Distr.: Restricted
9 October 2023
English
Original: English, French and Russian

Working Party on Inland Water Transport

Sixty-seventh session
Geneva, 11–13 October 2023
Item 9 (a) of the provisional agenda
Promotion of River Information Services and Other Information and Communication Technologies in Inland Navigation: Guidelines and Criteria for Vessel Traffic Services on Inland Waterways (Resolution No. 58)

Draft Revision of the Guidelines and Criteria for Vessel Traffic Services on Inland Waterways

Note by the secretariat

The annex to this document contains the draft revision of *the Guidelines and Criteria for Vessel Traffic Services on Inland Waterways* (annex to resolution No. 58). The Working Party on Inland Water Transport may wish to adopt the draft and give further instructions to the secretariat.

Annex

Guidelines and Criteria for Vessel Traffic Services on Inland Waterways

1. Introduction

1.1 IMO Resolution A.1158(32) "Guidelines for Vessel Traffic Services" is associated with Regulation V/12 of the International Convention for the Safety of Life at Sea (SOLAS), 1974. It provides high-level guidance for planning, implementing and operating a vessel traffic service (VTS) under national law. This resolution notes that the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) has contributed significantly to the development of internationally harmonized guidance for vessel traffic services.

While the obligations of SOLAS Regulation V/12, IMO Resolution A.1158(32) and IALA standards do not apply on inland waterways, it is recommended that their provisions are taken into account.

1.2 The purpose of these Guidelines is to assist authorities establish VTS on inland waterways effectively and in a manner that reflects the international regulatory regime for VTS. These Guidelines are based on IALA Guideline G 1166 "Vessel Traffic Services in Inland Waters". They identify other IALA recommendations and guidelines and other documents of international organizations that may have relevance to Inland VTS, which national administrations may wish to take into account when applying this to national legislation or policy.

1.3 These Guidelines describe desirable practices to assist authorities establishing Inland VTS to plan, implement and operate them in a harmonized manner to minimize any confusion to masters of seagoing ships and skippers of inland waterway vessels moving from one vessel traffic service area to another.

1.4 IALA standards apply to VTS in international, territorial and coastal areas and in ports/harbours (see chapter 6). The applicability of the IALA standards to inland waters may vary considerably dependent on such high-level aspects as the density of traffic, the type of vessels navigating the inland waterway, the nature of the inland waterway and the applicable local, regional and national provisions and should be considered with due regard to inland waterways. This includes, but is not limited to, the considerations in the sections below.

2. Definitions and Clarifications

2.1.1 An inland vessel traffic service (Inland VTS) – a service on inland waterways implemented by an authority with the capability to interact with vessel traffic and respond to developing situations within a vessel traffic service area to improve the safety and efficiency of navigation, contribute to safety of life and support the protection of the environment. (Source: IALA Guideline)

2.1.2 Competent authority – the authority made responsible by the Administration for vessel traffic services. (Source: IMO Resolution A.1158(32))

2.1.3 VTS provider – the organization or entity authorized by the Administration or competent authority to provide vessel traffic services. (Source: IMO Resolution A.1158(32))

2.1.4 VTS area – the delineated, formally declared area for which the VTS provider is authorized to deliver vessel traffic services. (Source: IMO Resolution A.1158(32)) A VTS area may be subdivided in sub-areas or sectors.

2.1.5 Inland VTS centre – the centre from which the Inland VTS is operated. Each sub-area of the VTS may have its own sub-centre.

2.1.6 VTS operator – an appropriately qualified person performing one or more tasks contributing to the services of the VTS. (Source: IMO Resolution A.1158(32))

2.1.7 VTS personnel – persons performing tasks associated with vessel traffic services, trained in vessel traffic services operations and appropriately qualified. (Source: IMO Resolution A.1158(32))

2.1.8 VTS sailing plan – a plan which is mutually agreed between a competent authority for VTS and the boatmaster of a vessel concerning the movement of the vessel in a VTS area.

2.1.9 VTS traffic image – the surface picture of vessels and their movements in a VTS area.

2.1.10 Allied services – services other than vessel traffic services involved in the safe and efficient passage of a vessel through a VTS area, such as pilotage, tugs and linesmen. (Source: IMO Resolution A.1158(32))

2.1.11 Dangerous goods – categories of goods as set out in the annex to resolution No. 79.

2.1.12 Inland waterways are rivers, lakes or other stretches of water, whether linked to the sea or landlocked, which by natural or man-made features are suitable for navigation. In the river estuary the boundary between sea and inland waterways is the baseline established in accordance with international law.

3. General Considerations for Inland VTS

3.1 Objectives

3.1.1 The purpose of Inland VTS is to contribute to safety of life, improve safety and efficiency of navigation and support the protection of the environment within a VTS area by mitigating the development of unsafe situations through:

- Providing timely and relevant information on factors that may influence vessel movements and assist onboard decision-making
- Monitoring and managing vessel traffic to ensure the safety and efficiency of vessel movements
- Responding to developing unsafe situations.

3.1.2 The benefits of implementing an Inland VTS are that it allows identification and monitoring of vessels, strategic planning of vessel movements and provision of navigational information and assistance. It can also assist in prevention of pollution and coordination of pollution/emergency response.

3.1.3 Among the most important functions that an Inland VTS may carry out are those related to, contributing to and thereby enhancing:

- Safety of life;
- Safety of navigation;
- Efficiency of vessel traffic movement;
- Protection of the environment;
- Supporting law enforcement; and
- Protection of adjacent communities and infrastructure.

3.1.4 By being proactive, a VTS can contribute to the prevention of incidents resulting from vessel traffic movements. VTS contributes not only to the improvement of vessel traffic safety but also to the improvement of safety of life and protection of the environment.

3.1.5 Unlike other aids to navigation, VTS, being active, has the capability to interact and influence the decision-making process on board the vessel. For example, VTS might detect the development of a vessel running into danger and can thus alert such vessels accordingly.

Where an incident has occurred, VTS can also be used to support other incident mitigation operations.

3.1.6 The precise objectives of any VTS will depend upon the particular circumstances in the VTS area and the volume and character of vessel traffic as mentioned in 4.3. In setting the objectives for a VTS, consideration should be given to defining statements that contribute to one or more of the following:

- The purpose of the VTS; and
- Operational considerations to deliver the requisite service(s).

3.2 Responsibilities and Liability

3.2.1 Key responsibilities of administrations and competent authorities in planning and establishing an VTS include:

- Ensuring that a legal basis for the operation of a VTS is provided for and that the VTS is operated in accordance with national and international law
- Ensuring that a VTS provider is appointed and legally empowered
- Instructing the VTS provider to operate VTS in accordance with the relevant international and national legislation
- Establishing a policy with respect to violations of VTS regulatory requirements and ensure that this policy is consistent with national law.

3.2.2 The VTS provider should:

- Ensure that VTS conform with the regulatory framework set by the competent authority for VTS
- Set operational objectives for VTS that are consistent with improving the safety and efficiency of ship traffic and the protection of the environment. The objectives set should be routinely evaluated to demonstrate that they are being achieved.
- Ensure that appropriate equipment, systems and facilities for the delivery of VTS are provided.
- Ensure that VTS are adequately staffed and that VTS personnel are appropriately trained and qualified.
- Ensure that information regarding requirements and procedures of VTS and the categories of ships required to participate in VTS are promulgated in appropriate nautical publications.

3.3 General Principles

3.3.1 The need for Inland VTS should be assessed and reviewed through risk assessment.

3.3.2 VTS communications should be timely, clear, concise and unambiguous.

3.3.3 Inland VTS operate within a comprehensive environment in which vessels, ports, allied services and other organizations fulfil their respective roles, as appropriate.

3.3.4 Effective harmonized data exchange and information-sharing is fundamental to the overall operational efficiency and safety. VTS providers are encouraged to make use of automated reporting where possible.

3.3.5 River Information Services (RIS) do not necessarily include VTS, but VTS uses RIS technical and operational services (services and key technologies). Inland VTS operations should be therefore compatible with electronic ship reporting in inland navigation, Notices to Skippers, Tracking and Tracing (VTT) and harmonized with allied systems and services, as appropriate.

3.3.6 Where two or more Administrations or competent authorities have a common interest in establishing an Inland VTS in a particular area, they should develop coordinated

VTS on the basis of an agreement between them. Where coordinated VTS are established, they should have uniform procedures and operations.

3.4 Participating Vessels

3.4.1 In an Inland VTS area, participating vessels should:

(a) Provide reports or information required by Inland VTS;

(b) Take into account the information provided, or advice and warnings issued, by Inland VTS;

(c) Comply with the requirements and instructions given to the vessel by Inland VTS unless contradictory safety or environment protection reasons exist; and

(d) Report any pollution or dangers to navigation to Inland VTS.

3.4.2 Vessels not designated as participating vessels may take part in Inland VTS, subject to complying with the requirements of Inland VTS and any guidance issued by the VTS provider.

3.4.3 Skippers may be required to report on their actions should they decide to disregard any instruction given by Inland VTS.

4. Features of Inland VTS

4.1 General Provisions

4.1.1 Inland waterway vessels, including barges, operating on inland waterways may navigate beyond inland waterways into coastal and port/harbour areas. On the other hand, seagoing ships may operate on inland waterways. It follows, therefore, that there are considerable benefits in the control and management of vessel traffic on inland waterways being harmonized to similar global standards as far as is appropriate.

4.1.2 Authorities should, therefore, consider legislating for the control and management of vessels operating on inland waterways to be aligned as appropriate with the guidance provided for VTS covering coastal waters and port/harbour areas.

4.2 Vessels and Crew

4.2.1 Inland waterway vessels comprise a wide variety of different types, often with different characteristics to seagoing ships and may be subject to different regulatory requirements. Particular consideration may need to be given to:

(a) Carriage requirements for VHF[1] radiotelephone, AIS[2] and other communication equipment;

(b) Crewing standards;

(c) Safety measures;

(d) Requirements for vessels intended for the carriage of passengers and high-speed craft;

(e) Requirements and monitoring of vessels carrying dangerous goods; and

(f) Pollution prevention requirements which may differ from MARPOL.

4.2.2 Skippers and other persons responsible for navigation of inland waterway vessels may have limited VTS awareness and a lack of skills and knowledge of procedures when communicating with an Inland VTS and other vessels. Differing local dialects and an inability to communicate other than in their native language may further complicate communications between inland waterway vessels, seagoing ships, port authorities and VTS personnel.

[1] Very high frequency.
[2] Automatic Identification System.

4.3 Vessel Traffic Flow

4.3.1 On the inland waterways connected to the sea area and in coastal areas, vessel traffic and vessel traffic flow are often affected by the tide, meteorological conditions (the wind, icing, fog etc.) and seasonal variations in fluvial flow. There may, therefore, be a peak vessel traffic flow during the period of rapid rise and fall of the tide as well as during a rapid change of weather conditions.

4.3.2 An Inland VTS concerns the operational management of traffic and the forward planning of vessel movements to prevent congestion and dangerous situations. An Inland VTS is particularly relevant in times of high traffic density or when the movement of special transports may affect the flow of other traffic.

4.3.3 Due to the limited dimensions of many fairways on inland waterways and permanent inland waterway structures such as locks, dams, weirs and bridges, the distribution of docks, berths and anchorages may be concentrated and, in some sections, vessel traffic may be dense. Therefore, it may be difficult for an Inland VTS to predict the position of vessels through Time to Closest Point of Approach (TCPA) and Closest Point of Approach (CPA) and some information may be limited. As a result, it may be necessary to rely on broader traffic organization measures to implement VTS traffic management.

4.3.4 In relatively large water systems, lakes and busy inland waterways, there may be a succession of Inland VTS centres with adjacent VTS areas; in such circumstances, coordination among VTS centres and other contributing centres will be important.

4.4 Equipment and Systems

4.4.1 When a VTS system is established on inland waterways, it is maybe prone to radar clutter and low resolution. Due to the large number of vessels being tracked, the AIS signal may become less reliable or even lost, especially when AIS class B is being used. The VTS alarm function may also be difficult to use effectively. In some circumstances, CCTV[3] systems may have increased importance as an Inland VTS sensor.

4.4.2 When the Inland VTS covers a long and narrow section of an inland waterway, the VHF working channels of nearby Inland VTS centres may cause interference.

4.4.3 Inland waterways may naturally be close to shore and in areas covered by Wi-Fi or other mobile networks. Thus, some ship-to-shore communication can be carried out in a more timely and effective manner through these networks. However, consideration should be given to the potential reduction in situational awareness if public networks are used as an alternative to simplex VHF channels.

4.4.4 Inland AIS equipment carried by inland waterway vessels should be compatible with the maritime AIS; it enables direct data exchange in areas where both seagoing ships and inland waterway vessels may be navigating.

4.4.5 It is recommended that, whenever justified and reasonable, efforts should be made when setting up Inland VTS to ensure compatibility with existing services on sea routes.

4.5 General Navigation Environment

4.5.1 On inland waterways, the dimensions of the fairway, the presence of bridges, dams, weirs, ship locks, revetments and other permanent structures, together with the arrangement of aids to navigation and varying water levels, may cause restrictions on the navigation and operation of vessels. An Inland VTS centre may need to process a large amount of information in real time. For some sections of inland waterways, the arrangement of a passage plan, a system of traffic clearances or other appropriate measures may be required.

[3] Closed-circuit television.

5. Guidance for Planning, Establishing and Implementing an Inland VTS

Careful planning should be undertaken to ensure an Inland VTS is implemented effectively, achieves its objectives and is sufficiently resourced and funded on an ongoing basis. When planning and implementing a VTS, a project management approach is recommended to ensure the major deliverables, assumptions and constraints are clearly documented. This will assist in defining the scope of the VTS, its goals and objectives that need to be met.

5.1 Regulatory and Legal Framework

5.1.1 The key components of the international regulatory and legal framework for establishing an Inland VTS include:

- SOLAS
- IMO Resolution A.1158(32) "Guidelines for Vessel Traffic Services";
- IALA standards
- European Code for Inland Waterways (CEVNI)
- Resolutions of the Working Party on Inland Water Transport of relevance to River Information Services4
- National law.

5.1.2 It is recommended as best practice that an Inland VTS:

(a) Is aligned to international standards set out by IMO and expanded upon by IALA as far as is reasonably practicable;

(b) Is formally established in national law;

(c) Has appointed Inland VTS providers that are legally empowered, and

(d) Is coordinated between nations at borders or where responsibilities are shared.

5.1.3 The national structure may differ from that recommended in IMO Resolution A.1158(32); however, it is recommended that provision is made to ensure that:

(a) A legal basis for an Inland VTS is established;

(b) A regulatory framework for establishing and operating an Inland VTS is put in place;

(c) Inland VTS providers are authorized to operate an Inland VTS within a delineated VTS area, and

(d) A compliance and enforcement framework with respect to violations of Inland VTS regulatory requirements is established.

5.1.4 Local, regional or national regulations may be required to reflect the navigable environment as well as custom and practice relating to such issues as pilotage, prohibited zones and traffic control which will usually take precedence.

5.1.5 It should be noted that in Europe the International Regulations for Preventing Collisions at Sea only apply to vessels on the high seas and waters connected to the high seas and navigable by seagoing ships, except inland waterways where CEVNI applies.

5.1.6 Special consideration is needed for areas where inland waters are connected to the high seas and coastal areas and to the transition between different regulatory regimes.

[4] Resolution No. 63 "International Standard for Tracking and Tracing on Inland Waterways (VTT)"
Resolution No. 79 "International Standard for Electronic Ship Reporting in Inland Navigation"
Resolution No. 80 "International Standard for Notices to Skippers"
Resolution No. 57 "Guidelines and Recommendations for River Information Services"
Resolution No. 48 "Recommendation on electronic chart display and information system for inland navigation (Inland ECDIS)".

5.2 Inland VTS Implementation

5.2.1 IMO Resolution A.1158(32) states the responsibilities of a VTS provider and those of participating ships which may also be relevant to an Inland VTS. In particular, an Inland VTS should be provided with appropriate equipment, systems and facilities for the delivery of the Inland VTS and should be adequately staffed with Inland VTS personnel who are appropriately trained and qualified. This is further expanded in IALA standards (see chapter 6).

5.2.2 If it is assessed that the navigational complexity, volume of traffic or the degree of risk does not justify the establishment of an Inland VTS but that some form of co-ordination of local services is required, then note should be taken of the relevant IALA Guidelines (see chapter 6) that any service that is not authorized as a VTS should not use the term “VTS” in its name identifier.

5.3 Inland VTS Operations

5.3.1 Many of the detailed considerations for operational procedures for VTS may not be relevant to inland waterways. However, the need for operational guidance is of equal importance to Inland VTS personnel, and the principle of setting out operational procedures should be followed, the basic principles of the IALA guidelines adapted as appropriate and suitable objectives set.

5.3.2 Particular note should be made of the further explanation given on the purpose of a VTS in the provision of timely and relevant information, the monitoring and managing of vessel traffic and responding to developing situations. The close confines of many inland waterways and the ability to maintain a comprehensive traffic image may result in a more limited ability to respond to developing situations. Nevertheless, as long as the possibility exists that such interaction might be necessary, then it is important that Inland VTS personnel are appropriately trained and certified for such interventions.

5.3.3 While decision support tools may differ, the use of decision support tools is likely to be of similar value to an Inland VTS as it is to a VTS in coastal waters and port/harbour areas and the IALA guidance of equal relevance.

5.3.4 Where an inland waterway is managed by multiple Inland VTS centres, coordination between adjacent Inland VTS centres or sub-centres is essential.

5.3.5 Information promulgating the requirements of an Inland VTS should be publicized in a concise and harmonized format to reduce the burden on masters, skippers and other persons responsible for the navigation of seagoing ships or inland waterway vessels and to minimize misunderstandings when moving from one Inland VTS area to another.

5.4 Inland VTS Communications

5.4.1 A major factor in the effective delivery of VTS is the provision of precise and unambiguous voice communication.

5.4.2 Both inland waterway vessels and seagoing ships may operate in inland waters and may transit both inland and port/harbour VTS areas. National administrations should ensure that VTS providers for VTS in inland waters follow the IALA standards (see chapter 6) as far as is reasonably practicable.

5.4.3 It is recognized that local language may be the primary language for an Inland VTS, but the principles of phraseology and standardized phrases should still be used when translated into the local language and the principles for VTS nomenclature should be followed.

5.4.4 Local, regional and national agreements and recommendations of river commissions on the use of the language in radio communications on inland waterways may apply.

5.4.5 Inland waterway administrations may consider the application of the provisions of the IALA recommendations and guideline relating to the voice communication in full or partially, taking into account special regional and/or national rules.

5.4.6 Inland VTS providers should take measures to eliminate or minimize interference to VHF communications, while also considering alternative means of communication as a backup.

5.5 Inland VTS Additional Services

5.5.1 Inland VTS is often involved in providing information and supporting other services due to its capacity to maintain a traffic image and interact with ships and other services in the VTS area. If an Inland VTS centre exists in a RIS area, it may also be used as a RIS centre. Interactions between allied/other services and an Inland VTS may differ, and restricted or limited access areas may still be encountered on some inland waterways.

5.5.2 AIS enhances tactical and strategic traffic information in an Inland VTS area and as such is a critical part of the Inland VTS capabilities.

5.5.3 There may be a greater number of additional services associated with an Inland VTS compared with VTS in coastal and port/harbour areas and may have an enhanced significance. Administrations should define the additional services and identify where they apply. If the additional services include allied or other services, Inland VTS providers should develop the issues, criteria, and principles to be applied.

5.6 Inland VTS Data and Information Management

5.6.1 The compilation of an accurate traffic image is essential for VTS personnel to monitor traffic, evaluate situations and make decisions accordingly. The traffic image is dependent on the integration and portrayal of data from different sensors (e.g., radar, AIS and CCTV), information from reports such as VHF voice or data, and is supported by an effective data and information management framework.

5.6.2 While an Inland VTS may have a restricted set of functions, many of the principles set out in the guidance on the portrayal of information to VTS personnel will be relevant in establishing a suitable environment for Inland VTS operations.

5.6.3 The use of symbology to identify vessels of particular interest such as passenger vessels, vessels carrying dangerous goods and vessels restricted in their ability to manoeuvre can be of particular use in improving situational awareness in an Inland VTS.

5.6.4 Regional and competent authorities responsible for inland waters may wish to consider the development and application of harmonized exchange of information to support traffic and transport management and the transfer of information between operators, vessels and allied or other services. Inland VTS may be enhanced by linking it to bespoke systems for tracking ships such as VTT.

5.7 Inland VTS Technologies

5.7.1 A significant proportion of the investment associated with the implementation and on-going operation of a VTS is the equipment and relevant systems. Once the need for a VTS has been established, it will be necessary to set out the requirements for procurement, especially as regards the technical requirements.

5.7.2 IALA guidance on the procurement, technical specifications and performance standards for a VTS assume the need for continuous and uninterrupted surveillance of the entire area for which it is responsible with a high degree of reliability and redundancy. The technical specifications, particularly for radar, relate to relatively open waters. Not all of these may relate to inland waters; equally, there may be additional requirements unique to inland waters, such the management of locks and bridges that require additional consideration. Furthermore, gapless coverage may not be feasible or necessary. The guidance does, however, provide a useful baseline on which to draw in developing the specifications for an Inland VTS.

5.7.3 Equipment and facilities should be equipped in accordance with regional/local requirements. The technical performance of the Inland VTS equipment should meet the objectives of the Inland VTS. Authorities and providers should consider the following items when implementing an Inland VTS:

- The technical requirements for Inland VTS may vary in different countries or in different waters. Inland VTS providers should evaluate the detailed technical requirements.
- There may be a requirement for the output power of AIS, VHF and other equipment of all vessels in certain inland water areas to be lower than the default value, although the navigable environment of inland waters is often complex. These factors should be taken into account by competent authorities and Inland VTS providers during the design and operation of shore-based facilities such as VHF base stations, AIS base stations and radar stations.

5.7.4 The performance of radar, target tracking and associated decision support warnings may be seriously diminished in the inland environment. The use of short range, high-definition radar may, therefore, also be considered. Greater emphasis may also be needed on the use of other monitoring equipment such as CCTV and Virtual Reality video.

5.7.5 The technical specifications for VHF radiotelephone installations, radar installations and AIS on inland waterways can be found in the relevant international, national or regional provisions.

5.8 Data Models and Data Encoding

5.8.1 With the increasing globalization and digitalization of maritime operations, the increasing emphasis on data management is likely to be of high importance on inland waterways. The IALA guidance on the Inter-VTS Exchange Format (IVEF) Service (see chapter 6), which provides a framework with formats and protocols for data exchange between VTS systems, stakeholders and relevant external parties, is of significant relevance.

5.8.2 Network information systems are widely used on inland waterways, and the compatibility of data exchange should be considered when building network information systems.

5.8.3 Inland VTS may also consider collecting or updating such data from vessels passing through or navigating on fixed routes in order to establish a database and facilitate traffic management.

5.9 Training and Assessment

5.9.1 It is for the national administration to mandate the training and certification requirements for Inland VTS personnel on inland waterways. Here, international standards for training and certification set by IALA may be relevant (see chapter 6), which include guidance on the management and accreditation of training establishments. The use of IALA modules within the model courses may serve as the basis for training and certification of Inland VTS personnel in inland waters and enable them to transition more easily to other VTS centres as part of their career progression.

5.9.2 Inland VTS personnel may need additional skills, which should be taken into account when developing training courses. These include:

- The characteristics of inland waters
- Tracking and tracing of vessels
- Vessel reporting
- Routeing schemes
- Local rules and regulations
- Special requirements and procedures for pilotage, including cooperation skills with pilots
- The competencies of the crews of inland waterway vessels, and
- Specific network equipment and systems identified in other parts of this guideline such as CCTV, VTT and short range, high-definition radar.

5.9.3 Simulation training is an equally effective measure in the training of Inland VTS personnel.

5.9.4 Consideration should be given to the promotion of communications skills to skippers and other persons responsible for the navigation of inland waterway vessels.

5.10 Additional Guidance Related to the Provision of Inland VTS

5.10.1 Many inland waterways draw heavily on AIS as a primary tool for vessel tracking, and it is important that the capabilities and limitations of AIS are fully understood.

5.10.2 The specifications for AIS equipment on inland waterway vessels may differ from those for AIS on seagoing ships. For example, in Europe, the specification for AIS on inland waterway vessels (Inland AIS) is based on AIS Class A but requires additional functionality to meet the needs of inland navigation. There may be a higher proportion of vessels equipped with AIS Class B on inland waterways.

5.10.3 An Inland VTS may need to consider how AIS data from both inland waterway vessels and seagoing ships are presented on a VTS traffic image display system and how the AIS information can be checked for accuracy.

5.10.4 The buoyage system applied on European inland waterways may also be different from the IALA buoyage system is based on CEVNI. This should be taken into account to avoid, as far as possible, any risk of conflict or confusion between the two systems of buoyage and particularly where there is a transition between the different buoyage systems.

5.10.5 The Guidelines and Recommendations for River Information Services (edition 2019) of the World Association for Waterborne Transport Infrastructure (PIANC) and the PIANC report “E-Navigation for Inland Waterways” (2017) may also be of relevance in considering VTS on inland waterways.

5.10.6 IALA Guideline G1166 also provides recommendations for (a) Inland VTS auditing and assessing; (b) Risk management and (c) Quality management.

6. References

6.1 General:

- IMO Resolution A.1158(32) Guidelines for Vessel Traffic Services
- IALA Recommendation R0119 (V-119) Establishment of a VTS
- IALA VTS Manual.

6.2 For particular sections:

(a) Section 5.2:

- IALA Guidelines
  - G1150 Establishing, planning and implementing a VTS
  - G1160 Competencies for planning and implementing VTS
  - G1142 The Provision of Local Port Services other than VTS
  - G1083 Standard Nomenclature to Identify and Refer to a VTS;

(b) Section 5.3:

- IALA Recommendation R0127 VTS Operations and associated Guideline G1141 Operational Procedures for a VTS
- IALA Guidelines:
  - G1089 Provision of a VTS
  - G1110 Use of Decision Support Tools for VTS Personnel
  - G1131 Setting and measuring VTS objectives

- G1045 Staffing Levels at VTS Centres
- G1118 Marine Casualty/Incident Reporting and Recording, Including Near Miss Situations
- G1144 Promulgating the Requirements of a VTS to Mariners A VTS Users Guide Template;

(c) Section 5.4:

- IALA Recommendation R1012 VTS Communications
- Associated IALA Guideline G1132 providing greater detail on "VTS Voice Communications and Phraseology";

(d) Section 5.5:

- IALA Guidelines:
  - G1070 VTS Role in Managing Restricted or Limited Access Areas
  - G1102 VTS Interaction with Allied or Other Services
  - G1130 Technical Aspects of Information Exchange between VTS and Allied or Other Services;

(e) Section 5.6:

- IALA Recommendations:
  - R1014 Portrayal of VTS Information and Data
  - R0125 Use and Presentation of Symbology at a VTS Centre.
- IALA Guideline G1105 Shore-Side Portrayal Ensuring Harmonization with E-Navigation Related Information;

(f) Section 5.7:

- IALA Recommendation R0128 Operational and Technical Performance Standards of VTS systems
- IALA Guideline G1111 Establishing Functional and Performance Requirements for VTS Systems;

(g) Section 5.8:

- IALA Recommendation R0145 The Inter-VTS Exchange Format (IVEF) Service;

(h) Section 5.9:

- IALA Recommendation R0103 Training and Certification of VTS personnel
- IALA Guidelines:
  - G1156 Recruitment Training and Certification of VTS personnel
  - G1017 Assessment for Recognition of Prior Learning in VTS Training
  - G1027 Simulation in VTS Training
- IALA VTS Model Courses:
  - C0103-1 VTS operator Training (V-103/1)
  - C0103- 2 VTS supervisor Training (V-103/2)
  - C0103-3 VTS On-the-Job-Training (V-103/3)
  - C0103-4 VTS On-the-Job Training Instructor (V-103-4)
  - C0103-5 The Revalidation Process for VTS Qualification and Certification (V-103-5);

(i) Section 5.10:

- IALA Recommendation R0123 The Provision of Shore Based Automatic Identification System (AIS)
- IALA Recommendation R0126 The Use of the Automatic Identification System (AIS) in Marine Aids to Navigation Services
- IALA Guideline G1082 Overview of AIS
- IALA Guideline G1105 Shore-Side Portrayal Ensuring Harmonization with E-Navigation Related Information.