

RioTinto

Proactive approach for Identifying and Mitigating risk – Dry Bulk

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Safety Share – Falling Object

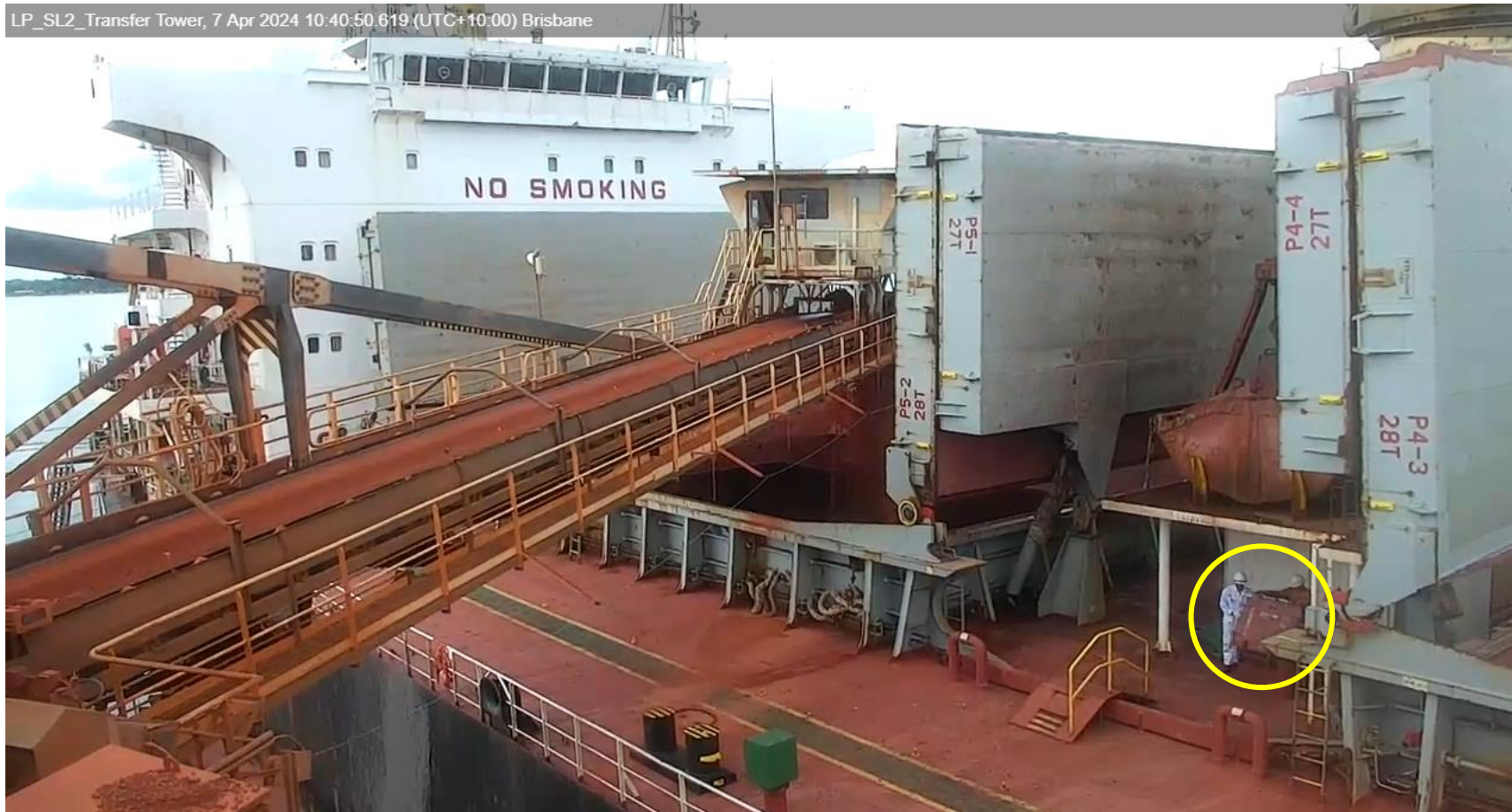
FOB vessel first time call at Lorim Point, Weipa. During the first loading sequence, a crewman was observed in the hold.



Falling objects



Confined space



- Loading operations ceased immediately.
- Crewman had entered the hold to replace bilge covers.
- Crew did not advise the terminal of this activity.
- Terminal operators followed operation procedures when a safety concern was found. Operations ceased, supervision informed, D&A completed, and statements collected.
- Loading only recommenced when it was determined to be safe to do so and additional controls were in place.

Rio Tinto Marine activities at a glance

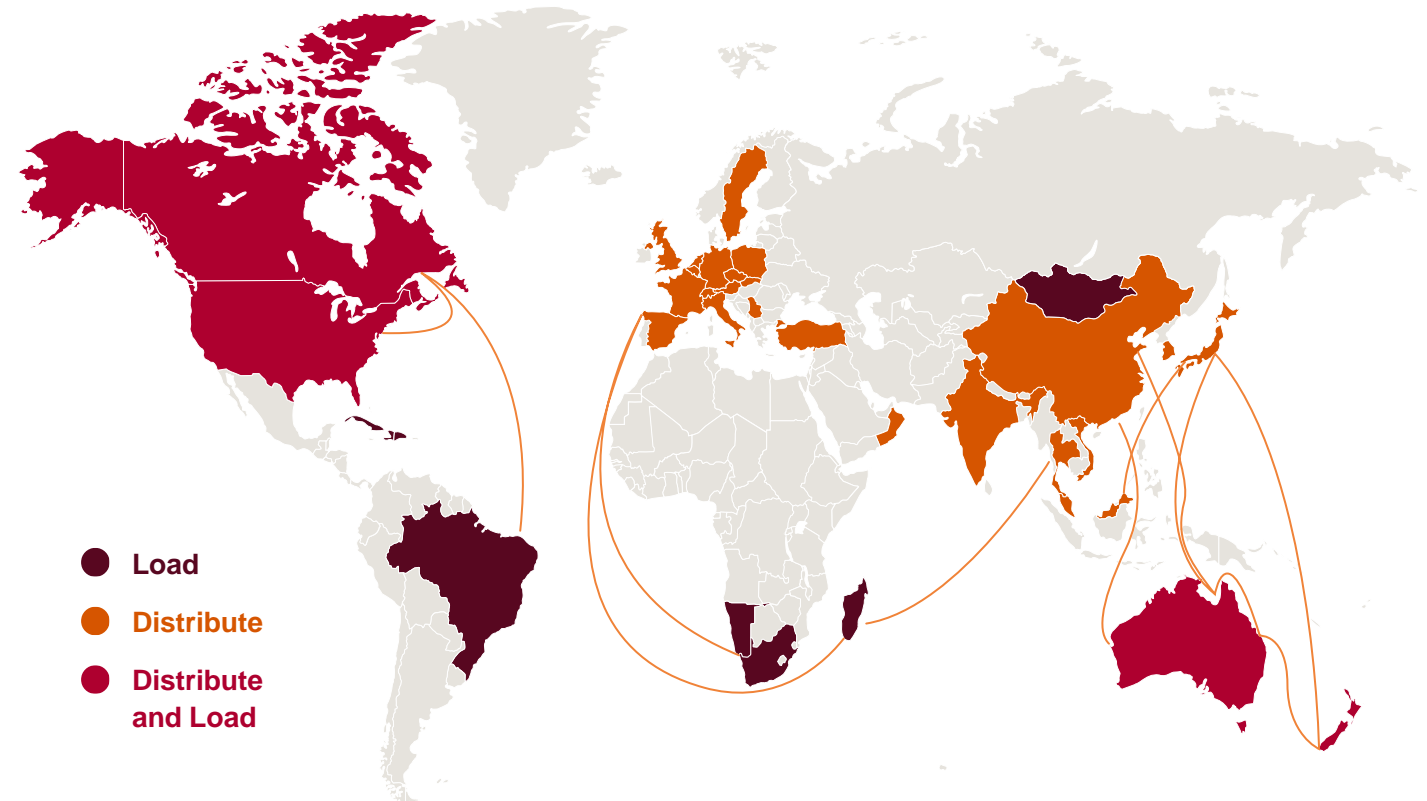
By volume, Rio Tinto is the world's largest dry bulk shipper

The Vision

- As a leading Charterer, we strive to have a fatality and injury free portfolio and an uplifted baseline for crew welfare.

The Action

- Rio Tinto has been on a journey to strengthen our vetting, assurance, and incident management processes
- Rio Tinto has developed a series of recommendations in collaboration with key partners to strengthen ties in safety & crew welfare in 2022 and onwards.
- Our safety programs anchors together these high priority initiatives on our journey to realising our vision



17
vessels
owned by
Rio Tinto

Over
230
contracted
vessels at any
given time

2,700
voyages
per annum

315_{MT}
per annum

Our values

Care

- People's safety
- Communities
- Planet

Courage

- Try new things
- Speak up
- Do what's right

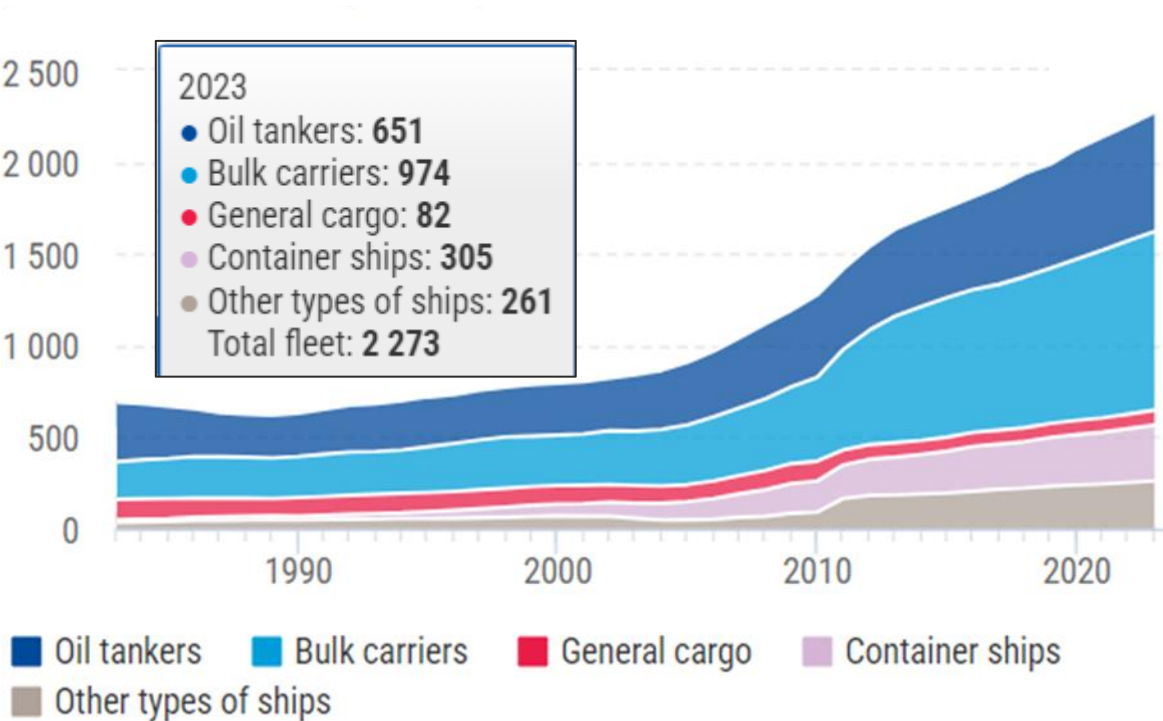
Curiosity

- Collaboration
- Learning
- Innovation



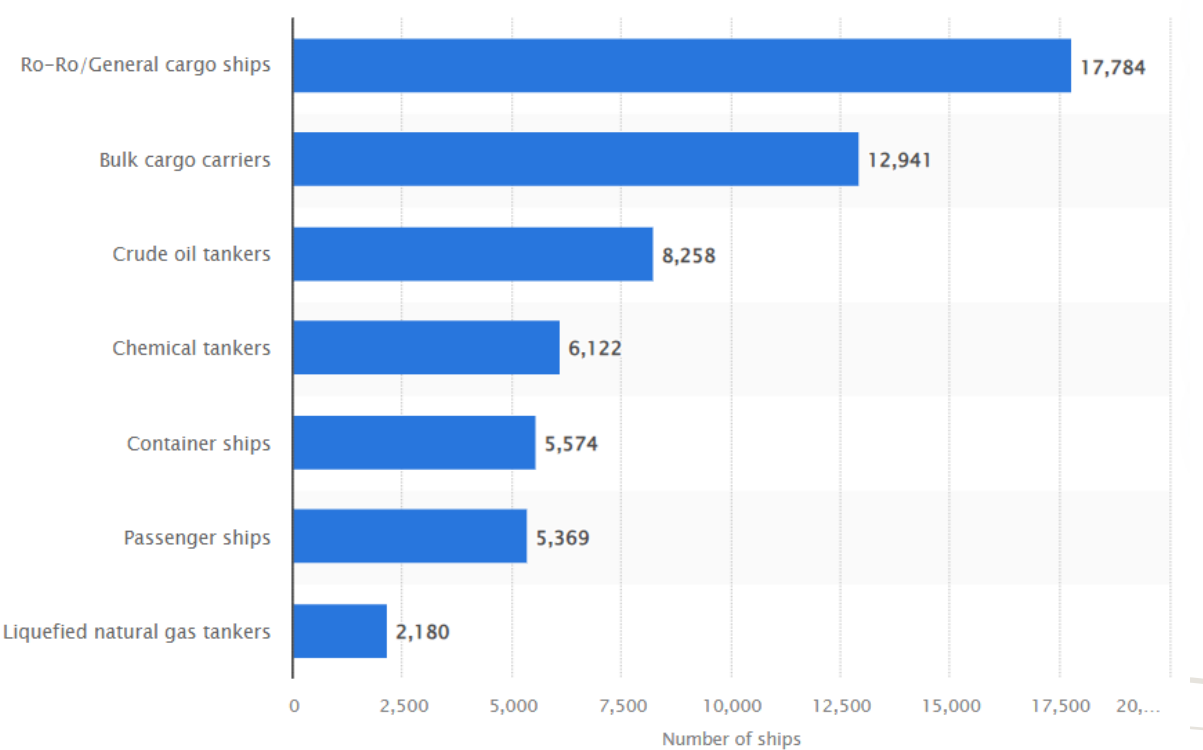
World Fleet by Principal Vessel Type

Millions of dead weight tons



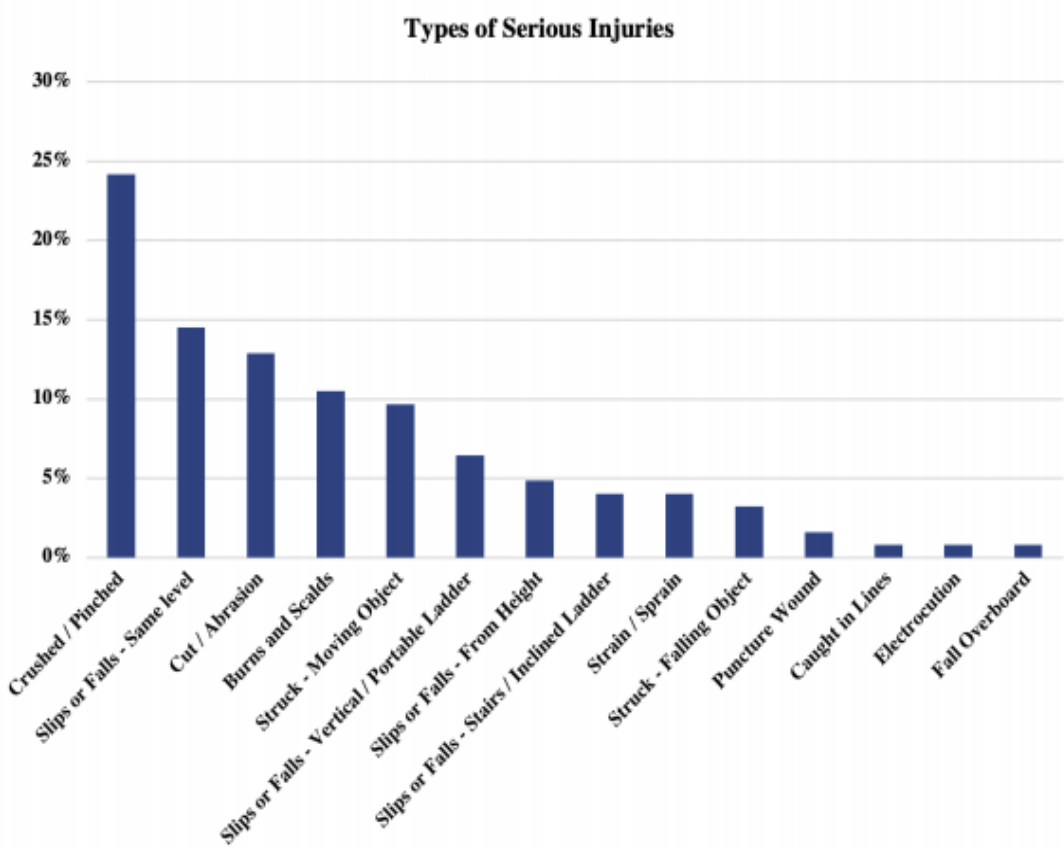
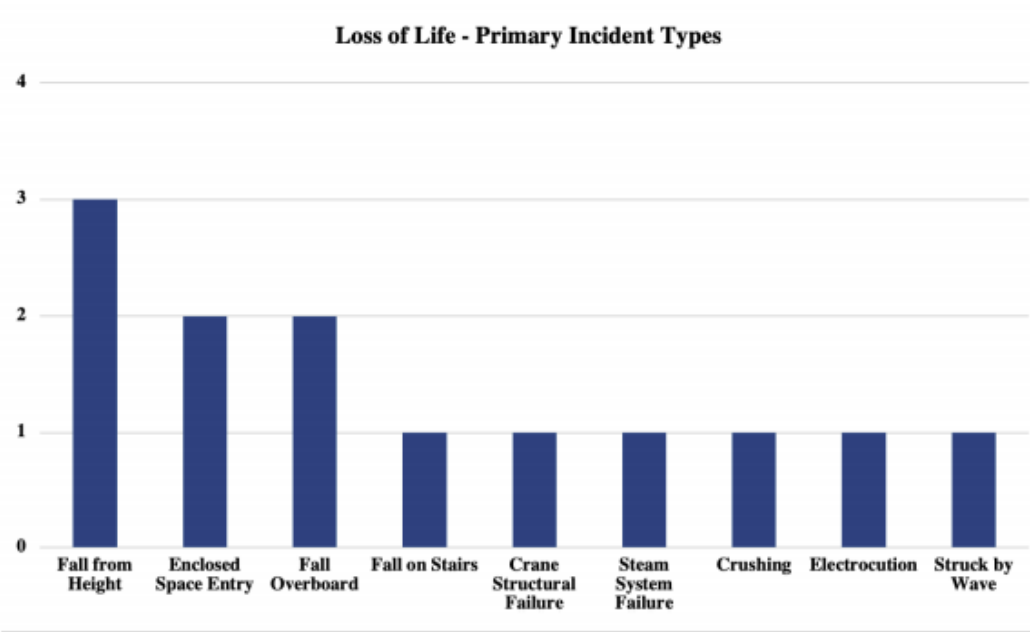
Source: [UNCTADstat \(UNCTAD, 2023a\)](#); [Clarksons Research](#)

Number of ships



Source: [Global merchant fleet - number of ships by type | Statista](#)

Marine Casualties



Source: REPUBLIC OF THE MARSHALL ISLANDS, ANNUAL REPORT ON MARINE SAFETY INVESTIGATIONS 2020

Rio Tinto's safety journey across our global managed assets in mining and metals

1999 – 2004

- Introduced new Rio Tinto Safety Standard across RT businesses globally in 1999
- Additional standards introduced within Safety, Health, Environment, Community and Social Performance

2005 – 2013

- Significant reduction in injuries (AIFR)
- Fatality rates did not improve
- Fatality Prevention Programme introduced in 2013**

2014 – 2022

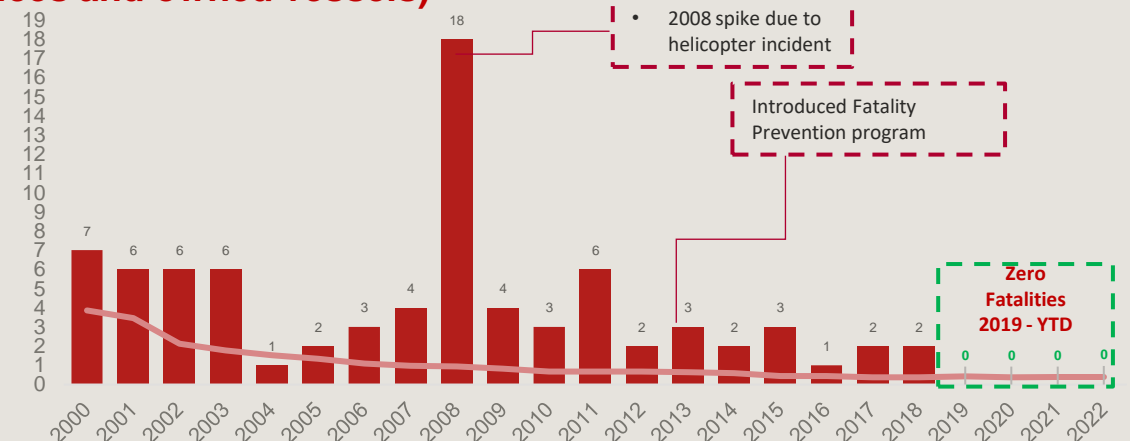
- Analysis, Learnings & Adjustments: stable and low injury frequency rate.
- Fatality rates improved – **4 consecutive years with zero fatalities since 2019**
- Launched HSES transformation programme in 2021

All Injury Frequency Rate (AIFR)



Rio Tinto Global Managed Assets in Mining and Metals (including mines, plants, offices and owned vessels)

Fatalities



Fatalities continue to occur on Rio Tinto's chartered fleet and the broader industry, while the pandemic accelerated the need for crew welfare and wellbeing

Rio Tinto chartered
fleet fatalities

2019: 2
2020: 1
2021: 3
2022: 1

Number of reported
fatalities in shipping
globally

2015-2019:
527* or 1 killed every 3.4 days

Total no. of reported
shipping industry
incidents including total
losses

2021: 3,000[^]

Bulk vessels among top 5 vessel
types lost between 2012 - 2021

Stranded seafarers
during height of
pandemic in 2000

400,000

Crew welfare and retention rate is a risk
factor considered in underwriting[^]

Mental health and
wellbeing should be part
of safety culture

45%

of seafarers who reported
symptoms of depression do not
ask for help^{**}

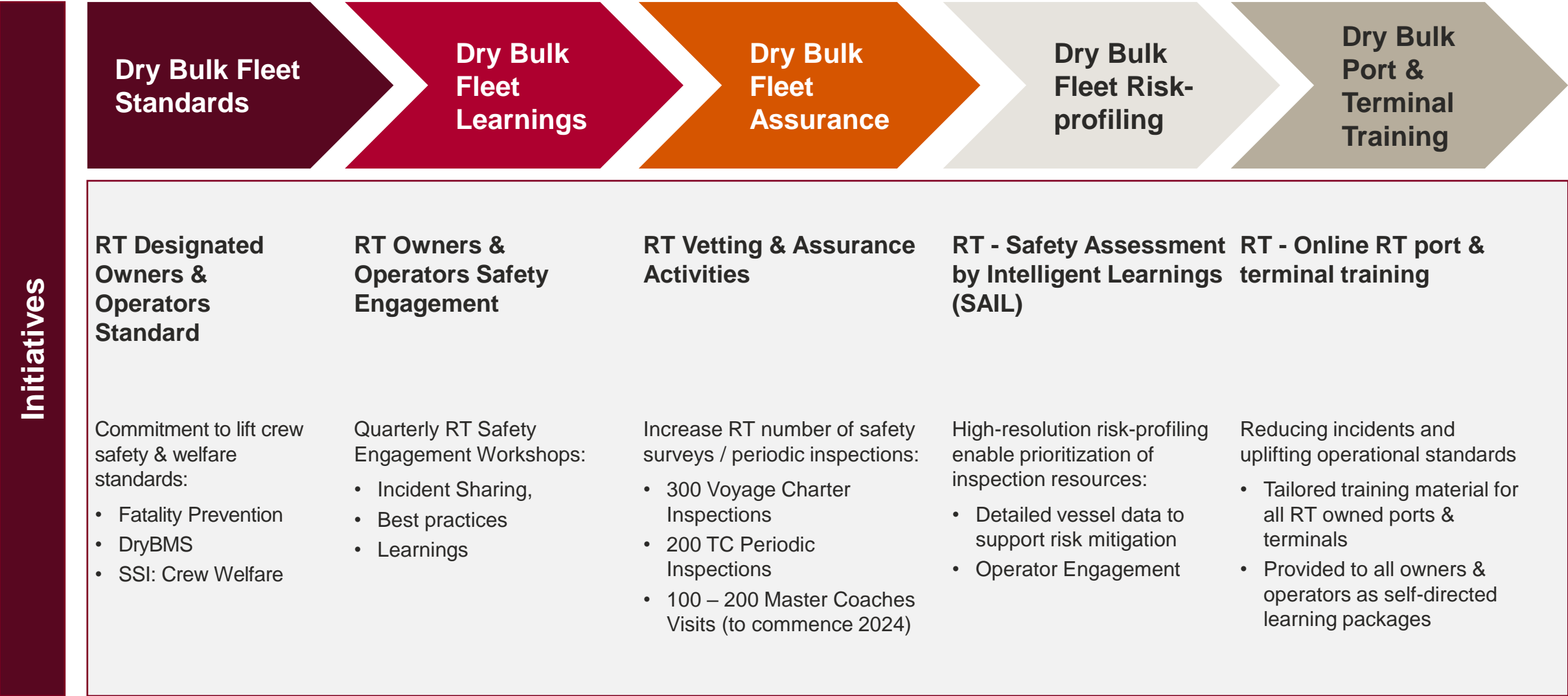
Source:

[^]Allianz, *Safety and Shipping Review 2022*;

^{*}IHS, *State of Maritime Safety Report*

^{**}Sailors Society and Yale, 2018 study

Rio Tinto's Marine Safety & Crew Welfare Initiatives



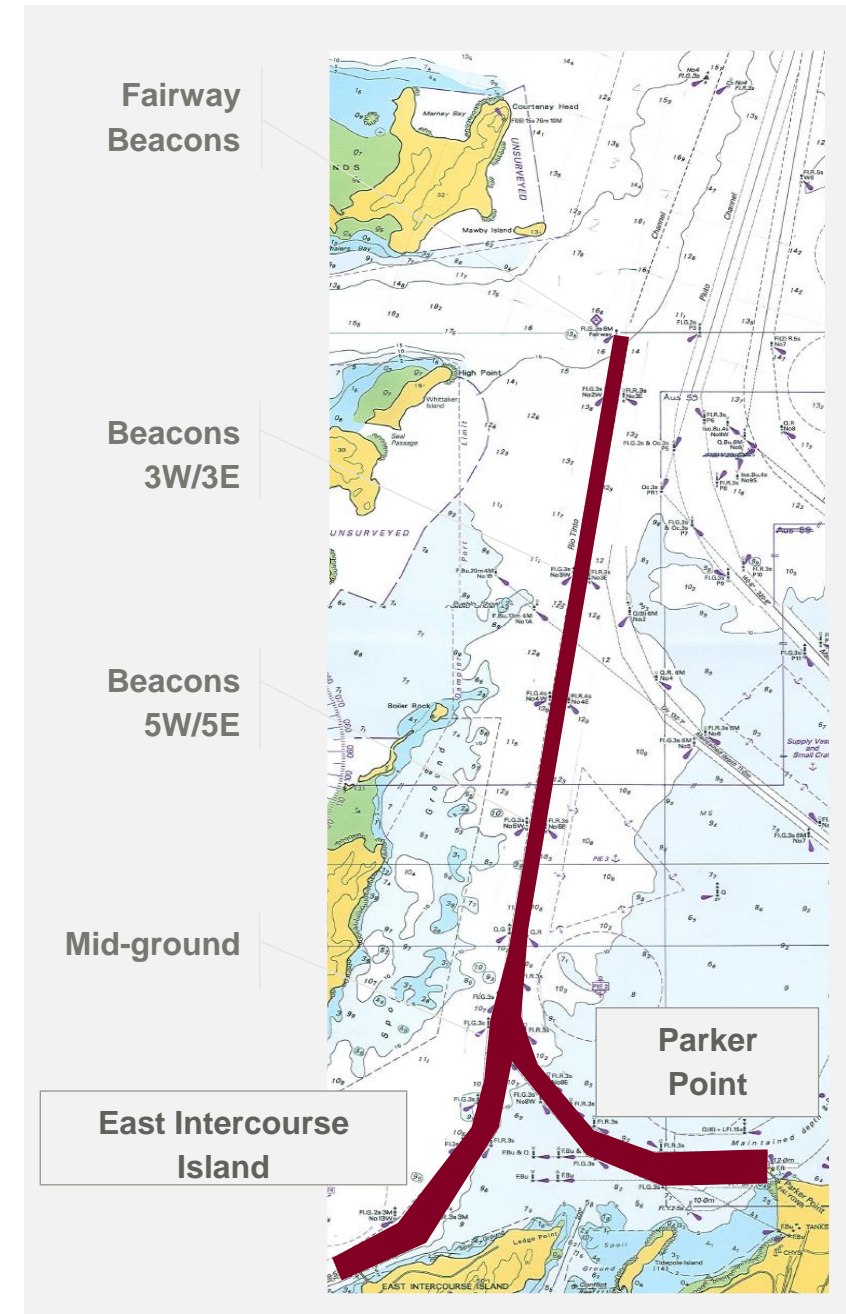
Port Dampier – risks

Risk Characteristics
influencing the supply
chain, brand &
environment

- Channel risk.
- Vessel operational safety.
- Impact to environment due vessel incident.
- Reputational risk associated with vessel incident.

Higher
standards of
operational
reliability.

- Vessel reliability of main engine / propulsion and associated equipment.
- Vessel operational reliability to optimize resources in port.
- Understanding the challenges and expectations of the port/terminal.



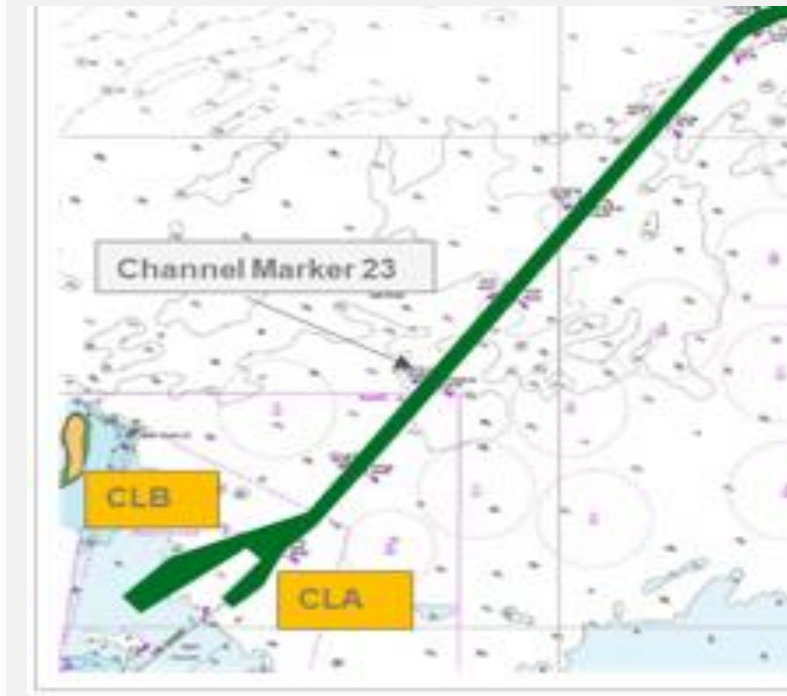
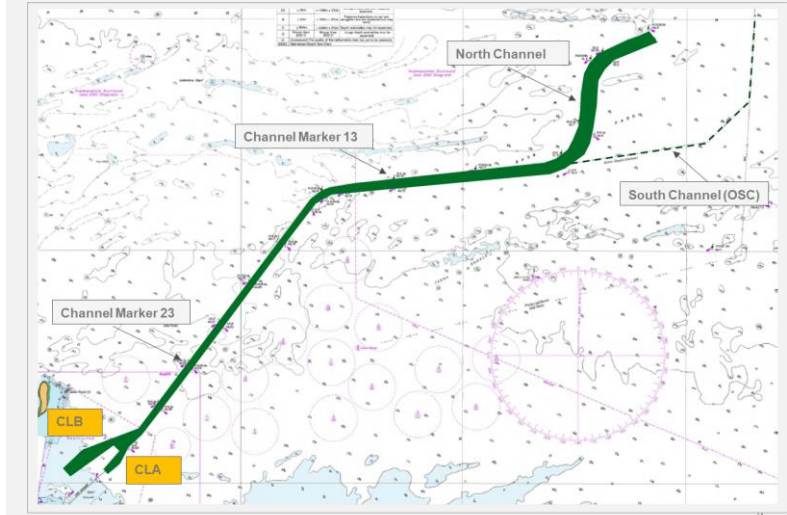
Port Walcott – risks

Risk Characteristics
influencing the supply
chain, brand &
environment

Channel risk is high, however, less
complex as compared to Dampier

Higher standards of
operational reliability.

Challenges with characteristics of berth
and environmental condition, DUKC
followed for loaded departures, main
engine reliability and familiarity with the
port approaches without a VTS system.



GBR – Authorities recommendations to control GBR risks

Marine Safety Queensland's Circular - Risks & recommended Mitigations / Controls

Maintenance & Operational Standards

Physical Verification of vessels condition

- Equipment in good condition
- Maintenance Routines
- No critical Inspection findings
- Business critical spares

Vessel Construction & Machinery

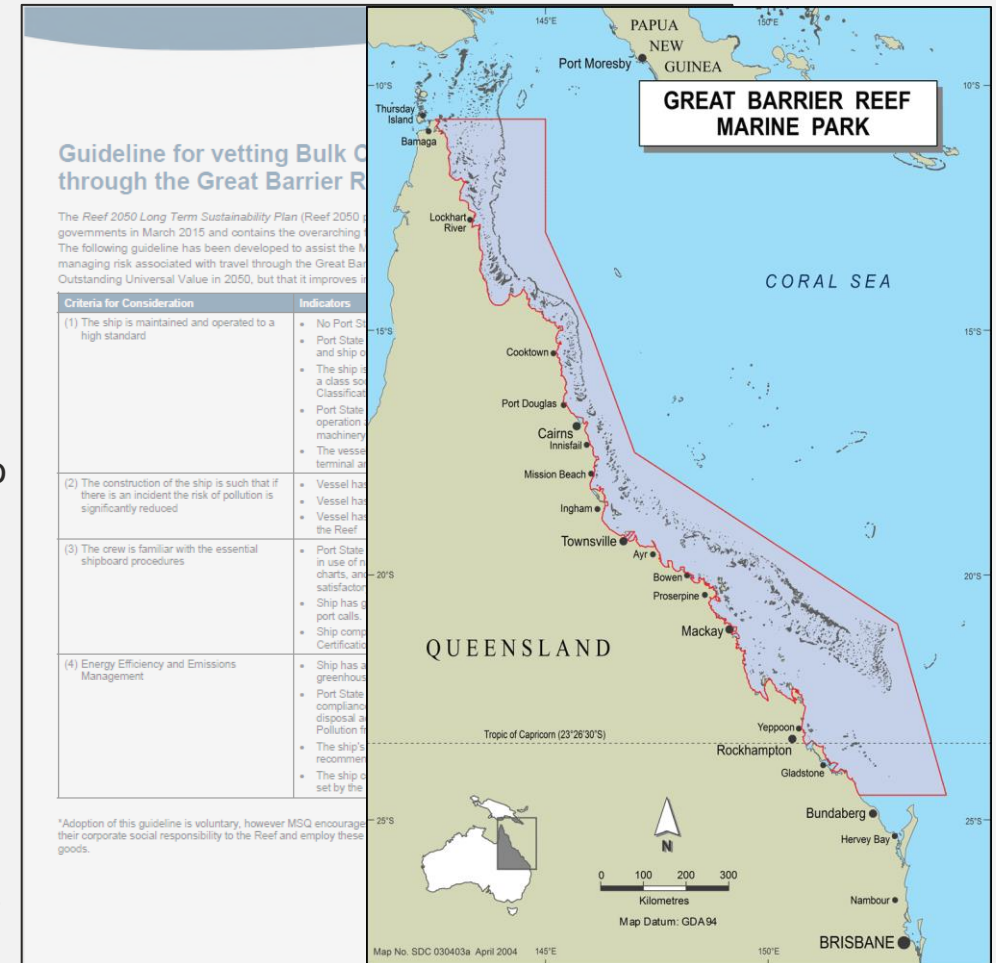
Vessel Construction & Capabilities

- Vessel has protected fuel tanks / double skin construction.
- Vessel has manoeuvrability / engine power to travel through the Reef

Crew Proficiency

Competencies & Training regime

- Use of navigational equipment
- Fire and emergency processes
- Good fatigue management
- Complies with Convention for Standards of Training
- Certification and Watchkeeping for Seafarers (STCW).

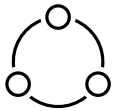


Designated Owners & Operators Standard

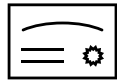
DOOS Delivers



Common standards across our fleet to prevent fatalities, injuries and improve crew welfare



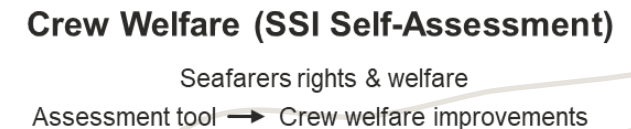
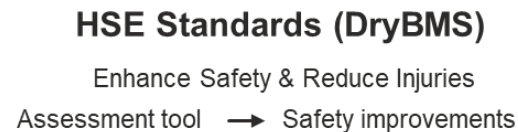
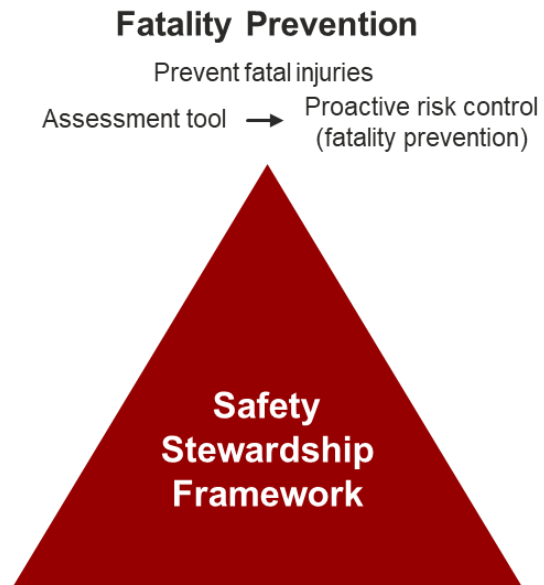
Provide a structured platform for Rio Tinto and partners to work together to improve safety and welfare outcomes



Differentiate like-minded owners and operators committed to positively shape the industry through Rio Tinto's shared vision

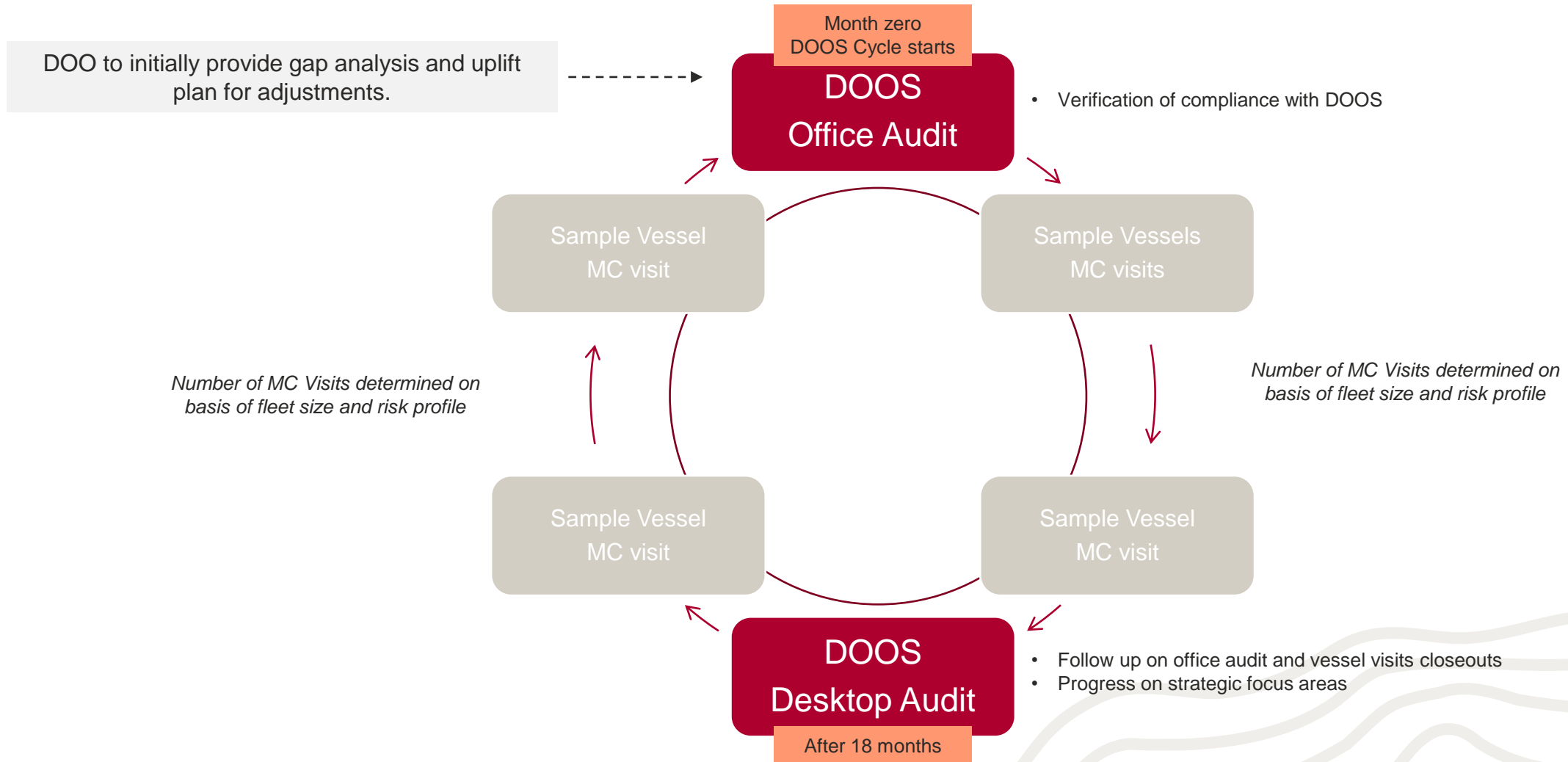
Why Join DOOS

Rio Tinto seek to partner with like-minded vessel owners, operators, and technical managers that share the same vision of improving seafarer safety and welfare outcomes.





DOOS – the 36 months Program Cycle



Chapter Index

- Introduction
- Preparing a Vessel Visit
- Conducting a Vessel Visit
- Completing a Vessel Visit
- Facilitating Learning



Introduction

- Welcome
- Why DOOS
- How DOOS Works
- Program Deliverables and Program Success Over Time
- Key Parties in the DOOS Program



Conducting a Visit

- Risk Assessment
- Hazard Identification
- Controlling Hazards
- Safety Behaviour
- Toolbox Talk
- Debriefing



Facilitating Learning

- Behavioural Change
- Interpersonal Skills
- Educational Principles
- Assignment Structures

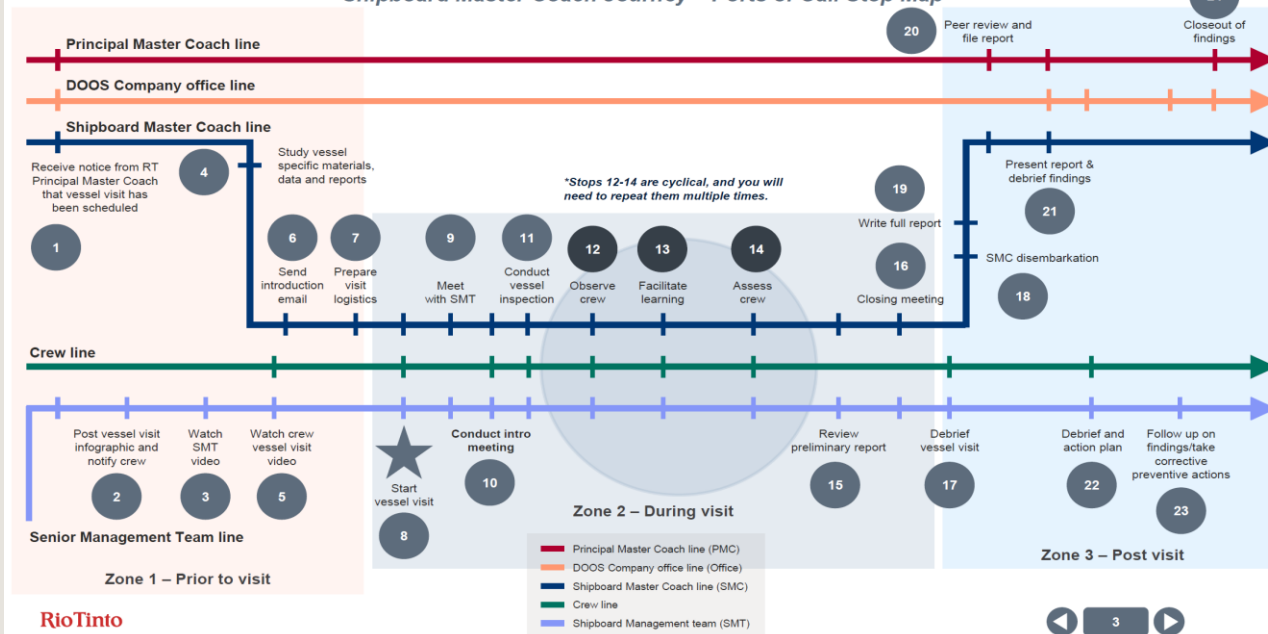


Completing a Visit

- Report
- Make Recommendations
- Submit Report



Shipboard Master Coach Journey – Ports of Call Stop Map



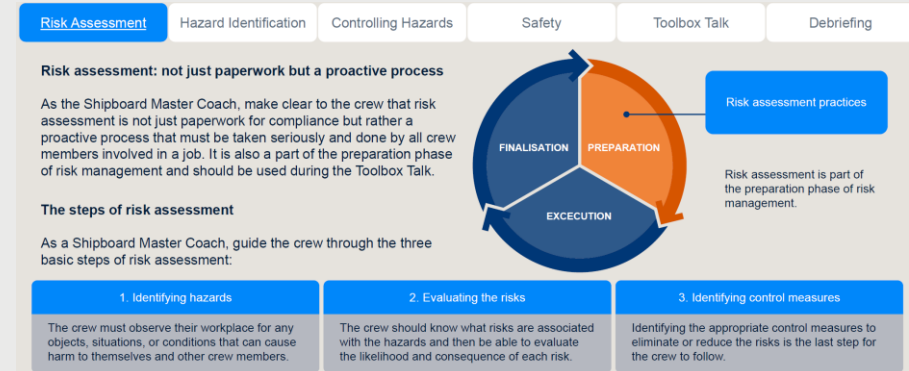
Conducting a Visit

- Risk Assessment
- Hazard Identification
- Controlling Hazards
- Safety Behaviour
- Toolbox Talk
- Debriefing



Each section of areas to observe contains

- Theory behind
- Best practices
- DOS – DON'TS
- Exercises
- Test Questions
- Assessments



DOS IN RISK ASSESSMENT	DON'TS IN RISK ASSESSMENT
<ul style="list-style-type: none">✓ Conduct it before job execution As risk assessment is part of risk management's preparation phase, it should be conducted before doing the job. This makes each crew member aware of the hazards and risks and prepared to control them.✓ Conduct it on the actual worksite The work process might be the same, but the working environment may differ from time to time, as will the hazards and risks. Conducting a risk assessment on the actual worksite gives the crew clearer and more specific measures to counteract the risks that could possibly evolve.✓ Involve everyone on the team When everyone on the team is actively involved in conducting a risk assessment, there is greater likelihood that the crew will be able to identify all hazards and risks. As a Shipboard Master Coach, invite experiences and ideas from the team member's various perspectives which can also be bases for better control measures.✓ Review previously recorded experience Guide the crew to refer to the previous risk assessment for the same job. The entries there reflect experiences and knowledge that can help the crew address present risks.	<ul style="list-style-type: none">✗ Underestimate risks As a Shipboard Master Coach, emphasise to the crew that no risk is too small to consider. It still needs to be noted and addressed by implementing appropriate control measures.✗ Conduct it for the sake of compliance Pass on the message that merely filling out the risk assessment form due to compliance will not make the crew safe. Taking risk assessment seriously is a crucial factor in ensuring the crew's safety.✗ Recycle risk assessments Although there may be similarities from one risk assessment to another, simply copying all previous entries in the form is not advisable. Hazards and risks can differ because of factors such as people's skills, working conditions, and environmental factors, among others. Therefore, the crew still needs to consciously go through each step of the risk assessment process.✗ Skip steps of a risk assessment As a Shipboard Master Coach make it clear to the crew that not completing and following the basic steps of risk assessment will result in ineffective risk prevention. The steps are interlinked and lead to a safer work process.

Activity Summary – Applying what the crew have learned

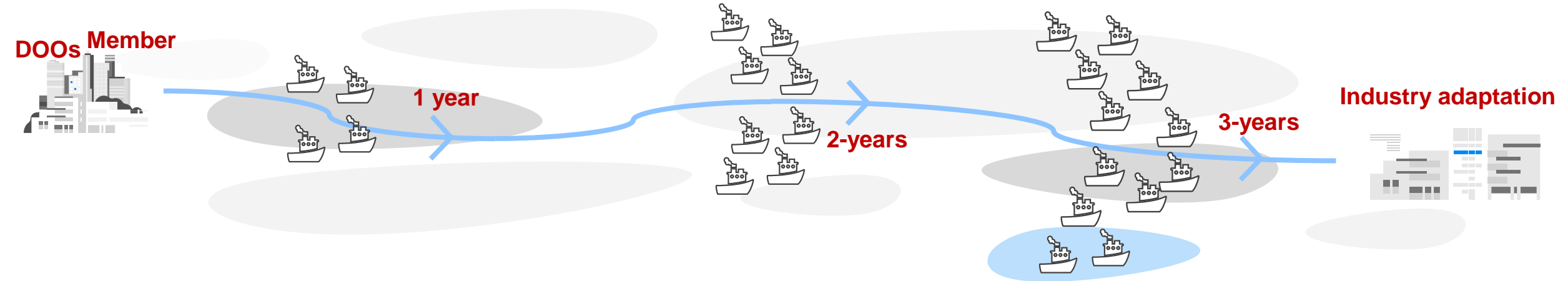
To ensure a deeper understanding of the topic, ask the crew to reflect on how to use the learnings in their day-to-day work practices. Encourage them to share ideas on how to do this by asking questions like:

- What have we/you learned from this activity? What is new?
- How can we/you include these learnings in our day-to-day work?
- Is there something that we/you should do more or less of? Should we try out any new initiatives?
- What are the observable actions that we/you will introduce/change/try out?
- What can happen when we/you do so?

The trick is to keep probing to make the ideas more and more tangible, concrete, and observable. Ask "how" until the ideas are practical rather than stop at abstract ideas like "be more aware" or "keep safety in mind".



DOOS Roadmap – We are Pioneers, towards Industry adaptation



1 year milestones

- 🏆 DOOS Launch – 1st partners on board
- 🏆 DOOS Head Owned Fleets

2-year milestones

- 🏆 DOOS Quality over Quantity
- 🏆 DOOS Chartered Fleets
- 🏆 DOOS Commercial Operators
- 🏆 DOOS Ship Management Companies

3-year milestones

- 🏆 DOOS Community increase
- 🏆 DOOS towards critical mass

4-year milestones

- 🏆 DOOS Industry adaptation
- 🏆 DBMS – SSI – Zero Fatalities Mandated by likeminded charters

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Thank You

Any comments or feedback may be addressed to:
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