

THE REEF REVIEW

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ABSTRACT

The national and international interest in the environmental and cultural significance of the Great Barrier Reef (GBR) has escalated at an exponential rate in the last decade. Australians are extremely conscious of the amenity and economic value of the GBR. The GBR is truly one of the world's greatest treasures.

There is a real potential to inflict enormous damage to the GBR and to the shipping industry should a major marine incident occur on the reef. A major catastrophic incident within the GBR would have extreme environmental, social and economic consequences.

The eyes of the world were fixed on the GBR for 13 days when the Malaysian container ship *Bunga Teratai Satu* grounded on Sudbury Reef, offshore from Cairns, in November 2000. More recently, the GBR was firmly implanted on people's minds again when the Greek bulk carrier *Doric Chariot* was aground on Piper Reef for 8 days in July 2002.

Thankfully, there was no oil spilt as a result of both these incidents and both vessels were successfully refloated. Consider the public outrage if there was a major oil spill in the GBR!

INTRODUCTION

Following the grounding of the Malaysian container ship *Bunga Teratai Satu* on Sudbury Reef in November 2000, the Commonwealth Minister for Transport and Regional Services, John Anderson, commissioned the *Review of Great Barrier Reef Ship Safety and Pollution Prevention Measures*. (Reef Review)

The Review Steering Committee was comprised of senior officers from the Australian Maritime Safety Authority (AMSA), Commonwealth Department of Transport and Regional Services (DOTARS), Great Barrier Reef Marine Park Authority (GBRMPA) and Queensland Transport (QT).

The Terms of Reference for the Review included:

- Extension of the compulsory pilotage area in the Reef;
- Advancing the introduction of technological developments to track and monitor shipping operations;
- Enhancing ship routing, traffic management and emergency response arrangements;
- Constraining certain ship types from operating in or near the reef; and
- Improving legislative powers of intervention, heightening penalties and ordering restitution.

This was the most comprehensive and in-depth review of shipping operations ever undertaken within the GBR and Torres Strait. Importantly, the Torres Strait which abuts the GBR to the north, was included in the review. Extensive consultation was carried out during the review process and the recommendations from the report take into account the views of major stakeholders, including coastal pilots, the shipping industry, environmental groups and indigenous interests.

The 41 recommendations from the review identify a wide range of initiatives which will improve the overall safety of shipping operations and environmental protection in the GBR and Torres Strait.

THE GREAT BARRIER REEF

The GBR covers an area extending over a thousand nautical miles of coastline through arguably the world's most environmentally sensitive sea area. The GBR is the largest coral reef system in the world and is rightfully considered to be Queensland's most precious natural treasure. The area is highly recognised throughout the international community and a supreme level of environmental protection is expected by both the Australian community and the international community.

The GBR was World Heritage listed on 26 October 1981 and was declared the world's first Particularly Sensitive Sea Area by the IMO in November 1990. The GBR is the largest area in the world afforded world heritage listing.

The GBR area supports a diverse number of commercial and recreational activities. The two most significant industries supported in the GBR are fishing and tourism which together form multi-million dollar industries. The GBR is of immense national and international significance by virtue of its natural, cultural, aesthetic, amenity and economic value. Few Australians think of the GBR as a shipping lane but rather a precious natural resource.

THE TORRES STRAIT

The Torres Strait adjoins the northern end of the GBR and divides Cape York from Papua New Guinea.

The Torres Strait has environmental and cultural significance equivalent to the GBR. The Torres Strait is an important international shipping lane, comprising Prince of Wales Channel and Great North East Channel. The strait connects the Coral Sea in the east to the Arafura Sea in the west.

Torres Strait islanders rely heavily on the waters for subsistence living and their livelihood.

SHIPPING IN THE GREAT BARRIER REEF AND TORRES STRAIT

Figure 1: Shipping Routes

The principal shipping routes through the GBR and Torres Strait are shown in Figure 1.

The two shipping routes through Torres Strait are Prince of Wales Channel and Great North East Channel.

The shipping routes through the GBR are the inner route (inside the reef) and the outer route which transits the Coral Sea. There are connecting passages to the Coral Sea at Grafton Passage, Palm Passage and Hydrographers Passage.

There is a significant level of shipping traffic in the GBR and Torres Strait area. The area abuts 14 commercial ports. Approximately 8,000 vessel movements occur within the GBR/Torres Strait region each year. This is not a big number by world standards but is substantial on the Australian coast.

My experience both ashore and afloat, tells me the significant risk areas and most navigationally difficult are the constricted channels through Torres Strait and the inner route north of Cairns. The inner route offers protection from the sea and weather but there is restricted sea room and limiting depths. The inner route is well charted and marked with navigation aids. Considerable skill, bolstered by the local knowledge of coastal pilots is required to navigate this area.

There are operational advantages in utilising the inner route versus the outer route. The inner route is about 120nm shorter which may equate to ½ day transit time or longer depending on the weather.

THE RISK

Queensland has been very proactive in utilising risk assessment techniques for identifying the highest risk areas for incidents and marine oil spills. Risk assessment provides the basis for oil spill prevention and response planning and allows for the development of defence strategies and for maximum and efficient use of finite resources.

The catalyst for the Reef Review was the grounding of the *Bunga Teratai Satu* in November 2000. However, since July 1996 there has been 7 serious “near miss” incidents within the GBR/Torres Strait region. Inspection of the incident table indicates clearly that human error is the primary cause of incidents.

| DATE | SHIP | CAUSE |
|---------------|-------------------------------------|---|
| July 1996 | Reefer "PEACOCK" | Enroute Singapore to New Zealand, grounded on Piper Reef near Lockhart River at 0155 18 July 1996 with a pilot on board. Vessel refloated 26 July 1996. Pilot error was the cause of the incident. |
| June 1997 | Bulk Carrier "THEBES" | Enroute Singapore to Sydney, in ballast, grounded on Larpent Bank in Torres Strait at 0002. Refloated using own power at 0112 12 June 1997. Pilot error was the cause of the incident. |
| July 1997 | Bulk Carrier "DAKSHINESHWAR" | Enroute from Hay Point to India, with cargo of coal, grounded on Hood Bank in Torres Strait at 2100 due to engine breakdown. Vessel refloated at 2354 15 July 1997 with aid of tug "Pacific Salvor". Engine failure was the cause of the incident.. |
| November 1997 | Container Ship "NOL AMBER" | Enroute Singapore to Brisbane, grounded on Larpent Bank in Torres Strait 0738. Vessel refloated with assistance from other vessels at 1744 3 November 1997. Pilot error was the cause of the incident. |
| May 1999 | Bulk Carrier "NEW REACH" | Enroute Cairns to Penang, grounded on Heath Reef near Lockhart River at 0654 16 May 1999. Refloated at 0320 17 May under own power. Pilot error was the cause of the incident. |
| November 2000 | Container Ship "BUNGA TERATAI SATU" | The ship grounded on Sudbury Reef near Cairns at 0730 on 2 November 2000. Refloated 13 days later with the assistance of tugs. Watchkeeping Officer being distracted was the cause of the incident. |
| July 2002 | Bulk Carrier "DORIC CHARIOT" | Enroute Hay Point to India, with cargo of coal. Ship grounded on Piper reef at 0400 29 July 2002. Vessel refloated on 6 August with assistance from tugs. Cause to be determined. |

Table 1: Groundings of vessels in the Great Barrier Reef and Torres Strait since 1996.

PREVENTION

The optimum means for defending against an oil spill is to ensure they don't happen in the first place. If ever the saying “*prevention is better than cure*” rang true, it is with regard to a major oil spill within the GBR.

Prevention of marine oil spills is patently preferable to having to conduct response operations. All response techniques have inherent limitations relating to sea, weather and local conditions.

The Reef Review builds upon existing defence strategies against oil spills and strives to create a culture where marine incidents are preventable.

KEY RECOMMENDATIONS FROM THE REEF REVIEW

The *Reef Review* highlighted 41 recommendations at improving ship safety and pollution prevention measures. The key recommendations are summarised below.

Great Barrier Reef and Torres Strait Shipping Management Group

An important recommendation of the review was the commissioning of the *Great Barrier Reef and Torres Strait Shipping Management Group*. (GBRTSMG) The group comprises the four agencies represented on the Review Steering Committee; namely AMSA, GBRMPA, DOTARS and QT. The Group is to prepare an ongoing Shipping Management Plan and to carry forward the 41 recommendations.

This recommendation highlights the need for the GBR and Torres Strait to be managed collectively. It is critical that strong relationships are built amongst all agencies, authorities and ship operators who have a stake in shipping within the GBR and Torres Strait.

Compulsory Pilotage

Prior to the Reef Review being conducted there were two compulsory pilotage areas; the inner route north of Cairns and Hydrographer's Passage offshore from Mackay. The compulsory pilotage reflects the navigational difficulty of the two areas.

The Review recommends a number of key initiatives with respect to pilotage, the primary two being;

1. Upgrading the recommended pilotage regime in Torres Strait to compulsory pilotage,
2. Extending the compulsory pilotage sector of the inner route approximately 50 nautical miles further south of Cairns to Mourilyan.

There is strong support for introduction of compulsory pilotage through Torres Strait, where many shipping incidents have occurred. It is noted that elevation of Torres Strait to compulsory pilotage will require passage through International Maritime Organisation (IMO) channels as the area is an international strait. This action is likely to be difficult to achieve. Extension of the GBR particularly sensitive sea area to include Torres Strait is seen as the first step in what may be a lengthy process. Thankfully, most vessels using the inner route board a pilot at Booby Island and so effectively have a pilot onboard through the navigationally demanding area of Torres Strait.

There is a compelling case to extend compulsory pilotage south of Cairns. As well as the *Bunga Teratai Satu* grounding on Sudbury Reef, there has been five near-miss groundings in the same area due to failure to execute the course alteration. This trend is difficult to explain, given the relatively simple navigational requirement. There is a view that the ship's crew decline into a sense of relaxation after disembarking the pilot at Cairns. This issue is likely to need further investigation. The shipping industry does not support this extension. Installation of a navigation aid in the vicinity has also proven to be a worthwhile risk reduction measure.

During the *Doric Chariot* grounding, the *GBRTSMG* conducted an urgent out of session meeting to closely re-examine the pilotage issues as a matter of priority. Issues under consideration are pilot fatigue, dual pilots and pilot working conditions.

Since the Reef Review was commissioned, compulsory pilotage has been enacted for the Whitsunday Islands. This is a positive move as this pristine area is a congested and hazardous waterway at times.

Advancing Emerging Technology

All agencies involved in the management of shipping strongly favour the early introduction of emerging technology to assist in the reduction of incidents caused by human error. The human element remains the greatest contributing factor in marine incidents.

AMSA and QT are highly committed to the introduction of emerging technology such as Electronic Navigation Charts (ENC), Electronic Chart Display Information System (ECDIS) and Automatic Identification System (AIS).

ECDIS is an excellent preventative technology and offers improved safety of navigation through reduction in human error. ECDIS will provide the mariner with real time information on the ship's position and track and alert him when outside set parameters. Unfortunately, the production of electronic charts is progressing slowly worldwide.

Both ASMA and QT have recently renewed their strong commitment to the Ship Reporting System (SRS) and are keen to provide improved information/service to participating ships. The SRS is a major plank in the marine pollution prevention and response repertoire for the GBR.

The SRS was the world's first mandatory ship reporting system (REEFREP) commissioned in 1997. The SRS covers the Torres Strait and the inner route of the GBR. SRS provides for an extremely intelligent surface picture of shipping operations over the entire SRS area.

Recent trials involving AIS and other satellite based tracking technology such as Inmarsat C in the GBR have delivered positive results. AIS is a shipboard broadcast transponder system that transmits ship information such as identity, course and speed etc to other ships or to shore. AIS was originally conceived as a shipboard collision avoidance tool but it has applications for shore based traffic monitoring and management. AIS trials demonstrate that AIS data is readily accommodated into the SRS.

AIS will clearly enhance the safety and efficiency of shipping. The Reef Review recommends introduction of AIS shore based monitoring and possible accelerated uptake ahead of the IMO timeline (2008) for the world's fleet. Inmarsat C tracking has considerably enhanced the surface picture of shipping at Reefcentre (the operational hub for the SRS, located at Hay Point) and should be encouraged for all vessels in the GBR.

Ship Routeing, Traffic Management and Emergency Response

It is well recognised that improved routeing methods is an excellent means for reducing a risk profile for an area.

The Reef Review notes that Fairway Channel, between Cape Direction and Cape Melville is seen as a possible alternative to the inner route section further inshore.

Detailed surveys have recently been incorporated into new charts of the area. The channel is less demanding navigationally and shorter than the existing route. A detailed study is

currently being undertaken by AMSA to select the optimum route and ensure for a suitable navigation aids network.

Should Fairway Channel prove a viable alternative to the existing inner route, then this will positively assist in the reduction of pilot fatigue as the less demanding route would provide a suitable rest period for pilots.

Constraining Certain Ship Types

A number of interest groups have called for a ban on certain ships from using the inner route of the GBR.

The Reef Review considers it inappropriate and impractical to impose constraints on certain ship types or cargo types using the inner route at this point in time.

This is a complex scenario. Should ships be required to utilise the outer route instead of the inner route, the risk of a major incident may be transferred to the Torres Strait. This is because access to the outer route for ships passing through Torres Strait is via the Great North East Channel, which would gain increased traffic. The Torres Strait has environmental and cultural significance equivalent to the GBR.

Studies have clearly shown that rerouteing of shipping to the outer route is not a reasonable risk control measure. Indeed the Reef Review noted the need to exercise considerable caution in respect to encouraging ships to use the outer route.

Education and Awareness

Delegates from *Spillcon 98* in Cairns may recall a paper I delivered, promoting the Marine Environment High Risk Area (MEHRA) concept as enunciated by Lord Donaldson. The Reef Review supports the MEHRA concept whereby mariners are expected to exercise particular caution when transiting a MEHRA. Queensland has conducted a Risk Assessment identifying 6 MEHRAs; Prince of Wales Channel, Great North East Channel, Inner route between Cape Flattery and Torres Strait, Whitsunday Islands, Hydrographers Passage and Moreton Bay.

MEHRAs provide an excellent means for broadcasting high risk areas to ships. The Reef Review recommends widespread promulgation of MEHRAs to shipping.

Importantly the Reef Review strongly supports an international campaign be conducted to promote ship safety and environmental awareness in the GBR and Torres Strait.

CONCLUSION

We in government and industry must take all reasonable precautions to minimise the risks within the GBR and Torres Strait, but at the same time striking a balance between protection of the marine environment and maintaining viable shipping lanes to support vital international trade.

A risk free environment can never be achieved but minimisation and control of risk can be achieved through preventative and planned means. The Reef Review builds on the existing strong framework of preventative measures in place.

Analysis of marine incidents shows that a number of barriers must be in place to prevent an accident. I believe that the suite of measures prescribed under the 41 recommendations of

the Reef Review combined with existing measures will considerably enhance and strengthen protection in the GBR and Torres Strait.

Collectively we as members of the maritime industry must steadfastly ensure that we continue to stringently monitor all available means to deliver the highest possible level of marine pollution prevention initiatives within the Reef. The protection process is a dynamic one and I urge every one of you here to consider possible additions and improvements. Provided we remain vigilant and together strive for improved systems, I am confident we can deliver the protection that the Reef rightfully deserves and preserve this magnificent area for future generations.

Unfortunately, too often the shipping industry does not get good press. The industry is often inappropriately maligned with respect to its actual record. I believe the shipping industry needs to exploit safety and environmental diligence as key marketing strategies. At the end of the day, efficient maritime transport must be synonymous with safety and environmental protection if the shipping industry is to really prosper and receive the recognition it deserves.

The GBRTSMG has been charged with the responsibility for developing a Shipping Management Plan for the area. Whatever combination of risk reduction measures that are agreed and imposed, there will be a cost to the shipping industry. It is essential that this cost is directed where it yields the maximum benefit.

There is absolutely no room for complacency and we need to continually reassess the risk, review contingency plans, and strive for additional and improved measures of protection. Further efforts are still needed.