

Appendix A to Tender Specifications

National Single Windows Prototype Landscape

TABLE OF CONTENTS

- 1 Background.....4**
- 1.1 SafeSeaNet.....4
- 1.2 The Reporting Formalities Directive 2010/65/EU5
- 1.3 Overview of the National Single Window Prototype5

- 2 Overview.....6**
- 2.1 Leading principles6
- 2.2 Formalities supported7
- 2.3 Information flow.....9
- 2.4 Content of Notifications.....9
- 2.5 Quality requirements.....9
- 2.6 Re-use of information.....10
- 2.7 Use of reference data from SafeSeaNet’s central databases10
- 2.8 Clearance.....10
- 2.9 Acknowledgment.....10

- 3 System Overview11**

- 4 System Design.....12**

- 5 System Interfaces.....12**

- 6 Other information12**

- 7 List of enclosures.....12**

List of abbreviations

AIE	Authority Information Exchange
AIS	Automatic Identification System
CRG	Common Reporting Gateway
EMSA	European Maritime Safety Agency
EU	European Union
GI	Graphical Interface
Hazmat	Hazardous Material - Dangerous and Polluting Goods
IMP	Integrated Maritime Policy
ISO	International Organisation for Standardization
LRIT	Long-range identification and tracking of ships
MRS	Mandatory ship reporting system
MS	Member State
NSW	National Single Window
RC	Resource management Console
SSN	SafeSeaNet
XLS	Excel
XML	Extensible markup language

1 Background

This section describes the business environment and underlying systems that will connect to and make use of the NSW Prototype.

1.1 SafeSeaNet

SafeSeaNet (SSN) is a system for the exchange of vessel and voyage related information between designated participants within the EU. It is developed, maintained and hosted by EMSA.

The objective of the SSN system is to support the Commission and Member States' (MS) activities for the purpose of maritime safety, port and maritime security, marine environment protection and the safety and efficiency of maritime traffic.

The operation of SSN involves a number of entities or users at regional, national and local level. The majority of these are in the shipping industry (ships' masters, agents and operators) and national administrations (port authorities and coastal stations, port State control officers, search and rescue centres, vessel traffic services, ship reporting systems, pollution response bodies, etc.).

SSN is the Union maritime information and exchange system established to enable the exchange of information in an electronic format between MSs, to provide the Commission with the relevant information in accordance with EU legislation and to support MSs in satisfying their operational information needs.

SSN is a network of national systems in Member States which are linked to a central SSN system that acts as a nodal point. The central SSN system has different interfaces available to facilitate different means of transmission. It supports the exchange of the following information:

- Port call information: Pre-arrival information sent to ports 24 hours in advance and information on ship arrivals and departures (as per Article 4 of Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 on establishing a Community vessel traffic monitoring and information exchange system, as amended (Directive 2002/59/EC) and Articles 9 and 24 of Directive 2009/16/EC of the European Parliament and of the Council of 23 April 2009 on port state control). In addition, 72 hours pre-arrival information if no other national arrangement is in place.
- Hazmat information: Information on the carriage of dangerous and marine polluting goods (as per Articles 4, 13 and 14 of Directive 2002/59/EC as amended).
- Incident information: Information on accidents and incidents which have occurred at sea (as per Articles 16, 17 and 25 of Directive 2002/59/EC as amended) and information on ships which have not delivered their ship-generated waste and cargo residues (as per Articles 11.2.d and 12.3 of Directive 2000/59/EC).
- Position information: AIS, MRS and LRIT information (as per Articles 5, 6.b, 9 and 23 of Directive 2002/59/EC as amended).
- Security information: Prior to ship's entry into a port of a Member State, security information should be sent in accordance with Article 6 of Regulation (EC) 725/2004 of the European Parliament and of the Council of 31 March 2004 on enhancing ship and port facility security.
- Waste and cargo residues information: Prior to ship's entry into a port of a Member State, ship-generated waste and cargo residues information should be sent in accordance with Article 6 of Directive 2000/59/EC of the European Parliament and of the Council of 27 November 2000 on port reception facilities for ship-generated waste and cargo residues.

- Information on exemptions on Port call (pre-arrival 24 hours) and Hazmat (as per Article 15 of Directive 2002/59/EC), Security (as per Article 7 of Regulation (EC) 725/2004) and Waste (as per Article 9 of Directive 2000/59/EC).

In addition, SSN features Central Databases of reference information which are used within EMSA and by the MS systems, such as:

- Central Country Database (CCD), for Countries and International Institutions;
- Central Organization Database (COD), for administrative entities, authorities, private organisations, etc.,
- Central Location Database (CLD), for geographical locations;
- Central Ship Database (CSD), for ship particulars;
- Central Hazmat Database (CHD), for reference information on dangerous and polluting goods.

Important Note: The development and configuration tasks of the SafeSeaNet system and its Central Databases are part of separate contracts and are out of the scope of this Tender.

1.2 The Reporting Formalities Directive 2010/65/EU

The purpose of Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC (Directive 2010/65/EU) is to:

“simplify and harmonise the administrative procedures applied to maritime transport by making the electronic transmission of information standard by rationalising reporting formalities”.

Due to the Reporting Formalities Directive 2010/65/EU, SSN was upgraded to support the exchange of additional reporting formalities in electronic format

The Annex of the Directive lists 14 reporting formalities which are to be submitted electronically, either prior to or on arrival or departure of a ship in an EU port, through a single window. In addition, MSs may require other reporting formalities in accordance with their national legislation. The information is then made available to the different public authorities (e.g. port, customs, border, health, safety, waste) who require such information to carry out their legal obligations.

1.3 Overview of the National Single Window Prototype

The development of the National Single Window (NSW) prototype started at the beginning of 2013 as part of an Integrated Maritime Policy (IMP) project. It is conducted by EMSA, in cooperation with six Member States (Bulgaria, Greece, Italy, Malta, Romania and Norway) each with its own NSW prototype. Other Member States were provided access to a common NSW prototype to familiarize themselves with the implemented functionalities. These six NSW prototypes are hosted at EMSA. Three MSs have also hosted the NSW software on their IT environment.

The project focused on implementing the objectives of Directive 2010/65/EU to set up a NSW. Its main purpose was to simulate the information flows between the NSW, the shipping industry (ship data providers - ship agent/master, shipping company), public authorities (maritime safety, customs, border control, health, port authorities and others that might be identified), and SafeSeaNet.

The purpose of the prototype was to develop software and service components that would be used by the MS for testing National Single Window (NSW) solutions. The demonstrator allowed MS to choose the solution that best fits

their needs and to reduce costs and time for the implementation of their NSW by re-using the technical documentation or the software components built by EMSA.

The prototype covers the overall chain related to reporting formalities with the submission of information to the NSW by a ship data provider (ship agent/master/duly authorised person) and the distribution of this information to various authorities at national level (maritime safety, customs, border control, health...). The relevant parts of the information are made available to the central SSN in order to be shared with other MS participating to the project. In this regard, software components of the national single window (with web and machine to machine interfaces) were developed to:

- Implement the national single window application and its interfaces with the ship data providers, other national systems, and the central SSN system;
- Implement the common functionalities (e.g. clearance, acknowledgement, data quality checks) of the NSWs;
- Provide services related to the reference databases (e.g. geographic locations and ship particulars); and
- Test the compilation of ship positioning data with the relevant reporting formalities and distribution of the combined data to the various authorities (maritime safety, custom, border control, health and other that might be identified) via a graphical interface.

2 Overview

2.1 Leading principles

The National Single Window Prototype (NSW):

- Collects information from reporting formalities required before or at ship's arrival or departure;
- Distributes the information to the relevant national and local authorities;
- Records decisions and comments from Authorities and communicates them to the ship data providers.

In addition, the NSW is interconnected with the SafeSeaNet system in order to retrieve information from previous port calls from other Member States.

Ship data providers can submit notifications via the **XML interface** (based on ISO 28005 standard) and the **Web User Interface**, which also includes the possibility to upload **XLS files**. Relevant information is made available to authorities using the web interface.

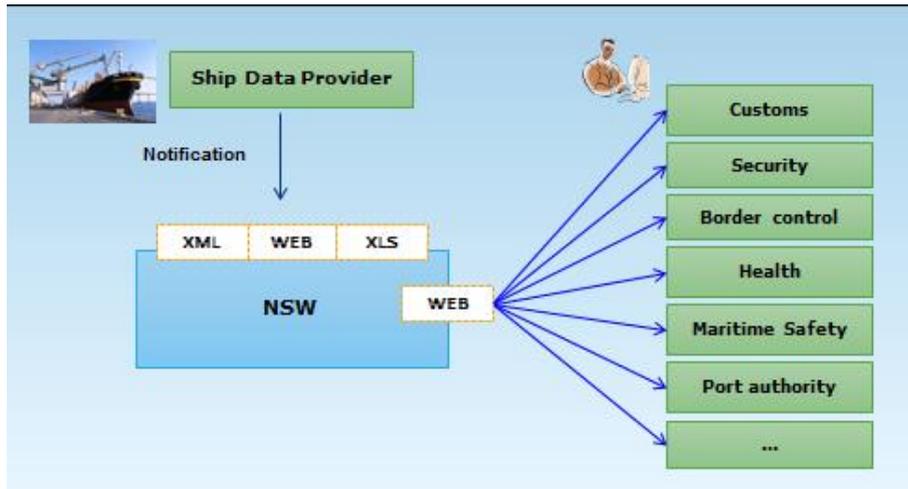


Fig.1: Submission of notifications by the Ship Data Provider to Authorities

Decisions and comments from authorities are provided to ship data providers via the ***XML interface*** (based on ISO 28005 standard) and the ***Web User Interface. e-mail notifications*** are sent to authorities and ship data providers to warn them of new and updated notifications or decisions.

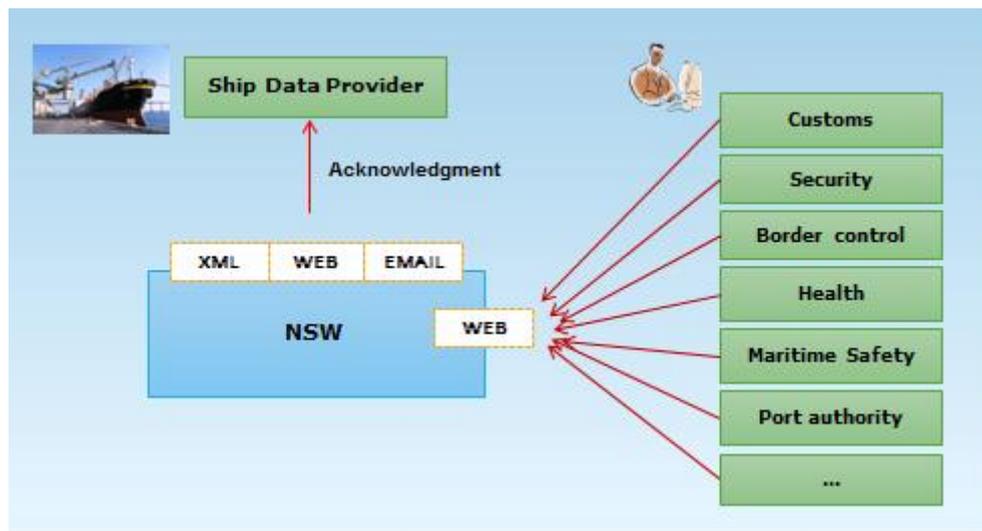


Fig.2: Report of Authorities decisions and comments to the ship data providers

2.2 Formalities supported

The following reporting formalities may be fulfilled through the NSW:

- Reporting formalities resulting from legal acts of the Union
 - Notification for ships arriving in and departing from ports of the Member States (Article 4 of Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system)
 - 72h pre-arrival notice for ships eligible to expanded inspections (article 9 of directive 2009/16/EC on Port State Controls);

- Actual arrival and departure notifications (article 24 of directive 2009/16/EC)
- Border checks on persons (Article 7 of Regulation (EC) No 562/2006 - Schengen Borders Code)
- Notification of dangerous or polluting goods carried on board (Article 13 of Directive 2002/59/EC establishing a Community vessel traffic monitoring and information system)
- Notification of waste and residues (Article 6 of Directive 2000/59/EC on port reception facilities for ship-generated waste and cargo residues)
- Notification of security information (Article 6 of Regulation (EC) No 725/2004 on enhancing ship and port facility security)
- Entry summary declaration (Council Regulation (EEC) No 2913/92 - Community Customs Code and Regulation (EC) No 450/2008 - Modernised Customs Code)
- FAL forms and formalities resulting from international legal instruments
 - FAL form 1: General Declaration
 - 2. FAL form 2: Cargo Declaration
 - 3. FAL form 3: Ship's Stores Declaration
 - 4. FAL form 4: Crew's Effects Declaration
 - 5. FAL form 5: Crew List
 - 6. FAL form 6: Passenger List
 - 7. FAL form 7: Dangerous Goods
 - 8. Maritime Declaration of Health
- Information which shall be provided in accordance with national legislation
 - Cargo related formalities: Declaration of Temporary Storage, cargo Manifest (tentative).
 - Waste delivery receipt
 - Bunkers remaining on board
 - Civil Liability Certificate for Oil Pollution Damage
 - Civil Liability Certificate for Bunker Oil Pollution Damage
 - Ship defects

All these data elements are described using structured data in alpha-numeric characters. The NSW handles all data elements or a sub-set of elements.

The identification of the data elements which are required to be reported in the NSW is done through configuration by the NSW administrator depending on national legal provisions. Data groups and individual data elements may also be removed through configuration.

2.3 Information flow

Information is reported to the NSW in **notifications**, sent **before arrival** ("arrival notifications"), **before departure** ("departure notifications") and **at arrival/departure** (included in "arrival"/"departure notifications"). Notifications may be reported through a web interface or a system interface. Data elements can be reported in distinct notifications by one or several ship data providers. Updates of previously provided information are accepted (in order to update or correct parts of the information).

For each received notification the NSW returns a technical **receipt**. A positive receipt means that the notification has been received by the NSW and will be processed and communicated to the relevant authorities.

Communication of Authorities' decisions is done through an **acknowledgment** message. All Ship Data Providers who submitted the initial notification or an update, are communicated with the acknowledgment message communicated through the System Interface, notified by e-mail, and can be consulted in the User Interface.

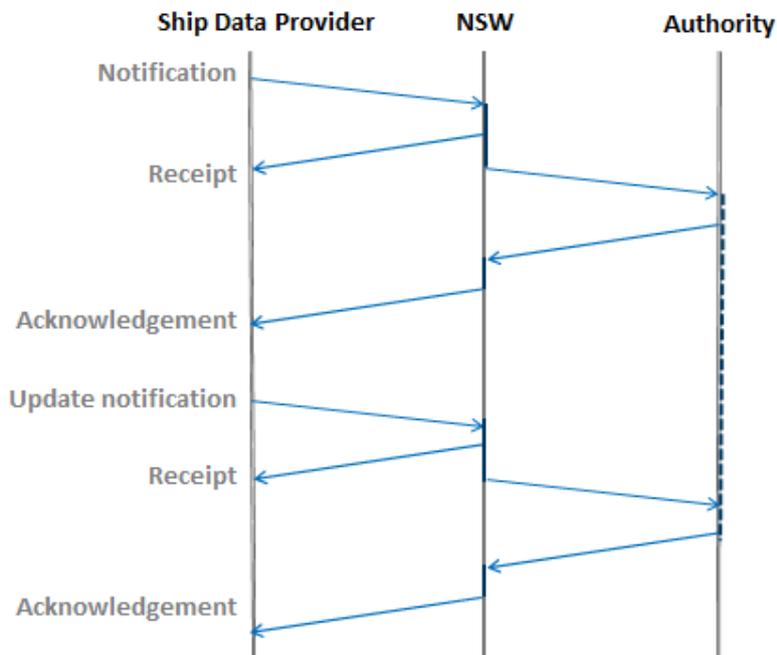


Fig.3: Information flow in the NSW

2.4 Content of Notifications

Data elements in a notification depend on the type of the notification (arrival or departure). Only the fields relevant for the notification type are included in the user interface forms.

2.5 Quality requirements

The notifications are processed anyway (regardless whether legislative constraints are met since no validation takes place) and the data is forwarded to the authorities. The NSW does not check whether notifications are reported in time.

The NSW also does not check if all reporting formalities are done for a specific ship, or if reporting formalities are possibly wrongly done by a ship. All reported data is processed and made available to the authorities. It is up to the authorities to take enforcement actions if ships do not report correctly or when it is necessary.

2.6 Re-use of information

The NSW allows the Ship Data Provider to re-use notifications previously submitted in the NSW for other calls of the same ship in order to prepare pre-arrival notifications. The Ship Data Provider may then submit the information as-is or update it.

The NSW also allows the Ship Data Provider to re-use data from SafeSeaNet for preparing pre-arrival notifications. In this case, the NSW requests information from SafeSeaNet to populate the notifications, and the Ship Data Provider may then confirm the information as-is or update it.

Information provided by SafeSeaNet include: ship identification, ship particulars; voyage, pre-arrival, arrival and departure information; dangerous and polluting goods details; waste disposal information; security information, and crew and passengers information.

In order to prepare the pre-departure notification, the NSW allows the Ship Data Provider to re-use information from the pre-arrival notification submitted for the same port call. The ship data provider may then submit the information as-is or update it.

When an updated notification is submitted, previous decisions issued by the relevant Authorities, which were based on the original information, will have to be reconsidered and are therefore cancelled.

2.7 Use of reference data from SafeSeaNet's central databases

The NSW Prototype is designed to receive updates of ship particulars and of location codes from the Central Databases of the SSN system. This aims at facilitating the configuration and maintenance work of the NSW database.

2.8 Clearance

Three clearance models are implemented in the NSW:

- **No clearance:** no acknowledgement messages are sent by the NSW. Communication of the authorities' decisions is done outside of the NSW.
- **Silent clearance:** acknowledgement messages are only communicated when the notification is rejected. The notification is considered by default as accepted once received by the NSW (with a positive receipt).
- **Systematic clearance:** acknowledgment messages are always communicated to the ship data provider regardless of the decision taken by the authorities.

The NSW will only apply one of the above models for all notifications received. The clearance model is configured by the NSW administrator through modification of a configuration file at the installation of the system. Refer to the installation manual.

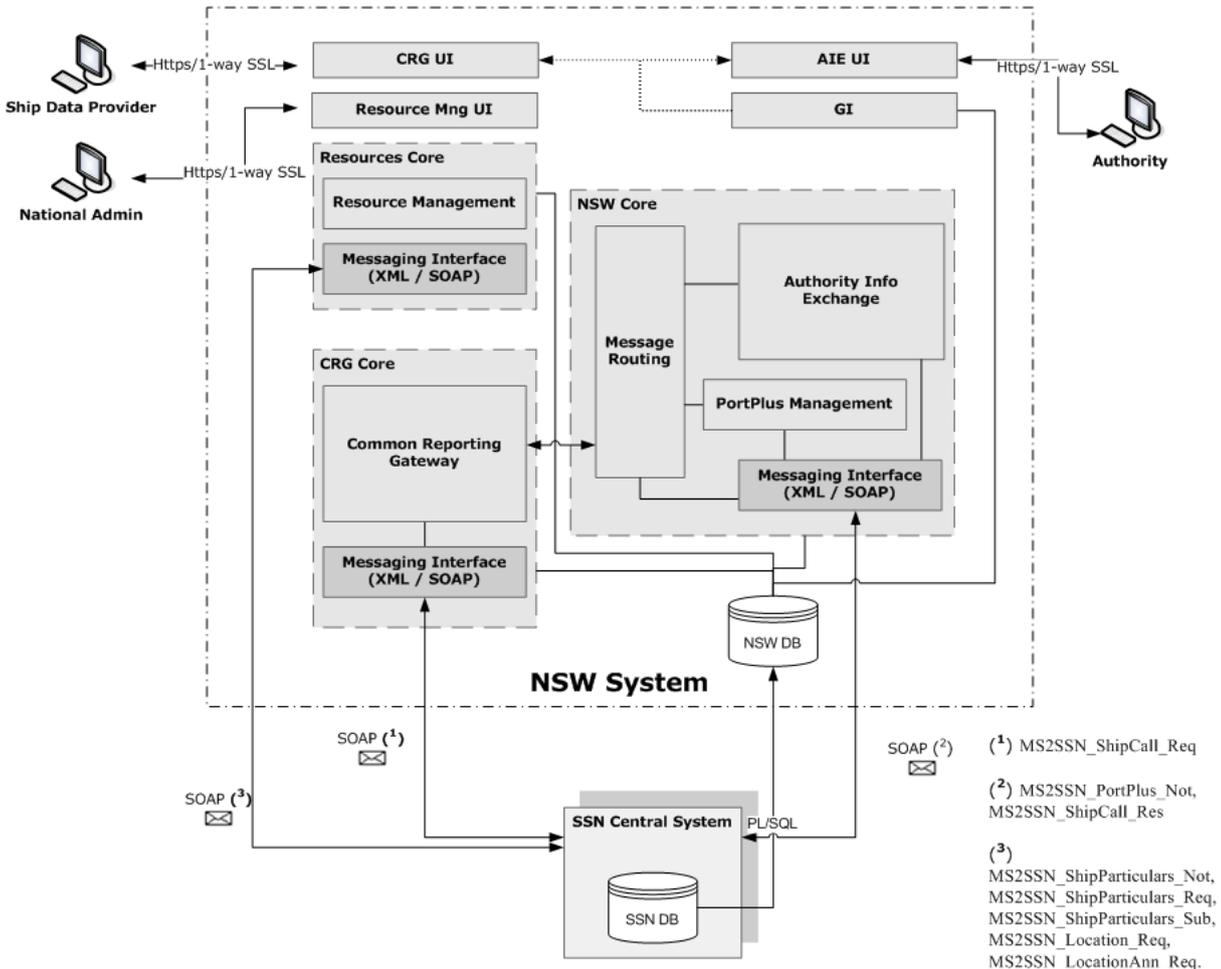
2.9 Acknowledgment

Decisions may be done by one or more authorities. Several acknowledgment messages may be provided for a unique request. Values of status codes: "**Accepted**" or "**NotAccepted**".

Acknowledgment messages with status code "NotAccepted" are provided as soon as an authority does not accept the request. Acknowledgment messages with status code "Accepted" are provided only once all relevant authorities have accepted the request.

3 System Overview

The following diagram depicts the context of the NSW prototype. A description of the high level changes required per module is provided further below.



NSW V3 prototype - Overview

The following modules form part of the NSW prototype:

- CRG:** The Common Reporting Gateway (web user interface and system-to-system interface based on ISO 28005 XML messages) that provides a standardized interface where ship data providers can submit notifications and view decisions by authorities;
- AIE:** The Authority Information Exchange (web user interface) that distributes information reported in notifications by the ship data providers to the participating authorities, records decisions by authorities and includes a messaging interface with the central SafeSeaNet system;
- RC:** The Resource Management Console (web based) which facilitates the technical administration (i.e. user management and system configuration).
- GI:** The Graphical Interface which offers a view of ships and their notifications on a map to the user interfaces provided by CRG and AIE. Due to the dependency of the module to data from the SSN database, it is only deployed in hosting environments situated at EMSA. A data replication mechanism is implemented between the SSN and NSW databases, allowing the former to source ship positioning

information to be stored in the latter. The replicated ship position data is enriched with ship call specific data from the NSW to facilitate the consultation of information via the GI.

The NSW Prototype is implemented in two forms:

- A version using proprietary software (e.g. Oracle for database and Oracle WebLogic for application server),
- A version using open-source software (PostgreSQL for database software, Apache Tomcat for application server).

The description of the software products required for the installation of the NSW prototype is provided in Enclosure 5 - COTS of NSW Prototype.

4 System Design

Refer to Enclosure 1 - NSW Prototype – System Design Document, and to Enclosure 2 - Graphical Interface Design Document.

5 System Interfaces

The NSW Prototype offers a system-to-system interface to Ship Data Providers system. Its specifications are provided in Enclosure 3 - NSW Prototype – System Interface Guide

The NSW Prototype uses the services offered by the SafeSeaNet system. The specifications of the SafeSeaNet services are provided in Enclosure 4.

6 Other information

Other documentation of the NSW Prototype is publicly available from the EMSA website, such as: user manuals, list of data elements supported, brochure. Refer to the following address: <http://emsa.europa.eu/nsw.html>

7 List of enclosures

Below is the list of all Enclosures of relevance to the technical specifications.

Enclosure 1: NSW Prototype – System Design Document

Enclosure 2: NSW Prototype – Graphical Interface Design Document

Enclosure 3: NSW Prototype – System Interface Guide

Enclosure 4: SafeSeaNet - XML Messaging Reference Guide

Enclosure 5: COTS of NSW Prototype