

Item: 6

Monitoring and Audit Committee: 22 September 2022.

Internal Audit Investigation Report: Nordic Sea.

Report by Chief Internal Auditor.

1. Purpose of Report

To consider internal audit investigation into the governance arrangements and processes followed in acquiring the Nordic Sea.

2. Recommendations

The Committee is invited to note:

2.1.

That Internal Audit has undertaken an investigation into the governance arrangements and processes followed in acquiring the Nordic Sea.

2.2.

The findings contained in the internal audit investigation report, attached as Appendix 1 to this report, concerning the governance arrangements and processes followed in acquiring the Nordic Sea.

It is recommended:

2.3.

That the Committee review the audit findings to obtain assurance that action has been taken or agreed where necessary.

3. Background

3.1.

This investigation was carried out following a request by an Elected Member who raised concerns around the governance in the procurement of the Nordic Sea.

3.2.

The Nordic Sea was purchased to replace the ageing Golden Mariana, a ferry that was used between Westray and Papa Westray. The Nordic Sea had previously operated as a passenger ferry on routes in the Vesteralen archipelago located north of Norway.

3.3.

The objective of this investigation was to review the processes and governance arrangements leading to the decision to acquire the Nordic Sea and in carrying out its procurement.

4. Audit Findings

4.1.

The investigation provides adequate assurance over the governance arrangements relating to the purchase of the Nordic Sea.

4.2.

The Committee is invited to review the audit findings to obtain assurance that action has been taken or agreed where necessary.

5. Corporate Governance

This report relates to the Council complying with governance and scrutiny and therefore does not directly support and contribute to improved outcomes for communities as outlined in the Council Plan and the Local Outcomes Improvement Plan.

6. Financial Implications

There are no financial implications associated directly with the recommendations in this report.

7. Legal Aspects

Complying with recommendations made by the internal auditors helps the Council meet its statutory obligations to secure best value.

8. Contact Officers

Andrew Paterson, Chief Internal Auditor, extension 2107, email andrew.paterson@orkney.gov.uk.

Peter Thomas, Internal Auditor, extension 2135, email peter.thomas@orkney.gov.uk.

9. Appendix

Appendix 1: Internal Audit Investigation Report: Golden Mariana Replacement - the Nordic Sea.



Internal Audit

Investigation report

Golden Mariana Replacement – The Nordic Sea

Draft issue date: 22 August 2022

Final issue date: 13 September 2022

Distribution list:	<p>Head of Marine Services, Transportation and Harbour Master.</p> <p>Corporate Director for Enterprise and Sustainable Regeneration.</p> <p>Head of Legal and Governance.</p> <p>Interim Chief Executive.</p>
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Investigation Opinion

Based on our findings in this review we have given the following audit opinion.

Adequate

Some improvements are required to enhance the effectiveness of the framework of governance, risk management and control.

A key to our opinions and level of recommendations is shown at the end of this report.

Executive Summary

This investigation into the governance arrangements and processes followed in acquiring the MV Nordic Sea, was carried out following a request made by a Councillor and the growing level of public concern generated from media reports and social media comments.

Our investigation provides adequate assurance over the governance arrangements for the procurement of the MV Nordic Sea and our report details a significant volume of due process activity that was carried out in the purchase of this vessel by the Council.

However, by the time of our investigation a Contract Award Notice had not been sent for publication for this procurement which under legislative requirement must have been sent for publication within 30 days of awarding a contract.

Our report also includes reference to some other aspects of the procurement where improvement could be made in processes.

The scope of our investigation focused primarily on the procurement activity carried out in the purchase to the MV Nordic Sea upon which our investigation opinion is based. There has been a series of issues causing the MV Nordic Sea to become non-operational since being brought into service on the North o' the Galt route.

At the time of our report the MV Nordic Sea is non-operational, due to an engine problem, requiring its removal in order to be sent to the manufacturer's plant.

The assistance provided by officers contacted during this investigation is gratefully acknowledged.

Introduction

On 30 September 2014, the Policy and Resources Committee of the Council recommended that a replacement should be found for the then 41-year-old Golden Mariana, which provided a passenger service between Westray and Papa Westray (Papay) and also served as a back-up for the Graemsay ferry.

A report to the Committee advised that the Golden Mariana was built in 1973 and although well maintained and meeting all operational safety requirements, the ferry's age meant that a replacement vessel would be needed for a reliable service to be provided on both routes.

A suitable replacement vessel for the Golden Mariana had proved difficult to source. Up until the middle of 2019, although the pool of potential vessels was found to be small, a number of vessels were looked at with one trialled locally on charter, one surveyed and underwent sea keeping trials in Eire and one inspected in the Bristol Channel. One potential option on the west coast of Scotland was sold before the Council were able to react. Generally, vessels had either failed inspection, were nearly as old as the Golden Mariana, failed sea trials or were soon taken off the market.

In 2019, it became known that the MV Nordic Sea, which operated passenger routes in the far north of Norway, had become available.

Following visits and sea trials involving Orkney Marine Services and Orkney Ferries staff, the MV Nordic Sea was considered as a suitable replacement for the Golden Mariana.

As the Nordic Sea was operating under a Norwegian Passenger Certificate, it was known that a number of requirements would have to be met before she could be considered ready for a UK passenger certificate.

On 3 March 2020 the Council decided to go ahead with the purchase of the Nordic Sea, from its operators in Northern Norway.

The Nordic Sea arrived in Orkney on Friday 24 April 2020.

Further modification work would be required to bring the Nordic Sea up to the full UK Classification and Certification and to meet the existing specifications for the Maritime and Coastguard Agency's (MCA) passenger vessel system.

The skipper of the Golden Mariana has retired and so a recruitment process needed to be carried out for a skipper and crew for the Nordic Sea.

Training and familiarisation of the crew would also be required before the vessel could be brought into operation.

It is understood that the Nordic Sea is the first vessel to undergo such a process of transformation.

The Nordic Sea made its inaugural journey on the Papay to Westray route during sea trials carried out on 3 December 2021.

The objective of this investigation was to review the processes and governance arrangements leading to the decision to acquire the Nordic Sea and in carrying out its procurement.

This review was conducted in conformance with the Public Sector Internal Audit Standards.

Investigation Scope

The scope of this investigation included a review of the following:

- The process followed in determining the Nordic Sea as being a suitable replacement for the Golden Mariana, including review of all external and internal surveys, checks carried out, and assessments made.
- The engagement of and activity, and advice, provided by agents and brokers for the purchase of the Nordic Sea.
- Any other advice given to the Council or sought over the suitability in purchasing the Nordic Sea.
- The process and governance over the decision to purchase the Nordic Sea.
- The procurement process carried out to the purchase of the Nordic Sea.
- Work carried out in bringing the Nordic Sea up to UK standards for passenger transportation and whether these standards have been met.
- Staff training and familiarisation in the operation of the Nordic Sea.

Investigation Findings

1.0 Summary of events leading to the purchase of the MV Nordic Sea.

- 1.1. At a meeting of the Development and Infrastructure Committee held on 4 June 2013, the committee were invited to note that “the longevity of the MV Golden Mariana has been called into further question when holes in the underwater hull sections were detected during her annual refit. These have been repaired and the vessel has been returned to service in a fully certified and safe condition. However, her rate of decline may be accelerating and a programme to find a replacement in the near future must now be a priority.”
- 1.2. At a meeting of the Development and Infrastructure Committee held on 12 November 2013, the Committee were invited to note a Stage 1 Project Appraisal report for the provision of a backup/replacement vessel for the MV Golden Mariana. This report included the following narrative, “the MV Golden Mariana is reliable and simple but at 40 years old she is a very aged vessel with a range of risks, potential non-compliance with future requirements and operating inefficiencies as a result. These risks were highlighted by her recent hull perforations and although she is currently sound, the risks of further defects are high. Due to her age, she has significant shortfalls for persons of reduced mobility, her load carrying capacity is poor and she has no crane with which to offload medium sized loads. She is also slow which reduces her utility for work over and above her standard run from Pierowall to Papa Westray.”
- 1.3. At a meeting of the Policy and Resources Committee held on 26 November 2013, the Committee recommended, inter alia, that, the provision of a backup/replacement vessel for MV Golden Mariana be progressed to Stage 2 of the Capital Project Appraisal process.

- 1.4. At a Meeting of the Policy and Resources Committee held on 30 September 2014, the Committee received a report entitled, Proposed replacement vessel for MV Golden Mariana / back up vessel for the MV Graemsay. The report invited the Committee to consider a Stage 2 Capital Project Appraisal in respect of a replacement vessel to ensure the reliability of the ferry service between Westray and Papa Westray and to Graemsay and Moaness.
- 1.5. The Committee resolved to recommend to the Council:
 - 1.5.1. That the Stage 2 Capital Project Appraisal, in respect of the provision of a backup/replacement vessel for the MV Golden Mariana be approved; and
 - 1.5.2. That, as an exception to policy, the purchase of a second-hand passenger vessel for the Papa Westray route and for relief duties on the Graemsay route, be included in the capital programme, for financial year 2014/15 onwards, at an estimated gross capital cost not to exceed £500k, to be funded by the substitution of a General Capital Grant currently allocated to the Capital Asset Replacement – Corporate Improvement Programme for 2014/15.
- 1.6. On the 10 July 2019, two officers, one from Orkney Ferries and one from the Council's Harbours Authority visited the sellers in Myre, Norway and joined passengers on a scheduled public transport journey upon the MV Nordic Sea and then carried out hands on sea trials. Review notes of the visit included that "We had a good visit and were able to see all that we needed to on the day with the notable exception of any kind of sea state. The weather was so good that the sea had hardly a ripple!"
- 1.7. Because the sea state conditions of 10 July 2019 were not the same as those that are usually encountered around Orkney a second visit was requested to carry out a set of sea trials which were carried out during 27 to 29 August 2019 by two officers, one from within Orkney Marine Services and an experienced skipper from within Orkney Ferries.
- 1.8. A report on the sea trials of the Nordic Sea was generally very positive. The report included the following comments:
 - 1.8.1. The Nordic Sea is a modern passenger vessel that services several small islands in the north of Norway. She has the capacity to carry 48 foot passengers and lift 1.5 tons of cargo with her onboard crane. The vessel has disabled access and facilities, she is finished to a high standard offering comfortable seating and access to the back deck for outside viewing.
 - 1.8.2. The aim is to replace the 1973 built Golden Mariana that runs between Westray and Papa Westray predominantly but also covers the Stromness Graemsay route. The Golden Mariana has only one propulsion engine so is lacking redundancy if this were to fail enroute with passengers as it has in the past. There is no access for disabled passengers or ability to carry cargo. Even though we take due diligence in ensuring the vessel is well maintained this has become far more onerous due to age, she fails to meet current passenger standards and safe access requirements.
 - 1.8.3. Concerns had been raised about the sea keeping characteristic head on in motion. On the first day we headed out of the home port of Myre and (the) skipper gave me the helm to open sea where we met a good three to five feet head punch which she took in her stride, never shipped water at all over the nose and aft deck. Then we headed with the motion for a little while, the swell by this time had increased to eight or ten feet fair sized sharp holes. The stabilisers made a noticeable difference

to her but more so at speed, as soon as I took power off her she was a different boat slapping and banging but at 12 knots plus (there was) no problem.

- 1.8.4. The handling of her is to say the least superb but feel I need to add here we had perfect conditions, little to no wind zero tide. On day two I took her right round the whole long route calling at maybe 10 to 15 piers in varying degree of size and water and indeed room round them and it soon became apparent why the boat has to be as manoeuvrable as it is some piers have literally 10 feet turning area around the boat to the rocks or marina. My boat driving style was slightly different to the regular skipper and I was soon told to use thrusters to hold in place and stop our own back wash from throwing you about when pushing onto the wooden piers.
- 1.8.5. Back in Myre we did some basic thruster trials and got two knots broadside no engines just thruster and turn in the length of herself as quick as you would want.
- 1.8.6. In summary she was a lovely boat, designed very obviously by someone that has practical experience of boats and has a good knowledge of confined areas in which she currently operates. Everything techy wise is very well laid out and more importantly easily accessible for maintenance. Great visibility from wheelhouse and enhanced by a modern current very high specification navigational aid package.
- 1.8.7. The passengers experience is the best ferry accommodation area for size of boat I have ever seen, well laid out informative ability to track your progress on the passenger screen AIS. The cabin was light and airy with good visibility and air conditioned. In the poor weather you hardly felt the motion that was outside it was probably up to 5 - 6 feet reasonable sharp frequent swells.
- 1.8.8. The maintenance history of equipment has been detailed in log books following manufacturers hourly based maintenance plans. When checked this all appears to be in order and updated daily. Machinery spaces were well lit and kept in a tidy manner and it was evident that they were cleaned regularly. There was ample room around engines to allow routine maintenance to be carried out and access to auxiliary machinery.
- 1.8.9. The vessels navigation aids are up to date and comply with Orkney Ferries standards.
- 1.8.10. The vessels passenger area benefits from a heating system that utilises waste heat produced by the engines and an air source heat pump.
- 1.8.11. Another interesting feature is the vessel has two hydraulic powered stabilisers, these greatly improve the vessels seakeeping characteristic in rough weather providing a much more comfortable experience for passengers.
- 1.9. The draft notes of the Officer carrying out the sea trials included only two concerns, these being:
 - 1.9.1. That the bow ramp at current length may not work in more restrictive berthing conditions, however a fixed gangway could be used on top deck for passenger access if needed with little modifications required.
 - 1.9.2. To the thruster capabilities for windage to hold the head or stern in tide but it was thought that the vessel could work with a rope to hold. It was also suggested that the power issue to the thrusters could probably be overcome by increasing the

engine idle revs from 650 to 750. It was noted that this may never be an issue, but the officer was not willing to commit on this point as the piers used during the assessment are different to our own.

- 1.10. There had also previously been an issue identified with the gearbox losing oil and that a report should be requested to the repairs required.
- 1.11. On 4 October 2019 an email to the shipbrokers stated the Council's increasing interest in the MV Nordic Sea pending a final decision on suitability.
- 1.12. On 23 October 2019 the shipbrokers sent an email to the Council for an update of progress in acquiring the NV Nordic Sea. The email advising that "as of now, Nordic Sea is still free on the market, but we know that the owners are awaiting your feedback, as you have indicated your firm interest in going forward with acquiring the vessel. We recommend that an agreement is made ASAP, in order to secure the vessel not going to other potential buyers."
- 1.13. On 6 November 2019 an internal email was sent to the Interim Chief Executive requesting that consideration be made to making a conditional offer to purchase the Nordic Sea under delegated urgent powers this week in advance of the Policy and Resources Committee consideration. The request was made due to the brokers pressing for "an earlier indication of next steps as we understand there is an alternative purchaser" and that the Scottish Government had already offered funding. An email from the Head of Legal Services advised that it would be competent to make an offer this week under delegated "urgent powers".
- 1.14. On 7 November 2019 the Interim Chief Executive gave agreement to using delegated urgent powers to "progress (with) the purchase subject to legal advice and all necessary checks having been completed".
- 1.15. On 7 November 2019, in compliance with a required process in using urgent powers an internal email was sent to the Leader, Depute Leader, Convener and Chair and Vice Chair of the relevant Service Committee (Development and Infrastructure) notifying the proposal to make a firm offer of €1,130,000 (subject to certification) within the next week.
- 1.16. On 8 November 2019 an offer was made to the shipbrokers for the purchase of the MV Nordic Sea, conditional and subject to full vessel classification / registration being resolved. The offer being €1,150,000.
- 1.17. On 14 November 2019 agreement was reached with the sellers of a price of €1,200,000.
- 1.18. On 26 November 2019 a formal offer of a grant for the purchase of the MV Nordic Sea, up to £750,000, to be spent in the financial year 2019/20 was sent to the Council by Transport Scotland.
- 1.19. At a Meeting of the Policy and Resources Committee held on 26 November 2019, the Committee were invited to consider a Stage 2 Capital Project Appraisal in respect of the purchase of a replacement vessel for the MV Golden Mariana to ensure the reliability of the ferry service between Westray and Papa Westray. Generally, the report invited the committee to note:

- 1.19.1. That the Council has been searching for a suitable replacement for the 47-year-old MV Golden Mariana for several years through the brokerage/second-hand market, which, until recently, has been unsuccessful.
 - 1.19.2. That a Norwegian vessel, the Nordic Sea, has recently been assessed and trialled at sea and is considered to be a good candidate for the Westray to Papa Westray route.
 - 1.19.3. That, parallel to the search, discussions have been taking place with Transport Scotland with regard to a request for funding support for the acquisition.
 - 1.19.4. That the Scottish Government has offered to fund up to 50% of the purchase costs of a replacement vessel for the Westray to Papa Westray route.
 - 1.19.5. That purchase of a second-hand vessel will be an interim short-term solution to address immediate service resilience issues and will not predetermine or usurp the long-term replacement options which will be identified through the Orkney Inter Islands Transport Service Study which is due to conclude spring 2020.
- 1.20. The committee resolved to recommend to the Council that:
- 1.20.1. The Stage 2 Capital Project Appraisal, in respect of the provision of a replacement vessel for the MV Golden Mariana, attached as Appendix 1 to this minute, be approved.
 - 1.20.2. As an exception to process, in order to ensure reliability of the ferry service between Westray and Papa Westray, purchase of a second-hand passenger vessel for the Papa Westray route be added to the capital programme for financial year 2019 to 2020 onwards, at an estimated gross capital cost of £1,535,000, to be funded by a Scottish Government Capital Grant and a contribution of up to £785,000 from the Vessel Reserve.
- 1.21. On 5 December 2019 approval for a non-competitive action was completed.
- 1.22. At a General Meeting of the Council held on 3 March 2020, after consideration of an urgent item report entitled, the MV Golden Mariana – Replacement, the Council noted:
- 1.22.1. That, in December 2019, officers agreed a purchase price of €1,150,000, together with associated terms and conditions, with the shipbrokers acting on behalf of the current owners of the vessel, Nordic Sea, with the paperwork ready for signing subject to final confidence that the vessel was in a position to be classified and certified for use within the United Kingdom.
 - 1.22.2. That certainty with regard to the classification and certification of the vessel was not achieved by early December 2019 and that, despite significant work by multiple organisations since then, certainty of the vessel classification to the satisfaction of the UK Maritime and Coastguard Agency had still not been achieved and hence the purchase agreement remained unsigned.
 - 1.22.3. That the Scottish Government had offered a 50% contribution, capped at £750,000, towards the cost of the vessel, an offer that would expire at the end of the current financial year.

- 1.22.4. That, to proceed with a purchase now, in order to secure the vessel and to utilise the Scottish Government funding, carried significant risk of the vessel being of limited or no use unless or until full classification and certification was achieved.
- 1.23. The Council resolved that, notwithstanding the remaining risks associated with certification, in order to ensure the reliability of the ferry service between Westray and Papa Westray, the Executive Director of Development and Infrastructure should proceed with the purchase of the Nordic Sea and the work required to have the vessel certified, subject to the Scottish Government contribution being forthcoming.
- 1.24. The report presented to the General Meeting of the Council held on 3 March 2020 explained that in the United Kingdom the issuing of a Passenger Ship Certificate is based upon the vessel also being 'Classified' or 'classed'. Classification covers design matters including stability, construction, watertight sub-division, equipment redundancy and the level of classification is related to the role of the vessel and where it may or may not operate. In Norway, smaller passenger vessels do not require classification and hence can be issued with a Passenger Certificate without having a Classification which was the case for the MV Nordic Sea.
- 1.25. The work that had been carried out by the time of the report to the Council on 3 March 2020 of evidence towards the MV Nordic Sea's integrity, suitability and equivalence to the UK standards were as follows:
 - 1.25.1. Vessel stability review by Macduff Ship Design: subject to a crane limitation, the level of assurance has been achieved.
 - 1.25.2. Vessel watertight integrity and compartmentalisation review: subject to some minor modifications, the required level of assurance has been achieved.
 - 1.25.3. Provision of the standards applied by the Norwegian Maritime Authority (NMA) to enable the issuing of a Passenger Certificate and a review of the equivalence to UK standards: the level of assurance has been achieved.
 - 1.25.4. Provision of build standards applied by the shipyard: the required information has been provided.
 - 1.25.5. Evidence of the construction of ships at the yard to Det Norske Veritas (DNV) standard: evidence has been provided.
 - 1.25.6. Evidence of hull capability: evidence that the hull is designed to a 30 knot standard whilst noting that the vessel maximum speed is approximately 17 knots has been provided.
 - 1.25.7. Read across between UK and Norwegian sea area conditions: evidence has been provided but some further information has been requested.
 - 1.25.8. The provision of certified drawings: the drawings have been provided.
- 1.26. On 24 March 2020 the Memorandum of Agreement (MoA) to sale and purchase of the MV Nordic Sea was signed.
- 1.27. The MoA provided, inter alia, for a buyer's option to carrying out a diver's or drydock inspection and the agreement being subject to a pre-survey inspection to be carried out by Registro Italiano Navale (RINA). If RINA were to conclude negatively regarding the

intended class entry then the sellers were to return the deposit paid by the Council back to them.

1.28. On 20 April 2020 the hull of the MV Nordic Sea was inspected and a report of a condition survey for Class Eligibility, for the purpose of verifying the MV Nordic Sea's eligibility to RINA class, concluded that, on the grounds of the survey carried out that the vessel (the MV Nordic Sea) is deemed fit to be admitted to RINA Class. The report also identified 11 items not in compliance with MCA.

1.29. The Bill of Sale to the MV Nordic Sea was completed on the same date of 20 April 2020.

2.0 Summary of events subsequent to the purchase of the MV Nordic Sea.

2.1. On 22 April 2020 an email to OIC from RINA confirmed that "There are already some deficiencies related to MCA requirements, but these can be solved by MCA (exemptions) or easily can be rectified by new owners".

2.2. On the 27 April 2020 RINA issued a class feasibility report. The report's general overview states that "After cursory review based on submitted drawings, in general the vessel seems in line with the applicable rules, however it does not mean that more detailed remarks will not follow during detailed review of the drawings".

2.3. Attached to the class feasibility report was a stability report. General notes highlighted in this report was that "the assessment has been done mainly based on the Small Seagoing Passenger Ship Code. As MCA predicted and it was indicated in some previous e-mails, the biggest issue that we may be facing is weather criterion. Vessel complies on weather when wind speed is decrease to c.a. 19 m/s which is more or less 240 Pa. This corresponds to Beaufort 8. Japanese relaxed weather criterions were considered for Coastal 1 wind speed 15 m/s".

2.4. From approximately 5 May 2020 refit works commenced on addressing the items identified that were not compliant with MCA regulations and general refit work.

2.5. On 22 May 2020 a report by RINA regarding approved drawings noted that:

2.5.1. The MV Nordic Sea's structural arrangements comply with MCA Small Seagoing Passenger Ship Code.

2.5.2. All structural arrangements were approved using more conservative EC rules kat B.

2.6. On 16 July 2020 an application was sent to the MCA to register the MV Nordic Sea.

2.7. On 26 November 2020 external consultants published a Preliminary Stability Booklet for the MV Nordic Sea which checked the vessel to various criteria to the Small Seagoing Passenger Ship Code, which is a code applied on a voluntary basis to passenger ships carrying not more than 250 passengers.

2.8. On 22 March 2021 the MV Nordic Sea obtained its passenger certificate from the MCA.

2.9. On 3 December 2021, the MV Nordic Sea underwent berthing trials at the pier of Papa Westray without passengers onboard. As the vessel pulled away from the westerly side of the pier, the wind gusted to 26 knots which then pushed the vessel back in towards the pier. The vessel contacted with the last wooden pile of the pier, causing a crack and hole in the Glass Reinforced Plastic (GRP) on the port forward quarter of the vessel.

- 2.10. A pre-existing fault to the port side stabiliser was identified when reviewing the berthing incident of 3 December 2021.
- 2.11. On 14 to 17 February 2022 berthing trials for the MV Nordic Sea were carried out at Kirkwall and Papay piers respectively. The General Manoeuvring comments from these trials were that.
- 2.11.1. “The handling characteristics of the vessel in calm weather are excellent with the bow and stern thrusters along with the main propulsion power it was found to be extremely manoeuvrable vessel and given good or somewhat sheltered conditions can be placed with ease almost anywhere within a small margin of the vessels own dimensions.”
 - 2.11.2. “Manoeuvring alongside berth stern to wind on the quarters in the conditions experience appeared to be much more favourable than with the wind on the starboard bow, it is assumed this is due to the extremely low draught but relatively high superstructure mostly forward for vessel of this size”.
 - 2.11.3. “It was found that in quite a low wave height the thrusters are prone to losing grip in the water and cavitating, this seemed to be somewhat reduced with the thruster was downwards of wave motion. Another characteristic that was found with the thruster system was if operating the stern thruster on its own for example pushing the stern to starboard the bow of the vessel would then be pushed quickly to port. This was not seen as a problem but something to be aware of manoeuvring close to berths or other vessels”.
 - 2.11.4. “Caution would be advised with side wind on port or starboard bows or abeam during manoeuvres in and around harbours and close quarters situations as the vessel can very quickly be overcome by the wind and when attempting to correct the drift the vessel can quickly be taken down wind, even when the vessel has way on in close quarters situations this can be the case though to be due to the very shallow draft and relatively high superstructure.”
 - 2.11.5. “Due to the fact this vessel can be set by the wind very quickly it would be advisable that skippers are given ample time to become familiar with the characteristics of this vessel in various weather conditions on intended berths without stress to become fully comfortable of its abilities, the thought was discussed that if someone was in the mind set of being nervous or panicked while in a difficult situation if rash decision to try and abandon a berthing or departure were taken it could lead to serious damage being done as this vessel is of relatively fragile construction.”
 - 2.11.6. “There is a particular vulnerable area on the port and starboard bows of this vessel just forward of the superstructure on each bow shoulder where the leads for the bow ropes are, the fixed fendering on the side ropes then there is a gap to the fixed fendering on the bow meaning any contact in this area where not fixed fendering exists will inevitably result in damage, the damage would occur right on the area the deck is moulded to the hull given the shape of the bow in that area, if there had be some way to adequately mount fixed fendering in this area it would help in the fact the vessel could be rolled on the pier to spring on and off berth as the moment this is not really possible due to the vulnerable unfendered section, any deviation from the planned berthing or departure by wind or sea state could

cause this area to be taking into contact with the berth also with high risk of damage to those areas.”

- 2.12. On 2 March 2022 MacDuff Ship Design issued a report into thruster use on the passenger vessel the MV Nordic Sea. The report was requested by Orkney Ferries to review current issues that the vessel has experienced operating in strong winds with regard to holding heading and position. Macduff Ship Design were advised that the large superstructure catches the wind and encourages the bow to point downwind. The report presented the results of three simulations, the results of which are summarised as follows:
 - 2.12.1. Situation 1, the existing thrusters are used without modification. The wind speed that the vessel can hold position and heading is 20.3 kts. This correlates with reports from the vessel, that she is “just about OK at 20 kts wind speed.
 - 2.12.2. Situation 2, the aft thruster is not modified. The forward thruster is increased to 550kg rated thrust. The wind speed that the vessel can hold position and heading is 23.2 kts.
 - 2.12.3. Situation 3, the aft thruster is not modified. The forward thruster is increased without limit to balance. The wind speed that the vessel can hold position and heading is 27.3 kts.
 - 2.12.4. Conclusion, the upgrade of the forward thruster to 550kg rated thrust appears to add 3 knots to the operational wind speed for the vessel. The upgrade of the forward thruster to 700-760kg rated thrust adds 7 knots wind speed to the current capability but would require significant rebuilding of the forward end of the vessel.
- 2.13. During March 2022 a workshop event for the Nordic Sea took place. The purpose of the workshop was to identify and correlate the operational experience gleaned with the vessel to date and review what impacts this has on:
 - 2.13.1. Characteristic of the vessel in terms of sea keeping and windage.
 - 2.13.2. Performance of the vessel in terms of engines and thruster output for manoeuvring.
 - 2.13.3. Ferry berth locations and characteristics in Westray.
 - 2.13.4. Ferry berth locations and characteristics in Papa Westray.
 - 2.13.5. Options for operating the vessel into designated berths and alternatives
 - 2.13.6. Limitations with current configuration of the vessel at the berthing locations.
 - 2.13.7. Operation methods which may improve limitations at current berths.
 - 2.13.8. Improvements to the vessel which will improve limitations.
 - 2.13.9. Improvements to the berths or berthing locations which will improve limitations.
- 2.14. The workshop noted that the MV Nordic Sea has a very strong tendency for the stern to seek the wind with the bow moving downwind very quickly - this is substantiated with the

centroid of the upperworks being forward of midships and the centre of gravity being aft of midships.

- 2.15. On 22 March 2022 the MCA issued the Nordic Sea a Workboat Certificate which remains valid to 1 April 2026. This document certified that the Nordic Sea was surveyed and found to comply with the Safety of Small Workboats and Pilot Boats – A Code of Practice, Edition 2 (2018). The permitted area of operation being Cat 2 whilst remaining within GMDSS A1– i.e. 60 miles from a safe haven and within VHF radio communication range.

3.0 Comments and Conclusions.

- 3.1. The urgent report presented to the meeting of the Council held on 3 March 2020 made clear the risk that to proceed with a purchase at that time, in order to secure the vessel and to utilise the Scottish Government funding carried a significant risk of the vessel being of limited or of no use unless or until full classification and certification is achieved.
- 3.2. The urgent report also identified the risks to not proceeding with the purchase that the offer of Scottish Government funding up to £750,000 did not extend into the next financial year and would also place at risk the chance to acquire, what was described as a highly capable vessel, within a reasonable timeframe to replace the aged and fragile MV Golden Mariana.
- 3.3. Faced with the risks noted at 3.1 and 3.2 of this report, Councillors agreed to the recommendation made within the urgent report that the Executive Director of Development and Infrastructure should proceed with the purchase of the MV Nordic Sea, and the work required to have the vessel certified.
- 3.4. Although the urgent report of 3 March 2020 noted that there would be work required to have the vessel certified, the report did not elaborate further the extent of work that would be required to have the vessel certified, overhauled and refitted, or updated to meet sea going conditions in Orkney.
- 3.5. Work carried out which was required to obtain classification, and the overhaul of the MV Nordic Sea was extensive. The timeline of significant events in Annex 1 to this report is by no means a comprehensive list of all activity which took place. The small technical team at Marine Services had to carry out this work, on top of their existing duties and without additional staff.
- 3.6. Normally when a boat is built to a specification, surveying work will be carried out, documented and certified while the boat is being built. In this instance, although the boat was being sold as being to Det Norske Veritas standards, inspections during the build were not undertaken and so construction inspection reports were not available. Inspections are not required under the Norwegian Maritime Authority for this size of vessel. It is understood that this is the first time that this type of conversion from NMA to MCA certification has taken place. The timing of responses and inspections from outside organisations are largely outwith the control of the Council.
- 3.7. A pre-survey inspection concluded that, on the grounds of the survey carried out that the MV Nordic Sea was deemed fit to be admitted to classification prior to the completion of its purchase.

- 3.8. The out-turn position has been that the Nordic Sea has obtained class classification and a passenger certificate, for the Westray and Papa Westray route and also Stromness to Moaness and Graemsay.
- 3.9. It is a legal requirement of Regulation 51 of the Public Contracts (Scotland) Regulations 2015 that not later than 30 days after the award of a contract, a contracting authority must send for publication (for values above the EU threshold) a contract award notice on the results of the procurement procedure. At the time of our investigation a contract award notice had not been sent for publication for the purchase of the Nordic Sea.
- 3.10. Following our review, a revised process has been adopted to ensure compliance with the Regulations in all future procurement exercises.
- 3.11. Where public procurement is intended to be carried out by direct purchase, the purchaser has the option to publish its intention to place a non-competitive contract under OJEU procedures by completing a Voluntary Ex Ante Transparency (VEAT) notice. This provides for a ten-day standstill period to allow for a challenge to the decision not to carry out a tendering exercise for the procurement. Although this document is voluntary it may give legal protection to the purchaser in any challenge to the intended purchase having to be made within 10 days of the notice. A VEAT notice is not a substitute for a contract award notice, however, pragmatically it would identify if a challenge to the intended purchase were to take place.
- 3.12. In the procurement exercise for the MV Nordic Sea, consideration for the potential publication of a VEAT took place after a draft of the Memorandum of Agreement was circulated to legal and procurement teams, late in the process and by the time there was an urgency for the completion to take place. It was ultimately decided that a VEAT notice would not be published for this procurement.
- 3.13. Although in this procurement, the risk of challenge from a potential alternative supplier of a vessel was very low, consideration for the desirability of a VEAT notice should be carried out at the earliest stage of intention in entering into a contract following a direct procurement exercise.
- 3.14. In this procurement a request to carry out a non-competitive action (NCA) was not put forward, or signed, in agreement until 5 December 2019. This being after a conditional offer had been sent to the sellers through the shipbrokers following requisite permission from the Chief Executive. The intended procurement route for a vessel to replace the Golden Mariana since 2014 has been by a direct procurement exercise.
- 3.15. Following the recommendations from a previous investigation carried out by Internal Audit the Council has already implemented enhanced procedures and controls towards obtaining authority for a Non-Competitive Action (NCA) agreement for carrying out purchases without an open competition exercise.
- 3.16. In this procurement exercise, sea trials were carried out on two occasions, firstly on 10 July 2019 in calm weather conditions and secondly between 27 to 29 August 2019 where hands on handling was allowed in sea conditions which varied between calm and to those more akin to those often found in Orkney. Berthing trials in Norway were carried out to piers that differ significantly from those in Orkney, in particular piers in Norway provide greater protection from weather.
- 3.17. Two sets of sea trials had therefore been carried out, with satisfactory results, before a conditional offer was made for the purchase of the MV Nordic Sea.

- 3.18. Sea trials in local conditions and simulation calculations for the MV Nordic Sea operating in strong winds were commissioned after the vessel had been purchased. The results of which are summarised between 2.9 to 2.11.
- 3.19. Since these sea trials took place, a further external survey, dated 4 May 2022 found that the thrusters were set at 240 bar (bow) and 230 bar (stern) rather than at their capacity of 270 bar pressure. A lowering of thruster power would reduce their effectiveness in supporting the vessel hold position.
- 3.20. The MV Nordic Sea, in its former routes berthed at piers which gave greater protection against the sea elements than those within Orkney.
- 3.21. This exercise was to replace a vessel built in 1973 with a modern replacement, the MV Nordic Sea's hull is made of Glass Reinforced Plastic compared to the older Golden Mariana's steel hull. The MV Nordic Sea, in common with most modern boats, has a draught (i.e. the distance that the boat sits below the water line) much lower than that of boats of the age of the Golden Mariana.
- 3.22. Piers in Orkney are of an age where they were built several decades ago for boats of that time.
- 3.23. It should therefore be further considered by the Council whether greater protection can be provided at Orkney piers, possibly by the provision of sea breakers if these can be added or by a harbour pontoon or other upgrade.
- 3.24. By the time of our audit the Council had not carried out a post project review for the purchase of the MV Nordic Sea. It is recommended that a post project review includes, inter alia, detailed reviews over the MV Nordic Sea's seafaring capabilities in Orkney Conditions and the suitability of piers within Orkney in giving protection to the Nordic Sea and vessels built of Glass Reinforced Plastic.
- 3.25. Should the Council carry out a procurement exercise for another second-hand ferry, all simulation of sea handling conditions should ideally be carried out in parallel to hands on sea trials, prior to the decision over whether to proceed with the purchase.
- 3.26. We are unable to provide professional advice to the sea keeping and windage characteristics of the MV Nordic Sea for Orkney conditions or of those to piers throughout the isles. However, we note that certification for the vessel was achieved which requires, inter alia, stability assessment of a minimum that corresponds to Beaufort wind scale 8 (Gale) (34-40 knots).
- 3.27. The total capital cost of the MV Nordic Sea has been £1,579,191 which was met from the Scottish Government contribution of £750,000, and £829,191 from the Repairs and Renewal Fund held by the Council.
- 3.28. The capital cost of £1,579,191 is £44,191 or 2.88% more than the estimated capital cost of £1,535,000 which was added to the capital programme for the financial year 2019 to 2020 onwards.
- 3.29. The total cost of £1,579,191 includes the purchase cost of £1,091,000 or €1,200,000, consultancy fees of £108,881, cost of refit and equipment of £348,636 and other costs of £30,674.

- 3.30. The total costs shown at 3.29 of this report compares to the urgent item report of 3 March 2020 of a purchase cost to date of €1,150,000, costs committed to date of £60,000, further full survey costs of £60,000 and a further £100,000 on minor works and delivery.
- 3.31. The major difference between the figures at 3.29 and 3.30 is the estimated £100,000 on what was described as minor works and the actual cost of £348,636 on the cost of refitting and equipment to the MV Nordic Sea.
- 3.32. Some minor differences were identified in the urgent report presented to the meeting of the Council held on 3 March 2020. The agreed purchase price was 1.2 million euros not 1.15 million as stated. The 50% limitation to grant offer from Scottish Ministers for the purchase of the MV Nordic Sea, referred to in the report was removed as a condition of the funding, prior to the date of this report.

Key to Opinion and Priorities

Audit Opinion

Opinion	Definition
Substantial	The framework of governance, risk management and control were found to be comprehensive and effective.
Adequate	Some improvements are required to enhance the effectiveness of the framework of governance, risk management and control.
Limited	There are significant weaknesses in the framework of governance, risk management and control such that it could be or become inadequate and ineffective.
Unsatisfactory	There are fundamental weaknesses in the framework of governance, risk management and control such that it is inadequate and ineffective or is likely to fail.

Annexe 1 Timeline of Events

<u>Timeline of Events</u>	
<u>Date</u>	<u>Narrative</u>
4 June 2013	Report by the Executive Director of Development and Infrastructure, to the Development and Infrastructure Committee, entitled, Strategic Transport Policy Initiatives Progress Report, including, inter alia, longevity concerns of the MV Golden Mariana.
12 November 2013	Report by the Executive Director of Development and Infrastructure, to the Development and Infrastructure Committee, entitled, proposed Capital Projects for 2015/16 onwards, inviting the committee to note proposed General Fund capital projects including, inter alia, the provision of a backup/replacement vessel to the MV Golden Mariana and a Stage 1 Capital Projects Appraisal regarding the backup/provision.
12 November 2013	Appendix 3 to the above report entitled, Project Appraisal – Stage 1 to the Provision of a backup/replacement vessel to the MV Golden Mariana.
26 November 2013	Report by the Executive Director of Corporate Services to Policy and Resources Committee of Orkney Islands Council. The committee resolved to recommend to the Council that the provision of backup / replacement to the MV Golden Mariana, amongst others, be progressed to Stage 2 of the Capital Project Appraisal process.
30 September 2014	Report by the Executive Director of Development and Infrastructure, to the Policy and Resources Committee, entitled, Proposed Replacement Vessel for MV Golden Mariana / Back up Vessel for MV Graemsay – Stage 2 Capital Project Appraisal.
10 July 2019	<p>Two Officers, one from Orkney Ferries and one from the Council's Harbour authority were present on a scheduled public transport journey of the MV Nordic Sea departing from Myre. Myre is located on the northwestern part of the island of Langoya in the Vesteralen archipelago which is located to the North of Norway.</p> <p>Review notes from the visit were as follows:</p> <p>“We had a good visit and were able to see all that we needed to on the day with the notable exception of any kind of sea state. The weather was so good that the sea had hardly a ripple!</p> <p>Sadly, the weather conditions here are not that good most of the time and as we were unable to assess the vessels true capabilities in a head sea, its full suitability needs to be confirmed.</p> <p>Clearly the vessel is far more than we need on our short route, although this does not mean that it will not be considered.”</p> <p>The original plan had been that should the outcome of this visit was positive a second visit would take place sometime after 24th July with agents and one of</p>

	<p>the existing Council vessel skippers to carry out a pre-purchase and flagging survey.</p> <p>“We would very much like to conduct a second visit to the vessel, this time with an experienced skipper. We would welcome the opportunity for him to get some hands-on time on the controls in order to conduct some detailed handling trials.</p> <p>We would also like to find some opportunity to seek out some sea conditions more like those that we may find in Orkney as well as to possibly slip the vessel for an underwater survey.”</p>
27 to 29 August 2019	<p>Visit by an Officer within the Harbours authority and an experienced skipper to carry out sea trials over two days. An underwater survey did not take place on this visit with the explanation that “if we do wish to purchase the vessel, it will need Maritime and Coastguard (MCA) surveyors to see it anyway after the Council gave a conditional offer of purchase to the Sellers.</p>
9 September 2019	<p>Issue of the sea trials report to the Nordic Sea.</p>
4 October 2019	<p>A letter was e-mailed to the brokers stating the Council’s increasing interest in the MV Nordic Sea and a request for the Sellers to consider a period of charter pending a final decision on suitability.</p>
9 October 2019	<p>The sellers indicated that for the time being only an outright sale of the MV Nordic Sea is being considered. The reasons given for this were that the vessel remained of interest to several buyers and moreover it was currently being utilised under a public transportation charter.</p>
9 October 2019	<p>An email was sent from the Council to the Shipbrokers stating that following the correspondence of 4 October 2019 we have received some very positive news with regards to finance support for the vessel, hence I shall be sending you a further letter, hopefully today to hopefully secure our interest in the Nordic Sea and to pave the way to a purchase.</p>
23 October 2019	<p>An email was received from the Shipbrokers as follows:</p> <p>Are there any progress in considering the way forward?</p> <p>“As of Now, Nordic Sea is still free on the market, but we know that the owners are awaiting your feedback, as you have indicated your firm interest in going forward with acquiring the vessel.</p> <p>We recommend that an agreement is made ASAP, in order to secure the vessel not going to other potential buyers.</p> <p>We recommend to proceed with placing a deposit in order for you to secure a purchase option. We can draft an agreement for Sellers and Buyers approval.”</p>
6 November 2019	<p>e-mail request to the interim chief executive to consider making a conditional offer to purchase the Nordic Sea this week in advance of the policy and resources committee consideration of the final position. The factors to be taken into account included that “our broker is pressing for an earlier indication of next steps as we understand there is an alternative purchaser” and that the Scottish Government had already offered funding.</p>

6 November 2019	e-mail from the Head of Legal stating that it is competent to make an offer this week under delegated "urgent powers"
7 November 2019	e-mail from the Interim Chief Executive in using urgent powers to progress (with) the purchase subject to legal advice and all necessary checks having been completed.
7 November 2019 13:01	e-mail following the required process to the use of delegated urgent powers that the Leader, Depute Leader, Convener and Chair and Vice chair are notified of the intended use of delegated urgent powers. The proposal being to make a firm offer of 1.13 million Euros (subject to certifications) within the next week.
8 November 2019 20:33	Offer was made to the shipbrokers to the purchase the MV Nordic Sea (inclusive of the spare engine and miscellaneous stock parts), conditional and subject to full vessel classification / registration being resolved. The offer made being 1.15 million Euros.
14 November 2019	Following a counter offer from the sellers, via the shipbrokers of a price of 1.25 million Euros, the Council's counter offer of 1.2 million Euros was accepted by the sellers.
26 November 2019	Formal Offer of Grant from Scottish Ministers through Transport Scotland for the project of the purchase of the MV Nordic Sea of up to £750,000 for the financial year 2019/20.
26 November 2019	<p>At a meeting of the Policy and resources Committee held on 26 November 2019, the Committee noted:</p> <p>That the Council had been searching for a suitable replacement for the 47-year-old MV Golden Mariana for several years through the brokerage/second hand market, which, until recently, had been unsuccessful.</p> <p>That a Norwegian vessel, the Nordic Sea, had recently been assessed and trialled at sea and was considered to be a good candidate for the Westray to Papa Westray route.</p> <p>That, parallel to the search, discussions had been taking place with Transport Scotland with regard to a request for funding support for the acquisition.</p> <p>That the Scottish Government had offered to fund up to 50% of the purchase cost of a replacement vessel for the Westray to Papa Westray route.</p> <p>That, further to the offer referred to at paragraph 23.4 above, the Leader had engaged with Scottish Ministers to request an increase in the offer of funding support of up to 100%.</p> <p>That purchase of a second-hand vessel would be an interim short-term solution to address immediate service resilience issues and would not predetermine or usurp the long-term replacement options which would be identified through the Orkney Inter Islands Transport Service Study which was due to conclude by spring 2020.</p>

	<p>The Stage 2 Capital Project Appraisal, attached as Appendix 1 to the report by the Executive Director of Development and Infrastructure, which presented three options for the provision of a backup/replacement vessel for the MV Golden Mariana, with the preferred course of action being to purchase a second-hand vessel.</p> <p>The Committee resolved to recommend to the Council:</p> <p>That the Stage 2 Capital Project Appraisal, in respect of the provision of a replacement vessel for the MV Golden Mariana be approved.</p> <p>That, as an exception to process, in order to ensure reliability of the ferry service between Westray and Papa Westray, purchase of a second-hand passenger vessel for the Papa Westray route be added to the capital programme for financial year 2019 to 2020 onwards, at an estimated gross capital cost of £1,535,000, to be funded by a Scottish Government Capital Grant and a contribution of up to £785,000 from the Vessel Reserve.</p>
26 November 2019	E-mail sent to Procurement for comment to the Norwegian Sales form (MoA)
26 November 2019	E-mail response from Procurement of a need for a Non – Competitive Action to be completed, the need for a contract award notice once the contract is awarded due to the value of the award and that a query was being considered with regards to a voluntary ex ante transparency notice.
5 December 2019	Signed approval for Non-Competitive Action – (noting the use of the Chief Executive’s emergency powers, the email attachment which demonstrates approval by the Chief Executive, and the E-mail from the Head of Legal Services advising of the competence of the offer.)
24 March 2020	Power of Attorney document appointing four senior officers as Attorneys-in-fact to act jointly or individually to conclude the purchase and delivery of the vessel “Nordic Sea”.
24 March 2020	Memorandum of Agreement – (SALEFORM 2012) – Norwegian Shipbrokers’ Association’s Memorandum for sale and purchase of ships.
24 March 2020	Escrow Agreement – standard deposit escrow agreement for ship sale and purchase dated 24 March 2020 signed by Buyers and sellers.
27 March 2020	Payment of 1.2M euros made into the Escrow account.
20 April 2020	Signed Bill of Sale Document.
20 April 2020	<p>Registro Italiano Navale (RINA) – Report of Condition Survey for Class Eligibility</p> <p>At owner’s request the undersigned Surveyor attended the vessel detailed below for a survey to the purpose of verifying her eligibility to RINA class.</p> <p>The conclusion shown within the report states that on the grounds of the survey carried out this vessel (the MV Nordic Sea) is deemed fit to be admitted to RINA Class.</p>

	<p>The report details, amongst other things, that the vessel has a Trading area: Sheltered waters, where the unsheltered stretches do not exceed 25 nautical miles Trade Area 4. Max passengers 48, crew 2. For the Transfer to Orkney Islands, she has changed to Private Yacht</p> <p>The report found the following items were not in compliance with the Maritime and Coastguard Agency (MCA) regulations:</p> <ul style="list-style-type: none"> -No Emergency Stop buttons on Bridge. Only Normal stop. [8.2.2] -Only 1 hydraulic unit for Steering Gear. Connected to both Normal and Emergency power. <p>There are no possibilities to run the system in Emergency mode (i.e. use the valves on the hydraulic unit).</p> <p>There are No alarms to the Bridge if non working Steering Gear (i.e. low oil, over current, low hydrostatic pressure). [8.4.1 and 8.4.5]</p> <ul style="list-style-type: none"> -There are not installed cocks or valves directly on the diesel tanks for quick closing in case of leakages of piping. Pipes to Main Engines are fitted with electric actuated valve for closing. Controlled from Bridge by means of turning key. [8.6.2] -Main fire pump is combined fire/bilge pump fixed installation. This is hydraulic driven from STB Main Engine. Emergency fire pump is portable and also combined fire/bilge. There are not a separate Fixed pump only for Fire fighting. [19.1.1] -Pyrotechnics, missing 2 handheld flares and 2 buoyant smoke signal of 3 minute duration [13] -There are no internal communication from Bridge to ER or Steering Gear room. [8.4.6] -There is only one access to rooms below Main Deck, and this is from Crew area.[16.7] -There is only one hydrant at the vessel, and hose is 15m. [19.1.7]-There is only on portable Fire Extinguisher in Crew area in Main Deck, where the distance is more than 10 m. [19.2.3] -There is only one portable Fire Extinguisher in ER category A. [19.4.2]
17 April 2020	Sellers signed declaration that to the best of their knowledge the vessel is not black listed by any nation or international organisation.
22 April 2020	Signed Protocol of Technical Acceptance document
24 April 2020	MV Nordic Sea arrives in Kirkwall
24 April 2020	Signed Protocol of Delivery and Acceptance document
Undated	Action List and proposed solution drawn up to address each of the areas of non conformity to the report dated 20 April 2020.
05 May 2020 to 15 January 2021	Various works to bring MV Nordic Sea up to MCA standards / overall condition work.

18 August 2020	<p>Registro Italiano Navale (RINA) "At ship's owner request the ship was surveyed in Kirkwall for the scope of admission to class of the named vessel. "</p> <p>As already agreed the ship will need to be inspected in dry conditions and on that occasion the tailshafts also will be surveyed as necessary.</p>
6 November 2020	MCA Survey and Inspection of the MV Nordic Sea being carved and marked.
26 November 2020	Preliminary stability report.
1 April 2021	Hull bottom condition survey.
3 December 2021	<p>Reportedly the Glass Reinforced Plastic (GRP) built, passenger ferry MV NORDIC SEA was undergoing berthing trials at the pier of Papa Westray, Orkney Islands on 3 December 2021, with no passengers onboard. The vessel was manoeuvring off the pier before a 10-minute journey back to Westray. As the vessel pulled away from the westerly side of pier, the wind gusted to 26 knots which then pushed the vessel back in towards the pier. The vessel contacted into the last wooden pile of the pier, causing a crack and hole in the GRP on the port forward quarter of the vessel. No Pollution or injuries were reported because of the casualty under review. The following day it was noted during an external routine vessel inspection by the crew, the port stabiliser unit was not in the neutral 'parked position' and had sustained damage. No system faults were noted, and the control unit and mechanical system were both indicating the stabiliser was parked. The damage noted was considered to have been a result of a separate incident and the damage noted was not caused as a result of the contact between the vessel and the pier on 3 December 2021.</p>
<p>14 February 2022</p> <p>17 February 2022</p>	<p>Nordic Sea Berthing Trials – Kirkwall pier</p> <p>Nordic Sea Berthing Trials – Papay</p> <p><u>General Manoeuvring comments</u></p> <p>The handling characteristics of the vessel in calm weather are excellent with the bow and stern thrusters along with the main propulsion power it was found to be extremely manoeuvrable vessel and given good or somewhat sheltered conditions can be placed with ease almost anywhere within a small margin of the vessel's own dimensions.</p> <p>Manoeuvring alongside berth stern to wind on the quarters in the conditions experience appeared to be much more favourable than with the wind on the starboard bow, it is assumed this is due to the extremely low draft but relatively high superstructure mostly forward for vessel of this size.</p> <p>It was found that in quite a low wave height the thrusters are prone to losing grip in the water and cavitating, this seemed to be somewhat reduced with the thruster was downwards of wave motion. Another characteristic that was found with the thruster system was if operating the stern thruster on its own for example pushing the stern to starboard the bow of the vessel would then be pushed quickly to port. This was not seen as a problem but something to be aware of manoeuvring close to berths or other vessels.</p> <p>Caution would be advised with side wind on port or starboard bows or abeam during manoeuvres in and around harbours and close quarters situations as the</p>

	<p>vessel can very quickly be overcome by the wind and when attempting to correct the drift the vessel can quickly be taken down wind, even when the vessel has way on in close quarters situations this can be the case though to be due to the very shallow draft and relatively high superstructure.</p> <p>Due to the fact this vessel can be set by the wind very quickly it would be advisable that skippers are given ample time to become familiar with the characteristics of this vessel in various weather conditions on intended berths without stress to become fully comfortable of its abilities, the thought was discussed that if someone was in the mind set of being nervous or panicked while in a difficult situation if rash decision to try and abandon a berthing or departure were taken it could lead to serious damage being done as this vessel is of relatively fragile construction.</p> <p>There is a particular vulnerable area on the port and starboard bows of this vessel just forward of the superstructure on each bow shoulder where the leads for the bow ropes are, the fixed fendering on the side ropes then there is a gap to the fixed fendering on the bow meaning any contact in this area where not fixed fendering exists will inevitably result in damage, the damage would occur right on the area the deck is moulded to the hull given the shape of the bow in that area, if there had be some way to adequately mount fixed fendering in this area it would help in the fact the vessel could be rolled on the pier to spring on and off berth as the moment this is not really possible due to the vulnerable unfendered section, any deviation from the planned berthing or departure by wind or sea state could cause this area to be taking into contact with the berth also with high risk of damage to those areas.</p>
2 March 2022	<p>MacDuff Ship Design Report into thruster use on passenger vessel “Nordic Sea”</p> <p>BACKGROUND</p> <p>Macduff Ship Design have been requested by Orkney Ferries to review current issues that the vessel NORDIC SEA has operating in strong side winds with regard to holding heading and position. We are advised that the large superstructure catches the wind and encourages the bow to point downwind.</p> <p>We have completed a calculation of the windage and balance of the vessel to evaluate the situation, and to suggest some means of improving the performance of the vessel.</p> <p>The currently installed thrusters are of the hydraulic type, with a rated thrust of 420kg. The tunnels have approximately 300mm internal diameter. We have been advised that there is also a 550kg thrust upgraded version that fits inside the same tunnel, which has been considered. If the thrust is to be increased any further, the modification will require a larger tunnel or multiple units installed.</p> <p><u>Simulations</u></p> <p>SITUATION 1</p> <p>The existing thrusters are used without modification. The forward thruster is fully powered and the aft thruster reduced to balance.</p> <p>With the ramp installed, our finding is that balance is achieved when the forward thruster is at maximum power and the aft thruster at 55% power. The wind speed that the vessel can hold position and heading is 20.3 kts. This correlates with reports from the vessel, that she is “just about OK at 20 kts wind speed”.</p> <p>SITUATION 2</p>

	<p>The aft thruster is not modified. The forward thruster is increased to 550kg rated thrust and fully powered. The aft thruster is reduced to balance.</p> <p>With the ramp installed, our finding is that balance is achieved when the forward thruster is at maximum power and the aft thruster at 57% power. The wind speed that the vessel can hold position and heading is 23.2 kts.</p> <p>SITUATION 3</p> <p>The aft thruster is not modified. The forward thruster is increased without limit to balance.</p> <p>With the ramp installed, our finding is that balance is achieved when the aft thruster is at maximum power and the forward thruster is rated 760kg at full power. The wind speed that the vessel can hold position and heading is 27.3 kts.</p> <p>CONCLUSION</p> <p>Based on the above calculations, it appears that the difference between the forward ramp installed and removed is not significant at less than 1 knot of wind speed gained.</p> <p>The upgrade of the forward thruster to 550kg rated thrust appears to add 3 knots to the operational wind speed for the vessel.</p> <p>The upgrade of the forward thruster to 700-760kg rated thrust adds 7 knots wind speed to the current capability but would require significant rebuilding of the forward end of the vessel. It would probably involve adding a second forward thruster of the same rating as the current one. It can be seen that removing the forward ramp has a significant effect in the reduction of the requirement from 760kg to 707kg.</p>
<p>March 2022</p>	<p>Nordic Sea operational workshop March 2022</p> <p>The purpose of the workshop is to identify and correlate the operational experience gleaned with the Vessel to date and review what impacts this has on:</p> <ol style="list-style-type: none"> 1. Characteristic of the Vessel in terms of sea keeping and windage. 2. Performance of the Vessel in terms of engines and thruster output for manoeuvring. 3. Ferry berth locations and characteristics in Westray 4. Ferry Berth locations and characteristics in Papa Westray. 5. Options for operating the Vessel into designated berths and alternatives 6. Limitations with current configuration of the Vessel at the berthing locations. 7. Operation methods which may improve limitations at current berths 8. Improvements to the Vessel which will improve limitations 9. Improvements to the berths or berthing locations which will improve limitations. <p>Items 1 to 5 will be reviewed initially at the workshop with the Northerly marine report, Macduff ship design thruster power evaluation along with inputs from crew. Pier drawing will also be used to consolidate the understanding of the current position.</p> <p>It is noted that the Nordic Sea has a very strong tendency for the stern to seek the wind with the bow moving downwind very quickly- this is substantiated with</p>

	the centroid of the upperworks being forward of midships and the centre of gravity being aft of midships.
18 March 2022	Annual hull and machinery survey.
22 March 2022	Maritime & Coastguard Agency UK Passenger Certificate – Class II(A)
23 March 2022	Maritime & Coastguard Agency – Workboat Certificate – This is to certify that the above named vessel (Nordic Sea) was surveyed and found to comply with the: Safety of Small Workboats and Pilot Boats – A Code of Practice, Edition 2 (2018). The permitted area of operation is: Cat 2 – 60 miles whilst remaining within GMDSS A1 Sea Area.
1 April 2022	RINA Document - Entry into Class C
29 April 2022	RINA – Certificate of class – “This is to certify that the above ship has been surveyed in accordance with the Classification Rules and, on the basis of the survey report submitted, has been assigned the class C
25 May 2022	Tailshaft Survey