

1.1 Introduction

This Guide is published as a follow-up to the implementation of the IMO-adopted Traffic Separation Scheme (TSS) within the Lombok and Sunda Straits in 2020, and the adoption of the Particularly Sensitive Sea Areas (PSSAs) of the Nusa Penida Island and the Gili Matra Islands in the Lombok Strait in 2024. This Guide aims to support informed decision making and improve shipping safety and protection of the maritime environment in the Lombok and Sunda Straits.

The TSSs include precautionary areas and inshore traffic zones (ITZs) and were introduced in the Straits of Lombok and Sunda as routing measures to improve safety of navigation by separating flows of marine traffic and recommending the direction of the flow of traffic in designated precautionary areas. The routing measures are implemented in high traffic areas to mitigate the increased risks of collision and grounding in these constrained waters.

Archipelagic Sea Lanes (ASLs) through Indonesian waters have been in use for several decades, although these lanes indicate a corridor through national territorial waters and do not necessarily indicate the deepest or safest routes for international shipping. In fact, the ASL lines on charts are not recommended routes, but instead indicate the centreline of ASL corridors, which mainly act as a legal boundary allowing freedom of navigation for international shipping through the extensive territorial sea of Indonesia.

While ships following the ASL corridor will often keep to starboard of the ASL axis line marked on charts, they are not legally obliged to do so. ASLs provide no recommended routes for crossing traffic, transiting traffic and no separation zone between flows of transiting traffic. The new TSS routing measures in the Straits of Lombok and Sunda have been created to improve navigational safety in ASL areas with the highest risk of traffic convergence.

In the Straits of Lombok and Sunda the number and size of ships, and traffic density, has been growing steadily for many years. Projections for the growth of the Indonesian economy also predict a continuing intensification of traffic in the Straits. Also, as the Straits of Malacca and Singapore (SOMS) face increasing volumes of traffic, some ships may decide to use the Straits of Lombok and Sunda as an alternative route between the Pacific and Indian Oceans. The Lombok Strait is the deepest channel connecting these oceans.

The TSS lanes and recommended routes in the precautionary areas aim to mitigate the risks of collision. However, navigators should understand that local traffic may not always be aware of the proper routing measures or properly interpret the compliance with Rule 10 of the COLREGs.

1.1.1 Explanation of Routes Shown on the Chartlets in this Guide



Dark Blue Route – Route for ships transiting the Lombok or Sunda Straits.



Traffic Arrows – General flow of traffic to be expected. The size of this arrow does not indicate the volume of traffic.



Ferry Route – Routine ferry traffic.

1.1.2 The Lombok Strait

The Lombok Strait lies between the Indonesian islands of Lombok and Bali. It is approximately 40 NM in length and has a width greater than 10 NM at its narrowest. The Strait is relatively free of navigational hazards with no offshore installations, hazardous rocks or fishing grounds present in the vicinity of the TSS. The Particularly Sensitive Sea Areas (PSSAs) at Penida Island and the Gili Islands are easily avoided and the water depths range from 126–1,200 m. Traffic is, therefore, considered to be the primary hazard to navigation.

The Lombok Strait provides the deepest water available between the Indian Ocean and Pacific Ocean. Ships with a draught in excess of 23 m that are unable to pass through the SOMS may pass through the Lombok Strait and these ships should be given a wide berth by other traffic.

Traffic analysis by Benoa VTS (Bali) for traffic transiting the Lombok Strait TSS between 1st November 2023 and 31st October 2024 recorded 15,304 unique voyages in that 12-month period. This equates to an average of 42 ships transiting the Lombok Strait each day in either a North/Southbound direction.

In addition to the number of merchant vessels transiting the Lombok Strait on a daily basis, data from Benoa VTS (2023) indicates that a further 220 short crossing trips are made daily by local ferries, support vessels or other small craft.

Traffic figures have risen from the average recorded between the years 2014–2016 of 12,257 ship transits per year, which is an average of 34 ships transiting the Lombok Strait in either a North/Southbound direction each day.

While the increasing traffic flows can, in part, be attributed to the IMO adoption of the Lombok Strait TSS in 2020, it has been further influenced by the rerouting of ships via the Cape of Good Hope, rather than via Suez, due to the Houthi attacks on vessels in the Red Sea in 2024.

The greatest risk of collision is presented by head-on situations and crossing situations, with high-speed craft, ferries, Ro-Pax and passenger ships crossing the Strait in dense concentrations, in addition to pleasure craft and smaller tourist craft.

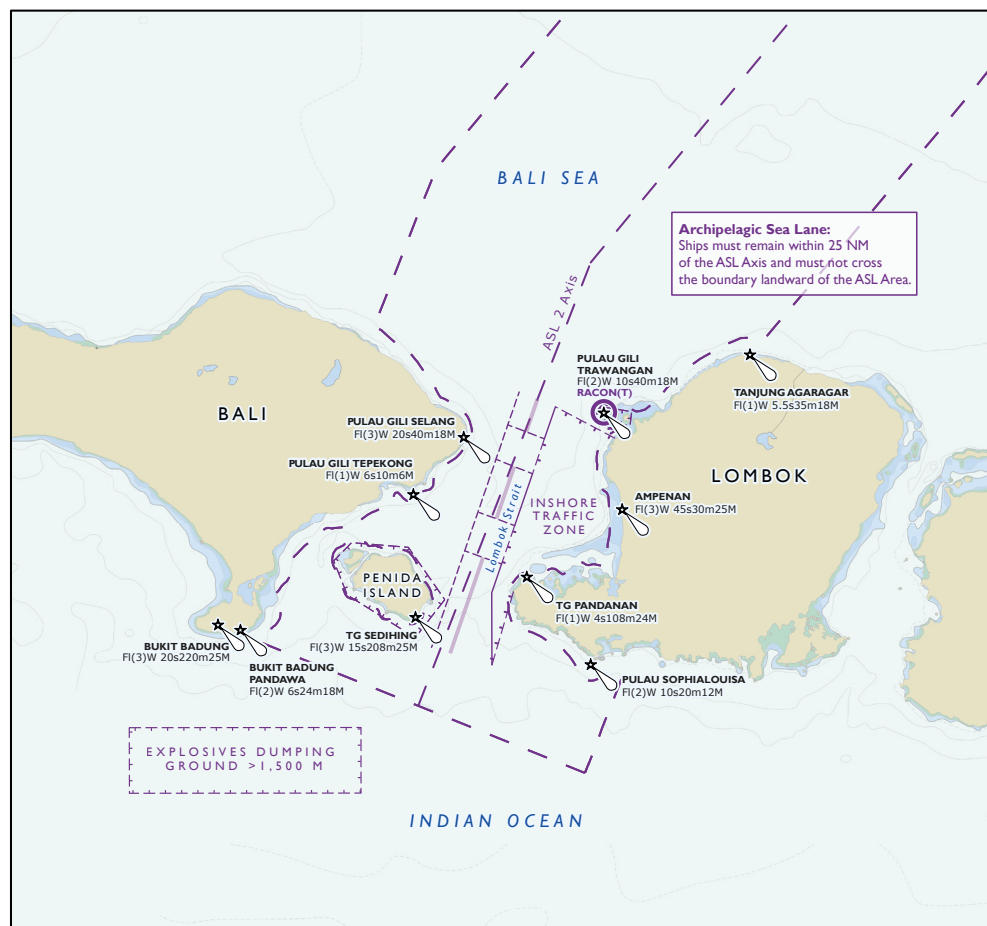


Figure 1: Overview of the Lombok Strait

1.1.3 The Sunda Strait

The Sunda Strait lies between the Indonesian islands of Sumatra and Java. The Strait is approximately 10 NM in length and narrows to just over 2 NM when proceeding along the TSS route. While shallower than the Lombok Strait, the main navigational hazard in the Sunda Strait is Koliot Reef, an isolated rock pinnacle in the centre of the Strait. While the TSS avoids Koliot Reef, and it is marked by AtoNs, ships should maintain a safe distance from it.

The marine protected areas (MPAs) at Sangiang Island, Panaitan Island and Ujung Kulon on Java are easily avoided. There are no offshore installations in the Sunda Strait, although there are oil fields to the North. The water depth

is quite variable in the Sunda Strait and the adjacent waters, with depths ranging from 30–100 m in the vicinity of the TSS. Volcanic activity in the region may pose a hazard to shipping at times.

Traffic analysis for traffic transiting the Sunda Strait TSS in 2023 recorded 22,150 unique voyages over the 12-month period. This equates to an average of 61 ships transiting the Sunda Strait in either a North/Southbound direction each day.

In addition to the merchant vessels transiting the Sunda Strait on a daily basis, traffic analysis (2023) indicates that a further 207 short crossing trips are made daily by local ferries, support vessels or other small craft.

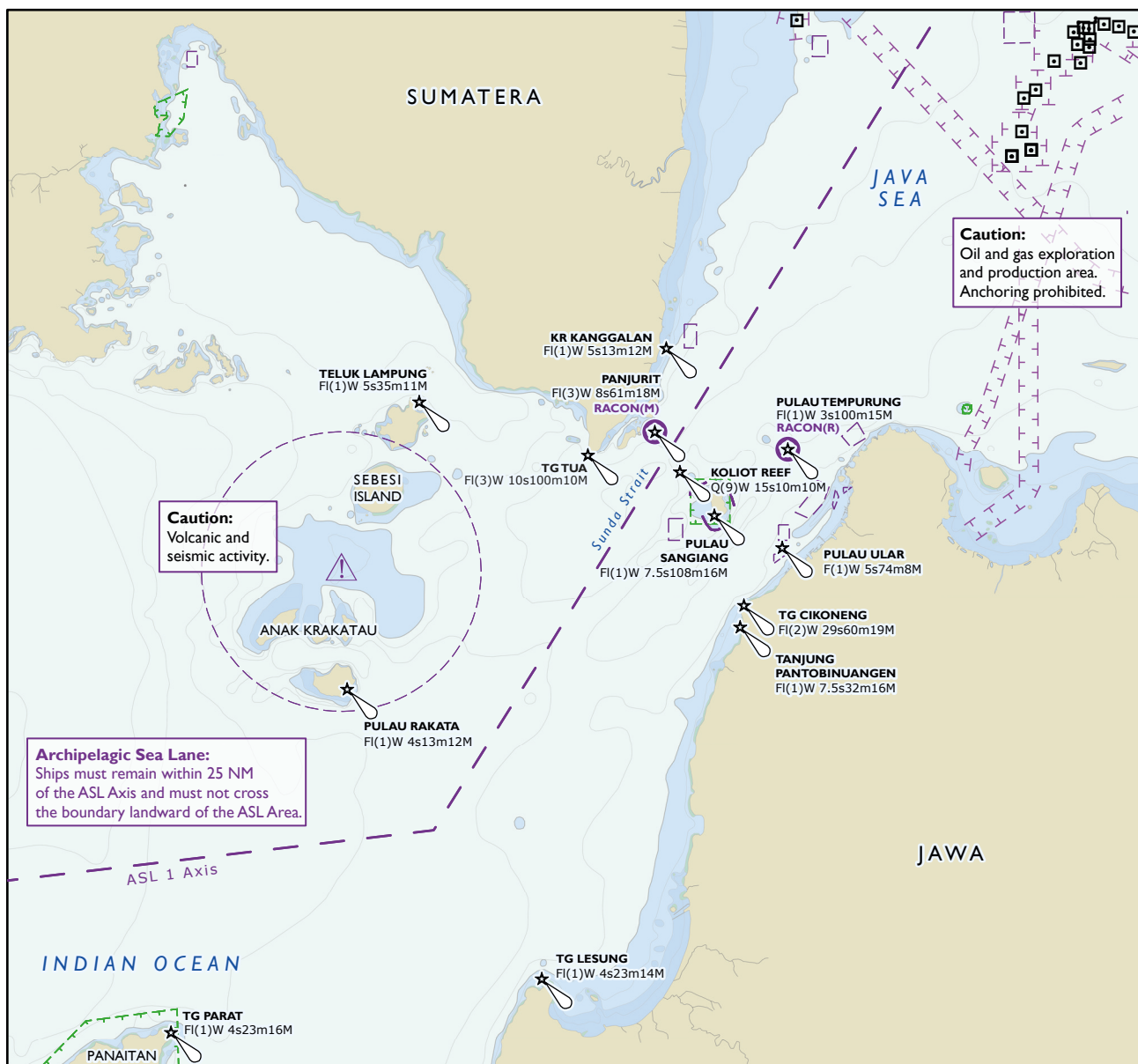


Figure 2: Overview of the Sunda Strait

1.1.4 TSSs

The TSSs in the Straits of Lombok and Sunda came into force on 1st July 2020 and are IMO-adopted routing measures.

Lombok Strait TSS

The Lombok Strait TSS is 37.79 NM in length. The width at the Northern entrance is 5.4 NM and at the Southern entrance it is 8.74 NM. The separation zone is 0.5 NM in width. There is very deep water throughout the TSS area.

- Least depth is 126 m
- CATZOC A2 throughout the Lombok Strait
- seabed consists of rock, sand and stone.

Sunda Strait TSS

The Sunda Strait TSS is 9.4 NM in length. The width at the Northern termination is 2.67 NM and at the Southern termination it is 2.27 NM. The TSS narrows passing Koliot Reef, with lanes decreasing to 0.6 NM. The separation zone is 0.3 NM in width. The TSS avoids a shallow patch and drying rock at Koliot Reef, where a light is stationed. Depths of water in the TSS are generally in excess of 30 m.

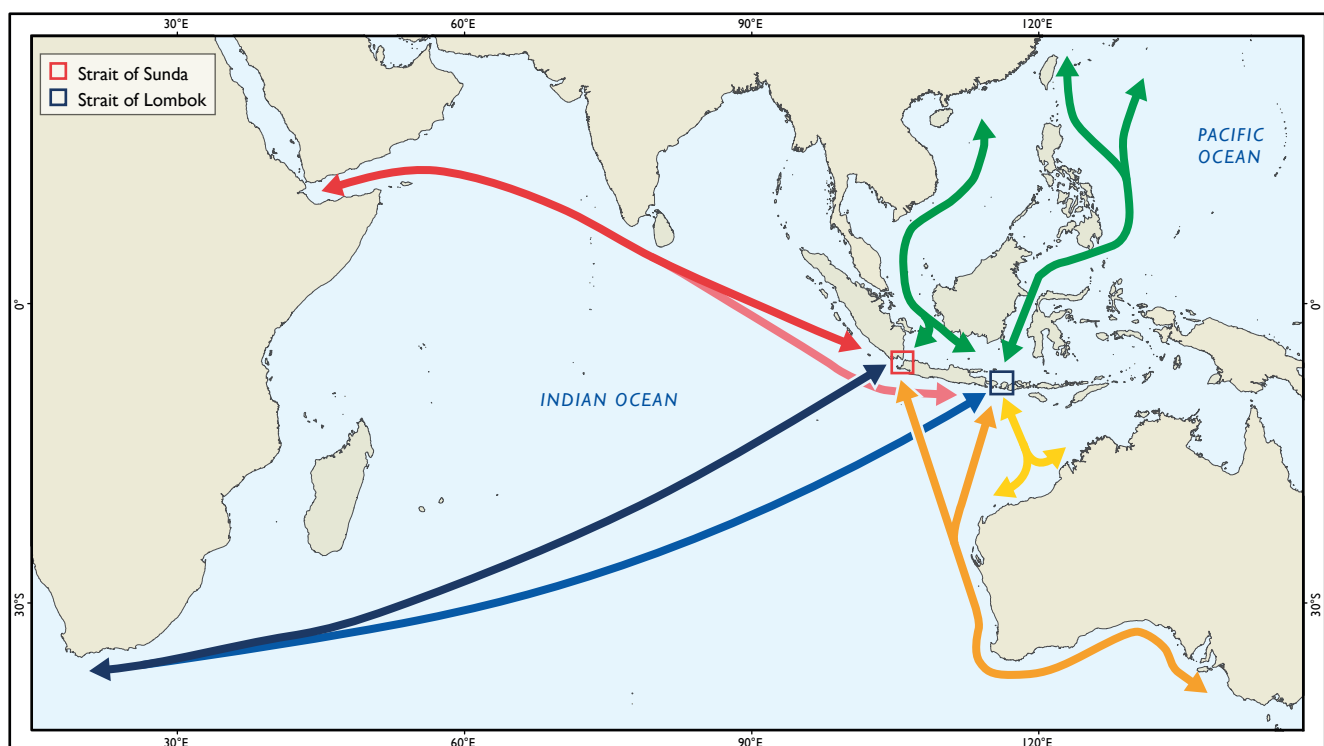
- Least depth is 37 m
- CATZOC A1 and A2 in the Sunda Strait
- seabed consists of coral and sand.

1.1.5 Routing

While many ships opt for the shorter passage available via the SOMS, navigation via Lombok or Sunda may at times prove more suitable. When choosing to navigate via Lombok or Sunda, the ship can benefit from an additional increase in safety margins. By avoiding the dense, congested SOMS, the ship's safe passage benefits from added protection by directly reducing the number of expected collision avoidance scenarios. Lombok and Sunda also present deeper water, and Lombok in particular provides a substantial increase in sea room and water depth throughout the Strait. Deep draught vessels that are either too deep or restricted for passage via the Malacca Strait will opt for an alternative route via the Lombok or Sunda Straits. Additionally, proactive weather routing also sees ships reroute via Lombok or Sunda to avoid identified tropical depressions further North, on the original planned route to Malacca.

The selection of either Lombok or Sunda will only be determined after a proper and thorough passage planning appraisal stage. This decision should have due regard for all elements and stages of the passage. For example, a benefit provided by selecting Lombok for the first leg of a voyage may be negated by a later disadvantage on the second, ocean-crossing, leg. Each decision should consider aspects such as:

- Departure port and onwards navigation to Strait
- destination and onwards navigation from Strait
- weather routing
- underkeel clearance (UKC) and sea room safety margins
- distance – time, fuel, emissions
- traffic density
- ship's business
- company standing orders.



Suez, Middle East and India

For ships transiting between the Suez Canal and East Asia, the three main routing options are via the Malacca, Sunda or Lombok Straits. Sunda provides a substantially shorter passage over Lombok, with a saving of approximately 650 NM. The shorter passage will equate to significant savings with regards to time, fuel and emissions.

Lombok is a favourable option for ships looking for increased navigational safety margins. Its deep waters (126 m least depth) provide deep draught vessels that are unable to pass through the Malacca Strait with a suitable navigable alternative. Lombok also provides greater navigable width, with a 10 NM span at its narrowest. Lombok's TSS lanes each have a width of 2.3 NM and can be favourably compared to Sunda's, which narrows to 0.6 NM.

Cape of Good Hope

Ships sailing between East Asia and the Cape of Good Hope will set course for either the Straits of Malacca, Sunda or Lombok on the Eastern side of the Indian Ocean. While both Lombok and Sunda present safe navigable passage into the Java Sea and beyond, passage via Sunda is the shorter of the two by approximately 450 NM. This presents the ship and its operator with savings on time, fuel and emissions over that of a Lombok passage. Passage via Sunda will also keep the vessel further North, avoiding the inclement weather typical of the frontal systems found in the South.

The Lombok Strait does, however, remain a practical option. It is particularly suitable for ships looking to further increase their safety protection measures. With its significant depths (126 m least depth), it is the deepest route for ships transiting between the Indian Ocean and Pacific Ocean. Deep draught vessels that are unable to pass through the Malacca Strait will commonly opt for passage via Lombok. The Strait also provides a much greater navigable width, with a span of 10 NM at its narrowest point. Lombok's TSS lanes each have substantial width at 2.3 NM, which compares favourably to Sunda's, which narrows to 0.6 NM.

East and Southeast Asia

Ships traversing between Lombok or Sunda and East or Southeast Asia will normally navigate via the Strait, which provides least distance. Typically, Lombok is used by ships operating to and from East Asia, as well as by larger, deeper draught vessels. The passage between Lombok and East Asia is plotted East of Borneo. This provides a more direct route to East Asian ports, saving around 200 NM over a Sunda passage. The passage East of Borneo will also allow the vessel to avoid the congested traffic expected further West, closer to Singapore.

For ships operating to and from Southeast Asia, Sunda and Lombok are both considered as viable options. While Lombok remains the preferred option for larger vessels, Sunda may present a shorter route and, therefore, savings in time, fuel and emissions. Sunda also provides an alternative approach to Singapore via the South.

Australia

The Straits of Lombok and Sunda are two of Australia's key logistic corridors for ships serving its national import and export markets.

Ships operating to and from ports on Australia's Western and Southern coasts tend to utilise both the Sunda and Lombok Straits, with larger vessels often opting for Lombok. From Australia's Northwest Cape, a passage via Lombok is approximately 200 NM less than passage via Sunda. Ships navigating between Australia and East Asia will typically opt for Lombok, reaping the benefit of cumulative miles saved from both legs of the voyage. Likewise, Sunda is preferred for ships transiting between Australia and Southeast Asia.

Ships operating to and from ports on Australia's Northwest coast typically opt for passage via Lombok (or the Ombai Strait) due to its close proximity. Lombok provides a route approximately 450 NM shorter than Sunda. The sizeably lesser distance will, typically, negate any saving in mileage calculated for the Sunda–East or Southeast Asia leg of the voyage.

Distance Tables (NM)

Passage via Sunda				Passage via Lombok		
8,228	7,252	5,081	Tokyo	4,736	7,706	8,468
7,879	6,903	4,737	Busan	4,606	7,576	8,338
6,975	5,998	3,829	Kaohsiung	3,612	6,582	7,344
7,537	6,560	4,391	Shanghai	4,181	7,151	7,913
6,797	5,821	3,651	Hong Kong	3,682	6,552	7,414
Cape of Good Hope	Red Sea	Cape Leeuwin		Cape Leeuwin	Red Sea	Cape of Good Hope

	Tokyo	Busan	Kaohsiung	Shanghai	Hong Kong	Cape of Good Hope	Red Sea	Cape Leeuwin
Sunda	3,234	2,886	1,981	2,543	1,803	4,994	4,017	1,847
Lombok	3,061	2,931	1,937	2,506	2,007	5,407	4,645	1,675