

This submission was originally submitted to the Net Zero, Energy and Transport Committee on the basis of its remit. Mr Haig has confirmed that he wishes to also share these submissions with the Public Audit Committee.

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29 June 2022

Peter McGrath
Net Zero, Energy and Transport Committee.
The Scottish Parliament
Edinburgh
EH99 1SP

Dear Mr. McGrath,

Net Zero, Energy and Transport Committee - Scottish Ferries - Procurement Process

1. The root cause of the difficulties in the 801/802 Project is CMAL's chaotic Procurement Process and the way it disintegrated the design process. Explaining a mess is a confused and messy process. Please stick with it.
2. My submission dated 26th June discussed aspects of a Report prepared for CalMac by Herbert Engineering. The significance of the Report is that it is early evidence of confusion and disarray in the Procurement Process and errors in the development of the design of 801/802 as procured by CMAL. It seems to have been ignored, to the detriment of weatherliness, fuel consumption, and emissions.
3. The Report warns CalMac of contradictions and incompatibility in CMAL's intended design between cargo capacity (deadweight), hull shape (Block Coefficient), hull resistance and power (with consequential high fuel consumption and emissions), LNG hybrid power to mitigate emissions (which it does not), and draught to fit one of the intended terminals.
4. CMAL wished the Procurement Process to be 'Design and Build'. One of the disturbing features of this entire Project is that these design matters at 3 above should have been delegated to the winning contractor in a normal Design and Build contract. But CMAL was working to their own heavily distorted version of Design and Build. It confused, diluted, or destroyed the responsibilities that normally must fall clearly to either the Owner or contractor. That led to a shambles of a design process and a near-unbuildable design.
5. I attach as simple a table as I have been to construct in an attempt to define normal procurement processes and explain the consequences of departures from them. The terms used will differ between various Owners but the sense should be similar.
6. Referring to the Table, the matters at para 2 should normally be delegated to the winning tenderer on the basis of the Ship Requirement, that being the basis of the ITT. But the basis of the ITT for 801/802 was the 'Indicative Design' CMAL had procured an from Houlder. Houlder's design should have resolved the contradictions at para 2 above but clearly had not. (Or their resolution was undone by any alterations by CMAL).
7. FMEL and CMAL had entered into a contract that was founded on sand - CMAL's Indicative Design was not valid as demonstrated by Herbert Engineering. CMAL had considerable responsibility for deciding on LNG hybrid power, not FMEL. The design is also invalid because the hull form and high superstructure are not suitable for operations in the high sea states in offshore Scotland. There is video showing one of CalMac's ferries rolling so much that the Port stabiliser emerges from the sea. CalMac has images of rows of commercial vehicles having toppled due to heavy rolling.

8. There was nothing in the Ship Requirement to confine Block Coefficient to the band-width where hull resistance is reasonably low for ships of that length. There was no consideration fuel economy or low emissions. There was no consideration whatsoever of 'design for construction'.
9. The Owner retains responsibility for design in a 'Build to Print' contract. 'Design and Build' is meant to relieve the Owner of these responsibilities to the extent that a ferry owner should not need a Naval Architect or much at all by way of staff with professional qualifications. CMAL created the worst muddle of 'Build to Print' and Design and Build, with most of the responsibility for design resting with CMAL. But CMAL was not capable of procuring a valid design nor establishing its validity.
10. The winning contractor in a Design and Build competition must be able to finalise his tendered design before commencing Production Drawings. (My contracts prohibited Production before the contractor completed his Final Design) Production Drawings must be at least 'complete enough' before starting production. There may be overlap between finalising design and commencing production Drawings, and between completing Production Drawings and commencing production but it is best there be none and the contractor is at risk.
11. The design CMAL had contracted FMEL to follow was immature, incomplete, and defective in repeat of design for production at least. By contracting FMEL to begin cutting steel to this design only two months after contract CMAL made certain that everything would be a muddle - design would overlap Production Drawings and Production. All this on a contractor of limited expertise and capacity.
12. The outcome is that FMPG are completing ships whilst finalising Production Drawings in a programme running years late with a long way to go, for ships that will be very costly to operate, unreliable because of their complexity, prone to cancellation in weather that should not trouble a well-designed ship, and vastly over-sized for most of its sailings.
13. The Evidence of Outcome is that CMAL's procurement model does not work. It should not be repeated. Yet the New Islay Ferry is more the same than different.

Yours sincerely,

Euan Haig

Key Actions in Ship Procurement

| Procurement Phases | What CMAL did (801/802) | Build to Print Process | Design and Build Process |
|----------------------------------|---|--|--|
| Produce Service Requirement | Omitted | Yes, by Owner | Yes, by Owner |
| Produce Ship Requirement | Yes, by CMAL | Yes, by Owner | Yes, by Owner |
| Produce Indicative Design | Yes, procured by CMAL. | NA | NA!! |
| Invitation to Tender (ITT) | Not yet. | Not yet. | Yes, by Owner, based on Ship Requirement (Line 3) |
| Preliminary Design (Note 1) | Indicative Design Procured by CMAL, but not valid. (Line 4) | Yes, by or procured by Owner, before ITT (Line 11) | Yes, by each tenderer after ITT. |
| Final Design (Note 2) | Muddle, some before ITT by CMAL, some by FMEL after award of contract. | Yes, by or procured by Owner, before ITT (Line 11) | Not yet. |
| Invite tenders, place contract | Yes. On FMEL. Transfer of responsibility to FMEL to finalise Indicative Design. | Not yet. | On winning tenderer. |
| Final Design (Note 2) | Winning contractor (FMEL) finalising design whilst preparing production drawings. | To be done before ITT. (Line 11) | Winning contractor to finalise his own design. (Line 6) |
| Cut steel | Contract requires cutting steel 2 months after award of contract whether design or production drawings are ready or not. | Not yet! | Not yet! |
| Invite tenders. Place contract. | Already done. (Line 8) | By Owner, based on his Final Design, contract on best tenderer. | Already done. (Line 8) |
| Prepare Production Drawings | FMEL still finalising design, whilst preparing production drawings, and continues cutting steel from 2 months after award of contract. | Winning contractor, based on Owner's validated design. | Winning contractor, based on his own validated design. |
| Commence construction/Cut steel. | FMEL still finalising design whilst preparing production drawings. | Winning contractor, AFTER production drawing are sufficient. | Winning contractor, AFTER production drawings are sufficient. |
| Tests, trials, and Acceptance | Ships are years late. Planning very difficult. Little has been tested. Control of production drawings against design is questionable (eg cabling) | Continuous 'no surprises' process as systems and ship are completed. | Continuous 'no surprises' process as systems and ship are completed. |

Notes

1. 'Preliminary Design' consists of 99% complete General Arrangement, weights estimated from scaling factors, stability estimated.
2. 'Final Design' is fit for Shipbuilder to prepare Production Drawings; weights are calculated, stability is calculated.
3. **Green** infill indicates phases led by the contractor.