planning Consent	24/02/25	27/06/25
Land Acquisition	17/06/24	26/09/25
Contract Documentation	28/10/24	25/04/25
Tender Period – Stage 1 – Single Procurement Document	08/01/25	07/02/25
Tender Period – Stage 2 – Works	28/04/25	14/08/25
Construction	10/11/25	10/05/27

Deployment Plan



New Electric Ferry (32 car)



MV Corran (28 cars) - 23 years old



Maid of Glencoul (14 cars) - 49 years old

- The new electric vessel will be the primary vessel and will have capacity to take 32 cars (4 more than the MV Corran).
- The 28 car MV Corran will be retained as the relief vessel until such time that the Council can undertake to deliver a second electric ferry.
- With the larger MV Corran as a backup the service will no longer be limited to carrying shorter articulated lorries during the Winter months.
- The older and smaller (49-years-old - 14 car) Maid of Glencoul will be sold.



Thank you Mòran taining



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