

2. SHIPPING IN THE GREAT BARRIER REEF

- 2.1 This chapter identifies some broad operational, technical, indigenous and legal considerations involved with shipping operations in the Great Barrier Reef and Torres Strait. It provides a background for consideration of proposals to better regulate shipping in the region. More detailed consideration is given to these aspects where relevant to specific measures in subsequent chapters.

Operational and Commercial Considerations

Shipping Routes

- 2.2 The main navigational shipping routes through the Torres Strait are the Prince of Wales Channel and the Great North East Channel (see Figure 2.1).
- 2.3 There are two major shipping routes in the GBR region:
- The Inner Route extends north-south between the GBR and the Queensland coast from Torres Strait to Gladstone in the south. The northern section from Torres Strait to Cairns is most restricted and passage through these waters involves navigation within confined waters for a long period, normally 40 hours. The inner route is well charted and marked with navigational aids.
 - The Outer Route commences at the eastern limit of the Torres Strait (the Great North East Channel) continuing southwards through the Coral Sea and rejoining the Queensland coast near Sandy Cape south of Gladstone. The outer route was surveyed and charted to international standards in 1997 encouraging a greater number of vessels, particularly oil tankers, to use the outer route.
- 2.4 There are some operational advantages for ships to use the inner route in preference to the outer route. The distance from Booby Island (in the western approaches to Torres Strait) to Sandy Cape (north of Brisbane) via the outer route is 1,344 nautical miles compared to 1,220 nautical miles via the inner route. The different distance involves an additional transit time of about half a day for an average trading ship, but taking account of the likelihood of heavy seas and strong winds, ship operators may allow an extra day's steaming time.
- 2.5 In addition, ships using the inner route are allowed to load to their Tropical Loadline between 1 April and 30 November each year in recognition of the inner route's more protected waters. The Tropical Loadline indicates the maximum depth of loading during the fine weather season in certain zones in the tropics. Its extension beyond the fine weather season allows ships to

carry greater loads than apply if they are required to load to their Winter or Summer Loadlines.²

- 2.6 Ships may traverse the GBR at three main transit passages: Grafton Passage near Cairns, Palm Passage near Townsville, and Hydrographers Passage near Mackay and in the south through the Capricorn Channel.
- 2.7 The navigational task along the Inner Route, in Torres Strait and its transit passages is demanding because of some 2,900 reefs, including 760 fringing reefs, 360 coral cays and 618 continental islands. The region also is subject to strong trade winds, occasional cyclones, and complex tidal streams within the GBR. Ships encounter limited water depths, reduced visibility in the wet season, and narrow restricted shipping lanes in certain parts of the GBR.
- 2.8 The Torres Strait also is an area of limited depth and complex tidal streams, and transit is subject to tidal constraints for large ships. Additional navigation demands arise from the operation of numerous fishing, tourism and recreational craft in the area.

Shipping Movements

- 2.9 There is a significant level of shipping traffic in the Great Barrier Reef and Torres Strait area, with a number of commercial ports located within the region. These include Cape Flattery, Cairns, Mourilyan, Lucinda, Townsville, Abbot Point, Mackay, Hay Point, Port Alma, Gladstone, and Bundaberg.
- 2.10 Approximately 6,000 ship movements of large vessels in excess of 50 metres in length occur within the GBR region every year. Most of these vessels use the inner route with the rest entering or departing through Hydrographers, Palm and Grafton Passages.
- 2.11 Most vessels using the GBR are bulk carriers (42%) carrying significant tonnages of export cargo, including coal, bauxite, nickel ores, raw sugar, alumina and silica sand. The major bulk ports are Hay Point, Abbot Point and Gladstone. Between 5% and 10% of ships are oil tankers, with most on northerly transits, either in ballast or carrying refined product to service Queensland ports north of Brisbane. Remaining trading vessel traffic consists of container vessels (24%), general cargo (22%) and other types.
- 2.12 Numerous types of recreational and commercial fishing vessels also ply the Queensland coast on a regular basis. It is estimated that there are some 1,500 tourism vessels and 25,000 commercial and recreational fishing vessels operating in the GBR.

² An international convention requires ships to be surveyed and marked with a loadline confirming the limitations on the draught to which a ship may be loaded for maintaining its external weathertight and watertight integrity. The overloading of a ship and submersion of the loadline relevant to the season and global zone of its voyage is prohibited under the Commonwealth *Navigation Act 1912*.

Shipping Incidents

- 2.13 During the period 1985 to 2000, there were 11 collisions and 20 groundings within the inner route of the GBR, which represents over two incidents each year. This is a relatively small rate of incidents given that over 2,500 ship movements occur in the northern section of the inner route annually, but still considerably higher than anywhere else on the Australian coast.
- 2.14 The highest incident occurrence is a grounding, which comprised 47% of incidents in the GBR over the past 15 years. Most groundings are caused by human error, with machinery failure being a minor factor. In the five years from 1995 to 2000, there have been eight serious groundings in the inner route and Torres Strait. Seven of these groundings were caused by human error and one by machinery failure. Six of the grounded vessels had a coastal pilot on board. None of these incidents resulted in an oil spill.
- 2.15 The next highest is a collision, usually between a trading ship and a fishing vessel. Collision statistics show that the only incident between two large ships was between *HMAS Fremantle* and *River Embley* in 1997. All other collisions involved trading ships and fishing vessels, caused in most instances by failure to keep a proper lookout.
- 2.16 A list of incidents from 1985 to 2000 is at Attachment C.
- 2.17 The largest contributing cause of all incidents was human error at 57%, with other notable causes being a combination of at least two simultaneous factors, at 27%. This compares with international estimates, where human error accounted for approximately 48% of incidents.³

Risks of Shipping Incidents

- 2.18 The review commissioned a study by Det Norske Veritas (DNV) to ascertain the impacts of various ship safety control measures for the GBR and Torres Strait.⁴ DNV found that the incident rate can be reduced significantly by a combination of control measures, dropping from around 2.5 per year currently to 1.6 per annum if full vessel traffic control is introduced and there is 100% uptake of electronic chart display and information systems.
- 2.19 The study found that for the Torres Strait:
- The risk of powered grounding in the Torres Strait is the dominant contributor to the risk profile for the whole GBR, on a per nautical mile basis, with a predicted frequency rate of 1-2 per year;

³ Capt J Watkinson, 2001, *Sustainable Shipping Access to the Great Barrier Reef*

⁴ Det Norske Veritas, 2001, *Assessment of Ship Safety Controls in the Torres Strait and Great Barrier Reef*

- Collision accidents are next in frequency with an expected rate of around one in 25 years;
- The low frequency of collisions is likely to be due to the absence of fishing vessels operating in the Prince of Wales Channel;
- The adoption of 100% pilotage on all ships traversing Torres Strait would reduce the risk of a collision by 30% and of a powered grounding by about 32%;
- It is reasonable to assume that ships currently not using pilots in the Torres Strait represent the lower end of the market.

2.20 For the Inner Route north of Cairns, DNV found that:

- It is reasonable to anticipate 1 incident per year in the Inner Route North sector, which has experienced the greatest aggregate rate of incidents in the study period;
- The dominance of powered grounding for this sector reflects the navigational difficulty.

2.21 South of Cairns on the Inner Route, DNV found that:

- Compulsory pilotage is an option for the Whitsunday Group;
- Enhanced navigational assistance might be appropriate for the area south of Cairns outside of compulsory pilotage areas. This would require extension of the existing radar coverage.

2.22 In assessing the Outer Route, DNV considered that:

- the overall contribution to risk reduction by the Outer Route is negligible, due to the reduced traffic levels on this route;
- there is compelling evidence to suggest that crew on ships on the Outer Route are exposed to considerably higher risk of an incident occurring as a result of remoteness and the potentially severe physical environment;
- it is reasonable to suggest that the environment of the GBR would be no better protected if shipping moved outside the reef.

2.23 Over the whole study area, DNV concluded that:

- The rate of incidents decreases as ships travel south on the Inner Route. This reduction is directly proportional to the navigational challenge;
- The benefits of increased pilotage are possibly optimistic, but the potential for risk reduction from shore-based vigilance and guidance is apparent;

- Since collision is not the primary contributor to risk within the relatively sparsely populated study area, introduction of Automatic Identification Systems (AIS) alone only reduces risk by around 5%;
- Adopting an upgraded vessel traffic system for the REEFCENTRE, together with adoption of AIS would result in a 20% reduction in incident rates across the study area, but any system of vessel traffic control would be an extremely large undertaking;
- Introduction of more technological controls will improve the quality operators first.

2.24 Incidents that have occurred in the study area are characterised by human error. Such behaviours are hard to predict and the variety of ways human errors can be manifested should be a caution to reacting to any single incident.

Indigenous Considerations

2.25 Indigenous communities raised a number of concerns about shipping in Torres Strait and the Great Barrier Reef.⁵ The fundamental message from consultations is that local communities understand that international shipping has to happen, but they want all possible measures to ensure safety and pollution prevention. However, some submissions called for a total ban on shipping through the GBR inner reef.

2.26 Specific areas of concern about shipping included:

- Vessels have been using “back channels” behind islands, as opposed to the recommended channels the islanders are aware of.
- Beaches and foreshore of islands are being eroded by “backwash” from ships passing close to the islands and rubbish washes onto the island shores, including gas bottles, jerry cans, kitchen refuse, bottles and cans.
- People are aware of the ships in the region and they avoid them as best as possible, but sometimes they are caught unaware and small craft have difficulty in the wake. Islanders are very interested in any arrangement that would help them be aware of when ships might be traversing the waters.
- There are proposals to run trawler and fishing charter operations in the near future, and there are concerns about safety of interactions with trading ships in Torres Strait.

⁵ Submission No 2 ATSIIC Cairns Regional Council and North Queensland Land Council, No 3 ATSIIC Queensland Land and Sea Policy Group, No 4 ATSIIC Townsville Regional Council, No 17 Central Queensland Land Council Aboriginal Corporation, No 60 Torres Shire Council and meetings with Torres Strait communities, March 2001, Townsville communities March 2001

- There was support for proposals to establish a “maritime officer” on local councils. This person would be the first point of contact for all issues associated with AMSA/Queensland Transport business, such as location of navigational aids, and reports of incidents.
 - Islanders believe all vessels should be piloted and that the Torres Strait should be subject to the same protection as the Great Barrier Reef.
 - There were concerns about the Torres Plan and the Papua New Guinea capability to respond to a pollution incident, and compensation to the Islanders should an incident occur. Islanders are concerned that they have useful local knowledge that is not being used in response arrangements. It was suggested that Queensland Transport should follow up with information and training for locals, and potentially run an exercise in the area.
 - Islanders are very interested in having any information that would enable more informed interaction with fishing vessels, including marine notice to mariners on seasonal fishing activities, and the marking of charts to show prawn areas.
 - There is concern about the declining populations of dugong and turtles, and concern that shipping may contribute to their decline.
 - Indigenous communities need to be consulted on the construction of navigation aids.
 - Proposals for expanded pilotage regimes and oil spill responses should consider opportunities for involvement and employment of indigenous people.
 - Indigenous participation in on-going planning and management schemes for the region is essential. There is a need for more consultation at high levels with indigenous communities and consultation has to be culturally appropriate.
- 2.27 In addition, Land Councils noted that indigenous communities are dedicated to the goal of gaining legal recognition of their traditional ownership of maritime estates, protection of cultural heritage sites and full participation in management of the GBR Marine Park.
- 2.28 During consultation sessions in Torres Strait, the island communities indicated they would like to receive information on ship traffic in the Great North East Channel, from both ownership and waterways management perspectives.
- 2.29 Island communities indicated that their main concerns about shipping through the Channel was the proximity to islands and the effects of ships’ wash and the deposition of garbage on beaches. Communities are also planning to engage in trawling operations and they see a hazard in interacting with shipping, especially at night.
- 2.30 Approximately two ships transit the Channel each day. Given that most ships utilising the Channel will only be known as they arrive at the SRS

entry and departure points, the SRS cannot presently provide a forward schedule.

- 2.31 Queensland Transport has identified an opportunity to consult with pilot service providers to ascertain forward bookings to engage pilots for the transit through Torres Strait, as a means of gaining advance knowledge of ship movements.

Recommendation 5

The review recommends improved data sharing arrangements between relevant agencies and with island communities in Torres Strait on traffic monitoring and regular dissemination of information to local communities.

- 2.32 The review supports Queensland Transport's efforts to explore compiling shipping data through contact with local pilotage service providers and notifying island communities of future shipping activities.
- 2.33 The review also supports initiatives by Queensland Transport and AMSA to raise awareness in island communities of the movement, risk and impact of shipping and response arrangements to marine incidents and marine pollution.

Technical considerations

- 2.34 Proposals for new regulations or technological approaches will involve a range of new infrastructure, equipment, legal and personnel requirements for both commercial and regulatory bodies.
- 2.35 Infrastructure requirements may encompass introduction of new or additional existing technologies such as Automatic Identification Systems, radar stations and electronic charts and display systems, as well as pilot launches or helicopter services and pilot accommodation.
- 2.36 In addition, the introduction of new measures will involve consideration of operational arrangements, staffing, qualification and training requirements, as well as other personnel considerations such as fatigue management.
- 2.37 Some proposals may require amendments to legislation and consideration of arrangements for consultation and participation in planning and management processes.
- 2.38 An important consideration in implementing any measures that require take-up of new technology and procedures by international shipping using the GBR is the extent to which such measures are endorsed by the IMO and the international timetable for adoption of such measures. As not all ships will universally be equipped with new technologies, according to internationally agreed requirements and timelines, any unilateral requirement by Australia for foreign ships to comply when sailing through the GBR would mean an effective ban on such ships from transiting the area.

- 2.39 Implementation of a number of the options considered in this report could involve considerable costs. Implementation of the full suite of proposals may not be cost effective for the whole GBR region or for specific sectors of the route.

Legal Considerations

- 2.40 Australia's powers to regulate foreign ships in Australian waters are subject to the provisions of the United Nations' Convention on the Law of the Sea 1982 (UNCLOS). UNCLOS builds upon earlier conventions on the Law of the Sea and customary international law. The convention was carefully negotiated at the UN over a period of some nine years and represents a delicate balance between the increasing and often competing demands of coastal States and those of traditional freedoms of navigation, as advocated by maritime nations.
- 2.41 This convention defines the internationally agreed responsibilities and jurisdictions of flag States (the country that has granted a ship the right to sail under its flag), coastal States (the country in whose maritime zones the ship is sailing) and port States (the country in whose port the ship has entered).
- 2.42 UNCLOS recognises the right of a Coastal State to regulate foreign flag ships in the territorial sea in respect of the safety of navigation and the regulation of maritime traffic, but such laws shall not hamper the right of innocent passage. States bordering a strait may designate sea lanes and prescribe traffic separation schemes for safe passage of ships, subject to presentation to a "competent international authority" like the IMO. They also may adopt laws for pollution prevention, control of fishing and loading and unloading of commodities.
- 2.43 The effect of UNCLOS is that Australia cannot hamper or impair the right of passage of foreign vessels through its waters, including the Torres Strait, and the territorial waters of the area covered by the Great Barrier Reef Marine Park.
- 2.44 The Commonwealth shares jurisdictional responsibility for regulating shipping with the States and Northern Territory under the Australian Constitution and the Offshore Constitutional Settlement in 1979 between the Commonwealth and States. This included provisions for sharing of powers based on the nature of the voyage being undertaken.
- 2.45 The Offshore Constitutional Settlement also defined the constitutional boundaries of States and Territories in relation to coastal waters. The rights and title vested in the States are subject to the operation of the *Great Barrier Reef Marine Park Act 1975*. Where a provision of that Act is in conflict with a State law, the State law will be invalid to the extent of the inconsistency.
- 2.46 Jurisdiction to regulate activities within internal waters and coastal waters in the GBR lies with the State of Queensland. The majority of the GBR

waters are within the territorial sea and come under Commonwealth legislation. A smaller proportion of the waters in the GBR, but significantly the waters most used by shipping, are Queensland coastal waters that come within State jurisdiction, subject to the *Great Barrier Reef Marine Park Act 1975*.

- 2.47 The mixture of international, Commonwealth and State law, with often overlapping requirements, presents a complex process for administration and enforcement of shipping regulations in the Great Barrier Reef. The applicability of legal measures to a ship travelling through the GBR will vary depending on the nature of the ship and its voyage pattern and its precise location at a given time in the course of its voyage. Further details of these legal considerations are provided in Chapter 7.