

**ANNEX 12**

**RESOLUTION MEPC.283(70)  
(Adopted on 28 October 2016)**

**DESIGNATION OF THE JOMARD ENTRANCE  
AS A PARTICULARLY SENSITIVE SEA AREA**

THE MARINE ENVIRONMENT PROTECTION COMMITTEE,

RECALLING Article 38(a) of the Convention on the International Maritime Organization concerning the functions of the Marine Environment Protection Committee conferred upon it by international conventions for the prevention and control of marine pollution from ships,

BEING AWARE of the ecological criteria, in particular the criteria relating to uniqueness or rarity, critical habitat, and diversity, and the social, economic, cultural and scientific attributes of the region surrounding the Jomard Entrance<sup>1</sup> as well as its vulnerability to damage by international shipping activities and the steps taken by Papua New Guinea to address that vulnerability,

NOTING the *Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, adopted by resolution A.982(24), as amended by resolution MEPC.267(68), (Revised PSSA Guidelines), and the *Revised Guidance Document for Submission of PSSA Proposals to IMO* set forth in MEPC.1/Circ.510,

HAVING AGREED that the criteria for the identification and designation of a PSSA provided in the revised PSSA Guidelines are fulfilled for the Jomard Entrance,

HAVING NOTED that the Jomard Entrance includes newly established routing systems (four two-way routes and a precautionary area), adopted by the Maritime Safety Committee at its ninety-fourth session, as the Associated Protective Measures to improve the safety of navigation and the protection of the marine environment, and that these routing systems entered into force on 1 June 2015,

1 DESIGNATES the region surrounding Jomard Entrance as defined in annex 1 to the present resolution as a Particularly Sensitive Sea Area;

2 INVITES Member Governments to recognize the ecological, social, cultural, economic and scientific attributes of the Jomard Entrance area, set forth in annex 2 to the present resolution, as well as its vulnerability to damage by international shipping activities, as described in annex 3 to the present resolution;

3 FURTHER INVITES Member Governments to note the associated protective measures established to address the area's vulnerability, the details of which are set out in annex 4 to the present resolution.

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<sup>1</sup> Part of the Louisiade Archipelago at the south eastern extent of Milne Bay Province, Papua New Guinea.

ANNEX 1

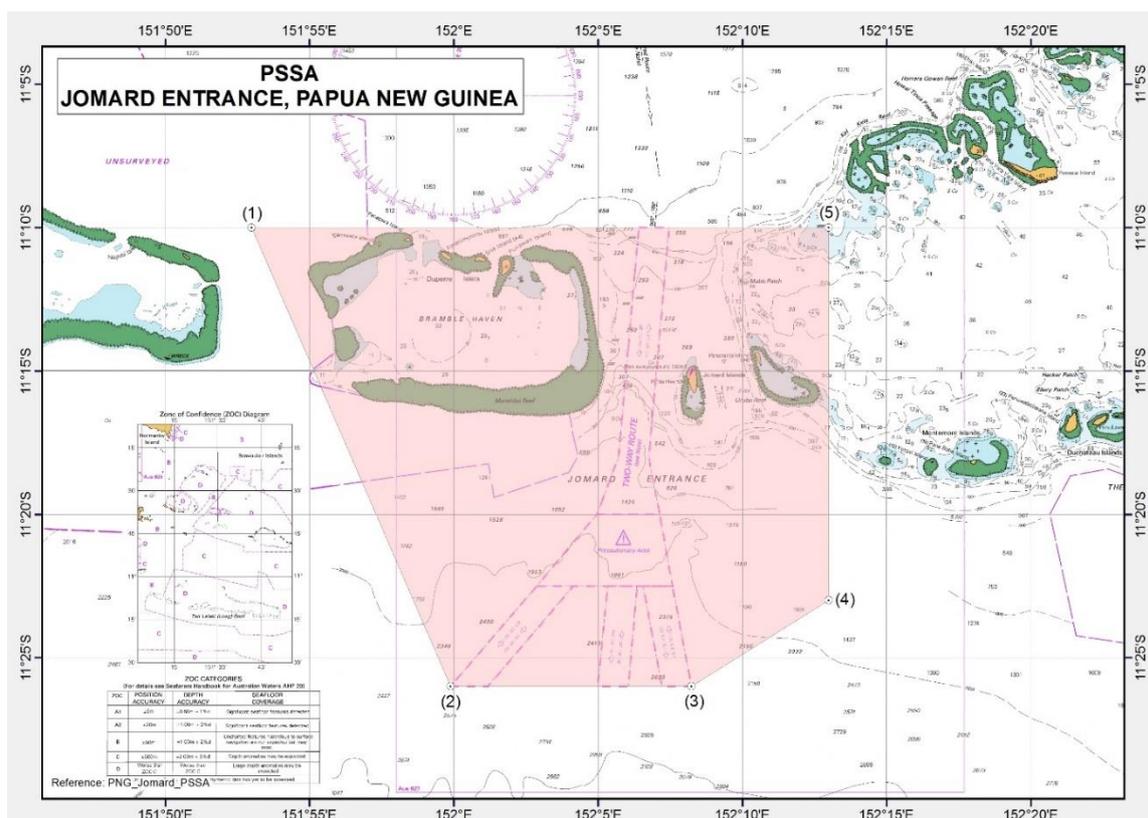
**DESCRIPTION OF JOMARD ENTRANCE PARTICULARLY SENSITIVE SEA AREA\***

**Description of the Particularly Sensitive Sea Area**

To minimize the risk of damage from ship groundings and pollution damage by international shipping activities and to protect the area's unique and threatened species as well as to preserve as far as practicable its critical habitat and diversity, mariners should exercise extreme care when navigating in the area bounded by the geographical coordinates of the Particularly Sensitive Sea Area, provided below, and adhere to the Associated Protective Measures set out in annex 4.

All geographical positions are based on WGS 84. Listed number refer to figure 1.

No.	Latitude	Longitude
1	11°10.00'S	151°53.00'E
2	11°26.00'S	151°59.90'E
3	11°26.00'S	152°08.24'E
4	11°23.00'S	152°13.00'E
5	11°10.00'S	152°13.00'E



**Figure 1 – Map showing the PSSA and newly established IMO routing systems**

\* The text in this annex is drawn from Papua New Guinea's submission contained in document MEPC 70/8. All references in this resolution are from annex 2 of MEPC 70/8.

## ANNEX 2

### ECOLOGICAL, SOCIO-ECONOMIC, AND SCIENTIFIC CRITERIA OF THE JOMARD ENTRANCE PARTICULARLY SENSITIVE SEA AREA\*

#### 1 INTRODUCTION – THE JOMARD ENTRANCE ECOSYSTEM

1.1 The Jomard Islands consist of two small uninhabited coral cay islands – Jomard Island (also called the Panuwaiyayapuna Island, meaning "long island") and Panarairai Island (also called Panadaludalu, meaning "island of dolphins"). The islands are located on raised reef flats and are fringed by coral reefs of significant size. The morphology of the fringing reef varies from site to site due to the different physical processes that take place on different parts of the island (e.g. wind and wave action). Without the current protection provided by the fringing reefs, the physical processes evident would ultimately erode the islands away. The fringing reef of Jomard Island also provides a significant habitat for marine species such as fish, crustaceans, corals, bivalves and other marine organisms. The marine life surrounding Jomard Island is extremely diverse in nature.

1.2 The beaches at Jomard Island are made up of fine sands and coral rubble. Ground vegetation lines the upper limits of the beach providing stability and protection from eroding processes, while the littoral zone (intertidal zone) is home to corals that have adapted to withstand intense ultraviolet radiation, desiccation and high salinities. The reefs surrounding Jomard Island provides very good shelter for foraging and mating activities for turtles. Furthermore, these diverse reef systems support other marine species like fish, rays, clam and sea cucumber which seek food, refuge and thrive in this healthy ecosystem. The beaches of Jomard Island and its fringing reefs accommodate a number of globally endangered species.

1.3 The terrestrial environment provides shelter for various species of birds like pigeons, crows and sea eagles. Jomard Island has been identified to have the largest turtle-nesting rookery in the southern part of Milne Bay Province. All six species of turtles that may be found in the region are currently listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as species threatened with extinction, and are also listed in Appendix I and/or Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals. The IUCN Red List of Threatened Species currently lists the Loggerhead, Leatherback and Olive Ridley turtles as Vulnerable; the Green turtle as Endangered; and the Hawksbill turtle as Critically Endangered.

1.4 Bramble Haven lies to the north-west of the Jomard Islands and consists of a total of five coral cay islands namely, Punawan, Siva, Pananimunimu, Panapwa and Awanagamwana Islands. These islands are important habitat to marine fauna and flora and lie on a reef platform of approximate depth range of 2 metres to 25 meters. The southern part of this group of islands consists of moderately exposed fringing and lagoonal reefs with sand and coral bommies in the shallows and coral ridges running horizontally across the slope. These drop off into deep water. The islands harbour marine species of turtles, giant clam, bumphead parrotfish (*Bolbometopon muricatum*) and humphead (maori) wrasse (*Cheilinus undulates*) that are on the IUCN Red list of threatened species. Green and hawksbill turtles often utilize these areas for nesting, mating and foraging, while loggerhead turtles transit through the region. This area is commercially exploited at a very low level. Factors that contributes toward this include the location of these islands in relation to human settlement.

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\* The text in this annex is drawn from Papua New Guinea's submission contained in document MEPC 70/8.

1.5 As the PSSA is part of the Louisiade Archipelago, Milne Bay Province, and is also within the Coral Triangle, the critical habitat, diversity and biogeographic importance criteria are applicable throughout the PSSA. The uniqueness or rarity and fragility criteria apply particularly in the vicinity of the Jomard Islands, with the naturalness criteria particularly applicable around Bramble Haven. The social or economic dependency and human dependency criteria are also applicable in both the Bramble Haven and Jomard Islands. Further details are provided below.

## 2 ECOLOGICAL CRITERIA

### Uniqueness or rarity

2.1 Six of the world's seven marine turtle species can be found in the waters off PNG. These include Hawksbill, Green Turtle, Leatherback, Flatback, Loggerhead and Olive Ridley. (Kinch, J., 2003). Of these, the first three are commonly found in the vicinity of Jomard Entrance. Scientific surveys and anecdotal evidence suggest that PNG has some of the largest remaining populations of these three turtle species in the world today. There is an informal tagging programme for turtle management and conservation at Jomard Islands, as the turtles have been nesting there annually for generations.

2.2 In terms of rarity, all six species of turtles that may be found in the region are currently listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as species threatened with extinction, and are also listed in Appendix I and/or Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals. The IUCN Red List of Threatened Species (<http://iucn-mltsg.org/>) currently lists the Loggerhead, Leatherback and Olive Ridley turtles as Vulnerable; the Green turtle as Endangered; and the Hawksbill as Critically Endangered (see below).

Turtle Type	IUCN Status List
Loggerhead Turtle ( <i>Caretta caretta</i> )	Vulnerable
Green turtle ( <i>Chelonia mydas</i> )	Endangered
Leatherback turtle ( <i>Dermochelys coriacea</i> )	Vulnerable
Hawksbill turtle ( <i>Eretmochelys imbricata</i> )	Critically Endangered
Flatback turtle ( <i>Natator depressus</i> )	Data Deficient
Olive ridley turtle ( <i>Lepidochelys olivacea</i> )	Vulnerable

### Critical habitat

2.3 Fifteen marine sub-regions were identified within the Milne Bay Province by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Ocean Flagships, the Louisiade Archipelago has the largest area of reef or reef associated (deep lagoon) habitat, with approximately 800,000 ha, representing 58% of the Archipelago (Skewes et al., 2003 and Skewes et al., 2011).

2.4 As noted above, the area provides a critical habitat for the Hawksbill, Green and Leatherback turtles. According to the IUCN, the overall global decline of the Hawksbill in particular has been in excess of 80% (Mortimer and Donnelly, 2008). In addition to these turtle species, both Bramble Haven and Jomard Island provide habitats for migratory marine and shore birds nesting sites, as well as for all giant clam species (Allen et al., 2003).

2.5 The fringing reef of Jomard Island provides a significant habitat for marine species such as fish, crustaceans, corals, bivalves and other marine organisms (UNESCO, 2016). The marine life surrounding Jomard Island is extremely diverse in nature. These habitats are sensitive to any shipping impact (e.g. oil spills, introduction of harmful marine species, marine debris and physical harm caused by groundings). Jomard Island has been identified to have the largest turtle-nesting rookery in the southern part of Milne Bay Province (UNESCO, 2016).

### **Representativeness**

2.6 The Jomard Entrance ecosystem include pristine reefs with high species endemism that are relatively undisturbed or only commercially exploited at a very low level (see Reef Condition Index value in paragraph 16 below).

### **Diversity**

2.7 Papua New Guinea (PNG) is located in the "Coral Triangle", an epicentre of rich marine biodiversity, see figure 1, and is home to 76% of all know coral species, 37% of all known coral-reef fish species, and 53% of the world's coral reefs. The area is of ecological and scientific significance and has great natural beauty and diversity, as seen in its pristine islands and reefs. Its waters host over 500 species of hard coral, 44 species of mangroves and 14 species of seagrass. PNG's Fourth National Report to the Convention on Biological Diversity (UNEP GEF 2016) notes that:

"PNG provides one of the last opportunities for the conservation of significant areas of coral reefs in the western Pacific region of maximum marine biodiversity. Few other locations offer the combination of large areas of high diversity reefs mostly undamaged by human activity; relatively low population size in most coastal areas; a scientific and management community that is committed to sustainable use of marine resources, and a customary land tenure system that can be used to enhance conservation efforts."

2.8 The Conservation International 2000 Rapid Marine Biodiversity Assessment (Allen et al. 2003) of the Milne Bay Province listed Punawan Island at Bramble Haven as the fifth most coral diverse of the 57 sites surveyed, with 107 coral species observed. The assessment also listed both Punawan and Jomard Islands as among the best sites in Milne Bay with a rich combination of coral and fish diversity, as well as being relatively free of damage and disease.

2.9 The 2000 Assessment also assessed reef condition at 57 sites in Milne Bay Province. Reef condition is a term pertaining to the general "health" of a particular site as determined by assessment of key variables including natural and human-induced environmental damage and general biodiversity as defined by major indicator groups (corals and fishes). A Reef Condition Index (RCI) value – derived from three components: coral diversity, fish diversity, and relative damage from human and natural causes – as calculated for each site. The results of this analysis indicated that the Louisiade Archipelago is included in the geographical area with the highest ranking Reef Condition Index. Overall, the RCI for the Milne Bay Province was significantly greater than the values obtained at previously surveyed reefs in other parts of the Coral Triangle.

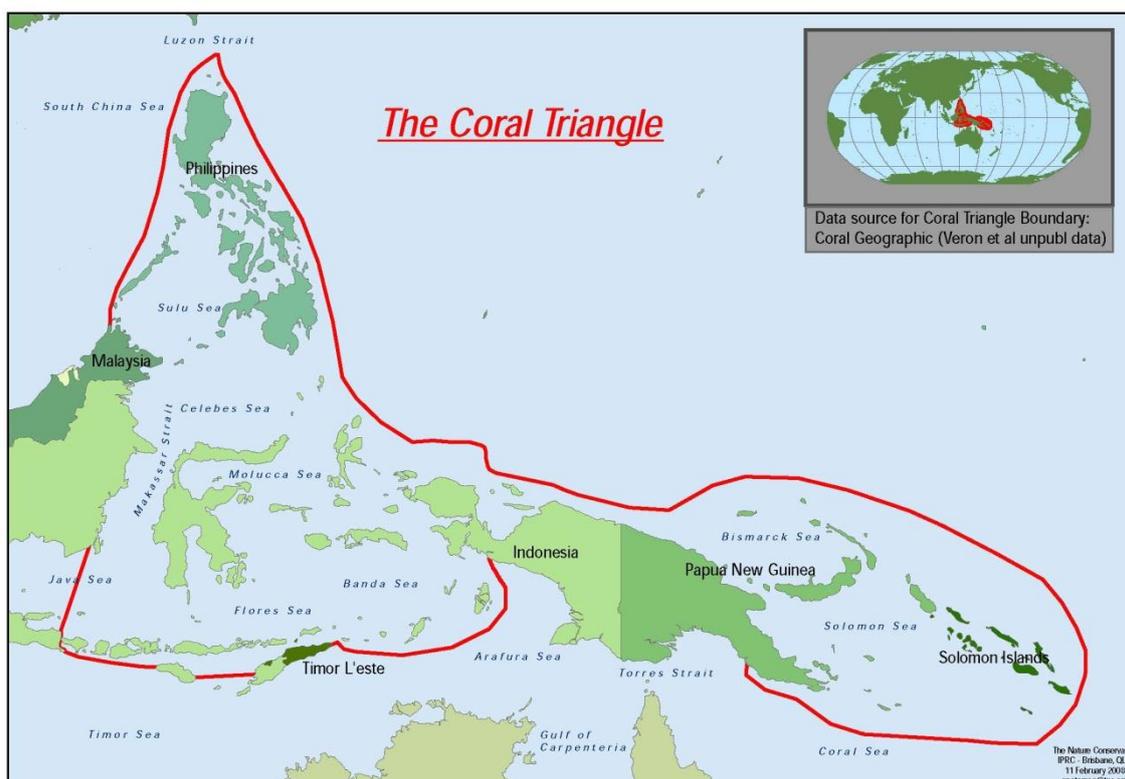


Figure 1 – Map showing Coral Triangle

### Naturalness

2.10 The 2000 Rapid Marine Biodiversity Assessment of Milne Pay Province (Allen et al. 2003) concluded that Punawan Island at Bramble Haven was one of the six sites in the Province (from a total of 57 sites surveyed) that rated highly from an aesthetic point of view (good diversity, pristine condition, extensive cover, and good visibility). Most indicators show that Milne Bay's reefs are in remarkably good condition, especially compared to other areas in the Coral Triangle. While coral bleaching has occurred several times in limited areas of Milne Bay, this has mostly been limited to the northern areas of less than 10 degrees south.

### Fragility

2.11 Jomard Island is a small coral cay island constructed on reef platforms, which have reached sea level during the Holocene. The island is fringed by a coral reef of significant size. The morphology of the fringing reef varies from site to site due to the different physical processes that take place on different parts of the island (e.g. wind and wave action). Without the current protection provided by the fringing reef, the physical processes evident will ultimately erode the island away (UNESCO, 2016).

2.12 A 2011 assessment of the coastal and marine ecosystem assets of Milne Bay found that the Louisiade Archipelago would be one of the subregions most impacted, taking into account sensitivity, exposure and weighting of ecosystem assets, climate change and human pressures (Skewes et al., 2001).

## **Bio-geographic importance**

2.13 Milne Bay by nature of being a series of variable island chains in close proximity to the large island of New Guinea has led to very high levels of endemism across virtually all taxa. These islands are a part of the Woodlark and Pocklington Rises that are separated by active seabed floor spreading. The islands range from mountainous volcanic chains through to coralline, makateas, atolls and sand cays, and their associated sea mounts and shelf; sunken, fringing and barrier reefs. Milne Bay has disproportionate biodiversity richness and endemism for its size (Andréfouët et al., 2006).

## **3 SOCIAL, CULTURAL AND ECONOMIC CRITERIA**

### **Social or economic dependency**

3.1 PNG's human population (~10 million inhabitants, 2016) has strong economic, social and cultural ties with the sea. PNG's marine resources are an important source of economic livelihood in the extensive rural portions of the country's islands and coastal areas. They support a private sector fishing industry that is a significant source of government revenue. (Asian Development Bank, 2016).

3.2 Tuna and shrimp are the major commodities comprising PNG's commercial fisheries. The 2010 tuna catch totalled 799,000 tons, while the shrimp catch has averaged about US\$10.5 million in recent years. Within the PSSA Panuwaiyayapuna and Panarairai Islands are both important sites for subsistence artisanal fishing and diving for commercially valuable resources, while Punaman Island is an important site of sea cucumbers for beche-de-mer and trochus harvesting.

### **Human dependency**

3.3 PNG's waters are vital to the subsistence of its inhabitants and the nation's economy, with the sea acting as a "supermarket" for coastal community residents. Fish is a major source of dietary protein, particularly in island and coastal areas, evident in the relatively high annual per capita fish consumption of coastal community residents, which is estimated at 53.3 kilograms (Asian Development Bank, 2016).

3.4 Marine resource use in the Louisiade Islands is artisanal in nature, providing for subsistence needs as well as limited small-scale commercial production. Because of a lack of regularly scheduled cargo transport and the absence of refrigeration facilities, commercial harvesting primarily targets non-perishable, high-value invertebrate products. Residents of some of the smaller islands are especially dependent on income from harvesting resources such as sea cucumbers for beche-de-mer.

### **Cultural heritage**

3.5 Traditional shell "money", locally known as "bagi" made from *Spondylus* shell is also extensively extracted and manufactured in the Louisiade Islands. These bagi flow along the Louisiade Archipelago and are eventually modified and fed into Kula Ring.

3.6 With the importance of the marine resources for islanders' wellbeing, many traditional legends, dances and hymns are linked to it. Many still ply the waters to these islands in either traditional sailing canoes or dinghies maintaining their seamanship and navigational skills in doing so (Smaalders and Kinch, 2003).

## **4 SCIENTIFIC AND EDUCATIONAL CRITERIA**

### **Research**

4.1 CSIRO Division of Marine Research, PNG National Fisheries Authority and Conservation International conducted a joint marine stock assessment of the abundance of reef resources and sustainable use of beche-de-mer resources for Milne Bay in 2001. This included the islands of the Jomard Passage (Skewes et al., 2002)

### **Baseline for monitoring studies**

4.2 Geo-referenced dive sites from the Conservation International Marine RAP of 2000, the stock assessment mentioned in paragraph 28, ongoing turtle monitoring and tag retrieval data held by SPREP (Secretariat of the Pacific Regional Environment Program) and Queensland National Parks and Wildlife Service as well as 2015 National Maritime Safety Authority Surveys are current baselines. Permanent transects need to be established to establish a standardized baseline.

## ANNEX 3

### VULNERABILITY TO DAMAGE BY INTERNATIONAL SHIPPING ACTIVITIES

#### 1 VESSEL TRAFFIC CHARACTERISTICS

##### Operational factors

1.1 Fishing vessels, local trade vessels, local sailing canoes, tourist and recreational craft can be encountered anywhere in the Jomard Entrance area.

1.2 There are currently no existing activities or foreseeable developments of offshore exploration or exploitation of the seabed. Nautilus Mining previously held Exploration Licence Tenements in the Solomon Sea, however these lapsed. Similarly, there are no offshore structures other than those used to provide aids to navigation in the region.

##### Vessel types

1.3 There is a wide variety of vessels operating in this area, including large bulk carriers, timber carriers, LNG, oil and chemical tankers, passenger ships, cruise liners and third generation container ships.

1.4 Since July 2014, LNG has become one of the primary commodities exported by PNG. It is predicted that around 110 LNG ships will call at PNG ports each year for the first three years, with this number forecast to double by 2020. All LNG ships will use Jomard Entrance as their primary route to/from Japan, which is contracted to import around 85% of PNG's LNG. There is a second LNG project within PNG that will likely be developed in the near future.

1.5 Papua New Guinea (PNG) is experiencing significant growth in marine tourism. Cruise industry sources reveal that up to 100 ship calls per annum are expected each year for the next five years, following which a further growth of 34% is estimated for the next five years.

##### Traffic characteristics

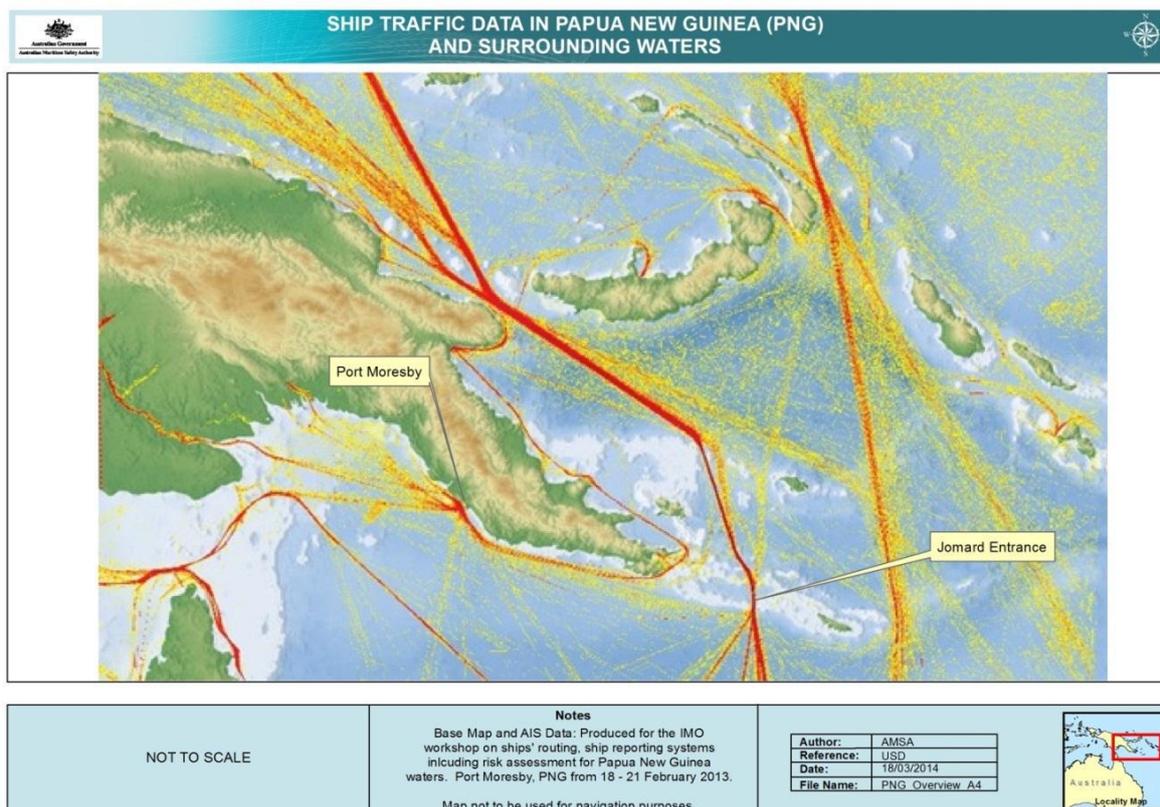
1.6 PNG is experiencing a marked increase in the volume of international ship traffic passing through its waters. It is estimated that some 9,200 ships transited its waters in 2013. Many ships in ballast drift near the southern approaches to Jomard Entrance awaiting their turn to load at Australian ports. Some 90% of the ships carrying commodities exported by Australia's eastern coast ports to north Asian markets (including China, Japan and the Republic of Korea) use this most direct route through PNG's waters.

1.7 Over the last decade and a half, commodity exports have been a key driver of economic activity in Australia, driven by strong growth in demand from emerging economies in Asia. Substantial resource exports (mainly coal and Liquefied Natural Gas (LNG)) from Australian ports have contributed to increased traffic through PNG's waters. This trend is predicted to continue for some time to come.

1.8 Coal exports from the state of Queensland in Australia will be the biggest driver of increased shipping through Jomard Entrance, through which northbound ships loaded with coal from the ports of Hay Point, Abbot Point and Gladstone will traverse. The coal port of Newcastle on the central coast of New South Wales also contributes to the significant traffic through Jomard Entrance.

1.9 As an example, the number of ships calling at the Australian coal exporting port of Abbot Point each year is forecast to grow from 172 (in 2012) to 1,640 (in 2032) – almost a tenfold increase. Likewise, annual traffic from Hay Point in central Queensland is forecast to grow from 809 ships to 2,380 ships in the same period.

1.10 Concurrently, strong growth in PNG's mining and resource sectors has led to it becoming one of the world's fastest growing economies. As noted above, a variety of ship types transit PNG's pristine and reef-littered waters, the majority along well-used routes, see figure 1.



**Figure 1 – Shipping traffic patterns in and around PNG waters**

1.11 Taking into account the current and project levels of international shipping traffic, a risk assessment conducted using the IALA Waterways Risk Assessment Program Mk2 in February 2013 found that the introduction of a two-way route could reduce the frequency of potential collisions from the one every seven years to one every 14 years – a reduction of 50% in the number of potential collisions.

### **Harmful substances carried**

1.12 Vessels transiting Jomard Entrance are primarily bulk carriers, however there are also significant numbers of oil, chemical/products and LNG tankers.

## **2 NATURAL FACTORS**

### **Hydrographical**

2.1 Hydrographic surveys in the immediate area of the Two-way routes are to Zone of Confidence (ZOC) B. These surveys confirm existing charted depths and depiction of reef edges and are to be incorporated in a new 1:75,000 large scale chart in 2014 – 15. Areas outside the limits of these surveys are to ZOC C. Notably, the reefs defining Jomard Entrance are fronted by deep water which considerably exceeds the maximum draught of any surface vessel which could conceivably use the route.

2.2 It is worth noting that through extensive use by commercial shipping over an extended period of time, bathymetric surveys in the region of the Two-way route have been proven as adequate for safe navigation.

2.3 Electronic Navigation Chart (ENC) coverage of the area is provided as ENC AU412152, Edition 2, at a nominal scale of 1:90,000. This was updated to include larger scale coverage to the limits shown in Chartlet 1 (see annex 4) prior to the establishment of the Two-way route. Smaller scale approach coverage of the Coral and Solomon Seas is provided by AU220150 Edition 3. Additionally, smaller scale ENC are also available for planning. All ENC are metric and referenced to WGS84 and Lowest Astronomical Tide (LAT).

2.4 Paper chart coverage of Jomard Entrance is available in a new chart at a scale of 1:75,000 with limits and extent as shown in Chartlet 1 in annex 4. The entrance is also depicted on existing smaller scale charts, ranging from 1:150,000 for navigation and at smaller scales for planning. All charts are metric and referenced to WGS84 and LAT.

### **Meteorological**

2.5 The Jomard Passage is in a tropical cyclone prone zone. Though cyclone frequency is expected to decrease with climate change projections, the severity is expected to increase when they do occur. The main shipping routes are heavily exposed to prevailing south-east trade winds, which have a fetch of hundreds of nautical miles.

### **Oceanographic**

2.6 Previous research has shown evidence of surface and deep boundary currents flowing around the southern end of the Louisiade Archipelago, with leakage of surface water from the Coral Sea through the Louisiade Archipelago.

## **3 OTHER INFORMATION**

### **History of groundings, collisions or spills**

#### **Groundings**

3.1 Chart Aus 510 shows four wrecks (visible at chart datum) on the immediate reefs in and around Jomard Entrance. In the early 2000s, several longliners ran aground in the Jomard and Bramble Haven area, with three running aground in 2000. In 2006, a bulk carrier grounded on Long Reef near Jomard Entrance, spilling oil and raw sugar. In 2011, the total loss of engine power by a container ship in the same area led to the Royal Australian Navy providing assistance by way of a patrol boat (which happened to be on exercise in PNG at the time). A tow line attached to the stricken ship prevented it from grounding on nearby reefs and potentially causing reef damage and pollution of the area.

### **Marine Debris**

3.2 A marine debris survey conducted in 2012 on four islands within the PSSA – Jomard, Panarairai, Punawan and Siva – reported that marine debris is accumulating in significant amounts on these islands (Raaymakers et al., 2012). While further work would be needed to establish with any certainty the proportion of debris contributed by shipping, it is hoped that the revised MARPOL Annex V, which entered into force on 1 January 2013, will result in a reduction in marine debris from shipping within the PSSA.

### **Intervention and response**

3.3 The length and remoteness of PNG's coastline poses major challenges to any response to an accident and containing any resulting pollution. These challenges are also compounded due to limited response capabilities in the region. As noted above, the main shipping routes are heavily exposed to prevailing south-east trade winds. A casualty in such circumstances will make any salvage and recovery task challenging. The closest tugs and oil spill response equipment are located at Port Moresby, which is approximately 330 nautical miles away. Therefore, it is vital to avoid incidents in the region.

ANNEX 4

**ASSOCIATED PROTECTIVE MEASURES FOR THE JOMARD ENTRANCE PSSA**

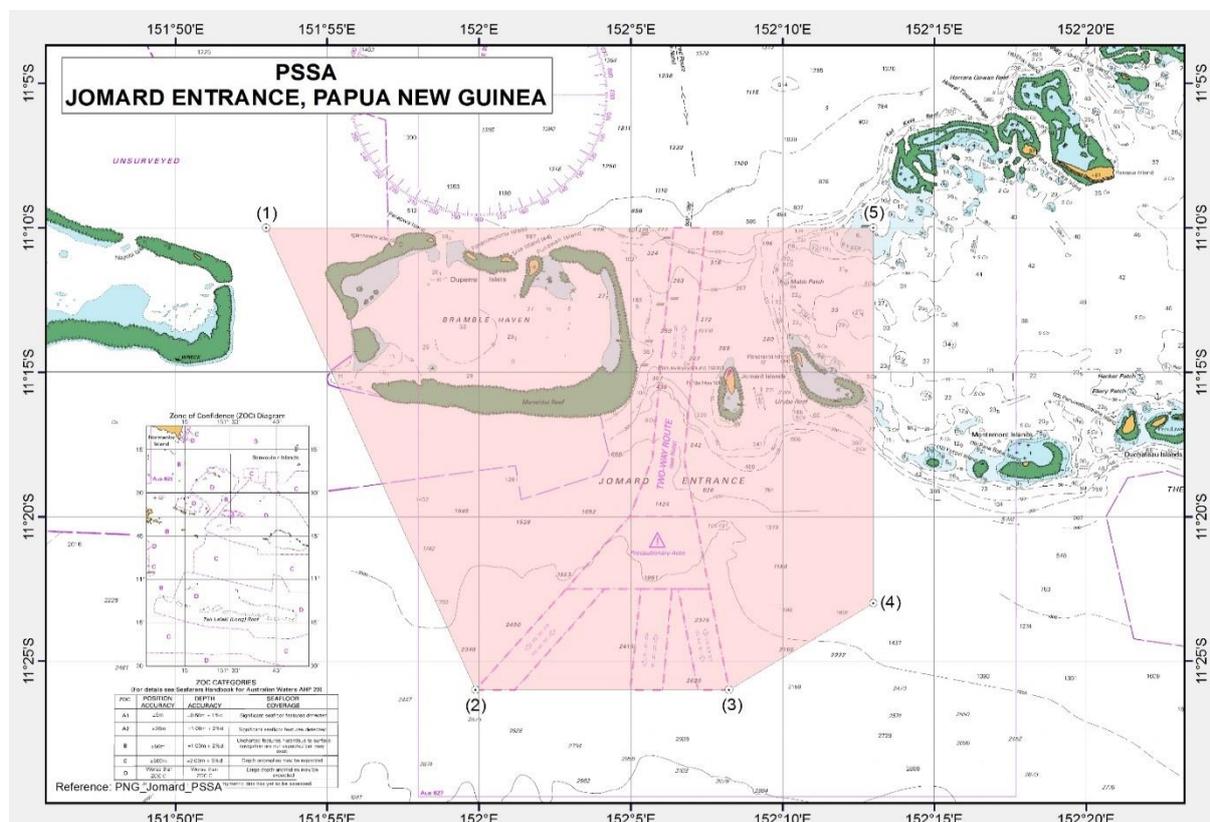
**Associated Protective Measures (APMs)**

1 The newly established routing systems (four two-way routes and a precautionary area) at Jomard Entrance are the APMs, as follows:

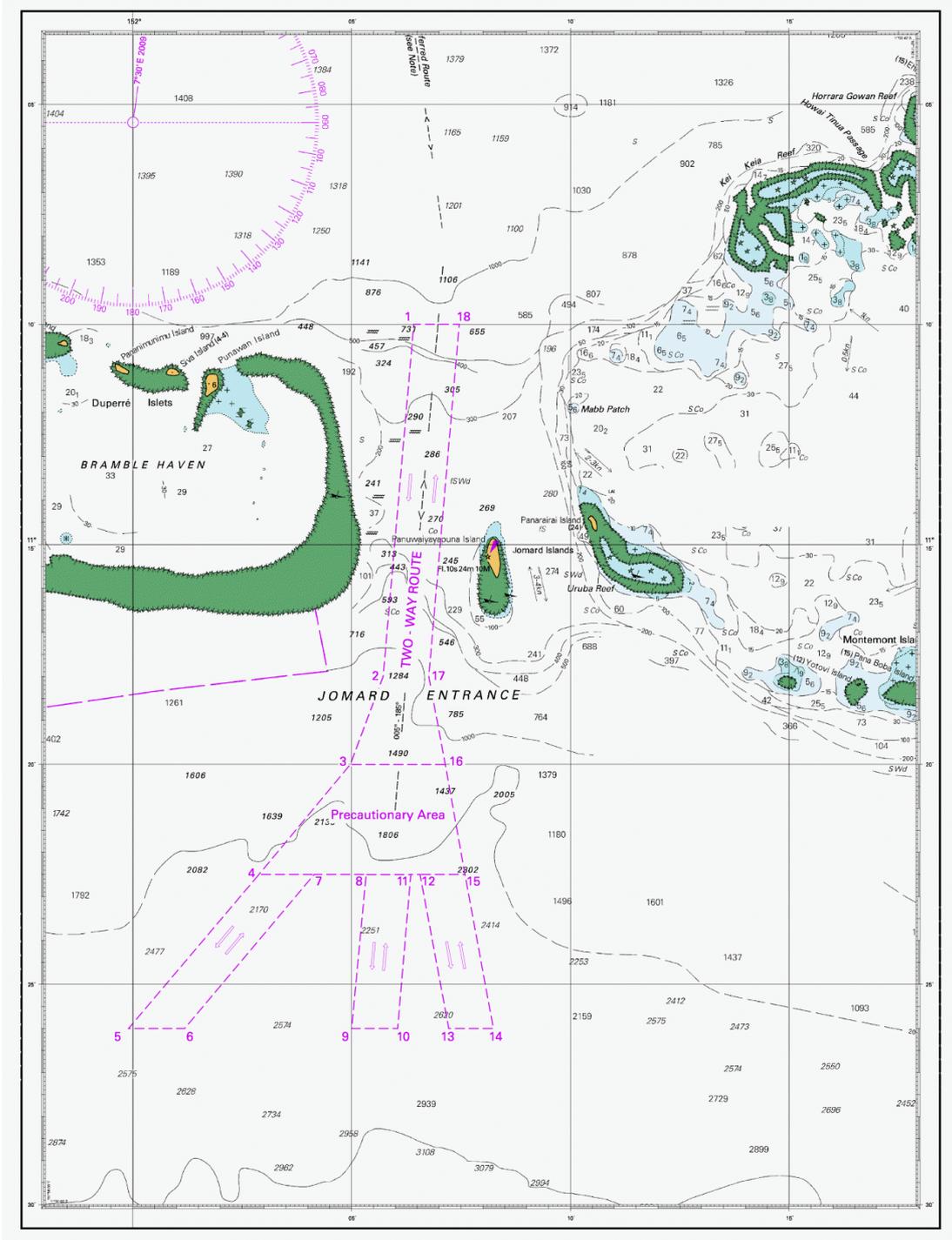
- .1 a one nautical mile wide Two-way route to the north of Jomard Entrance, which extends approximately 20 nautical miles from the northern boundary of the precautionary area, see Chartlets, below;
- .2 three 1 nautical mile wide Two-way routes to the south of Jomard Entrance, each aligned with the general traffic pattern to/from ports on the east coast of Australia. The routes extend approximately 3.5 nautical miles from the southern boundary of the precautionary area, see Chartlets, below; and
- .3 a quadrilateral-shaped precautionary area that lies between the northern and southern two-way routes described above, see Chartlets, below.

2 The two-way routes and precautionary area can be used by all ships navigating in the area.

(Note: These routing systems were approved at the first session of the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 1/3/8), subsequently adopted by MSC 94 and entered into force on 1 June 2015.)



**Chartlet 1 – Map showing the PSSA and newly established IMO routing systems**



**Chartlet 2 – The four Two-way routes and precautionary area at Jomard entrance, approved by MSC 94**

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