Draft - DEVELOPING A GUIDELINE FOR VETTING BULK CARRIERS TRAVERSING THE GREAT BARRIER REEF

Summary

The Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan) was launched by the Australian and Queensland Governments in 2015 with a vision to ensure the Great Barrier Reef (the Reef) not only retains its health and Outstanding Universal Value in 2050, but that it improves in overall health each decade between now and then. The Reef 2050 Plan was updated in 2018, highlighting priorities for immediate attention and identifying new actions to protect the value of the Reef, and improve the Reef's resilience.

The North-East Shipping Management Plan (NESMP), overseen by the North-East Shipping Management Group, also contains measures to address potential shipping issues within the Great Barrier Reef, and is considered a Foundation Program under the Reef 2050 Plan.

Protecting the environmental, social, and economic value of the Great Barrier Reef drives many of the Queensland Government's environmental policies and activities. However, it will take contributions from all parties - government, industry, traditional owners, researchers and the community - to ensure that the Reef continues to be a natural wonder for each successive generation to come.

It is recognised that shipping is a vital economic activity within the Reef, and therefore, actions to improve the performance of shipping have been included in the Reef 2050 Plan. The Reef 2050 Plan has a 2020 target that shipping within the Reef is safe, risks are minimised, and incidents are reduced to as close to zero as is possible. Industries and companies reliant on shipping have a social responsibility to help ensure current and future threats to the Reef are addressed in an effective, efficient and appropriate manner, by embedding practices within their operations that minimises the impact of shipping on the Reef.

One of the key shipping action items in the Reef 2050 Plan is for the maritime industry to adopt ship vetting practices for bulk carriers to ensure they meet high safety standards. Vetting practices should consider the quality of the ship, the capability of the crew, ship emissions and general protection of the marine environment. While the action as a whole is assigned to the maritime industry, the Department of Transport and Main Roads (TMR) is the reporting agency for this action item.

To assist the maritime industry in adopting the action, Maritime Safety Queensland (MSQ), a branch of TMR, is developing a guideline containing matters for the industry to consider when vetting ships for charter or risk. Industries that sell their product under FOB contracts are asked to include the guideline in discussions with their buyers.

Port Authorities and terminal operators may also like to consider the guidelines when assessing the level of risk presented by a ship to their infrastructure and operations.

The Australian Maritime Safety Authority (AMSA) operates a rigorous Port State Control inspection regime ensuring vessels comply with minimum standards of maritime safety, seafarer welfare and protection of the marine environment. Ships and operators with a record of poor performance can be banned from entering or using Australian ports.

The table below describes the proposed criteria to be included in the guideline. The list is not exhaustive, and it is expected that companies vetting ships will have additional criteria that they will assess against.

Criteria for Consideration	Indicators
1. The ship is maintained and operated to a high standard	- No Port State Control detentions in the past year. - Port State Control records do not show indications that the ship's operator and ship owner's history contain crew welfare issues. - The ship is not registered under a black listed flag state and is surveyed by a reputable class society. - Port State Control records do not show indications of issues with the operation and maintenance of the ship's navigational system and machinery. - The vessel has appropriate equipment to berth or moor at the intended terminal and that annual winch break tests have been conducted.
2. The construction of the ship is such that if there is an incident the risk of pollution is significantly reduced	- Vessel has protected fuel tanks. - Vessel has double skin construction.
3. The crew is familiar with the essential shipboard procedures	- Port State Control records do not show indications the crew is not proficient in use of navigational equipment including ECDIS software and navigation charts. - Ship has good fatigue management procedures in place especially around port calls. - Ship complies with the International Convention for Standards of Training, Certification and Watchkeeping for Seafarers (STCW).
4. Energy Efficiency and Emissions Management	- Ship has adopted operational practices to reduce or mitigate emissions of greenhouse gases, for instance slow steaming. - Port State Control records do not show indications the ship has non-compliances with waste reduction practices and manages its waste disposal according to the International Convention for the Prevention of Pollution from Ships (MARPOL). - The ships Design Index is less than the IMO's current maximum limit recommendation

Background

The Great Barrier Reef provides shelter to a vast array of wildlife and coral. Generations of people, beginning with Indigenous Australians, to modern day locals and tourists, have been awestruck by the crystalline and untouched wonder of the Reef. It is the responsibility of all to preserve this complex ecosystem, including industry that relies on safe passage of shipping through the region. Industry and shipping companies should recognise they have a social licence to effectively manage the impact of their activities on the Reef and preserve the Reef for future generations.

It is essential for Queensland's economy that shipping routes through the Great Barrier Reef remain open and available to shipping on an equitable basis. The Queensland and Australian Governments have extensive navigation and pollution prevention controls in place so that shipping within the Great Barrier Reef is safe and risks are both identified and understood, with appropriate mitigation measures in place.

It is recognised that shipping plays a critically important role developing industries and supporting communities, as well as expanding the Queensland economy. However, the Reef is a designated UNESCO World Heritage Area and under the International Maritime Organisation (IMO) is designated a Particularly Sensitive Sea Area, recognising that additional measures to protect it from the potential adverse effects of shipping are required.

As such, the protection of the Great Barrier Reef needs to be the paramount consideration for all stakeholders reliant on the maritime industry operating in the Region. With consideration of the following guidelines, risks associated with ships can be mitigated, protecting the Reef while also improving efficiency and safety.

Shipping globally is a highly regulated activity, and through international cooperation, key risks are generally well managed and addressed. As risks emerge the IMO is responsible for reacting to incidents and applying new standards to mitigate the risks.

Within an Australian context, there have been numerous reports that address the potential impact of shipping activities on the Reef. Over the past decade, two key reports have been released: The Reef 2050 Plan, and the NESMP.

Reef 2050 Plan

The Reef 2050 Plan was released by the Australian and Queensland governments in March 2015 and contains the overarching framework for protecting and managing the Reef until 2050. The plan is intended to set clear actions, targets, and outcomes to guide the short, medium and long-term management of the Reef.

A number of actions within the Reef 2050 Plan are directed towards managing the risks of shipping and in particular bulk carriers, which make up the majority of large commercial vessels operating in the Great Barrier Reef Marine Park (GBRMP). The need for shipping related actions is based on concerns about the potential risk of damaging incidents from shipping and their impacts on the Reef.

Under the original Reef 2050 Plan, MSQ was tasked with the investigation of the creation of a new class of vessel for use in and around the Reef. However, further investigation found that many of the items suggested to be included in a new class of ship were already being implemented under international shipping conventions. As such, when the Reef 2050 plan was revised in 2018, this action was amended to require that the standards of ships calling in Queensland ports were assessed against the updated international conventions and best practice operations. The Reef 2050 Plan revised action item MTR EBA1, states:

> *"Maritime industry to adopt ship vetting practices for bulk carriers to ensure they meet high safety standards. Vetting practices should take into account the quality of the ship, competence of the crew, ship emissions and general protection of the marine environment considerations."*

It is noted that several sectors of the maritime industry currently utilise ship vetting practices to manage their risk exposure when chartering vessels or accepting a vessel to berth at a terminal.

To further assist the maritime industry, it was proposed to develop a guideline that provides a better practice model to be considered when vetting a vessel that will travel through the Reef and call at a Queensland port.

North East Shipping Management Plan

Similar to the above, the Australian Maritime Safety Authority (AMSA) along with other Australian and Queensland government agencies, industry and key interest groups produced the NESMP in alignment with the Reef 2050 Plan. With shipping movements forecast to continue to grow in the region, the NESMP is intended to further improve shipping management, recognising the 'connectivity and consequential risks' associated within three regions, namely the Torres Strait, Coral Sea and Great Barrier Reef.

The NESMP identifies existing, new and strengthened management measures to ensure shipping within the region continues to be conducted to the highest standards possible.

Ship Vetting

Both of the above plans highlighted the necessity of introducing a vetting process for vessels entering the GBRMP and under the Reef 2050 plan, TMR is responsible for reporting on the progress of the ship vetting Reef 2050 Plan action item.

Ship vetting is an industry practice used to risk assess a ship intended for the carriage of a particular cargo or loading at a terminal. Ship charterers and terminal operators can vet a nominated ship before deciding to use it or accept it for loading. There are commercial ship vetting companies that provide this service and generally assess a multitude of factors in determining the quality and potential risk of a particular ship.

Employment of effective ship vetting will reduce the risk posed by shipping in the GBRMP and effectively increase efficiency through fewer delays due to breakdowns and detentions.

The guidelines below have been developed as a framework for consideration of the potential adverse effects from a maritime incident on the Reef environment when vetting a vessel. While the guideline is not exhaustive, it will inform industry on key items they should consider when vetting ships. This will help enable industry to meet their responsibilities in helping to protect and preserve the Reef.

Draft Criteria for inclusion in the Potential Guideline

As stated above, the proposed guidelines would not be mandatory, but rather provide key criteria for consideration prior to a shipping agent chartering a vessel intended for use in the Reef.

1. The ship is maintained and operated to a high standard

Examination of the quality of a vessel's previous operations can provide an insight into its suitability for travelling through the Reef. Port State Control (PSC) examination reports record information relating to the operational standards of any given vessel, including crew welfare standards, and can be used to determine a vessel's risk profile.

AMSA's robust PSC regime ensures that ships calling at Australian ports are usually of a high standard and quality. This is reflected in the average age of a vessel calling to Australia being only nine years old. Despite this regime, ship detentions still occur in Australia, with common causes of detentions being for failure to have the appropriate fire safety and lifesaving equipment and procedures, and emergency systems.

The following metrics are indicators of whether a vessel is of an acceptable standard to travel through the Great Barrier Reef.

- *Port State Control detentions in the past.*

AMSA monitors and enforces compliance with internationally agreed standards for seaworthiness, safety and pollution prevention of ships in Australian waters through PSC. AMSA surveyors will issue a ship with a deficiency if they determine or reasonably suspect that either the condition of a ship, its equipment, or the performance of its crew is not compliant with the requirements of relevant international conventions.

Rates of deficiencies and detentions vary by vessel types, with tugboats and general cargo vessels performing poorly. Bulk carriers are on or slightly below average in terms of detentions.

A lack of deficiencies or detentions by PSC may indicate that a vessel is operationally sound and does not have an elevated risk profile for travelling through the Reef.

However, it is acknowledged that PSC inspections are based on a risk rating of vessels. The risk rating assigned to a vessel is based on a number of factors including age, history and previous deficiencies. Due to this process, a vessel may not have had any

interactions with PSC due to its lower risk profile, however may still be of an acceptable quality to travel through the Reef.

- *The ship is registered under a reputable flag state and surveyed by a reputable class society.*

  The country (Flag State) in which a ship is registered can provide an indication of the quality of the ship's operations with some flags state paying imposing stricter governance measures than others. The lessor quality Flag States are singled out on a Black List used by Port State Control entities.

  Similarly, the level of detail and quality of ship surveys can vary dependant on the class society used to inspect the ship for compliance against international conventions and standards.

- *Vessel records do not contain any indication of crew welfare issues.*

  Under the Maritime Labour Convention 2006, there are a number of minimum standards requiring crew members be treated appropriately, including having access to food and water, suitable sleeping arrangements, and a wage. Compliance with this requirement can be determined through PSC inspection, and can be found by potential vessel charterers through the use of online ship vetting software.

  Further, compliance with crew welfare requirements can provide an indication as to how a vessel owner views compliance activities associated with the ship, in addition to the mental health of the crew. Crew welfare issues may have correlations to issues such as ship abandonment, which increases the risk of vessels travelling through the region.

- *The ship's navigational systems and machinery are in good working order and are well maintained.*

  Electronic Chart Display and Information System (ECDIS) is a computer-based navigation system that complies with IMO regulations and can be used as an alternative to paper navigation charts. It is an automated decision aid capable of determining a vessel’s position in relation to land, charted objects, navigation aids and unseen hazards. ECDIS includes electronic navigational charts and information from a number of different navigation sensors, including GPS.

  After 1 July 2018, almost all vessels on international voyages are required to carry an approved ECDIS. This means that all vessels being chartered should already have this capability.

  When shipping agents and companies are vetting the vessel they intend to charter, ensuring there is no history of proficiency issues such as the crew not using anti-grounding alarms in the ECDIS system could provide an indication that the vessel is of an acceptable standard to travel through the Great Barrier Reef.

  The ships engines and equipment should be maintained in line with the Original Equipment Manufacturers recommendation.

- *The vessel has appropriate equipment to berth or moor at Ports within the GBRMP*

  At a number of Ports within the GBRMP, there are a number of exposed berthing configurations that require special equipment in order to adequately moor. Similarly some vessels may not have the appropriate standard of equipment necessary on board, such as winches that are fit for purpose, which leads to the ship not being appropriately contained. This puts the ship at risk of being blown off the berth.

  To ensure that the Reef is protected from incorrectly moored ships, it should be a requirement that all vessels traversing the Reef have the correct equipment needed for berthing at their allocated wharf.

Table 1: Advantages and Disadvantages of including the operational status of the vessel in Ship Vetting Guidelines

Advantages	Disadvantages
• Ensures that the vessel being chartered has met the international minimum standard.	• It is difficult to determine the standard of vetting being conducted if the vetting process is being carried out by a non-government agency.
• Any issues can be readily identified and considered when determining if the vessel is appropriate for use in the GBRMP, given the sensitivity of the area	• Could economically disadvantage some companies by requiring only vessels of a higher standard to be able to transport their goods through the GBRMP.
• Reduces the possibility of known non-complying vessels from travelling in the region, reducing risk of possible incident.	• Relying on PSC inspections to ensure vessels are compliant could be difficult due to different grades of rigour amongst different countries.
• Encourages other vessels to maintain high standards so as not to be precluded from travelling in the Reef in the future.	• Human error resulting from issues with crew welfare is impossible to eliminate completely.
• Ensures that a vessel's crew is physically and mentally capable of steering the vessel, addressing possibility of human error.	• Crew welfare is a difficult area to monitor and regulate.
• Reduces possibility of ship abandonment, reducing the possibility of vessels becoming grounded.	• In relation to the implementation of anti-grounding alarms, the software must have the appropriate complimentary settings, otherwise the system is flawed in detecting groundings.
• Increased efficiency through less delays due to breakdowns and detentions	
• Reduces risk of possible grounding or collision.	

2. Vessel Construction

A vessel may be constructed with certain features that could mitigate any negative impact on the Reef in the event of an incident. The following metrics are indicators of

whether a vessel is constructed to a standard appropriate for travel through the Reef. These standards have been previously regulated under IMO conventions.

- *Vessel has protected fuel tanks*

  In 2006, the Marine Environment Protection Committee (MEPC) adopted an amendment to MARPOL on oil fuel tank protection. The regulation applies to all ships delivered on or after 1 August 2010 with an oil fuel capacity of 600 m cubed and above. The amendments include requirements for fuel tanks to be in protected locations, and maintain performance standards in situations where there is accidental oil fuel outflow.

  These amendments were progressed to protect the ocean should a bulk carrier's hull strike an object underwater and rupture. This is clearly an important indicator of a ship's appropriateness to be travelling through the Great Barrier Reef, as the risk of a sizeable incident is reduced due to the protected fuel tanks.

- *Vessel has double skin construction*

  Bulk carriers that have double-skin construction have an additional watertight hull surface on the bottom of the ship. Vessel's with double skin construction have two complete layers consisting of one outer layer forming the normal hull of the ship, and a second inner hull which is somewhat higher in the ship, which forms a barrier to seawater in case the outer hull is damaged and leaks.

  Bulk carriers greater than 150m in length constructed after 1 July 2006 are required to be constructed with a double skin. Distances between the outer and inner shell are not to be less than 1000mm.

  Additionally, reducing the number of older vessels from travelling through the Reef to Queensland ports has a number of benefits. Older vessels generally have a greater risk of structural failure and groundings, loss of cargo, smothering of marine environments and the release of potentially toxic substances. By increasing the number of younger vessels to travel through the Great Barrier Reef, this potential risk is mitigated.

Table 2: Advantages and Disadvantages of including construction features of the vessel in Ship Vetting Guidelines

Advantages	Disadvantages
• The average age of vessels travelling in Australia is 9 years. As such, most vessels meet the double-hulled and protected fuel tank requirements.	• Given that the requirement for bulk carriers to have double skins came into effect in 2006, and the protected fuel tanks in 2010, this may prevent a number of older vessels from traversing the Reef, which could cause economic issues for some companies.
• Reduces the risk of a sizeable incident in the event of a hull strike.	

• Double-side skin construction also prevents the vessel from flooding if the outer layer fails.	
• The bottom layer of the vessel does not suffer any damage by being in direct contact with the cargo.	
• The bottom layer of the ship is not in contact with offloading equipment, which could be subject to structural damage.	
• Prevents ships that have had natural wear and tear over the years from travelling in the region.	
• The double-layer construction helps in reducing the risks of marine pollution during a collision, grounding, and any other form of ship's hull damage.	

3. The crew is familiar with the essential shipboard procedures

When travelling through the Reef, it is imperative that the crew associated with the vessel have the appropriate skill and knowledge to navigate the region safely. The following metrics are indicators of whether a vessel is of an acceptable standard to be travelling through the Great Barrier Reef.

- *Crew is proficient in use of ECDIS software and navigation charts.*

As stated above ECDIS is a computer-based navigation system that complies with IMO regulations and can be used as an alternative to paper navigation charts.

After 1 July 2018, almost all vessels on international voyages are required to carry an approved ECDIS. This means that all vessels being chartered should already have this capability. There is however uncertainty about the level of crew proficiency in ECDIS, with some crew members having little knowledge of the functionality or limitations of the system.

By ensuring that the crew has a standard level of proficiency in using ECDIS charts, the risk associated with travel in the Reef is significantly reduced. It also enables an additional preventative measure to ensure that the risk of potential grounding or deviation from designated shipping lanes is mitigated.

- *Vessel has good fatigue management procedures and complies with the STCW Convention*

To ensure that the crew is familiar with essential procedures, training must be in line with new technological and operational requirements that emerge over time.

Currently, watchkeeping arrangements on board vessels within the Reef and the Torres Strait must comply with STCW requirements. PSC inspections include checks

for compliance with the records of work and rest, and other on-board documents. AMSA issues deficiencies and detentions if issues are identified with work hours.

By ensuring that vessels traversing the GBRMP have a crew that is familiar with essential procedures, the risk of human error is addressed.

Table 3: Advantages and Disadvantages of including the requirement that the crews of vessels travelling in the Great Barrier Reef are familiar with essential shipboard procedures in the Ship Vetting Guideline

Advantages	Disadvantages
• ECDIS provides fast and accurate data relating to the vessel's position and course.	• Overreliance on software may result in a lack of rigour, meaning that complacency may occur within the crew.
• Does not require physical correction of paper navigation charts, the software will manually update.	• Changes in areas of significance may not be accurately recorded, with updates sometimes being slow to upload onto the vessel's system.
• Reduces possibility of human error.	• The fact that ECDIS is required in almost all transnational shipping vessels means that including this as a requirement in the guideline is somewhat redundant.
• Concerted efforts to improve crew capabilities and fatigue management are likely to greatly improve safety performance.	• Crew capabilities and standards is a difficult area to monitor and regulate.
• Similar to above, by understanding how vessel owners treat their crew, an insight can be gained into the safety practices associated with the vessel itself.	• Human error is impossible to eliminate completely.

4. Energy Efficiency and Climate Management

The biggest threat to the Great Barrier Reef, and to coral reefs worldwide, is climate change. Damage to reefs as a consequence of climate change comes from ocean acidification, sea temperature increases, altered weather patterns (such as more intense storms) and rising sea levels. A concerted international effort to limit the effects of global climate change is the best protection for coral reefs and is currently the subject of consideration around the world.

- *Vessel has adopted practices to reduce or mitigate emissions of greenhouse gases and waste*

A range of new emission reduction measures are to be considered shortly under the IMO Greenhouse Gas Strategy. There is a joint Japanese/Norwegian proposal for an Energy Efficiency Index to be implemented for existing ships. This involves requiring ships to increase their efficiency through operational measures, with the percentage to be reduced being contingent on the vessel type. Subsequent to agreement of the

percentage reduction required at the IMO MEPC, charterers should consider and apply the target reduction to ships intended to travel through the Reef

Charterers seeking vessels to transport their goods through the Great Barrier Reef should make a concerted effort to begin the transition to vessels which produce lower greenhouse gas emissions. Efficiency in regard to energy consumption should also be considered.

This criterion is intended to address pollution to the air and sea in the Great Barrier Reef and surrounding regions.

Table 4: Advantages and Disadvantages of including energy efficiency standards of the vessel in Ship Vetting Guidelines

Advantages	Disadvantages
• Assists the maritime industry to transition to a low carbon economy through informed selection of more efficient ships.	• Could economically disadvantage smaller companies seeking to find a cost-efficient vessel.
• Provides the ability to benchmark and track emissions per journey and over time, assisting in meeting emissions targets.	• Could place unmandated burden on vessels which has no tangible positive impact on the vessel or ship owner.
• Charterers can identify more efficient vessels and reduce their overheads.	
• Reduces pollutants emitted into the atmosphere in the GBRMP.	