

**Programme:** 100m LNG Dual-fuel Ro-Ro Passenger Ferry

**Programme Director:** [redacted]

**Review Period:** July 2022

<u>Name</u>	<u>Job Title</u>	
[redacted]		
[redacted]		
[redacted]		



- **Minutes from previous meeting**
- **HSE**
- **Programme**
- **Production**
- **Engineering**
- **Commissioning**
- **OOR's**
- **RAG Status**
- **Variations to Contract**
- **CMAL Comments**
- **AOB**

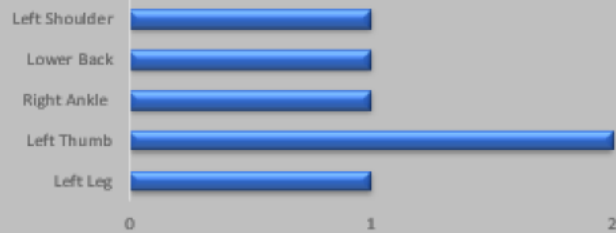
# HSE Dashboard

## July 2022

\* Per 1,000,000 working hours  
 \*\* Estimated no. of hours worked

Incident Statistics	Target	Actual		Fatal	0	Fire	0	Proactive Statistics	Target		Actual	
	2022	Month	YTD						Month	2022	Month	YTD
Number of Hours Worked**	870,000	65729	195919	RIDDOR	0	Damage	1	Number of YSYD Cards	>50	>600	58	103
Number of Lost Time Incidents (> 3 Days)	< 9	1	6	LTI (> 3days)	1	Environmental	0		Toolbox Talks Issued	2	24	2
Lost Time Incident Freq Rate*	< 10.14	15.21	22.93	Medical Treatment (MTC)	1	Serious Near Miss	0	Housekeeping Inspections	4	48	4	9
Number of Recordable Injury Incidents	< 30	2	10	First Aid	4	YSYD	58	Emergency Drills Completed	>4	>48	2	9
Total Recordable Injury Incident Rate*	< 35.0	30.43	38.22	Total Injuries	12	TOTAL Incidents	19	Vessel Compliance Checks	30	4200	15	80

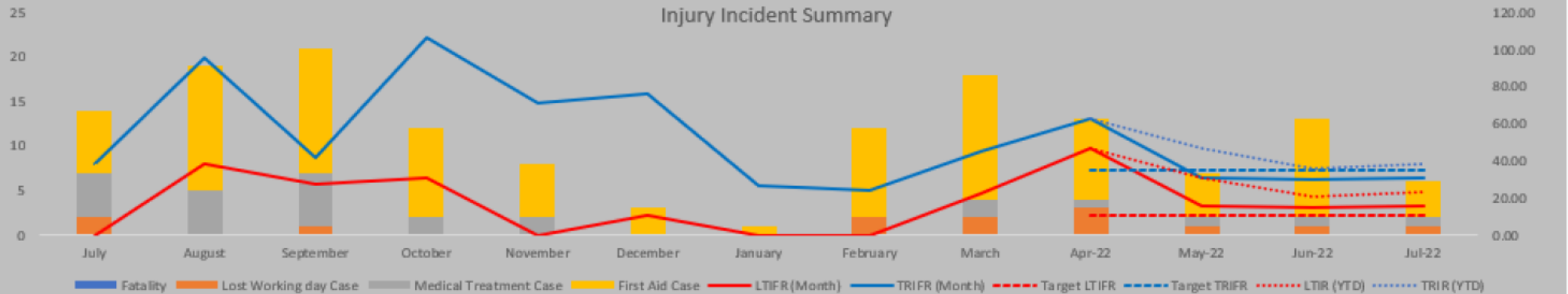
### Affected Area



### Incident Classification



### Injury Incident Summary



### Injury Stats

Lost Time Injury	1
Medical Treatment Case	1
First Aid Cases	4
You See You do Cards	58

### Progress Update:

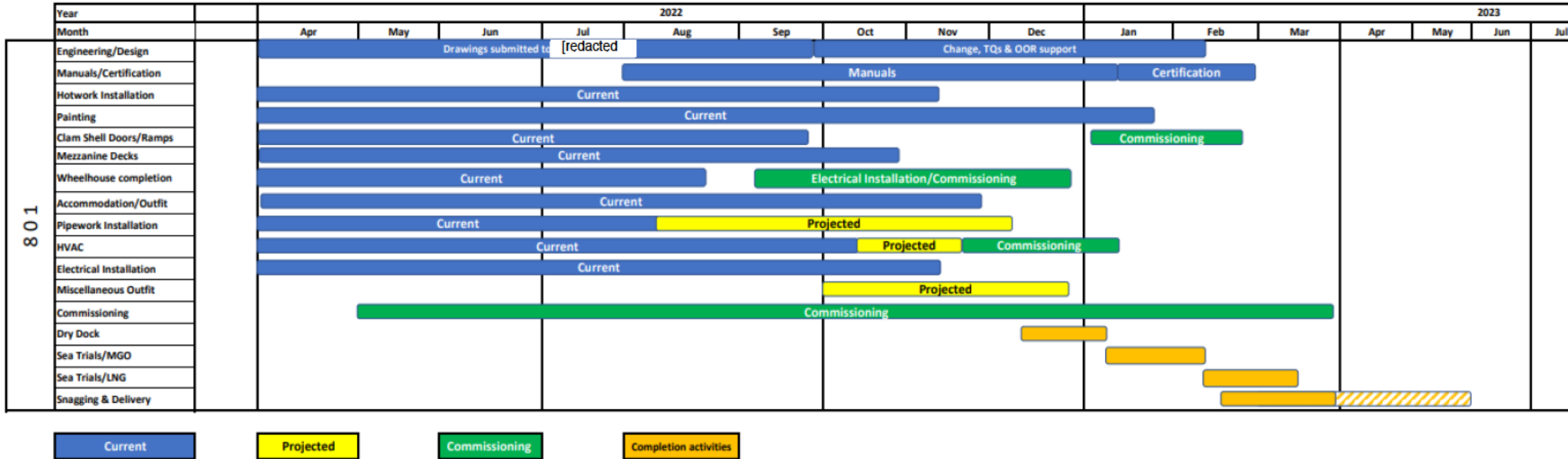
- Disappointing to have an LTI this month and an injury from last month also now classed as an LTI.
- Notable that these are avoidable injuries, rolling ankles, trips etc that with care and attention can prevent LTIs and the obvious impact on the individual and operational processes.
- Increased safety presence on 801 and 802 to enforce the required standards from our workforce and contractor colleagues.
- Increased use of formal reporting process to record breaches of process and procedures.
- Focus has been and will remain on the dry dock challenges whilst supporting this critical part of the project.

# Level 0 Programme



## Level 0 - Programme

30/06/2022



## Area Completion Summary 01/08/2022

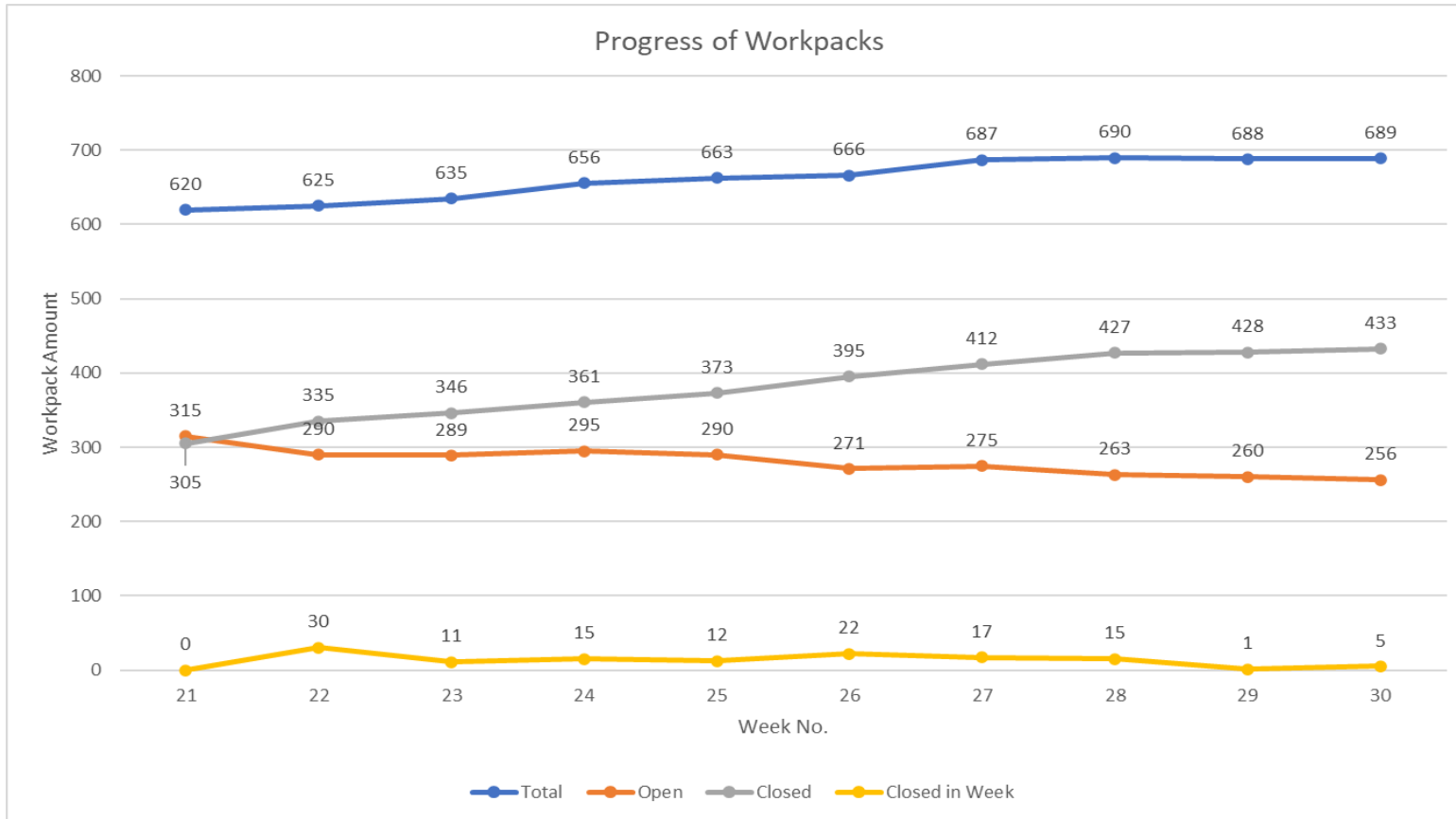
### Area Completion Summary 30/05/2022

Vessel 801	Activity	Complete	Complete	Complete
		May	June	July
1	Engineering & Design	70%	70%	70%
2	Steelwork Main Structure	95%	93%	95%
3	Piping Systems	60%	56%	65%
4	Mechanical Equipment	90%	92%	92%
5	Electrical Equipment	90%	90%	90%
6	Electrical Cabling	5%	21%	28%
7	Accommodation Outfit	20%	25%	28%
8	Painting	40%	42%	49%
9	Commissioning	10%	10%	10%
10	Drydocking	66%	66%	80%
11	Sea Trials	0%	0%	0%
<b>Overall Completion</b>		<b>70%</b>	<b>70%</b>	<b>72%</b>

Vessel 802	Activity	Complete	Complete	Complete
		May	June	July
1	Engineering & Design	50%	50%	50%
2	Steelwork Main Structure	60%	65%	68%
3	Piping Systems	2%	4%	2%
4	Mechanical Equipment	50%	50%	50%
5	Electrical Equipment	50%	50%	50%
6	Electrical Cabling	0%	0%	0%
7	Accommodation Outfit	0%	0%	0%
8	Painting	20%	20%	23%
9	Commissioning	0%	0%	0%
10	Drydocking	0%	0%	0%
11	Sea Trials	0%	0%	0%
<b>Overall Completion</b>		<b>45%</b>	<b>46%</b>	<b>47%</b>

**New focus has been placed on closing out all open work packs:**

- **Current total work packs to completion- 689 (Additional 20)**
- **Current number of closed work packs - 433 (63%)**
- **Current number of open Work packs – 256 (37%) 38 closed since last report.**

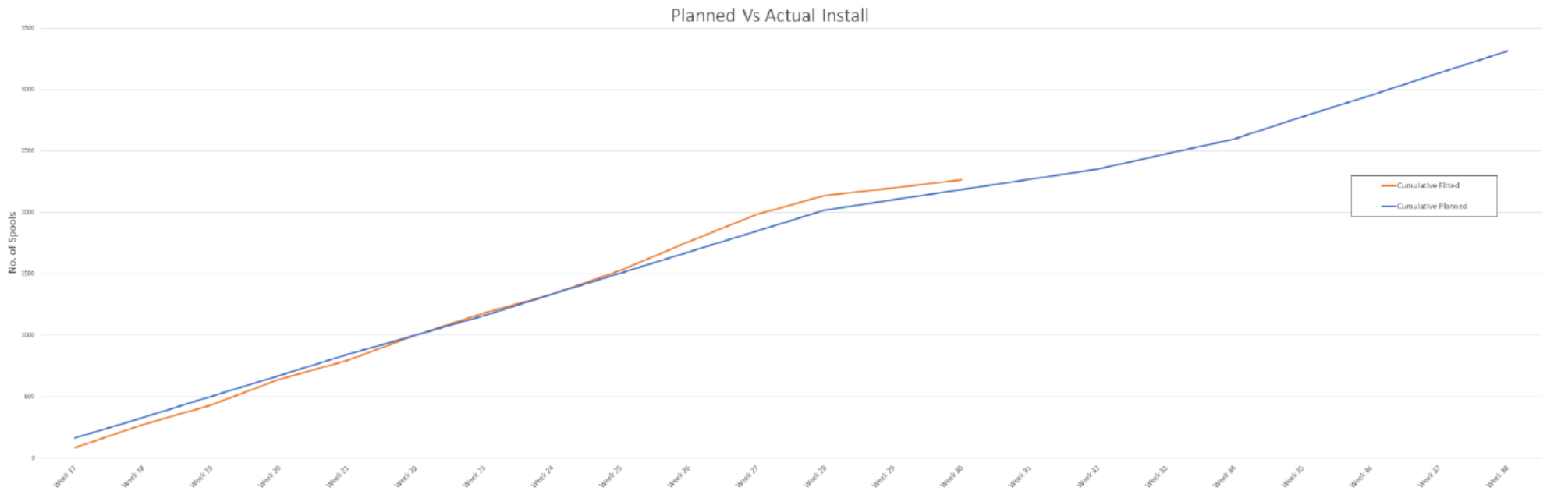


[redacted]

**Currently Progressing ahead of plan.**

**Total planned spools: 3314**

**Week 30: Cumulative planned 2186 (72%)  
Cumulative installed 2264 (75%)**



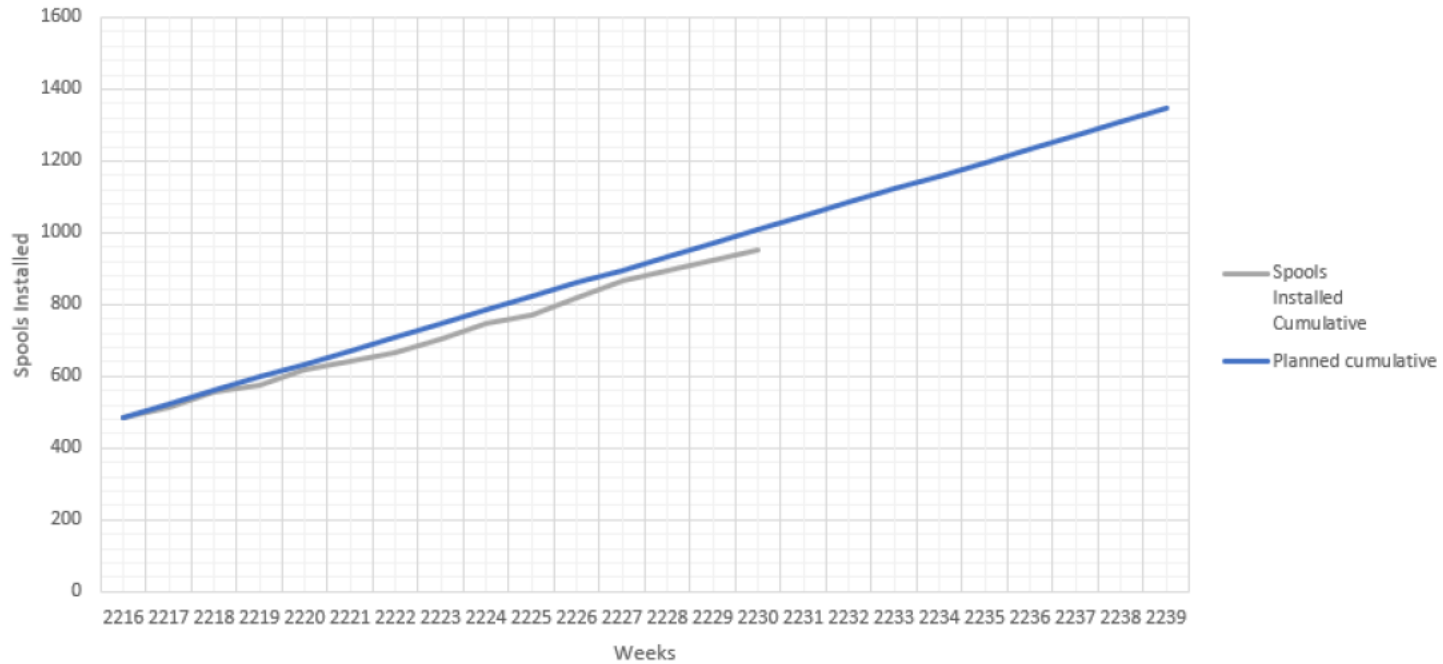


Total Spools planned: 1346

Week 30: Cumulative planned 960 (75%)  
Cumulative installed 802 (71%)

[redacted] continues to proceed to plan with small variance

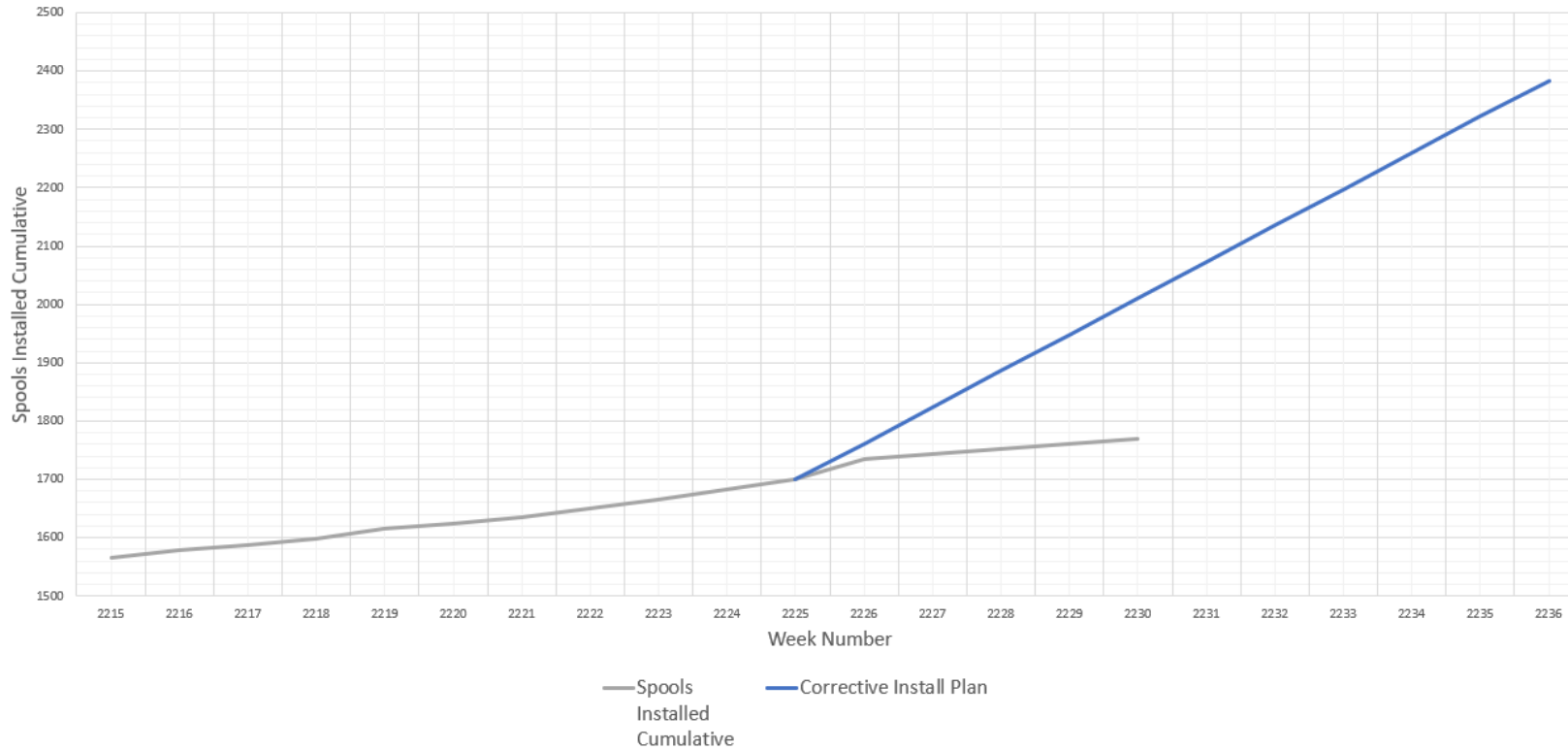
[redacted] Install S-curve



## FMPG

**Total planned spools: 2388**  
**Week 30: Cumulative planned 2010 (84%)**  
**Cumulative actual 1770 (73%)**

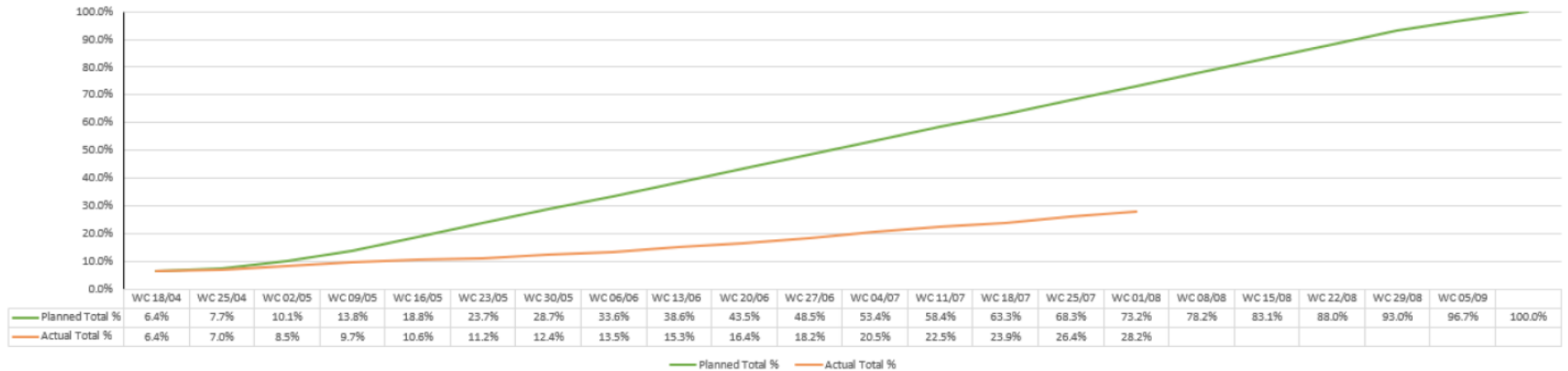
FMPG Spools Installed by Week



Week commencing 25/07, [redacted] currently 28.2% complete against planned 73.2%. Revised plan has been received from [redacted], after review we have deemed new plan unacceptable and asked for further discussions.

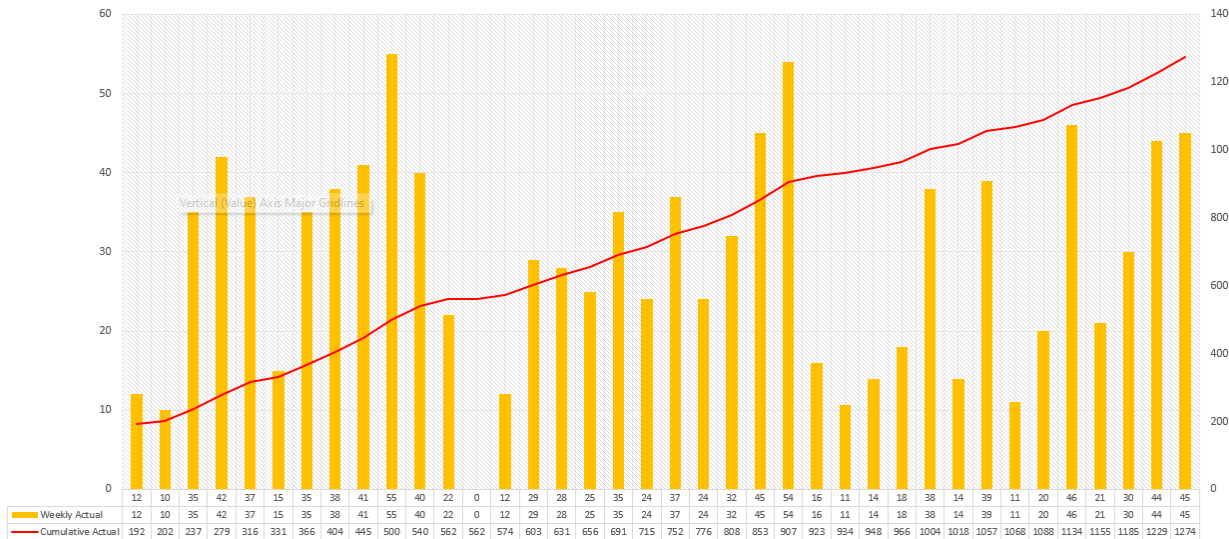
When revised plan is in place we will be monitored through daily Plan of the day onboard ship and weekly subcontractor meetings.

[redacted] -Ship 801 Cable Pulling



## HVAC installation progress:

HVAC Installation Progress 'S' Curve



Zone	Total Metreage	Installed Metreage	%age Complete
1	32	23	71.9%
2	35	26	74.3%
3	113	63	55.8%
4	94	55	58.5%
5	14	0	0.0%
6	378	43	11.4%
7	0	0	#DIV/0!
8	280	187	66.8%
9	1096	772	70.4%
10	198	173	87.4%
11	115	58	50.4%
<b>Totals</b>	<b>2355</b>	<b>1400</b>	<b>59.4%</b>

## Engineering & Steelwork

[redacted]

- Remaining work: operational wires expected to be installed and commissioning to commence start of August.

## Steelwork

- Hotwork scope for dry-dock complete
  - Clamshell doors fairing
  - Spigots IWO of screeding for on 6 deck accommodation & 7 deck Crew area
  - Coamings completed IWO screeding on 6 deck
  - Wheelhouse void hotwork complete for [redacted] to continue cable progress
  - Side-shell fairing complete
  - MES studs installed
- All platforms and brackets fitted in Port side funnel after Changes
- Hotwork support to allow [redacted] progress in accommodation areas ongoing and areas on target

## Specialist Subcontractors

- [redacted] erected 90% of liquid phase pipework and preparing for gas phase pipework install
- Bonded windows - Planned to install Mid August.
- Lifts - [redacted] – Had onsite visit this week, awaiting feedback.

## Electrical

- Cable install still ongoing dayshift and nightshift.
- [redacted] working alongside [redacted] on decks 6 with cable install to work towards behind linings & still installing cable on deck 5 & 7.
- Wheelhouse void cable ladder/route inspection passed off and cable install below wheelhouse started.
- Wheelhouse above ceiling cable ladder install started.
- Ongoing works installing cables Auxiliary Machine Room, Engine Room, Generator Room, Steering Gear.
- Glanding and terminating cabling in above areas.
- Cable testing to support above areas associated with pre commissioning critical 1<sup>st</sup> run systems.
- Disconnection of Bow and Stern Thruster motors to support [redacted] inspection.

## Pipework

- Installation of boiler pipework currently at 90%
- Re-instate of 701 fuel system in 0702 to allow testing & flushing
- Installation of Gas phase [redacted] pipework began in subzone 0303
- Completion of 722 HT/LT in zone 7

- Hotwork
  - Clamshell door inline fairing complete.
  - Internal hotwork ongoing on Clamshell doors.
- Thrusters
  - All thrusters now refitted.
- Paint
  - Paint topsides - Ongoing
  - Removal of marine growth- Complete
  - Painting below belting- Ongoing
  - Stern tube Inspection- Inspection complete, uncovered issues with Stern tube sealing face.
  - Draught marks- complete and signed off.

- Issues

- Axi lock issue to be resolved.
- [redacted] Gas Phase install being reviewed for any rip outs required for work in way.
- Stern Tube inspection results.

- Challenges

- [redacted] meeting current programme.
- Fire mains Accommodation.
- Cable installation & termination.
- Engineering Support.
- Level of change being managed.
- Pipework completion for commissioning (FO).
- Material availability.
- Driving OORs to closure.
  
- Production drawings closeout – design freeze.

- Successes

- Emergency Generators ran.
- Entered dry dock.

**No change to 802 programme at present. Overall programme under review by FMPG senior management team.**

**Level 0 - Programme**

Date: 23/03/2022

Year		2022										2023																
Month		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec					
802	Structure	[Bar from Mar to Dec]																										
	Hotwork Installation		[Bar from Apr to Jan]																									
	Painting			[Bar from May to Apr]																								
	Pipework Installation			[Bar from Jun to May]																								
	HVAC				[Bar from Aug to Jun]																							
	Electrical Installation				[Bar from Sep to Jul]																							
	Insulation & Architecture				[Bar from Sep to Sep]																							
	Launch													[Bar from Feb to Mar]														
	Commissioning														[Bar from Mar to Sep]													
	Dry Dock																									[Bar in Aug]		
	Sea Trial																									[Bar from Sep to Oct]		
	Snagging & Delivery																									[Bar from Oct to Dec]		



## Manufacturing Sheds

Units manufactured and erected

- U85 – complete in shed
- U86 – complete in shed
- U99 – complete in shed
- U100 – complete in shed
- A10/5 – erected
- A5/6 – erected
- A9/5 – erected

## Consolidation

- A5/5
- A6/5
- A9/5
- A10/5



## Outfitting – Still to update

Hotwork commencing well in Zone 2.

- Pipe Penetrations 85% complete.
- Major Foundations 80% complete.
- Lifting eyes and monorails 85% complete

## Pipework Installation

Work in progress on overboards. Burning only at this time, installation will take place after QC check.

## Launch

- Launch preparation ongoing.
- Launch Date February 23rd, 2023.

## Electrical

- Contract to be re-tendered.

## HVAC

- Commencing September.

## Specialist Contractors

- Currently reviewing opportunities and finalising plan with specialist contractors.

## Challenges

- Manpower, 801 absorbing labour.
- Potential changes (Design Reviews ongoing)
- Materials procured some time ago not fit for purpose.

## Successes

- Focsyl deck.
- Outfitting in Zone 2.

## Weight & Stability

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### Stability

- Cross flooding pipe due to arrive in yard early June, with installation to follow thereafter.
- Calculations for damage stability (Water on Deck) following updates to ECR partial bulkheads and the lift shaft doors on the car deck Still on going
- Discussions ongoing with [redacted] to make the one door semi-watertight(SWT). Currently [redacted] are not able to modify the existing door to SWT.  
[redacted] [redacted]<sup>th</sup> [redacted]

### Weight – Weight margin has reduced from 20 tonnes to 5 tonnes due to update with accurate information

- Legacy weight file (FMEL) is frozen and kept for a reference (Summary of data below).
  - predicted weight was 3556T with 44T contingency
  - Total validated amount was 3,449T, 97% of total
  - Remaining 3% validation was for foundations and supports.
- Validation of legacy weight file, a new study started ( mid-March). Overall weights extracted from the 3D model.
  - This study has never been performed at any stage of initial or detail design. Model based study provided a better estimation covering the previous margin assumptions.
  - All 3D model items extracted have provided a better reference for Centre of Gravity (CoG) values.
  - Current weight estimate is 3547.84t and 5.51t remained as margin. Contractual weight is 3553.35t Ratio of validated weight is 3547.84/3553.35 = 99.84%
  - Weight updates completed and issued on 13th July 2022. Weight distribution (WD) completed on 22nd July 2022. WD will be used for longitudinal strength calculation. (Part of stability calculations)
- New Weight format shall be monitored and updated as new data becomes available

### Interim inclining experiment was undertaken to set the towing condition on 2nd July 2022

- Validated condition along with towing condition calculation were conveyed to the insurer on 12th July before departure for drydock on 14th July.
- Warranty surveyor issued towing certificate on 12<sup>th</sup> July
- Currently, 3267.25t is available onboard including scaffoldings etc. This corresponds to 92% ship completion level
- Interim inclining experiment`s values will be used as a benchmark figure for the estimated figures in weight budget as well as forecast the trends until the final inclining experiment which shall give the actual weight.

## Other docs to deliver

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- [redacted] to confirm if [redacted] is still required
- FMPG to propose a test pack format to CMAL to show how the system recovers after failures.
- Machinery list (including serial numbers) has been completed and sent. This list will be under review until the final deliverable with the ship. [redacted]  
is now on contract, and they will be onsite in coming weeks with tallies to follow.
- Operations Manual – This will be reviewed on an ongoing basis during commissioning and training of equipment, final deliverable on ship hand over.
- As built drawings for P&IDs and technical compartment arrangements have been agreed with CMAL. Other as built drawings being agreed with CMAL as required.

[redacted] plan approval update

[redacted]

Future submissions to [redacted]	[redacted] Delivery Date	Note
Eco Notation	Delivered prior to handover	Eco Notation pack containing items such as Anti fouling plan
Stability book	Delivered prior to handover	Part of Stability book. To be released after stability book approval this will include the Damage Control Plan
NAV1 Notation	Delivered prior to handover	This covers items such as navigation lights etc.
MARPOL	Delivered prior to handover	Various OEM documents and supporting documents to satisfy MARPOL regulations

Resubmission to [redacted]	Responsible	Note
Cargo Securing Manual	FMPG	To be updated with [redacted] comments
Hazardous Zone Plan	FMPG	Updating for Crankcase Breather Change & Nitrogen Generation Plant Vent line Change
Fire & Deck Wash System	FMPG	After agreement on way forward this will require resubmission to [redacted]

[redacted]

Under Review with [redacted]	Date sent to MCA	Note
Emergency Towing Booklet	11/04/2022	Information Only. Copy to be kept on board. (Not [redacted] scope) [redacted] Approved (Remove next month)
Accommodation Layouts	15/02/2022	
Accommodation Handrailing	31/01/2022	Will be finalised after Escape route approval
Crew Accommodation Plan	15/02/2022	
Fire Control Plan	27/06/2022	Updated in line with Structural Fire protection Plan
Fixed Fire Extinguishing Syst. ECR & Pipes, Cables Transformer Room	04/11/2021	Provisionally agreed New Type Approval Certificate from [redacted] to be submitted (ongoing with [redacted])

To Be submitted to [redacted] (in Work)	Responsible	Note
Stability book	FMPG	Delivered prior to handover
CALMAC Muster Lists (Mode 1-4)	CMAL	
CALMAC SAR Plan	CMAL	
801&802-LNGPac Operating & Maintenance Manual LNGPac-H149-D9	[redacted]	[redacted] Updating.
Emergency Low level lighting	FMPG	Submit after escape routes update
Fire & Deck Wash System	FMPG	On Hold as under investigation for removal of 25NB pipework as if upsized to 65NB, to meet hydrant requirements, this will have a large impact on production due to the level of impact at the ship (801 only).
Structural Fire Protection Plan	FMPG	As of 26/06/22, bulkheads conditionally approved, deckheads rejected, Update being worked.

### P&IDs for CMAL Approval

- 9 Systems Approved
- 23 Systems. Under review with CMAL prior to joint review and final sign off.

### Contract Specification

- There are various updates within the document which require to be internally reviewed and then presented to CMAL for agreement. This is ongoing.

### CMAL Drawing Approval update

This list includes drawing such as General Arrangements of Galley / Accommodation.

- 68 Total to approve
  - 18 now approved by CMAL
  - 20 under review & nearing approval.
  - 26 others still to be submitted for approval

# Crew Training

## Training schedule (only soft booked)

### 1<sup>st</sup> vessel in Q1/2023

- 
- **Weeks 9-10: 27<sup>th</sup> February until 10<sup>th</sup> March 2023 (Engines at [redacted])**
- **Week 11: 13<sup>th</sup> until 17<sup>th</sup> March 2023 (Engine Control at [redacted])**
- **Week 12: 20<sup>th</sup> until 24<sup>th</sup> March 2023 (LNGPac at [redacted])**
- **Week 13: 27<sup>th</sup> until 31<sup>st</sup> March 2023 (Propulsion at [redacted] or on board)**

### 2<sup>nd</sup> vessel in Q1/2024

- **Week 8: 19<sup>th</sup> until 23<sup>rd</sup> February 2024 (Propulsion at [redacted] or on board)**
- **Weeks 9-10: 26<sup>th</sup> February until 8<sup>th</sup> March 2024 (Engines at [redacted])**
- **Week 11: 11<sup>th</sup> until 15<sup>th</sup> March 2024 (Engine Control at [redacted])**
- **Week 12: 18<sup>th</sup> until 22<sup>nd</sup> March 2024 (LNGPac at [redacted])**

## Still to confirm

- **PMS and Alarm and Monitoring system Under discussion to arrange with [redacted]**
- **LNG Training under discussion with CTS training provider due to specialist knowledge required to undertake.**

## 118 TECHNICAL TRAINING FOR CREW

The Builder will provide on board training in machinery and equipment for key staff. The Builder will also provide training as detailed in the Requirement Specification and Technical Schedule, and will include:

LNG Systems	Up to 10 people (3 courses)
Navigation and Communication Systems	6 people
Communications Systems	6 people
Generators & Prime Movers	Up to 10 people (3 courses)
Propeller Units	Up to 10 people (CPP)
Power Management System	6 people
Alarm, Monitoring & Control Systems,	6 people
Lifesaving Equipment	6 people

This will be done separately from the commissioning process.

The training is to be in English and held by specialist commissioning engineers from the Builder, or representatives from sub-contractors, prior to delivery and signed off by Buyers.

Specialist LNG training (approx. 1 week per ship) will be provided to ship's crew.

Training will also include Ship Specific ECDIS training for Deck Officers.

## The following has been achieved since the previous meeting.

- Emergency generator has been commissioned. All alarms and shutdowns witnessed by [redacted] & CMAL.
- Unable to make any progress with the Ship in Drydock.



## Planned activities for the next 3 weeks.

- Testing of alarm system controls for the Group Starter Boards will start W/C 04 July.
- Sea Water system to be ran sea to sea.
- Starting air compressors to be commissioned.
- Pressure hold test on start air receivers.
- Flushing of fuel oil system pipework.
- Bring fuel tanks into service and take fuel onboard.
- Load test the emergency generator.

## OOR status

	All categories	Category 1	Category 2	Category 3
Total Raised	605	368	224	13
Total Closed	445	263	179	3
Total committed	51	42	8	1
Total to close when work complete	63	48	10	5
Total still to resolve	46	15	27	4

Category 1 - Must be done before handover

Category 2 - General / Specification Issues to be done - may carry over to warranty period

Category 3 - Snagging

- From last report we have seen a slow movement.
- 26 OOR's have been targeted for confirmation of closure. These are being surveyed this week by <sup>[redacted]</sup>.

# Programme RAG Status

	Probability	Red	Amber	Green
Programme Plan	Low		There is a risk that [redacted] cannot resource for the installation and setting to work of the ships lifts within the programme dates	<p>Lack of knowledge of LNG handling causes safety hazards or problems</p> <p>COVID-19 - there is a risk that the ongoing effect may impact the yard or its suppliers</p> <p>There is a risk that resource is unavailable to support work on the ship as a result in increased requests for WFH / absences as a result of fuel cost increases</p> <p>There is a risk that should the conflict in the Ukraine escalate this may result in subcontractor personnel native to the region being unavailable for/ unwilling to travel</p>
	Medium	There is a risk that late approval of drawings results in additional reworking of progressed areas.	<p>There is a risk that management of change does not happen in a timely manner, resulting in additional rework / late ordering of material / equipment</p> <p>There is a risk that the number of legacy cables that need to be re-routed impacts the programme</p> <p>Workpackaging arrangements not robust enough to control properly the work sequence and capturing performance</p> <p>There is a risk of sabotage to equipment and systems on the vessel due to disgruntlement within the workforce</p>	
	High	<p>Performance of on site subcontractors impacts programme</p> <p>There is a risk of late change due to design errors. These errors may be mistake, missed scope or non-conformances to requirements / spec.</p> <p>LNG bunkering requires modifications as risk assessment has not yet been undertaken</p> <p>There is a risk that if all OORs are not agreed as closed with CMAL that acceptance of the vessel will be difficult to achieve.</p>	Level of rework not sufficiently scoped. Known rework not fully scoped. Unknown rework will occur particularly during the test and commissioning phase	<p>There is a risk that there are legacy / historic VTCs that may not have been implemented.</p> <p>Weather conditions may impact work at ship, e.g. applying external coatings, crane operation etc.</p>

# Risks-Supply Chain

	Probability	Red	Amber	Green
Supply Chain	Low		Impact to the programme of the implementation of the Public Procurement process	<p>ordering</p> <p>Equipment obsolescence may become a problem following the length of time the equipment has been on-site</p> <p>There is a risk that the output from [redacted] requires work to be completed at quayside that interrupts the 801 delivery programme</p> <p>Inadequate stock control leaves a shortfall in outfit steel, pipes and pipe fittings</p> <p><b>Intellectual Property:</b> the design challenges are well known and intellectual property associated with 801/802 is unclear. Challenge could follow from alleged or legal IP owners.</p> <p>Equipment damage may not be sufficiently scoped.</p> <p>There is a risk that material required for completion of the vessel is required at short lead time.</p> <p>There is a risk of increased cost and lead time due to global increase in aluminium pricing</p>
	Medium		<p>[redacted] costs for a care and maintenance plan may exceed budget</p> <p>There is a risk that there are critical items still to be procured that are on a lead time longer than the programme has scope for.</p> <p>Failure of equipment during warranty period. Supplier guarantees have expired</p> <p>There is a risk that equipment in stores cannot be located in a timely manner to support work packages</p>	<p>Currency risk with direct suppliers</p> <p>Impact of Brexit to the supplier base</p> <p>Post-Covid supply chain disruption and HGV driver shortages will increase lead times</p>
	High	There is a risk that items are delayed to yard (from supplier) and ship (from stores) due to lack of resource to process [redacted] (to allow invoicing) and resource to kit for ship visibility / SOEP of stores personnel	<p>Suitably qualified LNG certified crew may not be available to support the sea trials</p> <p>Delay due to situation in Ukraine</p>	

	Probability	Red	Amber	Green
Production	Low		<p>There is a risk that we are unable to recruit or retain Production staff in the required numbers, with suitable qualifications and experience. (include Mechanical Fitters)</p> <p>Significant number of pipes made but not fitted cannot be found or are obsolete. (retire and rewrite Lack of stock control with pipes located at various places in the yard</p> <p>There is a risk that the programme is delayed due to a breakdown / shortage of yard machinery / supplies and tooling (welding gear) Yard Supplies: Break down of critical supplies example [redacted] Inherited systems that have never been maintained Shore Side Power: Aged equipment providing power which hasn't the capacity. Large investment required. Welding Equipment's: Increased labour on vessel and continuous use and abuse of kits resulting in break down. ERT available to support programme requirements (weekend and overtime)</p>	There is a risk that the output from [redacted] requires work to be completed at quayside that interrupts the 801 delivery programme
	Medium		<p>Insufficient capacity for pipe manufacture and installation to support the programme</p> <p>There is a risk of failure to complete the external paintwork within the constraints of the plan. The drydocking period now includes a window to complete any steel shell painting and the underwater scope. [redacted] purging takes longer than planned Dirt and foreign body ingress into piping systems causes commissioning problems. Caused by inadequate protection on pipe ends</p>	
	High	There is a risk that the programme is impacted due to a lack of buy -in from work force to deliver the plan. (Mature Workforce)		

	Probability	Red	Amber	Green
Engineering	Low		<p>There is a risk that level 4 commissioning activities extend beyond level 2 time envelope</p> <p>Vessel cannot meet contract deadweight</p>	<p>Handover documentation not provided in time</p> <p>As result of redesigning the structure for increased lift size, lifts may not function properly</p> <p>P&amp;IDs do not comply with specification or owners' comments</p> <p>Linkspan/ramp interfaces must be suitable for all specified ports</p> <p>Damage Control Room.</p> <p>Distance to (e.g.) watertight doors means increase in pipe NB.</p> <p>Owner has suggested modifying specification to allow second closer control location to eliminate need to increase pipe bore.</p>
	Medium	<p>There is a risk that there are items in the model which are required but do not have a production output drawing from [redacted] or FMPG. This would lead to late emerging change, late hotwork.</p>	<p>Bow door and ramp arrangements are complex causing issues during STW and commissioning</p> <p>Environmental noise limits exceeded (impact on neighbours when alongside) [redacted]</p> <p>There is a risk of emergent change as a result of completing planned modifications to TCS [redacted]</p> <p>Hull vibration analysis indicates there may be an inherent design problem (impeller blade frequency)</p> <p>[red] Internal noise and vibration limits are exceeded (Passenger and Crew accommodation)</p> <p>Unable to recruit or retain technical staff in the required numbers, with suitable qualifications and experience</p> <p>Design does not comply with various aspects [redacted] rules</p> <p>There is a risk that CMAL do not accept the design.</p>	<p>[redacted] remains to be installed</p> <p>There is a risk that the hot work completion in the steering gear compartment will be late as a result of the lead time of the [redacted] approved quick release hatch for shaft inspection.</p>
	High	<p>There remains a non compliant axilock that has not been picked up as part of the review and modifications that have been issued.</p> <p>Client concerned about removal space for ME pistons and other generators (thinks harbour gen set should be OK).</p>	<p>Stability criteria may not be met</p>	<p>There is a risk that the [redacted] will not approve the aft navigation light that has been purchased for a zone 1 application.</p> <p>A navigation light has been selected that needs to complete type testing to gain [redacted] approval</p>

	Probability	Red	Amber	Green
Commissioning	Low			
	Medium		There is a risk that we do not have appropriate level of commissioning staff to support the programme with suitable qualifications and experience. Resulting in delays in completion of commissioning activities.	
	High		There is a risk that equipment may not work during the setting to work and commissioning phase due to being idle for a long time	
Quality	Low		Survey does not comply with various aspects [redacted] rules	Survey does not comply with various aspects [redacted] rules
				There is a risk of requiring [redacted] to attend at the weekend to undertake inspections. This would result in additional cost
				there is a risk that [redacted] approval of [redacted] system is not achieved
	High		Damage to Gopfert Valve actuators: large number are unprotected and at floor level.	
			There is a risk that the repair method for the damage to the wheelhouse windows will not be acceptable to the customer and that as a consequence the 3 windows will need to be repaired.	

## Variations to Contract

<u>VTC's</u>	<u>Contract Section</u>	<u>Description</u>	<u>Date Requested</u>	<u>Impact</u>	<u>Comments</u>	<u>Status</u>
<a href="#">LNG-100-114</a>	<b>section 813:</b> Fire and Wash Deck System	A fresh water fire main, supplied from the vessel's domestic fresh water system, will be provided in the main accommodation area and small bore fire hoses, of nominal 25 mm diameter and not exceeding 15 m length, will be provided at sufficient locations on each deck level to reach all parts of the accommodation This requirement to be deleted	13/04/2020	Requirement to be removed from technical specification		[redacted]
<a href="#">LNG-100-119</a>	N/A	Provision of workshop tools		[redacted] to supply various tools/pieces of equipment for workshop		postponed
<a href="#">LNG-100-121</a>	<b>section 561 i)</b> passenger lifts	addition of weathertight door for passenger lift on 07 deck				costs to be determined
<a href="#">LNG-100-123</a>	<b>section 868:</b> shore supply	Addition of a shore supply connection box for 802 only				[redacted]
<a href="#">LNG-100-127</a>		Sanitary/Grey Water System		Re-routing of laundry discharges to grey water tank		under investigation
<a href="#">LNG-100-128</a>		Quick Release Hatches for shaft inspection in Workshop / Nitrogen spaces				under investigation
<a href="#">LNG-100-129</a>		Domestic Hot Water		The installation for the potable freshwater which within the contract is stipulated as copper piping. Agreement with CMAL to change to Mappress rather than copper. This is a suitable replacement that is easier to install and maintain and is suitable for use on domestic systems. We have engaged with [redacted] and they do not have any issue with this	Amend Technical specification	[redacted]



## CMAL Comments to the Monthly Report

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### **CMAL Comments:**

- Conduct the risk management status in RAG (red amber green).

### **Key challenges for the shipyard:**

- Key known challenges for the shipyard to meet the programme.
- Installation and termination of the ship's cables.
- Completion of pipework to meet commissioning dates, including addressing pipe clashes.
- Closure of OORs.
- Delivery and completion of production drawings and accuracy of production drawings.
- Availability of experienced supervisors.
- Shortage of experienced trades.
- Availability of materials.
- Lack of familiarity with final stages of finishing the vessels, surveys, documentation and certification.