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Your ref: **20012643**
Our ref: Thanet Extension Offshore
Windfarm Project (EN010084)

5 March 2019

Dear Sir/Madam

Thanet Extension Offshore Windfarm Project (EN010084)

Thank you for the opportunity to comment on the Issue Specific Hearing 5 Action Points for the Application by Vattenfall Ltd for an Order Granting Development Consent for the Thanet Offshore Wind Farm Extension.

The MCA wish to comment on the Action Points, and to present the legal advice from the Department for Transport (DfT) Maritime Lawyers regarding the Legal Submissions and determination of 'Sea Lanes':

Item 1 Policy Considerations

- All IPs to provide full and specific details of what they consider to be the important and relevant policy considerations to this case.

The MCA considers the National Policy Statement for Renewable Energy Infrastructure (EN-3) as significant for the decision-making process for Offshore Renewable Energy Developments.

Item 2 Legal submissions Written legal submissions are sought from applicant, Trinity House (THLS), the MCA and other IPs concerned with the following matters

- Who determines what is a sea lane for the purposes of EN3 para 2.6.61-63 – how is a sea lane recognised? What is the appropriate applicable provision of UNCLOS, if one exists? What are the consequences of this



HM Coastguard

The MCA, in consultation with its stakeholders, would determine the need for a sea lane and put forward a proposal to IMO who would formally designate it as an International Sea Lane.

The area of concern is essentially “an area of sea” to the west of the existing Thanet Windfarm and is not a formally “designated” sea lane as such. However, that area of sea is actively used by all vessel types, including large commercial and international vessels. It is therefore considered an essential area for navigation and of strategic importance for vessel operation and accessing ports, with the SUNK TSS, an internationally recognised and established sea lane, in close proximity.

The key UNCLOS provisions are Articles 22, 41 and 60(7). Article 60(7) in UNCLOS that sets out:

*“Artificial islands, installations and structures and the safety zones around them **may not be established** where interference may be caused **to the use of recognized sea lanes** essential to international navigation.”*

Whilst the sea area concerned is not strictly a “recognised sea lane” it is argued that the sea area should be **treated as a recognised sea lane** as it is used by all vessel types every day. It is therefore considered an important route on an international scale.

Looking at the Archipelagic Sea Lanes given in the IMO Ships’ Routeing Guide, and the criteria for such measures as set out in UNCLOS, this area meets many of the conditions necessary for it to be designated as such. UK experts on UNCLOS advised that the area is within the UK’s Territorial Sea, therefore, international recognition by IMO may not be mandatory before UKHO would chart it, however explicit MCA direction to do so will be required.

The area in question is certainly used by international trading ships on a frequent basis - as a weekly/monthly AIS graphic for routes taken by tankers provides a good indicative snapshot. The area is used for navigation, leads onto Queens Channel and then onto the Thames and Medway Ports via Princes Channel or Fisherman’s Gat. It is part of a recognised route for shallower draught vessels not wishing to make the long detour around the Sunk Traffic Separation Scheme.

With regard to the special characteristics of channels; although the area is not marked by lateral buoyage or indeed even named, the presence of Pilot Boarding points and Radio Reporting points and no anchoring areas would indicate to us that traffic is being directed through it by marine authorities, principally London VTS and, therefore, as such, it has some form of official recognition.

With regards to what constitutes a “formally charted/ designated sea lane” this means that the sea lane is marked on the nautical chart. The sea area we are concerned about is not on the nautical chart, and therefore we are not aware that this ‘channel’ is recognised as an International Sea Lane.

There is no international symbol for a ‘recognised sea lane’, therefore, if UKHO were to chart it, they would use the standard maritime limit symbol (black pecked line) on the paper charts preferably with a name for the channel. This area lies outside any

port limits so UKHO would need MCA to designate and delineate it as such (with positions) before UKHO would insert it.

Response from Legal - Maritime Team, Department for Transport, Government Legal Department:

SUMMARY:

1. Who determines what is a sea lane for the purposes of EN3 para 2.6.161-163

Within the territorial sea of a State (other than straits used for international navigation), the coastal state will determine what is a sea lane and this is provided for by Article 22 UNCLOS. In practice, we understand that this would be the MCA in the UK.

Where the waters constitute, 'straits used for international navigation between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone' then the designation of sea lanes will be governed by Article 41 of UNCLOS. Article 41 suggests that although States bordering straits are responsible for proposing sea lanes/traffic separation schemes, they must be approved by the 'competent international organisation' before they can be designated. We understand that the competent international organisation would be the International Maritime Organisation ('IMO').

2. How is a sea lane recognised?

Article 22(3) and (4) of UNCLOS set out that a sea lane will be marked on nautical charts by the "coastal State" taking into account the recommendations of the competent international organisation, any channels used for international navigation, special characteristics of ships and channels and the density of traffic.

The International Regulations for Preventing Collisions at Sea, 1972 ('COLREG's') (rule 1(d) and Rule 10) stipulate how ships using traffic separation schemes and lanes should operate.

3. What is the appropriate applicable provision of UNCLOS, if one exists?

a. what are the consequences of this?

For the territorial sea other than straits (see below): Article 22 UNCLOS.

For straits used for international navigation: Article 41 UNCLOS.

For the exclusive economic zone: Article 60 UNCLOS.

In terms of consequences, the key one to consider is potential breach of Article 60(7) if the proposed extension would cause interference to vessels on an international voyage using the channels concerned.

4. Whether a sea lane is required to be formally charted and/or designated?

Article 22(4) of UNCLOS suggests that there is a requirement for a sea lane to be “designated” as it states, *“The coastal State shall clearly indicate such sea lanes and traffic separation schemes on charts to which due publicity shall be given.”*

Similarly, under Article 41(6), *“States bordering straits shall clearly indicate all sea lanes and traffic separation schemes designated or prescribed by them on charts to which due publicity shall be given.”*

5. To what extent are the provisions of IMO FSA MEPC.2/Circ 12 / Rev 2 capable of being something that constitute part of or directly derived from the UK’s membership of the IMO and hence an international obligation relevant to s104 of the Planning Act 2008?

In terms of the extent to which the FSA is an “international obligation” relevant to s104 of the Planning Act 2008, the application of the FSA in this instance does not seem mandatory. Note paragraph 1.3.2 of the FSA in relation to this:

-1.3.2 “It is not intended that FSA should be applied in all circumstances, but its application would be particularly relevant to proposals which may have far-reaching implications in terms of either costs (to society or the maritime industry), or the legislative and administrative burdens which may result.”

However, the national policy statement in this instance (the EN3) does explicitly refer to Article 60(7) of UNCLOS and this is something which is *“an international obligation”* relevant to s104 of the Planning Act 2008.

RESPONSES TO THE ExA QUESTIONS

1. Who determines what is a sea lane for the purposes of EN3 para 2.6.161-163.

1.1 “EN3” as referred to by the Examination Authority is the National Policy Statement for Renewable Energy Infrastructure (published in July 2011 by the Department of Energy and Climate Change). Paragraph 2.6.161 of EN3 sets out that:

“The use of recognised sea lanes essential to international navigation means:

(a) Anything that constitutes the use of such a sea lane for the purposes of article 60(7) of the United Nations Convention on the Law of the Sea 1982; or

(b) Any use of waters in the territorial sea adjacent to Great Britain that would fall within paragraph (a) if the waters were in a Renewable Energy Zone (REZ).”

1.2 Article 60(7) of UNCLOS does not define what constitutes a sea lane, or who designates such lanes. It states:

“Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.”

1.3 Within the territorial sea of a State (other than straits used for international navigation), the answer to Question 1 is provided for by Article 22(3)-(4) of UNCLOS which states:

“1. The coastal State may, where necessary having regard to the safety of navigation, require foreign ships exercising the right of innocent passage through its territorial sea to use such sea lanes and traffic separation schemes as it may designate or prescribe for the regulation of the passage of ships.

2. In particular, tankers, nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances or materials may be required to confine their passage to such sea lanes.

3. In the designation of sea lanes and the prescription of traffic separation schemes under this article, the coastal State shall take into account:

- (a) the recommendations of the competent international organization;*
- (b) any channels customarily used for international navigation;*
- (c) the special characteristics of particular ships and channels; and*
- (d) the density of traffic.*

4. The coastal State shall clearly indicate such sea lanes and traffic separation schemes on charts to which due publicity shall be given.”

1.4 This suggests that within their own territorial waters other than in straits used for international navigation, coastal States may designate sea lanes of their own accord. In practice we understand that this would be the MCA in the UK.

1.5 Where the waters constitute ‘straits used for international navigation between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone’ then the designation of sea lanes will be governed by Article 41 of UNCLOS:

“Article 41 Sea lanes and traffic separation schemes in straits used for international navigation

“41(4). Before designating or substituting sea lanes or prescribing or substituting traffic separation schemes, States bordering straits shall refer proposals to the competent international organization with a view to their adoption. The organization may adopt only such sea lanes and traffic separation schemes as may be agreed with the States bordering the straits, after which the States may designate, prescribe or substitute them.

41(5). *In respect of a strait where sea lanes or traffic separation schemes through the waters of two or more States bordering the strait are being proposed, the States concerned shall cooperate in formulating proposals in consultation with the competent international organization.*

41 (6). *States bordering straits shall clearly indicate all sea lanes and traffic separation schemes designated or prescribed by them on charts to which due publicity shall be given.*

41(7). *Ships in transit passage shall respect applicable sea lanes”*

1.6. Article 41 suggests that although States bordering straits are responsible for proposing sea lanes/traffic separation schemes, they must be approved by the ‘competent international organisation’ before they can be designated. We understand that the competent international organisation would be the International Maritime Organisation (‘IMO’); the IMO’s responsibility for developing guidelines and regulations on an international level for ships’ routing systems is enshrined in **SOLAS CHAPTER V Regulation 10.**

1.7. The following IMO guidance note on ships routing systems <http://www.imo.org/en/OurWork/Safety/Navigation/Documents/Ships%20routeing/MS C.1-Circ.1060-asAmended-consolidated-Guidance%20Note%20on%20the%20Preparation%20of%20Proposals%20onShipsRouteingReporting.pdf> confirms, “*The initiation of action to establish a routing system is the responsibility of the Member Government or Governments concerned.*”

1.8. 2.6.161-3 EN3 should also be read in the context of 2.6.168 of EN3 which states:
*“The IPC should, in determining whether to grant consent for the construction or extension of an offshore wind farm, and what requirements to include in such a consent, have regard to the extent and **nature of any obstruction of or danger to navigation which** (without amounting to interference with the use of such sea lanes) is likely to be caused by the development.”*

1.9. This reflects the requirement in s.36B (2) of the Electricity Act 1989. Therefore any concerns about traffic between the Thanet wind farm and the Kent coast could also be articulated by reference to this paragraph (2.1.168) in the EN3.

2. How is a sea lane recognised?

2.1. Article 22(3) and (4) of UNCLOS (as referred to above) set out that a sea lane will be marked on nautical charts by the “coastal State” taking into account the recommendations of the competent international organisation, any channels used for international navigation, special characteristics of ships and channels and the density of traffic. Similarly, under Article 41(6) of UNCLOS “*States bordering straits shall clearly indicate all sea lanes and traffic separation schemes designated or prescribed by them on charts to which due publicity shall be given.*”

2.2. The information from the UK Hydrographic Office confirms that there is no international symbol for a “recognised sea lane” and that if the channel concerned is to be formally charted, the standard maritime limit symbol (a black pecked line) would be used.

2.3. The International Regulations for Preventing Collisions at Sea, 1972 (‘COLREG’s’) (rule 1(d) and Rule 10) stipulate how ships using traffic separation schemes and lanes should operate. Please see attached document (page 19) for the symbols used for routing measures as recommended by the International Hydrographic Organisation.

3. What is the appropriate applicable provision of UNCLOS, if one exists?

a. what are the consequences of this?

3.1 The appropriate applicable provisions of the United Nations Convention on the Law of the Sea (UNCLOS) would be as follows:

- Article 22 – Sea lanes and traffic separation schemes in the territorial sea, other than straits used for international navigation
- Article 41 - Sea lanes and traffic separation schemes in straits used for international navigation
- Article 60- Artificial islands, installations and structures in the exclusive economic zone

3.2. We do not understand the sea area in question to have been designated by the MCA or UK as a “recognised sea lane”. Nonetheless it could be argued that the sea area ought to be treated as such. The information from the UK Hydrographic Office confirms that the channel in question is used by ships on international voyages frequently and that it is a recognised route for shallower draught vessels not wishing to make a detour around the Sunk Traffic Separation Scheme. MCA also agrees that both international and domestic vessels pass through the sea area concerned regularly.

3.3. It is therefore reasonable to argue that the construction of an artificial island/installation or structure would cause interference to the vessels using the channels concerned if indeed the planned construction encroaches into the area essential to the international navigation of these vessels- thereby breaching Article 60(7) of UNCLOS:

“Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.”

4. Whether a sea lane is required to be formally charted and/or designated?

4.1 I understand from our discussions last week that a “formally charted” / “designated” sea lane is one that is marked on the nautical chart. The sea area in question is not marked on the nautical chart however is used frequently by vessels.

4.2. Article 22(4) of UNCLOS suggest that there is a requirement for a sea lane to be “designated” as it states, “*The coastal State shall clearly indicate such sea lanes and traffic separation schemes on charts to which due publicity shall be given.*” Similar provision is made in Article 41(6).

4.3. However, I note the comments that, “*Throughout the Channel, North Sea and indeed all other areas of the world in both national and international locations, there are areas where vessels will transit. There is no requirement for formal sea lanes, TSS or other designated routes but these measures may be used when considered appropriate.*”

5. To what extent are the provisions of IMO FSA MEPC.2/Circ 12 / Rev 2 capable of being something that constitute part of or directly derived from the UK’s membership of the IMO and hence an international obligation relevant to s104 of the Planning Act 2008?

5.1. IMO FSA MEPC.2/Circ 12 / Rev 2 sets out the Revised Guidelines for Formal Safety Assessment (FSA) for use in the IMO Rule making process. The FSA is a tool which can be used in the evaluation of new regulations for maritime safety and protection of the marine environment. These guidelines are a tool which may be used in the IMO rule-making process. The FSA methodology can be applied by a “*Member State or an organisation in consultative status with IMO, when proposing amendments to maritime safety, pollution prevention and response-related IMO instruments in order to analyse the implications of such proposals.*” Paragraph 1.3.1.2 of the IMO FSA MEPC.2/Circ 12 / Rev 2 also informs that the FSA methodology can also be applied by, “*a Committee or an instructed subsidiary body.*”

5.2. Section 104 of the Planning Act 2008 refers to Decisions in cases where the national policy statement has effect. It is important to note that section 104(4) of the Planning Act 2008 requires the Secretary of State to decide the application for an order granting development consent in accordance with any relevant national policy statement as long as this does not, “***lead to the United Kingdom being in breach of any of its international obligations.***”

5.3. In terms of the extent to which the FSA is an “international obligation” relevant to s104 of the Planning Act 2008 I am of the view that the application of the FSA in this instance is not mandatory. I refer to paragraph 1.3.2 of the FSA in relation to this- particularly the highlighted text below:

1.3.2 It is not intended that FSA should be applied in all circumstances, but its application would be particularly relevant to proposals which may have far-reaching implications in terms of either costs (to society or the maritime industry), or the legislative and administrative burdens which may result. FSA may also be useful in those situations where there is a need for risk reduction but the required decisions regarding what to do are unclear, regardless of the scope of the project. In these circumstances, FSA will enable the benefits of proposed changes to be properly established, so as to give Member States a clearer perception of the scope of the proposals and an improved basis on which they take decisions.”

5.4. The national policy statement in this instance (the EN3) does however explicitly refer to Article 60(7) of UNCLOS and this is something that is “*an international obligation*” relevant to s104 of the Planning Act 2008.

6. OTHER MATTERS

6.1. The requirements in 2.6.161 EN3 reflect the legal obligations in section 36B of the Electricity Act 1989 (inserted by the Energy Act 2004).

36B Duties in relation to navigation

(1) Neither the Secretary of State nor the Scottish Ministers may grant a consent in relation to any particular offshore generating activities if he considers, or (as the case may be) they consider, that interference with the use of recognised sea lanes essential to international navigation—

(a) is likely to be caused by the carrying on of those activities; or

(b) is likely to result from their having been carried on.

[F2(1A)This section is subject to section 12 of the Marine and Coastal Access Act 2009 (which transfers certain functions of the Secretary of State to the Marine Management Organisation).**]**

(2) It shall be the duty both of the Secretary of State and of the Scottish Ministers, in determining—

(a) whether to give a consent for any particular offshore generating activities, and

(b) what conditions to include in such a consent,

to have regard to the extent and nature of any obstruction of or danger to navigation which (without amounting to interference with the use of such sea lanes) is likely to be caused by the carrying on of the activities, or is likely to result from their having been carried on.

6.2. Section 36B of the Electricity Act 1989 is therefore also relevant to the consideration of offshore developments. Even where a development is not likely to interfere with the use of recognised sea-lanes essential to international navigation (so falling outside s.36B(1)), under s.36B(2) the Secretary of State must have regard **to the extent and nature of any obstruction of, or danger to, navigation which is likely to be caused by offshore renewable energy activities**. It could therefore be argued that developments should not take place within areas that are significant to navigation in general (even where there are no coastal State or IMO traffic separation scheme or routing measures in place).

6.3. Some further research revealed that there is a joint paper from 2006 by DTI and DfT on the subject of “*recognised sea lanes essential to international navigation*”. The House of Lords discussed the phrase, “recognised sea lane essential to international navigation” on 19 January 2006 (Column 761): <https://publications.parliament.uk/pa/ld200506/ldhansrd/vo060119/text/60119-01.htm>. Reference was made by the Minister for the Department of Trade and Industry to “*a definition in a recent DTI and Department for Transport paper on the subject*”.

Item 4 Peer Review or other expert review IMO FSA

- The MCA is to provide a view on whether peer review or external expert review is a mandated or required element of compliance with IMO FSA MEPC.2/Circ12/Rev.2. If so, has this been adequately addressed within the Thanet OWFE NRA? If not, what more should be done?

Peer reviews is included in the methodology for assessing the impact for OREIs on shipping, and the use of expert judgment is considered to be an important element within the FSA methodology as detailed in the IMO FSA MEPC.2/Circ12/Rev.2.

It is not mandated or a required element of compliance - it is a set of guidelines. However, it is an internationally recognised guideline, especially with regard to the matters relevant to safety of life at sea and navigation, and there is an expectation for it to be followed. The MCA as a UK maritime regulator expects this to be followed and MGN 543 states that 'Failure by developers to give due regard to these recommendations may result in objections to their proposals on the grounds of navigational safety or emergency response preparedness'.

The MCA is satisfied that the applicant has consulted with key stakeholders as part of the NRA process, and therefore is in line with MGN 543. However, it is clear there is a disconnect between stakeholder feedback and the tolerability results of the NRA.

The applicant has now agreed to reduce the redline boundary on the western extent and this is being done in consultation with relevant stakeholders in the area. The MCA is hopeful that the redline boundary can be reduced to the satisfaction of all interested parties.

Items 5 and 7 Navigation Risk Assessment (NRA): written submissions in respect of Agenda Item 4 and the Technical Working Group

The MCA attended the Workshop on Wednesday 27th February 2018 in order to further the discussions on the reduction to the redline boundary on the western extent, and to reduce the risks to an acceptable level.

We hope you find this information useful as part of your Examination of the Thanet Extension.

Yours faithfully,

Helen Croxson
OREI Advisor
Maritime and Coastguard Agency

Resolution A.572(14)

Adopted on 20 November 1985
Agenda item 10(b)

GENERAL PROVISIONS ON SHIPS' ROUTEING
(SOLAS Reg V/8, COLREG Rules 1(d) & 10, A.527, MSC71(69))

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety ,

RECOGNIZING that the practice of complying with routeing measures adopted by the Organization for International use has contributed to the safety of navigation by reducing the risk of collisions and strandings,

RECOGNIZING FURTHER that such practice has consequently reduced the risk of pollution of the marine environment and the risk of damage to marine life resulting from collisions or strandings,

RECALLING regulation V/8 of the International Convention for the Safety of Life at Sea, 1974, whereby the Organization is recognized as the only international body for establishing and adopting routeing measures on an international level,

RECALLING ALSO rules 1(d) and 10, as amended, of the International Regulations for Preventing Collisions at Sea, 1972, which provide for the adoption of traffic separation schemes by the Organization and the behaviour of vessels in or near such schemes,

RECALLING FURTHER that the Ninth International Hydrographic Conference charged the International Hydrographic Bureau to deal with matters relating to the presentation on charts and in sailing directions of details of routeing provisions which have been considered, approved and adopted by the Organization for international use,

RECALLING ADDITIONALLY resolution A.378(X) on general provisions on ships' routeing and resolution A.428(XI), which authorizes the Maritime Safety Committee to adopt for implementation , subject to confirmation by the Assembly, any amendments to the general provisions on ships' routeing,

HAVING ADOPTED amendments to resolution A.378(X) by resolutions A.428(XI), A.475(XII) and A.527(13),

HAVING ALSO ADOPTED resolutions A.376(X) and A.377(X) establishing procedures for the adoption of traffic separation schemes and other routeing systems,

DESIRING that all routeing systems including traffic separation schemes thereby adopted conform uniformly to the same general criteria and principles,

RECOGNIZING the need to consolidate and improve the general provisions on ships' routeing,

taking account of the International Regulations for Preventing Collisions at Sea, 1972, as amended,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its forty-ninth and fifty-first sessions,

1. CONFIRMS the amendments to the general provisions on ships' routing adopted by the Maritime Safety Committee at its forty-ninth and fifty-first sessions,
2. ADOPTS the consolidated text of the general provisions on ships' routing set out in the annex to the present resolution;
3. URGES Governments, when planning either to introduce new routing systems, or to amend existing systems, to ensure that such systems comply with the general provisions on ships' routing set out in the annex to the present resolution,
4. REAFFIRMS its authorization to the Maritime Safety Committee to adopt for implementation, subject to confirmation by the Assembly, any amendments to the general provisions on ships' routing and to advise all concerned accordingly;
5. REVOKES resolutions A.378(X), A.428(XI), Annex 2 to resolution A.475(XII) and Annex 2 to resolution A.527(13), and
6. REQUESTS the Secretary-General to bring the present resolution to the attention of the International Hydrographic Organization .

ANNEX

GENERAL PROVISIONS ON SHIPS' ROUTEING

1 OBJECTIVES.

1.1 The purpose of ships' routeing is to improve the safety of navigation in converging areas and in areas where the density of traffic is great or where freedom of movement of shipping is inhibited by restricted sea-room, the existence of obstructions to navigation, limited depths or unfavourable meteorological conditions.

1.2 The precise objectives of any routeing system will depend upon the particular hazardous circumstances which it is intended to alleviate, but may include some or all of the following;

- .1 the separation of opposing streams of traffic so as to reduce the incidence of head-on encounters;
- .2 the reduction of dangers of collision between crossing traffic and shipping in established traffic lanes;
- .3 the simplification of the patterns of traffic flow in converging areas;
- .4 the organization of safe traffic flow in areas of concentrated offshore exploration or exploitation;
- .5 the organization of traffic flow in or around areas where navigation by all ships or by certain classes of ship is dangerous or undesirable;
- .6 the reduction of risk of grounding to providing special guidance to vessels in areas where water depths are uncertain or critical;
- .7 the guidance of traffic clear of fishing grounds or the organization of traffic through fishing grounds.

2 DEFINITIONS.

2.1 The following terms are used in connection with matters related to ships' routeing:

.1 Routeing system

Any system of one or more routes or routeing measures aimed at reducing the risk of casualties; it includes traffic separation schemes, two-way routes, recommended tracks, areas to be avoided, inshore traffic zones, roundabouts, precautionary areas and deep water routes.

.2 Traffic separation scheme *

A routeing measure aimed at the separation of opposing streams of traffic by appropriate means and by establishment of traffic lanes.

* These terms are used in the 1972 Collision Regulations.

.3 Separation zone or line *

A zone or line separating the traffic lanes in which ships are proceeding in opposite or nearly opposite directions; or separating a traffic lane from the adjacent sea area; or separating traffic lanes designated for particular classes of ship proceeding in the same direction.

* These terms are used in the 1972 Collision Regulations.

.4 Traffic lane *

An area within defined limits in which one-way traffic is established. Natural obstacles,

including those forming separation zones, may constitute a boundary.

* These terms are used in the 1972 Collision Regulations.

.5 Roundabout

A routing measure comprising a separation point or circular separation zone and a circular traffic lane within defined limits. Traffic within the roundabout is separated by moving in a counterclockwise direction around the separation point or zone.

.6 Inshore traffic zone *

A routing measure comprising a designated area between the landward boundary of a traffic separation scheme and the adjacent coast, to be used in accordance with the provisions of rule 10(d), as amended, of the International Regulations for Preventing Collisions at Sea (Collision Regulations), 1972.

* These terms are used in the 1972 Collision Regulations.

.7 Two-way route

A route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous.

.8 Recommended route

A route of undefined width, for the convenience of ships in transit, which is often marked by centre line buoys.

.9 Recommended track

A route which has been specially examined to ensure so far as possible that it is free of dangers and along which ships are advised to navigate.

.10 Deep water route

A route within defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles as indicated on the chart.

.11 Precautionary area

A routing measure comprising an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended.

.12 Area to be avoided

A routing measure comprising an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ship.

.13 Established direction of traffic flow

A traffic flow pattern indicating the directional movement of traffic as established within a traffic separation scheme.

.14 Recommended direction of traffic flow

A traffic flow pattern indicating a recommended directional movement of traffic where it is impractical or unnecessary to adopt an established directions of traffic flow.

3 PROCEDURES AND RESPONSIBILITIES.

Procedures and functions of IMO.

3.1 IMO is recognized as the only international body responsible for establishing and recommending measures on an international level concerning ships' routing.

3.2 In deciding whether or not to adopt or amend a traffic separation scheme, IMO will consider whether:

- .1 the aids to navigation proposed will enable mariners to determine their position with sufficient accuracy to navigate in the scheme in accordance with rule 10 of the 1972 Collision Regulations, as amended;
- .2 the state of hydrographic surveys in the area is adequate;
- .3 the scheme takes account of the accepted planning considerations and complies with the design criteria for traffic separation schemes and with established methods of routeing.

3.3 In deciding whether or not to adopt or amend a routeing system other than a traffic separation scheme, IMO will consider whether the aids to navigation and the state of hydrographic surveys are adequate for the purpose of the system.

3.4 IMO shall not adopt or amend any routeing system without the agreement of the interested coastal States, where that system may affect:

- .1 their rights and practices in respect of the exploitation of living and mineral resources;
- .2 the environment, traffic pattern or established routeing systems in the waters concerned;
- .3 demands for improvements or adjustments in the navigational aids or hydrographic surveys in the waters concerned.

Responsibilities of Governments and recommended practices.

3.5 A new amended routeing system adopted by IMO shall not come into force as an IMO adopted system before an effective date promulgated by the Government that proposed the system, which shall be communicated to IMO by the responsible Government. That date shall not be earlier than six months after the date of adoption of a routeing system by IMO but, when new chart editions necessitate a substantially longer period between adoption and implementation, IMO shall set a later date as required by the circumstances of the case. If the Government that proposed the system is unable at the time of adoption by IMO to declare a definite date of implementation, this information should be communicated to IMO as soon as possible thereafter and the implementation date then declared should not be earlier than four months after the date on which the declaration is made; in the case of a traffic separation scheme the exact time of implementation should also be stated. If there is a protracted delay in making such a declaration, the Government concerned should periodically inform IMO of the situation and forecast when implementation is likely to be possible. Either Notices to Mariners to amend charts, or revised charts to depict the system shall be made available in ample time before the system comes into force.

3.6 The responsible Government implementing a new or amended routeing system should ensure that full and final details of planned changes to aids to navigation, anchorage areas or pilot boarding areas which are closely associated with the system and important to its effective utilization by the mariner are provided to the appropriate hydrographic authority at least six months prior to the date of implementation.

3.7 The selection and development of routeing systems is primarily the responsibility of the Governments concerned.

3.8 A Government proposing a new routeing system or an amendment to an adopted routeing system, any part of which lies beyond its territorial sea, should consult IMO so that such system may be adopted or amended by IMO for international use. Such Government should furnish all relevant information, in particular with regard to the number, edition and where possible the geodetic datum of the reference chart used for the delineation of the routeing system. If appropriate, it should also provide the following additional information:

- .1 the reasons for excluding certain ships or classes of ship from using routeing system or

any part thereof; and

- .2 any alternative routing measure, if necessary, for ships or certain classes of ship which may be excluded from using a routing system or parts thereof.

Such a system, when adopted, shall not be amended or suspended before consultation with and agreement by IMO, unless local conditions and the urgency of the case require that earlier action be taken. In considering the proposal, IMO shall take account of the objectives, procedures, responsibilities, methods and criteria for routing systems as set out in these general provisions.

3.9 In an emergency such as might result from the unexpected blocking or obstruction of a traffic lane by a wreck or other hazard, immediate temporary changes in the use of the affected traffic separation scheme may be made by the responsible and sponsoring Government or Governments, with the object of directing traffic flow clear of the new hazard. In such cases, every possible measure shall be taken by the Government or Governments concerned immediately to inform shipping of the hazard and of the temporary changes which have been made.

3.10 Governments are recommended to ensure, as far as practicable, that oil rigs, platforms and other similar structures are not established within routing systems adopted by IMO or near their terminations. When the temporary positioning of an exploration rig or a similar structure in an adopted traffic separation scheme cannot be avoided, the scheme should, if necessary, be amended temporarily in accordance with the guidelines given in section 7.

3.11 If the above exploration activities lead to the finding of important exploitation prospects, the effect of subsequent exploitation on the safety of marine traffic should be considered carefully. If the establishment of permanent installations within a traffic separation scheme is unavoidable, permanent amendments to the scheme, if deemed necessary, should be submitted to IMO for adoption.

3.12 Governments establishing traffic separation schemes, no parts of which lie beyond their territorial seas, are requested to design them in accordance with IMO criteria for such schemes and submit them to IMO for adoption.

3.13 Where, for whatever reason, a Government decides not to submit a traffic separation scheme to IMO, it should, in promulgating the scheme to mariners, ensure that there are clear indications on charts and in nautical publications as to what rules apply to the scheme.

3.14 Governments establishing routing systems, other than traffic separation schemes, no parts of which lie beyond their territorial seas, are recommended to follow the same procedure as that set out in paragraphs 3.12 and 3.13 above.

3.15 By rules 10(k) and 10(l) respectively of the 1972 Collision Regulations a vessel restricted in her ability to manoeuvre when engaged in an operation for either the maintenance of safety on navigation or the laying, servicing or picking up of a submarine cable in a traffic separation scheme is exempted from complying with rule 10 to the extent necessary to carry out the operation. The Government or authority responsible for safety of navigation in a traffic separation scheme should ensure that:

- .1 the intention of undertaking such an operation is first notified to each Government or appropriate authority concerned;
- .2 information about such ships working in a traffic separation scheme is, as far as practicable, promulgated in advance by Notice to Mariners, and subsequently by radionavigation warnings broadcast before and at regular intervals during the operations;
- .3 such operations are, as far as possible, avoided in conditions of restricted visibility.

3.16 Nothing in the general provisions on ship's routing shall prejudice the provisions of the United Nations Convention on the Law of the Sea (1982) nor the present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.

4 METHODS.

In meeting the objectives set out in section 1 the following are among the methods which may be used:

- .1 The separation of opposing streams of traffic by separation zones, or lines where zones are not possible.

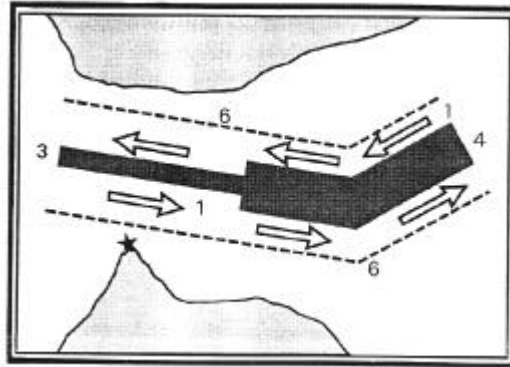


Figure 1 - Traffic separation by separation zone and line

In this method, streams of traffic proceeding in opposite or nearly opposite directions are separated by separation zones (4) or lines (3); the use of zones is to be preferred, but in narrow passages and restricted waters it may be necessary to use a separation line rather than a zone so as to allow more navigable space in the traffic lanes. A length of separation line may also be substituted for a zone in positions where this may encourage and facilitate correct procedures by crossing traffic. The outside limits of such traffic separation schemes are the outer boundaries of the traffic lanes. The arrow(1) indicate the established direction of traffic flow.

- .2 The separation of opposing streams of traffic by natural obstructions and geographically defined objects.

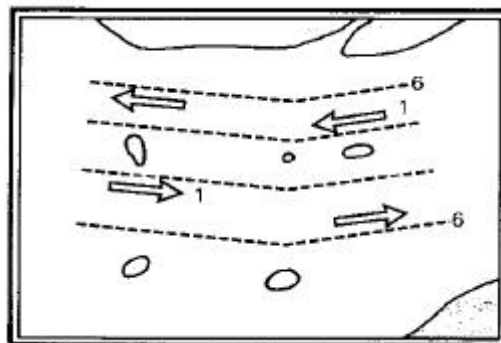


Figure 2 - Separation of traffic by natural obstructions

This method is used where there is a defined area with obstruction such as islands, shoals or rocks restricting free movement and providing a natural division for opposing traffic streams.

- .3 The separation of through and local traffic by providing inshore traffic zones.

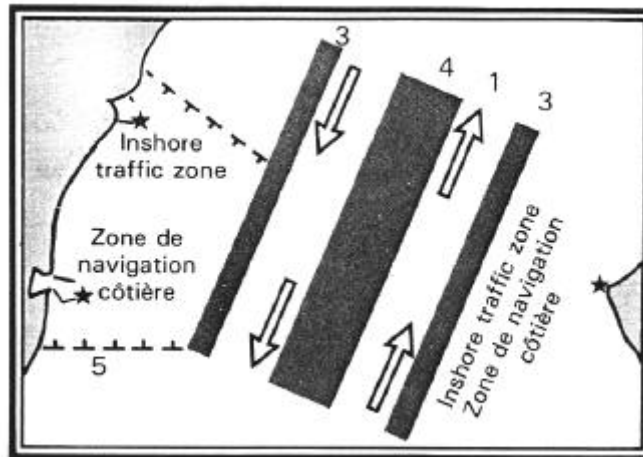


Figure 3 - Inshore traffic zones

Beyond the outside limits of traffic separation schemes, ships may navigate in any direction. Where such areas lie between the traffic separation scheme and the coast they may be designated as inshore traffic zones (see also figures 4 and 10), with the purpose of keeping local traffic clear of the traffic separation scheme which should be used by through traffic.

Traffic in inshore traffic zones is separated from traffic in the adjacent traffic lane by separation zones (4) or by separation lines (3) (see also figures 4 and 10).

- .4 The sectorial division of adjacent traffic separation schemes at approaches to focal points.

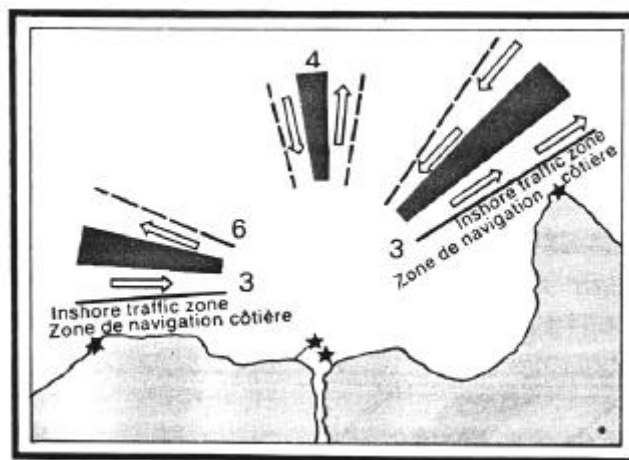


Figure 4 - Sectorial division of adjacent traffic separation schemes at approaches to focal points

This method is used where ships converge at a focal point or a small area from various directions. Port approaches, sea pilot stations, positions where landfall buoys or light vessels are located, entrances to channels, canals, estuaries, etc. may be considered as such focal points.

- .5 The routing of traffic at focal points and route junctions where traffic separation schemes meet.

The routing measure to be utilized at focal points, route junctions and intersections should be selected from the most appropriate of the following methods:

.5.1 Roundabouts

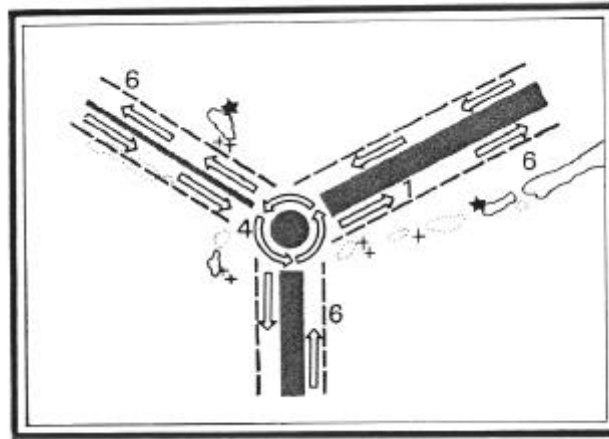


Figure 5 - Separation of traffic at a roundabout

If the need can be demonstrated, a roundabout may be used to guide traffic counterclockwise round a circular separation zone (4) or specified point, as illustrated above.

.5.2 Junctions

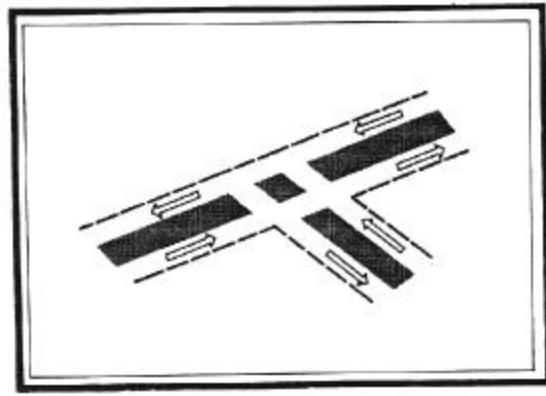
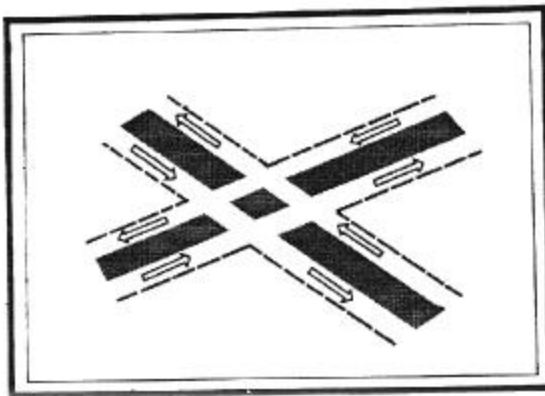


Figure 6 - Separation of traffic at a crossing

Figure 7- Separation of traffic at a junction

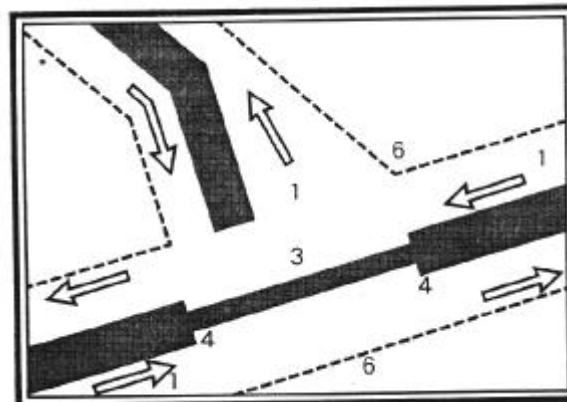


Figure 8 - A junction, showing a separation line substituted for a zone, where there will be crossing traffic

These methods are used where two routes join or cross. The directions of traffic flow are established in the lanes of the adjoining schemes; the separation zone may be interrupted, as shown in figures 6 and 7 or replaced by a separation line, as shown in figures 8, in

order to emphasize the correct method of crossing by traffic changing from one scheme to the other.

.5.3 Precautionary areas

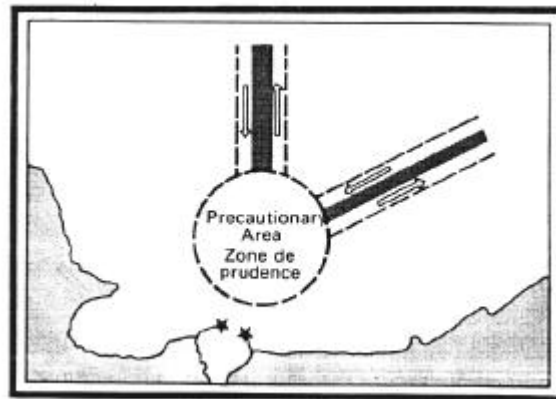


Figure 9 - Precautionary area at a focal point

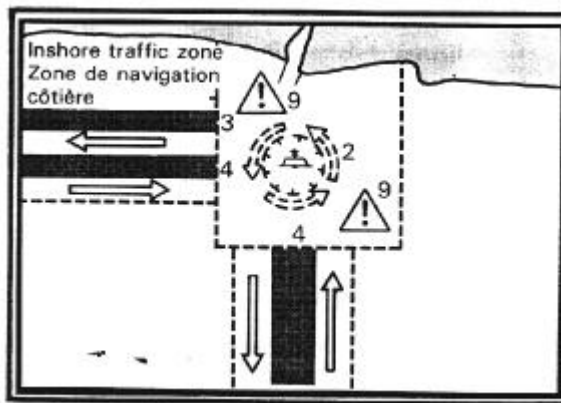


Figure 10 - Precautionary area with recommended direction of traffic flow around an area to be avoided

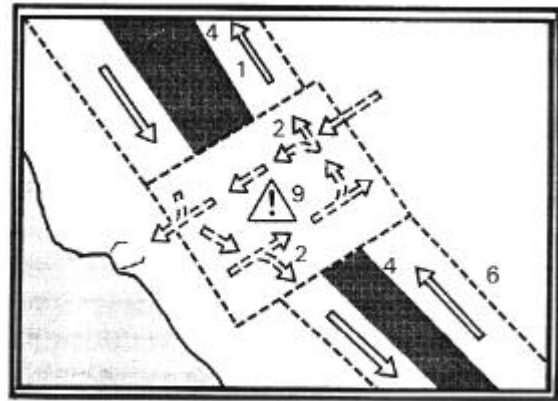


Figure 11 - Precautionary area at a junction, with recommended directions of traffic flow

It may be best, when routes converge, to terminate them clear of their potential joining points and in such a case a precautionary area (9) can be instituted so as to emphasize the need for care in navigation. Figures 9 and 10 illustrate the use of such an area at focal points; a direction of traffic flow may be recommended (2) around the focal point, as shown in figure 10.

Figure 11 gives an example of how a precautionary area (9) can be used at a junction with crossing traffic. The traffic lanes are terminated short of the point where traffic is expected to cross and replaced by a precautionary area within which the recommended directions of traffic flow (2) are indicated.

Precautionary areas may also be used at the termination of any single route.

.6 Other routing methods

Other routing methods which may be used are as shown in figures 12 to 18:

.6.1 deep-water routes (figures 12 and 13);

.6.2 areas to be avoided (figures 10 and 18);

.6.3 recommended directions of traffic flow (figure 14), tow-way routes (figure 15) and recommended routes and tracks through areas where navigation is difficult or dangerous (figures 16 and 17).

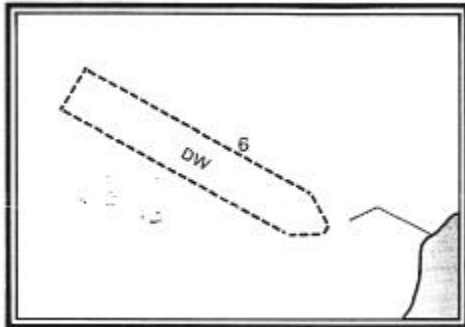


Figure 12 - Deep water route (two-way)route

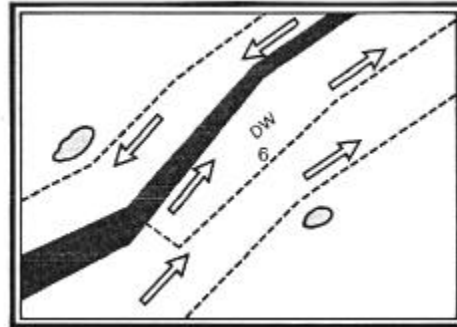


Figure 13- One way deep-water route (within a traffic lane)

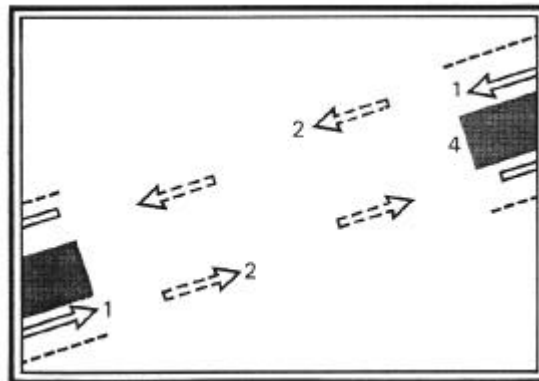


Figure 14- Recommended directions of traffic flow between two traffic separation schemes

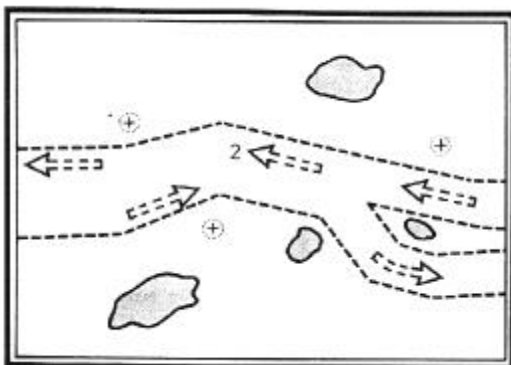


Figure 15- Two-way route (with one-way sections)

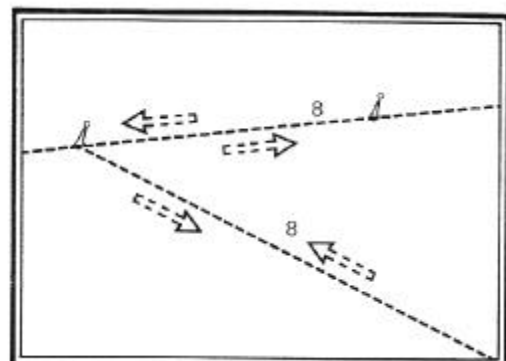


Figure 16- Recommended routes

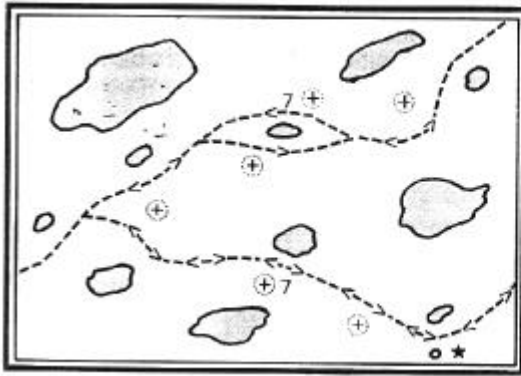


Figure 17- Recommended tracks
(in black)

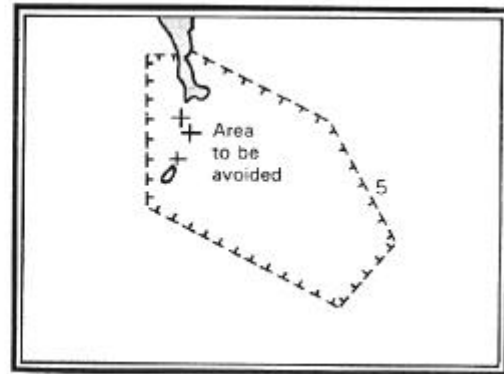


Figure 18 - Area to be avoided

5 PLANNING.

5.1 Routeing systems should only be established when safety of navigation in the area can thereby be clearly improved.

5.2 The routeing system selected for a particular area should aim at providing safe passage for ships through the area without unduly restricting legitimate rights and practices, and taking account of anticipated or existing navigational hazards.

5.3 When planning, establishing, reviewing or adjusting a routeing system, the following factors shall be among those taken into account by Government:

- .1 their rights and practices in respect of the exploitation of living and mineral resources;
- .2 previously established routeing systems in adjacent waters, whether or not under the proposing Government's jurisdiction;
- .3 the existing traffic pattern in the area concerned, including coastal traffic, crossing traffic, naval exercise areas and anchorage areas;
- .4 foreseeable changes in the traffic pattern resulting from port or offshore terminal developments;
- .5 the presence of fishing grounds;
- .6 existing activities and foreseeable developments of offshore exploration or exploitation of the sea-bed and subsoil;
- .7 the adequacy of existing aids to navigation, hydrographic surveys and nautical charts of the area;
- .8 environmental factors including prevailing weather conditions, tidal streams and currents and the possibility of ice concentrations; and
- .9 the existence of environmental conservation areas and foreseeable developments in the establishment of such areas.

5.4 Routeing systems should be reviewed, re-surveyed and adjusted as necessary, so as to maintain their effectiveness and compatibility with trade patterns, offshore exploration and resource exploitation, changes in depths of water, and other developments.

5.5 Routeing systems should not be established in areas where the instability of the sea-bed is such that frequent changes in the alignment and positions of the main channels, and thus of the routeing system itself, are likely.

5.6 When establishing areas to be avoided by all ships or by certain classes of ship, the necessity for creating such areas should be well demonstrated and the reasons stated. In general, these areas should be established only in places where inadequate survey or insufficient provision of aids to navigation may lead to danger of stranding, or where local knowledge is considered essential for safe passage, or where there is the possibility that unacceptable damage to the environment could result from a casualty, or where there might be hazard to a vital aid to navigation. These areas shall not be regarded as prohibited areas unless specifically so stated; the classes of ship which should avoid the areas should be considered in each particular case.

5.7 Governments considering establishing a new routeing system or amending an existing one should consult at an early stage with:

- .1 mariners using the area;
- .2 authorities responsible for aids to navigation and for hydrographic surveys and nautical publications;
- .3 port authorities; and
- .4 organizations concerned with fishing, offshore exploration or exploitation and environmental protection, as appropriate.

This consultation process is implied in paragraphs 3.4, 3.8, 5.3,5.5, and 6.2.

6 DESIGN CRITERIA.

6.1 The following standards should, so far as the circumstances allow, be applied in the design of ships' routeing measures.

General.

6.2 Routes should follow as closely as possible the existing patterns of traffic flow in the areas as determined by traffic surveys.

6.3 The configuration and length of routeing systems which are established to provide for an unobstructed passage through offshore exploration and exploitation areas may differ from the dimensions of normally established systems if the purpose of safeguarding a clear passage warrants such a special feature.

6.4 Course alterations along a route should be as few as possible and should be avoided in the approaches to convergence areas and route junctions or where crossing traffic may be expected to be heavy.

6.5 The number of convergence areas and route junctions should be kept to a minimum, and should be as widely separated from each other as possible. Adjacent traffic separation schemes should be placed such that nearly opposing streams of traffic in the adjacent schemes are separated as widely as possible. Route junctions should not be located where concentrated crossing traffic, not following established routes, may be expected, e.g. ferry traffic.

6.6 Routes should be designed to allow optimum use of aids to navigation in the area, and of such shipborne navigational aids as are required or recommended to be fitted by international conventions or by IMO resolutions and recommendations.

6.7 The state of hydrographic surveys within the limits of a routeing system and in the approaches thereto should be such that full information on existing depths of water and hazards to surface navigation is available to nautical charting authorities.

Traffic separation schemes.

6.8 The extent of a traffic separation scheme should be limited to what is essential in the interests of safe navigation.

6.9 Traffic lanes should be designed to make optimum use of available depths of water and the safe navigable areas taking into account the maximum depth of water attainable along the length of the route. The width of lanes should take account of the traffic density, the general usage of the area and the sea-room available.

6.10 Where there is sufficient space, separation zones should be used in preference to separation lines to separate opposing streams of traffic and to segregate inshore traffic zones from adjacent traffic lanes. Separation zones or lines may also be used to separate a traffic lane from adjacent sea areas other than inshore traffic zones, in appropriate circumstances, taking into account traffic density and the available means of fixing ships' positions.

6.11 It should be possible for ships to fix their position anywhere within the limits of and in the immediate approaches to a traffic separation scheme by one or more of the following means, both by day and by night:

- .1 visual bearings of readily identifiable objects;
- .2 radar bearings and ranges of readily identifiable objects; and
- .3 D/F bearings.

6.12 When it is considered essential to provide within a traffic separation scheme an additional lane for ships carrying hazardous liquid substances in bulk, as specified in the International Convention for the Prevention of Pollution from Ships, 1973, in circumstances where it is not possible for ships to fix their position as set out in paragraph 6.11 over the whole area of that lane and an electronic position-fixing system covers that area, the existence of that system may be taken into account when designing the scheme.

6.13 The minimum widths of traffic lanes and of traffic separation zones should be related to the accuracy of the available position-fixing methods, accepting the appropriate performance standards for shipborne equipment as set out in IMO resolutions and recommendations.

6.14 Where space allows the use of traffic separation zones, the width of the zone should, if possible, be not less than three times the transverse component of the standard error (measured across the separation zone) of the most appropriate of the fixing methods listed in paragraph 6.11. Where necessary or desirable, and where practicable, additional separation should be provided to ensure that there will be adequate early indication that traffic proceeding in the opposite direction will pass on the correct side.

6.15 If there is doubt as to the ability of ships to fix their positions positively and without ambiguity in relation to separation lines or zones, serious consideration should be given to providing adequate marking by buoys.

Converging and junction areas.

6.16 Whichever of the several available routeing methods is chosen for use at a route junction or in a converging area, it must be a cardinal principle that ambiguity or possible source of confusion in the application of the 1972 Collision Regulations must be avoided. This principle should be particularly borne in mind when establishing or recommending the direction of traffic flow in such

areas. If recommended directions of traffic flow are adopted, these should take full account of the existing pattern of traffic flow in the area concerned, and also of all other applicable provisions of ships' routing.

6.17 At route junctions the following particular considerations apply:

- .1 the need to encourage the crossing of traffic lanes as nearly as possible at right angles;
- .2 the need to give ships which may be required to give way under the 1972 Collision Regulations as much room to manoeuvre as possible;
- .3 the need to enable a stand-on vessel to maintain a steady course, as required by the 1972 Collision Regulations, for as long as possible before the route junction; and
- .4 the need to encourage traffic not following an established route to avoid crossing at or near route junctions.

Deep-water routes.

6.18 In designing deep-water routes, consideration should be given to marking critical turning points. Any wrecks or sea-bed obstructions which lie within the limits of a deep-water route and which have less depth of water over them than the minimum depth of water for the route as indicated on the charts, should be marked.

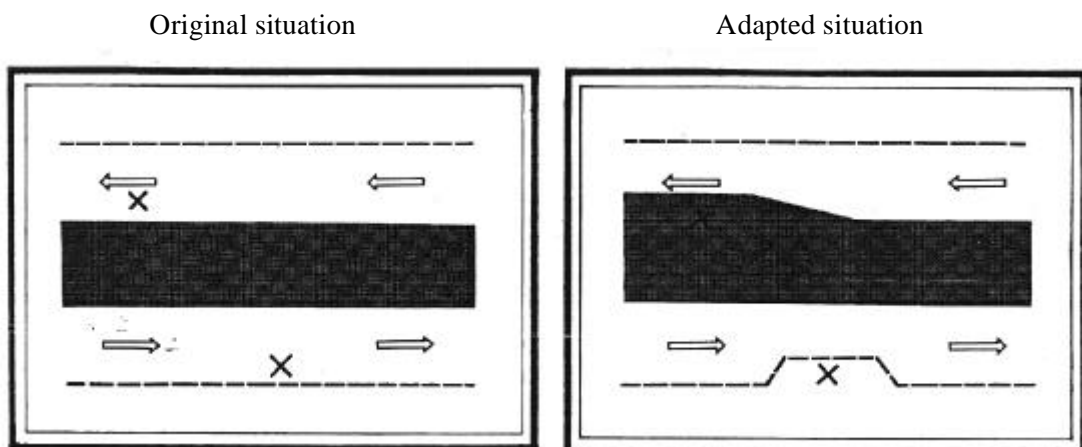
7 TEMPORARY ADJUSTMENTS TO TRAFFIC SEPARATION SCHEMES.

7.1 When the temporary positioning of an exploration rig is unavoidable, the design criteria and the provisions for planning should be taken into account before permitting the positioning of the rig or subsequently adjusting a traffic separation scheme.

7.2 The said adjustments should be made in accordance with the following:

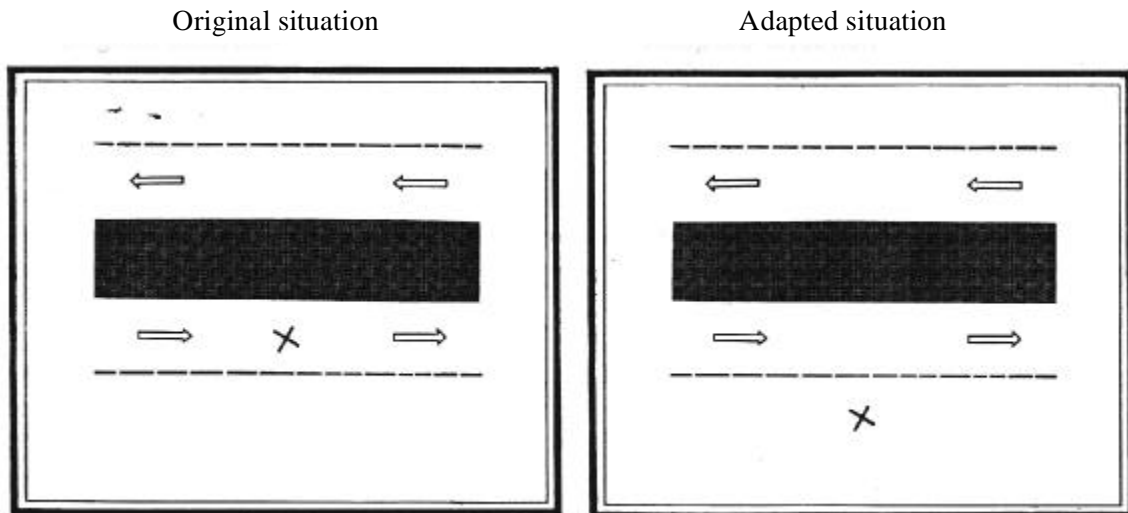
- .1 When the drilling location is situated near the boundary of a traffic lane or separation zone, a relatively slight adjustment of the scheme could have such effect that the drilling rig and its associated safety zone are sufficiently clear of the traffic lane;

Example



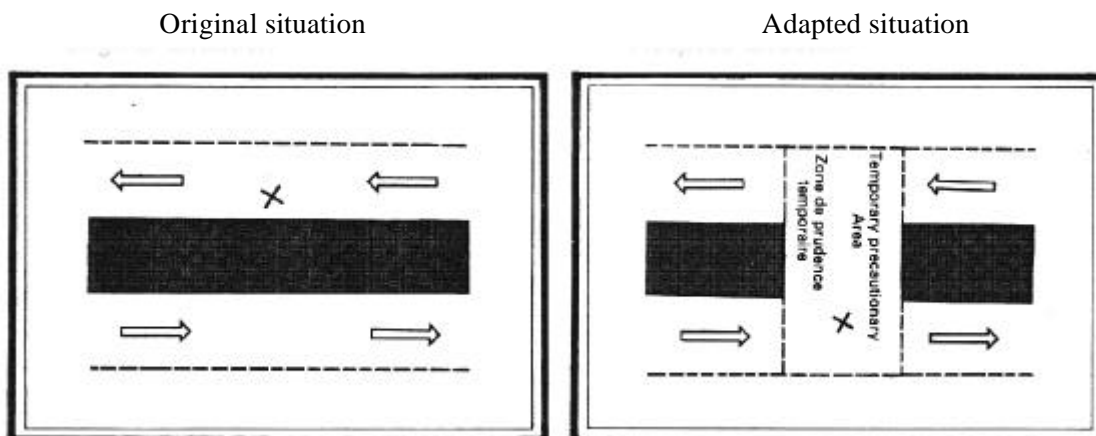
- .2 If a small temporary adjustment of the traffic lane is not possible the whole or part of the scheme could be temporarily shifted away from the drilling area so that traffic connected with drilling operations will stay clear of the lane;

Example



- .3 Temporary local interruption of the scheme or part of the scheme in the area of location of the drilling rig. Such an interruption could be made a precautionary area;

Example



- .4 Temporary suspension of the whole scheme.

7.3 In each case, exploration sites should be reviewed and such conditions specified as the responsible Government may deem necessary to ensure safety of navigation in the area.

7.4 Details of these temporary adjustments should be forwarded to IMO and to appropriate hydrographic offices at least four months before the rig is positioned within an adopted traffic separation scheme so as to allow ample time to inform shipping. When the duration of such temporary adjustments is expected to be six months or more, this should be made known to the relevant hydrographic authorities in order to allow appropriate action to be taken in notifying mariners.

7.5 In the event of a temporary adjustment to a traffic separation scheme remaining in force for more than one year, the responsible government should consider whether permanent amendments to the scheme may ultimately become necessary and, if appropriate, initiate timely procedures for IMO to adopt such amendments.

8 THE USE OF ROUTEING SYSTEMS.

8.1 Routeing systems are intended for use by day and by night in all weathers, in ice-free waters or under light ice conditions where no extraordinary manoeuvres or ice-breaker assistance are required.

8.2 Routeing systems are recommended for use by all ships unless stated otherwise. Bearing in mind the need for adequate under-keel clearance, a decision to use a routeing system must take into account the charted depth, the possibility of changes in the sea-bed since the time of the last survey, and the effects of meteorological and tidal conditions on water depths.

8.3 A ship navigating in or near a traffic separation scheme adopted by IMO shall in particular comply with rule 10 of the 1972 Collision Regulations to minimize the development of risk of collision with another ship. The other rules of the 1972 Collision Regulations apply in all respects, and particularly the rules of part B, sections II and III, if risk of collision with another ship is deemed to exist.

8.4 At junction points where traffic from various directions meets, a true separation of traffic is not really possible, as ships may need to cross routes or change to another route. Ships should therefore navigate with great caution in such areas and be aware that the mere fact that a ship is proceeding along a through-going route gives that ship no special privilege or right of way.

8.5 A deep-water route is primarily intended for use by ships which, because of their draught in relation to the available depth of water in the area concerned, require the use of such a route. Through traffic to which the above consideration does not apply should, as far as practicable, avoid using deep-water routes.

8.6 Precautionary areas should be avoided, if practicable, by passing ships not making use of the associated traffic separation schemes or deep-water routes, or entering or leaving adjacent ports.

8.7 In two-way routes, including two-way deep-water routes, ships should as far as practicable keep to the starboard side.

8.8 Arrows printed on charts in connection with routeing systems merely indicate the general direction of established or recommended traffic flow; ships need not set their courses strictly along the arrows.

8.9 The signal YG meaning "You appear not to be complying with the traffic separation scheme" is provided in the International Code of Signals for appropriate use.

9 REPRESENTATION ON CHARTS.


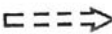




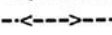


9.1 The legends, symbols and notes appearing in paragraphs 9.2, 9.3, 9.4 and 9.5 are recommended by the International Hydrographic Organization as guidance for the representation of details of routeing systems and associated measures on nautical charts. They are included to illustrate the information likely to be found on charts and as an aid to those designing proposed routeing systems for adoption by IMO.

9.2 use of legends on charts and in notes

Legend	Use of legend
Traffic separation scheme	Not usually shown on charts. Referred to in notes as traffic separation scheme or its national language equivalent.
Inshore traffic zone	Inshore traffic zone or its national language equivalent is shown on charts and is referred to in notes.
Precautionary area	Precautionary area or its national language equivalent may be shown on charts in lieu of the symbol and is referred to in notes.
Deep-water route	DW is shown on charts to indicate the deep water, DW or deep-water route is referred to in notes .
Area to be avoided	Area to be avoided or its national language equivalent is shown on charts and is referred to in notes.
Two-way route	Two-way route is not usually shown on charts but is referred to in notes.
Recommended route	Recommended route is not usually shown on charts but is referred to in notes.
Recommended track	Recommended track is not usually shown on charts but is referred to in notes

9.3 Symbols for basic elements of routeing measures

Unless otherwise specified, symbols are printed on charts in colour, usually magenta.

Routeing term	Symbol	Description	Applications	Notes and paragraph references
1 Established direction of traffic flow		Outline arrow	Traffic separation schemes and deep-water routes (when part of a traffic lane)	(1) (2)
2 Recommended direction of traffic flow		Dashed outlined arrow	Precautionary areas, two-way routes, recommended routes and deep-water routes	(1)
3 Separation lines		Tint, 3mm wide	Traffic separation schemes and between traffic separation schemes and inshore traffic zones	(3)(4) and paragraph 9.4
4 Separation zones		Tint may be any shape	Traffic separation schemes and between traffic separation schemes and inshore traffic zones	(4) (5) and paragraph 9.4
5 Limits of restricted areas (charting term)		T-shaped dashes	Areas to be avoided and defined ends of inshore traffic zones	(6) and paragraph 9.4
6 General maritime limits (charting term)		Dashed line	Traffic separation schemes, precautionary areas, two-way routes and deep-water routes	
7 Recommended tracks: one-way tow-way		Dashed lines with arrowheads (colour black)	Generally reserved for use by charting authorities	(7)
8 Recommended routes		Dashed line and dashed outlined arrows	Recommended routes	
9 Precautionary areas		Precautionary symbol	Precautionary areas	(8)











For examples of routeing measures using these basic symbols see figures 1 to 18 in section 4.

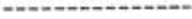
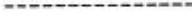


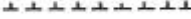
NOTES

- 1 Arrows dispersed over width of route. Arrows may be curved. Where the traffic lane is converging, arrows should be oriented to the approximate average directions of the side boundaries.
- 2 Arrow omitted at intersections (other than roundabouts) to avoid implying priority of one lane.
- 3 Separation line 3 mm wide where chart scale permits.
- 4 Tint light enough not to obscure detail beneath it.
- 5 If traffic lanes are separated by natural obstacles, may be replaced by the symbol for general maritime limits at the boundaries of the lanes.
- 6 Stems of dashes point towards the area in question.
- 7 Symbol intended for tracks to be followed closely through inadequately surveyed areas.
- 8 Legend Precautionary area or its national language equivalent may also be used within the precautionary area instead of the symbol.

9.4 Boundary symbols in detail

Example : Boundary symbol 8 means that the boundary, Indicated by the line, between a precautionary area and an inshore traffic zone is to be shown by T-shaped dashes, with the stems of the Ts pointing towards the ITZ.

1 Traffic separation scheme (ends) Open sea	No boundary	
2 Traffic separation scheme (sides) Open sea	or	 (zone)
	or	
3 Traffic separation scheme Inshore traffic zone		 (zone)
	or	
4 Traffic separation scheme next to traffic separation scheme	No boundary	
5 Inshore traffic zone (ends) Open sea		or no boundary where limits are undefined
6 Precautionary area Open sea		
7 Precautionary area Traffic separation scheme		
8 Precautionary area Inshore traffic zone		
9 Deep-water route (sides) Open sea		
10 Deep-water route (ends) Open sea		

11 Deep-water route (ends) Traffic separation scheme	
12 Deep-water route next to deep-water route	No boundary
13 Deep-water route (ends) Precautionary areas	
14 Deep-water route Separation zone/line	 (Separation zone/line acts as boundary)
15 Two-way route All other areas	
16 Area to be avoided All other areas	

9.5 Cautionary and explanatory notes on charts

9.5.1 Traffic separation schemes and other routeing measures

The existence of special provisions applying to particular measures should be mentioned on the charts affected, if necessary referring mariners to the full text in sailing directions.

9.5.2 Deep-water routes

Where maintenance of a minimum depth can be guaranteed, the least depth (e.g. 22 m) may be given after the abbreviation "DW". In other cases charted soundings will indicate the least depth, preferably in conjunction with a note giving the date of the latest survey.

9.5.3 Areas to be avoided

Notes on conditions governing avoidance of areas (classes and sizes of ships, nature of cargoes, etc.) should preferably be given on charts and should always be given in sailing directions.

The weekly/monthly AIS graphic for routes taken by tankers

