

REQUEST FOR PROPOSAL

MANUFACTURE, DELIVER AND COMMISSION ONE NEW HIGH-SPEED PASSENGER FERRY OF PROVEN DESIGN, OPERATING IN THE TABLE BAY AREA BETWEEN THE NELSON MANDELA GATEWAY AT THE VICTORIA AND ALFRED WATERFRONT IN CAPE TOWN HARBOUR, AND MURRAY'S BAY HARBOUR AT ROB BEN ISLAND.



LEVEL 3

ANNEXURE F: LOGISTIC BID DOCUMENTS

RFP

Annexure F: Logistic Bid Documents

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1. Annexure F1: Integrated Logistic Support Plan

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1. Introduction

1.1. General

1.1.1. The Robben Island Museum Ferry Project (RIMFP), managed by RIM's representative, intends to provide Robben Island Museum (RIM) with a vessel platform system capable of safely, and efficiently, ferrying both local and international passengers/tourists to and from Robben Island (RI), a world heritage site. RI is approximately eight (8) nautical miles away from Table Bay Harbour. The vessel will be procured as a Product System and will be integrated into the RIM User System.

1.1.2. The new Product System shall consist of a fully outfitted and seaworthy Ferry, of an in-service proven design, with an exceptional record of accomplishment in terms of reliability, availability, maintainability and supportability. The Product System shall be ready for operation upon delivery (turnkey) and handover to RIM, inclusive of all the associated Integrated Logistic Support (ILS) specified within Annexure B1 "Technical Specification", and aligned with this document.

1.1.3. This Integrated Logistic Support Plan (ILSP) shall be used as the basic planning document for all ILS activities, requirements relating to the RIMFP, as well as the strategy that will be followed to integrate the Product System into the RIM User System. The main objective shall be to describe all the necessary ILS activities and to assign responsibility for completing those activities.

1.1.4. The integration of all Logistic Support Elements (LSE) will be the responsibility of the Preferred Bidder, or the Preferred Bidder's recommended System Integration Contractor (SIC). In addition, the preferred maintenance and supply support philosophy shall take into account that the Preferred Bidder and/or SIC will provide maintenance and supply support for the first year after acceptance of the vessel, with the option of yearly renewal of such a support contract by RIM.

1.1.5. It must be noted that this document is a "living" document, which will/can be continuously updated as the system progresses from contract negotiations, between RIM and the Preferred Bidder, to delivery of the vessel, and finally through to disposal of the system. Upon delivery of the product system this ILSP and its subsequent amended issues will be combined with the Preferred Bidder's Integrated Support Plan (ISP) in order to form the first issue RIM ISP. The complete proposed process is depicted in Figure 1 below for reference.

1.1.6. Throughout the ILSP, "Product System", "Ferry" and "Vessel" is used interchangeably, as is "User System" and "RIM".

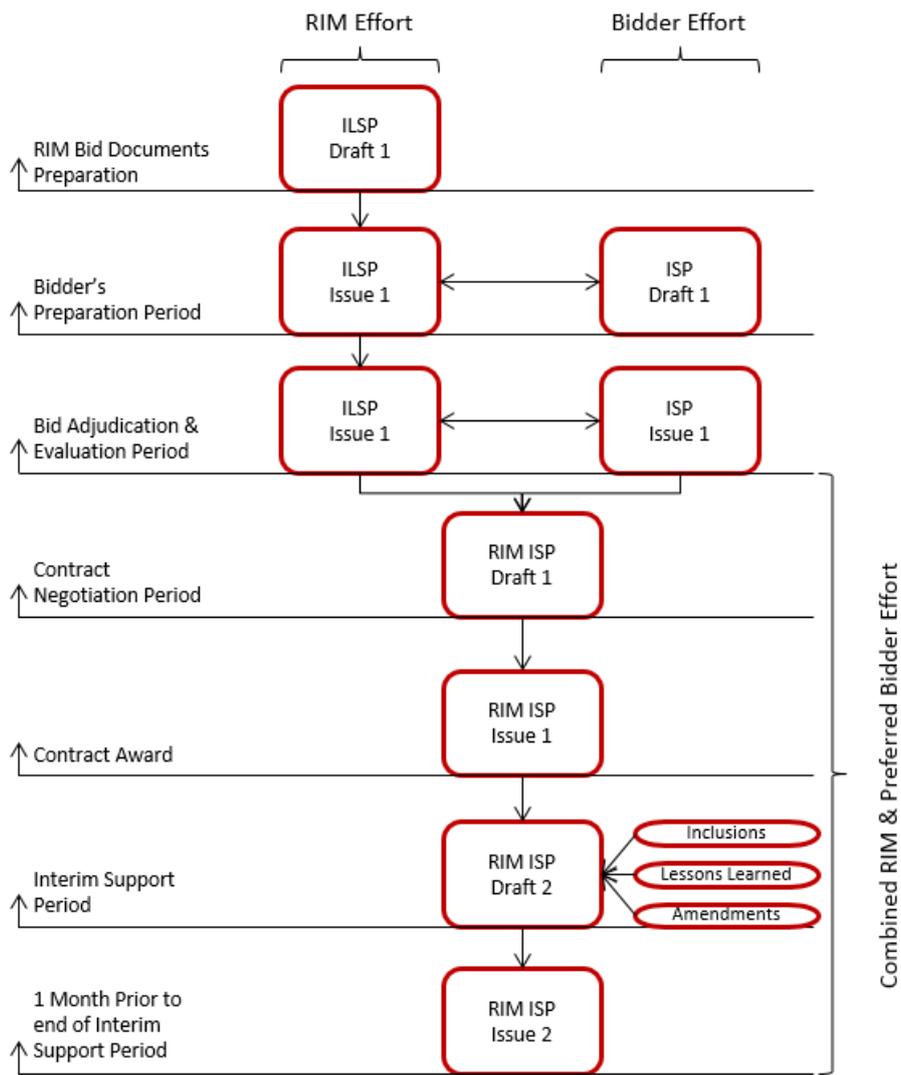


Figure 1: ILSP & ISP Process

1.2. Background Information

1.2.1. Background information regarding the RIMFP, as well as other logistic deliverable requirements, can be obtained from the RFP document, inclusive of all its Annexures.

1.2.2. Vessel Employment

1.2.2.1. The primary role of the Product System (the Vessel) shall be to act as a passenger ferry between Table Bay Harbour and Murray’s Bay Harbour, conducting at least four (4) daily return trips, ferrying a maximum of 180 - 200 persons per trip. No secondary roles are envisaged.

1.2.2.2. It is estimated that the Vessel will conduct four (4) return trips between its Cape Town (CT) Harbour floating jetty and Murray’s Bay (MB) Harbour per day. The estimated speed, time and distance is indicated in Table 1 below. This information shall be used in determining the Ferry’s Maintenance Plan, Schedule and Supply Support provisions unless otherwise stated by the Bidder and upon RIM’s approval during contract negotiations

Table 1: Estimated Vessel Utilisation Profile –Round Trip

Description	Distance (NM)	Speed (KN)	Time (Min)
CT Floating Jetty to Victoria Basin	0.50	6	5
Victoria Basin Cut to Outer Breakwater	0.50	10	3
Outer Breakwater to 0.1NM for MB Harbour	6.50	22	18
RI Harbour and Approaches Manoeuvring	0.50	10	3
Idle at RI Harbour (Passengers Embark/Disembark)	0	0	15
RI Harbour and Approaches Manoeuvring	0.50	10	3
0.1NM outside MB Harbour to Outer Breakwater	6.50	22	18
Outer Breakwater to Victoria Basin Cut	0.50	10	3
Victoria Basin to CT Floating Jetty	0.50	6	5
Idle at CT Floating Jetty (Passengers Embark/Disembark)	0	0	15
Total Time/ Round Trip			88

1.2.3. Operational Environment

1.2.3.1. The operational environment and its associated environmental conditions as described in Annexure B1 “Technical Specification” shall be used as the baseline reference for this document. Additional information is available upon request to RIM via RIM FER 03 2015/2016 007 Hydrographic Report for survey information and data regarding the Murray’s Bay Harbour seabed profile.



Figure 2: Current RIM Ferry Route and Primary Operational Area

1.2.4. Service Life

1.2.4.1. The expected Product System life cycle is thirty (30) years, from the date of delivery and handover of the Vessel to RIM, up to the point of disposal of the Vessel.

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1.3. Logistic Support Concepts

1.3.1. Objective

1.3.1.1. This ILSP outlines the requirement, and associated concepts, to support the RIM Product System.

1.3.2. System Logistics Components/Elements

1.3.2.1. The Preferred Bidder, the Preferred Bidder's recommended SIC, or an externally contracted third party shall provide all logistics and support as part of the Bid in accordance with the logistic requirements stated in the system specification, which are developed from, and aligned to, this ILSP.

1.3.3. Support Requirements

1.3.3.1. The facilities and support organisations expected to be used by RIM during the extent of the vessel procurement process are listed in Chapter 1, Section 1.4 below.

1.3.4. Logistic Support Improvements

1.3.4.1. This project and ILSP shall provide RIM with the necessary lessons learned in order to improve the logistic support of various other vessels already in their fleet. The specific concepts, benefits and features of the RIM logistic support program in terms of Logistic Support Elements are mentioned in Chapters 5 and 7.

1.3.5. Logistic Support Transition

1.3.5.1. The Preferred Bidder and/or Preferred Bidder's SIC will provide most of the logistic elements specified in this ILSP, and those specified in the Annexure B1 "Technical Specification", during an Interim Support Period of one (1) year, to commence upon handover of the Vessel to RIM. This period will serve as a transition to ensure that all elements are suitably covered, addressed and the Product System correctly integrated into the User System as far as possible. All lessons learned, inclusions and/or amendments to the Issue 1 RIM ISP (Process depicted in Figure 1) shall be captured prior to completion of the Interim Support Period, and updated to an Issue 2 RIM ISP.

1.4. Logistic Support Analysis

1.4.1. LSA Concepts and Objectives

1.4.1.1. The system integration will be an Off-the-Shelf Vessel design. The Preferred Bidder/SIC will provide Logistic Support Analysis (LSA) support for the initial one (1) year Interim Support Period. Thereafter, RIM may contract support services from the Preferred Bidder, Preferred Bidder's recommended SIC, a third party, or support the system with RIM assets.

1.4.2. LSA Strategy

1.4.2.1. The Preferred Bidder/SIC will develop an LSA Strategy for RIMs approval, that ensures system availability goals, as specified in Chapter 5, Section 5.2.2.2 of this document, are met. The strategy will include a LSA Plan that provides details on LSA tasks, tracking, reporting and products.

1.5. Glossary of Terms

1.5.1. Assisted Maintenance Period (AMP)

1.5.1.1. The purpose of an AMP is to provide an up-keep period for the Vessel during which specific Line 1 and Line 2 Planned Maintenance (Described in Chapter 5, Sections 5.2.2.3.1. and 5.2.2.3.2.), Engineering Changes (EC's) and repairs are carried out with full support provided by the Preferred Bidder/SIC. Support is also provided by industry to ensure that no four (4) monthly Planned Maintenance routines are outstanding after this period.

1.5.2. Docking and Essential Defects (DED)

1.5.2.1. The purpose of a DED is to provide the relevant/contracted maintenance organisation with a programmed upkeep period during which a routine docking is undertaken and the prescribed planned

maintenance, essential defects effecting sea-going efficiency of the Ferry, as well as EC's which cannot await the next Refit/Main Overhaul are carried out.

1.5.3. Refit

1.5.3.1. The purpose of a Refit is to provide a programmed upkeep period for the Vessel during which the necessary resources are planned to carry out planned/preventative maintenance, corrective maintenance and defect repair, main overhauls and EC's against an approved defects list.

1.5.4. Preventative Maintenance

1.5.4.1. The purpose of Preventative Maintenance is to care for, and service, the Product System for the purpose of maintaining the Product System, sub-systems, equipment and facilities in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects. It tends to follow planned routines and tasks to prevent equipment and machinery breakdown.

1.5.5. Corrective Maintenance

1.5.5.1. The purpose of Corrective Maintenance is to perform tasks to identify, isolate, and rectify an occurring fault so that the failed equipment, machine, or system can be restored to an operational condition within the tolerances or limits established for in-service operations.

1.5.6. Condition Based Maintenance

1.5.6.1. The purpose of Condition Based Maintenance is to strive towards maintaining the correct equipment at the right time. CBM is based on using real-time data and observation (Condition Based Monitoring) to prioritize and optimize maintenance resources. Such a system will determine the equipment's health, and act only when maintenance is actually necessary, especially for critical systems that lack redundancy. It is envisaged that CBM will allow the maintenance personnel/contractor to do only the required maintenance on systems, minimizing spare parts cost, system downtime and time spent on maintenance.

1.5.7. Interim Support Period

1.5.7.1. An Interim Support Period will be negotiated for a predetermined period (twelve (12) months preferred to coincide with the twelve – (12)-month Warranty Period) between RIM and the Preferred Bidder. This type of support is aimed at:

- a. Improving and ensuring the reliability of systems supplied by the Preferred Bidder.
- b. Refining the logistic support requirements and evaluating the initially delivered logistic support products.
- c. The development and transfer of additional technical and support knowledge, expertise and/or capability to RIM, if required.
- d. Preparation to ensure a smooth transition from Preferred Bidder/SIC to a contracted third party support entity, if required.

1.5.8. Computer Resources

1.5.8.1. The computer hardware and software products and their associated support elements applied as part of the Vessel System design, inclusive of the support system for the Vessel. Computer resources therefore also include:

- a. Software, firmware and associated supporting hardware, as embedded in the Vessel System design.
- b. Information systems and/or databases applied in the procurement, operation and support of the Vessel System and its integrated support system.

- c. An onboard admin system (Can be via Enterprise Resource Planning (ERP) / Product Lifecycle Management (PLM) / Fleet Management (FM) software loaded onto a laptop/personal computer).

2. System Description

2.1. User System

2.1.1. The RIMFP team will contribute to the establishment of a capable, enabled, User System by acquiring one (1) passenger ferry, together with its required ILS systems, and facilitate, in conjunction with the Preferred Bidder, the integration of the acquired ILS resources with the current RIM personnel, facilities, infrastructure, systems, tasks / abilities, etc. where applicable.

2.1.2. The acquired Vessel shall be progressively integrated into the RIM user organization, where required, prior to the delivery of the Vessel.

2.1.3. The enablement of the RIM user organization is a RIM responsibility, supported by the Preferred Bidder. The enablement will be funded by RIM, unless specific agreements are concluded between RIM and the Preferred Bidder to acquire new and/or modified existing infrastructure and/or resources.

2.2. Product System

2.2.1. As stated earlier, the requirement is for one (1) passenger ferry, which constitutes the Product System.

2.2.2. The Vessel shall be built in the Republic of South Africa (RSA), utilizing mature, proven equipment to high marine standards, unless otherwise specified. Local content of onboard systems and fittings, as specified in Annexure A10 "DTI Requirements", must be maximized and locally supported, without compromising quality, reliability, availability, maintainability and supportability

2.2.3. Where commonality and standardization between the various vessels in RIM's fleet can be obtained due consideration from the Preferred Bidder shall be given in the event that the Life Cycle Cost (LCC) of the system will be minimized.

2.2.4. The high-level breakdown / descriptions for the Vessel System are as follows:

- a. **F1:** Hull
- b. **F2:** Equipment
- c. **F3:** Accommodation
- d. **F4:** Navigation and Communication Equipment
- e. **F5:** Inventory
- f. **F6:** Air Conditioning, Heating and Ventilation
- g. **F7:** Control Consoles and Instruments
- h. **F8:** Electrical Installation
- i. **F9:** Machinery Installation
- j. **F10:** Auxillaries
- k. **F11:** Ship Piping System

2.3. ILS System

2.3.1. An ILS System consisting of various Logistic Support Elements (LSE) will be defined, developed and acquired for the Product System, and suitably integrated into the User System. The strategy and

related concepts to acquire the relevant support is reflected in Chapter 5 and Chapter 6 of this document.

3. Project Management

3.1. ILS Manager

3.1.1. The ILS Manager for the Product System shall initially be located at RIM, or its contracted ILS Manager at his/her business premises. The primary functions of the ILS Manager shall be to coordinate logistic support functions for the Product System. This shall be accomplished through participation in logistic planning meetings of the ILS Management Team (ILSMT), the preparation and continuous updating of Logistics Plans such as the ILSP and combined RIM ISP, and the day-to-day functioning as the logistic point for the Bid.

3.2. ILS Management Team

3.2.1. The ILSMT serves as a source of expertise to manage ILS throughout the Product System life cycle. The ILSMT will meet as frequently as the needs dictate. One of the ILSMTs primary functions is providing input to the ILSP and RIM ISP. The ILSMT and applicable support managers will review the ILSP and RIM ISP for accuracy and completeness.

3.3. Contractor Integrated Support Plan

3.3.1. All Potential Bidders shall submit, together with their Bid submissions, an Issue 1 Integrated Support Plan (ISP) addressing the ILS strategy, concepts, approaches, management and planning to be undertaken in response to the ILS concepts, strategies and requirements of this ILSP.

3.3.2. The Potential Bidder's ISP response to this ILSP shall describe how ILS for the Vessel will be designed, developed, executed, integrated, verified and accepted as far as reasonably possible. Execution, planning and integration of ILS activities shall be in-line with key milestones (to be determined during contract negotiations).

3.3.3. It is essential that the detail and extent of information provided in the ISP is as comprehensive, appropriate and commensurate with the context and complexity of the project and offered solution as possible.

3.3.4. The Preferred Bidder will be required to update their Issue 1 ISP to Issue 1 RIM ISP, which shall be a combined document inclusive of this ILSP (for approval), after contract negotiations, for review and approval by the ILSMT. The RIM ISP shall form the baseline for the acquisition of the Logistic Support System and shall be updated by the Preferred Bidder as and when required at key milestones and baselines.

4. Documents

4.1. Applicable Documents

4.1.1. Annexure B1 - Technical Specification

4.2. Reference Documents

4.2.1. Annexure A10 - DTI Requirements

4.2.2. Annexure B15 - Life Cycle Requirement Guideline

5. Logistic Support Elements

5.1. General

It is expected that all support that forms part of the Logistic Support Elements (LSE) listed below will be contracted by RIM from either the Preferred bidder, SIC recommended by the Preferred Bidder, or an external third party after completion of the one (1) year Interim Support Period. All Potential Bidders shall however include in their Bid submissions the cost associated with supporting all the requirements as listed within this section of the ILSP, in yearly increments, for a period of five (5) years, starting from the date of completion of the initial one (1) year mandatory Interim Support Period.

NOTE: The additional five (5) year Logistic Support and the associated Terms and Conditions, in-line with the ISP and ILSP, shall be a costed option and must therefore be costed separately. This cost must not be included as part of the final Bid price as part of the Bid submission.

5.2. Maintenance Planning

5.2.1. Concept

5.2.1.1. Maintenance shall initially be provided by the Preferred Bidder, or the Preferred Bidder's recommended SIC. The Preferred Bidder and/or SIC will be responsible to maintain the system during the integration period and for a minimum of one (1) year after delivery of the Vessel. Maintenance will involve both preventive and corrective maintenance and will include condition-based maintenance of the Ferry's prime equipment (i.e. main engines, diesel generators, hull structure, steering gear etc.).

5.2.1.2. After this one (1) year Interim Support Period, RIM plans to exercise one of the following three options:

- a. Continuing maintenance support via the Preferred Bidder.
- b. Continuing maintenance support via the SIC recommended by the Preferred Bidder.
- c. Contracting maintenance through another third party.
- d. Utilizing RIM assets.

5.2.1.3. Maintenance Planning shall be done in accordance with the operational/utilisation profile of the Ferry as describe in Table 1.

5.2.2. Element Detail Planning

5.2.2.1. Equipment Categories and Breakdown Structure

5.2.2.1.1. Equipment are categorised as per the high-level Work Breakdown Structure (WBS) specified in Chapter 2, Section 2.2.4, and is as used in Annexure B1 Technical Specification. Maintenance Planning shall be done in accordance with the WBS, and all technical data in support of maintenance shall be grouped accordingly.

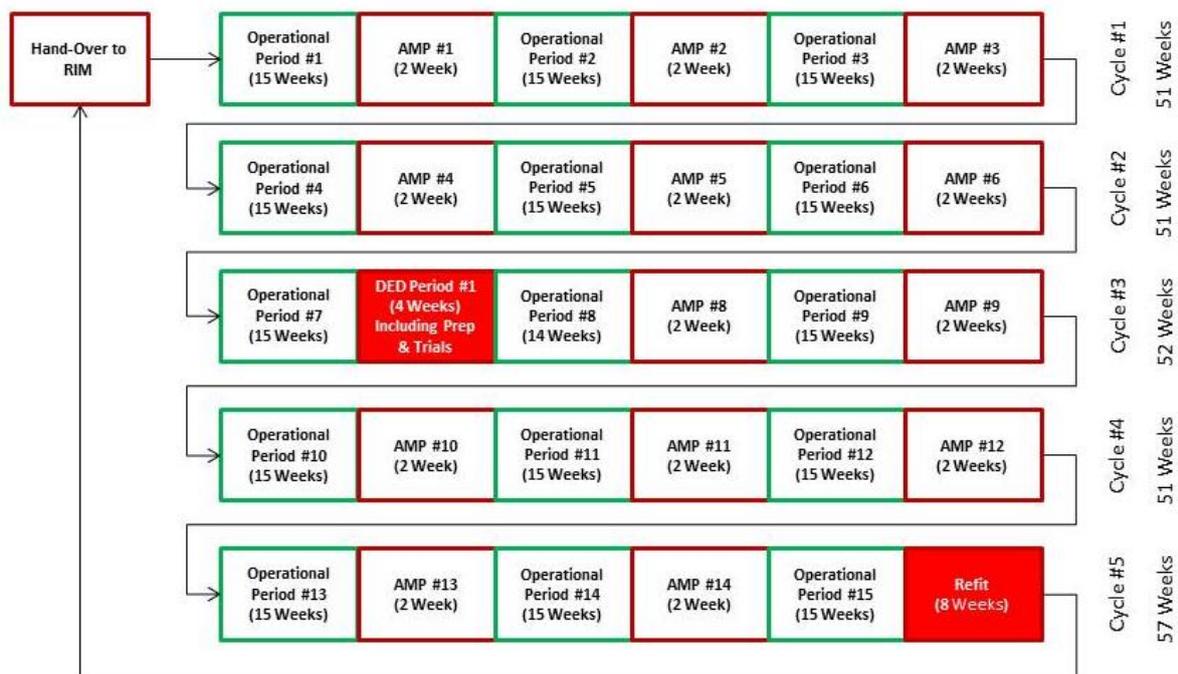
5.2.2.2. Maintenance and Operational Cycle

5.2.2.2.1. The envisaged Maintenance Periods and Operational Cycle for the Ferry is as indicated in Table 2 and Figure 3 below. Both the Maintenance Periods and Operational Cycle of the Vessel shall be confirmed in the combined Issue 1 RIM ISP, based on the Preferred Bidder's recommendations. The Preferred Bidder shall maximise efforts to ensure that no DED or Refit of the Ferry occurs during the peak operating period of October (the previous year) to March (the next year).

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Table 2: Maintenance and Operational Cycle

Period	Time and/or Duration
Operational Availability	300 Days / Year (Minimum 1760 Hrs / Year)
Round Trip Duration (Including Em/Disembark)	88 min
Round Trips per Day	4
Assisted Maintenance Period (AMP)	2 Weeks every 4 Months
Commissioning Cycle	2 years
Docking and Essential Defects	4 Weeks every 2 Years
Refit	8 Weeks every 5 Years



Yearly surveys to be scheduled/conducted during last AMP per cycle.

Figure 3: Combined Representation of Proposed Maintenance and Operational Cycle

5.2.2.3. Maintenance Levels and Lines

5.2.2.3.1. Maintenance Levels: Each maintenance task shall be classified according to the maintenance level applicable to that specific task. Maintenance levels into which maintenance tasks, as described in Chapter 5, Section 5.2.2.5., shall be grouped and classified against are as follows:

- a. Level 1. Servicing and day-to-day preparation. It may include such operations as functional testing, replenishment, servicing, minor modification, fault diagnosis and corrective maintenance by replacement, adjustment or minor repair.
- b. Level 2. Maintenance by replacement, adjustment or minor repair, including fault diagnosis and minor authorized modifications, within specified times using generally provisioned resources.
- c. Level 3. Maintenance in greater depth than Level 2. It may include such operations as repair, partial reconditioning and modification requiring special skills, special equipment, or a

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relatively infrequently used capability which is not economic to provide generally, but which is short of complete strip, reconditioning and re-assembly.

- d. Level 4. That maintenance which is full reconditioning, major conversions, or major repairs (Refits and Major Overhauls).

5.2.2.3.2. Maintenance Lines: Each maintenance task shall be classified in accordance to the location/organisation where such a task, or repair, will take place. The maintenance lines are defined as follows:

- a. Line 1. The maintenance organisation immediately responsible for both the preparation for operation and the initial diagnosis of defects of the Vessel, its systems and equipment. Line 1 will denote Ship's Crew (SC).
- b. Line 2. The recommended maintenance organisation of the Preferred Bidder (can be in-house), established to provide support for the Vessel, its systems and equipment, excluding the organisation within Line 1. Line 2 will denote the Preferred Bidder, the Preferred Bidder's recommended SIC, or a contracted third party after the Interim Support Period.
- c. Line 3. Original Equipment Manufacturers (OEM) as the maintenance organisation. Components removed by the Preferred Bidder, the Preferred Bidder recommended SIC, or a contracted third party, will be replaced with a spare and the defective component sent to the appropriate OEM vendor for repair, repair on site, or discarded, as appropriate. When a replacement component arrives from the OEM, the Preferred Bidder, the Preferred Bidder's recommended SIC, or a contracted third party will test the component on a test bed to ensure functionality, and ensure configuration management, prior to installation in the system.

5.2.2.4. Maintenance Cards

5.2.2.4.1. The Preferred Bidder shall provide electronic maintenance and servicing cards for inclusion in a maintenance management programme (Product Lifecycle Management Software / Enterprise Resource Planning Software), recommended by the Preferred Bidder for the Vessel. These maintenance cards shall be provided for all maintenance types, where applicable, specified in Section 5.2.2.5. below. The electronic maintenance cards shall be capable of being printed in hard copy format.

5.2.2.4.2. Refer to Section 5.6.2.4. for a further in-depth description of maintenance cards and their use.

5.2.2.5. Maintenance Types and Strategies

5.2.2.5.1. Preventative Maintenance Strategy

5.2.2.5.1.1. The Preferred Bidder shall propose a Preventative Maintenance Plan for the entire Product System. Preventative maintenance shall be performed as necessary, in accordance with hourly, daily, weekly, monthly and yearly maintenance task procedures. Maintenance cards, as specified in Chapter 5, Section 5.2.2.4. and 5.6.2.4, shall be provided by the Preferred Bidder for each maintenance task.

5.2.2.5.1.2. The preferred level of maintenance support, upon completion of the Preferred Bidder's initial one (1) year Interim Support Period, shall take into account the skill levels of RIM operating personnel in order to specify which preventative maintenance tasks associated to specified

maintenance lines will be able to be completed by RIM operating personnel without any external industry support.

5.2.2.5.2. Corrective Maintenance Strategy

5.2.2.5.2.1. Any expected corrective maintenance tasks shall follow the same concept as stated in Section 5.2.2.5.1 above.

5.2.2.5.2.2. Any further corrective maintenance procedures to be conducted in terms of fault identification and localisation, component removal/replacement, and system restart/sustainment, upon failure of primary or secondary systems, will be covered by means of an external maintenance contract after completion of the one (1) year Interim Support Period. This maintenance contract will follow the same concept as stated in Section 5.2.1.2.

5.2.2.5.3. Condition Based Maintenance (CBM) Strategy

5.2.2.5.3.1. The Preferred Bidder shall propose a CBM and Monitoring Strategy/Plan, for prime equipment, as a method to strive towards zero corrective maintenance events. This CBM and Monitoring Strategy/Plan shall form part of the Issue 1 RIM ISP upon acceptance and approval by RIM.

5.2.2.5.3.2. Prime equipment for the purposes of which CBM applies is as follows:

- a. Main Propulsion Engines
- b. Diesel Generators
- c. Reduction gearboxes
- d. Steering Gear
- e. Hull and Superstructure

5.2.2.6. Other

5.2.2.6.1. As stated earlier, the Preferred Bidder shall provide a detailed ISP prior to the delivery of the vessel, inclusive of the following information/data to assist in completing maintenance tasks effectively and on time:

- a. Maintenance Schedule and Plan
- b. Preferred Bidder generated and OEM Technical Manuals (Refer Chapter 5, Section 5.6.)
- c. Technical Drawings

5.3. Design Interface

5.3.1. Concept

5.3.1.1. The Off-the Shelf (OTS) design shall minimize life cycle support/management costs. Support resources shall maintain, or preferably, increase the system's overall reliability and maintainability by contributing to the achievement of the operational availability goals as depicted in Table 1 and Figure 1.

5.3.2. Element Detail Planning & Design Interface Objectives

5.3.2.1. Vessel System design and the selection of specific systems and equipment shall take into account the requirement to have reliable Vessel Systems, with redundancy as required for safety and operational critical functions, while meeting the requirements of the Classification Society.

5.3.2.2. The logistic support required for the Vessel during independent operations must be adequate for the ship's crew to effect restoration of all Line 1 / Level 1 failures, as applicable.

5.3.2.3. In order to improve availability and reduce LCC costs, the vessel shall be designed for high operational reliability.

5.3.2.4. The Vessel design shall be based on mature technologies and proven design solutions suitable for the intended use of the Vessel. It is important that selected mature technologies be suitably supported for the Life Cycle of the Vessel. Untried and developmental solutions will not be considered.

5.3.2.5. Low-end technology equipment and systems shall be selected to improve reliability, availability and maintainability (RAM), through inherent robustness and simplicity. RAM features shall be built-in to provide installation simplicity and ease of maintenance.

5.3.2.6. Maintenance and repair by replacement shall be designed into the Vessel, where applicable.

5.3.2.7. The Vessel's dry-docking requirements and ship-lift physical characteristics shall be taken into account for the repair and maintenance facilities available to RIM in the Table Bay Harbour and greater Cape Town area (e.g. block heights, space for shaft removal, capacities etc.).

5.3.2.8. The Vessel shall meet all the RAM requirements as stated in the specification in order to ensure that a vessel with a minimised LCC and maximised operational availability is obtained.

5.4. Supply Support

5.4.1. Concept

5.4.1.1. As with the Maintenance Planning concept described above, it is expected that all maintenance upward from Level 1 / Line 1, and its associated Supply Support, will be contracted for via the Preferred Bidder, or the Preferred Bidder's recommended SIC during the one (1) year Interim Support Period.

5.4.2. Element Detail Planning

5.4.2.1. The Preferred Bidder shall provide a Supply Support Plan (SSP), addressing and identifying both Interim Support Period and long-term spares provisioning, including any long lead-time spares. The requirement for spare equipment, assemblies and spare parts shall be established as early as possible via the SSP in order for these items to be purchased concurrently with the equipment to be installed on the Vessel. Special provision must be made for ensuring proper Supply Support channels, especially when purchasing from abroad, and more so when End User Certificates are required. Where possible, preference should be given to utilizing multiple channels or local alternatives for Supply Support.

5.4.2.2. Recommended spares, listed as part of the SSP, shall be stored on the premises of the Preferred Bidder or its recommended SIC as part of the initial one (1) year Interim Support Period. Management of Supply Support in accordance with the SSP may be handed over to a third party upon completion of the one (1) year Interim Support Period, as stated earlier.

5.4.2.3. The use of locally available spares with a wide marine user-base shall be maximised fully.

5.5. Packaging, Handling, Storage and Transportation

5.5.1. Concept

5.5.1.1. As part of the Vessel procurement, the Preferred Bidder and/or the Preferred Bidder's SIC is responsible for PHS&T during the Interim Support Period of one (1) year. RIM may, after the Interim Support Period, contract a third party to continue with the management of PHS&T.

5.5.2. Element Detail Planning

5.5.2.1. PHS&T shall be done in accordance with the Preferred Bidder's current commercial standards in use.

5.6. Technical Data and Information

5.6.1. Concept

5.6.1.1. The Preferred Bidder and/or the Preferred Bidder's recommended SIC will provide RIM with commercially available manuals and system documentation, augmented with the unique system level documentation associated with the Vessel. Any conflict regarding the issue of documentation that includes IP concerns for the Preferred Bidder must be resolved prior to handover of the Vessel to RIM, and prior to delivery of the ILS requirements as specified in Annexure B1 - Technical Specification.

5.6.2. Element Detail Planning

5.6.2.1. The Preferred Bidder and/or the Preferred Bidder's recommended SIC shall provide RIM with the as-built integration and organisational level documentation, data and drawings in accordance with the paragraphs below.

5.6.2.2. Data Requirements

5.6.2.2.1. The Configuration Management of the Vessel shall be in accordance with the Preferred Bidder's Configuration Management processes and documentation numbering standards.

5.6.2.2.2. The design and Configuration Management responsibility of all data deliverables of the Vessel is that of the Preferred Bidder/SIC, until the end of the Interim Support Period of one (1) year (Refer Chapter 7, Section 7.2. for further detailed information). Thereafter, RIM may contract out this service in accordance with Chapter 5, Section 5.2.1.2.

5.6.2.2.3. Technical data, Acceptance Test Procedures (ATP), manuals and documentation required to operate, maintain and support the Vessel throughout the Vessel Life Cycle, shall be supplied in accordance with commercial standards.

5.6.2.2.4. The use of OEM supplied manuals, to the approval of RIM, shall be maximised to reduce costs, while retaining operating and maintenance effectiveness.

5.6.2.2.5. In the event where new Technical Manuals must be developed, these will be based on industry related standards, and be supplied to RIM for approval prior to release.

5.6.2.2.6. Drawings, Technical Manuals, data and technical documentation shall be supplied in hard copy, as well as in editable software format. Exact formats, and the extent of IP restrictions, will be determined in consultation with the Preferred Bidder. The provision of an interactive documentation version of delivered hard copy Technical Manuals, which shall be compatible with PLM/ERP/FM software proposed by the Preferred Bidder, shall be considered. There is also a requirement for a detailed photographic record of all spares items and items of supply, which shall be integrated with the Illustrated Parts Catalogue (Catalogue to list Preferred Bidder's codification data for each item).

5.6.2.2.7. The following types of LSA / support analysis data is required, to define and specify support requirements for logistic deliverables to be developed and/or acquired:

- a. Structure of systems
- b. Maintenance management data
- c. Materials (for maintenance tasks and re-supply)
- d. Engineering support data (for change management processes)
- e. LCC data

5.6.2.2.8. All documentation, drawings, and instructions shall be provided in the English language.

5.6.2.2.9. The Preferred Bidder shall propose a list of required drawings and diagrams to be delivered prior to handover of the vessel to RIM, for RIM's approval.

5.6.2.3. Technical Manuals

5.6.2.3.1. It is proposed that the following documentation be supplied as part of the Vessel System:

- a. Vessel Information Manual: A vessel level Technical Manual, which integrates system level information, and refers to lower level system manuals for detailed information (Highest Level).
- b. System Manuals: A manual shall be supplied per major system and sub-system (Mid-Level)
- c. Equipment Manuals: Manuals related to specific equipment associated with a singular system and sub-system (Lowest Level).
- d. On-board Documentation (Operational):
 - i. General descriptions.
 - ii. On-board operators' manual listing all procedures and instructions, inclusive of the Preferred Bidders Standard Operating Procedures.
- e. On-board Documentation (Line 1 / Level 1 Maintenance and Repair):
 - i. Technical descriptions.
 - ii. Preventative maintenance schedules/plans and procedures in a maintenance card format.
 - iii. Diagnostic and repair procedures.
 - iv. An Illustrative Parts Catalogue indicative of all spares, supplier part numbers, and recommended suppliers.
- f. Ashore Documentation for Line 1+ / Level 1+ (To be kept under configuration by Preferred Bidder/SIC, duplicated at RIM)
 - i. Technical descriptions
 - ii. Preventative maintenance schedules/plans and procedures in a maintenance card format.
 - iii. Diagnostic, repair, and restoration procedures.
 - iv. An Illustrative Parts Catalogue indicative of all spares, supplier part numbers, recommended suppliers, and Preferred Bidder's codification data.
 - v. Main overhaul information and procedures.

5.6.2.4. Maintenance Cards

5.6.2.4.1. The Preferred Bidder shall provide electronic maintenance and servicing cards for inclusion in the Preferred Bidders proposed PLE/ERP/FM programme for support of the Vessel. The electronic maintenance cards shall be capable of being printed in hard copy format.

5.6.2.4.2. The maintenance cards shall be provided in the format as agreed to by the party contracted to manage the PLM/ERP/FM software, as well as in accordance with the supplier recommended software requirements.

5.6.2.4.3. All applicable maintenance scheduling data from the acquired maintenance cards shall be migrated to the PLM/ERP/FM software.

5.6.2.4.4. Acceptance, tests and trials requirements shall be linked as subordinate tasks, if required, to the maintenance cards.

5.6.2.5. Item Identification and Codification Data

5.6.2.5.1. All item identification via codification shall be done in accordance with the Preferred Bidder's current Codification Management System and/or in-house standards.

5.6.2.6. Technical Data

5.6.2.6.1. In addition to the technical data objectives addressed in the preceding paragraphs, the Preferred Bidder shall be required to supply the following applicable data, of which the format shall be negotiated during contract negotiations:

- a. As-built documentation, inclusive of structural details down to the level of detail composite compartment layouts and system flow sheets.
- b. Vessel build history.
- c. System design and operating philosophies.
- d. Vessel specific documentation i.e. stability books, mass books etc.
- e. Parts lists.
- f. Operating data, such as equipment running sheets and logbooks.
- g. Test and trials documents, providing the results for each segment of the Vessel, system and equipment.
- h. Product Breakdown Structure, to be approved by RIM.
- i. Ship Equipment List (i.e. list of equipment to be maintained, including relevant information such as location, quantity, supplier, etc.).
- j. Process/Material specifications.
- k. Safety Plan.

5.7. Support and Test Equipment

5.7.1. Concept

5.7.1.1. The Preferred Bidder and/or the Preferred Bidder's recommended SIC shall provide all Support and Test Equipment (S&TE) associated with the Vessel. It is envisaged that RIM will only require S&TE for Line 1 / Level 1 maintenance tasks, while the Preferred Bidder/SIC shall be responsible for all other related S&TE.

5.7.2. Element Detail Planning

5.7.2.1. To be determined during contract negotiations.

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5.8. Training and Training Support

5.8.1. Concept

5.8.1.1. Training shall be conducted in accordance with the Preferred Bidder's Training Support Plan (TSP), as determined by the Preferred Bidder's Training Needs Analysis.

5.8.2. Element Detail Planning

5.8.2.1. To be determined during contract negotiations.

5.9. Manpower and Personnel

5.9.1. Concept

5.9.1.1. It is envisaged that the manpower and personnel required to operate the Vessel after hand-over to RIM will be qualified in accordance to SAMSA regulations for the class of vessel.

5.9.2. Element Detail Planning

5.9.2.1. Manning/Crew

5.9.2.1.1 The Vessel will be manned by personnel/crew with appropriate levels of commercial marine experience and qualifications, as stipulated by SAMSA regulations and RIMs associated post profiles for ship's crew, prior to the commencement of any specific training courses. Total crew required on-board, as operators, will be determined by RIM in consultation with the Preferred Bidder and SAMSA.

5.9.2.2. Ashore Support Personnel

5.9.2.2.1. As stated earlier, it is expected that all maintenance and management of the Vessel will be contracted to the Preferred Bidder/SIC, or a third party, after the initial one (1) year Interim Support Period. A total amount of personnel, inclusive of their qualifications, required to suitably maintain and manage the Vessel during its Life Cycle, shall be supplied by the Preferred Bidder in the event that RIM intends to shift maintenance and associated management of the Vessel internally.

5.9.2.3. Delivery Crew

5.9.2.3.1. It is envisaged that RIM personnel will join the Vessel at the Preferred Bidder's shipyard, prior to delivery at the agreed upon delivery point, in order to familiarise themselves with the various Vessel Systems, as well as to participate in Harbour (HAT) and Sea Acceptance Trials (SAT).

5.9.2.4. Acceptance Team

5.9.2.4.1. RIM will establish an acceptance team to accept the Vessel, systems and equipment. This acceptance team will also take part, witness, and sign off on Factory Acceptance Trials (FAT), HATs and SATs

5.10. Computer Resources Support

5.10.1. Concept

5.10.1.1. The Preferred Bidder/SIC will provide all facilities, hardware, system software, software development (if required) and support tools, documentation and personnel to support the system, if and where applicable.

5.10.2. Element Detail Planning

5.10.2.1. Computer resources support for the Vessel shall be provided as part of the Interim Support Period.

5.10.2.2. Any additional computer resources, in terms of hardware and software, shall be motivated and negotiated with RIM prior to the delivery of the Vessel.

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5.10.2.3. Data collection and transfer systems shall be provided to facilitate appropriate levels of Vessel management, as well as satisfy the legal requirements of IMO and SOLAS.

5.10.2.4. Software: End User License Agreements shall be established for the transfer of system level software code to RIM, to enable software updates commensurate with future system changes for the Vessel. Upgradable chip (ROM) encoded software i.e. embedded software (typically found in PLC's) shall be included in the agreement. End User Licence Agreements, as applicable, shall be delivered, registered in the name of RIM.

5.10.2.5. The software warranty shall be maintained until the end of the Interim Support Period. Any updates shall be retrofitted to the vessel by completion of the Interim Support Period.

5.10.2.6. Software Source Codes: All software source code shall be maintained by the Preferred Bidder or designated contractor while the equipment is being contractually supported.

5.10.2.7. In the case of potential hardware crashes, installation disks shall be provided for the re-installation of software, as applicable. Disaster Recovery Plans shall be provided for major systems. Cards with firmware needing specific configurations shall be identified, and the configuration settings provided as part of Technical Manuals, where applicable.

5.10.2.8. Software configuration Product Breakdown Structure (PBS) numbering for software deliverables shall be included in the Master Record Index (MRI).

5.11. Facilities and Infrastructure

5.11.1. Concepts, strategies and detail planning shall be determined during contract negotiations.

6. LSE Element Reviews

6.1. Maintenance Planning

6.1.1. Maintenance Plans and Schedules shall be reviewed as part of ILS reviews. This review shall also confirm that maintenance lines and levels allocation are compatible with the capability of the RIM organisation and their associated facilities and/or the Preferred Bidder/recommended SIC's organisation and facilities, and/or that of a third party's.

6.1.2. The completeness and consistency of the maintenance and repair planning shall be verified as part of the logistic demonstrations, to confirm the supportability of the supplied vessel, before hand-over to the RIM.

6.2. Design Influence

6.2.1. ILS design influence in relationship with the other ILS elements, such as RAM engineering and LCC management, will be reviewed at ILS Reviews.

6.3. Supply Support

6.3.1. The requirements for, and acquisition and management of spares and repair parts, will be reviewed at ILS Reviews.

6.4. PHS&T

6.4.1. The requirements for, and implementation of PHS&T approaches, will be reviewed at ILS Reviews.

6.5. Technical Data and Information

6.5.1. The requirements for data and the development and delivery process will be reviewed during ILS Reviews.

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6.5.2. The completeness and acceptability of delivered technical documentation shall be verified as part of the logistic demonstrations, to confirm the supportability of the supplied vessel. This will typically be done during the Interim Support Period, to confirm the adequacy and effectiveness of the delivered documentation.

6.6. S&TE

6.6.1. The requirements for S&TE will be reviewed, in consideration of applicable Reliability, Maintainability and other matters, at ILS Reviews. During the Interim Support Period, the supportability of S&TE held both by industry and RIM will be assessed, to ensure that all logistic risks are identified and addressed, in respect of the S&TE and associated logistic support.

6.7. Training and Training Support

6.7.1. The requirements for, and the acquisition of, Training and Training Support will be reviewed in accordance with the approved TSP at ILS Reviews.

6.8. Manpower and Personnel

6.8.1 The requirements for Manpower and Personnel will be reviewed at ILS reviews.

6.9. Computer Resource Support

6.9.1. The requirements for, and implementation of, Computer Resources Support will be reviewed at ILS Reviews

6.9.2. Assessment of the implemented software support shall be conducted as part of the demonstrations, scheduled to demonstrate the supportability of the integrated system with the supplied logistic support, by the time of the hand-over of the vessel to RIM.

6.10. Facilities and Infrastructure

6.10.1. The requirements for, and the provision of, Facilities and Infrastructure shall be reviewed at ILS reviews

7. Other Support Elements

7.1. Human Resources Management

7.1.1. Human Resources (HR) planning and budgeting for the Bid shall be considered as part of the Life Cycle Cost estimate. There are no HR shortfalls identified at this time, but might change. The Preferred Bidder will be supplied with the current filled and vacant posts related to operating and maintaining the vessel, upon contract award, and shall be used to evaluate HR required by the new mode of operating posed by the Vessel, if applicable.

7.2. Configuration Management

7.2.1. The Preferred Bidder's Configuration Management system shall be structured around a Product Breakdown Structure (PBS). The PBS shall establish and provide an integrated configuration identification system to effectively manage all supplied design, maintenance, support and training data. During the build, delivery and through service life of the delivered Vessel, it shall be possible to record, track, audit and (where applicable) revise or upgrade the following:

- a. Equipment, through their serial numbers;
- b. Embedded software (typically found in PLC's);
- c. Levels of the delivered documentation, material and data.

7.2.2. During, and after the build and supply of the contracted work, all design and build documentation and/or other data considered relevant by RIM shall be placed under formal Configuration Control by the Preferred Bidder, and a MRI generated for RIMs information and records.

7.2.3. Configuration control of the Product System shall be under the direction of the Preferred Bidder. Design and Configuration Management of the Vessels rests with the Preferred Bidder/SIC until the end of the one (1) year Interim Support Period, and thereafter with the RIMs contracted service provider (i.e. Preferred Bidder, Recommended SIC, and Third Party). The contracted service provider will then become the custodian and controller of all data and shall be the Design Authority for the Vessel, in consultation with RIM.

7.3. Life Cycle Cost

7.3.1. The objective for the Bid is to acquire a Vessel that has a minimised LCC, and is simple to operate and maintain over the 30-year life cycle, including all associated logistic support resources and systems. Refer to Annexure B15 Life Cycle Requirement Guideline for further information and guidance.

7.4. Post Production Support

7.4.1. The Preferred Bidder/SIC shall support the Product System during the Interim Support Period, in accordance with the requirements as stated in this ILSP. The Interim Support Period will start at the delivery and handover of the Ferry, and end twelve (12) months / one (1) year after delivery and handover of the Ferry. This is to facilitate the effective transition of support from the Preferred Bidder/SIC to RIM support structures and organisations, or a third party contracted support services provider.

7.4.2. During the Interim Support Period, the Ferry will be operated and maintained as per the approved, current version, of the RIM ISP. This will include using the initial on-board and ashore spares that will be supplied with the Ferry, as approved by RIM, and agreed to by the Preferred Bidder.

7.4.3. The evaluation/qualification of the delivered logistic support system designed i.a.w the ILS requirements of this ILSP, including RAM, LCC, maintainability and supportability.

7.4.4. The Preferred Bidder will be responsible for the ILS management during the Interim Support Period, including the management and logistic data recording of all tasks being done.

7.4.5. The Preferred Bidder shall propose, and propose and employ a PLM/ERP/FM programme to manage support and maintenance transactions during the Interim Support Period, inclusive of all maintenance transactions prior to delivery.

7.4.6. Regular audits of all spares issued and remaining shall be conducted during the Interim Support Period for vetting by the RIM. Usage patterns shall also be established and management software updated accordingly.

7.5. Miscellaneous

7.5.1. Quality Assurance

7.5.1.1. The preferred bidder and/or the preferred bidders SIC will implement, manage and maintain a Quality Assurance (QA) programme that complies with ISO9000. It is encouraged that RIM participation into QA activities be included.

7.5.2. System Safety

7.5.2.1. The Preferred Bidder/SIC shall ensure that all safety and environmental health issues are identified within the various LSE outlined in Sections 5 and 7 of this ILSP, and that all applicable health

standards and guidelines are followed, as required. This effort includes hardware and software updates/issues, as well as identifying and monitoring critical software/hardware.

8. Enclosure A: Acronyms

AMP	-	Assisted Maintenance Period
CBM	-	Condition Based Monitoring
CT	-	Cape Town
DED	-	Docking and Essential Defects
DTI	-	The Department of Trade and Industry
EC	-	Engineering Change
ERP	-	Enterprise Resource Planning
ESWBS	-	Expanded Ship Work Breakdown Structure
FAT	-	Factory Acceptance Trial
HAT	-	Harbour Acceptance Trial
HR	-	Human Resources
ILS	-	Integrated Logistic Support
ILSP	-	Integrated Logistic Support Plan
IMO	-	International Maritime Organisation
ISP	-	Integrated Support Plan
KN	-	Knot/s
LCC	-	Life Cycle Cost
LSA	-	Logistics Support Analysis
LSE	-	Logistic Support Elements
MB	-	Murray's Bay
NM	-	Nautical Mile
OEM	-	Original Equipment Manufacturer
OTS	-	Off-the-Shelf
PHS&T	-	Packaging, Handling, Storage & Transportation
PLM	-	Product Lifecycle Management
QA	-	Quality Assurance
RAM	-	Reliability, Availability, Maintainability

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RI	-	Robben Island
RIM	-	Robben Island Museum
RIMFP	-	Robben Island Museum Ferry Project
RSA	-	The Republic of South Africa
S&TE	-	Support and Test Equipment
SAMSA	-	South African Maritime Safety Authority
SAT	-	Sea Acceptance Trial
SIC	-	System Integration Contractor
SOLAS	-	Safety of Life at Sea
SS	-	Ship's Staff
SSP	-	Supply Support Plan
TSP	-	Training Support Plan