DNV Australia Pty Limited

TFNSW ENGINEERING ASSESSMENT

Sydney Ferry Fleet Engineering Assessment

Transport for NSW (TfNSW)

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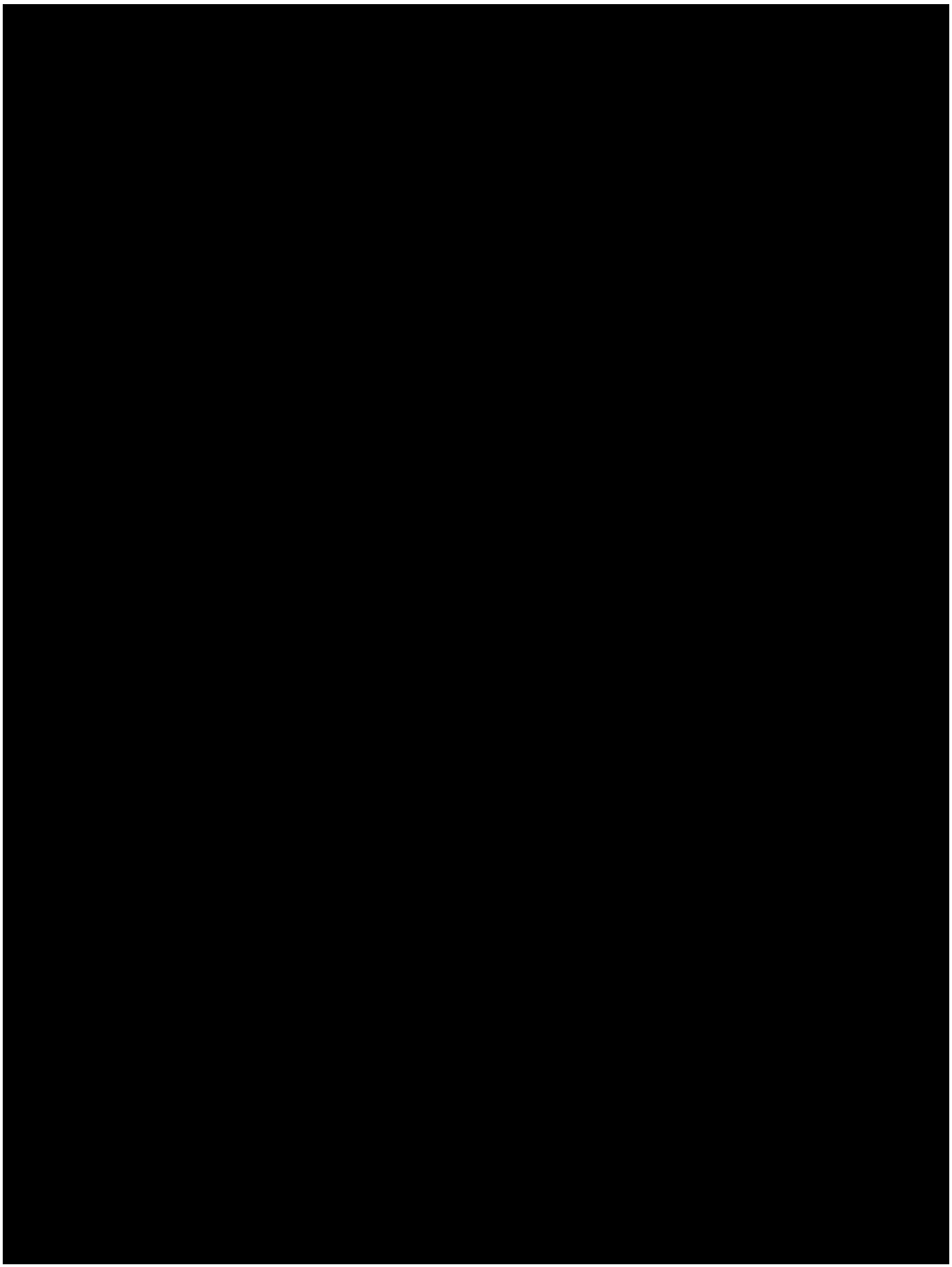

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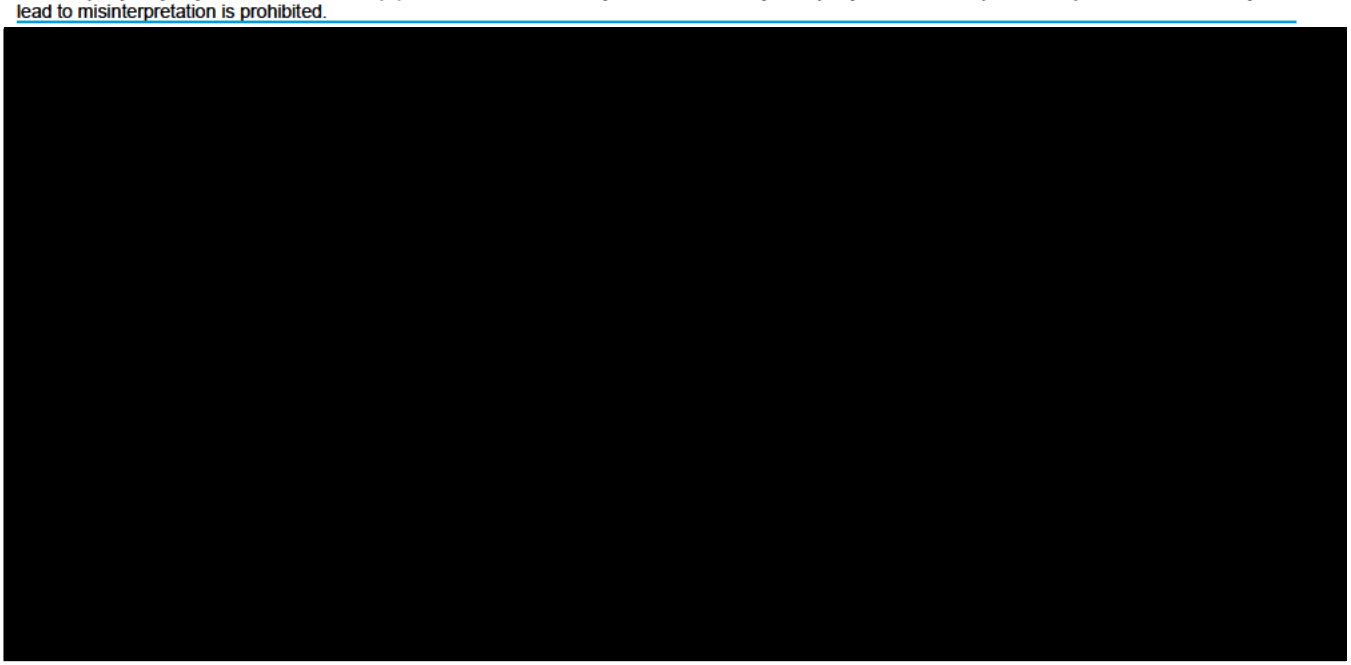

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1 EXECUTIVE SUMMARY, KEY FINDINGS & OBSERVATIONS

1.1 Vessel condition

The assessment results for the overall Fleet condition varies between **Average** and **Above average**.

Across the Fleet, vessel ratings ranged from **2.83 – Average** to **4.06 – Above average**. The mean rating was **3.38 – Average** and the median rating was **3.22 – Average**. No single vessel fell below 2.5 (**Below average** rating).

Overall and across the Fleet, areas such as hull structure and coatings (categories: **External structure and Painting** and **Internal structure and Painting)**, interior fit-out (category: **Accommodation**) and bridge equipment (category **Bridge systems**) were found in good condition.

Categories **Machinery and Systems** and **LSA and FFE** performed the weakest and some of these areas need urgent attention.

Immediate Fleet-wide improvements can be achieved by the following actions:

- Improved housekeeping practises in engine rooms by ensuring bilges are kept dry and free from oil, engine fluids and water.
- Secure oil leaks in machinery spaces.
- Repair or replace areas of missing or damaged structural fire protection (SFP) and protecting hot surfaces in engine rooms.
- Shield high-pressure fuel and oil lines in engine rooms.
- Ensure that all cable and pipe penetrations are properly sealed.
- Ensure that access to escape ways, lifesaving and fire-fighting equipment are clear and unhindered.
- Repair or replace worn-out, damaged or expired lifesaving equipment.
- Ensure save-alls and other fuel/oil spill containment devices are fitted with drain plugs to prevent any oily residues from entering the water.

Actions to take to ensure the design/residual life of vessels are achieved:

- Rectify pitting corrosion on the main deck (below the wheelhouse) on RiverCat *Marlene Matthews*.
- Upgrade the interior fit-out onboard *Alexander* to be in line with the other First Fleet vessels.

1.2 Planned Maintenance System (PMS) and Defect Management

Overall, unless vessels are not in service, it should be strictly avoided operating vessels with overdue **1 – Immediate** priority items. This is particularly critical for items involving key safety or vessel control functions. A similar principle should apply for overdue **2 – Urgent** priority items. It should be highlighted that overdue items were already present for 30+ days since the work order was first raised.

Further, safety and regulatory related defects are routinely prioritised at a priority **3 – Routine** level. Defects of this nature should be assigned a higher level of priority to ensure they are rectified sooner.

Defects particularly those with a High or Very High-risk ranking, should be communicated to the survey authority and Classification society of the vessel prior to assigning a priority categorisation that allows the vessel to continue operating in-service.

At times, the detail of reviewed work orders was not clear on the defect and its impact on operations. Section 4.7.3 of the *Fleet Generic Operations Manual* could be updated to further prompt defect reporters on the type and required detail to be included.

There should be an increased effort to reduce the number of overdue work orders to be in-line with historical averages (<10%).

1.3 Asset Management Activities for 2019-2022

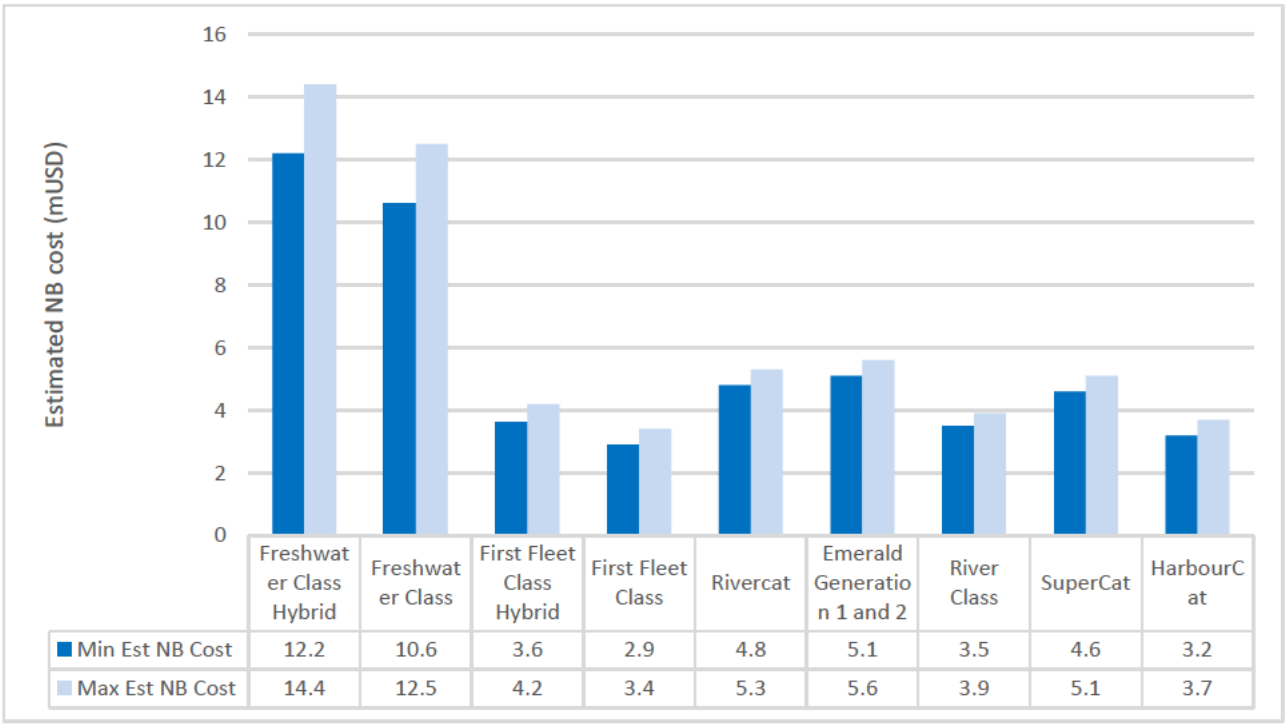
Overall, TDSF have completed most of the Asset Management Activities planned for 2019 to 2022.

From the records provided to DNV, the life extension of *Supply* was postponed on numerous occasions between 2019 and 2022. Additionally, the planned docking of May Gibbs was not completed in 2020 as planned.

Vessel surveys were always completed as per the planned asset management activities (excluding vessels which were retired or withdrawn from service).

1.4 Vessel Replacement Cost

Below is a representation of the capital expenditure cost that is estimated for a newbuilding vessel from each ferry Class. The dark blue columns show the minimum estimates for a similar vessel with the same propulsion technology. The light blue columns show the maximum estimates for a similar vessel with the same propulsion technology. For international currency flexibility, all figures are in US Dollars.



	Freshwater Class Hybrid	Freshwater Class	First Fleet Class Hybrid	First Fleet Class	Rivercat	Emerald Generation 1 and 2	River Class	SuperCat	HarbourCat
Min Est NB Cost	12.2	10.6	3.6	2.9	4.8	5.1	3.5	4.6	3.2
Max Est NB Cost	14.4	12.5	4.2	3.4	5.3	5.6	3.9	5.1	3.7

1.5 Vessel Documentation

From the information provided to DNV, TDSF has demonstrated it has access to a full range of relevant vessel drawings, manuals, key parameters and data sheets for instrumentation across the Sydney Ferries Fleet.

Due to the age of some vessels and the myriad drawings available, it is unclear if there is a single set of updated vessel drawings which have encompassed all vessel modification and changes over time. DNV recommends that each vessel Class has a set of drawings which are maintained as the main 'source of truth' for vessel information. These drawings should be centrally located and in a universally readable electronic format (eg .pdf).

1.6 Spare Parts

DNV were provided with a register of spare parts from TDSF. Over 20 500 items were identified of which 6500 are retained as stock items. Below are some overall observations:

- Approximately 700 of those stock items did not have costs assigned to them. 420 did not have an assigned supplier code.
- Spare parts do not have a lead or delivery time.
- Although some spare parts were identified as vessel specific through their description/title, no spare parts were identified via their assigned Class. As such, it is difficult to ascertain if spares are specific to a particular Class or if they can be used generically across the Fleet.
- Quantities are not provided.

Comparing the spare part recommendations from the DNV Rules (tailored to a ferry application) and recent work orders against the TDSF spare parts register it appears there are sufficient spares covering a range of key onboard systems.

It is recommended that commonly used stock and non-stock items are assigned a cost, lead time, Class application and quantity by TDSF.

DNV recommend that inventory items associated with main vessel and safety functions are provided with a critical identification or tag in the spare parts inventory along with a minimum stock number that should be maintained.

1.7 Special Tools and Equipment

Overall, DNV consider the special tools and equipment held by TDSF are suitable and fit-for-purpose to maintain the Sydney Ferries Fleet.

DNV also noted a significant in-house workshop capability to carry out typical marine engineering jobs and to develop tools specific to maintenance activities of machinery.

DNV also understands the TDSF utilise OEMs and their nominated local representatives to conduct a range of machinery and systems maintenance across the Sydney Ferries Fleet. It is assumed that OEMs and their nominated local representatives would have the relevant special tools and equipment to carry out the requested work.

DNV recommend TDSF having a record of key non-calibrated special tools and equipment to allow traceability and tracking of such equipment.

1.8 Approved Contractors

Overall, the contractor organisations engaged to provide safety critical tasks to the Sydney Ferries Fleet are well established through their own industry reputation, third-party certifications and OEM authorisations. From the information provided all these specific contractors have valid Public Liability and Workers Compensation Insurance.

For contract work which relates to routine onboard inspections, surveys and testing, it is important that a wide range of inspectors from a single agency are used when available. This variation allows a wider breadth of experience to assess safety critical systems on the Sydney Ferries Fleet and reduces the likelihood of familiarity induced errors.

1.9 Configuration Status

All vessels in the Sydney Ferries Fleet are currently undergoing at least two configuration changes.

From the information provided there are CCRs that have been open for one or more years. It is not known to DNV if this is due to ongoing work or if the Configuration Control Change Register has not been kept up to date.

Although some active CCRs have status ‘Awaiting Documents’ they also have been marked as “Closed – Full Approval” in the information provided to DNV. According to TDSF’s procedure, the CCR status “Awaiting Documents’ Indicates that associated documentation has not yet been received to complete the process (e.g. a risk assessment, technical info, etc). As such, it is unclear to DNV how these CCRs have been closed.

Overall, TDSF has undertaken the configuration control process in accordance with their written procedures.

The procedures which map the configuration change process are well established and utilise industry standard risk assessment at various stages. The level of assessed risk of each configuration change either increases or decreases the involvement of senior TDSF management and technical personnel and the level of documentation. This appears to be appropriate for the scope of the CCRs reviewed by DNV.

It is not well established how TDSF know when to engage a regulator when relevant changes are made to systems which require regulatory approval. A better-defined procedure on when to engage a regulator during the configuration control process could help ensure that regulatory acceptance of configuration changes is not inadvertently missed.

2 SCOPE OF WORK

DNV was tasked by Transport for NSW (TfNSW) to conduct a range of vessel condition inspections and other general assurance tasks for 2022-23. These tasks are listed as Statement of Requirements (SOR) throughout this report. Broadly, these tasks cover:

- SOR 1 – Vessel condition and survey status
- SOR 2 – Vessel condition against baseline condition completed in 2019
- SOR 3 – Review of planned maintenance systems, work orders, outstanding and overdue tasks along with defect list and defect reporting procedures
- SOR 4 – Confirm all Asset Management Activities required under the Asset Management Plan are completed
- SOR 5 – (Removed from scope)
- SOR 6 – Fair wear and tear for each vessel
- SOR 7 – Deficiencies which may reduce the design or residual life of a vessel in the Fleet
- SOR 8 – Replacement cost for each vessel
- SOR 9 – Availability of vessel drawings, manuals and spares
- SOR 10 – Spare parts review
- SOR 11 – Special tools and equipment
- SOR 12 – Review of approved contractors
- SOR 13 – Configuration status and procedure for vessels

In conjunction with this report, vessel survey reports, findings, ratings and comparisons with previous inspections from 2012, 2015 and 2019 can be accessed in a digital format on the DNV Veracity dashboard. The dashboard can be accessed from the link [redacted] Access to the dashboard for specific users can be arranged via DNV.

3 APPROACH

DNV carried out physical inspections of the ferries operated and managed by TDSF using a pre-prepared inspection checklist and results from the Contract-2012, Mid-term (2015) and end-Contract (2019) assessments as the condition baseline for assets.

Three qualified DNV surveyors from DNV Australia's Sydney Office carried out the inspections in conjunction with TDSF scheduling. Where possible, the same DNV surveyor completed all vessels within that Class of vessel.

Outside of the physical vessel inspections, DNV have relied upon TDSF to provide documentation in support of the assessment of individual SORs. DNV sent information requests via TfNSW and when permitted, directly to TDSF. Information was uploaded by TDSF to the TfNSW hosted Kiteworks platform specific to this project. DNV provided ongoing feedback to TfNSW and TDSF on the completeness and quality of information throughout the project.

For some SORs, a full set of complete and high-quality information was able to be provided to DNV. For other areas, DNV have received only partially complete and lower-quality information. Where gaps in information exist, DNV have used our own professional judgment and experience in the analysis of partially fulfilled information to complete the objective of each SOR as much as reasonably possible.

4 OBJECTIVE

The objective of the project was to perform a desktop fleet maintenance and management system assessment and conduct an independent visual condition assessment of the ferry assets operated and managed by Transdev Sydney Ferries (TDSF).

The current condition was assessed against the condition at the beginning of the Contract in 2012 and mid of Contract of 2015. All ferries were reviewed and physically inspected as part of the agreed scope of work, with the basis of the inspection to be similar to the previous work carried out in 2019. All findings were documented and reported.

5 SOR 1 – SURVEY STATUS AND VESSEL CONDITION

5.1 Survey Status

Transdev Sydney Ferries (TDSF) provided DNV with all vessel survey and Class certificates. Upon review by DNV, it was found that all vessels except *Betty Cuthbert* had valid AMSA Certificates of Survey.

This conclusion is based on the assumption that all relevant periodical surveys had been carried out in accordance with the respective AMSA schedule and Class requirements and no conditions or exemptions are overdue. See Table 5.1.1 for the expiry dates of the AMSA Certificates of Surveys.

Table 5.1.1 – Vessel survey status – AMSA Certificate of Survey

Class	Vessel	Valid to
Freshwater	*Collaroy*	06-July-2023
	Freshwater	01-March-2026
First Fleet	*Alexander*	03-August-2023
	Borrowdale	02-March-2025
	Charlotte	05-May-2027
	Fishburn	24-September-2025
	Friendship	03-June-2025
	Golden Grove	11-November-2024
	Scarborough	12-March-2025
	Sirius	15-June-2025
	Supply	22-December-2027
RiverCat	*Betty Cuthbert*	19-November-2022
	Dawn Fraser	19-July-2026
	Evonne Goolagong	09-June-2024
	Marjorie Jackson	09-August-2025
	Marlene Mathews	06-February-2025
	Nicole Livingstone	28-October-2024
	Shane Gould	18-May-2025
HarbourCat	*Pam Burridge*	11-November-2024
SuperCat	*Louise Sauvage*	23-March-2026
	SuperCat4	13-June-2026

Class	Vessel	Valid to
Emerald Generation 1	*Bungaree*	04-September-2027
	Catherine Hamlin	07-November-2026
	May Gibbs	12-October-2027
	Fred Hollows	18-April-2027
	Pemulwuy	10-August-2027
	Victor Chang	22-June-2027
Emerald Generation 2	*Balmoral*	12-July-2026
	Clontarf	12-July-2026
	Fairlight	12-July-2026
River	*Olive Cotton*	11-August-2025
	Liz Ellis	15-December-2025
	Cheryl Salisbury	15-December-2025
	Lauren Jackson	15-December-2026
	Kurt Fearnley	15-December-2025
	Esme Timbery	11-August-2025
	Ethel Turner	15-December-2025
	Margaret Olley	11-August-2025
	Ruby Langford Ginibi	11-August-2025
	Ruth Park	15-December-2025

During inspections of River Class vessel *Ruth Park* it was observed that the Certificate of Operation was not found onboard.

In addition to the AMSA Certificates of Survey, DNV reviewed the Class Certificates of both *Collaroy* and *Freshwater*. As per the conditions listed on the AMSA Certificates of Survey, these two vessels are required to hold a valid certificate of Class issued by a Recognised Classification Society. From the Class certificates provided, it was concluded that *Collaroy* and *Freshwater* held valid Class certificates. See Table 5.1.2.

Table 5.1.2 - Vessel survey status – Class certificate

Vessel	Certificate issuer	Valid from	Valid to
Collaroy	Lloyds Register	30-September-2018	29-September-2023
Freshwater	Lloyds Register	18-July-2020	17-July-2025

It was advised by TDSF that there were no Conditions of Class issued to either *Collaroy* or *Freshwater* at the time of reporting.

5.2 Vessel Condition

5.2.1 General

This section will provide a high-level insight into the condition of the 40 ferries across the eight Classes of vessels.

DNV carried out physical inspections of the ferries operated and managed by TDSF using a pre-prepared inspection checklist and results from the Contract-2012, Mid-term (2015) and end-Contract (2019) assessments as the condition baseline for assets.

Three qualified DNV surveyors from DNV Australia's Sydney Office carried out the inspections in conjunction with TDSF scheduling. Where possible, the same DNV surveyor completed all vessels within that Class of vessel.

The following Classes and vessels were inspected as per Table 5.2.1.

Table 5.2.1 - Vessel inspection scope

Class	**Vessels**	
Freshwater (2 vessels)	*- Freshwater* *- Collaroy*	
First Fleet (9 vessels)	*- Alexander* *- Borrowdale* *- Charlotte* *- Fishburn* *- Friendship*	*- Golden Grove* *- Scarborough* *- Sirius* *- Supply*
RiverCat (7 vessels)	*- Betty Cuthbert* *- Dawn Fraser* *- Evonne Goolagong* *- Marjorie Jackson*	*- Marlene Matthews* *- Nicole Livingstone* *- Shane Gould*
HarbourCat (1 vessel)	*- Pam Burridge*	
SuperCat (2 vessels)	*- Louise Sauvage* *- SuperCat4*	
Emerald Generation 1 (6 vessels)	*- Catherine Hamlin* *- Fred Hollows* *- Victor Chang*	*- Pemulwuy* *- Bungaree* *- May Gibbs*
Emerald Generation 2 (3 vessels)	*- Balmoral* *- Clontarf* *- Fairlight*	
River (10 vessels)	*- Ruth Park*	*- Esme Timbery*

Class	Vessels	
	- Liz Ellis	*- Lauren Jackson*
	- Kurt Fearnley	*- Olive Cotton*
	- Cheryl Salisbury	*- Ethel Turner*
	- Margaret Olley	*- Ruby Langford Ginibi*

Vessel inspections consisted of visual assessments of pre-identified equipment, systems and hull structure (above the waterline). See Annex 1 for the tailored inspection checklist used.

DNV did not direct TDSF staff or crew to specifically test, operate or start/stop equipment during the course of the inspections. Equipment or systems that were not operational or areas of the vessel which were unable to be accessed were recorded on each vessels survey report. These were typically non-running main engines and generators for vessels that were alongside during inspections and void spaces/tanks which were considered confined spaces.

The following equipment and systems were inspected as per Table 5.2.2.

Table 5.2.2 – Inspection categories and scope

Categories	Typical items (examples only and not limited to)		
External structure and Painting	- Main deck Superstructure	- Outer side shell (above waterline)	- Plimsol and draught marks - External coatings
Internal structure and Painting	- Inner side shell	- Bulkheads	- Internal brackets, stiffeners
Deck machinery	- Winches - Vents	- Hatches	- Bollards
Machinery and Systems	- Main and auxiliary engines - Electrical	- Pumps - Pipes and valves	- Shafts
Bridge systems	- Navigation equipment (GPS, chart plotter)	- Communications equipment (VHF radio)	- Bridge equipment
Lifesaving appliances (LSA) and firefighting equipment (FFE)	- Lifebuoys - Carley floats	- Fire hoses - Fire extinguishers	- Distress signals - Lifejackets

Categories	Typical items (examples only and not limited to)
Accommodation	- Seats - Interior fit-out items - Lighting - Flooring

The following condition ratings have been used in the vessel condition assessment for 2022-23. For consistency and comparison validity, these were the same ratings used in the 2012, 2015 and 2019 assessments.

Traffic Light Colour and Rating			Interpretation
Poor	1	Below 1.5	Not compliant with survey requirements.
Below Average	2	Range 1.5-2.5	Compliant, but requiring reactive maintenance works in the next 12-months.
Average	3	Range 2.5-3.5	No predicted additional reactive works in the next 12-months.
Above Average	4	Range 3.5-4.5	No predicted additional reactive works in the next 24-months.
Excellent	5	Above 4.5	No predicted reactive works in the next 24-months and potentially over-maintained.

Note that the vessel inspection systematic employed in this assessment is based upon DNV's WPI (Work Process Instruction) - 0574 'Condition Assessment Program (CAP)' but that the rating scale in CAP WPI-0574 is different to the 'Traffic light colour'. However, the description from the CAP WPI for the ratings have been aligned to deliver the desired comparative/benchmarking outcome for this assessment.

5.2.2 Overall Vessel Ratings

For 2022-23, vessel ratings ranged from **2.83 – Average** to **4.06 – Above average**. Across the Fleet the mean rating was **3.38 – Average** and the median rating was **3.22 – Average**.

It is recommended that the [redacted] is used to display and analyse individual vessel ratings. A summary of key items is provided below.

Survey reports for individual vessels can be found in Annex 2 and on the [redacted] > 2022-2033 Inspection Results.

Table 5.2.3 shows the overall rating per vessel for 2022-23 (in descending order).

Table 5.2.3 – Overall vessel condition ratings for 2022-23 – orange text indicates a vessel which has been advised by TfNSW that will be retired in the near-term.

Vessel	Class	Vessel overall rating
Kurt Fearnley	River	4.06
Olive Cotton	River	3.97
Cheryl Salisbury	River	3.97
Charlotte	First Fleet	3.96
Liz Ellis	River	3.95
Lauren Jackson	River	3.91

Information on this page has been redacted because it contains a link to DNV's proprietary online information portal.

Vessel	Class	Vessel overall rating
Borrowdale	First Fleet	3.91
Ruby Langford Ginibi	River	3.89
Sirius	First Fleet	3.89
Ethel Turner	River	3.84
Ruth Park	River	3.84
Margaret Olley	River	3.83
Esme Timbery	River	3.76
Fred Hollows	Emerald Generation 1	3.46
Victor Chang	Emerald Generation 1	3.42
Friendship	First Fleet	3.42
Scarborough	First Fleet	3.40
Mean rating across Fleet		*3.38*
May Gibbs	Emerald Generation 1	3.32
Supply	First Fleet	3.30
Pemulwuy	Emerald Generation 1	3.26
Median rating across Fleet		*3.22*
Bungaree	Emerald Generation 1	3.18
Pam Burridge	HarbourCat	3.17
Golden Grove	First Fleet	3.17
Balmoral	Emerald Generation 2	3.16
Clontarf	Emerald Generation 2	3.16
Fairlight	Emerald Generation 2	3.16
SuperCat4	SuperCat	3.13
Betty Cuthbert	RiverCat	3.12
Nicole Livingstone	RiverCat	3.08
Evonne Goolagong	RiverCat	3.07
Dawn Fraser	RiverCat	3.06

Vessel	Class	Vessel overall rating
Freshwater	Freshwater	3.02
Marjorie Jackson	RiverCat	3.02
Louise Sauvage	SuperCat	3.02
Catherine Hamlin	Emerald Generation 1	3.02
Shane Gould	RiverCat	2.99
Fishburn	First Fleet	2.88
Marlene Mathews	RiverCat	2.84
Alexander	First Fleet	2.83
Collaroy	Freshwater	2.83

Due to anticipated vessel retirements, Table 5.2.4 shows the overall vessel condition excluding those vessels identified for retirement.

Table 5.2.4 – Overall vessel condition ratings for 2022-23 – excluding vessels to be retired.

Vessel	Class	Vessel overall rating
Kurt Fearnley	River	4.06
Olive Cotton	River	3.97
Cheryl Salisbury	River	3.97
Charlotte	First Fleet	3.96
Liz Ellis	River	3.95
Lauren Jackson	River	3.91
Borrowdale	First Fleet	3.91
Ruby Langford Ginibi	River	3.89
Sirius	First Fleet	3.89
Ethel Turner	River	3.84
Ruth Park	River	3.84
Margaret Olley	River	3.83
Esme Timbery	River	3.76
Mean rating across remaining Fleet		*3.54*
Fred Hollows	Emerald Generation 1	3.46

Vessel	Class	Vessel overall rating
Median rating across the remaining Fleet		*3.44*
Victor Chang	Emerald Generation 1	3.42
Friendship	First Fleet	3.42
Scarborough	First Fleet	3.40
May Gibbs	Emerald Generation 1	3.32
Supply	First Fleet	3.30
Pemulwuy	Emerald Generation 1	3.26
Bungaree	Emerald Generation 1	3.18
Golden Grove	First Fleet	3.17
Balmoral	Emerald Generation 2	3.16
Clontarf	Emerald Generation 2	3.16
Fairlight	Emerald Generation 2	3.16
Freshwater	Freshwater	3.02
Catherine Hamlin	Emerald Generation 1	3.02
Fishburn	First Fleet	2.88

5.3 Fleet Performance across the seven key areas

Across the Sydney Ferries Fleet, the seven categories in Table 5.3 were rated for 2022-23 (in descending order).

Table 5.3 – Average Fleet rating across the inspection categories

Category	Average Fleet Rating of 2022-2023 Assessment
Bridge Systems	3.65
External Structure and Painting	3.58
Internal Structure and Painting	3.46
Deck Machinery	3.44
Accommodation	3.36
Machinery and Systems	3.10
LSA and FFE	3.08

The highest performing categories were **Bridge Systems and External Structure and Painting** which were rated **Above average**, and the weakest performers were **Machinery and Systems** and **LSA and FFE** which were rated **Average**.

5.4 Defect Performance

A total number of 464 items were rated as either **1 – Poor** or **2 – Below average** across the entire Sydney Ferries Fleet. For the purpose of this report, these are classed as 'defects' as they require either immediate or short-term intervention to rectify their condition to a rating of **3 – Average**. This result was an increase from the 395 findings in the 2019 assessment, however, 13 new vessels have been added to the Fleet since the last assessment.

A full list of the defects can be found in Annex 3.

Items rated as **1 – Poor** may also be considered non-compliant with regards to the vessel's statutory survey or Classification regime. Items rated **2 – Below average** may become rating **1 – Poor** if appropriate actions are not taken to improve the condition in the required timeframe.

Figure 5.4.1 shows the percentage category breakdown of items rated **1 – Poor** across the entire Fleet.

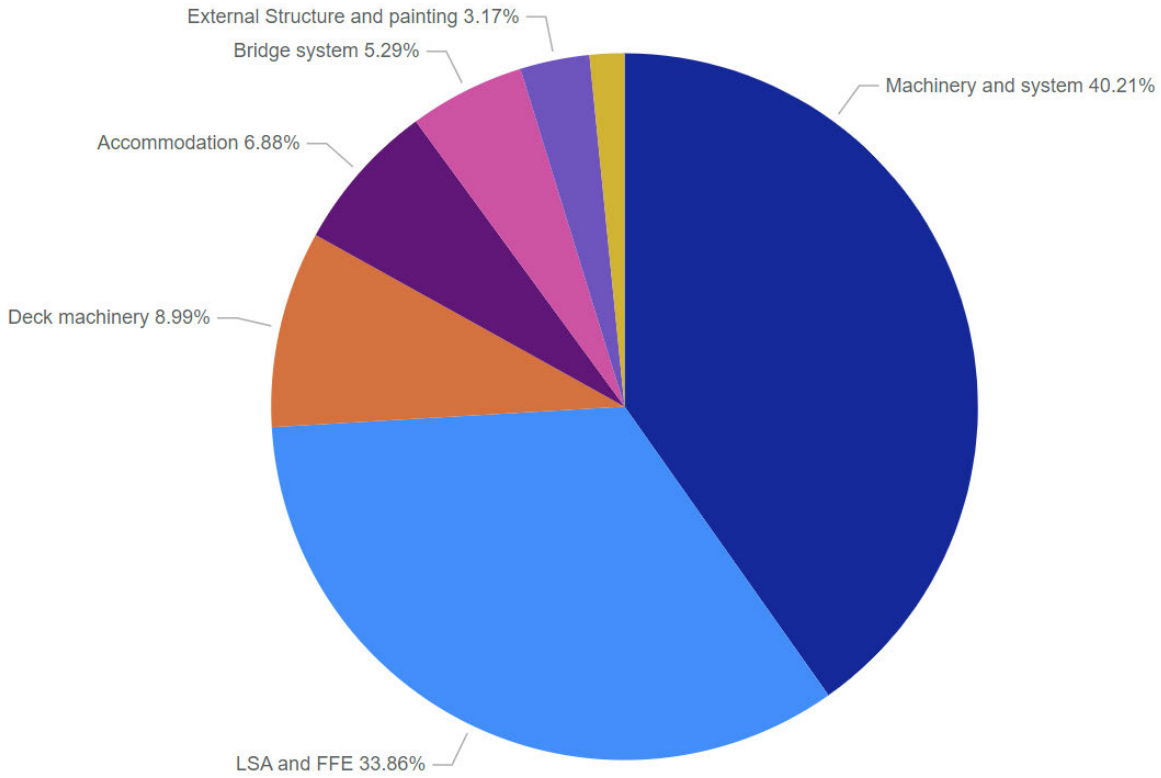


Figure 5.4.1 - Breakdown of items rated **1 – Poor** across the entire Fleet.

Figure 5.4.2 shows the percentage category breakdown of items rated **2 – Below average** across the entire Fleet.

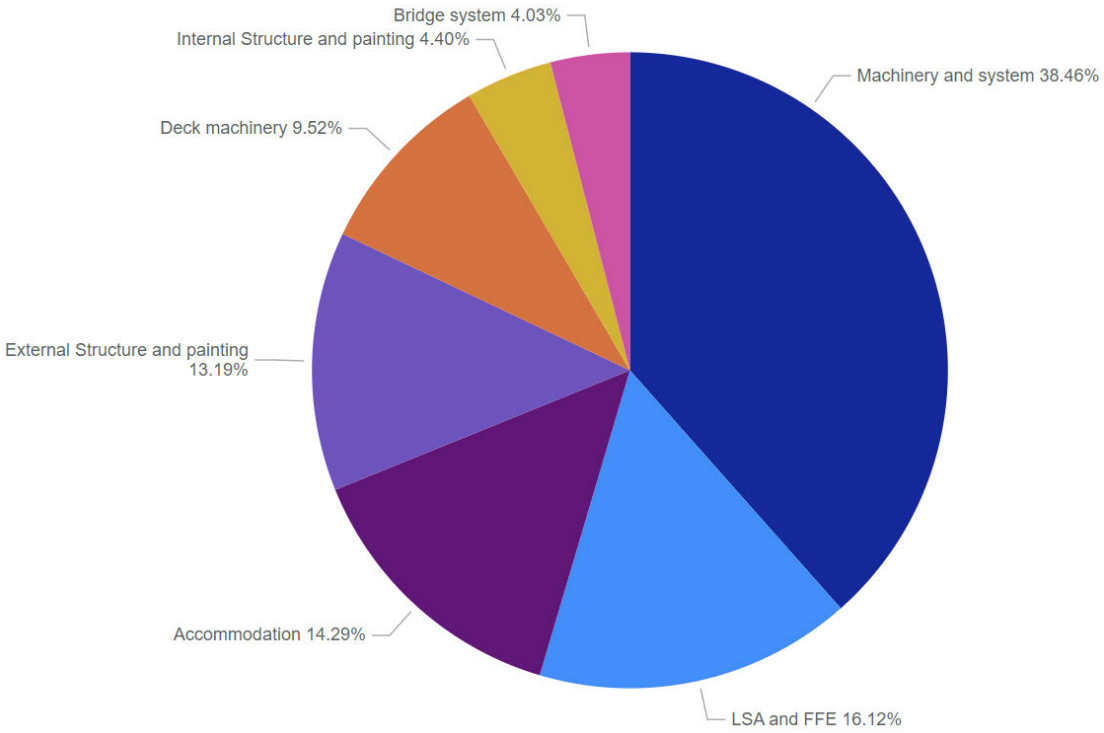


Figure 5.4.2 - Breakdown of items rated 2 – Below average across the entire Fleet

5.5 Immediate Actions

Most of the observations made across the Ferry Fleet were in the **Machinery Systems** and **LSA and FFE** categories.

Immediate Fleet-wide improvements can be achieved by the following actions:

- Improved housekeeping practises in engine rooms by ensuring bilges are kept dry and free from oil, engine fluids and water.
- Secure oil leaks in machinery spaces.
- Repair or replace areas of missing or damaged structural fire protection (SFP) and protecting hot surfaces in engine rooms.
- Shield high pressure fuel and oil lines in engine rooms.
- Ensure that all cable and pipe penetrations are properly sealed.
- Ensure that access to escape ways, lifesaving and fire-fighting equipment are clear and unhindered.
- Repair or replace worn-out, damaged or expired lifesaving equipment.
- Ensure save-alls and other fuel/oil spill containment devices are fitted with drain plugs to prevent any oily residues from entering the water.
- Rectify pitting corrosion on the main deck (below the wheelhouse) on RiverCat *Marlene Matthews*.
- Upgrade the interior fit-out onboard *Alexander* to be in line with the other First Fleet vessels.

6 SOR 2 - VESSEL CONDITION ASSESSMENT COMPARISON TO PREVIOUS ASSESSMENTS

6.1 Overall Fleet performance

To allow a comparison with vessel conditions from 2012, 2015 and 2019, the seven inspection categories from 2022-23 were re-harmonised and distributed to the four categories which were used in previous assessments. These four categories for comparison are:

- **Engineering**
- **Platform Structural Integrity**
- **Paint and Interior**
- **Systems**

Green text indicates an improvement (> +0.2) from 2019. Orange text indicates a steady result (+/- 0.2). Red text indicates a decline (> -0.2) from 2019.

It is recommended that the [redacted] is used to compare individual vessels to their historical ratings and to other vessels within the Fleet.

A summary of key items is provided below.

6.2 Freshwater Class

6.2.1 Vessel *Freshwater*

The below graph, spider web and table indicate the comparison between *Freshwater's* inspection performance for 2022-23 compared with 2019 and 2015.

Overall and since 2015, vessel *Freshwater* has declined in condition. For 2022-23 there has been an improvement in condition from 2019 with some significant and incremental improvements across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**).

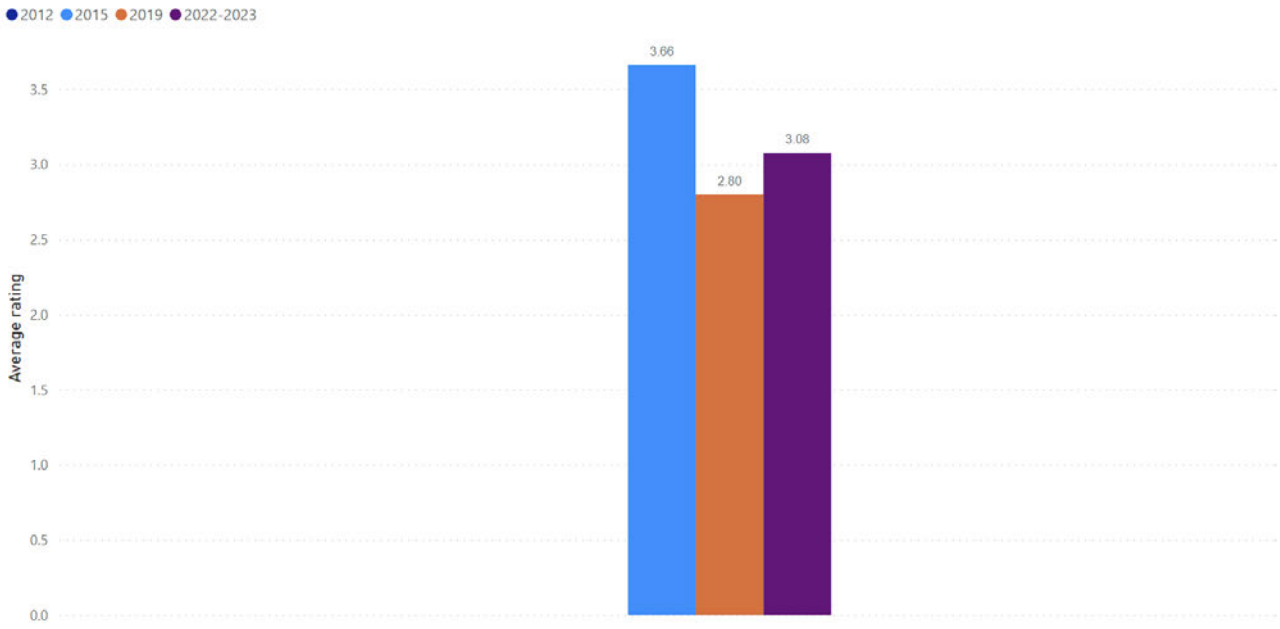


Figure 6.2.2 – Overall rating comparison between 2015, 2019 and 2022-23

Information on this page has been redacted because it contains a link to DNV's proprietary online information portal.

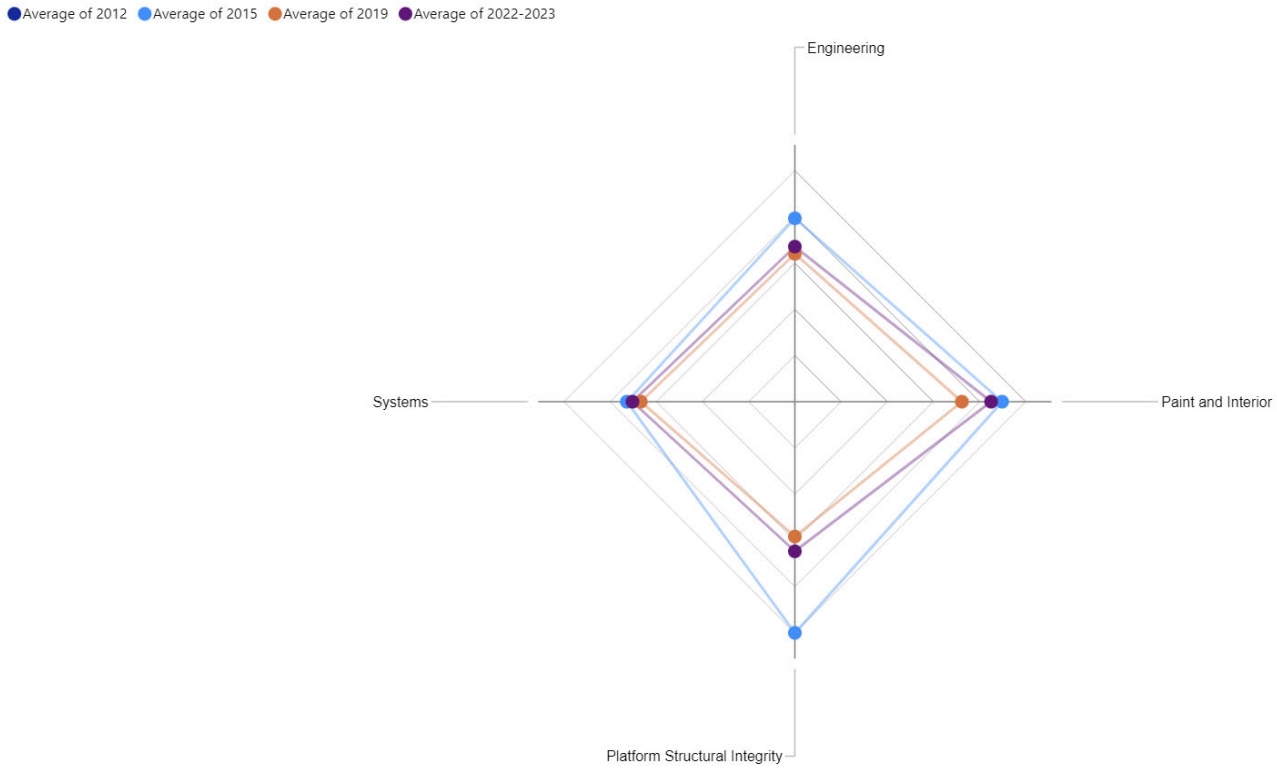


Figure and Table 6.2.3 – Category rating comparison between 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Freshwater	Engineering	-	3.40	2.74	2.88
Freshwater	Paint and Interior	-	3.85	3.10	3.64
Freshwater	Platform Structural Integrity	-	4.29	2.50	2.77
Freshwater	Systems	-	3.12	2.86	3.01

6.2.2 Vessel *Collaroy*

The below graph, spider web and table indicate the comparison between *Collaroy's* inspection performance for 2022-23 compared with 2019 and 2015.

Overall and since 2015, vessel *Collaroy* has declined in condition. For 2022-23 there has been an improvement in condition from 2019 with an improvement in the **Paint and Interior** category. A decline was seen across categories **Engineering** and **Platform Structural Integrity. Systems** remained steady.

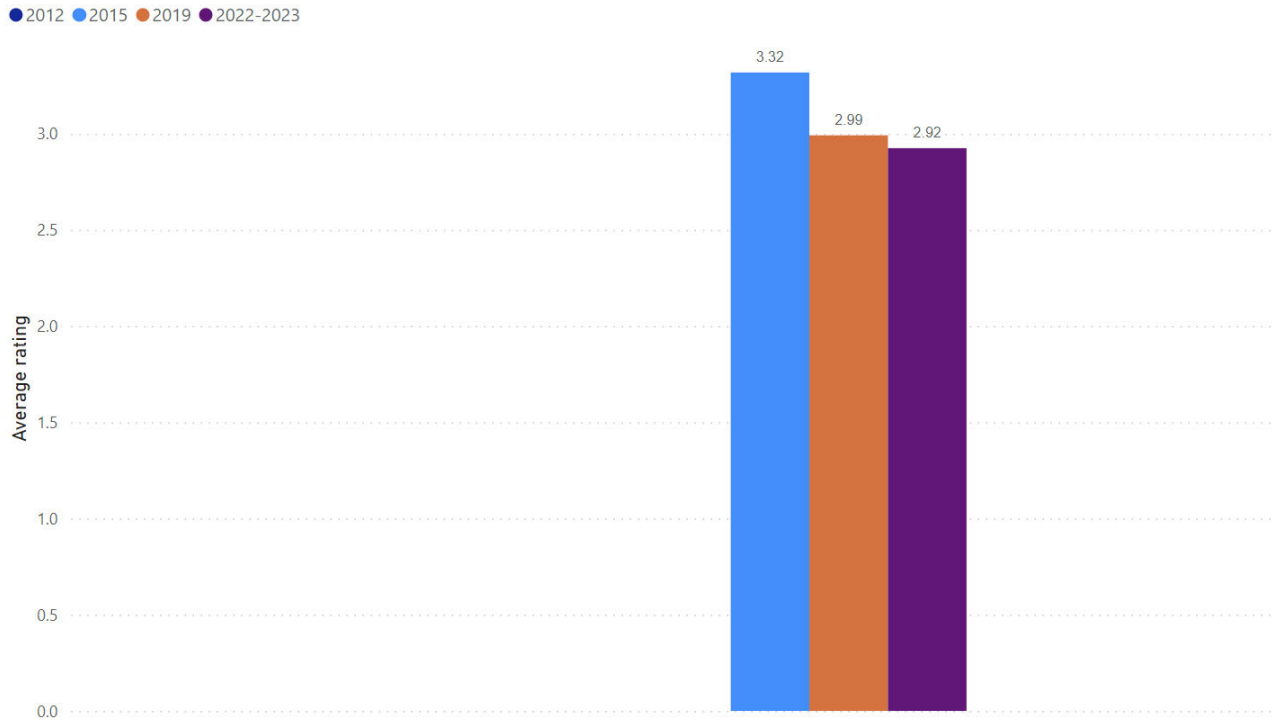


Figure 6.2.4 – Overall rating comparison between 2015, 2019 and 2022-23

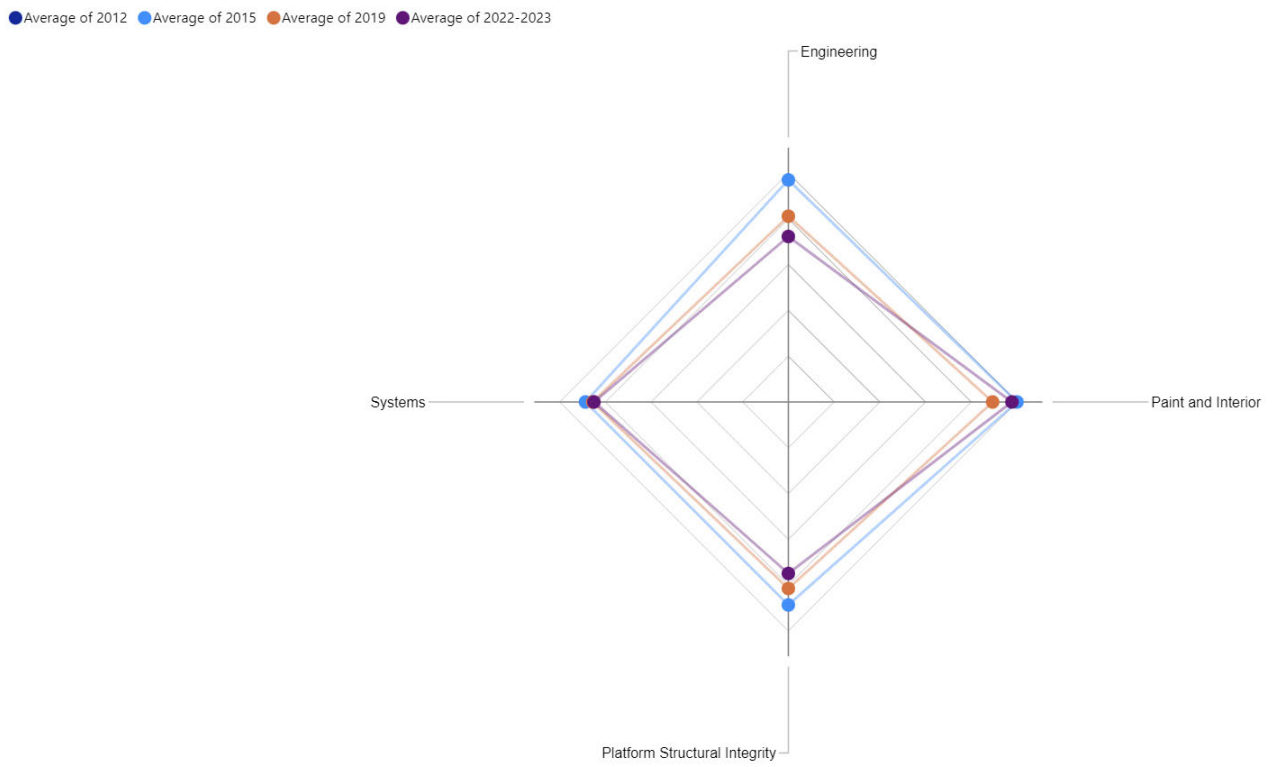


Figure and Table 6.2.5 – Category rating comparison between 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Collaroy	Engineering	-	3.44	2.88	2.56
Collaroy	Paint and Interior	-	3.55	3.17	3.47
Collaroy	Platform Structural Integrity	-	3.14	2.89	2.66
Collaroy	Systems	-	3.15	3.03	3.01

6.3 First Fleet Class

6.3.1 Vessel *Alexander*

The below graph, spider web and table indicate the comparison between *Alexander's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

Until 2022-23, vessel *Alexander* had improved in overall condition. For 2022-23 there has been a decline in condition from 2019 with significant declines across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest declines were in **Paint and Interior** and **Systems.**

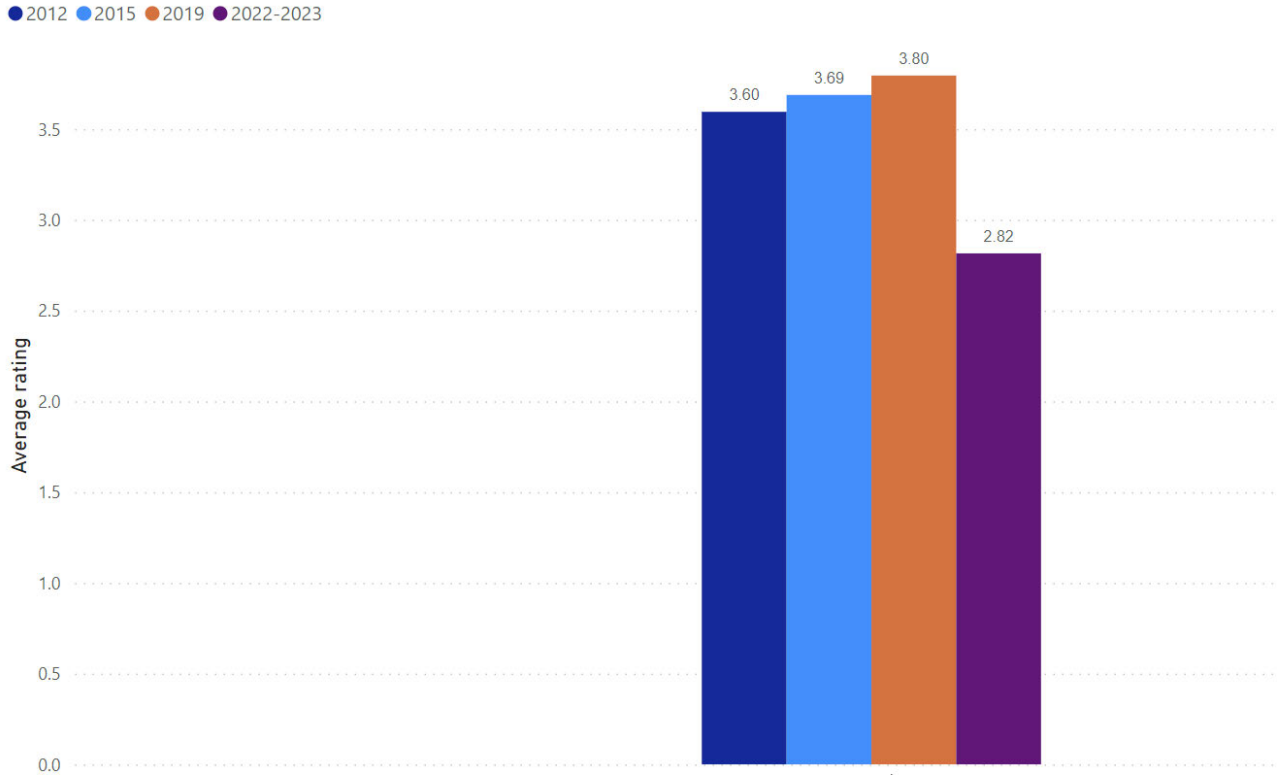


Figure 6.3.1 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

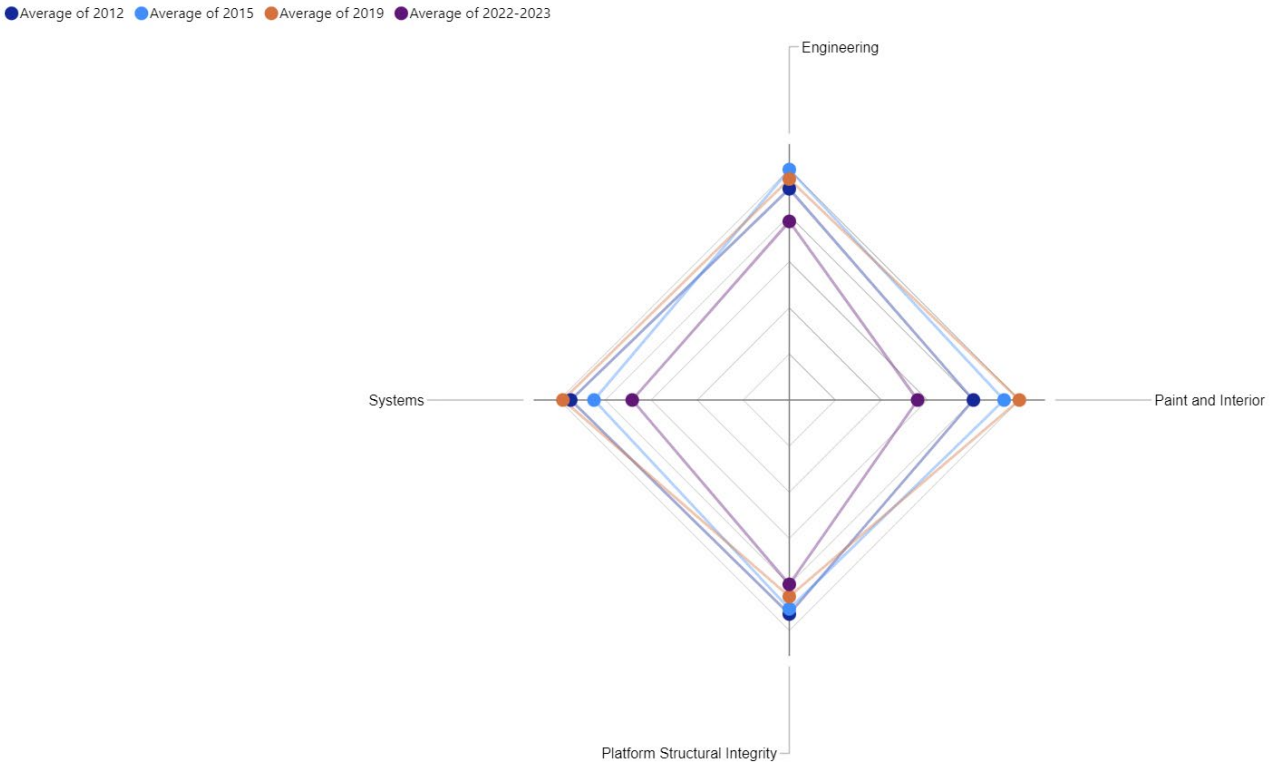


Figure and Table 6.3.2 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Alexander	Engineering	3.67	4.00	3.84	3.10
Alexander	Paint and Interior	3.20	3.73	4.00	2.23
Alexander	Platform Structural Integrity	3.71	3.63	3.41	3.20
Alexander	Systems	3.80	3.40	3.94	2.73

6.3.2 Vessel *Borrowdale*

The below graph, spider web and table indicate the comparison between *Borrowdale's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Borrowdale* has recorded its best condition since Fleet Assessments commenced. For 2022-23 there has been an improvement in condition from 2019 (2015 and 2012) with significant increases across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest increases were in **Paint and Interior** and **Platform Structural Integrity.**

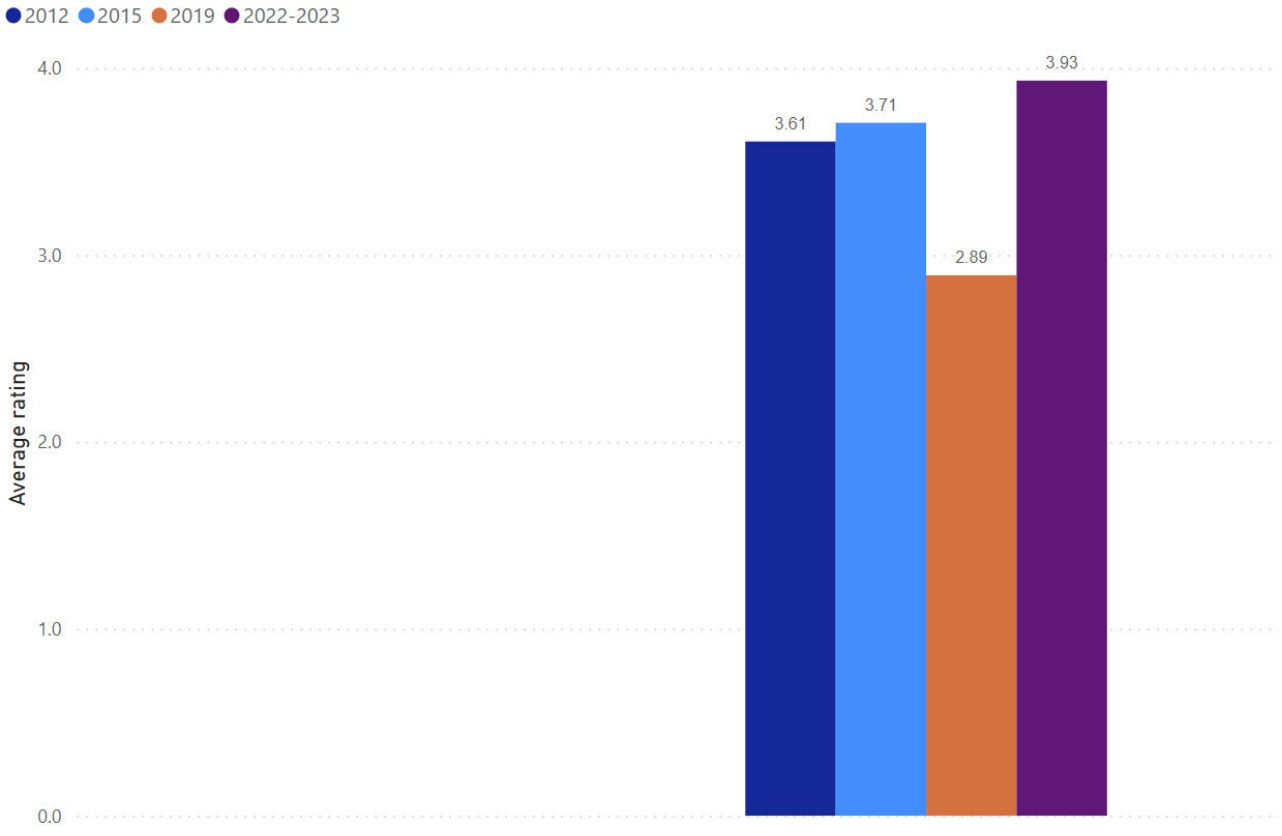


Figure 6.3.3 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

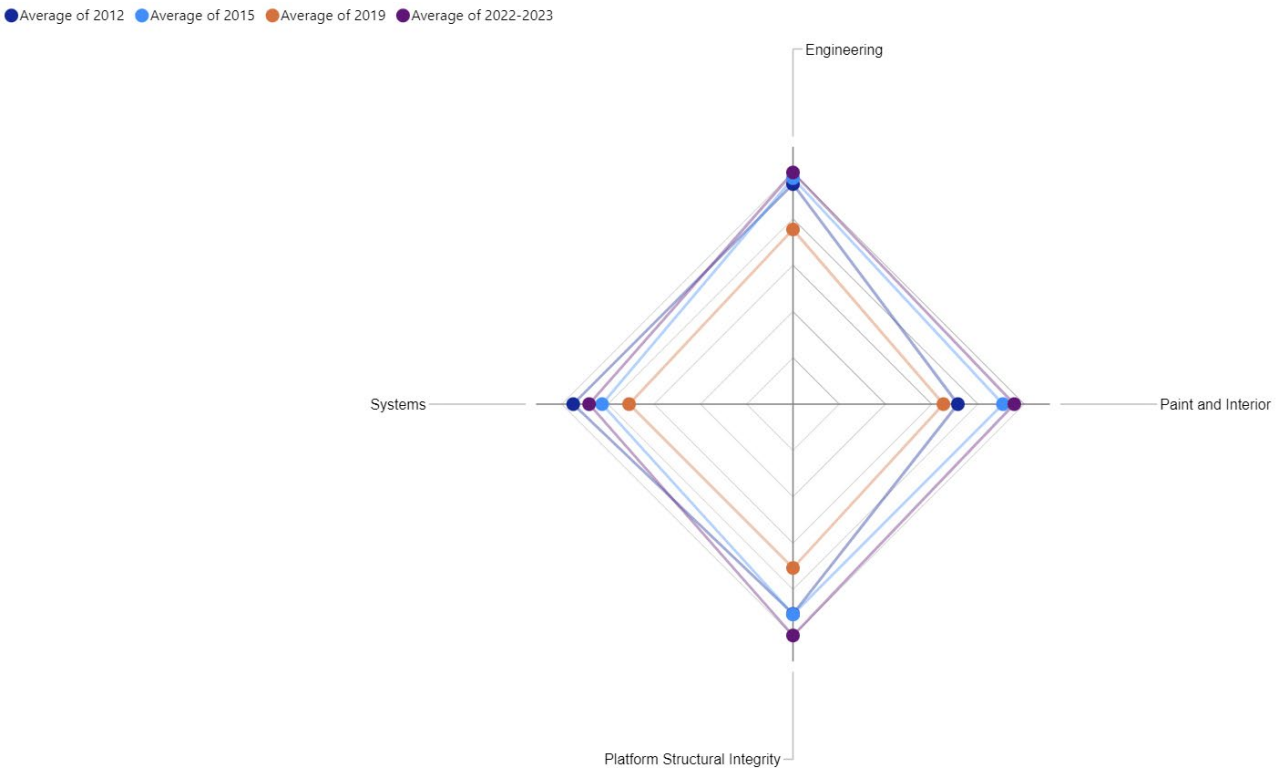


Figure and Table 6.3.4 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Borrowdale	Engineering	3.89	4.00	3.09	4.10
Borrowdale	Paint and Interior	2.92	3.72	2.67	3.92
Borrowdale	Platform Structural Integrity	3.71	3.72	2.90	4.10
Borrowdale	Systems	3.90	3.39	2.91	3.61

6.3.3 Vessel *Charlotte*

The below graph, spider web and table indicate the comparison between *Charlotte's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Charlotte* has recorded its best condition since Fleet Assessments commenced. Prior to this its condition was in a constant decline. For 2022-23 there has been an improvement in condition from 2019 (2015 and 2012) with significant increases across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest increases were in **Engineering** and **Platform Structural Integrity.**

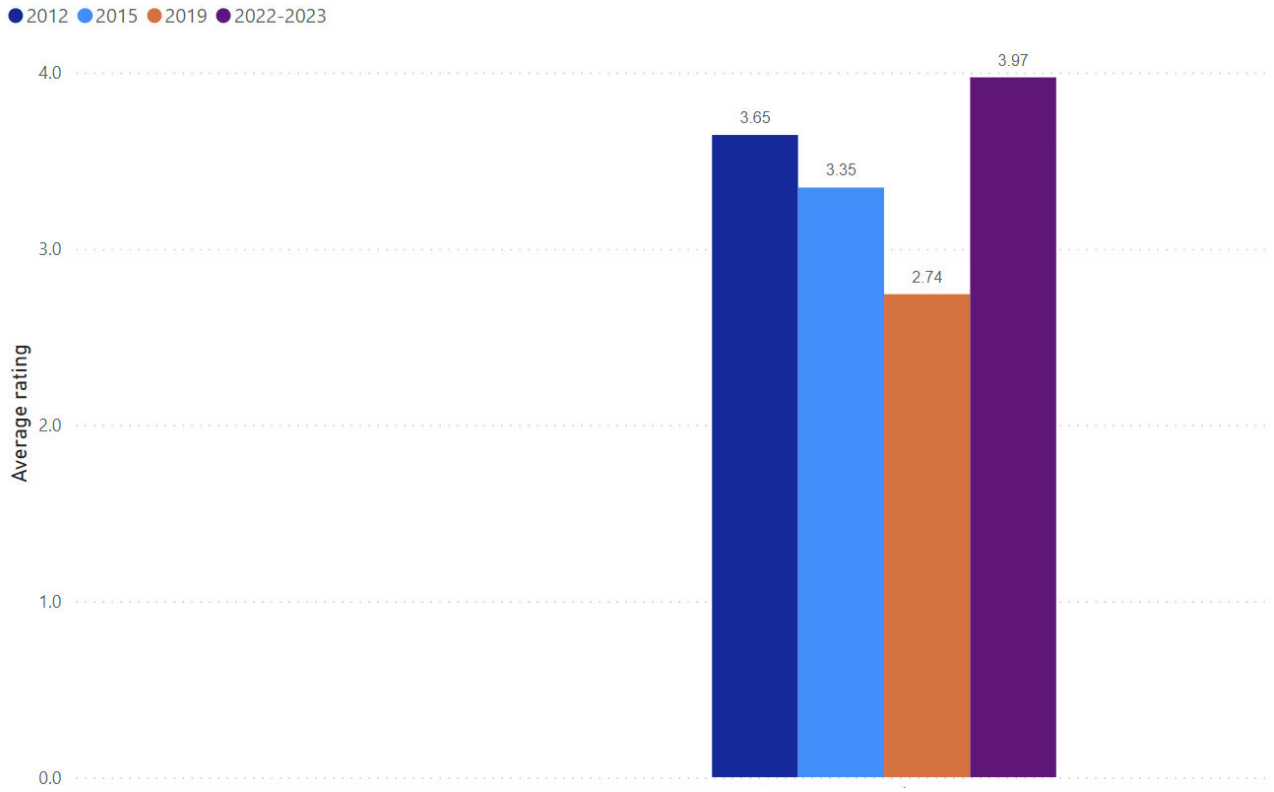


Figure 6.3.5 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

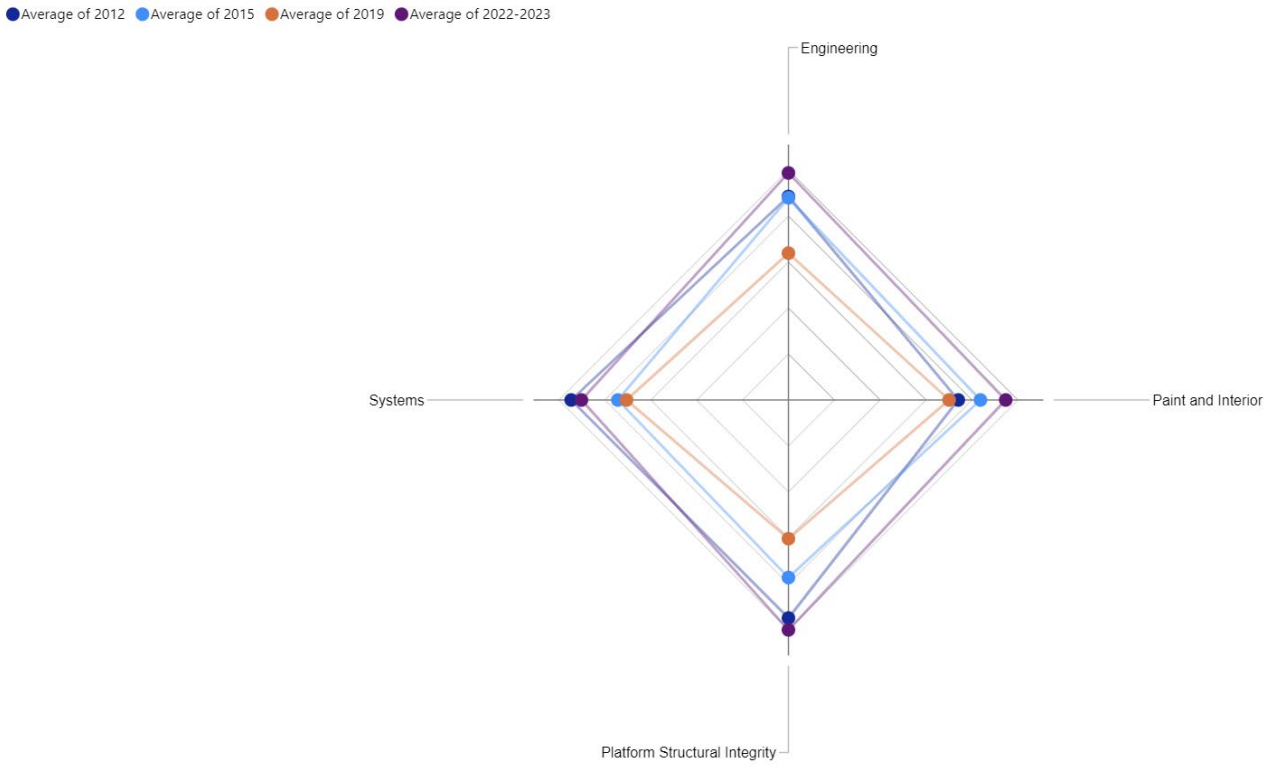


Figure and Table 6.3.6 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Charlotte	Engineering	3.67	3.64	2.65	4.09
Charlotte	Paint and Interior	3.07	3.47	2.90	3.92
Charlotte	Platform Structural Integrity	3.93	3.20	2.50	4.14
Charlotte	Systems	3.92	3.08	2.92	3.74

6.3.4 Vessel *Fishburn*

The below graph, spider web and table indicate the comparison between *Fishburn's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

Since 2012, vessel *Fishburn* has declined in overall condition. For 2022-23 there has been an improvement in condition from 2019 with an improvement in the **Paint and Interior** and **Platform Structural Integrity** categories. **Engineering** and **Systems** remained steady.

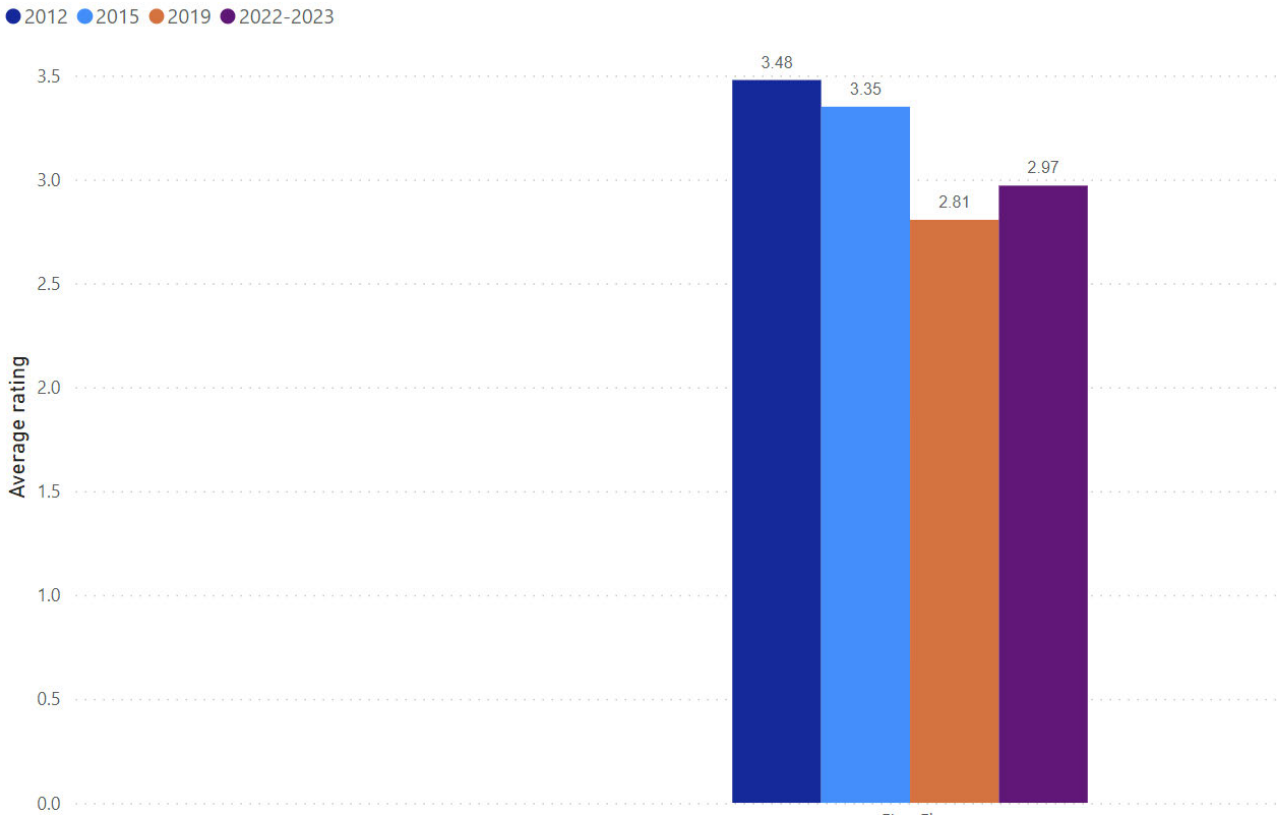


Figure 6.3.7 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

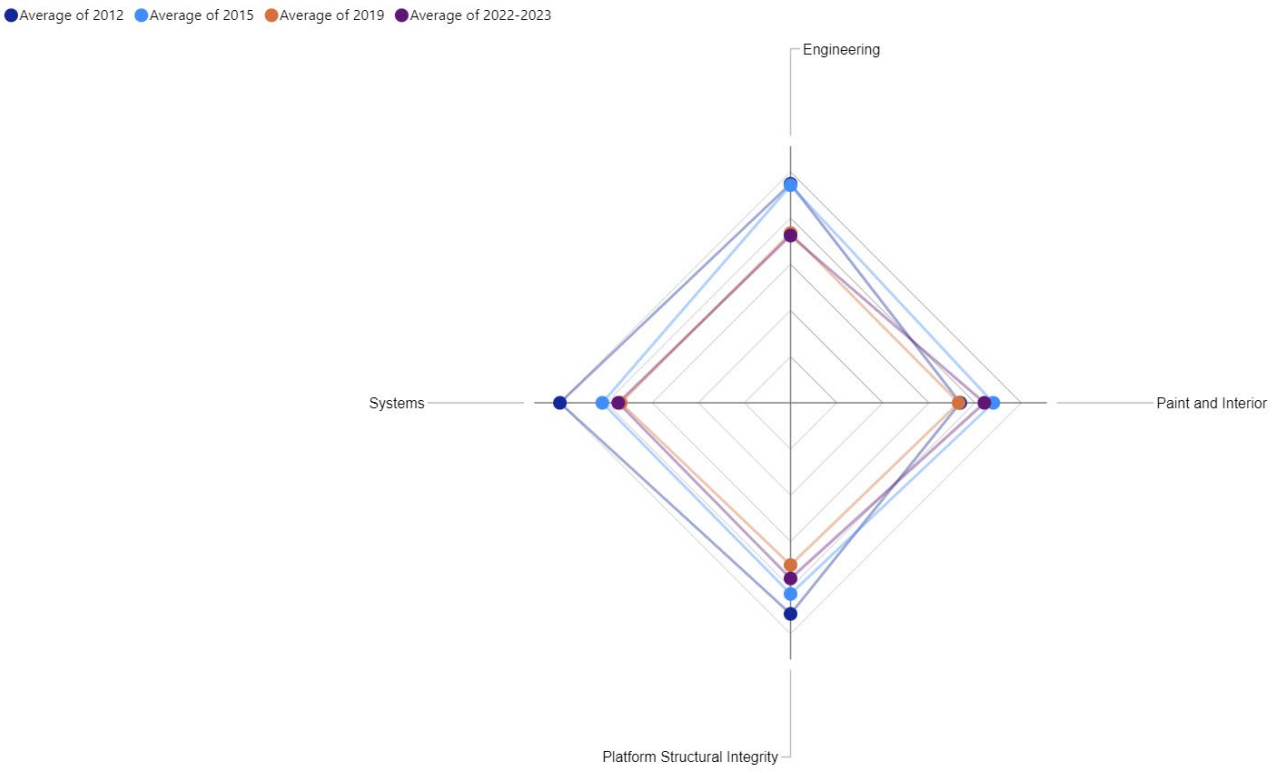


Figure and Table 6.3.8 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Fishburn	Engineering	3.67	3.64	2.84	2.80
Fishburn	Paint and Interior	2.85	3.40	2.82	3.25
Fishburn	Platform Structural Integrity	3.53	3.20	2.72	2.94
Fishburn	Systems	3.87	3.16	2.85	2.89

6.3.5 Vessel *Friendship*

The below graph, spider web and table indicate the comparison between *Friendship's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Friendship* has recorded results similar to (but marginally less than) those from 2012 and 2015. For 2022-23 there has been an improvement in condition from 2019 with significant increases across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest increases were in **Engineering** and **Paint and Interior.**

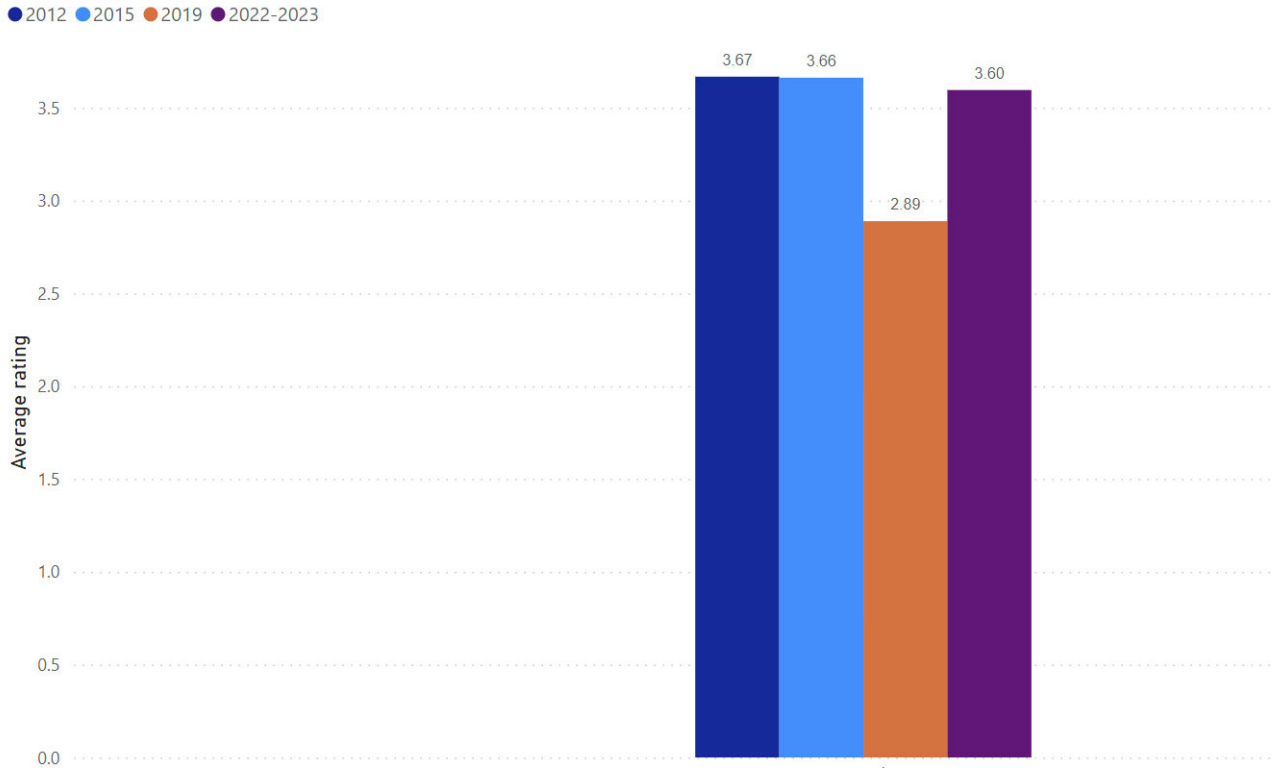


Figure 6.3.9 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

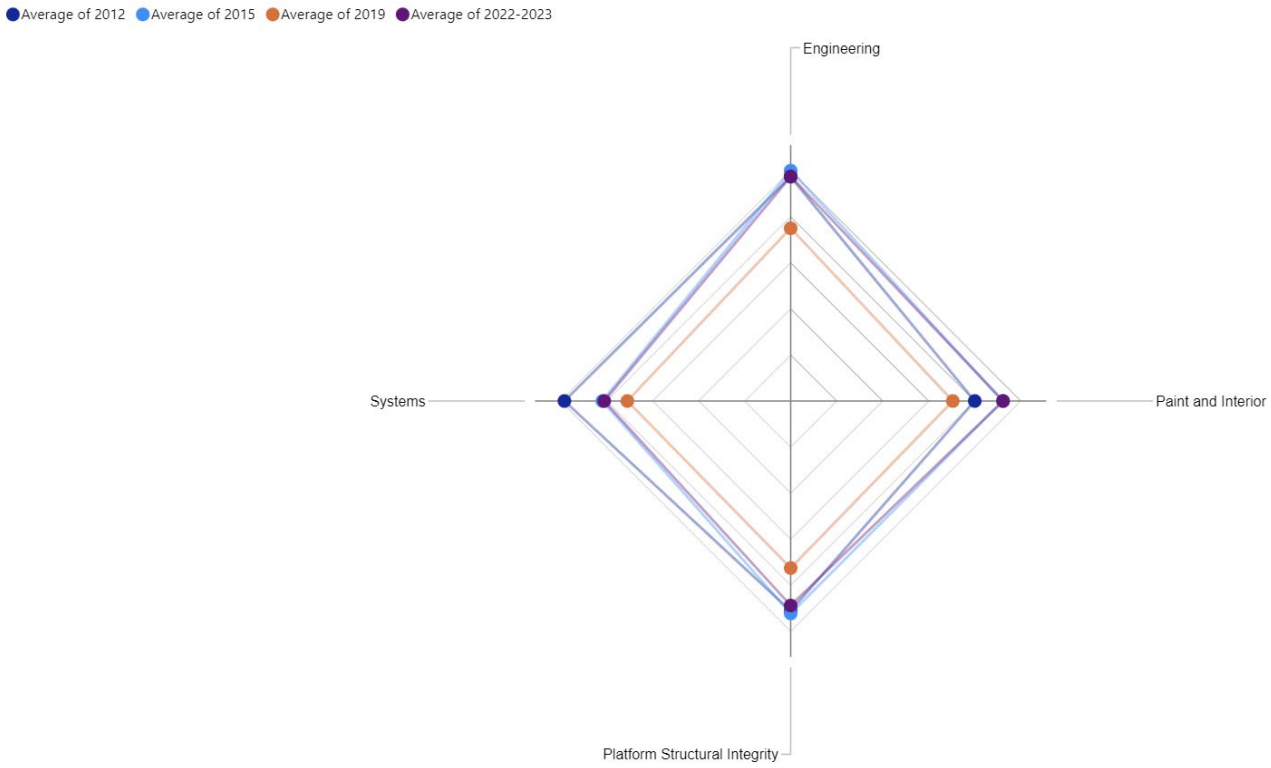


Figure and Table 6.3.10 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Friendship	Engineering	3.89	4.00	3.00	3.90
Friendship	Paint and Interior	3.20	3.69	2.82	3.69
Friendship	Platform Structural Integrity	3.64	3.69	2.90	3.55
Friendship	Systems	3.93	3.27	2.84	3.24

6.3.6 Vessel *Golden Grove*

The below graph, spider web and table indicate the comparison between *Golden Grove's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

Since 2012, vessel *Golden Grove* had improved in overall condition. For 2022-23 there has been a decline in condition from 2019 (and 2012 and 2015) with a decline seen in the **Platform Structural Integrity**, **Engineering** and **Systems** categories. **Paint and Interior** improved from 2019.

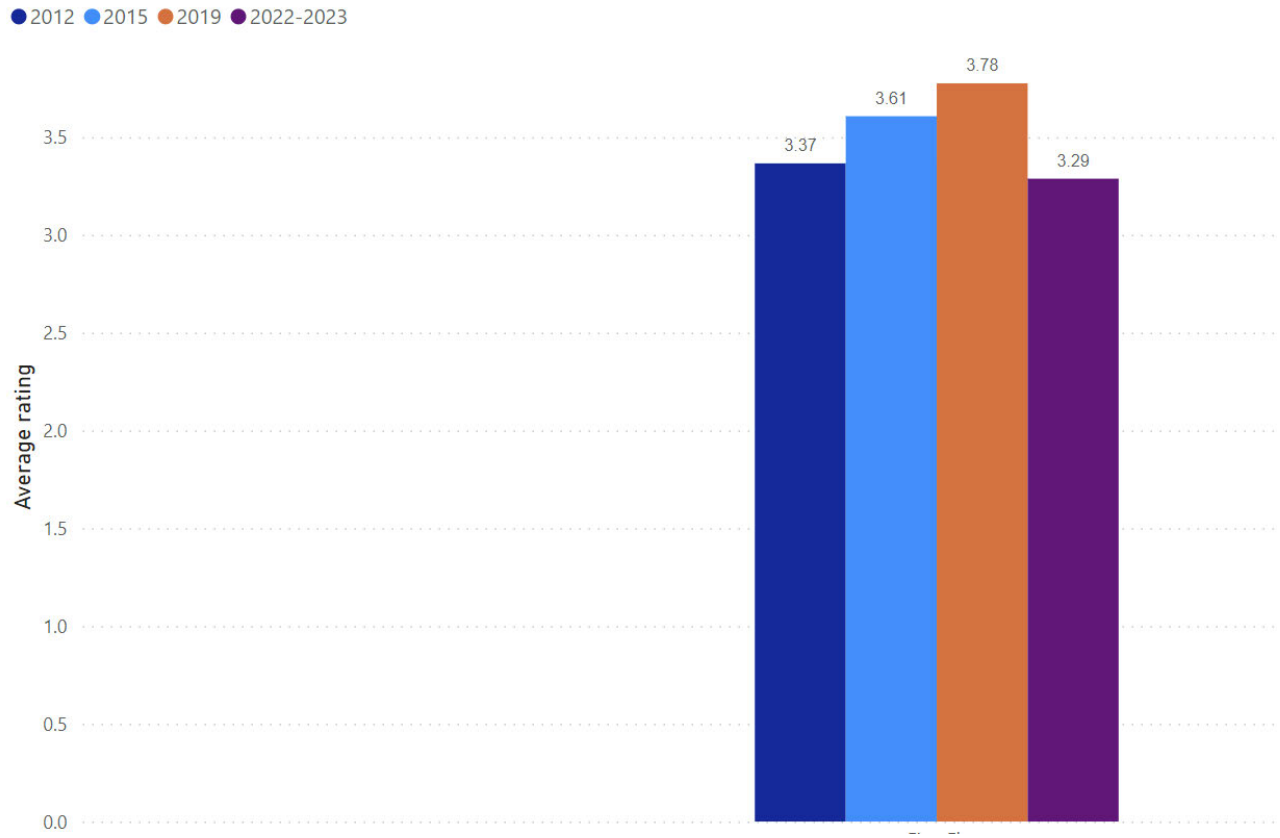


Figure 6.3.11 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

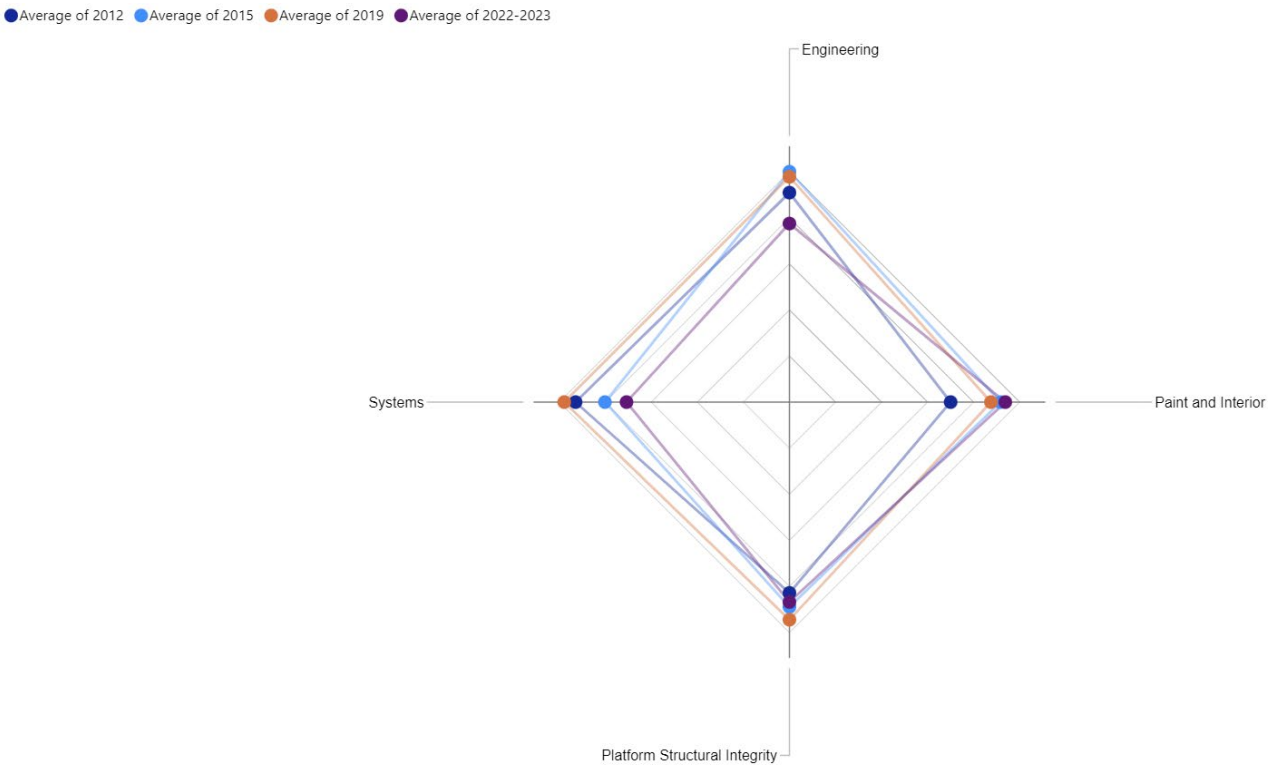


Figure and Table 6.3.12 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Golden Grove	Engineering	3.64	4.00	3.91	3.10
Golden Grove	Paint and Interior	2.8	3.67	3.50	3.75
Golden Grove	Platform Structural Integrity	3.31	3.56	3.78	3.47
Golden Grove	Systems	3.71	3.21	3.91	2.83

6.3.7 Vessel *Scarborough*

The below graph, spider web and table indicate the comparison between *Scarborough's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Scarborough* has recorded results similar to those from 2012 and 2015. For 2022-23 there has been an improvement in condition from 2019 and 2015 with significant increases across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest increases were in **Engineering** and **Paint and Interior.**

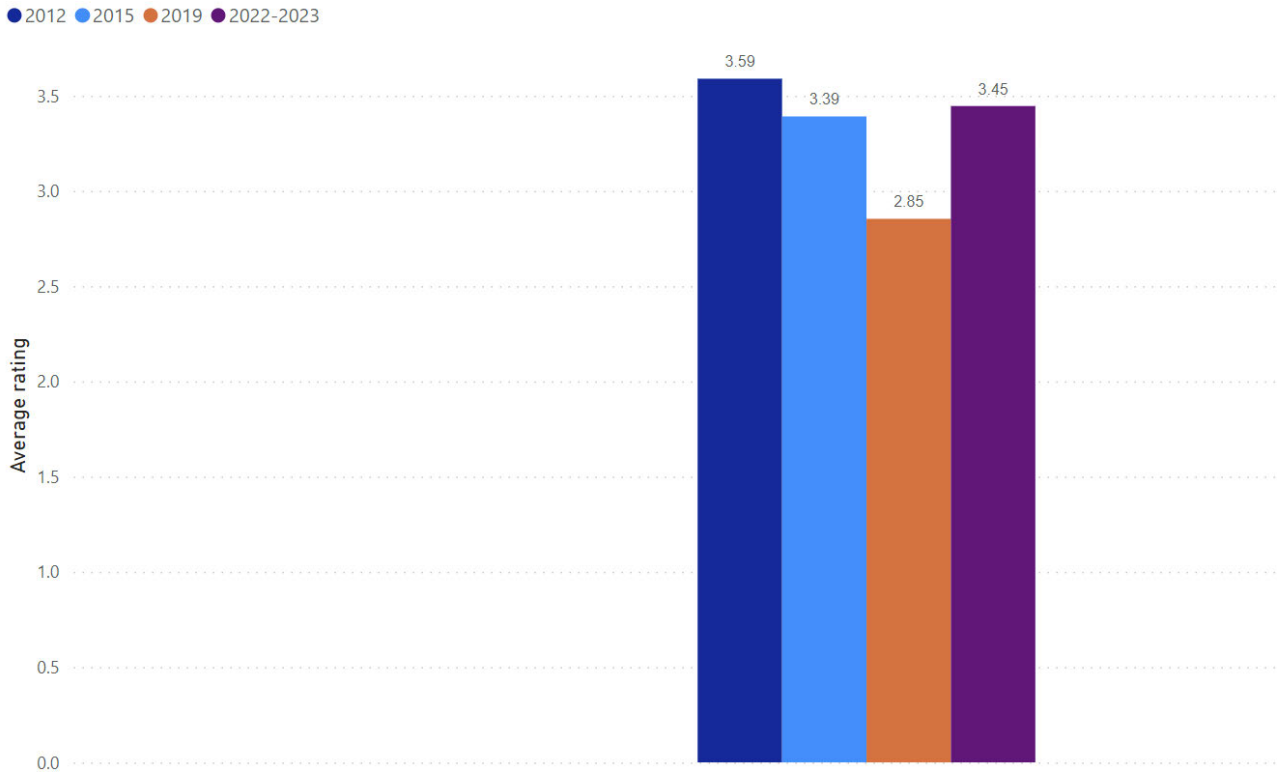


Figure 6.3.13 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

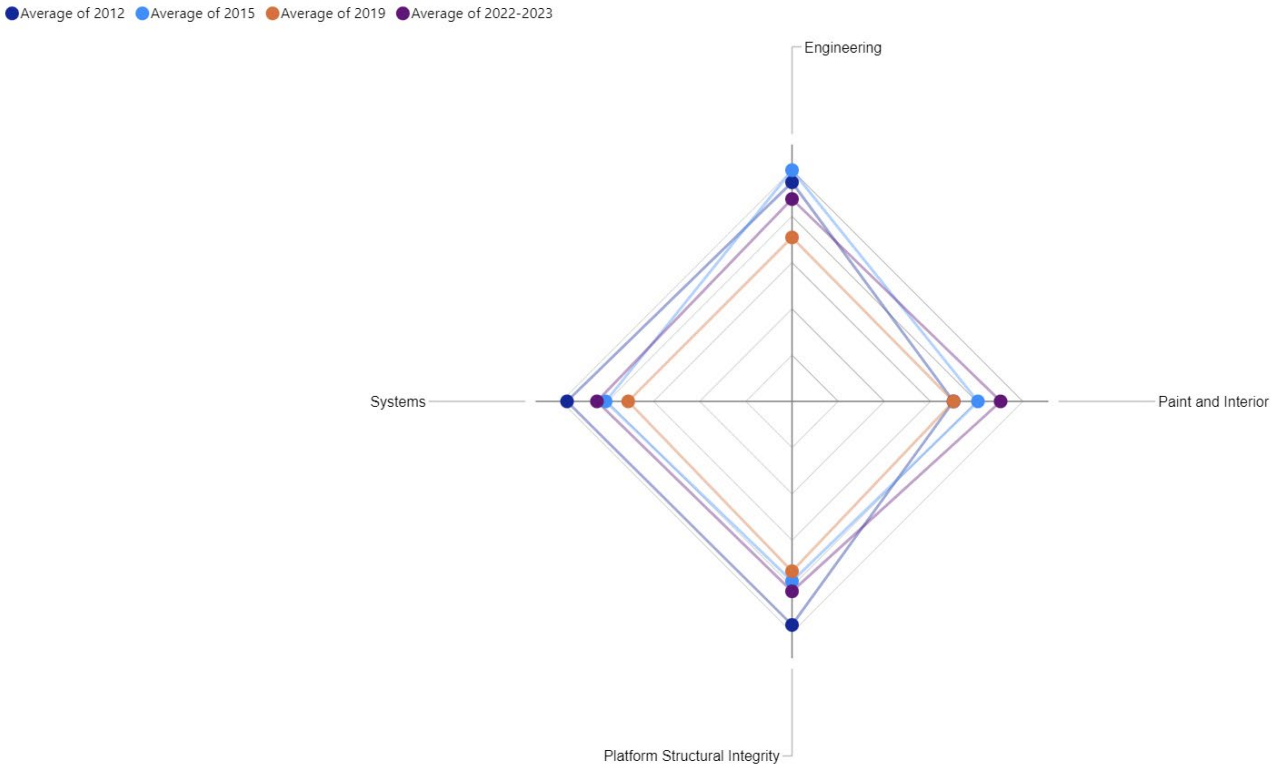


Figure and Table 6.3.14 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Scarborough	Engineering	3.79	4.00	2.84	3.50
Scarborough	Paint and Interior	2.8	3.22	2.80	3.62
Scarborough	Platform Structural Integrity	3.87	3.11	2.94	3.29
Scarborough	Systems	3.90	3.23	2.84	3.38

6.3.8 Vessel *Sirius*

The below graph, spider web and table indicate the comparison between *Sirius'* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Sirius* has recorded its best condition since Fleet Assessments commenced. Prior to this its condition was in a constant decline. For 2022-23 there has been an improvement in condition from 2019 (2015 and 2012) with significant increases across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest increases were in **Paint and Interior** and **Platform Structural Integrity.**

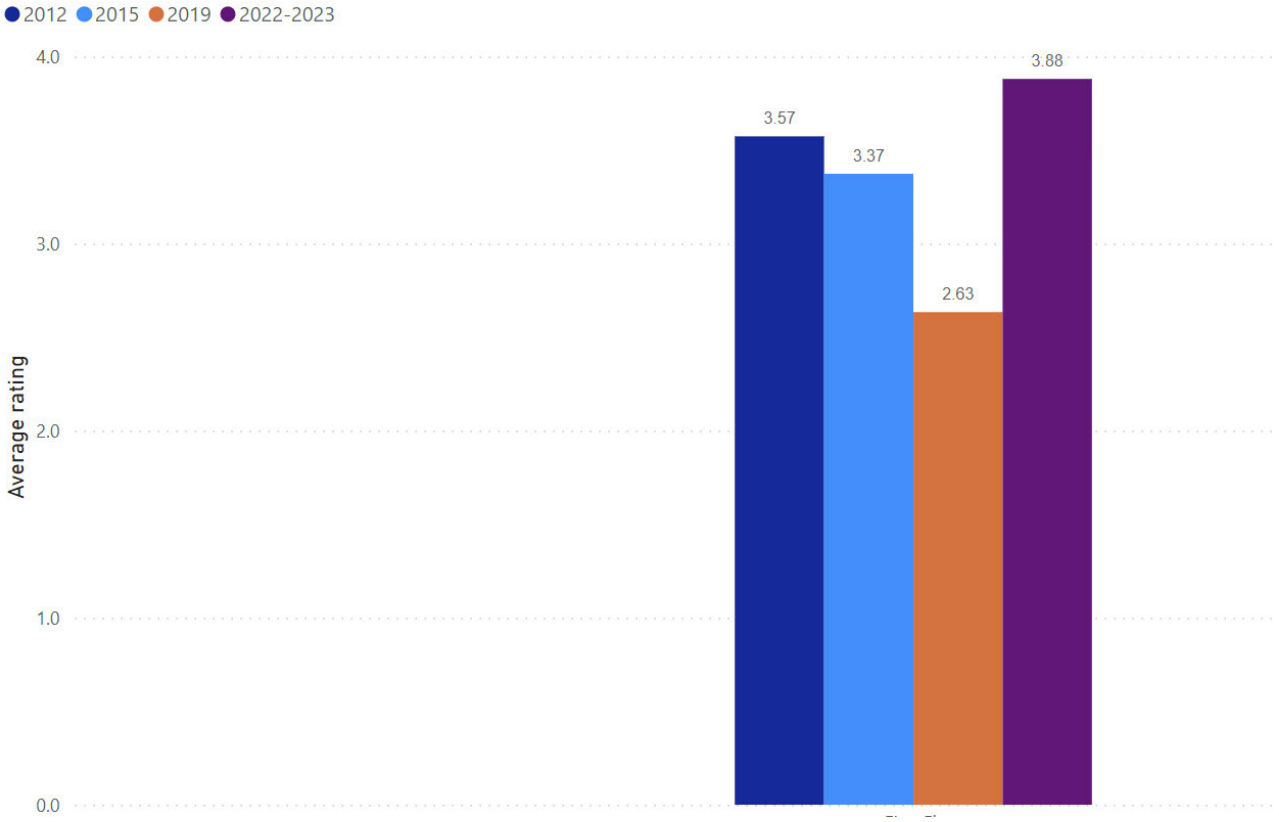


Figure 6.3.15 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

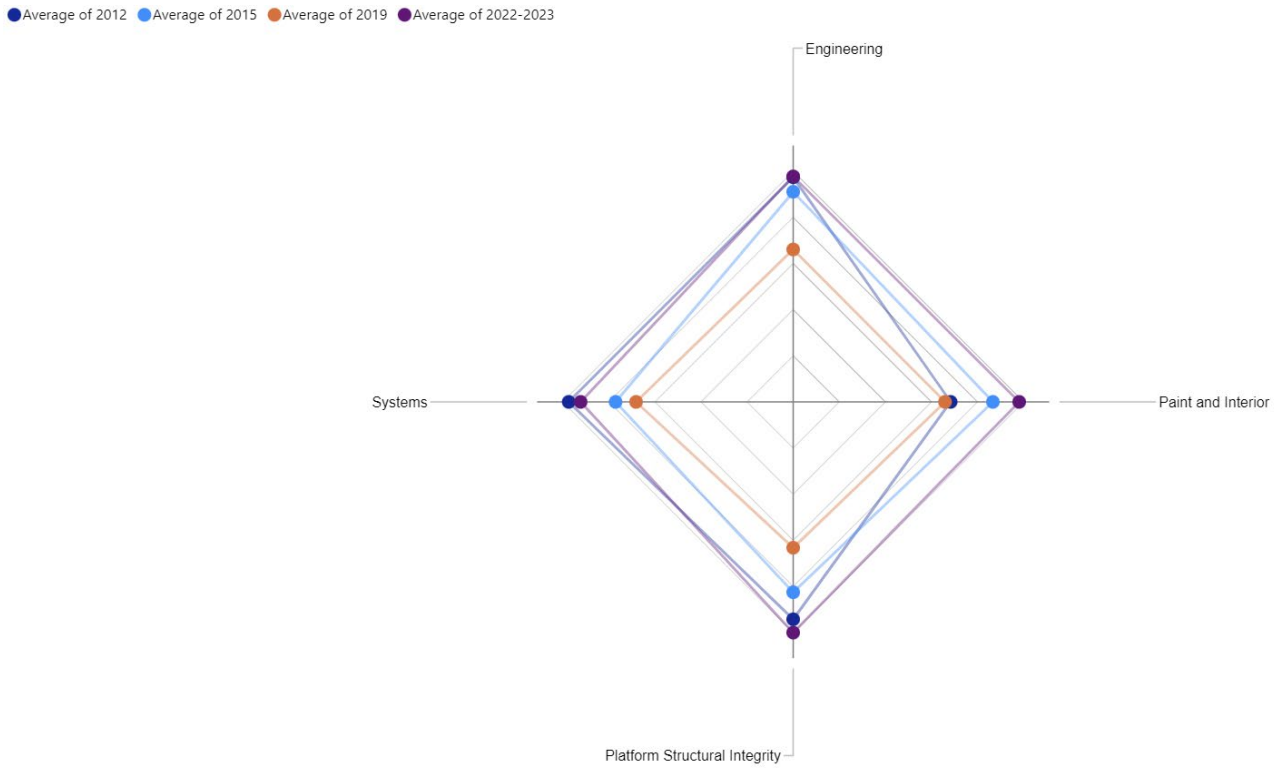


Figure and Table 6.3.16 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Sirius	Engineering	3.89	3.64	2.64	3.91
Sirius	Paint and Interior	2.73	3.47	2.64	3.92
Sirius	Platform Structural Integrity	3.77	3.30	2.53	4.00
Sirius	Systems	3.90	3.08	2.73	3.69

6.3.9 Vessel *Supply*

The below graph, spider web and table indicate the comparison between *Supply's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Supply* has recorded results similar to those from 2012 and 2015. For 2022-23 there has been an improvement in condition from 2019 and 2015 with significant increases across all categories (**Engineering, Platform Structural Integrity, Paint and Interior** and **Systems**). The biggest increases were in **Platform Structural Integrity** and **Paint and Interior.**

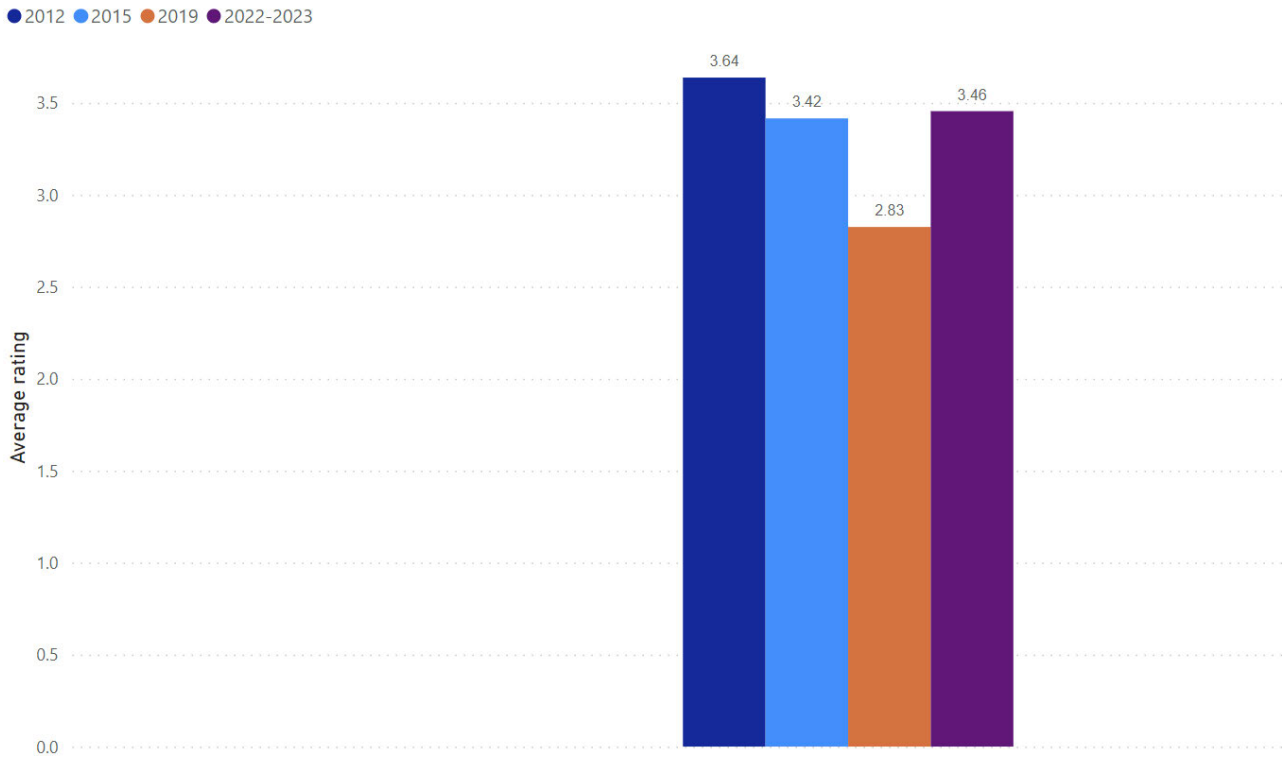


Figure 6.3.17 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

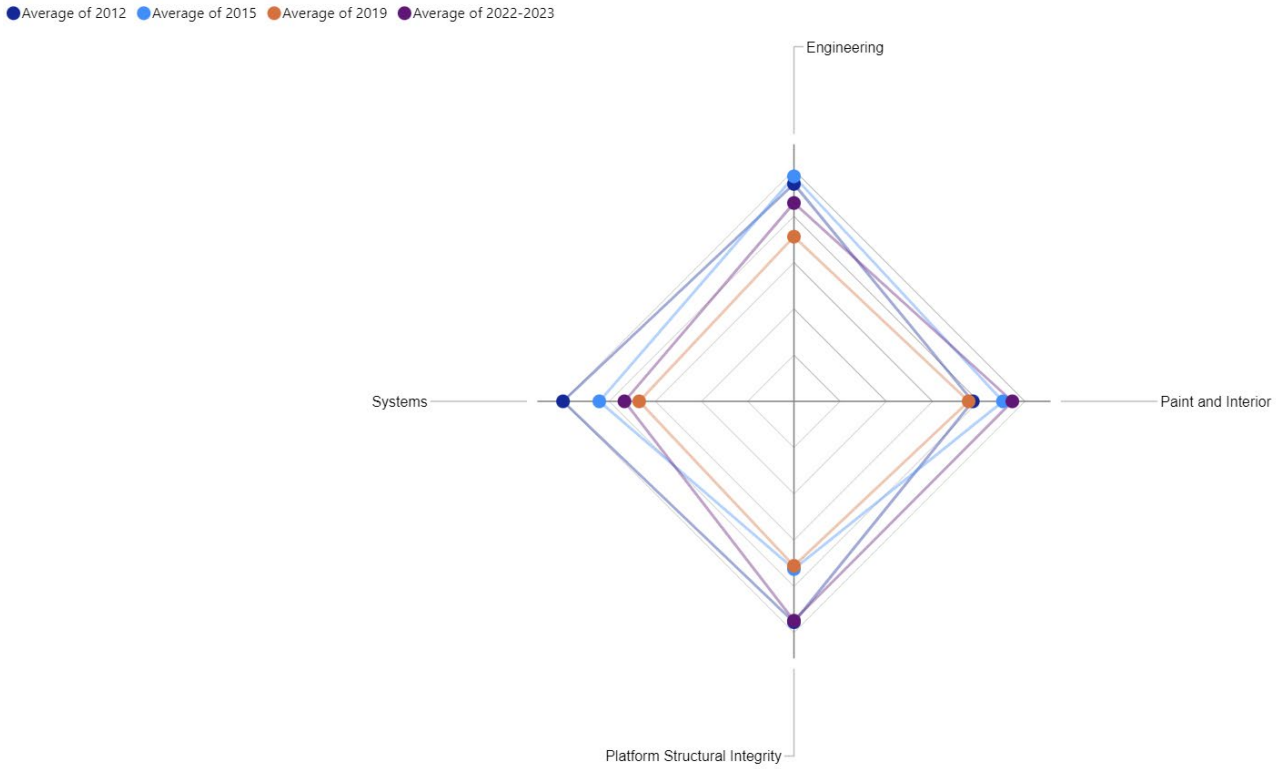


Figure and Table 6.3.18 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Supply	Engineering	3.73	3.86	2.82	3.40
Supply	Paint and Interior	3.07	3.59	3.00	3.75
Supply	Platform Structural Integrity	3.79	2.88	2.82	3.76
Supply	Systems	3.97	3.34	2.66	2.91

6.4 RiverCat Class

6.4.1 Vessel *Betty Cuthbert*

The below graph, spider web and table indicate the comparison between *Betty Cuthbert's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

The overall condition of *Betty Cuthbert* has remained stable since the 2015 assessment. For 2022-23, all categories remain steady from the 2019 assessment.

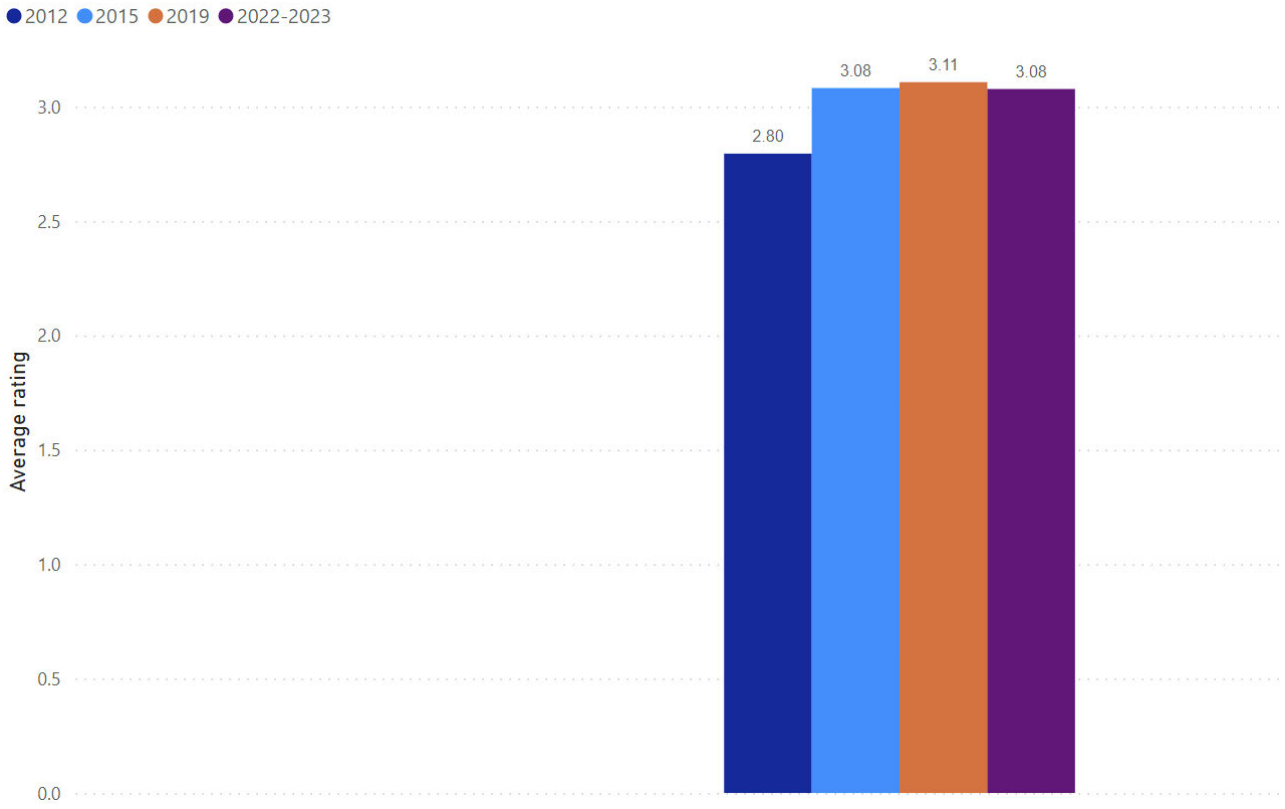


Figure 6.4.1 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

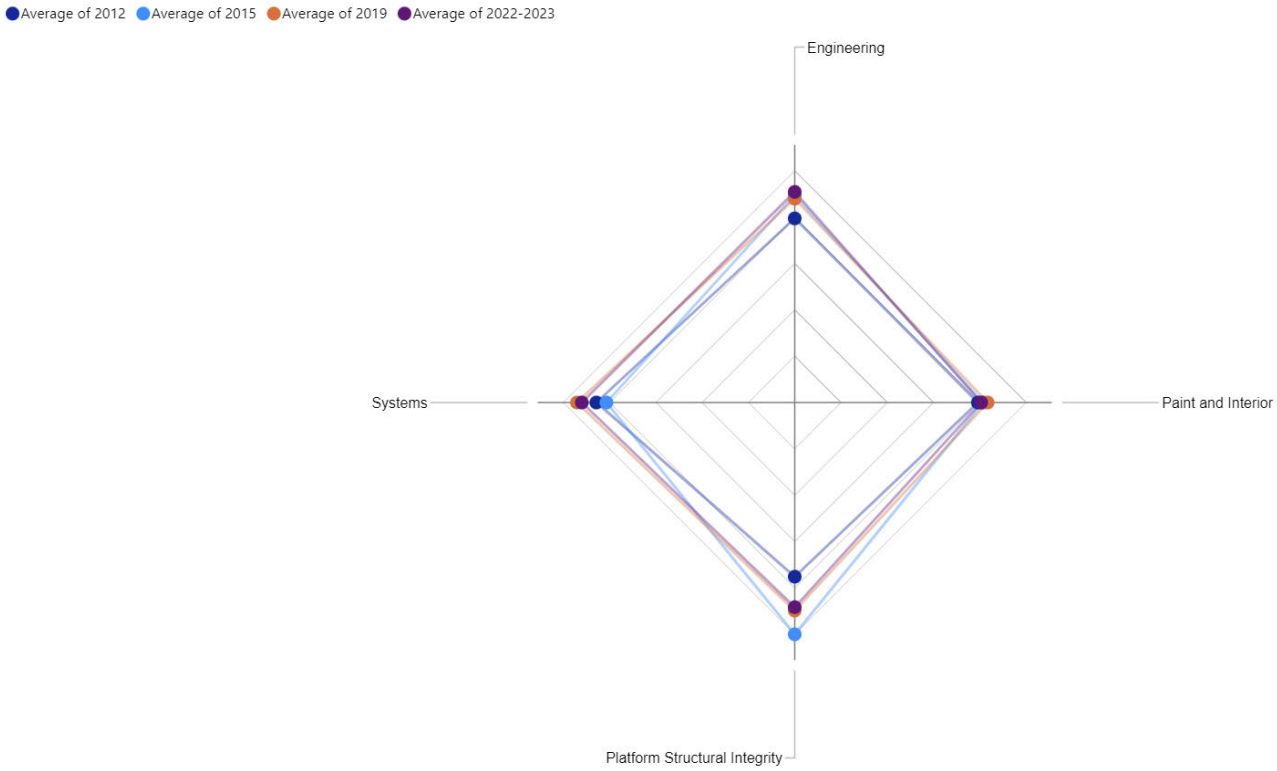


Figure and Table 6.4.2 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Betty Cuthbert	Engineering	2.78	3.13	3.08	3.18
Betty Cuthbert	Paint and Interior	2.77	2.85	2.92	2.82
Betty Cuthbert	Platform Structural Integrity	2.63	3.50	3.14	3.09
Betty Cuthbert	Systems	3.00	2.85	3.29	3.22

6.4.2 Vessel *Dawn Fraser*

The below graph, spider web and table indicate the comparison between *Dawn Fraser's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

For 2022-23 there has been a decline in the overall condition of vessel *Dawn Fraser* since 2015. There has been a decline across categories **Systems** and **Paint and Interior**. **Engineering** and **Platform Structural Integrity** have remained steady since 2019**.**

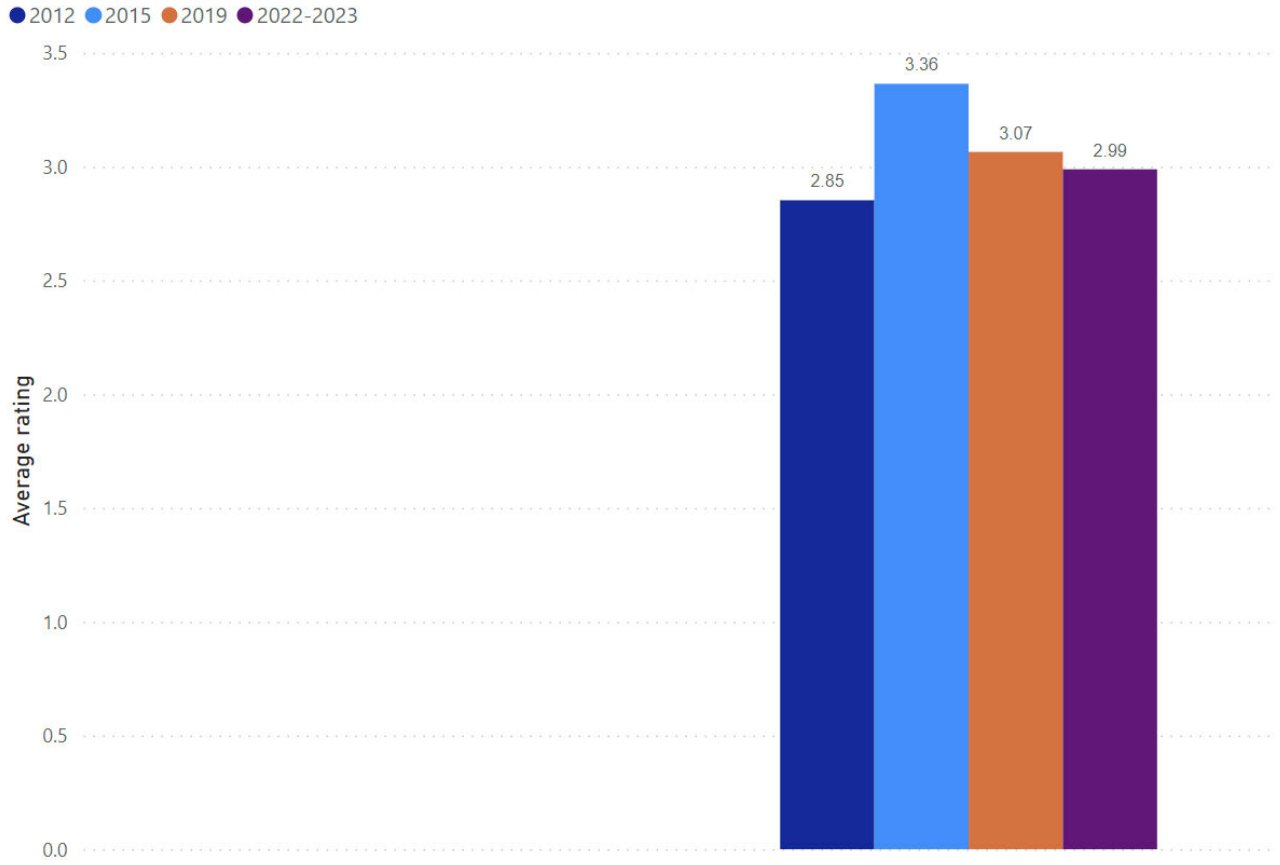


Figure 6.4.3 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

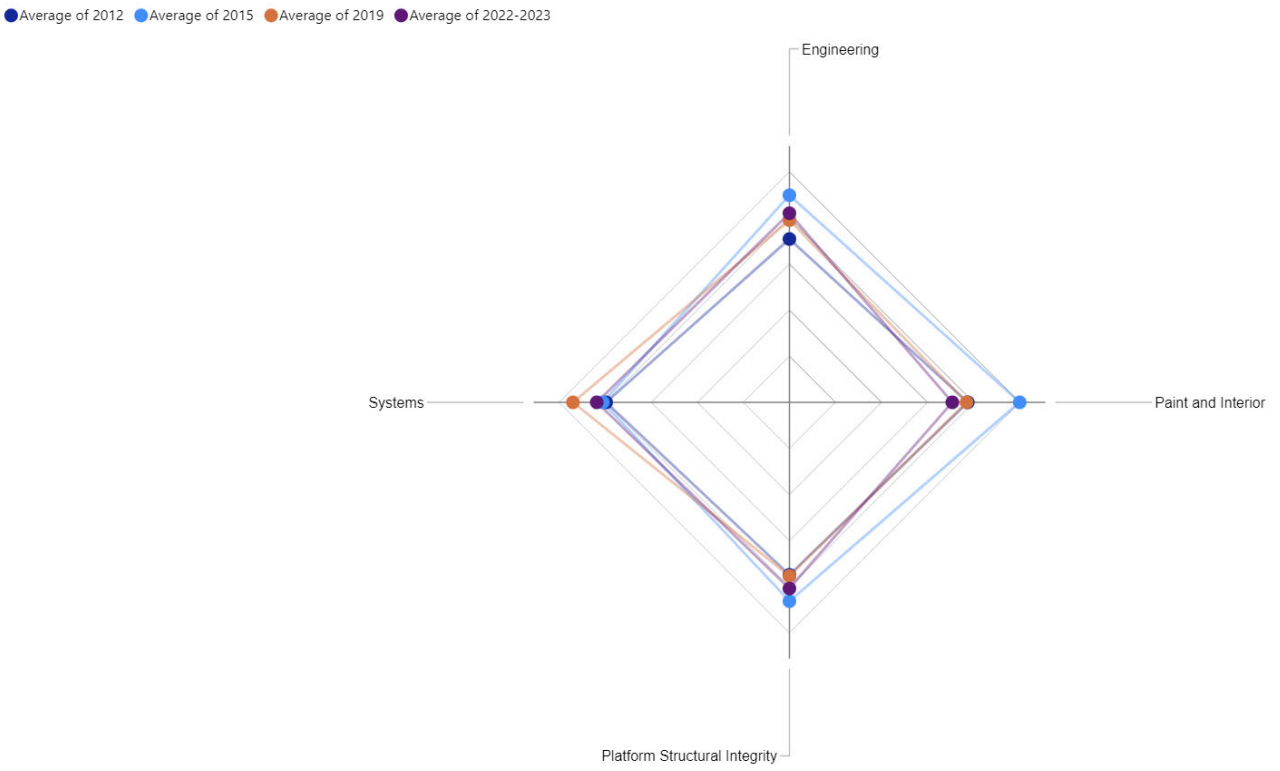


Figure and Table 6.4.4 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Dawn Fraser	Engineering	2.67	3.39	2.98	3.09
Dawn Fraser	Paint and Interior	2.92	3.77	2.90	2.67
Dawn Fraser	Platform Structural Integrity	2.82	3.25	2.84	3.04
Dawn Fraser	Systems	3.00	3.05	3.54	3.15

6.4.3 Vessel *Evonne Goolagong*

The below graph, spider web and table indicate the comparison between *Evonne Goolagong's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

For 2022-23 there has been a decline in the overall condition of vessel *Evonne Goolagong* since 2015. From 2019 there has been a decline in the category **Systems**. **Engineering, Paint and Interior** and **Platform Structural Integrity** have remained steady since 2019**.**

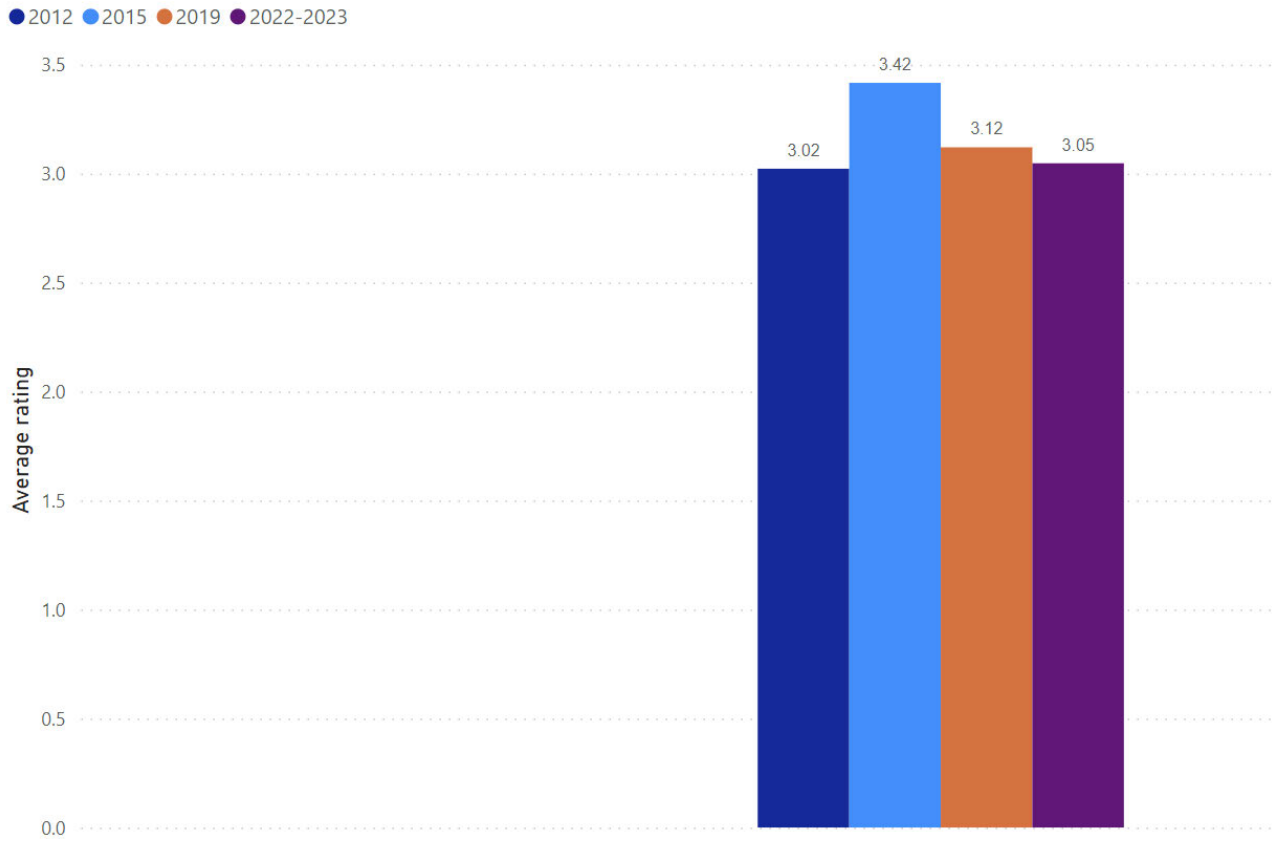


Figure 6.4.5 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

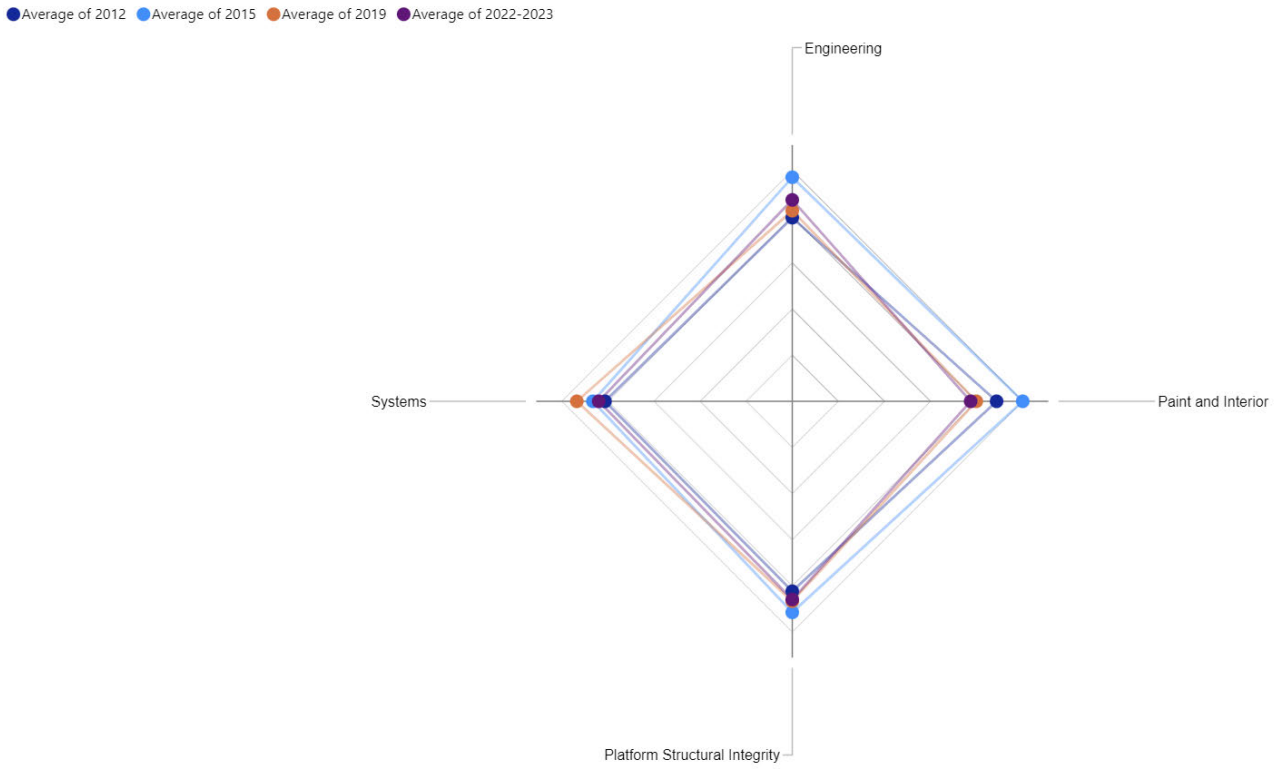


Figure and Table 6.4.6 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Evonne Goolagong	Engineering	2.90	3.54	3.01	3.18
Evonne Goolagong	Paint and Interior	3.23	3.64	2.91	2.82
Evonne Goolagong	Platform Structural Integrity	3.00	3.33	3.16	3.13
Evonne Goolagong	Systems	2.96	3.15	3.41	3.06

6.4.4 Vessel *Marjorie Jackson*

The below graph, spider web and table indicate the comparison between *Marjorie Jackson's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

For 2022-23 there has been a decline in the overall condition of vessel *Marjorie Jackson* since 2015. From 2019 there has been a decline in the categories **Paint and Interior** and **Platform Structural Integrity**. **Engineering** and **Systems** have remained steady since 2019**.**

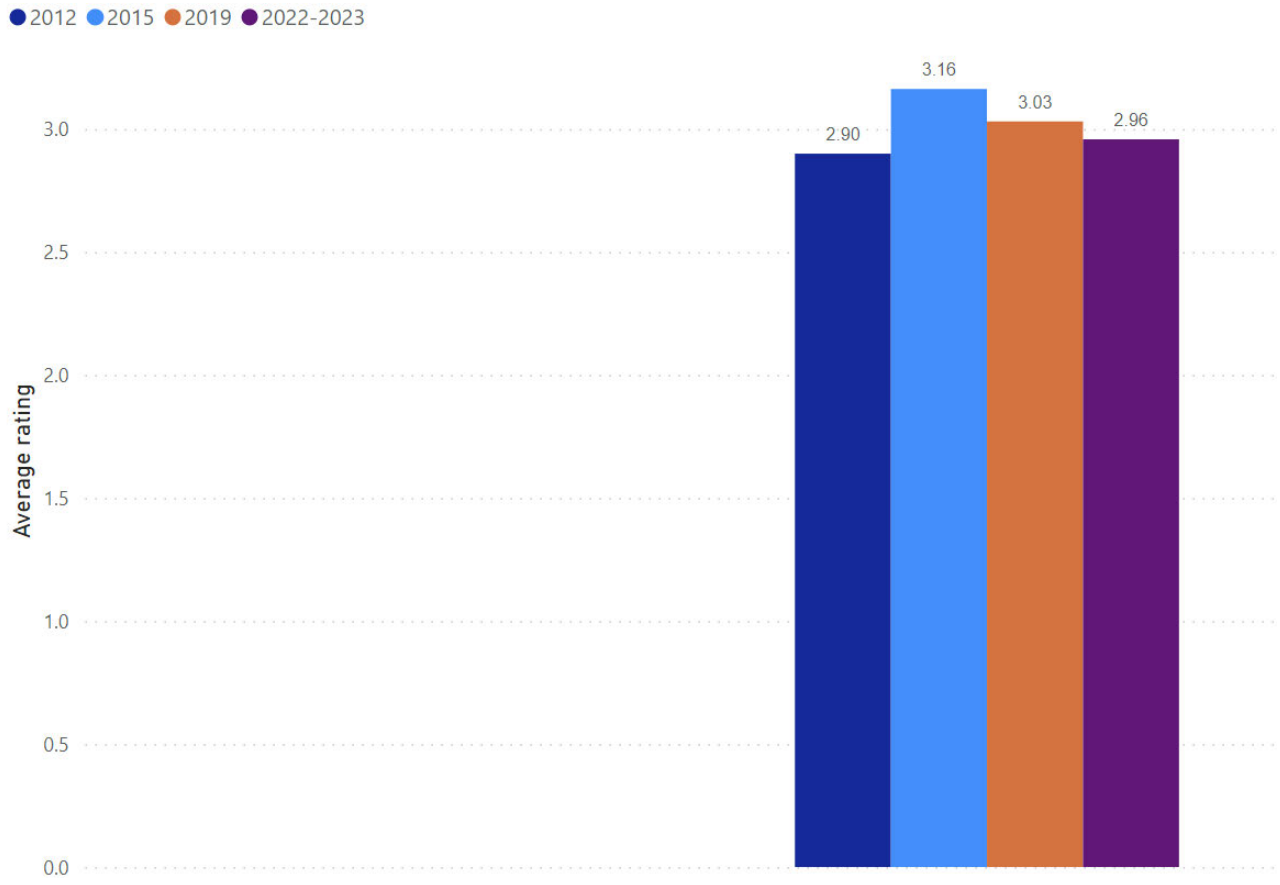


Figure 6.4.7 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

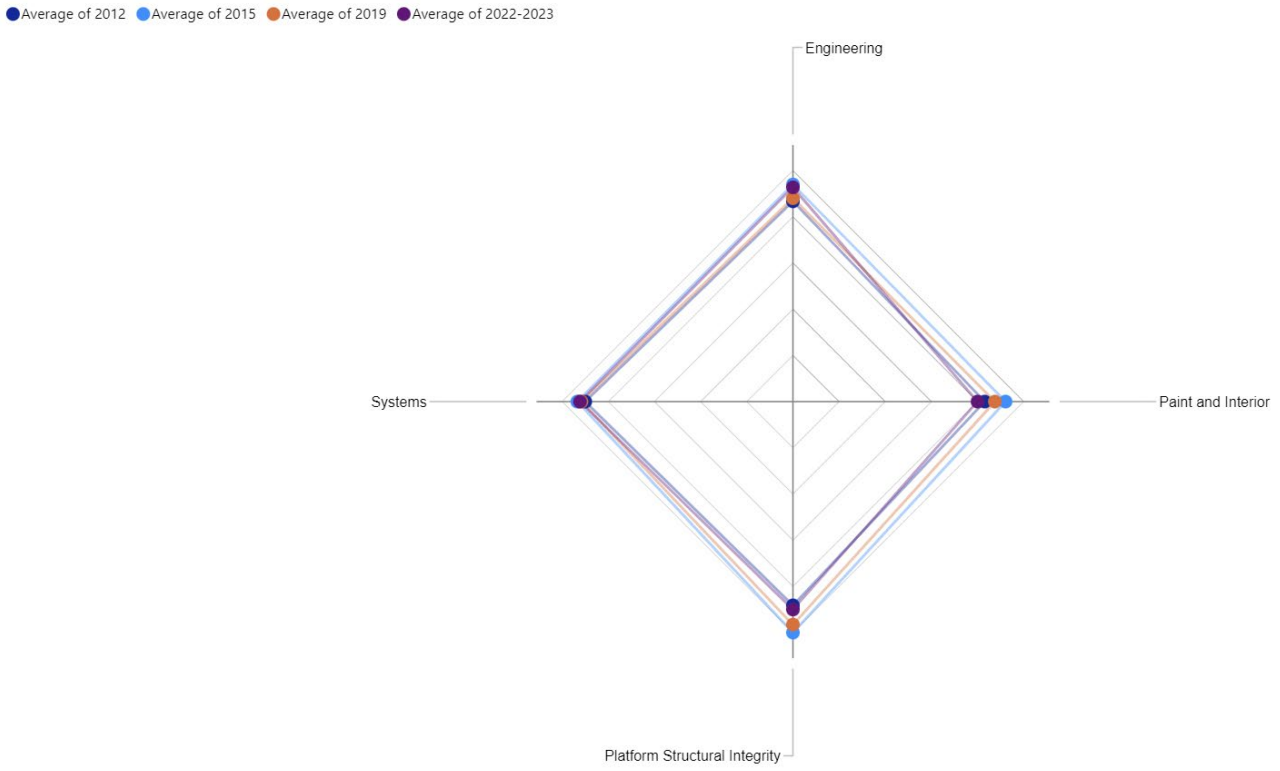


Figure and Table 6.4.8 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Marjorie Jackson	Engineering	2.89	3.13	2.94	3.09
Marjorie Jackson	Paint and Interior	2.77	3.07	2.92	2.67
Marjorie Jackson	Platform Structural Integrity	2.94	3.33	3.22	3.00
Marjorie Jackson	Systems	3.00	3.11	3.06	3.08

6.4.5 Vessel *Marlene Matthews*

The below graph, spider web and table indicate the comparison between *Marlene Matthews'* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

For 2022-23 there has been a decline in the overall condition of vessel *Marlene Matthews* since 2015. From 2019 there has been a decline in the categories **Systems** and **Platform Structural Integrity**. **Engineering** and **Paint and Interior** have remained steady since 2019**.**

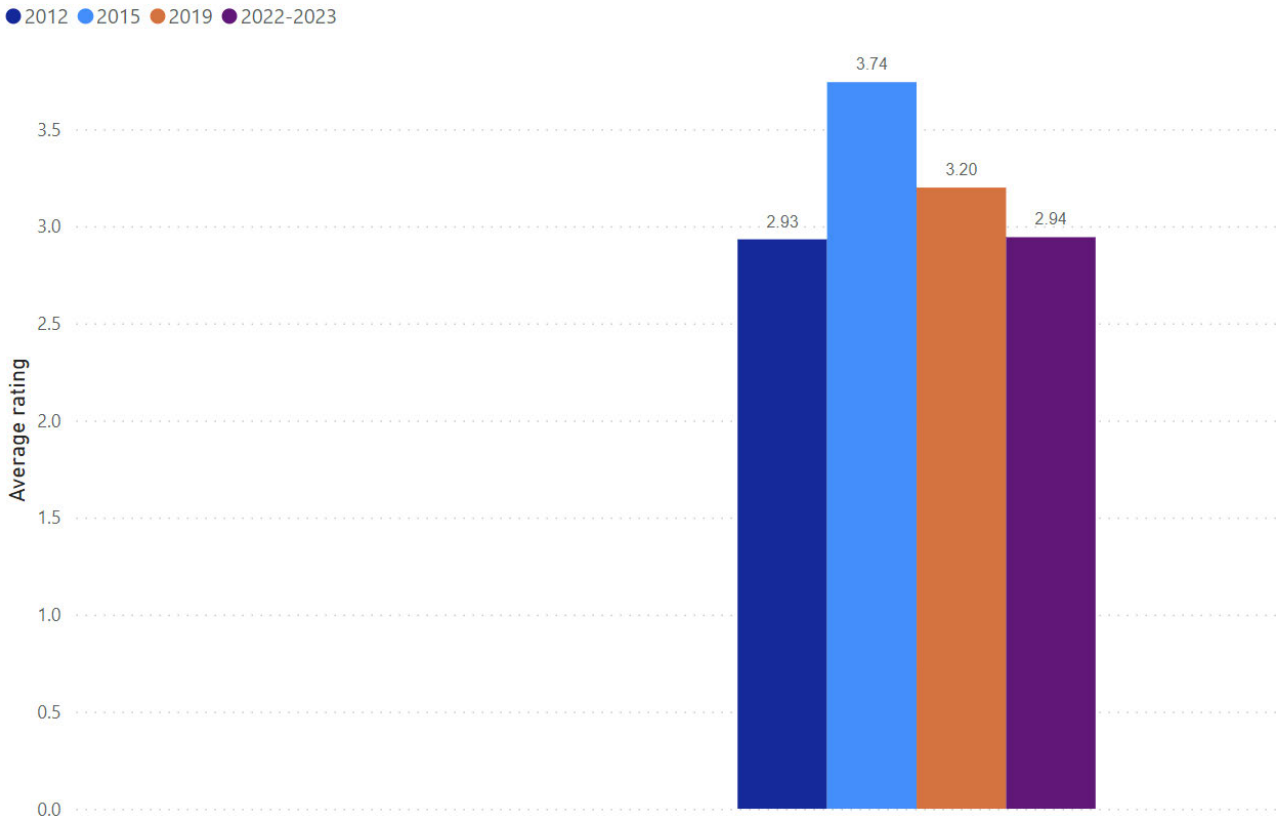


Figure 6.4.9 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

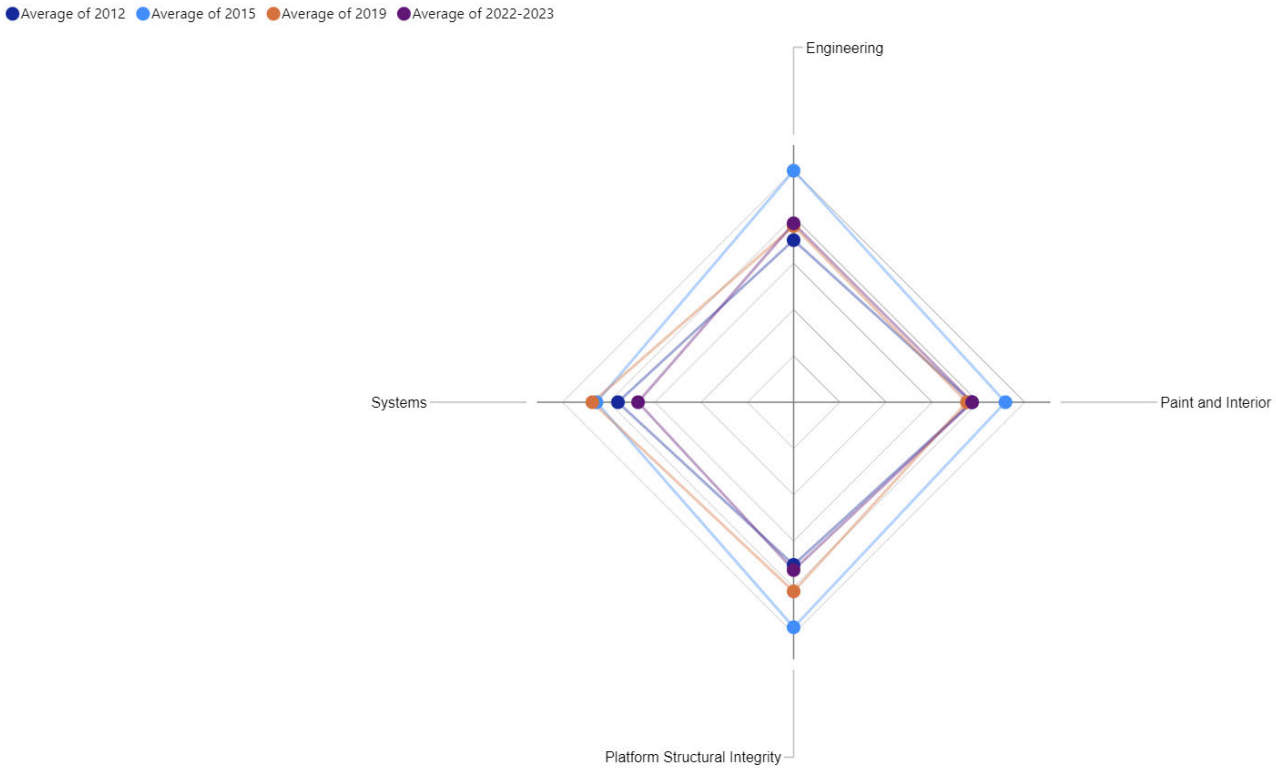


Figure and Table 6.4.10 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Marlene Mathews	Engineering	2.80	4.00	3.04	3.09
Marlene Mathews	Paint and Interior	3.08	3.67	3.00	3.09
Marlene Mathews	Platform Structural Integrity	2.81	3.89	3.27	2.90
Marlene Mathews	Systems	3.04	3.41	3.48	2.69

6.4.6 Vessel Nicole Livingstone

The below graph, spider web and table indicate the comparison between *Nicole Livingstone's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

For 2022-23 there has been an improvement in the overall condition of vessel *Nicole Livingstone*. From 2019 there has been a significant improvement in the categories **Systems, Engineering** and **Platform Structural Integrity**. **Paint and Interior** have remained steady since 2019.

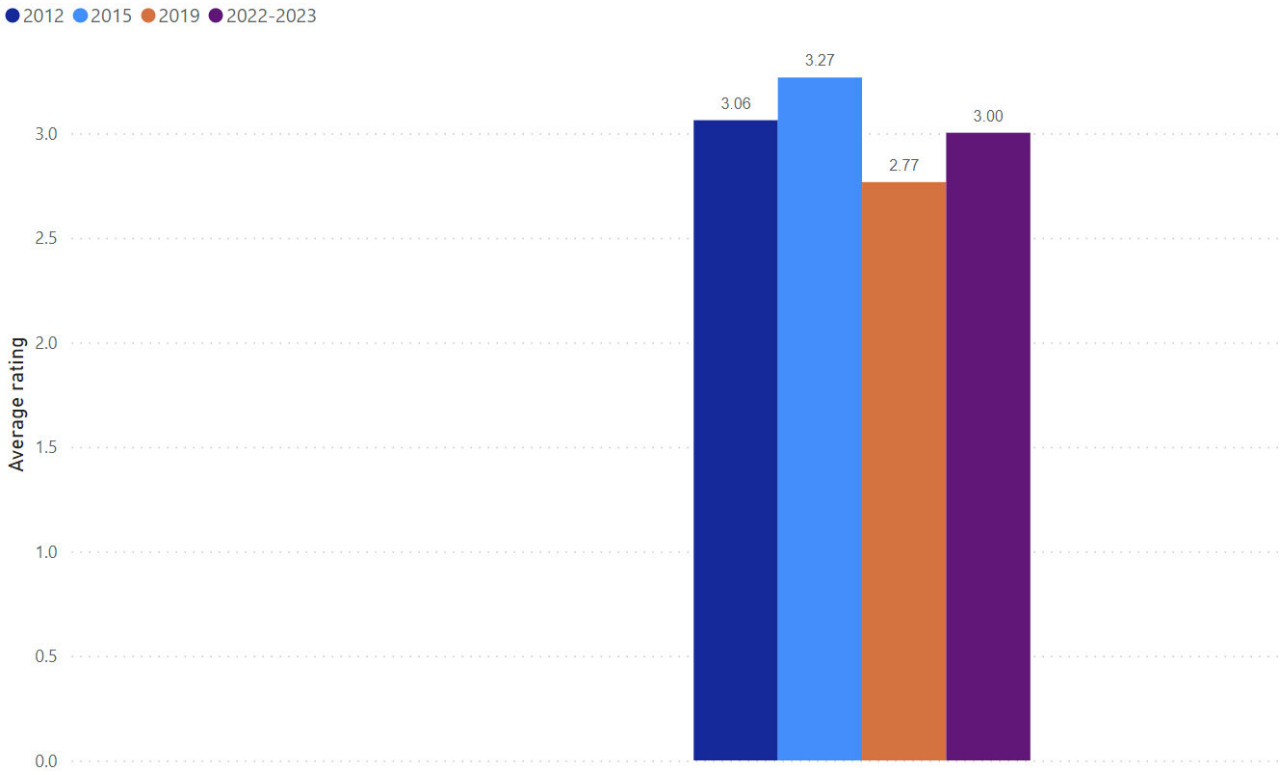


Figure 6.4.11 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

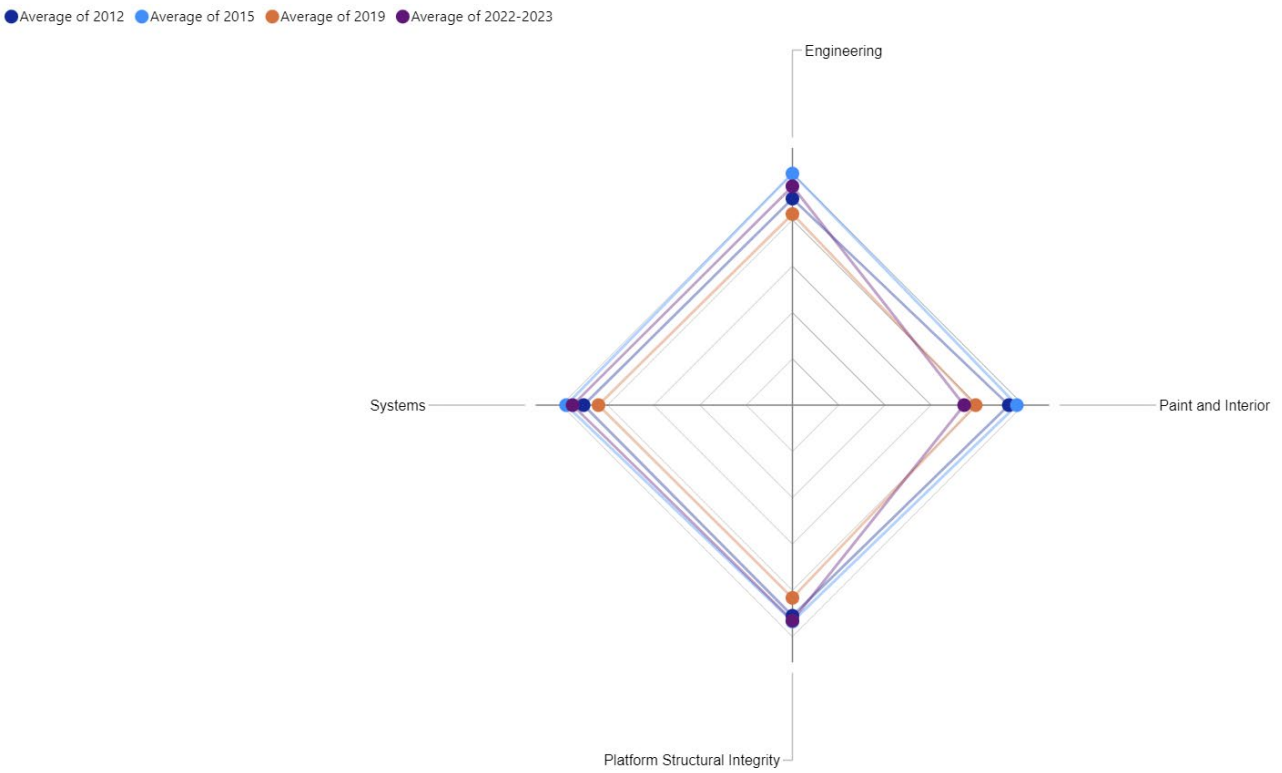


Figure and Table 6.4.12 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Nicole Livingstone	Engineering	3.00	3.36	2.78	3.18
Nicole Livingstone	Paint and Interior	3.15	3.27	2.67	2.50
Nicole Livingstone	Platform Structural Integrity	3.06	3.14	2.80	3.13
Nicole Livingstone	Systems	3.04	3.29	2.82	3.20

6.4.7 Vessel *Shane Gould*

The below graph, spider web and table indicate the comparison between *Shane Gould's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

For 2022-23 there has been a decline in the overall condition of vessel *Shane Gould* since 2015. From 2019 there has been a decline in the categories **Paint and Interior** and **Platform Structural Integrity**. **Engineering** and **Systems** have remained steady since 2019**.**

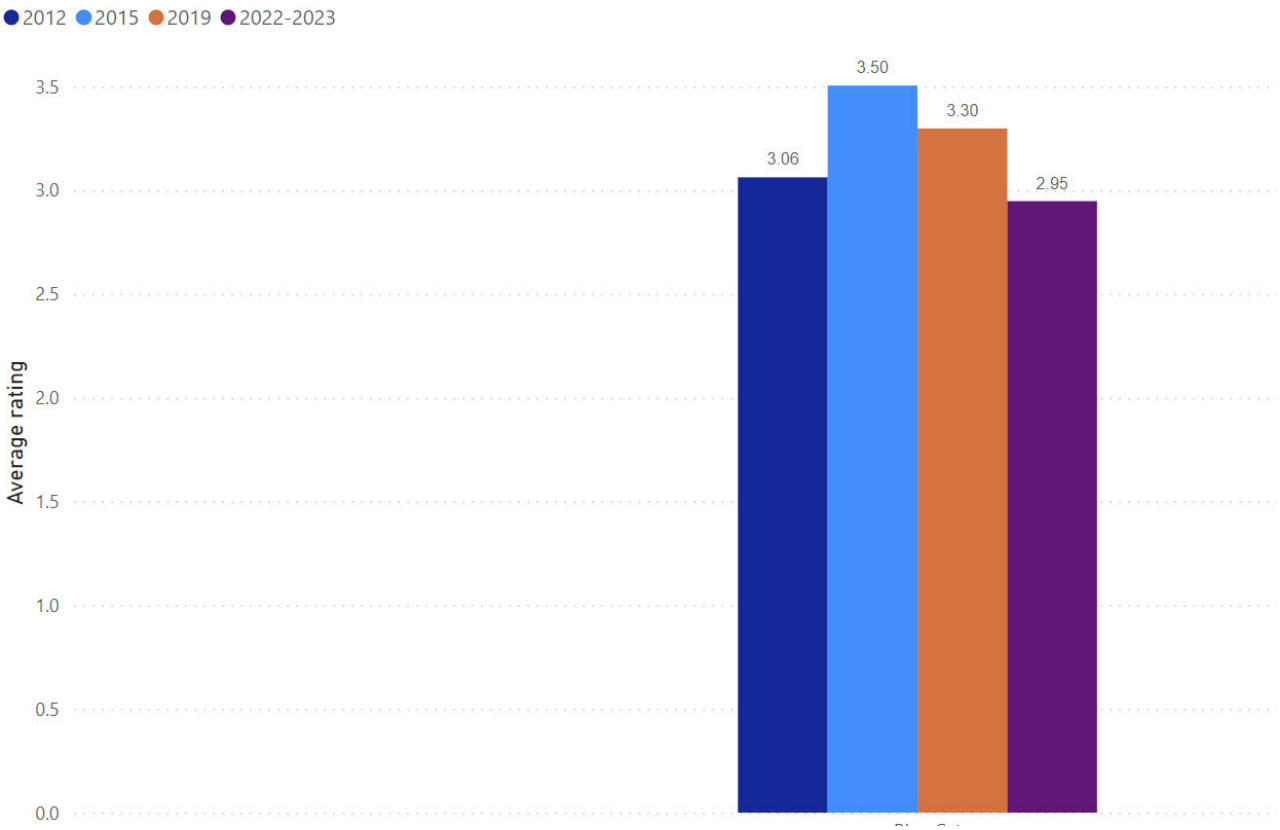


Figure 6.4.13 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

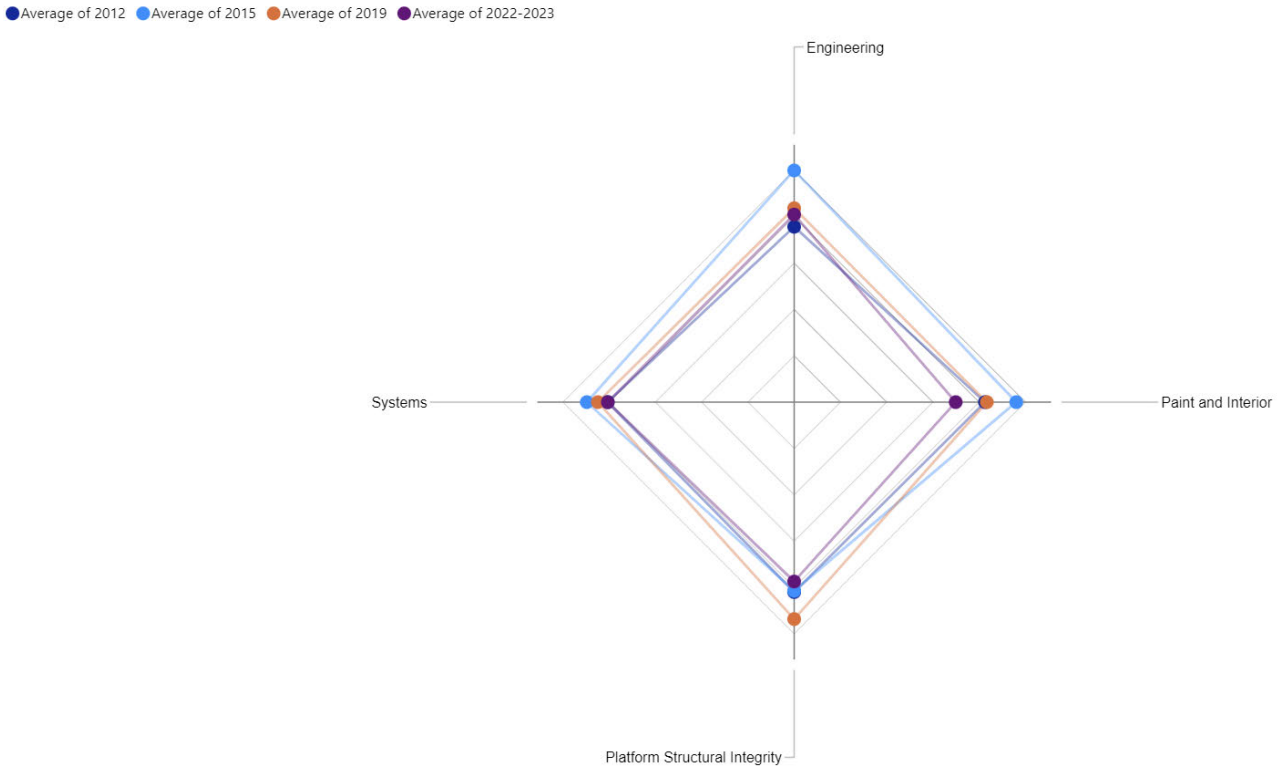


Figure and Table 6.4.14 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Shane Gould	Engineering	2.89	3.82	3.20	3.09
Shane Gould	Paint and Interior	3.15	3.67	3.18	2.67
Shane Gould	Platform Structural Integrity	3.13	3.11	3.58	2.96
Shane Gould	Systems	3.08	3.42	3.24	3.08

6.5 HarbourCat Class

6.5.1 Vessel *Pam Burridge*

The below graph, spider web and table indicate the comparison between *Pam Burridge's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

In 2022-23, vessel *Pam Burridge* has recorded its best overall condition since Fleet Assessments commenced (despite an overall decline in condition since 2012). For 2022-23 there has been an improvement in condition from 2019 with significant improvements across **Engineering, Platform Structural Integrity** and **Paint and Interior** categories. A decline was seen across category **Systems**.

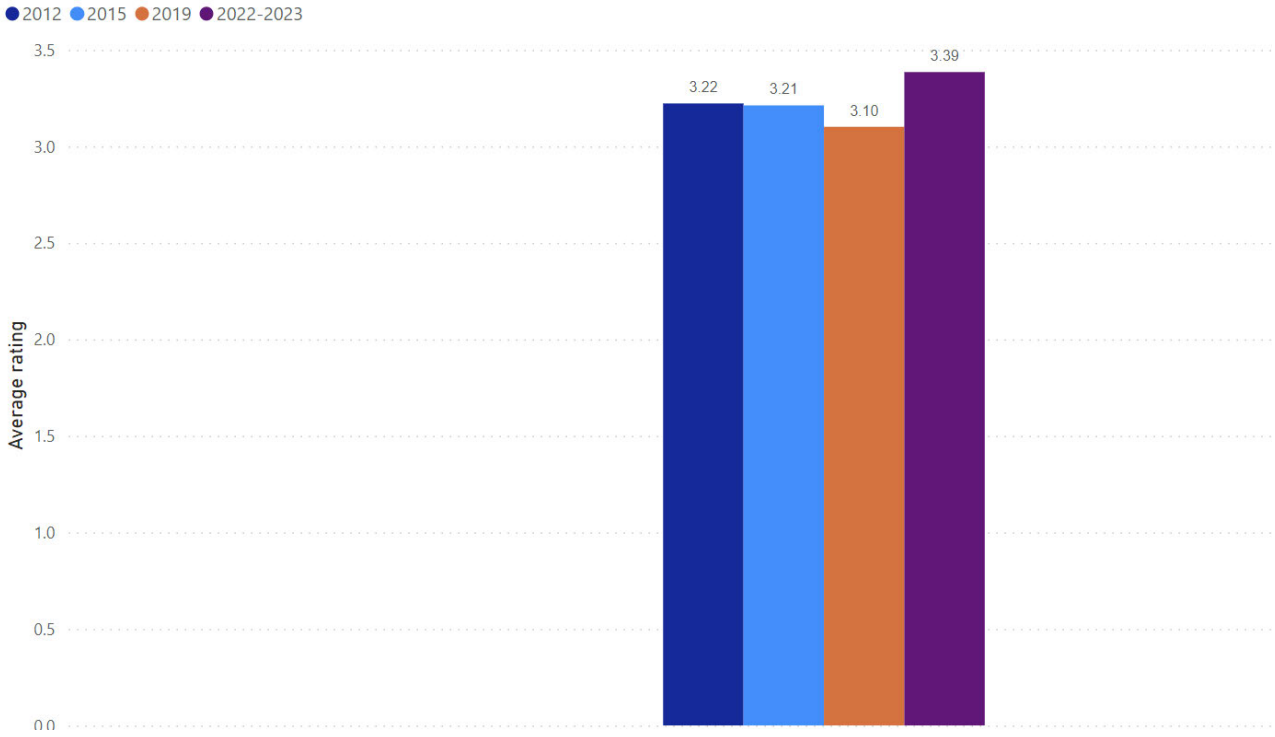


Figure 6.5.1 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

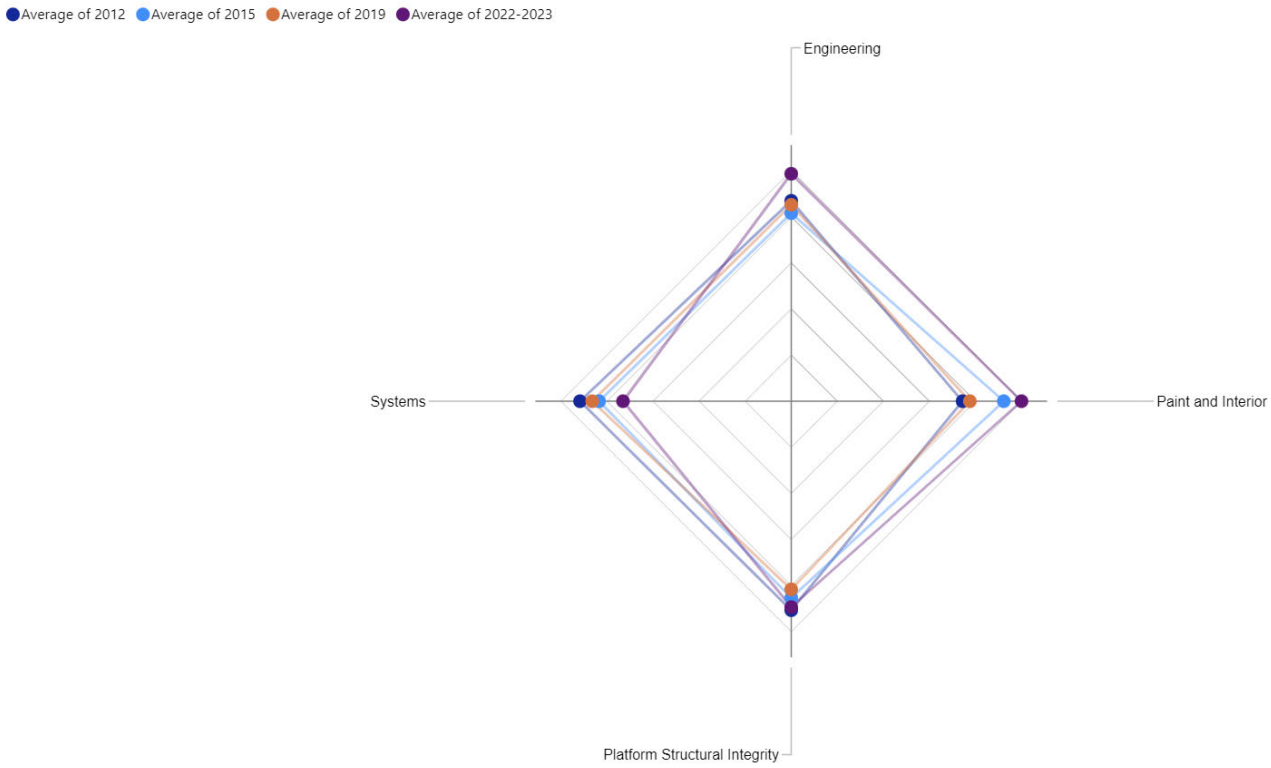


Figure and Table 6.5.2 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Pam Burridge	Engineering	3.26	3.06	3.20	3.70
Pam Burridge	Paint and Interior	2.79	3.46	2.91	3.75
Pam Burridge	Platform Structural Integrity	3.40	3.20	3.06	3.35
Pam Burridge	Systems	3.44	3.13	3.24	2.74

6.6 SuperCat Class

6.6.1 Vessel *Louise Sauvage*

The below graph, spider web and table indicate the comparison between *Louise Sauvage's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

Overall and since 2012, vessel *Louise Sauvage* has declined in condition. For 2022-23 there has been an improvement in condition from 2019 with significant improvements across **Engineering** and **Paint and Interior** categories. Declines were seen across categories **Platform Structural Integrity** and **Systems**.

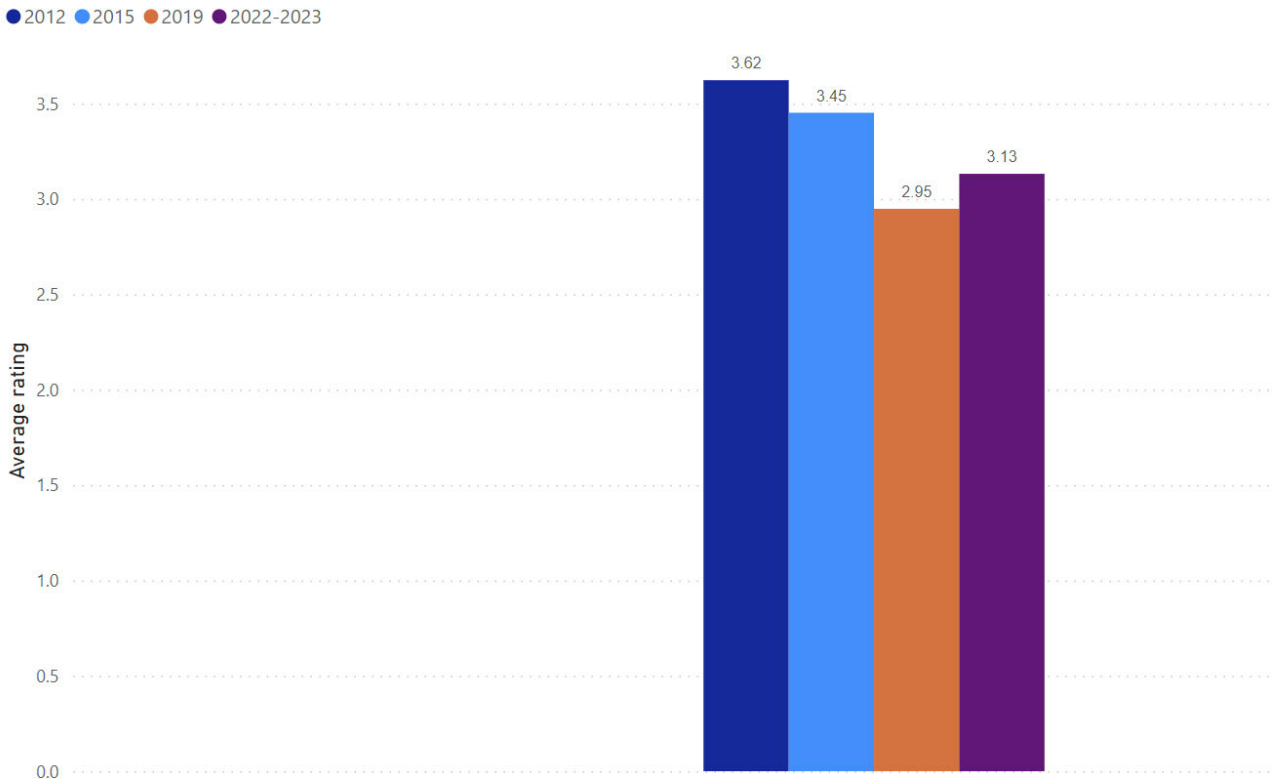


Figure 6.6.1 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

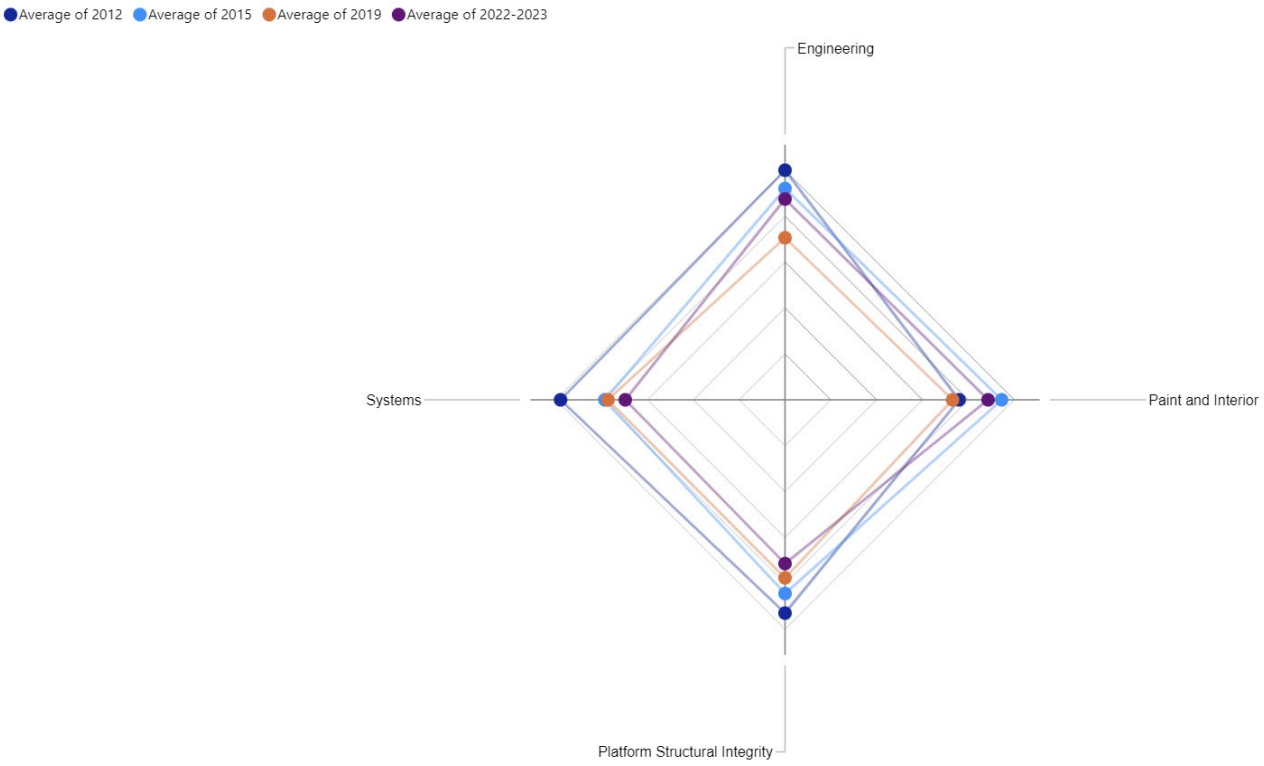


Figure and Table 6.6.2 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Louise Sauvage	Engineering	3.95	3.64	2.79	3.45
Louise Sauvage	Paint and Interior	3.00	3.73	2.89	3.50
Louise Sauvage	Platform Structural Integrity	3.67	3.33	3.06	2.82
Louise Sauvage	Systems	3.87	3.11	3.05	2.75

6.6.2 Vessel *SuperCat 4*

The below graph, spider web and table indicate the comparison between *SuperCat 4's* inspection performance for 2022-23 compared with 2019, 2015 and 2012.

Overall and since 2012, vessel *SuperCat 4* has declined in condition. For 2022-23 there has been an improvement in condition from 2019 with significant improvements across **Engineering, Platform Structural Integrity** and **Paint and Interior** categories. A decline was seen across category **Systems**.

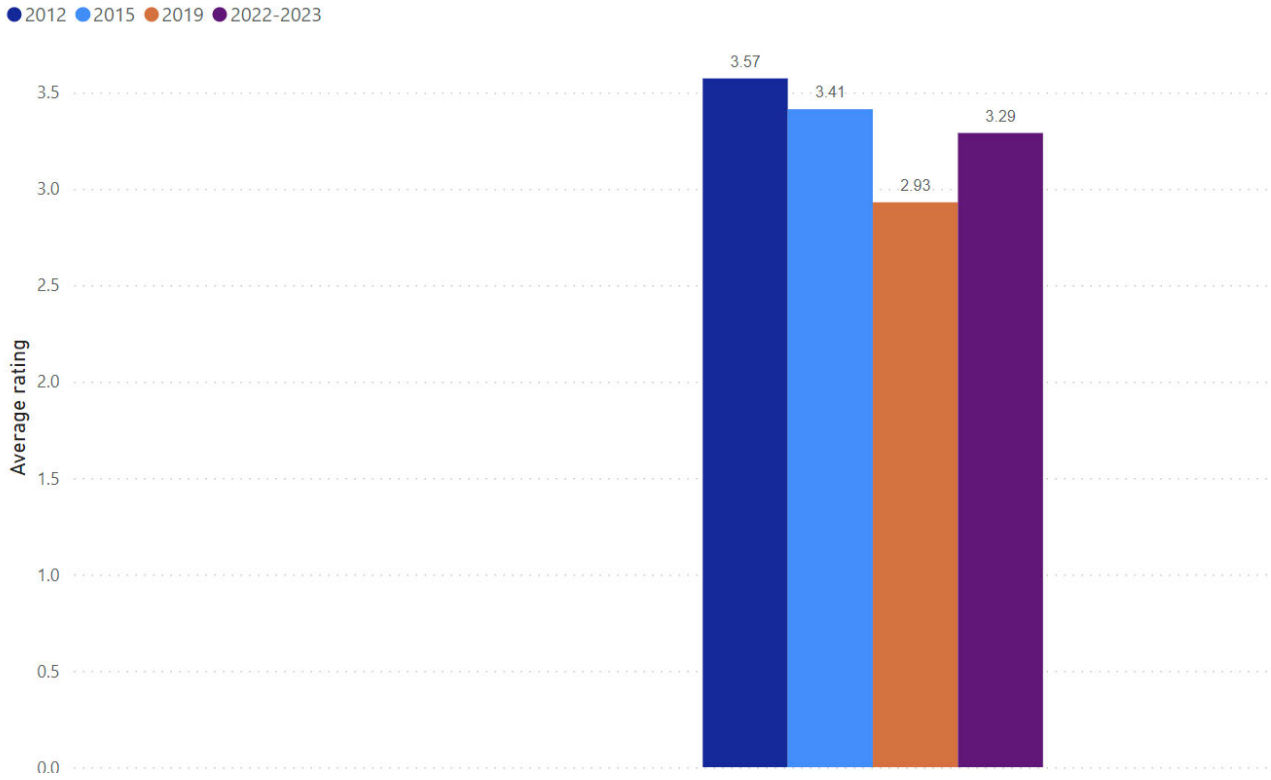


Figure 6.6.3 – Overall rating comparison between 2012, 2015, 2019 and 2022-23

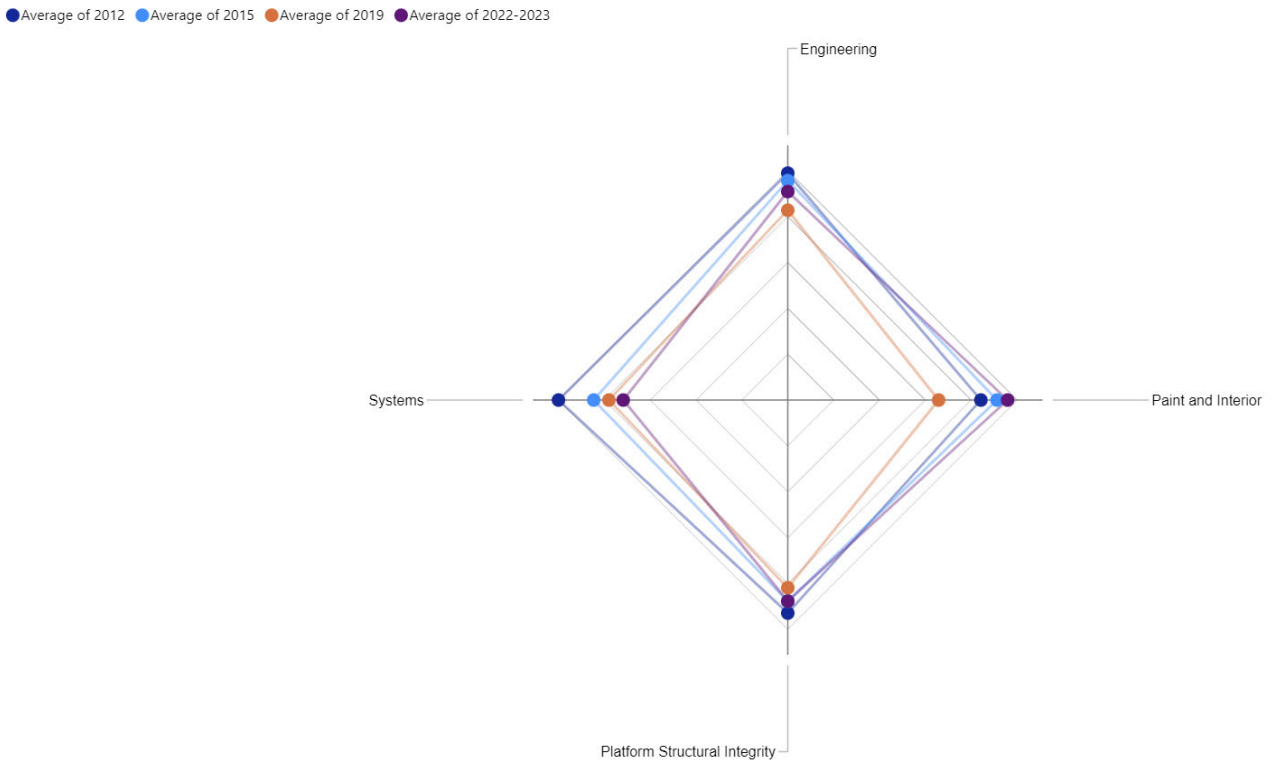


Figure and Table 6.6.4 – Category rating comparison between 2012, 2015, 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
SuperCat4	Engineering	3.76	3.64	3.15	3.45
SuperCat4	Paint and Interior	3.20	3.47	2.50	3.64
SuperCat4	Platform Structural Integrity	3.53	3.33	3.11	3.33
SuperCat4	Systems	3.80	3.22	2.96	2.73

6.7 Emerald Generation 1 Class

6.7.1 Vessel *Catherine Hamlin*

The below graph, spider web and table indicate the comparison between *Catherine Hamlin's* inspection performance for 2022-23 compared with 2019.

For 2022-23 there has been a decline in the condition of *Catherine Hamlin* from 2019. There has been a significant decline across all categories (**Engineering, Platform Structural Integrity, Systems** and **Paint and Interior**). The most significant has been in **Engineering** and **Platform Structural Integrity.**

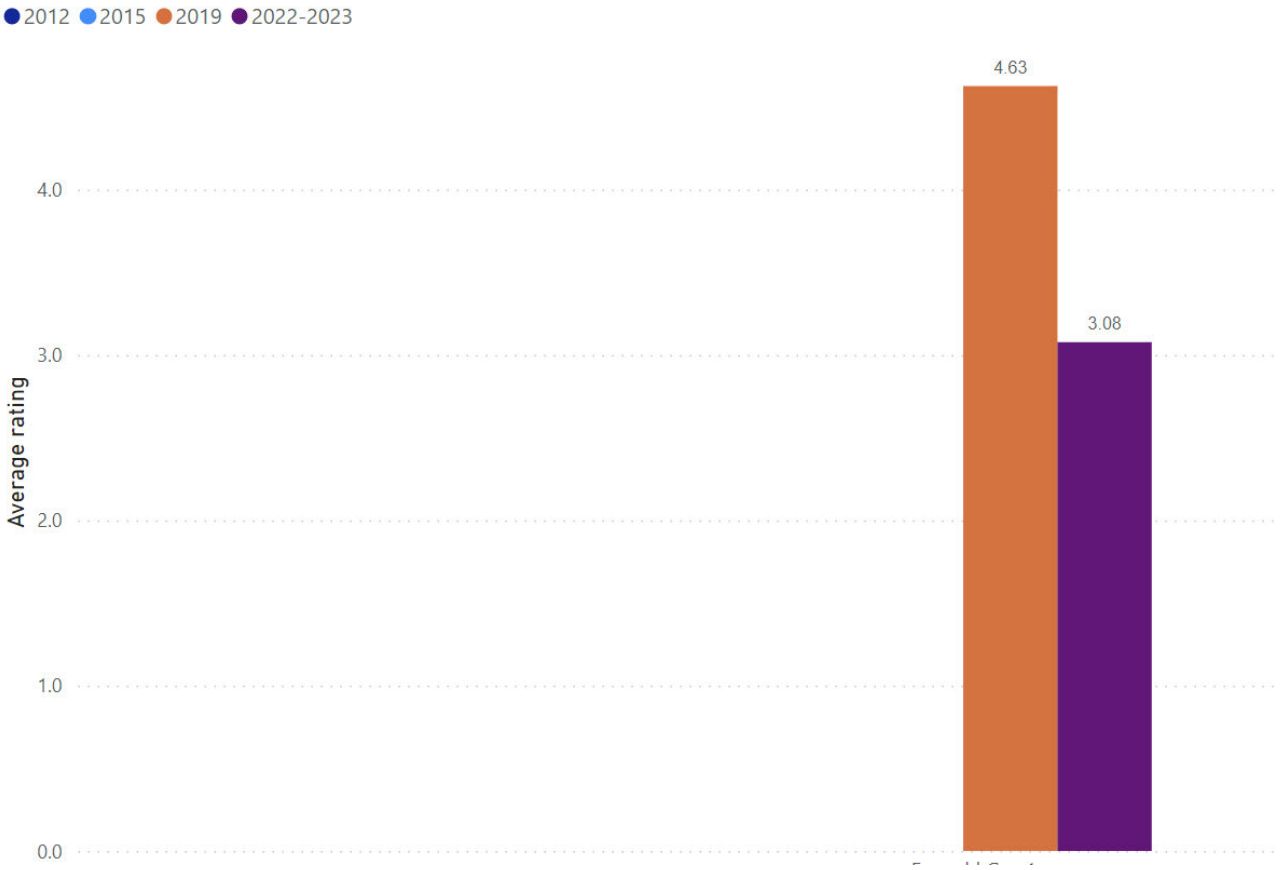


Figure 6.7.1 – Overall rating comparison between 2019 and 2022-23

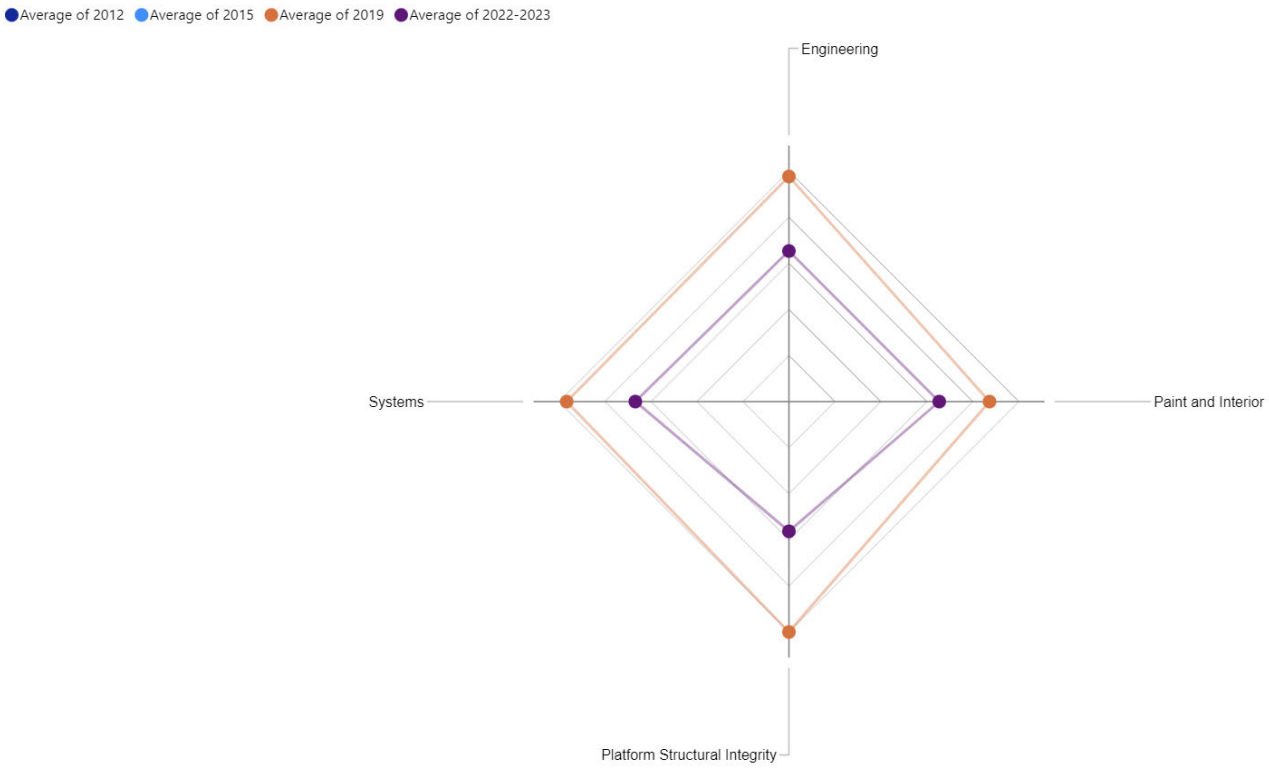


Figure and Table 6.7.2 – Category rating comparison between 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Catherine Hamlin	Engineering	-	-	4.74	3.17
Catherine Hamlin	Paint and Interior	-	-	4.23	3.17
Catherine Hamlin	Platform Structural Integrity	-	-	4.85	2.73
Catherine Hamlin	Systems	-	-	4.69	3.24

6.7.2 Vessel Fred Hollows

The below graph, spider web and table indicate the comparison between *Fred Hollows'* inspection performance for 2022-23 compared with 2019.

For 2022-23 there has no significant overall change in the condition of *Fred Hollows*. When compared to 2019. there has been a stable result across categories **Engineering, Platform Structural Integrity** and **Paint and Interior**. There was a decline in condition of category **Systems**.

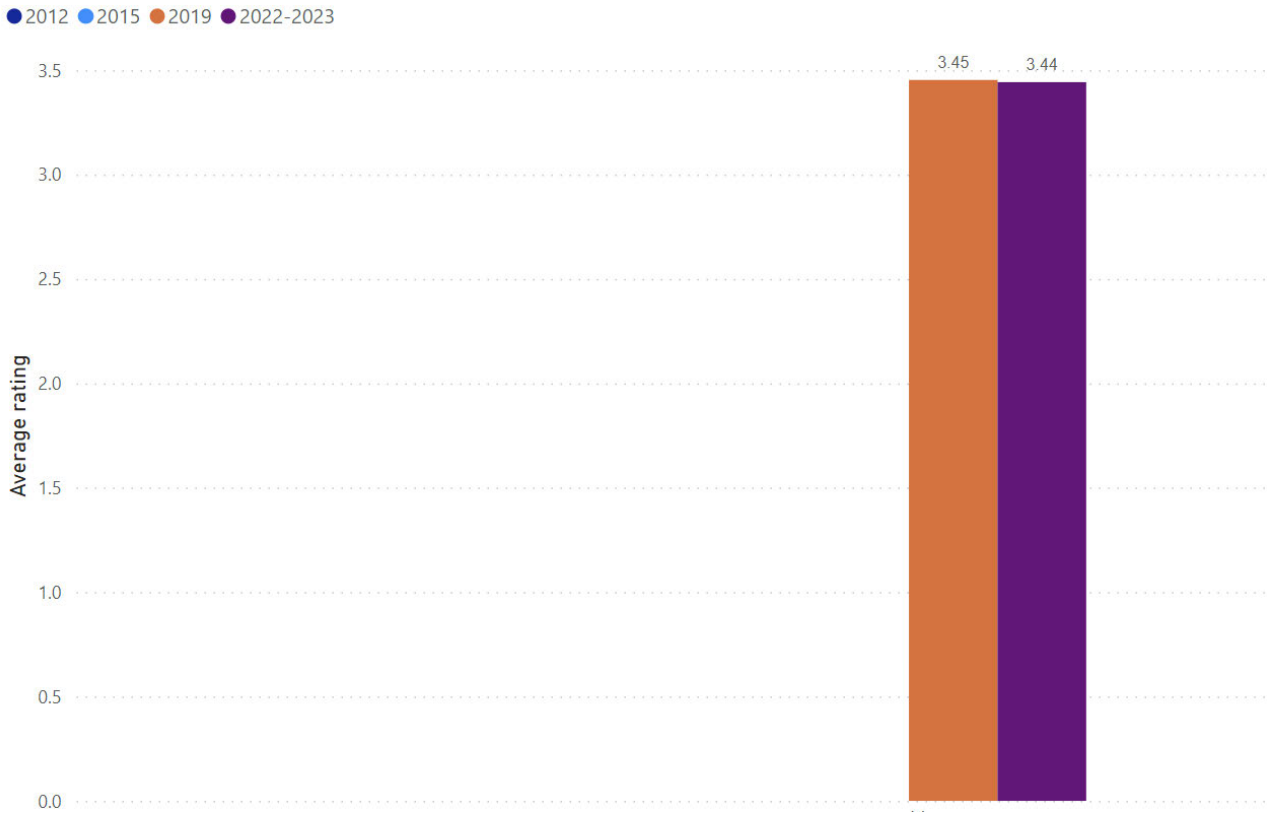


Figure 6.7.3 – Overall rating comparison between 2019 and 2022-23

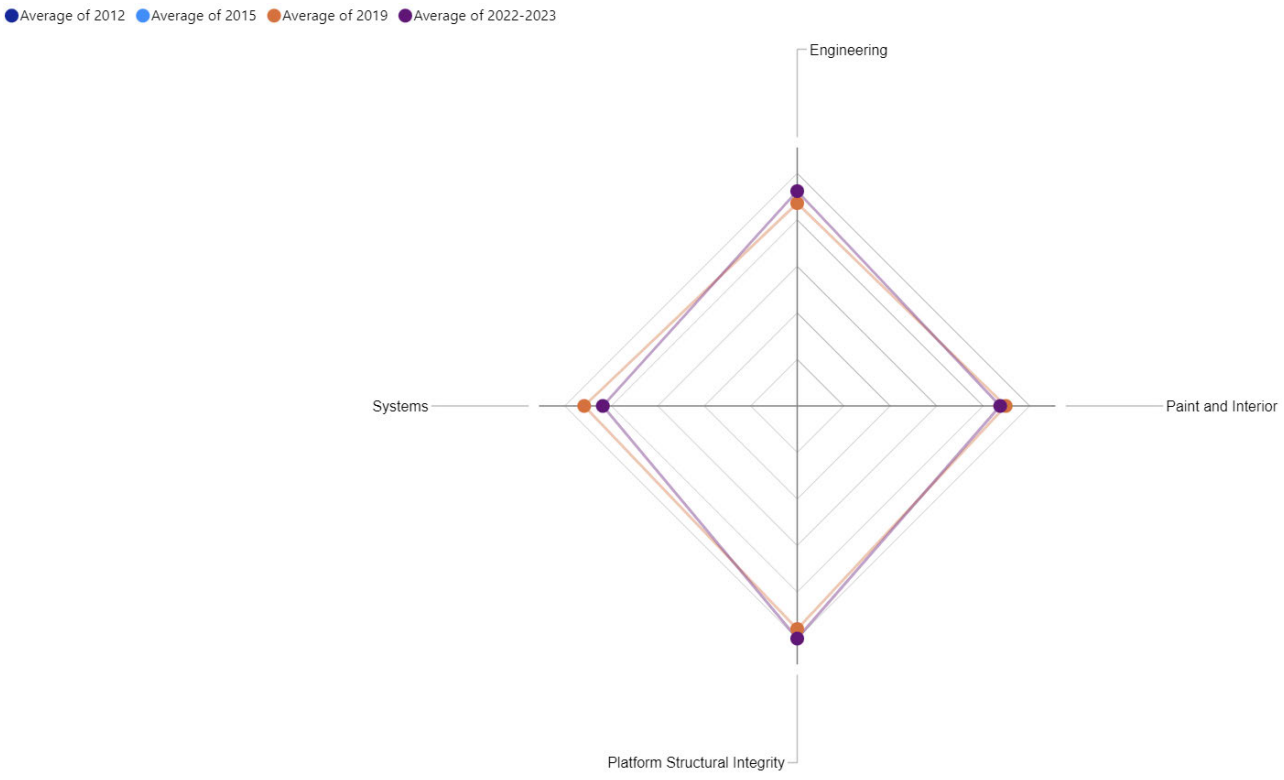


Figure and Table 6.7.4 – Category rating comparison between 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Fred Hollows	Engineering	-	-	3.30	3.50
Fred Hollows	Paint and Interior	-	-	3.40	3.31
Fred Hollows	Platform Structural Integrity	-	-	3.63	3.79
Fred Hollows	Systems	-	-	3.47	3.17

6.7.3 Vessel *Victor Chang*

The below graph, spider web and table indicate the comparison between *Victor Chang's* inspection performance for 2022-23 compared with 2019.

For 2022-23 there has been a decline in the condition of *Victor Chang* from 2019. There has been a significant decline across categories **Engineering, Systems** and **Paint and Interior**. **Platform Structural Integrity** remained steady.

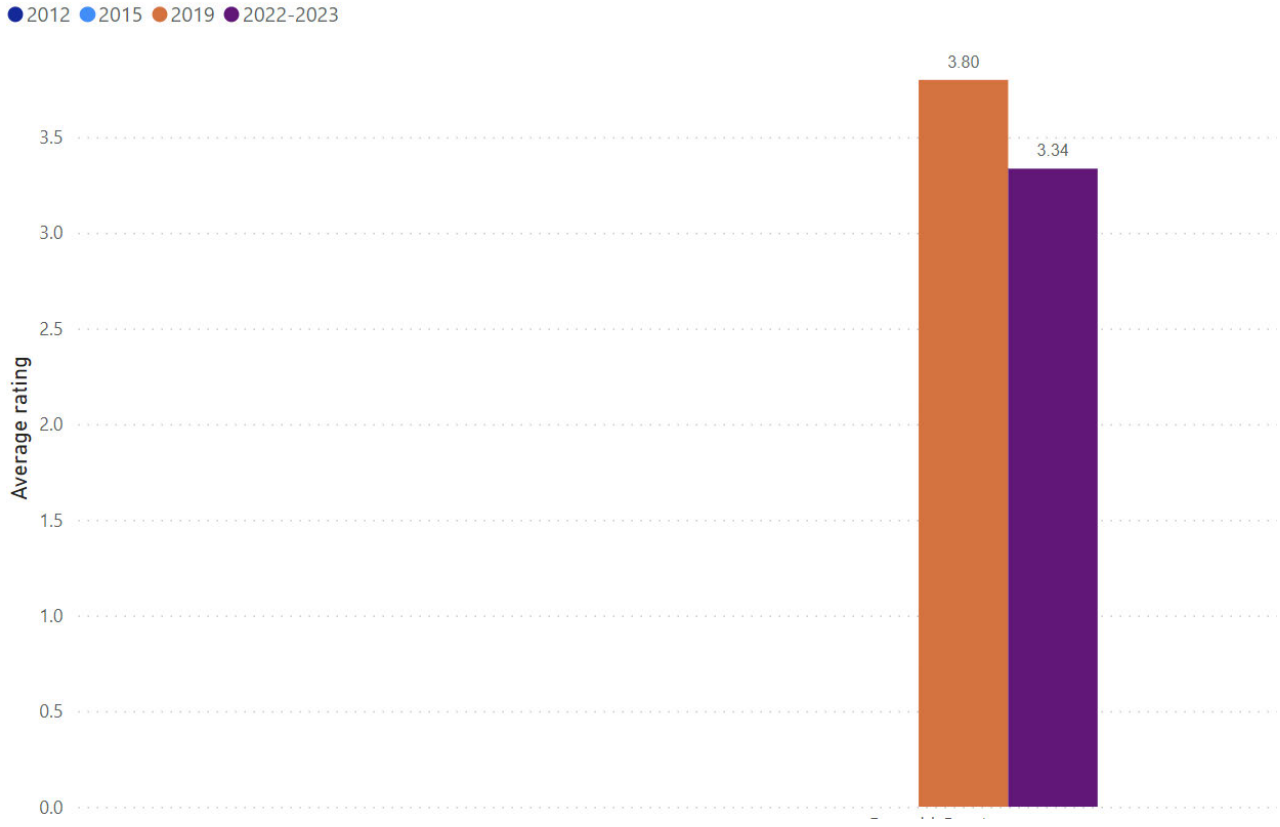


Figure 6.7.5 – Overall rating comparison between 2019 and 2022-23

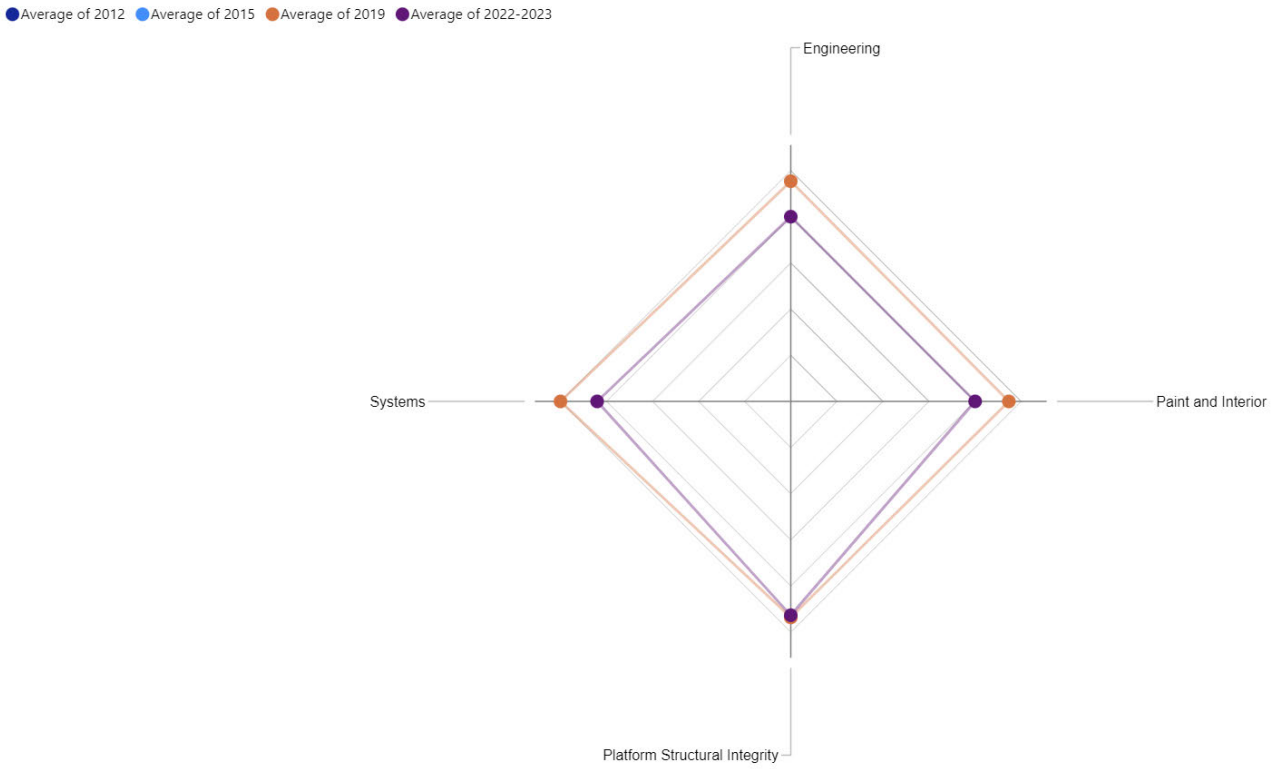


Figure and Table 6.7.6 – Category rating comparison between 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Victor Chang	Engineering	-	-	3.78	3.17
Victor Chang	Paint and Interior	-	-	3.75	3.17
Victor Chang	Platform Structural Integrity	-	-	3.71	3.67
Victor Chang	Systems	-	-	3.96	3.33

6.7.4 Vessel *Pemulwuy*

The below graph, spider web and table indicate the comparison between *Pemulwuy's* inspection performance for 2022-23 compared with 2019.

For 2022-23 there has been a decline in the condition of *Pemulwuy* from 2019. There has been a significant decline across categories **Engineering** and **Systems**. **Platform Structural Integrity** and **Paint and Interior** remained steady.

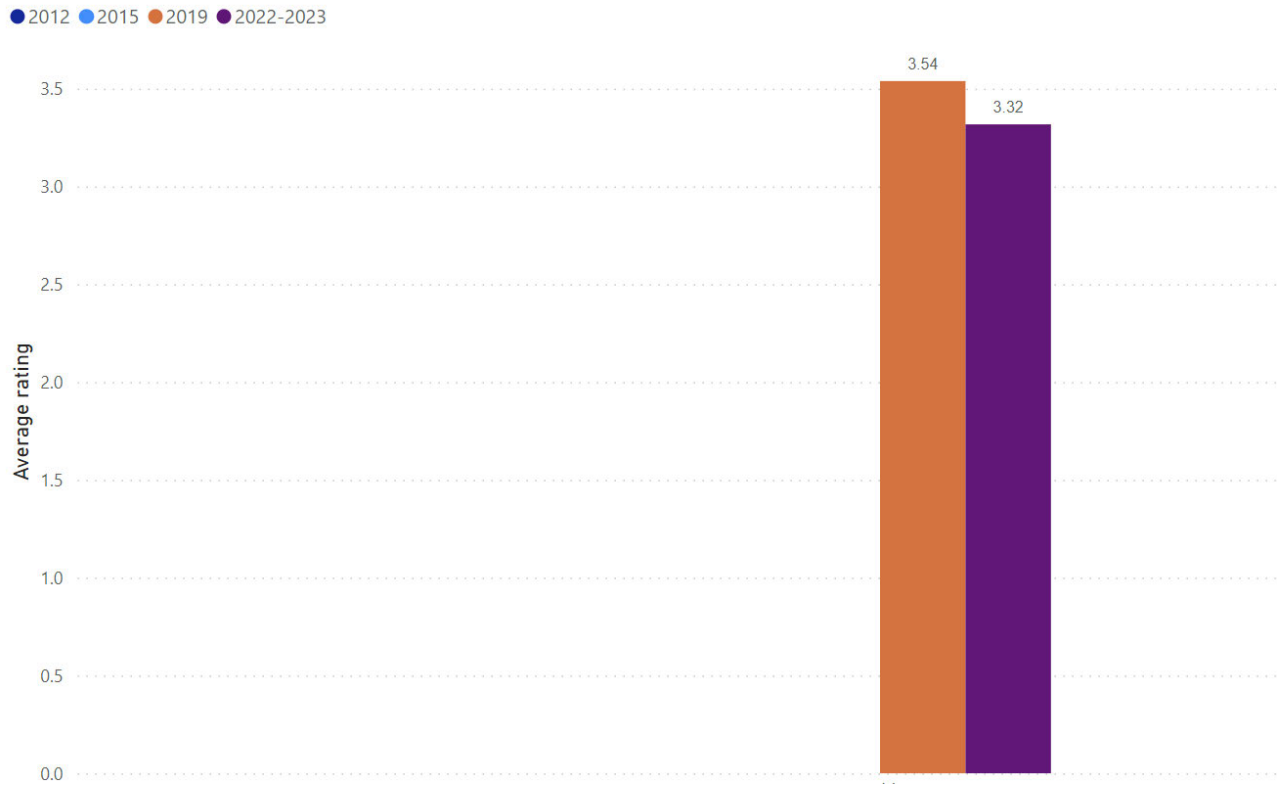


Figure 6.7.7 – Overall rating comparison between 2019 and 2022-23

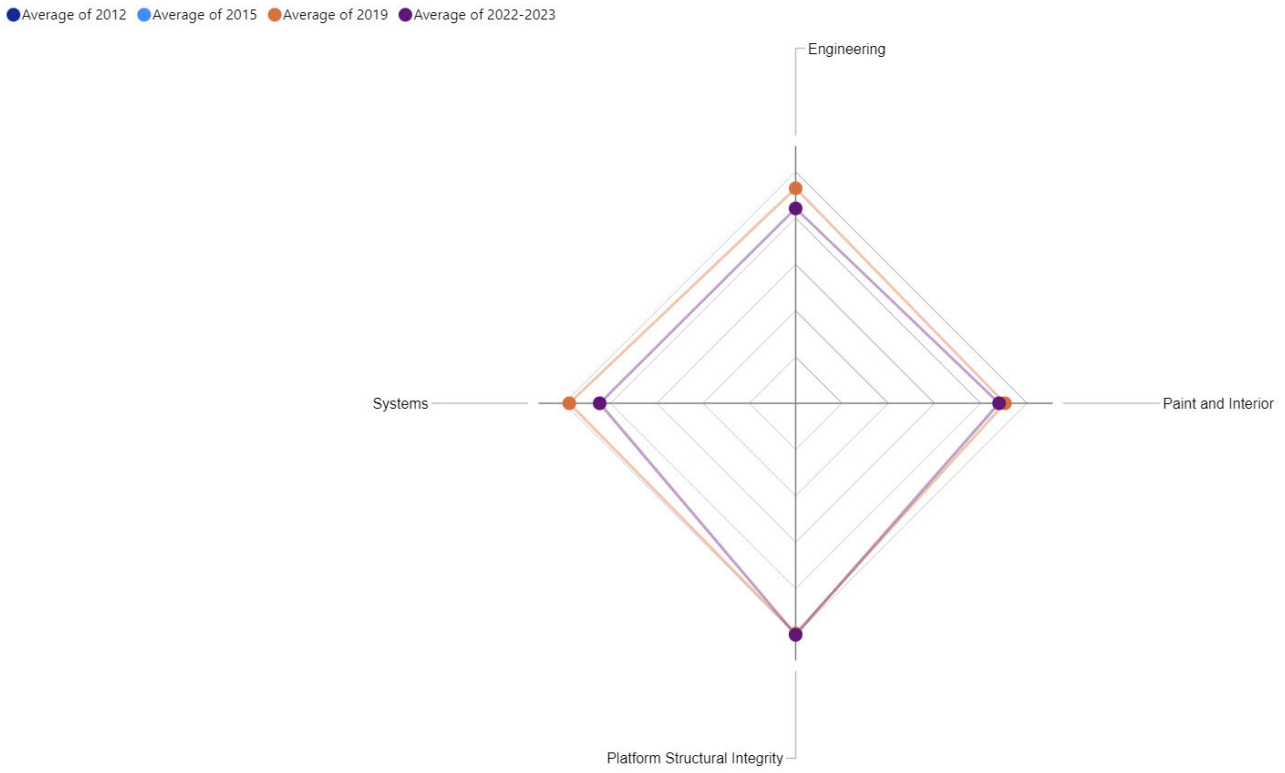


Figure and Table 6.7.8 – Category rating comparison between 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Pemulwuy	Engineering	-	-	3.45	3.13
Pemulwuy	Paint and Interior	-	-	3.36	3.27
Pemulwuy	Platform Structural Integrity	-	-	3.70	3.72
Pemulwuy	Systems	-	-	3.64	3.15

6.7.5 Vessel Bungaree

The below graph, spider web and table indicate the comparison between *Bungaree's* inspection performance for 2022-23 compared with 2019.

For 2022-23 there has been a decline in the condition of *Bungaree* from 2019. There has been a significant decline across all categories (**Engineering, Platform Structural Integrity, Systems** and **Paint and Interior** categories). The most significant has been in **Engineering** and **Paint and Interior.**

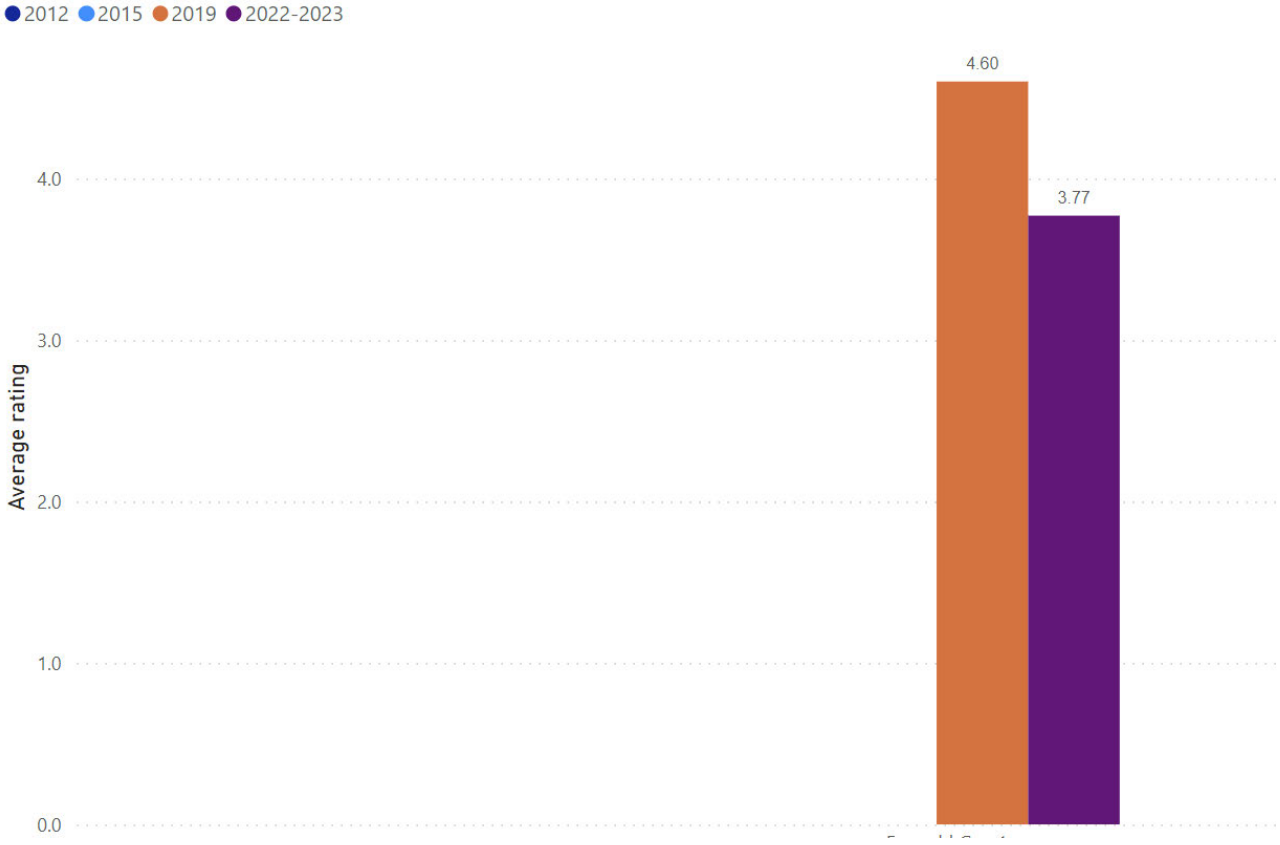


Figure 6.7.9 – Overall rating comparison between 2019 and 2022-23

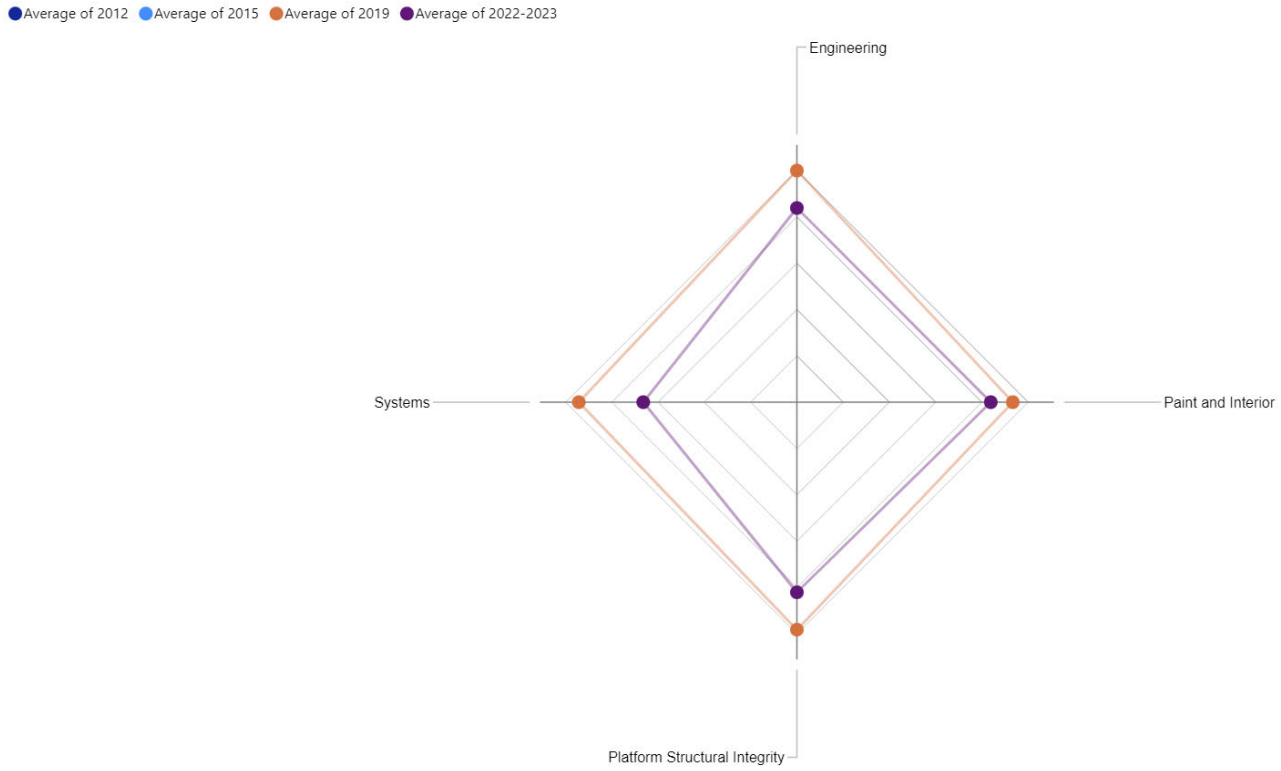


Figure and Table 6.7.10 – Category rating comparison between 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
Bungaree	Engineering	-	-	4.77	3.17
Bungaree	Paint and Interior	-	-	4.45	2.92
Bungaree	Platform Structural Integrity	-	-	4.69	3.47
Bungaree	Systems	-	-	4.50	3.17

6.7.6 Vessel *May Gibbs*

The below graph, spider web and table indicate the comparison between *May Gibbs'* inspection performance for 2022-23 compared with 2019.

For 2022-23 there has been a decline in the condition of *May Gibbs* from 2019. There has been a significant decline across categories **Systems** and **Paint and Interior**. **Platform Structural Integrity** and **Engineering** remained steady.

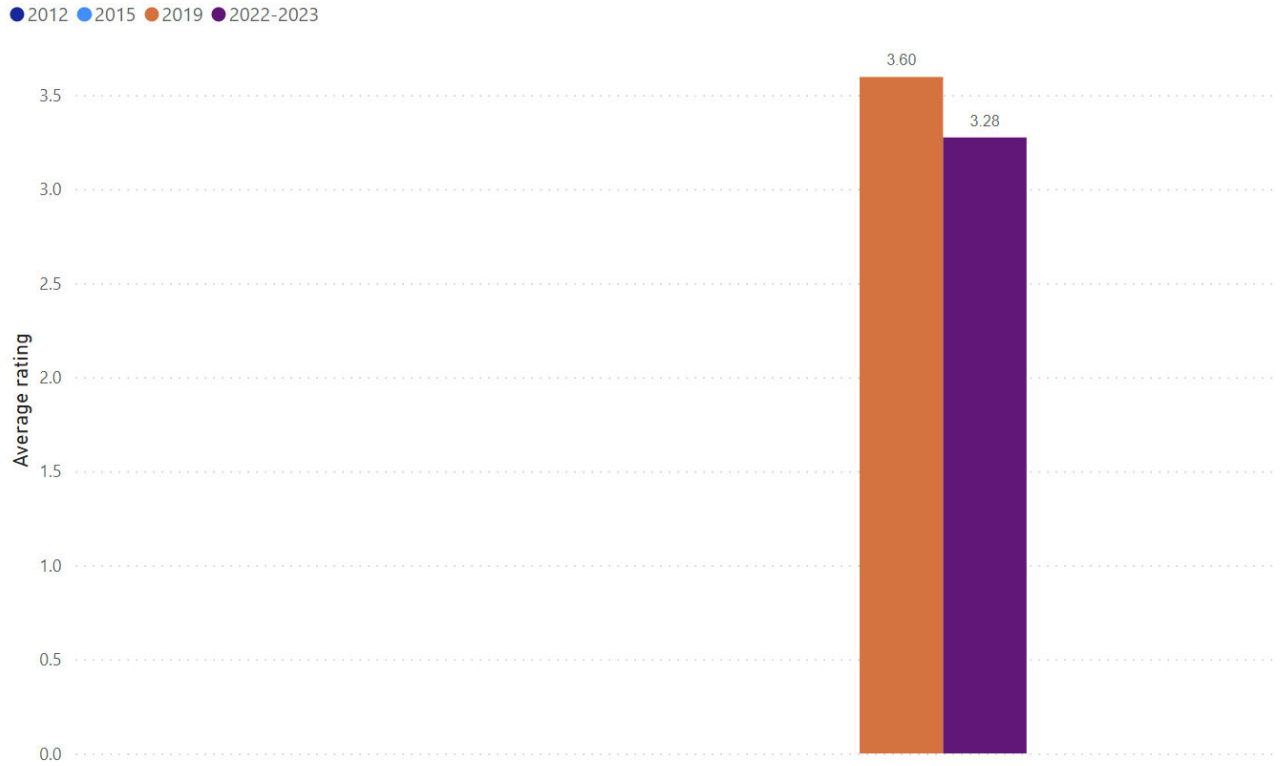


Figure 6.7.11 – Overall rating comparison between 2019 and 2022-23

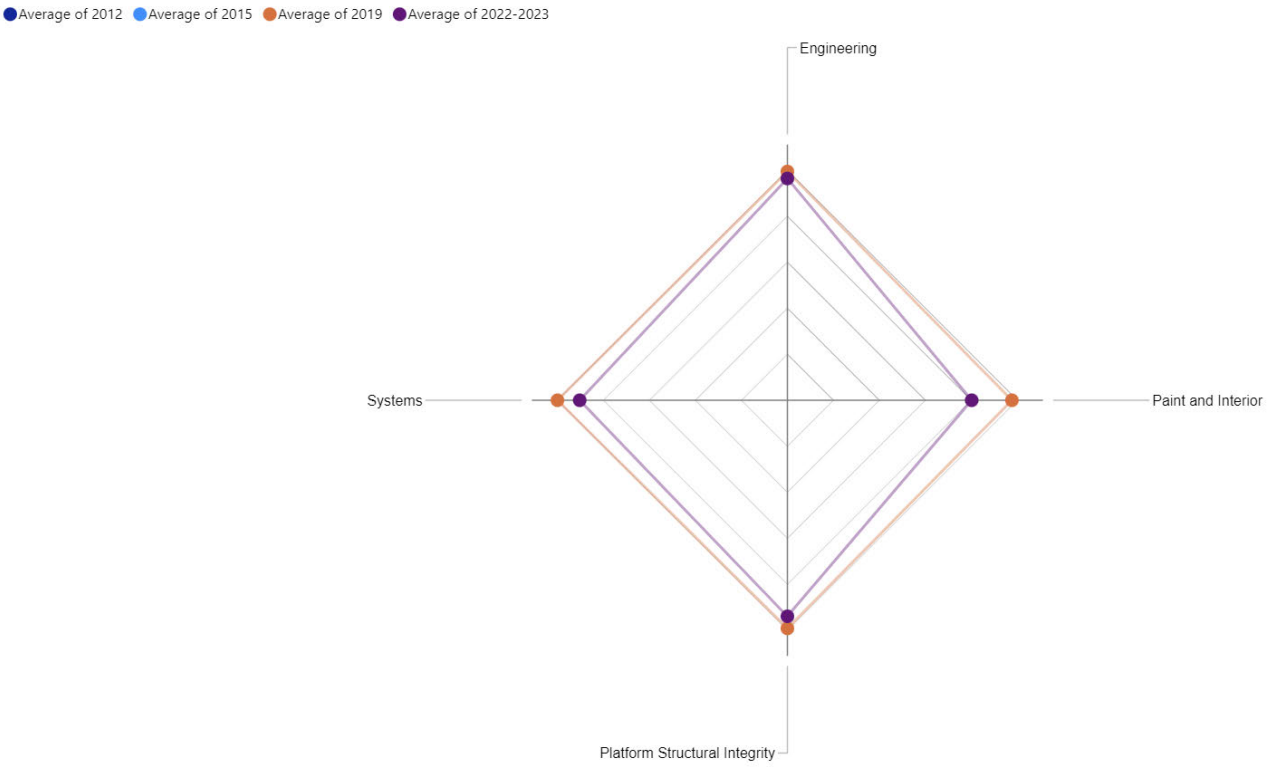


Figure and Table 6.7.12 – Category rating comparison between 2019 and 2022-23

Vessel	Category	2012	2015	2019	2022-2023
May Gibbs	Engineering	-	-	3.61	3.50

Vessel	Category	2012	2015	2019	2022-2023
May Gibbs	Paint and Interior	-	-	3.55	2.91
May Gibbs	Platform Structural Integrity	-	-	3.60	3.41
May Gibbs	Systems	-	-	3.63	3.28

6.8 Emerald Generation 2 Class and River Class

As the Emerald Generation 2 and River Class vessels entered service in 2020-21 (after the last Fleet Assessment in 2019) there is no existing data to compare their current condition.

However, it is notable that the Emerald Generation 2 (EG2) vessels have underperformed when compared to the older yet similar Emerald Generation 1 (EG1) vessels (overall rating of **3.37** for EG1 vs **3.16** for EG2).

Other than the **Accommodation** category, the EG2 vessels consistency received lower ratings than the EG1 vessels. The biggest difference was in the **Machinery and Systems** category followed by **Deck Machinery**.

Table 6.8 – Comparison of Emerald Generation 1 and 2 ratings for 2022-23

Category	EG1 Rating for 2022-23	EG2 Rating for 2022-23
Accommodation	3.04	3.09
Bridge System	3.81	3.68
Deck Machinery	3.53	3.27
External Structure and Painting	3.46	3.30
Internal Structure and Painting	3.42	3.67
LSA & FFE	2.70	2.50
Machinery and Systems	2.97	2.63
Overall average	**3.37**	**3.16**

The results of River Class indicate these are the highest performing vessels in the Fleet. They are also the newest which reflects their **Above Average** rating.

7 SOR 3 – PLANNED MAINTENANCE SYSTEM, WORK ORDERS AND DEFECT PROCEDURES

7.1 Overall performance

DNV received Work Order data from July 2019 to January 2023, covering approximately 24 525 individual work orders.

It is recommended that the [redacted] is used to compare individual vessels work order statistics.

A summary of key items is provided below.

Table 7.1 – Breakdown of Fleet work order categories for 2019-2023

Work Order Category	Percentage
Corrective	40%
Preventative	21%
Planned	20%
Emergent	5%
Modification	3%
Regulatory	3%
Condition Monitoring	3%
Incident	2%
Breakdown	1%
Rework	1%
Inspection	1%
Training	<1%
Rotable	<1%

Information on this page has been redacted because it contains a link to DNV's proprietary online information portal.

DISTRIBUTION OF WORK ORDER TYPE

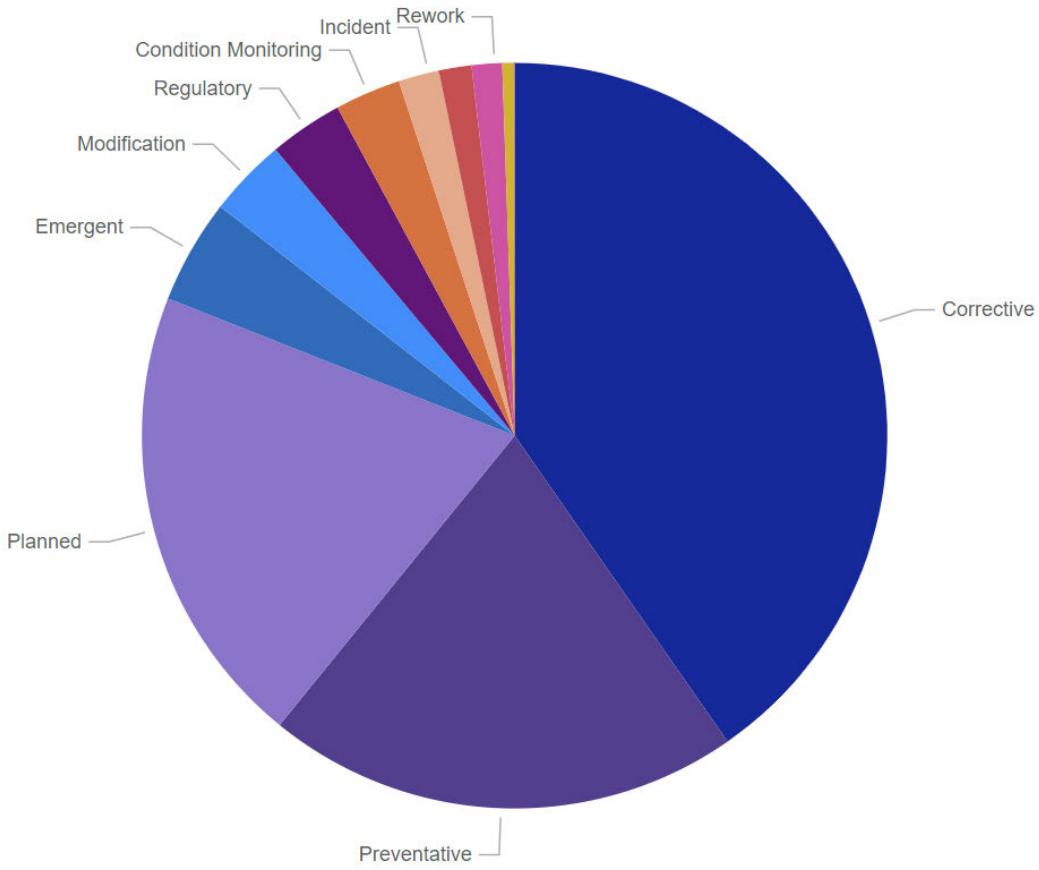


Figure 7.1 – Breakdown of Fleet work order categories

In comparison with deep sea shipping the expected ratio between preventive and corrective maintenance is typically 80%/20%. The ratio between preventive and corrective maintenance across the Sydney Ferry Fleet is 21%/40%. As such, a considerable amount of additional preventative maintenance should be carried out.

A higher percentage of corrective maintenance is expected for the Fleet considering the wear and tear in public areas but there should be a potential to increase the ratio of preventive maintenance across the Fleet.

An increase in preventive maintenance jobs would indicate that a system of continual improvement is in place to learn from experience and anticipate maintenance needs prior to breakdowns.

These findings are consistent with the PMS and work order review from 2019.

7.2 Vessel performance – corrective action jobs

A breakdown of corrective action jobs per vessel is shown in Table 7.2 below.

Table 7.2 – Percentage of corrective action work orders across the Fleet (green text highlights corrective jobs for the year that were less than 20%)

		2019 Corrective %	2020 Corrective %	2021 Corrective %	2022 Corrective %	2023 Corrective %
Emerald Gen 1	*Bungaree*	43%	26%	26%	46%	26%
	Catherine Hamlin	46%	29%	30%	58%	38%
	Fred Hollows	51%	32%	30%	40%	30%
	May Gibbs	45%	23%	33%	30%	24%
	Pemulwuy	40%	22%	33%	43%	53%
	Victor Chang	51%	24%	32%	42%	41%
Emerald Gen 2	*Balmoral*	N/A	N/A	22%	50%	33%
	Clontarf	N/A	N/A	20%	43%	25%
	Fairlight	N/A	N/A	30%	43%	51%
First Fleet	*Alexander*	48%	34%	48%	41%	55%
	Borrowdale	38%	9%	27%	38%	No data
	Charlotte	49%	40%	19%	51%	42%
	Fishburn	45%	24%	35%	59%	62%
	Friendship	51%	25%	38%	63%	70%
	Golden Grove	39%	11%	45%	29%	22%
	Scarborough	53%	45%	18%	53%	8%
	Sirius	53%	21%	41%	52%	75%
	Supply	56%	42%	32%	24%	18%
Freshwater	*Collaroy*	71%	55%	76%	58%	17%
	Freshwater	64%	52%	24%	58%	50%
HarbourCat	*Pam Burridge*	42%	54%	55%	58%	25%
River	*Cheryl Salisbury*	N/A	2%	12%	47%	59%

		2019 Corrective %	2020 Corrective %	2021 Corrective %	2022 Corrective %	2023 Corrective %
	Esme Timbery	N/A	10%	10%	50%	65%
	Ethel Turner	N/A	3%	15%	51%	59%
	Kurt Fearnley	N/A	N/A	12%	53%	67%
	Lauren Jackson	N/A	N/A	12%	56%	58%
	Liz Ellis	N/A	2%	15%	46%	58%
	Margaret Olley	N/A	7%	13%	60%	79%
	Olive Cotton	N/A	3%	12%	44%	50%
	Ruby Langford Ginibi	N/A	3%	14%	44%	63%
	Ruth Park	N/A	2%	15%	59%	64%
RiverCat	*Betty Cuthbert*	52%	44%	52%	69%	77%
	Dawn Fraser	45%	37%	45%	65%	58%
	Evonne Goolagong	52%	48%	39%	54%	76%
	Marjorie Jackson	53%	51%	51%	61%	71%
	Marlene Mathews	48%	39%	50%	56%	80%
	Nicole Livingstone	44%	44%	43%	64%	74%
	Shane Gould	46%	41%	49%	52%	67%
SuperCat	*Louise Sauvage*	57%	48%	41%	45%	30%
	Supercat4	56%	35%	48%	49%	47%

Only on 22 occasions did corrective work orders make up less than 20% of total work orders. These were generally focussed on newer vessels such as the River Class or First Fleet vessels which had undergone life extension upgrades.

As a result, more focus should be paid to preventive maintenance activities on all vessels across the Fleet.

7.3 Overdue Statistics

A work order is considered overdue if the completion date is more than 30 days after the scheduled start date.

Figure 7.2 shows that there were a significant number of overdue work orders in 2020 (21%) but this percentage has been decreasing in both 2021 and 2022. Data for 2023 is up until January so it is considered non-representational for 2023.

External factors such as the COVID-19 pandemic may have added to high rate of overdue work orders along with a high number of new vessels entering the Fleet in 2020-21

As a comparison and as shown in Figure 7.3, there was an improvement in overdue work orders at the end of the 2015-2019 period. This trend did not continue into the 2019-2023 period with the aforementioned rise of overdue orders in 2020. By 2022, the overdue work orders were still higher than those across 2017-2019.

There should be an increased effort to reduce the number of overdue work orders to be in-line with historical averages (<10%).

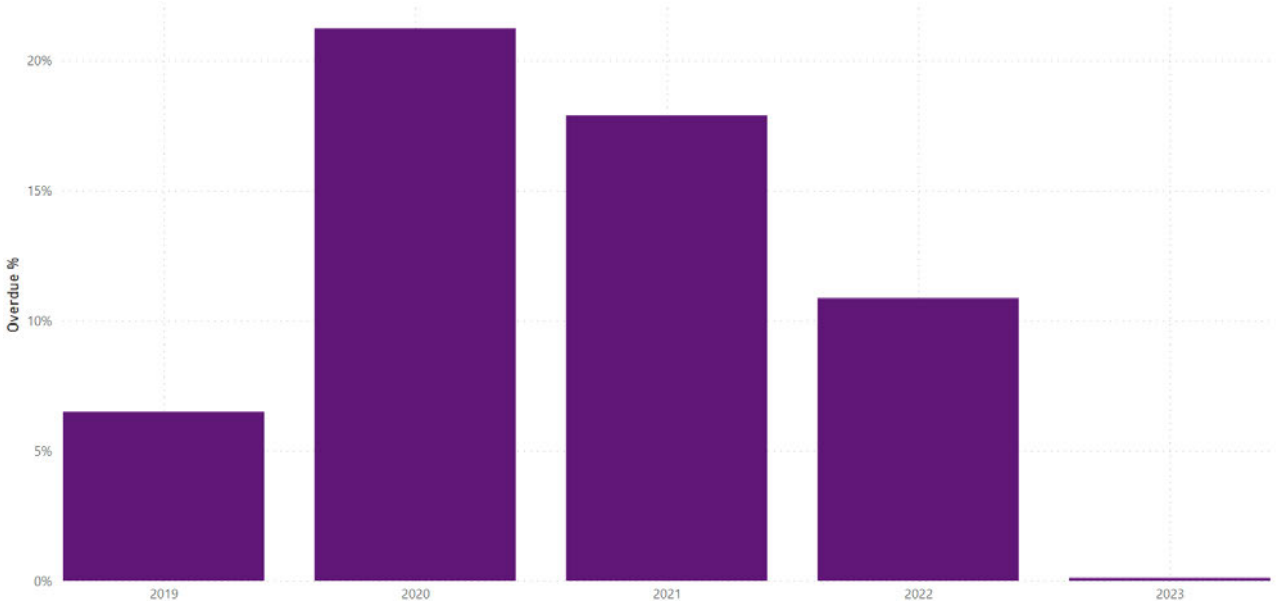


Figure 7.2 – Percentage of overdue work orders across the Fleet for 2019-2023

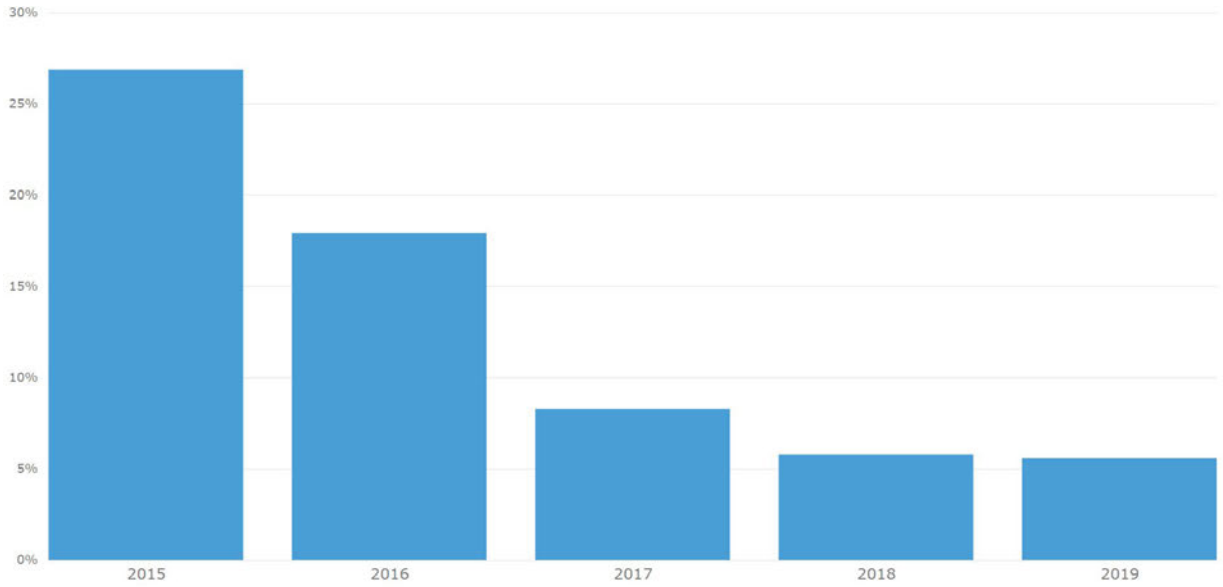


Figure 7.3 – Percentage of overdue work orders across the Fleet for 2015-2019

Tables 7.3-7.6 highlight a range of performance indicators associated with overdue workorders.

Table 7.3 – Percentage of all overdue work orders per vessel Class (red text is the maximum value, green text is the minimum value for a given year)

	2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %	2023 Overdue %
Emerald Gen 1	5.02%	17.44%	19.70%	11.78%	-
Emerald Gen 2	N/A	N/A	6.20%	9.07%	-
First Fleet	5.44%	17.37%	24.09%	18.12%	-
Freshwater	8.43%	10.04%	3.98%	1.97%	-
HarbourCat	9.04%	12.50%	16.36%	44.55%	-
River	N/A	54.82%	11.66%	3.44%	-
RiverCat	6.20%	17.97%	22.44%	6.21%	0.92%
SuperCat	13.08%	9.67%	19.71%	19.12%	-
Total	**6.49%**	**21.22%**	**17.88%**	**10.86%**	**0.11%**

Table 7.4 – Percentage of all overdue work orders per vessel (red text is the maximum value, green text is the minimum value for a given year per vessel Class)

		2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %	2023 Overdue %
Emerald Gen 1	*Bungaree*	3.73%	10.68%	6.02%	22.89%	No data
	Catherine Hamlin	6.21%	17.29%	33.02%	12.74%	No data
	Fred Hollows	6.91%	11.07%	14.47%	5.61%	No data
	May Gibbs	5.71%	25.81%	14.67%	8.20%	No data
	Pemulwuy	4.32%	32.34%	9.60%	7.89%	No data
	Victor Chang	3.26%	10.36%	32.95%	12.63%	No data
Emerald Gen 2	*Balmoral*	N/A	N/A	8.65%	8.39%	No data
	Clontarf	N/A	N/A	5.05%	8.84%	No data
	Fairlight	N/A	N/A	5.26%	10.04%	No data
First Fleet	*Alexander*	3.40%	9.77%	24.68%	23.98%	No data
	Borrowdale	3.47%	28.64%	15.00%	28.87%	No data
	Charlotte	2.02%	8.28%	38.19%	15.15%	No data
	Fishburn	2.50%	23.35%	20.92%	13.10%	No data
	Friendship	No data	24.46%	21.58%	13.64%	No data
	Golden Grove	9.68%	18.29%	13.33%	21.19%	No data
	Scarborough	3.91%	7.01%	24.77%	8.33%	No data
	Sirius	5.35%	13.41%	20.83%	14.73%	No data
	Supply	15.77%	18.42%	29.85%	22.73%	No data
Freshwater	*Collaroy*	8.13%	12.17%	7.79%	1.04%	No data
	Freshwater	8.71%	8.55%	2.29%	2.80%	No data
HarbourCat	*Pam Burridge*	9.04%	12.50%	16.36%	44.55%	No data
River	*Cheryl Salisbury*	N/A	80.95%	6.59%	7.20%	No data
	Esme Timbery	N/A	21.64%	17.98%	5.13%	No data
	Ethel Turner	N/A	75.38%	4.63%	2.27%	No data
	Kurt Fearnley	N/A	75.81%	6.19%	4.35%	No data
	Lauren Jackson	N/A	44.62%	14.85%	2.91%	No data

		2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %	2023 Overdue %
	Liz Ellis	N/A	79.69%	8.51%	3.33%	No data
	Margaret Olley	N/A	47.12%	7.03%	2.16%	No data
	Olive Cotton	N/A	41.28%	9.76%	3.70%	No data
	Ruby Langford Ginibi	N/A	54.00%	24.11%	1.89%	No data
	Ruth Park	N/A	79.69%	8.57%	1.74%	No data
RiverCat	*Betty Cuthbert*	3.76%	6.88%	14.29%	3.33%	No data
	Dawn Fraser	1.16%	28.36%	11.76%	3.10%	8.33%
	Evonne Goolagong	13.40%	8.10%	41.71%	4.67%	No data
	Marjorie Jackson	4.65%	46.77%	23.70%	18.27%	No data
	Marlene Mathews	10.86%	15.20%	10.61%	2.65%	No data
	Nicole Livingstone	3.95%	5.33%	31.22%	3.42%	No data
	Shane Gould	4.09%	12.80%	14.39%	11.21%	No data
SuperCat	*Louise Sauvage*	6.71%	10.69%	24.24%	16.13%	No data
	Supercat4	19.75%	8.29%	15.68%	21.62%	No data

Table 7.5 – Percentage of all priority **1 – Immediate** overdue work orders per vessel

		2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %	2023 Overdue %
Emerald Gen 1	*Catherine Hamlin*	14.29%	-	20.00%	-	-
	May Gibbs	14.29%	-	-	-	-
	Victor Chang	-	16.67%	16.67%	12.50%	-
Emerald Gen 2	*Balmoral*	-	-	33.33%	-	-
	Clontarf	-	-	-	6.67%	-
	Fairlight	-	-	-	8.33%	-
First Fleet	*Friendship*	-	-	-	25.00%	-

		2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %	2023 Overdue %
Freshwater	*Collaroy*	20.00%	-	-	-	-
River	*Cheryl Salisbury*	-	66.67%	-	-	-
	Esme Timbery	-	21.43%	56.41%	-	-
	Ethel Turner	-	50.00%	-	-	-
	Kurt Fearnley	-	66.67%	-	-	-
	Lauren Jackson	-	50.00%	-	-	-
	Liz Ellis	-	66.67%	-	-	-
	Margaret Olley	-	70.00%	12.50%	-	-
	Olive Cotton	-	60.00%	-	-	-
	Ruby Langford Ginibi	-	60.00%	60.53%	-	-
	Ruth Park	-	50.00%	-	-	-
RiverCat	*Dawn Fraser*	-	-	-	-	100.00%
SuperCat	*Supercat4*	-	20.00%	-	-	-

As a summary of Table 7.5:

- Emerald Generation 1 Class had six overdue **1 – Immediate** priority items over the 2019-2023 period. Overdue days ranged from one to seven days. Two of these items involved the controls of the vessel and one involved the public address system.
- Emerald Generation 2 Class had four overdue **1 – Immediate** priority items over the 2019-2023 period. Overdue days ranged from two to 75 days. Two of these reported work orders involved the rudder and steering system. Another involved a bridge window and the other was high temperature within the gearbox lubrication system.
- First Fleet Class had one overdue **1 – Immediate** priority items over the 2019-2023 period. Overdue days was three days. This was due to a low voltage alarm and shutdown.
- Freshwater Class had one overdue **1 – Immediate** priority items over the 2019-2023 period. Overdue days was 21 days. This was for a faulty fire detection system.
- River Class experienced a very high number of overdue **1 – Immediate** priority items in 2020 and 2021. This may be due to the introduction of these vessels into the Fleet in 2020 and 2021 where a high number of emergent works were required. The maximum overdue days for a single item was 49 with most others ranging from 2-13 days.
- RiverCat Class had one overdue **1 – Immediate** priority items over the 2019-2023 period. Overdue days was 1 day. This was for a back-up steering alarm.

- SuperCat Class had one overdue **1 – Immediate** priority items over the 2019-2023 period. Overdue days was 188 days. This was for a port main engine control lever. Loss of vessel control was reported to have had occurred twice in the work order description.

Overall, unless vessels are not in service, it should be strictly avoided operating vessels with overdue **1 – Immediate** priority items. This is particularly critical for items involving key safety or vessel control functions.

Table 7.6 – Percentage of all priority **2 – Urgent** overdue work orders per vessel

		2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %
Emerald Gen 1	*Bungaree*	5.00%	3.23%	3.85%	9.30%
	Catherine Hamlin	-	15.00%	16.67%	15.73%
	Fred Hollows	6.67%	11.11%	4.35%	8.51%
	May Gibbs	-	-	4.35%	8.11%
	Pemulwuy	7.14%	3.70%	8.33%	8.89%
	Victor Chang	10.87%	9.76%	16.67%	11.54%
Emerald Gen 2	*Balmoral*	-	-	16.00%	4.84%
	Clontarf	-	-	4.55%	7.14%
	Fairlight	-	-	11.54%	11.11%
First Fleet	*Alexander*	-	10.53%	26.09%	20.83%
	Borrowdale	-	17.86%	5.00%	7.69%
	Charlotte	3.03%	10.00%	26.67%	-
	Fishburn	2.27%	23.08%	17.86%	20.00%
	Friendship	-	27.27%	19.61%	21.43%
	Golden Grove	5.26%	11.54%	14.71%	7.69%
	Scarborough	2.70%	12.00%	9.52%	4.35%
	Sirius	-	5.00%	31.71%	5.26%
	Supply	3.45%	27.78%	38.46%	38.10%
Freshwater	*Collaroy*	7.22%	20.37%	2.56%	1.75%
	Freshwater	10.17%	2.47%	2.78%	-
HarbourCat	*Pam Burridge*	7.14%	9.68%	9.09%	-
River	*Cheryl Salisbury*	-	92.86%	-	-

		2019 Overdue %	2020 Overdue %	2021 Overdue %	2022 Overdue %
	Esme Timbery	-	18.31%	7.27%	-
	Ethel Turner	-	86.05%	-	-
	Kurt Fearnley	-	83.33%	-	-
	Lauren Jackson	-	66.67%	-	-
	Liz Ellis	-	90.48%	3.70%	-
	Margaret Olley	-	46.30%	-	-
	Olive Cotton	-	44.44%	11.76%	-
	Ruby Langford Ginibi	-	57.69%	8.89%	-
	Ruth Park	-	90.48%	-	-
RiverCat	*Betty Cuthbert*	4.17%	3.23%	-	-
	Dawn Fraser	4.35%	-	-	-
	Evonne Goolagong	21.05%	3.33%	-	-
	Marjorie Jackson	-	8.70%	22.22%	-
	Marlene Mathews	4.76%	5.56%	3.23%	-
	Nicole Livingstone	-	3.70%	5.00%	-
	Shane Gould	8.00%	11.76%	-	-
SuperCat	*Louise Sauvage*	2.94%	11.94%	33.33%	6.90%
	Supercat4	23.81%	11.36%	12.50%	-

Overall, unless vessels are not in service, it should be strictly avoided operating vessels with overdue **2 – Urgent** priority items. This is particularly critical for items involving key safety or vessel control functions.

7.4 DNV Inspection findings and PMS data

Almost all 464 defects (rating either **1 – Poor** or **2 – Below average**) found during onboard inspections by DNV were not captured in by the work order system at the time of survey. Only four findings were found already recorded in the PMS providing a completion rate of 0.86%. From the 2019 assessment only eight of the 395 findings (2.03%) were found recorded in the PMS.

The reasons for this may include:

- Defects were not identified by TDSF and therefore not reported in the PMS.
- A lag between the PMS and work order data and the time of onboard inspection (ie defects may have appeared after the PMS/work order data was submitted to DNV).
- Work order descriptions differ from the keywords/categories that DNV used to search for them in the provided data.
- Ad-hoc jobs (such as pumping bilges dry, keeping escape ways clear etc) may not be reported by the crew in the PMS and are managed outside the PMS or informally (eg individual crew take responsibility to resolve).

It is recommended that all deficiencies (outside of those routine ship housekeeping) jobs are recorded in the PMS as a work order. This allows better tracking and data aggregation of defects found onboard the fleet. With proper reporting and handling, this may improve the management of the ferries and allow technical management within TDSF and TfNSW to target specific areas for improvement.

7.5 Defect Reporting and Defect List Procedures

7.5.1 Defect Reporting Procedures

Section 4.7 of *4.1 Fleet Generic Operations Manual* (v 22.0, dated 2019-11-29) details the reporting and management of defect reporting for the Sydney Ferries Fleet. Work requests are initiated and managed using the INFOR EAM computer-based maintenance management system. Only TDSF staff that have an INFOR EAM log-in can submit a work request.

During vessel inspections and attendances to Balmain shipyard DNV witnessed various functionalities in the operation and usage of INFOR EAM. DNV also reviewed the work order list generated from INFOR EAM as part of the PMS review. From the snapshot witnessed by DNV and data provided by TDSF it is apparent that TDSF uses the system effectively to raise work orders.

At times, the detail of reviewed work orders was not clear on the defect and its impact on operations. Section 4.7.3 of the *Fleet Generic Operations Manual* could be updated to further prompt defect reporters on the type and required detail to be included.

In section 4.7.4 ‘Submission and Routing’ when a defect is risk ranked as either High or Very High (Priority: **1 - Immediate** or **2 – Urgent**) the Technical Superintendent is required to discuss the work order with the originator and relay the final decision to TDSF’ Controlling Officers. It is not clear from this section if the vessel’s survey authority or Classification society is also contacted to assist in advising the defect’s impact to regulatory certification. This is particularly important for decisions that still allow the vessel to operate with a reduction in functionality or capability such as priority **2 – Urgent** defects.

DNV recommends that any relevant defect, particularly those with a High or Very High-risk ranking, be communicated to the survey authority and Classification society of the vessel prior to assigning a priority categorisation that allows the vessel to continue operating in-service.

Table 7.5.1 – Categorisation of work orders using TDSF' INFOR EAM maintenance management system.

INFOR Priority Categorisation	Risk Ranking	Rationale	INFOR Short Description
1 – Immediate (vessel out of service)	Very High	Safety critical component, maintenance/repair task of the highest priority and to be completed immediately. Asset must be withdrawn from service until rectified	Very High Risk – Asset Unserviceable
2 – Urgent	High	Asset may complete current day's service and should then be withdrawn (within 24 hours) from service until rectified. Senior Management may extend the period in service by explicitly accepting the known risk. Short-term additional control measures must be in place if appropriate	High Risk – Withdraw from service within 24 hours
3 – Routine	Moderate	Maintenance/repair task to be completed as soon as possible not exceeding 2 weeks. Senior Management may extend the period in service by explicitly accepting the known risk. Short-term additional control should be considered	Moderate Risk – Completion 2 weeks or <
4 – Docking	Low	Maintenance/repair task to be completed during the next planned maintenance activity but not more than 26 weeks	Low Risk - Completion 26 weeks or <
5 - Monitor	Very Low	Low priority maintenance/repair task. Task can be postponed to next major planned maintenance activity	Very Low Risk – Completion next planned activity

7.5.2 Defect List Procedures

From the work orders provided, DNV have identified that there are some high priority items which are not being addressed in a timely manner and that some lower priority defects should be elevated to a higher category to enable rectification earlier. Although these items are small in the overall composition of total work orders, they do represent a significant safety and operational risk to the vessels.

Per section 4.7.6 of the *4.1 Fleet Generic Operations Manual* the Technical Superintendent shall review Work Requests from vessels, provide instructions for repairs and authorise work. The Technical Superintendent has control over the assigned priority, and this is based on the outcome of a maintenance prioritisation assessment exercise. The level of assessment should be determined by the Technical Superintendent but may include other key stakeholders (eg vessel Engineers, Masters, OEMs etc). As a result, the Technical Superintendents play a key role in the correct and timely management of vessel defects.

For priority **1 – Immediate** defects, the timeframe specified in the *4.1 Fleet Generic Operations Manual* is to rectify defects before returning to service. There is no mechanism to allow the vessel to return to service prior to rectification (eg by short-term risk mitigation measures). *SuperCat4* had one reported defect that was 188 days overdue. This was for a port main engine control lever where a loss of vessel control was reported to have had occurred twice in the work order description. It is not known to DNV if the vessel was withdrawn from service for the entire period. If the vessel was returned to service prior to rectification of the defect, this would not be in accordance with TDSF's defect list procedures.

For priority **2 – Urgent** defects, the timeframe specified in the *4.1 Fleet Generic Operations Manual* is to rectify defects before returning to service. Unlike for priority **1 – Urgent**, there is a mechanism allowing senior management to put in place mitigations to enable to vessel to return to service for a short-term period whilst the defect remains. Overall there were 367 defects not resolved within a seven-day period. This is 7.5% of all total work orders of this category. There were 30 defects which took over 50 days to resolve. Some key safety and regulatory important overdue items included:

- Rudder angle indication incorrect on *Pam Burridge* (140 days overdue).
- Main engine starting air valve leaking on *Freshwater* (57 days overdue)
- Leaking port main engine soft patch on *Fairlight* (54 days overdue)
- Exhaust leak on main engine on *SuperCat4* (33 days overdue)

For category **3 – Routine** defects the timeframe specified in the *4.1 Fleet Generic Operations Manual* to rectify is 'as soon as possible and not exceeding 2 weeks'. Overall there were 496 category **3 – Routine** defects not resolved within the 2-week timeframe. This is 3.6% of all total work orders of this category. There were 28 which were over 100 days overdue. Some key safety and regulatory important overdue items included:

- Incident with a portable bilge/fire pump on *Louise Savage* (311 days overdue).
- VHF radio not transmitting effectively in upper-river areas on *Pam Burridge* (195 days overdue)
- AMSA Annual Survey Prep and Survey Activities on *Fred Hollows* (110 days overdue)
- Navigation equipment annual maintenance on *Charlotte* (95 days overdue)
- 6-monthly fire systems inspection, service and certification on *SuperCat4* (86 days overdue)
- Locate and rectify a hydraulic leak on *Louise Sauvage* (76 days overdue)
- Structural fire protection repairs in *Catherine Hamlin's* engine room (75 days)
- Provide a 300 mm bell as per NSCV and COLREGs requirements on *Pam Burridge* (34 days overdue)

For both priority **2 – Urgent** and **3 – Routine**, it is not known to DNV if additional short-term mitigations were put in place whilst these defects were being managed.

Due to the safety and regulatory aspects that the above highlighted overdue items cover, DNV recommend that items of this nature are re-categorised to a higher level of priority to ensure they are rectified sooner.

8 SOR 4 – ASSET MANAGEMENT ACTIVITIES

DNV have review the major Asset Management Activities that TDSF conducted between 2019 and the end of 2022. These activities ranged from vessel surveys (annual, intermediate and renewal), dockings and major upgrades (life extensions etc). Based on the information provided by TDSF the following observations are made.

8.1 2022 Asset Management Activities

8.1.1 Vessel Dockings in 2022

All planned vessels completed except *Susie O'Neill* (retired from service and not in this project's scope).

8.1.2 Vessel Surveys in 2022

All planned vessels completed except *Susie O'Neill* (retired from service and not in this project's scope).

Betty Cuthbert's Certificate of Survey expired on 19-November-2022.

8.1.3 Life Extensions in 2022

Charlotte completed.

Supply not commenced

8.2 2021 Asset Management Activities

8.2.1 Vessel Dockings in 2021

All planned vessels completed.

8.2.2 Surveys in 2021

All planned vessels completed.

8.2.3 Life Extensions in 2021

Charlotte commenced (later finished in 2022).

Scarborough and *Supply* not commenced.

8.3 2020 Asset Management Activities

8.3.1 Dockings in 2020

All planned vessels except *May Gibbs* completed.

8.3.2 Surveys in 2020

All planned vessels completed.

8.3.3 Life Extensions in 2020

Charlotte, Supply and *Scarborough* not commenced as planned.

8.4 2019 Asset Management Activities

8.4.1 Dockings in 2019

All planned vessels completed.

8.4.2 Surveys in 2019

All planned vessels completed.

8.4.3 Life Extensions in 2019

None planned.

9 SOR 5 – SLIPPING AND DOCKING PREPARATION

This SOR scope of work was withdrawn by TfNSW.

10 SOR 6 – VESSEL "FAIR WEAR AND TEAR"

It is recommended that the [redacted] is used to compare individual vessels baseline and benchmarking statistics.

A summary of key items is provided below.

10.1 Baseline and Benchmark Analysis - Quantitative Assessment

The current baseline in the average rating of the 2022-23 vessel condition assessment. The benchmark is established by bringing up items rated **1 – Poor** and **2 – Below** average to a score of **3 – Average**.

Figure 10.1 highlights the Baseline (current Fleet condition for 2022-23) compared with the benchmark if all items rated **1 – Poor** and **2 – Below average** were improved to a score of **3 – Average**. This would be the result if all identified defects were rectified to at least a **3 – Average** quality level.

Both the Emerald Generation 2 Class and Freshwater Class have the largest gap between the baseline and benchmark. The River Class and First Fleet Class have the smallest gap.

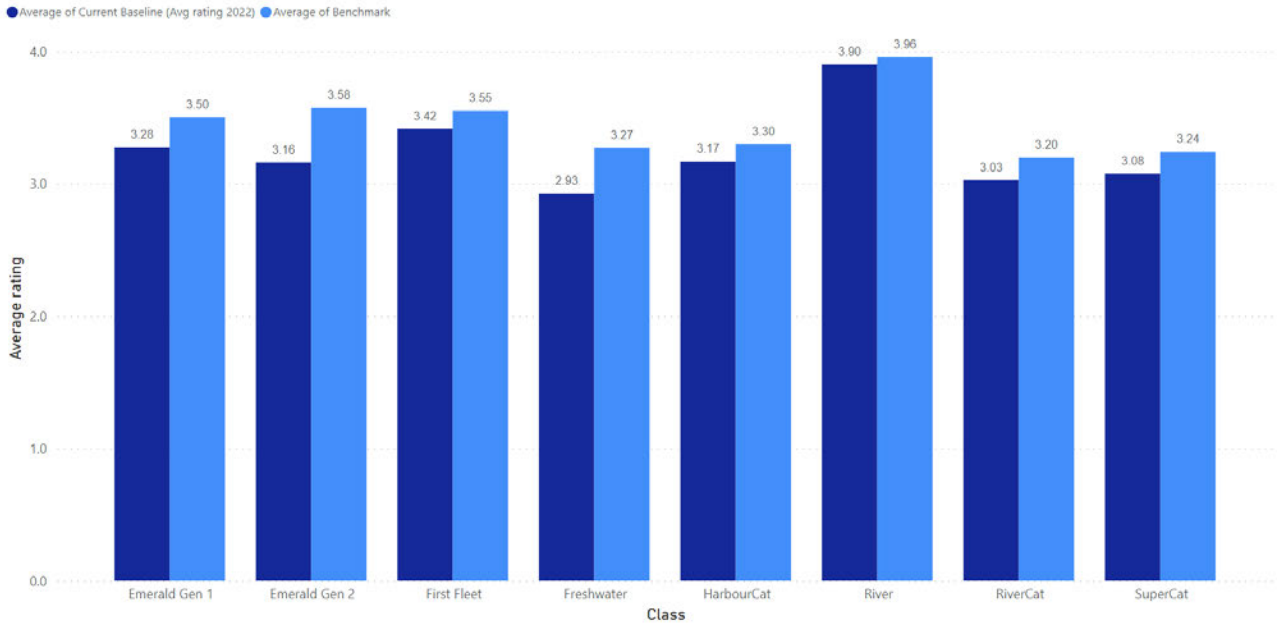


Figure 10.1 – Baseline (2022-23) vs benchmark values across the eight vessel Classes.

Table 10.1 highlights the difference between the individual vessel baseline (current vessel condition for 2022-23) compared with the benchmark if all items rated **1 – Poor** and **2 – Below average** were improved to a score of **3 – Average**.

The vessels requiring the biggest baseline improvement to reach the benchmark are *Balmoral* (0.747 – 17 defects to rectify), *Collaroy* (0.419 – 18 defects to rectify) and *Fishburn* (0.357 – 21 defects to rectify). The vessels requiring the least baseline improvement to reach the benchmark are *Cheryl Salisbury, Olive Cotton* and *Charlotte* (all ~0.02 – 1 or 2 defects to rectify). This would be the resultant change if all identified defects were rectified to at least a **3 – Average** quality level.

Table 10.1 – Difference between the individual vessel baseline (current vessel condition for 2022-23) compared with the benchmark

Vessel	Difference in Benchmark and Baseline
Alexander	0.259
Balmoral	0.747
Betty Cuthbert	0.147
Borrowdale	0.070
Bungaree	0.263
Catherine Hamlin	0.305
Charlotte	0.018
Cheryl Salisbury	0.020
Clontarf	0.246
Collaroy	0.419
Dawn Fraser	0.140
Esme Timbery	0.153
Ethel Turner	0.072
Evonne Goolagong	0.173
Fairlight	0.247
Fishburn	0.357
Fred Hollows	0.199
Freshwater	0.275
Friendship	0.123
Golden Grove	0.183
Kurt Fearnley	0.026
Lauren Jackson	0.042
Liz Ellis	0.036
Louise Sauvage	0.184
Margaret Olley	0.076
Marjorie Jackson	0.178
Marlene Mathews	0.200
May Gibbs	0.181
Nicole Livingstone	0.172

Vessel	Difference in Benchmark and Baseline
Olive Cotton	0.018
Pam Burridge	0.130
Pemulwuy	0.225
Ruby Langford Ginibi	0.047
Ruth Park	0.096
Scarborough	0.052
Shane Gould	0.198
Sirius	0.053
SuperCat4	0.148
Supply	0.110
Victor Chang	0.190

10.2 "Fair Wear and Tear" - Qualitative Assessment

10.2.1 Overall impression

The evaluation of the whole fleet indicates the following:

- The overall rating of the fleet is indicative of a condition that is close to **3 – Average**.
- The River Class is best among the fleet with a condition rating close to **4 – Above average** – a likely reflection of the age of the vessels.
    - Ratings are indicative of a fleet performing close to **4 – Above average** and regular maintenance should allow it to continue to operate for more than 10 years.
- The RiverCat Class are in relatively poor condition compared to the rest of the fleet where it is seen to be rated as just below **3 – Average**.
- The older Classes (First Fleet and Freshwater) appear to be in better or similar condition despite their age compared to the HarbourCat Class.
- Emerald Generation 1 appear to be in similar condition which is rated slightly above **3 – Average**.
- First Fleet, Freshwater, Harbour Cat, River, RiverCat and SuperCat Classes are seen to have an average rating of around **3 – Average** which means the current wear and tear rate is indicative of a higher maintenance need over the next 2-3 years. More specifically, the **External** and **Internal structure and painting** stands out as below average for several of the First Fleet and Freshwater Class vessels.
- Across the categories:
    - **LSA and FFE** and **Machinery and systems** are rated to be just below **3 – Average**
    - I**nternal structure and painting** and **Deck Machinery** are rated to be just above **3 – Average**.
    - **Bridge Systems, Accommodation** and **External structure and painting** are rated to be closer to **4 – Above average**.
- Regarding future maintenance demands:
    - Increased maintenance is foreseen for the fleet on the **Machinery and systems** and **LSA and FFE** categories which are critical to the operation of the fleet.
    - Aside from the River Class, the rest of the fleet has the need for increased maintenance in the near future based on the current wear and tear rates.
    - For the older vessels in the fleet such as Freshwater and First Fleet Classes some additional maintenance spend is foreseen over the next 2–3-year period.
    - Over the next 3–5-year period for Freshwater, RiverCat & SuperCat Classes, an increased maintenance spend is foreseen on **Internal structure and painting** and **Deck Machinery** based on the current wear and tear rates.

Table 10.2 highlights the Class comments from the assessment of each vessel.

Table 10.2 – Class commentary on 'fair wear and tear'

Class name	Comments
Emerald Generation 1	• **Machinery and systems** are rated average/below average on a fleet level, this might imply need for additional maintenance. • Safety systems (**LSA and FFE**) are below average on a fleet level. ○ There seems to be a larger spread in the scores, implying that the variation in condition of the safety systems is large.
Emerald Generation 2	• On a fleet level, all systems are rated average except **Internal Structure and painting** and **Bridge system** which are rated above average.
First Fleet	• On a fleet level the **Internal structure and painting** is rated slightly below average. • **Accommodation** is rated above average for whole fleet except for *Alexander.* • On a vessel level, except for *Friendship*, all other systems are rated average/below average which might imply the need for additional maintenance.
Freshwater	• On a fleet level, all systems are rated average except **Bridge system** and **Accommodation** which are rated above average.
HarbourCat	• All systems are rated average/ below average except **External structure and painting** and **Accommodation** which are rated above average.
River	• Generally, all systems on a fleet level are rated above average and the vessel Class stands out as the best vessel Class in the fleet. In addition to the score, the deviation is low/zero for several of the check points/vessels. • On a fleet level, **Deck and Machinery** seem to be the system with the largest variation in scores.
RiverCat	• Generally, all systems on a fleet level are rated average, with a low variation.
SuperCat	• Generally, all systems on a fleet level are rated average, except **External Structure and painting** and **Accommodation** which are rated slightly above average.

The vessels with rating closer to **3 – Average** and above are expected to pose few problems over the next 2–3-year period while vessels that are closer to **2 – Below Average** will require maintenance in the next 2–3-year period. This assumes that the periodic maintenance is carried out as required.

The vessels *Fishburn, Alexander, Collaroy* and *Marlene Matthews* are vessels with higher wear and tear rates and are the likely candidates requiring increased maintenance over the next 2-year period.

The vessels *Bungaree, Catherine Hamlin, Clontarf, Fairlight, Balmoral, Freshwater, Pam Burridge* and *SuperCat4* are vessels with **Average** ratings and are indicative of a maintenance need in the next 3–4-year period.

The remainder of the vessels have low wear and tear rates and are in good condition based on the rating assigned. These vessels should be available for reliable long-term usage provided ongoing periodic maintenance is continued to be carried out.

11 SOR 7 – DEFICIENCIES AFFECTING THE DESIGN OR RESIDUAL LIFE OF VESSELS

Two findings were observed during vessel inspections that may have implications to the overall vessel life if not rectified. These were found onboard *Marlene Matthews* and *Alexander*.

Other low-ranking vessels with condition ratings less than **3 – Average** (*Shane Gould*, *Fishburn* and *Collaroy*) should also be closely monitored, and preventative maintenance increased to ensure they do not develop deficiencies or an overall condition that could jeopardise vessel design or residual life.

11.1 Main deck corrosion (pitting) on RiverCat *Marlene Matthews*

Several areas of pitting corrosion were discovered on the main deck (void space/storage area) below the wheelhouse on *Marlene Matthews*. Some pits had already surpassed the thickness of the aluminium main deck thus reducing the structural effectiveness of the structure. This defect impacts both vessel watertight integrity and hull strength.

These pits should be rectified at the next available opportunity and measures put in place to reduce the root cause of the pitting. There was a noticeable build up salt in this space which is likely accelerating the corrosion issue in this area. The origin of the salt (eg leaking pump, pipes or seawater ingress) should also be addressed.

If these are not addressed the residual or design life of the vessel may be affected. This is not considering any regulatory compliance issues that this defect may present.

Photo 11.1 – Pits (circled) which has corroded through the main deck of *Marlene Matthews.* Note the build-up salt in the vicinity.

Photo 11.2 – Pits (circled) which has corroded through the main deck of *Marlene Matthews*. Note the build-up salt in the vicinity.

Photo 11.3 – Pits (circled) which has corroded through the main deck of *Marlene Matthews* and has caused a crack-like defect in the plate

Photo 11.4 – Pit which has corroded through the main deck of *Marlene Matthews*. Note the build-up salt in the vicinity.

11.2 Interior fit-out condition on First Fleet vessel *Alexander*

The interior fit-out standard on First Fleet vessel *Alexander* was recorded as **2 – Below average** and was notably different and in a poorer condition than other First Fleet vessels.

It is recommended that the interior fit-out onboard *Alexander* is upgraded to be in line with the other First Fleet vessels.

Photo 11.5 – Condition of bridge fit-out

Photo 11.6 – Condition of passenger area fit-out

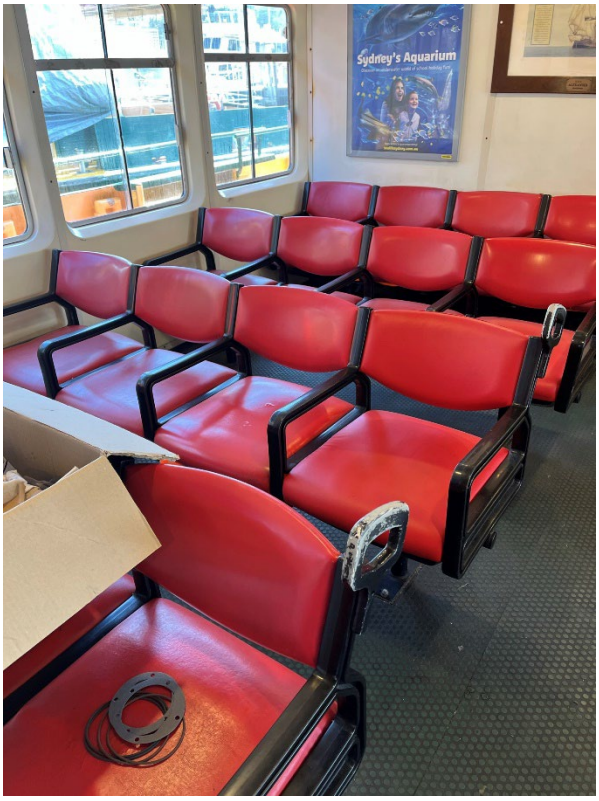


Photo 11.7 – Condition of passenger area fit-out

Photo 11.8 – Condition of passenger toilet fit-out

12 SOR 8 – RETIREMENT CALENDAR AND REPLACEMENT COST OF VESSELS

12.1 Vessel Retirement Calendar

The Table 12.1 is presented as the lifetime calendar which specifies when certain vessels should be retired. This has been derived from the useful life (including life extension years) in relation to the year they were built.

It is apparent that vessels from the Freshwater, RiverCat, First Fleet and SuperCat Classes are in their last years of operation now. The Fleet will then enter the 2029-2040 period where no vessels should be retired. Retirements will then commence in the 2040's for the Emerald Generations 1 and 2 and River Classes.

Table 12.1 – Vessel retirement and replacement calendar.

2023	2024	2025	2026	2027	2028	2029-2040	2041	2042	2043	2044	2045	2046
Marjorie Jackson	*Supply*	*Borrowdale*	*Scarborough*	-	*Collaroy*	-	*Catherine Hamlin Gen 1*	*Fred Hollows Gen 1*	-	-	*Esme Timberly*	*Balmoral Gen 2*
Evonne Goolagong	*Sirius*	*Fishburn*	*Friendship*					*Victor Chang Gen 1*			*Olive Cotton*	*Clontarf Gen 2*
Dawn Fraser		*Alexander*	*Golden Grove*					*Pemulwuy Gen 1*			*Margaret Olley*	*Fairlight Gen 2*
Marlene Mathews		*Charlotte*						*Bungaree Gen 1*			*Ruby Langford Ginibi*	
Shane Gould		*Nicole Livingstone*						*May Gibbs Gen 1*			*Ethel Turner*	
Betty Cuthbert											*Cheryl Salisbury*	
Louise Sauvage											*Ruth Park*	
SuperCat 4											*Lauren Jackson*	
Pam Burridge											*Liz Ellis*	
											Kurt Fearnley	

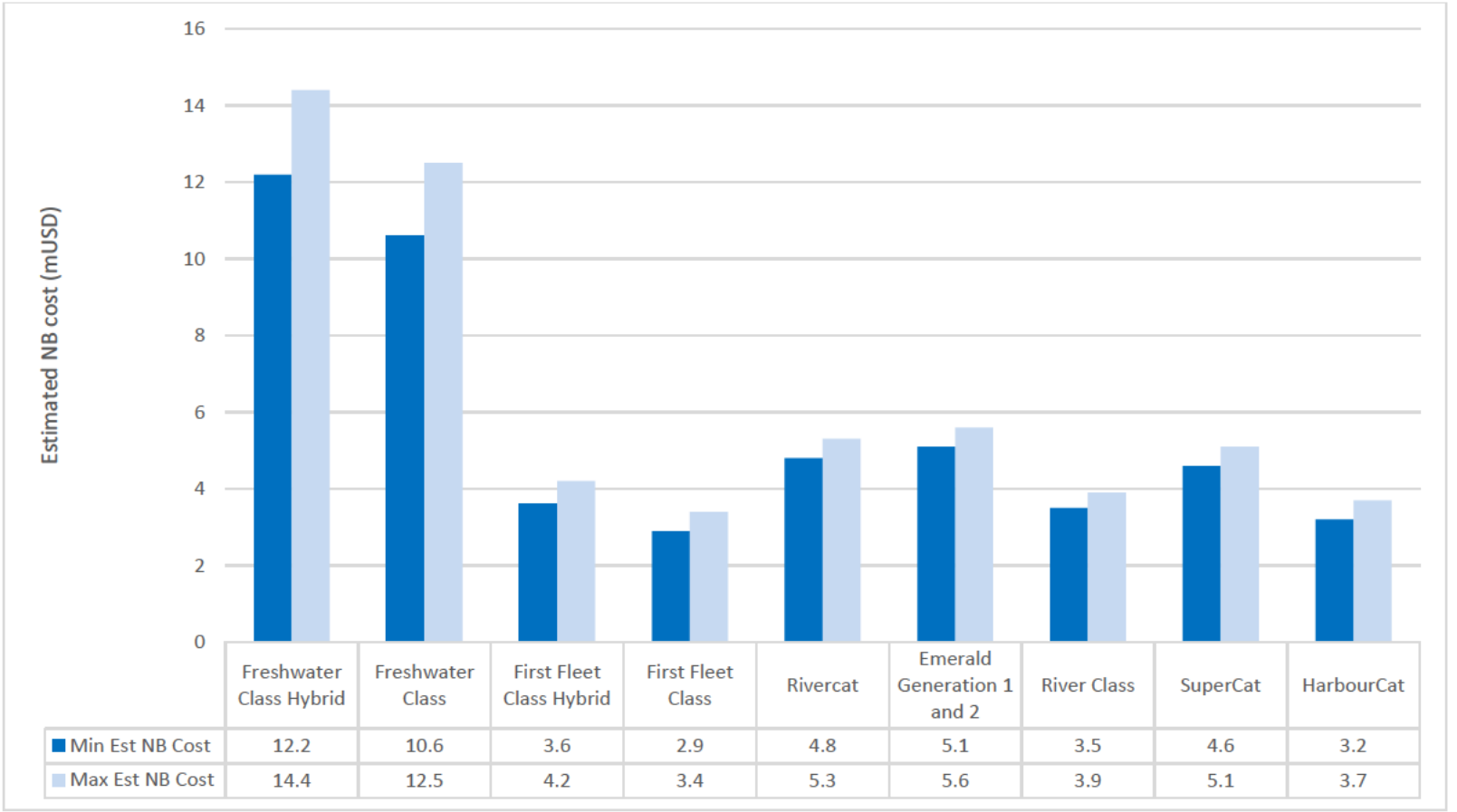
12.2 Vessel Replacement Cost

Figure 12.1 is a representation of the capital expenditure cost that is estimated for a newbuilding vessel from each ferry Class. The dark blue columns show the minimum estimates for a similar vessel with the same propulsion technology. The light blue columns show the maximum estimates for a similar vessel with the same propulsion technology. For international currency flexibility, all figures are in US Dollars.

For the First Fleet Class and Freshwater Class, an additional estimated cost is suggested for a hybrid vessel. The reason for this is that these Classes are operating at a relatively lower speed and a hybrid propulsion (eg batteries) setup might be feasible based on currently available technology.

Assumptions for the estimated costs:

- Vessels are built with up-to-date equipment and specifications available in the current market.
- Design and construction standards follow European standard practice using renowned designers, shipyards and equipment suppliers.
- All estimates are exclusive of inflation and are in US Dollars (USD).



	Freshwater Class Hybrid	Freshwater Class	First Fleet Class Hybrid	First Fleet Class	Rivercat	Emerald Generation 1 and 2	River Class	SuperCat	HarbourCat
Min Est NB Cost	12.2	10.6	3.6	2.9	4.8	5.1	3.5	4.6	3.2
Max Est NB Cost	14.4	12.5	4.2	3.4	5.3	5.6	3.9	5.1	3.7

Figure 12.1 – Newbuild replacement cost for the Sydney Ferry Fleet (in USD)

13 SOR 9 – AVAILABILITY OF VESSEL DOCUMENTATION

DNV assessed the availability of key documentation and data relevant to the ongoing management and operation of the Sydney Ferries Fleet.

These documents included:

- Vessel drawings
- Vessel and equipment manuals
- Key parameters and data sheets for instrumentation

13.1 Vessel drawings

DNV requested TDSF provide a register of all vessel drawings across typical ship disciplines such as hull structure, machinery, piping, electrical and safety systems. These disciplines are viewed by DNV as most relevant to the ongoing management and operation of the Sydney Ferries Fleet as they would be used as a basis in troubleshooting, repairs and modifications as well as familiarisation of vessel systems. DNV then requested TDSF to show that they have access to the drawings listed in the register.

From the information provided to DNV, TDSF has demonstrated it has access to a full range of relevant vessel drawings across the Sydney Ferries Fleet.

Due to the vast age range of vessels across the ferry fleet, newer drawings were found to be of higher quality and easily accessed using digital means. Older drawings were typically in paper format with scans used to digitise the information. These scans were of variable quality but don't present significant issues in terms of legibility.

Drawing on DNV's involvement with vessels regulated under instruments published by the International Maritime Organization, the Maritime Safety Committee (MSC) Circular 1135 – *As-Built Construction Drawings to be Maintained on Board the Ship and Ashore* sets out the minimum complement of as-built drawings onboard the vessel and on-shore. These drawings cover vessel general arrangement, stability documentation, structural plans of the shell, bulkheads and decks, rudders and bilge piping systems. Once again, TDSF has shown it has access to drawings of this nature (ashore) in accordance with the requirements of MSC/Circular.1135 across all vessels in the Sydney Ferries Fleet.

Due to the substantial age of some vessels in the Sydney Ferries Fleet which, in turn, coincides with older documentation, it is not clear how modifications to vessels are captured in vessel drawings. For example, are existing drawings updated or are they discarded and replaced by a new revision. Although the configuration control process (see SOR 13) shows sound management of configuration changes it is not known if a set of current drawings are maintained as the main 'source of truth' for vessel information.

13.2 Vessel and equipment manuals

DNV requested TDSF provide a register of all manuals across typical ship disciplines such as machinery, piping, electrical and safety systems. These disciplines are viewed by DNV as most relevant to the ongoing management and operation of the Sydney Ferries Fleet as they would be used as a basis in troubleshooting, repairs and modifications as well as familiarisation of vessel systems. DNV then requested TDSF to show that they have access to the manuals listed in the register. In addition to the register, DNV also witnessed a range of relevant equipment manuals during the vessel inspection stage of this body of work which are pertinent to the ongoing operation and maintenance of individual vessels.

From the information provided to DNV, TDSF has demonstrated it has access to a full range of relevant vessel manuals across the Sydney Ferries Fleet.

13.3 Key parameters and data sheets for instrumentation

Key parameters and data sheets for instrumentation were found in both vessel drawings, equipment manuals and information posted onboard individual vessels.

From the information provided to DNV, TDSF has demonstrated it has access to a full range of key parameters and data sheets for instrumentation across the Sydney Ferries Fleet.

14 SOR 10 – SPARE PARTS

14.1 General and Critical Spare Parts

DNV were provided with a register of spare parts from TDSF titled "*Spare Parts Inventory + Part Cost.xlsx*". Over 20 500 items were identified of which 6500 are retained as stock items. Below are some overall observations:

- Approximately 700 of those stock items did not have costs assigned to them. 420 did not have an assigned supplier code.
- Spare parts do not have a lead or delivery time.
- Although some spare parts were identified as vessel specific through their description/title, no spare parts were identified via their assigned Class. As such, it is difficult to ascertain if spares are specific to a particular Class or if they can be used generically across the Fleet.
- Quantities are not provided.

It is recommended that commonly used stock and non-stock items are assigned a cost, lead time, Class application and quantity by TDSF.

To assess the suitability of spare parts in-hand, DNV used guidance from our Classification rule set *DNV Rules for Classification: Ships — DNV-RU-SHIP Pt.4 Ch.1 Sec.5 - Spare Parts*. Although these tables are recommendations for vessels on global unrestricted service it provides high-level guidance on the typical spares to be carried to ensure high-reliability, low-downtime operations which is a desirable outcome for a ferry operator. The tables have also been adjusted to suit the use of high-speed diesel engines and the typical equipment found onboard the Sydney Ferries Fleet.

Comparing the spare part recommendations from the DNV Rules (tailored to a ferry application) and recent work orders against the TDSF spare parts register it appears there are sufficient spares covering a range of key onboard systems. In addition to component/part level spares, the availability of a rotatable engine and generator across each vessel Class is likely to reduce down time and enhance efficiency when carrying out repairs on trunk-style high-speed diesel engines.

As TDSF were unable to export our spare parts inventory with a critical part identification or tag associated to that part, TDSF have provided a high-level response (below) for this item to DNV.

"All vessels and equipment have spare parts inventory for the below systems:

- *Sea water pipework and fittings*
- *Electrical equipment and critical componentry*
- *Mechanical parts for engines and steering*
- *Spare engines for River, First Fleet, Emerald and RiverCat Class*
- *Control system parts*
- *Bilge pumps and floats*
- *All engine auxiliary equipment.*
- *Generator spare units for all Classes*
- *Mechanical and electrical spares for steering system*
- *Navigation componentry; navigation lights and chart plotters etc.*
- *Interior and exterior passenger seating, carpets and furnishings.*
- *Sea and freshwater pumping equipment for amenities and engine cooling.*
- *Propellors and shafts for all Classes"*

DNV recommend that inventory items associated with the above-mentioned system categories are provided with a critical identification or tag in the spare parts inventory along with a minimum stock number that should be maintained.

Through other bodies of work, DNV has identified that engines fitted to Emerald Class vessels are operating at a higher utilisation rate than their design intended. This will likely result in more frequent and in-depth maintenance activities to be carried out through the vessel's life. As this utilisation rate was likely not envisaged when TDSF's spare parts strategy was developed, DNV recommend that this new information be included into the spare parts strategy for the

Emerald Class vessels. This will likely result in having more spare parts on hand and may also require additional rotable units.

14.2 Rotable Spare Parts

From the Spare Parts inventory provided the below rotable spare parts were identified. These were tagged as “ROTSP” in the inventory. These items are listed as “stock” which indicates they are on-hand and ready to be deployed into a vessel (ie they are fully refurbished or are in an ‘as-new’ condition).

Engines:

- First Fleet (1 off)
- Freshwater (1 off)
- HarbourCat (1 off)
- RiverCat (1 off)
- SuperCat (1 off)

Gearboxes:

- First Fleet (1 off)
- Freshwater (1 off)
- HarbourCat (1 off)
- RiverCat (1 off)
- SuperCat (1 off)

Generators:

- First Fleet (1 off)
- Freshwater (2 off)
- HarbourCat (1 off)
- RiverCat (1 off)
- SuperCat (1 off)

Although TDSF provided the statement that there are spare engines for River, First Fleet, Emerald and RiverCat Class vessels and a spare generator for all Classes. The spare parts inventory provided does not list an available rotable spare engine or generator for the Emerald or River Class. This may be the result of a rotable engine or generator assigned to the River or Emerald Class undergoing overhaul/repair and is currently not ready to be fulfilled as a stock unit. Despite this, it is noted that there a comprehensive number of River and Emerald Class engine and generator parts and components listed in the spares part inventory.

Alternatively, as these vessels are also the newest additions to the Sydney Ferries Fleet this information may not have been updated into the spare parts inventory as a rotable part. It is recommended that this information be updated if it is found to be missing.

15 SOR 11 – SPECIAL TOOLS AND EQUIPMENT

DNV were provided with a register of tools and equipment from TDSF titled "*TOOL REGISTER 2 - OCTOBER - NOVEMBER 2021.docx*". The register provided tool/equipment name and type, identification ID, make, storage location, calibration dates among other key information. The provided register only captures calibrated equipment.

The register consisted of measurement equipment, alignment tools, inspection cameras (regular and borescope), deflection tools, torque wrenches, scales, electrical meters and pressure gauges. These tools and equipment are typical of those required for undertaking a range of general and precision marine engineering tasks.

All equipment that had a calibration date listed in the register was found within its respective calibration date. The rationale of the 12-monthly calibration interval listed for all equipment is not known to DNV, but this represents typical industry practice. Several items of the listed special tools and equipment were specific OEM required tools in the measurement of crankshaft deflections and torque (Yanmar and CAT engines).

It is expected that individual manufacturer requirements of each special tool or equipment has been considered by TDSF and that these are not exceeded using a standardised 12-montly calibration interval assigned by TDSF. It would also be expected for equipment that is used more frequently is calibrated at an increased rate.

Other uncalibrated special tools are other equipment used in the maintenance of machinery and vessels are not centrally recorded in a register. TDSF advised DNV that they carry any specially tooling nominated by OEMs for the maintenance or overhaul of machinery and if additional special tools or equipment are required TDSF will either machine it or buy the tool from the OEM.

To verify this, during vessel inspections, DNV toured the workshop facilities at Balmain Shipyard and workshop/tool areas onboard the vessels. DNV noted a range of suitable tools and equipment (both OEM and generic) used in the maintenance of shipboard machinery in-line with the type of equipment found onboard the Sydney Ferries Fleet.

At the Balmain Workshop, DNV witnessed a range of metalworking tools such as lathes, cutting, machining and drilling tools consistent with typical operations of a marine workshop.

DNV also noted a significant in-house capability to develop tools specific to maintenance activities of machinery. One such device on display at the time of inspection was the frame support for the extraction, transport and storage of the drive unit on the RiverCat Class of vessels.

Overall, DNV consider the special tools and equipment held by TDSF are suitable and fit-for-purpose to maintain the Sydney Ferries Fleet. In addition to the established register for calibrated equipment, DNV would recommend TDSF having a record of key special tools and equipment to allow traceability and tracking of such equipment.

DNV also understands the TDSF utilise OEMs and their nominated local representatives to conduct a range of machinery and systems maintenance across the Sydney Ferries Fleet. It is assumed that OEMs and their nominated local representatives would have the relevant special tools and equipment to carry out the requested work.

16 SOR 12 – CONTRACTOR CAPABILTIY AND INSURANCES

DNV were provided with a list of key contractors used by TDSF. From this list, DNV selected the companies which provide safety critical services to the Sydney Ferries Fleet.

From the information provided all the below tabulated contractors have valid Public Liability and Workers Compensation Insurance.

Table 16.1 – Capability of safety critical contractors

Company	Services provided	Capability Assessment
Birdon	Shipbuilder	OEM support to River and Emerald Generation 2 Class vessels.
Electrotech Australia	Vessel radio communications	Classification society approved service supplier in the inspection and testing of radio communication equipment and automatic identification systems.
Griffin Marine	Welding and Marine Engineering	Classification society approved welding workshop
Halliday Engineering	Welding and Marine Engineering	Classification society approved welding workshop
Lloyds Register	Recognised Organisation/AMSA Accredited Marine Surveyors	IACS Classification society
Maritime Survey Australia	Marine Surveyors	AMSA accredited marine surveyors
Onboard Engineering	Marine Engineering	CAT and Yanmar authorised agents
Sydney Diesel Marine	Marine Engineering	Yanmar diesel engine specialist
Chubb Fire	Fire Systems	Fire systems maintainer in accordance with Australian Standards.

Overall, the contractor organisations engaged to provide safety critical tasks to the Sydney Ferries Fleet are well established through their own industry reputation, third-party certifications and OEM authorisations.

From the above assessment, it appears that TDSF use a range of OEM and third-party accredited organisations to carry out their safety critical tasks. Such accreditations may take the form of Approved Service Supplier accreditation from one or more Classification Societies along with other accreditations to international and local standards.

For contract work which relates to routine onboard inspection, survey and testing, it is important that a wide range of inspectors from a single agency are used when available. This variation allows a wider breadth of experience to assess safety critical systems on the Sydney Ferries Fleet and reduces the likelihood of familiarity induced errors.

17 SOR 13 – CONFIGURATION STATUS OF EACH VESSEL

17.1 Configuration Status

DNV have reviewed TDSF's *Configuration Control Change Register Rev 3.4*. The following configuration exists for the following Classes of vessels.

All vessels in the Sydney Ferries Fleet are currently undergoing at least two configuration changes.

Table 17.1 – Configuration status for each vessel Class

Vessel Class	Open configuration items	Date raised
All vessels	CCR-000136 – Passenger counting system	20-September-2022
	CCR-000137 – Passenger Wi-Fi	20-September-2022
Emerald Generation 1 and 2	CCR-000067 – ER Fire Suppression Activation	12-August-2020
	CCR-000071 – Clutch status installation lights	12-November-2020
	CCR-000119 – VDRS upgrade to include steering parameters	14-January-2022
	CCR-000120 – Update of fire detection panels to digital (*Catherine Hamlin* only)*	23-February-2022
	CCR-000121 – Install of foredeck seating/additional handrails (EG2 only)	23-February-2022
	CCR-000123 – New door closers on fwd doors	25-May-2022
First Fleet	CCR-000020 – Ventilation of void spaces	06-January-2020
River	CCR-000086 – Window reflection in wheelhouse*	21-January-2022
	CCR-000095 – Fire alarm panel and help point*	21-March-2021
	CCR-000115 – Modifications to MEN links and ZF control box	08-October-2021
	CCR-000125 – CCTV installation	15-June-2022
	CCR-000134 – Increase house battery storage	14-July-2022

Vessel Class	Open configuration items	Date raised
SuperCat	CCR-000074 – Neutral cam switch removed from gearbox	05-January-2021

From the information provided there are CCRs that have been open for one or more years. It is not known to DNV if this is due to ongoing work or if the *Configuration Control Change Register* has not been kept up to date.

Although some active CCRs have status 'Awaiting Documents' they also have been marked as "Closed – Full Approval" in the information provided to DNV. According to TDSF's procedure, the CCR status "Awaiting Documents' Indicates that associated documentation has not yet been received to complete the process (e.g. a risk assessment, technical info, etc). As such, it is unclear to DNV how these CCRs have been closed. These relate to CCR-000086 (closed on 2022-01-21) and 000095 (closed on 2021-12-14) on the River Class and CCR-000120 (2022-02-25) on the Emerald Class. These have been marked with an * in the above table.

17.2 Configuration Control Process

DNV have reviewed examples of completed CCRs provided by TDSF along with TDSFs procedures in managing the configuration control process.

Aside from the discrepancies noted above with the CCR status in the CCR Register, TDSF has undertaken the CCR process in accordance with their procedures.

The procedures which map the configuration change process are well established and utilise industry standard risk assessment at various stages. The level of assessed risk of each configuration change either increases or decreases the involvement of senior TDSF management and technical personnel and the level of documentation. This appears to be appropriate for the scope of the CCRs reviewed by DNV.

It is not well established how TDSF know when to engage a regulator when relevant changes are made to systems which require regulatory approval. A better-defined procedure on when to engage a regulator during the configuration control process could help ensure that regulatory acceptance of configuration changes is not inadvertently missed.

18 RECOMMENDATIONS

DNV recommend the following actions be taken by TfNSW in order to improve the overall management and operation of the Sydney Ferry Fleet.

18.1 Vessel Condition

1. Educate TDSF crew and technical managers across the root causes of the common inspection deficiencies. Provide examples of typical findings. This could be achieved through a formal course or seminar.
2. Increase the effectiveness of TDSF routine inspections across the Sydney Ferries Fleet by providing key focus areas in categories such as LSA/FFE and Machinery and Systems.
3. Perform a follow up inspection (conducted by DNV) within the next six-months to determine the status of previously recorded deficiencies. This could be a targeted (Fleet wide sampling of key areas) or a full scope assessment.

18.2 PMS, Work Orders, Defect Procedures and Management

1. All deficiencies (outside of those routine ship housekeeping) jobs are recorded in the PMS as a work order. This allows better tracking and data aggregation of defects found onboard the Fleet. With proper reporting and handling, this may improve the management of the ferries and allow technical management within TDSF and TfNSW to target specific areas for improvement.
2. Unless vessels are not in service, it should be strictly avoided operating vessels with overdue **1 – Immediate** and **2 – Urgent** priority items. This is particularly critical for items involving key safety or vessel control functions.
3. Relevant defects, particularly those with a High or Very High-risk ranking, should be communicated to the survey authority and Classification society of the vessel prior to assigning a priority categorisation that allows the vessel to continue operating in-service.
4. At times, the detail of reviewed work orders was not clear on the defect and its impact on operations. Section 4.7.3 of the *Fleet Generic Operations Manual* could be updated to further prompt defect reporters on the type and required detail to be included.
5. Safety and regulatory related defects are routinely prioritised at a priority **3 – Routine** level. Defects of this nature should be assigned a higher level of priority to ensure they are rectified sooner.

18.3 Vessel drawings

1. Ensure that each vessel Class has a set of drawings which are maintained as the main ‘source of truth’ for vessel information. These drawings should centrally located in an electronic format (.pdf) to allow for universal access.

18.4 Spare Parts

1. Commonly used stock and non-stock items are assigned a cost, lead time, Class application and quantity by TDSF.
2. Inventory items associated with identified critical systems are provided with a critical identification or tag in the spare parts inventory along with a minimum stock number that should be maintained.
3. As a high utilisation rate of Emerald Class main engines was likely not envisaged when TDSF’s spare parts strategy was developed, it is recommended that this new information be included into a revised spare parts strategy for the Emerald Class vessels.

18.5 Special Tools and Equipment

1. In addition to the established register for calibrated equipment, DNV recommend TDSF having a record of key non-calibrated special tools and equipment to allow traceability and tracking of such equipment.

18.6 Configuration Control

1. CCRs should not be set as “Closed – Full Approval” when the status of a CCR is categorised as “Awaiting Documents”. CCRs should only be fully closed when all relevant documentation is received.

2. A better-defined procedure on when to engage a regulator during the configuration control process could help ensure that regulatory acceptance of configuration changes is not inadvertently missed.

19 CONCLUSION

Overall, the Sydney Ferry Fleet Engineering Assessment has provided a thorough evaluation of the current fleet condition as well as insight into the effectiveness of operational and maintenance information, procedures and plans.

Strategic incorporation of the recommendations proposed by DNV have the potential to improve the overall fleet condition and fleet management.

Information on pages 111 to 122 (inclusive) (Annex 1 - Inspection Checklist) have been redacted because they contain DNV's intellectual property. This Checklist is in template form only and does not contain any information about the ferries operated and managed by TDSF.

21 ANNEX 2 – VESSEL SURVEY REPORTS

Please follow the link [redacted] to view vessel survey reports via OneDrive.

Information on this page has been redacted because it contains a link to DNV's proprietary online information portal.

22 ANNEX 3 - VESSEL DEFECT LIST

Below is the list of defects rated **1 – Poor** or **2 – Below average**.

Class	Vessel	Category	Component	Comments
First Fleet	*Alexander*	Accommodation	Bridge chairs	Seats ripped
First Fleet	*Alexander*	Accommodation	Carpet condition	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Ceiling / Bulkheads	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	General housekeep	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Interior fitout	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Lighting system	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Seat condition	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Ship office	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Staircase	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	Accommodation	Toilet	Below average condition – high levels of wear and tear
First Fleet	*Alexander*	LSA and FFE	Carley float	Reflective tape faded/degraded. Carley floats have furniture (chairs, cleaning gear) housed inside stacks.
First Fleet	*Alexander*	LSA and FFE	Life buoys	Some cracked with faded reflective tape
First Fleet	*Alexander*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room or pax areas.
First Fleet	*Alexander*	Machinery and system	ER escape hatch	ER escape hatch not marked in ER.
First Fleet	*Alexander*	Machinery and system	Exhaust system	ME exhaust not lagged all the way to water silencer. Some flanges unlagged.
First Fleet	*Alexander*	Machinery and system	Fire insulation	Some areas of missing SFP in the tunnel curve in the ER.

Class	Vessel	Category	Component	Comments
First Fleet	*Alexander*	Machinery and system	Piping	ER penetration open to other ER and one open pipe filled with expanding foam
Emerald Gen 2	*Balmoral*	Accommodation	Seat condition	Various seats have stains
Emerald Gen 2	*Balmoral*	Bridge system	Rudder angle indicators	Port and stbd rudder indicators show a deviation of up to 7 degrees.
Emerald Gen 2	*Balmoral*	Deck machinery	Hatch to engine room	Area around hatch crowded with containers and other ER consumables which are partially blocking the escape path. One clip on the ER soft patch was not secured.
Emerald Gen 2	*Balmoral*	External Structure and painting	Side fender	Scuffs, marks and local indents
Emerald Gen 2	*Balmoral*	LSA and FFE	Fire Hydrants / monitor / hose	Hoses located on the main deck lockers had spanners not in an accessible location.
Emerald Gen 2	*Balmoral*	LSA and FFE	Life buoys	Lifebuoy on fwd main deck (x2) with vessel UVI partially removed
Emerald Gen 2	*Balmoral*	LSA and FFE	Lifeboat/rescue boat rafts	Top Carley Float across all four stacks found with reflective tape degraded. HRUs missing expiry date marking.
Emerald Gen 2	*Balmoral*	LSA and FFE	Portable Extinguishers	AFFF and DP extinguishers at the top of the stairs are not positioned iaw the Fire and Safety Plan.
Emerald Gen 2	*Balmoral*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room.
Emerald Gen 2	*Balmoral*	Machinery and system	Bilges	Bilges were found with oil/seawater/fluid build-up, especially under the main engines.
Emerald Gen 2	*Balmoral*	Machinery and system	ECU plugs	ECU panel was found with numerous cables without protective boots properly fitted and outer cable sheaf missing
Emerald Gen 2	*Balmoral*	Machinery and system	Electrical cable and tray in general	Cable penetration between ER and Steering void found partially opened up. Poor cable management and support of cables behind the bridge console.

Class	Vessel	Category	Component	Comments
Emerald Gen 2	*Balmoral*	Machinery and system	Exhaust system	Hot surface insulation of turbo charger and exhaust from Main Engines found missing/poorly adjusted in various areas. Port ME turbo leak evidenced by soot build up on insulation.
Emerald Gen 2	*Balmoral*	Machinery and system	Fire insulation	Some areas of damaged SFP (port fwd ER) with foil missing.
Emerald Gen 2	*Balmoral*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 2	*Balmoral*	Machinery and system	General lighting	Some ER lights had come loose from their brackets. These were rectified during inspections.
Emerald Gen 2	*Balmoral*	Machinery and system	Seawater cooling pump and system	Some ER sea water valves found corroding
RiverCat	*Betty Cuthbert*	Accommodation	Ventilation & air conditioning systems and ducting	Visual only; A/C only in the wheelhouse. (only one unit is available)
RiverCat	*Betty Cuthbert*	External Structure and painting	Main Deck Aft	stbd and port side found buckled
RiverCat	*Betty Cuthbert*	External Structure and painting	Superstructure	both sloped roofs of port and stbd engine rooms found buckled.
RiverCat	*Betty Cuthbert*	LSA and FFE	Fire dampers/ventilation flaps	Visual only; not airtight
RiverCat	*Betty Cuthbert*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
RiverCat	*Betty Cuthbert*	LSA and FFE	Life buoys	Markings are fading.
RiverCat	*Betty Cuthbert*	Machinery and system	Control panel and distribution board	Visual only, some cables not well protected.
RiverCat	*Betty Cuthbert*	Machinery and system	Electrical cable and tray in general	some cables loosely placed in port + stbd engine rooms.
RiverCat	*Betty Cuthbert*	Machinery and system	Fire insulation	some flaps of engine rooms not closing tight.

Class	Vessel	Category	Component	Comments
First Fleet	*Borrowdale*	Deck machinery	Hatch to engine room	Fastening cleats for the engine rooms hatches are not fastened.
First Fleet	*Borrowdale*	External Structure and painting	Superstructure	The open bridge deck shows only light buckling.
First Fleet	*Borrowdale*	Machinery and system	ER escape hatch	ER escape hatch not fastened with all cleats.
First Fleet	*Borrowdale*	Machinery and system	Exhaust system	ME exhaust not lagged all the way to water silencer. Some flanges found partly unlagged.
First Fleet	*Borrowdale*	Machinery and system	Fire insulation	Some areas of missing SFP in the tunnel curve, in both engine rooms.
First Fleet	*Borrowdale*	Machinery and system	Recommendation 1	Missing SFP to be insulated in the tunnel curve of the engine rooms.
First Fleet	*Borrowdale*	Machinery and system	Recommendation 2	exhaust pipes of diesel engines to be fully covered by insulation
Emerald Gen 1	*Bungaree*	Accommodation	Ceiling / Bulkheads	Some ceiling tiles are loose and have build-up of dust, ceiling panel has an old hole for camera
Emerald Gen 1	*Bungaree*	Accommodation	Interior fitout	Some window seals loose
Emerald Gen 1	*Bungaree*	Accommodation	Seat condition	Various seats have stains and rips
Emerald Gen 1	*Bungaree*	Deck machinery	Hatch to engine room	Area around hatch crowded with containers and other ER consumables
Emerald Gen 1	*Bungaree*	Internal Structure and painting	Other piping passing through	Deck peno from main switchboard to tunnel not sealed assumed supposed to be fire/WT
Emerald Gen 1	*Bungaree*	LSA and FFE	Fire alarm	Earth fault in the fire pro 12v battery backup isolated
Emerald Gen 1	*Bungaree*	LSA and FFE	Life Jackets	Lifejackets outer decks with slightly faded high vis, Crew lifejacket lights missing says they should be there on posters and LSA plan

Class	Vessel	Category	Component	Comments
Emerald Gen 1	*Bungaree*	LSA and FFE	Observation 2	Secondary escape route for crew from bridge blocked by Australia Day decorations
Emerald Gen 1	*Bungaree*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room, Emergency escape poster in passenger area found damaged, Fire plan does not have the children/infant lifejackets listed
Emerald Gen 1	*Bungaree*	Machinery and system	Bilges	Bilges were found with oil/seawater/fluid build-up, especially under the main engines.
Emerald Gen 1	*Bungaree*	Machinery and system	Exhaust system	Hot surface insulation of turbocharger and exhaust from MEs found loose/missing/poorly adjusted in various areas
Emerald Gen 1	*Bungaree*	Machinery and system	Fire insulation	Some areas of damaged SFP with foil missing (store under aft stairs, port and stbd ER in way of soft patches)
Emerald Gen 1	*Bungaree*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 1	*Bungaree*	Machinery and system	Observation 1	ER air fan grating dirty/dusty
Emerald Gen 1	*Bungaree*	Machinery and system	Observation 4	ME soft patch handles left open
Emerald Gen 1	*Catherine Hamlin*	Accommodation	Ceiling / Bulkheads	Some ceiling tiles are loose and have build-up of dust, ceiling panel has an old hole for camera
Emerald Gen 1	*Catherine Hamlin*	Accommodation	Interior fitout	Some window seals loose
Emerald Gen 1	*Catherine Hamlin*	Accommodation	Seat condition	Various seats have stains and rips
Emerald Gen 1	*Catherine Hamlin*	Accommodation	Ship office	Household, portable oven set up on the office desk (on the bridge) fire risk?
Emerald Gen 1	*Catherine Hamlin*	Bridge system	CCTV	Stopped working however was rectified remotely
Emerald Gen 1	*Catherine Hamlin*	Bridge system	Echo sounder	Visual only. Appeared to cut out while maneouvring alongside wharf

Class	Vessel	Category	Component	Comments
Emerald Gen 1	*Catherine Hamlin*	Bridge system	Navigation lights	Port and stbd nav lights held in place by stainless steel bolts with threaded connection through aluminium dissimilar materials corrosion risk
Emerald Gen 1	*Catherine Hamlin*	External Structure and painting	Main Deck Mid	Some paint worn/missing around mid-boarding area
Emerald Gen 1	*Catherine Hamlin*	Internal Structure and painting	Other piping passing through	Deck peno from main switchboard to tunnel not sealed assumed supposed to be fire/WT
Emerald Gen 1	*Catherine Hamlin*	LSA and FFE	Lifeboat/rescue boat rafts	Some Carley floats missing vessel name and reflective tape faded (sample only)
Emerald Gen 1	*Catherine Hamlin*	LSA and FFE	Observation 1	Medical kit in the wrong location and service record/inventory list missing
Emerald Gen 1	*Catherine Hamlin*	LSA and FFE	Observation 2	Secondary escape route for crew from bridge blocked by Australia Day decorations
Emerald Gen 1	*Catherine Hamlin*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room, Fire plan does not have the children/infant lifejackets listed, infant lifejacket stickers missing from locker
Emerald Gen 1	*Catherine Hamlin*	Machinery and system	Exhaust system	Hot surface insulation of turbocharger and exhaust from MEs found loose/missing/poorly adjusted in various areas
Emerald Gen 1	*Catherine Hamlin*	Machinery and system	Fire insulation	Some areas of damaged SFP with foil missing (store under aft stairs, port and stbd ER in way of soft patches)
Emerald Gen 1	*Catherine Hamlin*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 1	*Catherine Hamlin*	Machinery and system	Observation 1	ER air fan grating dirty/dusty
Emerald Gen 1	*Catherine Hamlin*	Machinery and system	Observation 4	ME soft patch handles left open
Emerald Gen 1	*Catherine Hamlin*	Machinery and system	Observation 5	BHD cable penetration from the port ER to steering room damaged

Class	Vessel	Category	Component	Comments
First Fleet	*Charlotte*	Bridge system	Magnetic compass (compensated)	Visual only, Compass calibration table is missing.
First Fleet	*Charlotte*	Machinery and system	Fire insulation	Some areas of missing SFP in the tunnel curve, in port engine room.
First Fleet	*Charlotte*	Machinery and system	Recommendation 1	Missing SFP to be insulated in the tunnel curve of the engine rooms.
River	*Cheryl Salisbury*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
River	*Cheryl Salisbury*	LSA and FFE	Recommendation 1	Fire /Safety/Evacuation Plan to be posted in passenger's area main deck.
River	*Cheryl Salisbury*	LSA and FFE	Signboard	Vessel's Fire Safety and Evacuation plan is not posted in the accommodation, main deck port fwd.
River	*Cheryl Salisbury*	Machinery and system	Recommendation 1	The plug for draining the save all of stbd fwd F.O. tank vent pipes to be inserted tight (pollution risk)
Emerald Gen 2	*Clontarf*	Accommodation	Seat condition	Various seats have stains
Emerald Gen 2	*Clontarf*	Bridge system	Rudder angle indicators	Port and stbd rudder indicators show a deviation of up to 7 degrees.
Emerald Gen 2	*Clontarf*	Deck machinery	Hatch to engine room	Area around hatch crowded with containers and other ER consumables which are partially blocking the escape path.
Emerald Gen 2	*Clontarf*	External Structure and painting	Side fender	Scuffs, marks and local indents
Emerald Gen 2	*Clontarf*	LSA and FFE	Fire Hydrants / monitor / hose	Hoses located on the main deck lockers had spanners not in an accessible location.
Emerald Gen 2	*Clontarf*	LSA and FFE	Life buoys	Lifebuoy on main deck (x1) with vessel UVI partially removed
Emerald Gen 2	*Clontarf*	LSA and FFE	Lifeboat/rescue boat rafts	Top Carley Float across all four stacks found with reflective tape degraded. HRU expiry was not marked.

Class	Vessel	Category	Component	Comments
Emerald Gen 2	*Clontarf*	LSA and FFE	Portable Extinguishers	AFFF and DP extinguishers at the top of the stairs are not positioned iaw the Fire and Safety Plan
Emerald Gen 2	*Clontarf*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room.
Emerald Gen 2	*Clontarf*	Machinery and system	Bilges	Bilges were found with oil/seawater/fluid build-up, especially under the main engines.
Emerald Gen 2	*Clontarf*	Machinery and system	ECU plugs	ECU panel was found with numerous cables without protective boots properly fitted and outer cable sheaf missing
Emerald Gen 2	*Clontarf*	Machinery and system	Electrical cable and tray in general	Cable penetration between ER and Steering found partially opened up. Poor cable management and support of cables behind the bridge console.
Emerald Gen 2	*Clontarf*	Machinery and system	Exhaust system	Hot surface insulation of turbo charger and exhaust from Main Engines found missing/poorly adjusted in various areas.
Emerald Gen 2	*Clontarf*	Machinery and system	Fire insulation	Some areas of damaged SFP (port fwd ER) with foil missing.
Emerald Gen 2	*Clontarf*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 2	*Clontarf*	Machinery and system	General lighting	Some ER lights had come loose from their brackets. These were rectified during inspections.
Emerald Gen 2	*Clontarf*	Machinery and system	Seawater cooling pump and system	Some ER sea water valves found corroding
Freshwater	*Collaroy*	Deck machinery	Bulwarks	Edge corrosion, dents and missing paint on bulwark structure. Some deck corrosion/pitting and localised soft dishing and deformation.
Freshwater	*Collaroy*	Deck machinery	Bunker station save all's	Drain plug missing on stbd bunker station save all
Freshwater	*Collaroy*	Deck machinery	Main deck ramps	Some rubbing damage on the outboard side (bottom of ramps). Some hydraulic fittings corroding due to paint loss. Upper deck stbd hydraulic system leaking.

Class	Vessel	Category	Component	Comments
Freshwater	*Collaroy*	Deck machinery	Tank vent pipe	Vent closing devices on Cfrdam Vent (x2) not automatically closing. Fore peak tank vent head heavy corrosion
Freshwater	*Collaroy*	Deck machinery	Windlass/Mooring winches	Visual only. Fwd stbd gypsy deformed/bent. Surface corrosion all over.
Freshwater	*Collaroy*	External Structure and painting	Bulwark bracket	Stiffener at bulwark emergency exit gate (stbd side aft) has wastage >50% of original thickness.
Freshwater	*Collaroy*	External Structure and painting	External penetrations	One open peno on main deck s/s stbd side
Freshwater	*Collaroy*	External Structure and painting	Main Deck Aft	Edge corrosion, dents and missing paint on bulwark structure. Some deck corrosion/pitting and localised soft dishing and deformation.
Freshwater	*Collaroy*	External Structure and painting	Main Deck Fwd	Edge corrosion, dents and missing paint on bulwark structure. Some deck corrosion/pitting and localised soft dishing and deformation.
Freshwater	*Collaroy*	External Structure and painting	Side fender	Fenders have noticeable surface corrosion and damage/indents/scratches.
Freshwater	*Collaroy*	External Structure and painting	Superstructure vents	Moderate corrosion on ventilation openings from superstructure
Freshwater	*Collaroy*	External Structure and painting	Upper Deck (Fwd/Aft)	Paint missing/breaking down in aft/fwd pax areas
Freshwater	*Collaroy*	Internal Structure and painting	Windows	External window trim has heavy pitting on areas on the main deck. Several window leaks in passenger areas on main and upper decks.
Freshwater	*Collaroy*	LSA and FFE	Carley floats	Carley floats have faded reflective tape and vessel name/details (all floats on the top of each stack)
Freshwater	*Collaroy*	LSA and FFE	Life buoys	Vessel name/port missing on one life buoy on stbd aft bridge station. Lifebuoy light expired (Jun 22)

Class	Vessel	Category	Component	Comments
Freshwater	*Collaroy*	LSA and FFE	Rescue boat	No rescue boat launching procedure posted.
Freshwater	*Collaroy*	LSA and FFE	Signboard	Missing fire hydrant and extinguisher signs in engine room
Freshwater	*Collaroy*	Machinery and system	Bilges	Some areas with significant oil, fluid build-up. Some rags noted in bilges.
Freshwater	*Collaroy*	Machinery and system	Engine 1	Visual only. Oil leaks noted on engine.
Freshwater	*Collaroy*	Machinery and system	Engine 2	Visual only, engine running. Oil leaks noted on engine.
Freshwater	*Collaroy*	Machinery and system	ER escape ladder	Ladder obstructed by lifting strops
Freshwater	*Collaroy*	Machinery and system	Fire insulation	SFP coverage OK but some damage noted on main engine and generator insulation.
Freshwater	*Collaroy*	Machinery and system	Gearbox	Significant build-up of oil around gearboxes. Suggests several leaks.
Freshwater	*Collaroy*	Machinery and system	Generator 1	Visual only. Lube oil pressure transducer not operational
Freshwater	*Collaroy*	Machinery and system	Generator 2	Visual only. Lube oil pressure transducer not operational
Freshwater	*Collaroy*	Machinery and system	Generator 3	Visual only, engine running. Lube oil pressure transducer not operational
Freshwater	*Collaroy*	Machinery and system	Lube oil pump and system	Lube oil cooler flange fitting has absorbent pad fitted under flange. Suggests that a leak is present during usage.
Freshwater	*Collaroy*	Machinery and system	Sea chest box	Some corrosion/existing leaks evident on SW piping and pumps associated with the sea chests
Freshwater	*Collaroy*	Machinery and system	Seawater cooling pump and system	Some corrosion/existing leaks evident on SW piping and pumps in ER
Freshwater	*Collaroy*	Machinery and system	Steering system aft	Significant number of absorbent pads and oil leaks noted in fwd and aft steering gear rooms in way of steering gear and pumps

Class	Vessel	Category	Component	Comments
Freshwater	*Collaroy*	Machinery and system	Steering system fwd	Significant number of absorbent pads and oil leaks noted in fwd and aft steering gear rooms in way of steering gear and pumps. Bucket used to catch oil noted under steering gear.
RiverCat	*Dawn Fraser*	Accommodation	General housekeep	trip hazard on both fwd entrance doors with 3cm high sill.
RiverCat	*Dawn Fraser*	Accommodation	Recommendation 1	trip hazard at fwd entrance doors to main deck to be eliminated.
RiverCat	*Dawn Fraser*	External Structure and painting	Main Deck Aft	whole aft deck found buckled
RiverCat	*Dawn Fraser*	LSA and FFE	Fire dampers/ventilation flaps	Visual only; not airtight
RiverCat	*Dawn Fraser*	LSA and FFE	Life buoys	Markings are fading.
RiverCat	*Dawn Fraser*	Machinery and system	Bilge pump and system	some oily bilges around the engines,
RiverCat	*Dawn Fraser*	Machinery and system	Control panel and distribution board	Visual only, some cables not well protected.
RiverCat	*Dawn Fraser*	Machinery and system	Electrical cable and tray in general	some cables and wires loosely placed in port + stbd engine rooms.
RiverCat	*Dawn Fraser*	Machinery and system	Fire insulation	some flaps of engine rooms not closing tight.
River	*Esme Timbery*	Bridge system	Echo sounder	Echo sounder found out of order.
River	*Esme Timbery*	Bridge system	Recommendation 1	Echo sounder to be repaired.
River	*Esme Timbery*	Deck machinery	Recommendation 1	drain plugs for the fwd F.O. tanks' vent pipes save-alls port &stbd to be inserted tight.
River	*Esme Timbery*	Deck machinery	Tank vent pipe	Drain plugs of fwd F.O. tank vents port + stbd not inserted. (pollution risk)
River	*Esme Timbery*	Deck machinery	Windlass/Mooring winches	Some mooring ropes found worn.

Class	Vessel	Category	Component	Comments
River	*Esme Timbery*	Internal Structure and painting	Inner side shell	Inspected from fwd void spaces only vessel was in operation; about 5 cm depth of water found in fwd port void space.
River	*Esme Timbery*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
River	*Esme Timbery*	LSA and FFE	Life buoys	Markings of upper deck's lifebuoy are faded.
River	*Esme Timbery*	Machinery and system	Bilge pump and system	Visual only, some oily bilge water found in fwd bilges of both engine rooms covered by absorbing mats
River	*Esme Timbery*	Machinery and system	Electrical cable and tray in general	Electrical cables in engine room to be bundled and better protected
River	*Esme Timbery*	Machinery and system	Fuel oil pump and system	plugs for draining the save all of fwd F.O. tanks (port + stbd) overflow/vent pipes not inserted.
River	*Esme Timbery*	Machinery and system	Recommendation 1	The plugs for draining the save-alls of F.O. tanks vent pipes to be inserted tight.
River	*Ethel Turner*	Deck machinery	Recommendation 1	Closing devices of fwd F.O. tanks vents port+ stbd not closing completely.
River	*Ethel Turner*	Deck machinery	Tank vent pipe	See Recommendation 1 below.
River	*Ethel Turner*	Internal Structure and painting	Observation 1	Overboard cooling pipe of about 1.5" size in stbd engine room very light water leakage at 2 threaded connections
River	*Ethel Turner*	Machinery and system	Exhaust system	Hot surface insulation of turbocharger of main engine, port side found poorly adjusted.
River	*Ethel Turner*	Machinery and system	Fire insulation	see Observation No.1
River	*Ethel Turner*	Machinery and system	Observation 1	In port side E/R the T/charger found not fully covered by insulation.
RiverCat	*Evonne Goolagong*	Accommodation	Ventilation & air conditioning systems and ducting	Visual only; A/C exists also in the passenger area and the bridge. A/C unit on upper deck is partly corroded
RiverCat	*Evonne Goolagong*	Bridge system	Navigation lights	Anchor light is not working

Class	Vessel	Category	Component	Comments
RiverCat	*Evonne Goolagong*	Bridge system	Recommendation 1	Anchor light to be fixed.
RiverCat	*Evonne Goolagong*	External Structure and painting	Main Deck Aft	found buckled
RiverCat	*Evonne Goolagong*	LSA and FFE	Fire dampers/ventilation flaps	Visual only; not airtight
RiverCat	*Evonne Goolagong*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
RiverCat	*Evonne Goolagong*	LSA and FFE	Life buoys	Markings are fading.
RiverCat	*Evonne Goolagong*	Machinery and system	Control panel and distribution board	Visual only, some cables not well protected.
RiverCat	*Evonne Goolagong*	Machinery and system	Electrical cable and tray in general	some cables and wires loosely placed in port + stbd engine rooms.
RiverCat	*Evonne Goolagong*	Machinery and system	Fire insulation	some flaps of engine rooms not closing tight.
Emerald Gen 2	*Fairlight*	Accommodation	Seat condition	Various seats have stains
Emerald Gen 2	*Fairlight*	Bridge system	Rudder angle indicators	Port and stbd rudder indicators show a deviation of up to 7 degrees.
Emerald Gen 2	*Fairlight*	Deck machinery	Hatch to engine room	Area around hatch crowded with containers and other ER consumables which are partially blocking the escape path.
Emerald Gen 2	*Fairlight*	External Structure and painting	Side fender	Scuffs, marks and local indents
Emerald Gen 2	*Fairlight*	LSA and FFE	Fire Hydrants / monitor / hose	Hoses located on the main deck lockers had spanners not in an accessible location.
Emerald Gen 2	*Fairlight*	LSA and FFE	Life buoys	Lifebuoy on bridge deck and fwd main deck (x2) with vessel UVI partially removed

Class	Vessel	Category	Component	Comments
Emerald Gen 2	*Fairlight*	LSA and FFE	Lifeboat/rescue boat rafts	Top Carley Float across all four stacks found with reflective tape degraded.
Emerald Gen 2	*Fairlight*	LSA and FFE	Portable Extinguishers	AFFF and DP extinguishers at the top of the stairs are not positioned iaw the Fire and Safety Plan
Emerald Gen 2	*Fairlight*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room.
Emerald Gen 2	*Fairlight*	Machinery and system	Bilges	Bilges were found with oil/seawater/fluid build-up, especially under the main engines.
Emerald Gen 2	*Fairlight*	Machinery and system	ECU plugs	ECU panel was found with numerous cables without protective boots properly fitted and outer cable sheaf missing
Emerald Gen 2	*Fairlight*	Machinery and system	Electrical cable and tray in general	Cable penetration between ER and Steering found partially opened up. Poor cable management and support of cables behind the bridge console.
Emerald Gen 2	*Fairlight*	Machinery and system	Exhaust system	Hot surface insulation of turbo charger and exhaust from Main Engines found missing/poorly adjusted in various areas.
Emerald Gen 2	*Fairlight*	Machinery and system	Fire insulation	Some areas of damaged SFP (port fwd ER) with foil missing.
Emerald Gen 2	*Fairlight*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 2	*Fairlight*	Machinery and system	General lighting	Some ER lights had come loose from their brackets. These were rectified during inspections.
Emerald Gen 2	*Fairlight*	Machinery and system	Seawater cooling pump and system	Some ER sea water valves found corroding
First Fleet	*Fishburn*	Accommodation	Fire and watertight doors	Door sill above bridge door aft poor condition with holes, numerous rivets, deformed etc.
First Fleet	*Fishburn*	Deck machinery	Bulwarks	Localised indent port side mid and aft in way of vessel name
First Fleet	*Fishburn*	Deck machinery	Chain on the deck	Limited access. Surface rust on exposed part

Class	Vessel	Category	Component	Comments
First Fleet	*Fishburn*	Deck machinery	Deck sounding pipe	Some caps not secured by wire
First Fleet	*Fishburn*	External Structure and painting	Anchor chain	Limited access. Surface rust on exposed part
First Fleet	*Fishburn*	External Structure and painting	Draft market Plimsoll mark	Most of the draft marks at WL and below have faded
First Fleet	*Fishburn*	External Structure and painting	Side fender	Timber backing of the steel fender is breaking down. Minor scuffs, marks and local indents on the steel strip
First Fleet	*Fishburn*	Internal Structure and painting	Frame/Stiffener/Bracket	Coating breakdown. Structure okay
First Fleet	*Fishburn*	Internal Structure and painting	General structure in machinery space	Coating breakdown. Structure okay
First Fleet	*Fishburn*	Internal Structure and painting	Inner side shell	Coating breakdown. Structure okay
First Fleet	*Fishburn*	Internal Structure and painting	Other piping passing through	Coating breakdown. Structure okay
First Fleet	*Fishburn*	Internal Structure and painting	Vertical ladder and access	Primary escape route from bridge tread worn out
First Fleet	*Fishburn*	LSA and FFE	Distress signals	Exp March 2023
First Fleet	*Fishburn*	LSA and FFE	Life buoys	Lifebuoy line in pooled water degrading
First Fleet	*Fishburn*	LSA and FFE	Lifeboat/rescue boat rafts	Carley float lines in pooled water degrading
First Fleet	*Fishburn*	LSA and FFE	Portable Extinguishers	Fire extinguisher access key missing stbd iwo bridge stairs
First Fleet	*Fishburn*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room or pax areas, lifejacket and flares stickers missing on bridge

Class	Vessel	Category	Component	Comments
First Fleet	*Fishburn*	Machinery and system	Electrical cable and tray in general	Poor condition and housekeeping
First Fleet	*Fishburn*	Machinery and system	Fire insulation	Some areas of damaged SFP
Emerald Gen 1	*Fred Hollows*	Accommodation	Observation 1	Anti-slip pads on fwd stairs starting to lift
Emerald Gen 1	*Fred Hollows*	Accommodation	Ship office	Household, portable sandwich press and microwave set up on the office desk (on the bridge) fire risk?
Emerald Gen 1	*Fred Hollows*	Bridge system	Navigation lights	Port and stbd nav lights held in place by stainless steel bolts with threaded connection through aluminium dissimilar materials corrosion risk some corrosion already present, cable in way of all around white light loose/drooping
Emerald Gen 1	*Fred Hollows*	LSA and FFE	Life Jackets	Lifejackets outer decks with slightly faded high vis, some lifejacket bags under seats found damaged, lifejacket lights missing on bridge, lifejackets exp
Emerald Gen 1	*Fred Hollows*	LSA and FFE	Lifeboat/rescue boat rafts	Some Carley floats missing vessel name and reflective tape faded, and 1 cracked
Emerald Gen 1	*Fred Hollows*	LSA and FFE	Observation 2	2 medical kits 1 missing inventory list and with expired stuff
Emerald Gen 1	*Fred Hollows*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room, Fire plan does not have the children/infant lifejackets listed, infant and children lifejacket stickers peeling off from locker
Emerald Gen 1	*Fred Hollows*	Machinery and system	Electrical cable and tray in general	Twin disk cable perspex cover not in place port + stbd so damage risk, disconnected cable found in stbd ER unsure of purpose
Emerald Gen 1	*Fred Hollows*	Machinery and system	Fire insulation	Some areas of damaged SFP with foil missing (store under aft stairs, port and stbd ER in way of soft patches)
Emerald Gen 1	*Fred Hollows*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.

Class	Vessel	Category	Component	Comments
Emerald Gen 1	*Fred Hollows*	Machinery and system	Main switchboard	Switchboard could not be opened with the main switch on due to physical interference
Emerald Gen 1	*Fred Hollows*	Machinery and system	Observation 1	ER air fan grating dirty/dusty
Emerald Gen 1	*Fred Hollows*	Machinery and system	Observation 4	Main soft patch handles not in closed position
Freshwater	*Freshwater*	Deck machinery	Bunker station save-alls	Drain plug missing on bunker station save all
Freshwater	*Freshwater*	Deck machinery	Tank vent pipe	Vent closing devices on FW Tk Vent Stbd and FO Tk Vent (P/F) not automatically closing
Freshwater	*Freshwater*	External Structure and painting	Bulwark bracket	Stiffener at bulwark emergency exit gate (Stdb side aft) has wastage >50% of original thickness.
Freshwater	*Freshwater*	External Structure and painting	External penetrations	One open peno on main deck s/s stbd side
Freshwater	*Freshwater*	External Structure and painting	Side fender	Stbd side fender has noticeable surface corrosion and damage/indents/scratches.
Freshwater	*Freshwater*	External Structure and painting	Superstructure penetrations	Open penos in superstructure port and stbd above main deck at midships. Open penos in superstructure above crew mess escape hatch on port side.
Freshwater	*Freshwater*	External Structure and painting	Upper Deck (Fwd/Aft)	Paint missing/breaking down in aft/fwd pax areas
Freshwater	*Freshwater*	Internal Structure and painting	Windows	External window trim has heavy pitting on isolated areas on the main deck. Several window leaks in passenger areas on main and upper decks.
Freshwater	*Freshwater*	LSA and FFE	Carley floats	Carley floats have faded reflective tape (all floats on the top of each stack)
Freshwater	*Freshwater*	LSA and FFE	Crew mess escape	Escape hatch from crew mess to main deck evidence of leak

Class	Vessel	Category	Component	Comments
Freshwater	*Freshwater*	LSA and FFE	Distress signals	Orange smoke (1) and red hand (2) flares expiry date in March 23 (due for replacement)
Freshwater	*Freshwater*	LSA and FFE	Engine room escape	ER emergency escape not dogged/secured
Freshwater	*Freshwater*	LSA and FFE	Life buoys	Vessel name partially missing on life buoys on stbd aft bridge station
Freshwater	*Freshwater*	LSA and FFE	Life Jackets	Child and infant lifejackets not provided in the marked stowage locations
Freshwater	*Freshwater*	LSA and FFE	Rescue boat	No rescue boat launching procedure posted.
Freshwater	*Freshwater*	LSA and FFE	Signboard	2 x missing fire hydrant signs in engine room
Freshwater	*Freshwater*	Machinery and system	Bilges	Some oil and seawater in ER bilges
Freshwater	*Freshwater*	Machinery and system	ER overboard discharges	Temporary repair of pipe leading to an ER overboard on stbd side (mid-engine room)
Freshwater	*Freshwater*	Machinery and system	Fire insulation	SFP coverage OK but some damage noted on genset insulation where crane rail comes into contact during movement.
Freshwater	*Freshwater*	Machinery and system	Gearbox	Build-up of oil around gearboxes. Suggests several leaks.
Freshwater	*Freshwater*	Machinery and system	Generator 1	Coolant leak noted on the fwd main generator. Visual only machinery not running
Freshwater	*Freshwater*	Machinery and system	Lube oil pump and system	Lube oil cooler flange fitting has drip bucket fitted under flange. Suggests that a leak is present during usage.
Freshwater	*Freshwater*	Machinery and system	Sea chest box	Some corrosion/existing leaks evident on SW piping and pumps associated with the sea chests
Freshwater	*Freshwater*	Machinery and system	Seawater cooling pump and system	Some corrosion/existing leaks evident on SW piping and pumps in ER
Freshwater	*Freshwater*	Machinery and system	Steering system fwd	Significant number of absorbent pads and oil leaks noted in fwd and aft steering gear rooms in way of steering gear and pumps

Class	Vessel	Category	Component	Comments
Freshwater	*Freshwater*	Machinery and system	Steering system aft	Significant number of absorbent pads and oil leaks noted in fwd and aft steering gear rooms in way of steering gear and pumps
First Fleet	*Friendship*	Bridge system	CCTV	CCTV screen not operational.
First Fleet	*Friendship*	Bridge system	Engine tachometers	Stbd ME tachometer not working on bridge.
First Fleet	*Friendship*	Internal Structure and painting	Vertical ladder and access	Primary escape route from bridge tread worn out
First Fleet	*Friendship*	LSA and FFE	Carley float	Reflective tape faded/degraded.
First Fleet	*Friendship*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room or pax areas, lifejacket and flares stickers missing on bridge
First Fleet	*Friendship*	Machinery and system	Exhaust system	ME exhaust not lagged all the way to water silencer. Some flanges unlagged.
First Fleet	*Friendship*	Machinery and system	Fire insulation	Some areas of damaged SFP
First Fleet	*Friendship*	Machinery and system	Observation 1	ER escape hatch not marked in ER.
First Fleet	*Golden Grove*	Deck machinery	Deck sounding pipe	Some caps not secured by wire
First Fleet	*Golden Grove*	Deck machinery	Hatch to engine room	Pooled water found under hatch port fwd indicating possible leak from hatch
First Fleet	*Golden Grove*	External Structure and painting	Anchor	Limited view. Minor paint breakdown. Shank slightly bent
First Fleet	*Golden Grove*	Internal Structure and painting	Vertical ladder and access	Primary escape route from bridge tread worn out
First Fleet	*Golden Grove*	LSA and FFE	Life Jackets	Only 2 of 3 bridge lifejackets found
First Fleet	*Golden Grove*	LSA and FFE	Portable Extinguishers	Upper pax deck Co2 fire ext missing iwo of bridge stairs. Also service overdue according to tag on port ER dry powder

Class	Vessel	Category	Component	Comments
First Fleet	*Golden Grove*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room or pax areas, lifejacket and flares stickers missing on bridge
First Fleet	*Golden Grove*	Machinery and system	Bilges	Water in port bilge possibly due to fwd hatch leak
First Fleet	*Golden Grove*	Machinery and system	Fire insulation	Some areas of damaged SFP
First Fleet	*Golden Grove*	Machinery and system	Fire pump and system	Fire pump locker used as a storeroom. Incorrect old signage for fire pump
River	*Kurt Fearnley*	Accommodation	Toilet	Stbd aft toilet's door is not closing fully easily.
River	*Kurt Fearnley*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
River	*Lauren Jackson*	Deck machinery	Windlass/Mooring winches	Some mooring ropes found worn.
River	*Lauren Jackson*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
River	*Lauren Jackson*	LSA and FFE	Life buoys	marking with UVI number faded at the lifebuoy on the upper deck.
River	*Lauren Jackson*	LSA and FFE	Observation 1	Upper deck's lifebuoy 's markings to be corrected.
River	*Liz Ellis*	Deck machinery	Observation 1	Drain plugs of Fuel oil save-alls port & stbd side on fwd main deck were not put in place (pollution risk)
River	*Liz Ellis*	Deck machinery	Recommendation 1	Closing flap of fwd F.O. tanks vent stbd side not closing.
River	*Liz Ellis*	Deck machinery	Tank vent pipe	See Recommendation 1 and Observation 1 below.
SuperCat	*Louise Sauvage*	Accommodation	Passenger boarding door	Scratches and missing paint on entry doors
SuperCat	*Louise Sauvage*	Accommodation	Toilet	carpets dirty and with coating blisters
SuperCat	*Louise Sauvage*	Bridge system	Charts & publications	Visual only, marine publications library not in good order.

Class	Vessel	Category	Component	Comments
SuperCat	*Louise Sauvage*	Bridge system	Magnetic compass (compensated)	Visual only, Calibration certificate onboard is very old.
SuperCat	*Louise Sauvage*	External Structure and painting	Main Deck Aft	Covered by carpet/flooring, coating affected on aft stbd side main deck
SuperCat	*Louise Sauvage*	External Structure and painting	Main Deck Fwd	Covered by carpet/flooring; carpets in passenger sitting areas are damaged and dirty.
SuperCat	*Louise Sauvage*	External Structure and painting	Main Deck Mid	Covered by carpet/flooring, worn coating at the embarkation areas port & stbd side.
SuperCat	*Louise Sauvage*	External Structure and painting	Recommendation 1	the 3 holes in the fwd port side chain locker to be closed.
SuperCat	*Louise Sauvage*	External Structure and painting	Side shell Port	limited access. Port side vertical sharp stem lightly dented due to light collision just above the waterline
SuperCat	*Louise Sauvage*	External Structure and painting	Superstructure	Three round holes found in fwd port side void space/chain locker
SuperCat	*Louise Sauvage*	Machinery and system	Bilges	Build-up of oil and other fluid in both ERs
SuperCat	*Louise Sauvage*	Machinery and system	Cabling	Some cabling in ER not supported in cable trays or fixed with metal fixings.
SuperCat	*Louise Sauvage*	Machinery and system	Electrical cable and tray in general	Cables not bundled and protected correctly; connectors only provisory installed
SuperCat	*Louise Sauvage*	Machinery and system	ER hatch	ER soft patch hatches not fully dogged/secured
SuperCat	*Louise Sauvage*	Machinery and system	Exhaust system	M. Engines' exhaust pipes have exposed areas/sections.
SuperCat	*Louise Sauvage*	Machinery and system	Gearbox	Surface corrosion on gearboxes
SuperCat	*Louise Sauvage*	Machinery and system	Generator 1	Visual only. Absorbent pad below engine suggests ongoing leaks. Surface corrosion found

Class	Vessel	Category	Component	Comments
SuperCat	*Louise Sauvage*	Machinery and system	Generator 2	Visually only, all over surface corrosion found
SuperCat	*Louise Sauvage*	Machinery and system	Recommendation 2	Heat insulation of exhaust pipes to be repaired.
SuperCat	*Louise Sauvage*	Machinery and system	Recommendation 3	El. Cables to be bundled/shielded and marine connectors installed.
River	*Margaret Olley*	Deck machinery	Hatch to engine room	Cleats of engine room hatch not tightened.
River	*Margaret Olley*	Deck machinery	Observation 1	Drain plugs of Fuel oil save-alls port & stbd side on fwd main deck were not put in place (pollution risk)
River	*Margaret Olley*	Deck machinery	Observation 2	All cleats of engine room hatch to be tightened during sailing.
River	*Margaret Olley*	Deck machinery	Recommendation 1	Closing flap of fwd F.O. tanks vent port side not closing.
River	*Margaret Olley*	Deck machinery	Tank vent pipe	See Recommendation 1 and Observation 1 below.
River	*Margaret Olley*	LSA and FFE	Observation 1	Lifebuoy's markings (UVI number) on the upper deck were faded/partly missing.
River	*Margaret Olley*	Machinery and system	Steering system 1	Witnessed operation from bridge only. Steering void not accessible
River	*Margaret Olley*	Machinery and system	Steering system 2	Witnessed operation from bridge only. Steering void not accessible
RiverCat	*Marjorie Jackson*	Accommodation	General housekeep	trip hazard on both fwd entrance doors with 2.50 cm high sill.
RiverCat	*Marjorie Jackson*	Accommodation	Recommendation 1	trip hazard at fwd entrance doors to main deck to be eliminated.
RiverCat	*Marjorie Jackson*	External Structure and painting	Main Deck Aft	whole aft deck found buckled
RiverCat	*Marjorie Jackson*	External Structure and painting	Side fender	Limited access some scratches and light dents found

Class	Vessel	Category	Component	Comments
RiverCat	*Marjorie Jackson*	LSA and FFE	Fire dampers/ventilation flaps	Visual only; not airtight
RiverCat	*Marjorie Jackson*	LSA and FFE	Life buoys	Markings are fading.
RiverCat	*Marjorie Jackson*	Machinery and system	Bilge pump and system	some oily bilges around the engines,
RiverCat	*Marjorie Jackson*	Machinery and system	Control panel and distribution board	Visual only, some cables not well protected.
RiverCat	*Marjorie Jackson*	Machinery and system	Electrical cable and tray in general	some cables and wires loosely placed in port + stbd engine rooms.
RiverCat	*Marjorie Jackson*	Machinery and system	Exhaust system	Heat insulation around exhaust ducts not complete
RiverCat	*Marjorie Jackson*	Machinery and system	Fire insulation	some flaps of engine rooms not closing tight.
RiverCat	*Marjorie Jackson*	Machinery and system	Oil tank and gauge system	Save-alls of both Fuel filling stations port & stbd side without a plug for draining
RiverCat	*Marlene Mathews*	External Structure and painting	Main Deck Fwd	Pitting corrosion with several areas of plate fully wasted through found below navigation bridge. Heavy salt build-up around pumps inside the same area. Minor soft indents/deformation on fore deck. Stbd side deck crack at pax entry door in way of slots.
RiverCat	*Marlene Mathews*	External Structure and painting	Pax entry door (fwd)	Rubber seal missing around port side entry door.
RiverCat	*Marlene Mathews*	LSA and FFE	Carley float	Reflective tape faded/degraded.
RiverCat	*Marlene Mathews*	LSA and FFE	Distress signals	All flares out of date (expiry in 2022). Replaced during survey.
RiverCat	*Marlene Mathews*	LSA and FFE	Fire dampers/ventilation flaps	Some louvers not free moving and have questionable sealing abilities in ER
RiverCat	*Marlene Mathews*	LSA and FFE	Life buoys	Faded reflective tape and missing/damaged vessel name and port of registry

Class	Vessel	Category	Component	Comments
RiverCat	*Marlene Mathews*	LSA and FFE	Life Jackets	Faded reflective tape on numerous lifejackets under seats.
RiverCat	*Marlene Mathews*	Machinery and system	Exhaust system	ME and generator exhaust piping missing coverage in some areas.
RiverCat	*Marlene Mathews*	Machinery and system	Fire insulation	SFP iwo engine penos missing in some areas.
RiverCat	*Marlene Mathews*	Machinery and system	Fire pump and system	Corrosion noted on pipework and pumps. Significant amount of salt build-up in the vicinity suggests leaks.
RiverCat	*Marlene Mathews*	Machinery and system	Penetrations	Stbd ER penetration open at inboard bulkhead (near fire control system box)
Emerald Gen 1	*May Gibbs*	Accommodation	Carpet condition	Some areas of the floor have marks and scuffs
Emerald Gen 1	*May Gibbs*	Accommodation	Ceiling / Bulkheads	Some ceiling tiles are loose and have build-up of dust, ceiling panel has an old hole for camera
Emerald Gen 1	*May Gibbs*	Accommodation	Interior fitout	Some window seals loose
Emerald Gen 1	*May Gibbs*	Accommodation	Seat condition	Various seats have stains and rips
Emerald Gen 1	*May Gibbs*	LSA and FFE	Life Jackets	Lifejackets outer decks with slightly faded high vis, some lifejacket bags under seats found damaged, 3 inflatable lifejackets on bridge and ER entrance expired fixed type in place as back up, lifejackets missing lights, child and infant life jacket signs not in place and not on plan
Emerald Gen 1	*May Gibbs*	LSA and FFE	Lifeboat/rescue boat rafts	Some Carley floats missing vessel name and reflective tape faded sample only, 1 Carley float stbd damaged plug, 1 Carley float port cracked plastic
Emerald Gen 1	*May Gibbs*	LSA and FFE	Observation 1	Medical kit in the wrong location
Emerald Gen 1	*May Gibbs*	LSA and FFE	Observation 2	Secondary escape route for crew from bridge blocked by Australia Day decorations

Class	Vessel	Category	Component	Comments
Emerald Gen 1	*May Gibbs*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room, Fire plan does not have the children/infant lifejackets listed, infant lifejacket stickers missing from locker
Emerald Gen 1	*May Gibbs*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 1	*May Gibbs*	Machinery and system	Observation 1	ER air fan grating dirty/dusty
Emerald Gen 1	*May Gibbs*	Machinery and system	Observation 4	ME soft patch handles left open and some damaged
RiverCat	*Nicole Livingstone*	Accommodation	General housekeep	trip hazard on both fwd entrance doors with 4 cm high sill.
RiverCat	*Nicole Livingstone*	Accommodation	Recommendation 1	trip hazard at fwd entrance doors to main deck to be eliminated.
RiverCat	*Nicole Livingstone*	Accommodation	Toilet	Toilet door aft is not closing by itself easily.
RiverCat	*Nicole Livingstone*	Accommodation	Ventilation & air conditioning systems and ducting	Visual only; A/C exists also in the passenger area and the bridge. A/C unit on upper deck is partly corroded
RiverCat	*Nicole Livingstone*	External Structure and painting	Main Deck Aft	found buckled
RiverCat	*Nicole Livingstone*	LSA and FFE	Fire dampers/ventilation flaps	Visual only; not airtight
RiverCat	*Nicole Livingstone*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
RiverCat	*Nicole Livingstone*	LSA and FFE	Life buoys	Markings are fading.
RiverCat	*Nicole Livingstone*	Machinery and system	Control panel and distribution board	Visual only, some cables not well protected.
RiverCat	*Nicole Livingstone*	Machinery and system	Electrical cable and tray in general	some cables and wires loosely placed in port + stbd engine rooms.
RiverCat	*Nicole Livingstone*	Machinery and system	Fire insulation	some flaps of engine rooms not closing tight.

Class	Vessel	Category	Component	Comments
River	*Olive Cotton*	Deck machinery	Observation 1	Drain plugs of Fuel oil save-alls port & stbd side on fwd main deck were not put in place (pollution risk)
River	*Olive Cotton*	Deck machinery	Tank vent pipe	See Observation 1
HarbourCat	*Pam Burridge*	LSA and FFE	Carley float	Reflective tape faded/degraded.
HarbourCat	*Pam Burridge*	LSA and FFE	Fire Hydrants / monitor / hose	Fire hose nozzle damaged.
HarbourCat	*Pam Burridge*	LSA and FFE	Life buoys	Reflective tape faded/degraded.
HarbourCat	*Pam Burridge*	LSA and FFE	Portable Extinguishers	Fire extinguishers in fwd pax area obstructed by bins and cleaning gear
HarbourCat	*Pam Burridge*	Machinery and system	Bilges	Significant build-up of oil in Stbd ER. Pumped dry during inspection.
HarbourCat	*Pam Burridge*	Machinery and system	Cabling	Some cabling in ER not supported in cable trays or fixed with metal fixings. Unterminated wire in stbd ER associated with ER fan.
HarbourCat	*Pam Burridge*	Machinery and system	Exhaust system	ME exhaust has exposed areas/sections.
Emerald Gen 1	*Pemulwuy*	Accommodation	Ship office	Household, portable oven set up on the office desk (on the bridge) fire risk?
Emerald Gen 1	*Pemulwuy*	Internal Structure and painting	Other piping passing through	Deck peno from main switchboard to tunnel not sealed assumed supposed to be fire/WT
Emerald Gen 1	*Pemulwuy*	LSA and FFE	Life buoys	Missing vessel marking
Emerald Gen 1	*Pemulwuy*	LSA and FFE	Life Jackets	Lifejackets outer decks with slightly faded high vis, some lifejacket bags under seats found damaged, lifejacket lights missing on bridge
Emerald Gen 1	*Pemulwuy*	LSA and FFE	Lifeboat/rescue boat rafts	Some Carley floats missing vessel name and reflective tape faded sample only
Emerald Gen 1	*Pemulwuy*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room, Fire plan does not have the children/infant

Class	Vessel	Category	Component	Comments
				lifejackets listed, infant lifejacket stickers missing from locker, some stickers peeling, confined space signage damaged
Emerald Gen 1	*Pemulwuy*	Machinery and system	Bilges	Bilges were found with minor oil/seawater/fluid
Emerald Gen 1	*Pemulwuy*	Machinery and system	Exhaust system	Hot surface insulation of turbocharger and exhaust from MEs found loose/missing/poorly adjusted in various areas
Emerald Gen 1	*Pemulwuy*	Machinery and system	Fire insulation	Some areas of damaged SFP with foil missing (store under aft stairs, port and stbd ER in way of soft patches)
Emerald Gen 1	*Pemulwuy*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 1	*Pemulwuy*	Machinery and system	Observation 1	ER air fan grating dirty/dusty
Emerald Gen 1	*Pemulwuy*	Machinery and system	Observation 4	ME soft patch handles left open
Emerald Gen 1	*Pemulwuy*	Machinery and system	Observation 5	fan in tank void stbd missing grate hazard
River	*Ruby Langford Ginibi*	Deck machinery	Observation 1	Drain plugs of Fuel oil save-alls port & stbd side on fwd main deck were not put in place (pollution risk)
River	*Ruby Langford Ginibi*	Deck machinery	Recommendation 1	Closing flap of fwd F.O. tanks vent stbd side not closing
River	*Ruby Langford Ginibi*	Deck machinery	Tank vent pipe	See Recommendation 1 and Observation 1 below.
River	*Ruby Langford Ginibi*	LSA and FFE	Observation 1	Lifebuoy's markings (UVI number) on the upper deck were faded/partly missing.
River	*Ruth Park*	Accommodation	Toilet	Stbd aft toilet's door is not closing fully easily.
River	*Ruth Park*	Bridge system	Office and admin. system	Certificate of operation is missing.

Class	Vessel	Category	Component	Comments
River	*Ruth Park*	Deck machinery	Recommendation 1	Closing arrangement for the fwd F.O. tanks' vent pipes port &stbd to be repaired.
River	*Ruth Park*	Deck machinery	Tank vent pipe	F.O. tank vent pipe stbd not closing and port side counterweight missing.
River	*Ruth Park*	Deck machinery	Windlass/Mooring winches	Some mooring ropes found worn.
River	*Ruth Park*	LSA and FFE	Fire Hydrants / monitor / hose	Assembling tool missing in the fire box, main deck.
River	*Ruth Park*	Machinery and system	Fuel oil pump and system	plugs for draining the save all of fwd F.O. tanks (port + stbd) overflow/vent pipes not inserted.
River	*Ruth Park*	Machinery and system	Recommendation 1	The plugs for draining the save-alls of F.O. tanks vent pipes to be inserted tight.
First Fleet	*Scarborough*	External Structure and painting	Superstructure	The open bridge deck shows coating flaking and lightly buckled.
First Fleet	*Scarborough*	Machinery and system	Bilge pump and system	In both engine rooms about 50 mm deep bilge water in fwd part.
First Fleet	*Scarborough*	Machinery and system	ER escape hatch	ER escape hatch not fastened with all cleats.
First Fleet	*Scarborough*	Machinery and system	Exhaust system	ME exhaust not lagged all the way to water silencer. Some flanges and supports unlagged.
First Fleet	*Scarborough*	Machinery and system	Fire insulation	Some areas of missing SFP in the tunnel curve, especially in the stbd engine room.
RiverCat	*Shane Gould*	Accommodation	General housekeep	trip hazard on both fwd entrance doors with 3cm high sill.
RiverCat	*Shane Gould*	Accommodation	Recommendation 1	trip hazard at fwd entrance doors to main deck to be eliminated.
RiverCat	*Shane Gould*	External Structure and painting	Main Deck Aft	whole aft deck found buckled
RiverCat	*Shane Gould*	External Structure and painting	Main Deck Mid	in passengers' cabin fwd centre part, several blisters on the bottom coating.

Class	Vessel	Category	Component	Comments
RiverCat	*Shane Gould*	External Structure and painting	Side shell Port	partly visible. On the stbd semi hull vertical stem 2 dents found above the waterline for a probable collision
RiverCat	*Shane Gould*	LSA and FFE	Fire dampers/ventilation flaps	Visual only; not airtight
RiverCat	*Shane Gould*	LSA and FFE	Life buoys	Markings are fading.
RiverCat	*Shane Gould*	LSA and FFE	Lifeboat/rescue boat rafts	Carley Floats available. One fwd stbd side Carley float found with some coating peeling
RiverCat	*Shane Gould*	Machinery and system	Bilge pump and system	some oily bilges around the engines, about 20mm deep in stbd engine room and 15mm deep in port engine room.
RiverCat	*Shane Gould*	Machinery and system	Bilges	not dry bilges see above…
RiverCat	*Shane Gould*	Machinery and system	Control panel and distribution board	Visual only, some cables not well protected.
RiverCat	*Shane Gould*	Machinery and system	Electrical cable and tray in general	some cables and wires loosely placed in port + stbd engine rooms.
RiverCat	*Shane Gould*	Machinery and system	Exhaust system	Heat insulation does not cover completely the exhaust ducts of the diesel engines
RiverCat	*Shane Gould*	Machinery and system	Fire insulation	some flaps of engine rooms not closing tight.
First Fleet	*Sirius*	Bridge system	Magnetic compass (compensated)	Visual only, Compass calibration table is missing.
First Fleet	*Sirius*	Deck machinery	Tank vent pipe	Closing flaps of overflow pipes on the fwd deck and stbd side not closing fully
First Fleet	*Sirius*	External Structure and painting	Superstructure	The open bridge deck shows only light buckling and some coating brake down
First Fleet	*Sirius*	Machinery and system	ER escape hatch	stbd engine room entrance hatch cover's sealing found worn out and damaged.
First Fleet	*Sirius*	Machinery and system	Fire insulation	Some areas of missing SFP in the tunnel curve, in port engine room.

Class	Vessel	Category	Component	Comments
First Fleet	*Sirius*	Machinery and system	Recommendation 1	Missing SFP to be insulated in the tunnel curve of the engine rooms.
First Fleet	*Sirius*	Machinery and system	Recommendation 2	Damaged sealing of stbd engine room's entry hatch cover to be renewed.
SuperCat	*SuperCat4*	Accommodation	Bridge chairs	Seats ripped
SuperCat	*SuperCat4*	Accommodation	Passenger boarding door	Scratches and missing paint on entry doors
SuperCat	*SuperCat4*	Bridge system	Rudder angle indicators	Rudder indicators showing deviation up to 5 degrees when rudders are at midships
SuperCat	*SuperCat4*	LSA and FFE	Carley float	Reflective tape faded/degraded.
SuperCat	*SuperCat4*	LSA and FFE	Fire Hydrants / monitor / hose	Fire hose nozzle damaged.
SuperCat	*SuperCat4*	LSA and FFE	Portable Extinguishers	Fire extinguishers in pax area obstructed by bins and cleaning gear
SuperCat	*SuperCat4*	Machinery and system	Bilges	Build-up of oil and other fluid in both ERs. Rags and pads noted around fitting on ME and generators.
SuperCat	*SuperCat4*	Machinery and system	Cabling	Some cabling in ER not supported in cable trays or fixed with metal fixings.
SuperCat	*SuperCat4*	Machinery and system	ER hatch	ER soft patch hatches not fully dogged/secured
SuperCat	*SuperCat4*	Machinery and system	Exhaust system	ME exhaust has exposed areas/sections.
SuperCat	*SuperCat4*	Machinery and system	Gearbox	Surface corrosion on gearboxes
SuperCat	*SuperCat4*	Machinery and system	Generator 1	Visual only. Absorbent pad below engine suggests ongoing leaks.
SuperCat	*SuperCat4*	Machinery and system	Penetration	Superstructure peno at aft of wheelhouse poorly sealed
SuperCat	*SuperCat4*	Machinery and system	Piping	Piping and cables from electrical room found with rags between them.
First Fleet	*Supply*	Deck machinery	Deck sounding pipe	Some caps not secured by wire

Class	Vessel	Category	Component	Comments
First Fleet	*Supply*	Internal Structure and painting	Vertical ladder and access	Primary escape route from bridge tread worn out
First Fleet	*Supply*	LSA and FFE	Life buoys	Lifebuoy line port side in pooled water degrading
First Fleet	*Supply*	LSA and FFE	Life Jackets	Only 2 of 3 bridge lifejackets found
First Fleet	*Supply*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room or pax areas, lifejacket and flares stickers missing on bridge
First Fleet	*Supply*	Machinery and system	Fire insulation	Some areas of damaged SFP
Emerald Gen 1	*Victor Chang*	Accommodation	Seat condition	Various seats have stains and rips two bench seats are taped off 1 stbd lower, 1 upper fwd inside
Emerald Gen 1	*Victor Chang*	Accommodation	Ship office	Household, portable toaster set up on the office desk (on the bridge) fire risk?
Emerald Gen 1	*Victor Chang*	Bridge system	Navigation lights	Port and stbd nav lights held in place by stainless steel bolts with threaded connection through aluminium dissimilar materials corrosion risk some corrosion already present, mat black paint peeling off leaving bare aluminium for port and stbd iwo lights
Emerald Gen 1	*Victor Chang*	Bridge system	Observation 2	Ceiling panels not in place properly
Emerald Gen 1	*Victor Chang*	Deck machinery	Tank vent pipe	Sewage tank vent is an open pipe no insect shield
Emerald Gen 1	*Victor Chang*	External Structure and painting	Draft market Plimsoll mark	Fwd stbd draft mark '4' is faded
Emerald Gen 1	*Victor Chang*	LSA and FFE	Life buoys	Missing vessel marking
Emerald Gen 1	*Victor Chang*	LSA and FFE	Life Jackets	Lifejackets outer decks with slightly faded high vis, some lifejacket bags under seats found damaged, lifejacket lights missing on bridge

Class	Vessel	Category	Component	Comments
Emerald Gen 1	*Victor Chang*	LSA and FFE	Lifeboat/rescue boat rafts	Some Carley floats missing vessel name and reflective tape faded sample only
Emerald Gen 1	*Victor Chang*	LSA and FFE	Signboard	Some fire equipment and all escape signage not found in either engine room, Fire plan does not have the children/infant lifejackets listed, infant and children lifejacket stickers peeling off from locker, some stickers peeling, confined space signage damaged
Emerald Gen 1	*Victor Chang*	Machinery and system	Exhaust system	Hot surface insulation of turbocharger and exhaust from MEs found loose/missing/poorly adjusted in various areas
Emerald Gen 1	*Victor Chang*	Machinery and system	Fire insulation	Some areas of damaged SFP with foil missing (store under aft stairs, port and stbd ER in way of soft patches, ER to tank space bhd iwo pipe penos)
Emerald Gen 1	*Victor Chang*	Machinery and system	Fuel oil pump and system	Shielding of high-pressure fuel lines found missing.
Emerald Gen 1	*Victor Chang*	Machinery and system	Observation 1	ER air fan grating dirty/dusty

About DNV

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