

Caledonian Maritime Assets Limited



Project: New Vessels 1 & 2
100m Dual Fuel Ro-Pax Ferries
Yard Numbers: 801 & 802

**Quarterly Update Report for
Transport Scotland**

February 2016 to April 2016

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EXECUTIVE SUMMARY

Stage payment certificates 1, 2, 3 and 4 for vessels 1 and 2 processed. FMEL advise that there will be a delay in achieving the scheduled dates for the next fabrication stages 5, 6 and 7 and that they will be back on schedule for stage 8 (50% fabrication).

Fabrication has commenced 7 weeks later than originally scheduled; this is due to the delay in the issue of the hull structure drawings by FMEL and the redevelopment of the shipyard. FMEL have employed around 30 additional steelworkers from the Intermarine Group in Poland. The workers are employed on a 3 month contract which will be extended as required. FMEL advise that the local market could not provide the required skilled personnel.

FMEL have advised after further design development and access to more accurate and detailed hull and equipment weight figures; that to be able to achieve the 900 tonnes contract deadweight at 3.4m contract draught at the 16.5 kts contract speed, it will be required to fit the larger 8 cylinder engines as the power required is in excess of that which can be delivered by 6 cylinder engines. FMEL has provided 3 options for deadweight, powering and fuel consumption. CMAL advised CFL and Transport Scotland of these options and CMAL's recommendation on the 04th March 2016. We await CFL's views on the operational and cost implications of the 3 options. The time taken to assess the implication of the proposals from the shipyard may possibly have an impact on the construction programme as the shipyard cannot finalise the order for the main engines and the delivery date for the main engines.

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1. Project Progress

1.1 Design/Production Progress and other Project activities

1.1.1 Fabrication

Fabrication of both vessels is now underway (7 weeks later than originally scheduled). FMEL proceed with fabrication at risk as they have not yet received approval of the structural drawings from the classification society (Lloyds Register).

Main reasons why fabrication has commenced later than scheduled:

- Delay in the issue of the hull structure drawings by FMEL.
- Redevelopment of the shipyard.

FMEL have employed around 30 additional steelworkers from the Intermarine Group in Poland. The workers are employed on a 3 month period which will be renewed as required. FMEL advise that local market could not provide the required skilled personnel.

FMEL now have 2 operational plate cutting/preparation machines and 6 new semi-automatic flux core welding machines. It is expected that fabrication output will be much improved compared with the previous equipment available in FSL times.

1.1.2 Deadweight/Powering/Fuel Consumption

We were informed by FMEL that after further design development and access to more accurate and detailed hull and equipment weight figures, that to be able to achieve the 900 tonnes contract deadweight at 3.4m contract draught at the 16.5 kts contract speed, it will be required to fit the larger 8 cylinder engines as the power required is in excess of that which can be delivered by 6 cylinder engines. FMEL has provided 3 options for deadweight, powering and fuel consumption for our consideration.

The options are summarised in Table 1-1 below with approximate annual fuel costs:

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Table 1-1 Deadweight and powering options including approximate annual fuel costs

	Option 1	Option 2	Option 3
Draft	3.4m	3.4m	3.5m
Propulsion Power at 16.5 knots including Sea Margin	6026 kW	4598 kW	4986 kW
Propulsion Power at 14.5 knots including Sea Margin	3476 kW	2710 kW	3148 kW
Deadweight	900 tonnes	759 tonnes	900 tonnes
Annual cost of fuel; MGO @ 30p/litre Speed: 16.5 knots both routes	£2.58m	£1.96m	£2.13m
Annual cost of fuel; MGO @ 40p/litre Speed: 16.5 knots both routes	£3.44m	£2.62m	£2.85m
Annual cost of fuel; MGO @ 50p/litre Speed: 16.5 knots both routes	£4.3m	£3.3m	£3.56m
Annual cost of fuel; MGO @ 60p/litre Speed 16.5 knots both routes	£5.16m	£3.93mm	£4.27m
Annual cost of fuel; MGO @ 30p/litre Speed: 16.5 knots Uig, 14.5 knots Ardrossan	£2.11m	£1.6m	£1.79m
Annual cost of fuel; MGO @ 40p/litre Speed: 16.5 knots Uig, 14.5 knots Ardrossan	£2.8m	£2.15	£2.39m
Annual cost of fuel; MGO @ 50p/litre Speed: 16.5 knots Uig, 14.5 knots Ardrossan	£3.51m	£2.7m	£2.99m
Annual cost of fuel; MGO @ 60p/litre Speed: 16.5 knots Uig, 14.5 knots Ardrossan	£4.2m	£3.23m	£3.58m

Note: For options 2 and 3 the vessel will still be designed to carry the maximum deadweight of 1180 tonnes as specified in the contract technical specification for the Stornoway to Ullapool route. This would be at 3.7m draft rather than 3.6m draft. Existing vessel Loch Seaforth is 4.8 m draft.

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CMAL's recommendation is to ask the shipyard to develop the model testing and final designs around Option 2 and 3 for the following reasons:

- Reduced fuel consumption
- Reduced fuel cost
- Reduced emissions
- Minimal reduction in cargo deadweight capacity

The 3 proposed options have no effect on car number capacity or freight vehicle number capacity. Option 1 (900 tonnes @ 3.4m) will increase displacement and will increase GT and port dues.

CMAL advised CFL and Transport Scotland of these options and CMAL's recommendation on the 04th March 2016. We await CFL's views on the operational and cost implications of the 3 options.

Note: The time taken to assess the implication of the proposals from the shipyard may possibly have an impact on the construction programme as the shipyard cannot finalise the order for the main engines and the delivery date for the main engines.

1.1.3 Master Construction Schedule

An updated master construction schedule is awaited. FMEL advise that the schedule will be issued following the decision on the deadweight/powering proposals.

1.1.4 Drawing Approval Schedule

FMEL issued the drawing approval schedule on 15th Dec 2016. Progress is slow with many scheduled drawings still to issue and those issued, have been issued after the scheduled dates.

1.1.5 Ship Design Risk Analysis

A HAZID meeting was held on 22nd and 23rd of March 2016, "LNG Fuel Risk Assessment". Attended by FMEL, CMAL, Wartsila, LR and MCA, CFL were not able to attend. The next stage in the process is the FMEA, safety critical equipment and bunkering safety study followed by Stage 4 HAZOP – final design assessment.

CFL have requested consideration be given to have the ability to bunker LNG from the vehicle deck in addition to shore side. This requirement is not in the original statement of requirements from CFL and will be put to FMEL for consideration.

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1.2 Stakeholder Groups

Meetings have been held with the North Ayrshire accessibility panel, Ardrossan taskforce and Uig and Tarbert port authorities.

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Table 1-2 Yard No 801 Actual production progress compared with schedule

YARD NO. 801			
Milestone	Scheduled Date	Actual Date	Comments
Cutting of Steel	15 Dec 2015	15 Dec 2015	
10% Fabrication	18 Apr 2016		Fabrication commenced 7 weeks later scheduled. FMEL advise that the 10% milestone will be achieved 3 weeks later than scheduled.
25% Fabrication	14 Jun 2016		FMEL advise that the 25% milestone will be achieved 2 weeks later than scheduled.
35% Fabrication	15 Aug 2016		FMEL advise that the 35% milestone will be achieved 1 week later than scheduled.
50% Fabrication	14 Oct 2016		FMEL advise that the 50% milestone will be achieved as scheduled.
Major Equipment and Lock Out Items Installations	14 Nov 2016		
75% Fabrication	15 Dec 2016		
100% Fabrication	16 Jan 2017		
Berth Join Up	14 Mar 2017		
Hull Inspection Prior to Paint	17 Apr 2017		
Launch	14 Aug 2017		
Delivery	25 May 2018		

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Table 1-3 Yard No 802 Actual production progress compared with schedule

YARD NO. 802			
Milestone	Scheduled Date	Actual Date	Comments
Cutting of Steel	15 Dec 2015	15 Dec 2015	
10% Fabrication	18 Apr 2016		Fabrication commenced 7 weeks later scheduled. FMEL advise that the 10% milestone will be achieved 3 weeks later than scheduled.
25% Fabrication	14 Jun 2016		FMEL advise that the 25% milestone will be achieved 2 weeks later than scheduled.
35% Fabrication	15 Aug 2016		FMEL advise that the 35% milestone will be achieved 1 week later than scheduled.
50% Fabrication	14 Oct 2016		FMEL advise that the 50% milestone will be achieved as scheduled.
Major Equipment and Lock Out Items Installations	14 Nov 2016		
75% Fabrication	15 Dec 2016		
100% Fabrication	16 Jan 2017		
Berth Join Up	14 Mar 2017		
Hull Inspection Prior to Paint	17 Apr 2017		
Launch	12 Oct 2017		
Delivery	26 Jul 2018		

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2. Actual Expenditure compared with Profiled Expenditure

Table 2-1 Yard No 801 Actual expenditure compared with profiled expenditure

YARD NO. 801						
Instalment Number	Milestone	Profiled		Actual		Comments
		Date	Expenditure	Expenditure	Date	
1	Receipt of Refund Guarantee	30 Oct 2015	£2,400,000	£2,400,000,	13 Nov 2015	Invoice received 13 November 2015. Two week hold up for refund guarantees to be ratified.
2	Procurement Deposits Long Lead Items (1)	12 Nov 2015	£12,100,000	£12,100,000	18 Jan 2016	FMEL issued the main equipment technical proposals on 26 th Nov 2015. CMAL raised many points on the proposals. FMEL issued updated technical proposals on 06 th and 12 th Jan 2016.
3	Cutting of Steel	15 Dec 2015	£1,400,000	£1,400,000	15 Dec 2015	First cutting steel carried out 15 Dec 2015.
4	Procurement Deposits Long Lead Items (2)	15 Jan 2016	£1,000,000	£1,000,000	14 Mar 2016	
5	10% Fabrication	18 Apr 2016	£2,400,000			
6	25% Fabrication	14 Jun 2016	£3,650,000			
7	35% Fabrication	15 Aug 2016	£3,650,000			
8	50% Fabrication	14 Oct 2016	£2,400,000			
9	Major Equipment and Lock Out Items Installations	14 Nov 2016	£1,375,000			
10	75% Fabrication	15 Dec 2016	£1,200,000			
11	100% Fabrication	16 Jan 2017	£1,200,000			
12	Berth Join Up	14 Mar 2017	£1,200,000			
13	Hull Inspection Prior to Paint	17 Apr 2017	£1,200,000			
14	Launch	14 Aug 2017	£1,200,000			
15	Delivery	25 May 2018	£12,125,000			

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YARD NO. 801						
Instalment Number	Milestone	Profiled		Actual		Comments
		Date	Expenditure	Expenditure	Date	
TOTAL			£48,500,000.00	£16,900,000.00		

Table 2-2 Yard No 802 Actual expenditure compared with profiled expenditure

YARD NO. 802						
Instalment Number	Milestone	Profiled		Actual		Comments
		Date	Expenditure	Expenditure	Date	
1	Receipt of Refund Guarantee	30 Oct 2015	£2,400,000	£2,400,000	13 Nov 2015	Invoice received 13 November 2015. Two week hold up for refund guarantees to be ratified.
2	Procurement Deposits Long Lead Items (1)	12 Nov 2015	£12,100,000	£12,100,000	18 Jan 2016	FMEI issued the main equipment technical proposals on 26 th Nov 2015. CMAL raised many points on the proposals. FMEI issued updated technical proposals on 06 th and 12 th Jan 2016.
3	Cutting of Steel	15 Dec 2015	£1,400,000	£1,400,000	15 Dec 2015	First cutting steel carried out 15 Dec 2015.
4	Procurement Deposits Long Lead Items (2)	15 Jan 2016	£1,000,000	£1,000,000	14 March 2016	
5	10% Fabrication	18 Apr 2016	£2,400,000			
6	25% Fabrication	14 Jun 2016	£3,650,000			
7	35% Fabrication	15 Aug 2016	£3,650,000			
8	50% Fabrication	14 Oct 2016	£2,400,000			
9	Major Equipment and Lock Out Items Installations	14 Nov 2016	£1,375,000			
10	75% Fabrication	15 Dec 2016	£1,200,000			
11	100% Fabrication	16 Jan 2017	£1,200,000			
12	Berth Join Up	14 Mar 2017	£1,200,000			

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YARD NO. 802						
Instalment Number	Milestone	Profiled		Actual		Comments
		Date	Expenditure	Expenditure	Date	
13	Hull Inspection Prior to Paint	17 Apr 2017	£1,200,000			
14	Launch	12 Oct 2017	£1,200,000			
15	Delivery	26 Jul 2018	£12,125,000			
TOTAL			£48,500,000.00	£16,900,000.00		

3. Vessel Procurement and Construction Risk Register

Table 3-1 Vessel Procurement and Construction Risk Register

Risk No		Risk Description	Significance	Risk Likelihood 1 – 5	Risk Impact 1 – 5	Risk Level H/M/L	Mitigating Controls	Further Actions	Current Status
1	Contractual/Commercial	Ship not capable of making contract speed	Cannot meet timetables	2	4	M	<ul style="list-style-type: none"> Model testing Shipbuilding Contract (LDs) Terminate contract Installed propulsion power margins 		Model Tests Undertaken
2	Contractual/Commercial	Excessive fuel consumption	Increased cost to operate the vessel and higher emission levels	3	4	M	<ul style="list-style-type: none"> Factory testing of engines Model testing Shipbuilding Contract (LDs) Engine rejection included in contract 		Await CFL reply on yard proposals

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Risk No		Risk Description	Significance	Risk Likelihood 1 – 5	Risk Impact 1 – 5	Risk Level H/M/L	Mitigating Controls	Further Actions	Current Status
3	Contractual/Commercial	Ship not capable of making contract deadweight	Cannot carry freight requirements	2	4	M	<ul style="list-style-type: none"> Analysis of lightship make up Regular requirement to update lightship estimates Regular progress meetings On site supervision Inclining test Shipbuilding Contract (LDs) Terminate contract 		Await CFL reply on yard proposals
4	Contractual/Commercial	Ship delivered late	Increase cost to CMAL due to loan interest payments and crew and site inspector costs increase. Vessel cannot enter service	3	3	M	<ul style="list-style-type: none"> Monitoring progress Shipbuilding Contract (LDs) Terminate contract 		Slow start to design/ production
5	Contractual/Commercial	The shipbuilder is deemed insolvent	Possible non delivery of vessel	2	4	L	<ul style="list-style-type: none"> Monitoring progress Regular progress meetings Title Shipbuilding Contract Refund guarantee Final stage payment 		
6	Contractual/Commercial	A major supplier is deemed insolvent	Increase cost to CMAL due to loan interest payments and crew and site inspector costs increase. Vessel cannot enter service	2	4	L	<ul style="list-style-type: none"> Monitoring progress Regular progress meetings Title Shipbuilding Contract Refund guarantee Final stage payment Identify alternative suppliers 		
7	Contractual/Commercial	Late ordering of equipment	Late delivery of vessel	3	4	M	<ul style="list-style-type: none"> On site supervision Regular progress meetings Monitoring progress Shipbuilding Contract (LDs) 		Main Engine rating yet to be confirmed

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Risk No		Risk Description	Significance	Risk Likelihood 1 – 5	Risk Impact 1 – 5	Risk Level H/M/L	Mitigating Controls	Further Actions	Current Status
8	Contractual/Commercial	Modifications and Changes	Proposed modification has detrimental effect on performance	2	3	L	<ul style="list-style-type: none"> Plan approval Equipment approval Regular progress meetings 		
9	Contractual/Commercial	Failure of equipment during warranty period	Vessel downtime Costs Reputation	2	4	L	<ul style="list-style-type: none"> Warranty period in shipbuilding contract Selection of equipment Equipment/FAT/Dock/Sea Trials 		
10	Contractual/Commercial	Loss and damage to equipment	Late delivery of vessel Quality of finish	1	3	L	<ul style="list-style-type: none"> Shipbuilding Contract (LDs) On site supervision 		
11	Contractual/Commercial	Late issue of drawings	Late delivery of vessel	3	4	M	<ul style="list-style-type: none"> Shipbuilding Contract (LDs) On site supervision Regular progress meetings 		Awaiting updated drawing schedule
12	Contractual/Commercial	Force majeure	Late delivery of vessel	2	4	L	<ul style="list-style-type: none"> On site supervision Regular progress meetings 		
13	Technical	Substandard equipment or construction	Equipment is unreliable, expensive to maintain or not supported by manufacturers	2	4	L	<ul style="list-style-type: none"> Technical schedule (makers list included in contract) Equipment approval process included in contract Built under class supervision Experienced site inspectors 		
14	Technical	Freight deck arrangements restrict carriage of dangerous goods	Passenger deck aft may need to be modified to increase open deck area on freight deck	3	4	M/H	<ul style="list-style-type: none"> Early discussions with MCA regarding arrangements 		Proposed change to increase open deck area
15	Technical	Shipyard does not resource the works accordingly. Shipyard does not recruit required quality of staff; technical, supervisory and production	Late delivery of vessel Quality of finish	3	4	M	<ul style="list-style-type: none"> On site supervision Regular progress meetings Monitoring progress Shipbuilding Contract (LDs) 		A number of new managerial staff appointed

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16	Technical	Cannot meet passenger, car or freight numbers	Detailed designs and calculations result in passenger decks and freight deck dimensions reducing	1	4	L	<ul style="list-style-type: none"> Contract and specification requirement Detailed and rigorous preparation of general arrangement drawings Plan approval process 		
17	Technical	Changes in rules/regulations	Late delivery of vessel Increase in costs	2	4	L	<ul style="list-style-type: none"> Meetings with MCA/LR Updates from LR rule finder 		
18	Technical	Complications of dual fuel designs	New rules regarding installation of gas systems on vessels need to be fully understood and followed	3	4	M	<ul style="list-style-type: none"> Classification specialists MCA specialists Equipment supplier specialist 		Risk analysis with major parties underway
19	Technical	Design cannot comply with various aspects MCA or LR rules	Major changes required to design (or part constructed vessel). Shipyard responsibility	2	4	L	<ul style="list-style-type: none"> Early dialogue with LR and MCA Early confirmation of meeting stability, evacuation, DG requirements 		
20	Technical	Vessel cannot berth at all the ports	Unable to serve route	2	4	M	<ul style="list-style-type: none"> Dimensional analysis to be carried out Port studies to be carried out 		Dimensional analysis underway
21	Performance	Weather	Late delivery of vessel. Poor paint finish if not completed indoors	2	3	L	<ul style="list-style-type: none"> On site supervision Paint under cover 		
22	Performance	Shipyard have other projects	Late delivery of vessel	2	3	L	<ul style="list-style-type: none"> On site supervision Regular progress meetings Monitoring progress Shipbuilding Contract (LDs) 		
23	Performance	Progress not in accordance with build programme	Late delivery of vessel	3	4	M	<ul style="list-style-type: none"> On site supervision Regular progress meetings Monitoring progress Shipbuilding Contract (LDs) 		Await updated build programme

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Risk No		Risk Description	Significance	Risk Likelihood 1 – 5	Risk Impact 1 – 5	Risk Level H/M/L	Mitigating Controls	Further Actions	Current Status
24	Performance	Shipyard rebuilding works not in accordance with rebuilding programme	Late delivery of vessel	3	4	M	<ul style="list-style-type: none">On site supervisionRegular progress meetingsMonitoring progressShipbuilding Contract (LDs)		Works on-going
25	Performance	Performance of workforce	Late delivery of vessel	3	4	M	<ul style="list-style-type: none">On site supervisionRegular progress meetingsMonitoring progressShipbuilding Contract (LDs)		