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 ROBBEN ISLAND.

ANNEXURE B: TECHNICAL BID DOCUMENTS
Contents

2. Annexure B2: Bidder’s Design ................................................................................................................................. 74
3. Annexure B3: Plant and Materials .......................................................................................................................... 76
4. Annexure B4: Technical Data ..................................................................................................................................... 78
5. Annexure B5: Proposed Subcontractors/Consultants ............................................................................................... 80
6. Annexure B6: Management and CV’s of Key Persons ............................................................................................. 82
7. Annexure B7: Quality Control Plan .......................................................................................................................... 84
8. Annexure B8: Programme and Method Statement ................................................................................................ 86
9. Annexure B9: Technical Pre-Qualification ............................................................................................................. 88
10. Annexure B10: Technical Specification Evaluation Sheet ......................................................................................... 91
11. Annexure B11: Certificate of Acquaintance with Specifications ............................................................................. 98
12. Annexure B12: Manufacturers ............................................................................................................................... 100
13. Annexure B13: Warranty Requirements ................................................................................................................ 102
15. Annexure B15: Life Cycle Requirement Guideline ................................................................................................. 120
1. Annexure B1: Technical Specification
## Contents of Technical Specification

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>INTRODUCTION</td>
<td>10</td>
</tr>
<tr>
<td>B.</td>
<td>GENERAL</td>
<td>10</td>
</tr>
<tr>
<td>C.</td>
<td>DESIGN CRITERIA</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>C1. Design conditions:</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>C2. Main Particulars</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>C3. Speed</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>C4. Classification</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>C5. Certificates</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>C6. Drawings and Documentation</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>C7. Miscellaneous:</td>
<td>20</td>
</tr>
<tr>
<td>D.</td>
<td>TESTS AND TRIALS</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>D1. General</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>D2. Basin Trials</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>D3. Inclining Test</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>D4. Sea Trials</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>D5. Speed Trials</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>D6. Endurance Test</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>D7. Maneuvering and Steering Tests</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>D8. Black-out Tests</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>D9. Anchor Tests</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>D10. Evacuation Test</td>
<td>24</td>
</tr>
<tr>
<td>E.</td>
<td>STANDARDISATION</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>E1. Makes</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>E2. Spare Parts, Tools and Inventory</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>E3. Assembling, Welding, etc.</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>E4. Noise Reducing Measures</td>
<td>25</td>
</tr>
<tr>
<td>F.</td>
<td>TECHNICAL GUIDELINES</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>F1 Hull</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>F1.1. General Arrangement</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>F1.2. Hull Construction and Scantlings</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>F1.3. Hull General</td>
<td>28</td>
</tr>
</tbody>
</table>

[Signature]

Annexure B1
Page 4 of 124
F2.10. Fixed Fire Extinguishing System .................................................................................. 39
F2.11. Integrated Fire Detection, Alarm System and Smoke Detection System .................. 39
F2.12. Loose Fire Fighting Equipment .................................................................................. 40
F2.13. Life-Saving Appliances .............................................................................................. 40
F2.14. Repair Areas ............................................................................................................. 41
F2.15. Store Spaces ............................................................................................................. 41
F2.16. Protection Covers ...................................................................................................... 41
F3. Accommodation ............................................................................................................ 42
   F3.1. Passenger Arrangement ............................................................................................ 42
   F3.2. Wheelhouse Arrangement ........................................................................................ 42
   F3.3. Crew Mess ............................................................................................................... 43
   F3.4. Kiosk ........................................................................................................................ 44
   F3.5. Sanitary Equipment .................................................................................................. 44
   F3.6. Panelling, Partition Bulkheads and Ceilings ............................................................ 44
   F3.7. Doors in Accommodation ......................................................................................... 45
   F3.8. Windows ................................................................................................................... 45
   F3.9. Stairways .................................................................................................................. 46
   F3.10. Accommodation Insulation ...................................................................................... 46
   F3.11. Floor Coverings ....................................................................................................... 46
   F3.12. Furniture ................................................................................................................ 46
   F3.13. Domestic Refrigerators and Freezers ...................................................................... 47
F4. Navigation and Communication Equipment ................................................................... 47
   F4.1. Magnetic Compass .................................................................................................... 47
   F4.2. Gyro Compass .......................................................................................................... 47
   F4.3. Electric Steering System ......................................................................................... 47
   F4.4. Electric Rudder Position Indicating System .............................................................. 47
   F4.5. Autopilot .................................................................................................................... 48
   F4.7. Automatic Identification System ............................................................................. 48
   F4.8. Water Track Speed Log ............................................................................................. 49
   F4.9. Radar Installations .................................................................................................... 49
   F4.10. Global Positioning System (GPS) for Navigation Purposes .................................... 49
   F4.11. Wind Measuring System .......................................................................................... 49
   F4.12. Radio Communication and Safety Equipment .......................................................... 50
F4.13. Electronic Chart Display and Information System (ECDIS) ........................................... 50
F4.15. Navigation Lights ............................................................................................................ 52
F4.16. Day Signals ...................................................................................................................... 52
F4.17. Daylight Signalling Lamp ............................................................................................... 52
F4.18. Horn ............................................................................................................................... 53
F4.19. Searchlight ..................................................................................................................... 53
F4.20. Window Wipers ............................................................................................................. 53
F4.21. Clocks ............................................................................................................................ 53
F5 Inventory ............................................................................................................................... 53
F5.1. Deck Inventory ................................................................................................................ 53
F5.2. Nautical Inventory ........................................................................................................... 54
F5.3. General Outfit ................................................................................................................. 54
F6. Air Conditioning, Heating and Ventilation .......................................................................... 54
F6.1. General Design Conditions ............................................................................................ 54
F6.2. Air Conditioning .............................................................................................................. 55
F6.3. Heating ............................................................................................................................ 55
F6.4. Mechanical Ventilation .................................................................................................. 55
F6.5. Natural Ventilation .......................................................................................................... 56
F6.6. Air Inlet Mist Eliminators .............................................................................................. 56
F7. Control Consoles and Instruments ...................................................................................... 56
F7.1. General ............................................................................................................................ 56
F7.2. Main Control Console ..................................................................................................... 57
F7.3. Control Panels Engine Room .......................................................................................... 57
F7.4. Tank Sounding Installation ............................................................................................. 57
F8. Electrical Installation ........................................................................................................... 58
F8.1. General ............................................................................................................................ 58
F8.2. AC Generators ................................................................................................................ 58
F8.3. Main Switchboard ........................................................................................................... 58
F8.4. Anti-Condensation Heating ............................................................................................. 59
F8.5. Emergency Switchboard - 380 V .................................................................................... 59
F8.6. Shore Supply 380 V ......................................................................................................... 59
F8.7. Accumulators .................................................................................................................. 60
F8.8. Transformers 380 V / 220 V ........................................................................................... 60
F8.9. Power Distribution Boxes.................................................................60
F8.10. Cables and Cable Trays........................................................................61
F8.11. Main Lighting..........................................................................................61
F8.12. Socket outlets for general use in covered spaces..................................61
F8.13. Emergency Lighting................................................................................62
F8.15. Engine Room Alarm and Monitoring System........................................62
F9. Machinery Installation ..............................................................................64
  F9.1. General..................................................................................................64
  F9.2. Control Systems Machinery Installations..............................................65
  F9.3. Main Diesel Engines............................................................................65
  F9.4. AC Generator Diesel Engines...............................................................65
  F9.5. Couplings for Propeller Drive...............................................................65
  F9.6. Gearboxes for Propeller Drive...............................................................65
  F9.7. Propeller Shaft Earthing.......................................................................66
  F9.8. Propeller Shaft Locking Device............................................................66
  F9.9. Stern Tube and Seals............................................................................66
F10. Auxiliaries .................................................................................................66
  F10.1. Bilge/Fire/General Service Pumps......................................................66
  F10.2. Emergency Fire Pump.........................................................................67
  F10.3. Sewage Treatment Unit.......................................................................67
  F10.4. Water Pressure Sets...........................................................................67
  F10.5. Fresh Water Disinfection Installation..................................................67
  F10.6. Domestic Hot Drinking Water Circulating Pump................................68
  F10.7. Calorifiers............................................................................................68
  F10.8. Fuel Oil Transfer pump.......................................................................68
  F10.9. Lubricating Oil Pumps.........................................................................68
  F10.10. Sludge/Dirty Oil Pump.....................................................................68
  F10.11. Cooling Water Systems.....................................................................69
  F10.12. Sea Chests.........................................................................................69
  F10.13. Pre-Heating for Diesel Engines..........................................................69
  F10.14. Exhaust Silencers..............................................................................70
  F10.15. Hydraulic Installations......................................................................70
F11. Ship Piping Systems..................................................................................70
F11.1. General ........................................................................................................................................ 70
F11.2. Materials .................................................................................................................................... 71
F11.3 Bilge Piping .................................................................................................................................. 71
F11.4. Air Pipes ....................................................................................................................................... 71
F11.5. Filling Pipes ................................................................................................................................. 71
F11.6. Sounding Pipes ............................................................................................................................ 71
F11.7. Scuppers ........................................................................................................................................ 71
F11.8. Fire Fighting and Deck Wash System ......................................................................................... 72
F11.9. Domestic Pipelines ...................................................................................................................... 72
F11.10. Exhaust Gas Systems .................................................................................................................. 72
F11.11. Insulation ..................................................................................................................................... 73
G. DISCLAIMERS ...................................................................................................................................... 73
A. INTRODUCTION

This document serves as the Request for Proposal made available by Robben Island Museum.

B. GENERAL

The Scope of Works is for the manufacture, delivery and commissioning of 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 Robben Island.

This specification aims to set out the technical data and extent of supply as applicable to a classification approved passenger Ferry registered in the Republic of South Africa.

B1.1. All dimensions, calculations, formulae, power outputs, weights etc. mentioned in this specification are based on the International System of Units (SI Units).

B1.2. Should any inconsistency exist in the Specification, the Bidder is required to bring this to the attention of the Project Manager/RIM, before or during the Compulsory Bid Briefing by means of the RFP Clarification Request Form, and may offer the best practice solution to the problem.

B1.3. Equipment capacities, powers, flows, pressures and/or head figures as stated in the Specification shall be considered as being a guideline required for the vessel.

B1.4. The Bidder may offer an alternative to the mechanical concept (relating to power supply, transmission and layout of engine room), complying with the specification generally, but shall meet the performance requirements.

B1.5. The Ferry shall be built under survey and to the requirements of a recognized Classification Society with a proven track record with SAMSA and new builds in the Republic of South Africa.

B1.6. When considering hull scantlings, the thickness of plating, stringers, floors, keelson, etc., is to be as per the Classification Society’s requirements (Refer to paragraph F1 for shell plating). The strength of propeller shafts, intermediate shafts, coupling bolts and rudder stocks must be in accordance with the Classification Society’s requirements.

B1.7. The Ferry and its equipment are to meet all South African Maritime Safety Authority (SAMSA) requirements for a vessel of its class.

B1.8. It will be the responsibility of the successful Bidder to advise SAMSA of the intention to build the Ferry. All Bidders shall ensure that the Department’s requirements are met when bidding.

B1.9. Bidders must submit full details and outline drawings of their proposals when bidding. The outline drawings are to include a general arrangement profile, as well as a midship section and plan. Frame spacing and all scantlings are to be clearly indicated. Bidders are also to include high definition photos (in digital format) of previous builds to the same design. See C6.1. In addition, a 3D CAD Model of the bidder’s proposed Ferry design shall be provided during contract negotiations.
B1.10. Full particulars of all machinery and equipment shall be submitted with the Bid.

B1.11. The successful Bidder shall arrange to submit one print of working drawings, duly approved by the Classification Society where necessary, within a period of 2 months from the date of acceptance of award, to RIM’s representative. The prints are to be filed in black files, labeled and numbered with cover letter and transmittal slip.

B1.12. A project plan detailed to at least 3 levels shall be submitted with a Bidder’s response to this RFP. Additionally, a detailed project plan (“Gantt Chart”) of the entire construction in excess of 3 levels, inclusive of commissioning, handover and delivery, shall be provided highlighting relevant milestones. This shall be provided no later than one (1) month from the date of award, with the delivery date being determined and fixed during contract negotiation phase.

B1.13. In addition to the drawings mentioned in B1.11, the Yard shall supply one electronic set/copy (preferably in .dwg and PDF format) of fully dimensioned drawings covering all general arrangement and working drawings depicting the full details of the Ferry and on-board machinery, as actually constructed on the day of delivery. See C6.4.

B1.14. The completed and successfully commissioned Ferry shall be delivered to the Robben Island Museum Facilities in Cape Town, South Africa, at the contractor’s own risk and cost. The Ferry shall be thoroughly cleaned upon completion of the trials, the fuel tanks at 25% capacity, and all compartments brought to a high standard of finish. The main Bidder shall also provide a scale model of the Vessel for display purposes at the Nelson Mandela Gateway (at Bidder’s cost). All other related costs shall be for the contractors account. RIM is the final authority for acceptance on behalf of the Robben Island Museum.

**IMPORTANT NOTE**

B1.15. Notwithstanding any errors, omissions or inconsistencies in the specification or drawings, it will be the Bidder’s responsibility to deliver the Ferry complete in every respect, to Robben Island Museum’s satisfaction, meeting all requirements of SAMSA, the Classification Society and the latest HSC Code. Special consideration should be taken in terms of SAMSA’s requirements, unless a mutual agreement regarding said requirements is reached between the Bidder and SAMSA. This shall be the responsibility of the Bidder.

B1.16. The cost of any work, material or equipment not covered by the specification or drawings, but considered necessary by the Classification Society and/or SAMSA, for the satisfactory completion of the Ferry shall be borne by the Bidder and included in their Bid prices.

B1.17. After completion of the Ferry by the builders and prior to commencement of the delivery voyage, complete Builder’s trials are to be carried out. All costs incurred are to be borne by the Bidder.

B1.18. All costs in connection with certificates, surveys by SAMSA and the Classification Society, are to be borne by the Builder. Registration of the Ferry shall be the responsibility of RIM, but with due support by the successful Bidder in ensuring that all documentation needed is supplied timeously and correct. Three hard copies and two digital copies of test certificates for machinery, anchors, cables, deck machinery, etc., are to be supplied by the successful Bidder on delivery as part of the Technical Data requirements.
B1.19. Handover will include sufficient training to RIM crew and shall be outlined in the Bidder’s draft training plan (incl. skippers and engineers).

B1.20. A Builder’s Service Engineer shall attend for a period of **14 days** after the delivery of the Vessel with the objective to assist in the daily operation and maintenance of the Vessel. During this period, start-up, operation and maintenance procedures shall be worked through with the crew. All costs incurred are to be borne by the Builder.

**IMPORTANT NOTE**

B1.21. The Bidder must indicate, paragraph by paragraph, either that his tender complies in every respect with this Specification or, if not, precisely how it differs from this Specification. If a paragraph by paragraph comparison is not possible the Bidder’s vessel technical specification should be easily traceable to the requirements listed in the RIM vessel technical specification. By complying to this requirement, the technical/functional adjudication committee’s task of assigning scores based on a Bidder’s response is significantly improved.

B1.22. Alternative proposals may be submitted as a separate document within the Bidder’s submission, but all divergences from this Specification must be clearly stated and the reasoning behind the change/alternative chosen stated.

C. DESIGN CRITERIA

C1. Design conditions:

The vessel, a passenger Ferry, shall be constructed, launched, equipped and delivered to be able to carry out the following duties:

C1.1. The Ferry shall be able to deliver 180 to 200 seated passengers comfortably and safely from the Nelson Mandela Gateway at the Victoria and Alfred Waterfront in Cape Town, to Murray’s Bay Harbour at Robben Island and return.

C1.2. The Ferry shall be able to operate fully loaded at the required service speed of 22 knots outside the harbour in up to wind (South Easterly) Beaufort 4, swell 3.5m, and shall be capable of operating in wind Beaufort 8, swell 5m at a suitable speed required to return to Nelson Mandela Gateway safely. The Ferry design must take into account the minimization of slamming and broaching.

C1.3. The Ferry shall have a high degree of safety, ship handling ability and maneuverability at all times.

C1.4. The Ferry and its equipment shall be designed for full operation under the following conditions:

- Maximum outside temperature 45°C
- Minimum outside temperature 5°C
- Maximum Engine Room temperature 55°C
- Maximum Sea Water temperature 25°C
- Minimum Sea Water temperature 8°C
- Relative Humidity 80% at 30°C

C1.5. Anchoring equipment shall be designed according to the calculated Equipment Number for this type of vessel. It shall be of a High Holding Power and shall be able to effectively anchor the Ferry in a sandy sea bed.

C1.6. Fuel Oil requirements (unless specified otherwise)

- Main Diesel Engines Marine Diesel (1)
- Auxiliary Generator/s Marine Diesel (1)

C1.7. The Ferry must be designed, and shall be constructed to, the most up-to-date and highest marine standards throughout and shall remain consistent with the terms of this Specification. These terms refer to those soundly conceived and engineered details, plans, and practices which will meet the details and performance requirements of the Bid, and which have proven to be successful in the long-term service of similar vessels engaged in a comparable service. Care must be taken to ensure fair lines, smooth surfaces and neat welding throughout. Welding shall be carried out in accordance with the Builder’s “Quality Standard for Welding” which shall meet or exceed the rules of the Classification Society. Dissimilar metals must be suitably insulated from each other throughout the Ferry to prevent galvanic corrosion. The finish and appearance of paintwork, paneling, deck covering, seating etc., and all other items visible to passengers or with which they may be in contact is of primary importance. The Builder shall be capable of constructing and painting the hull whilst under cover. The Builder shall make use of fully qualified and competent tradesmen and supervision, and shall ensure a uniform, high level of workmanship.

C1.8. All materials required for the construction of this Ferry, and all equipment to be installed, shall be new, of a reputable make and of sound marine quality.

C1.9. The Bidder shall ensure that the Original Equipment Manufacturer (OEM) of the equipment supplied and installed on-board the Ferry has an adequate support structure in the Republic of South Africa, and is able to successfully troubleshoot and maintain the chosen equipment nationally.

C1.10. Any extrusions used in the manufacturing of the Ferry must be locally available and in accordance with the Classification Society’s requirements.

C1.11. All Equipment and Materials must be Asbestos free with the relevant Asbestos Free certificates.

Additional Requirements

C1.12. The Ferry shall be able to operate un-replenished (i.e. without refueling, taking on Fresh Water, discharging holding tanks etc.) for 3 days, conducting 4 return trips per day. The vessel must be capable of dry docking with full tanks. The position of tanks should be carefully considered to avoid pollution in the event of the vessel grounding.
C1.13. Each propeller shall be driven by a non-reversible diesel engine.

C1.14. The fuel and fresh water tanks shall be situated to create as stable a vessel as possible, and to have the least amount of negative effect due to trim between departure and arrival conditions.

C1.15. The Ferry must have an unmanned/automated engine room, suitable for unattended operation, according to the rules of the Classification Society and SAMSA. Engine room Monitoring of temperatures, pressures and levels must be available from the wheelhouse.

C1.16. All standard operating software required to efficiently run all equipment will be considered as standard delivery items.

C1.17. When sailing at "International Freeboard Draught", the longitudinal strength of the Ferry should allow for operation in areas as intended by the hull class notation.

C1.18. The Ferry shall have good energy efficiency and a low environmental footprint. The Ferry design shall minimize fuel oil consumption as far as reasonably possible.

C1.19. The Builder shall dispose of any pollutants or toxic materials safely and in accordance with all current regulations for such materials. The Builder shall also dispose of any scrap produced during the build, as well as paint cans and other associated materials.

C1.20. The Builder shall take all necessary precautions to ensure no pollutants enter the water during the build, and up to the point of delivery of the Ferry to RIM. The Bidder shall be responsible for the safety of the environment, including but not limited to marine life, water, etc.

C1.21. The Builder shall deliver docking cradles with the Ferry upon handover.

C2. Main Particulars

IMPORTANT NOTE

The Ferry shall be of a proven catamaran design with two symmetrical hulls. A proven design means that the design information is available to the Bidder as a class approved package, the Ferry has been built in the last 10 years, and has a proven operational track record of at least one [1] year in its capacity as a high-speed passenger ferry in any national or international location.

C2.1. The wheelhouse shall be designed ergonomically and arranged to give maximum visibility. Main and side vessel conning positions shall be well positioned to allow for the best possible visibility and ergonomical suitability to the navigator, with all required controls close to hand.

C2.2. The Ferry must be able to carry between 180 and 200 passengers seated in an enclosed space. An outside space for 30 persons, seated either on the aft main deck or on an upper deck, shall also be provided and is considered mandatory. It must be noted that the outside seating shall not be considered as additional seating to make up the requirement of seating 180 – 200 passengers in total.

C2.3. The Ferry wheelhouse must have a coffee/kettle station and a bar fridge.
C2.4. The Ferry mast must be able to carry all the necessary navigation equipment and radio antennas, safe from electromagnetic interference (EMI) from each other, and within a safe distance of both passengers and crew.

C2.5. Passengers shall have access to three ablution facilities, Wi-Fi internet, and a kiosk on-board the Ferry. The kiosk shall be suitable for one crew member to operate, and shall accommodate at least 3 passengers side by side whilst being served by the crew member.

C2.6. One of the three on-board ablution facilities shall be easily accessible to wheelchair bound passengers, and shall additionally serve as a baby change area.

C2.7. Foldaway seating must be provided to create space for at least 4 to 8 wheelchair-bound passengers, which shall remain seated in their wheelchairs and securely fastened in their positions, preferably facing each other fore and aft. When there are no wheelchair-bound passengers aboard, the seating must fold back down to accommodate able bodied passengers.

C2.8. Potable water shall be available by means of the fresh water supply.

C2.9. The Ferry crew must be provided with a separate mess room to accommodate up to 4 people. The mess room shall preferably be on or above the main deck.

C2.10. An integrated ramp must allow wheelchair-bound passengers to board and disembark the Ferry without any additional assistance from the Ferry crew.

C2.11. A small area for the stowage of passenger luggage is preferred. The location of the stowage area shall be such that no delays will occur whilst passengers retrieving their luggage are disembarking.

C2.12. The Ferry must be branded as per RIM Marketing guidelines. Branding is to be determined once a successful Bidder has been appointed.

C2.13. The Ferry shall be designed having two totally separated and independent systems for propulsion, steering, firefighting, electrical power generation and distribution as per Classification Society, IMO and SAMSA rules and regulations.

C2.14. The Ferry shall be built in accordance with good shipyard practices and be in compliance with the Builder’s ISO 9001 Quality Assurance (QA) standards. The Ferry shall comply with the rules of the Classification Society, HSC 2000 Code and that of SAMSA.

C2.15. The Bid shall be inclusive of all outfitting.

C2.16. **Principal Dimensions**

- Maximum Length Overall 36.00m
- Maximum Beam Overall 10.00m
- Maximum Draft at Fully Loaded Condition 1.80m

[Signature]
The maximum dimensions stated above shall not be exceeded and should allow for a reasonable selection of proven vessels to meet the general requirements stated herein.

**C3. Speed**

It is a critical requirement that the Ferry can achieve its operational mandate of delivering a full complement of passengers from the Nelson Mandela Gateway at the Victoria and Alfred Waterfront in Cape Town, to Murray’s Bay Harbour at Robben Island, in up to wind Beaufort 4 and 3.5 m swell in 30 minutes from ropes off to first line.

**C3.1. Propulsion and Speed**

The Ferry shall be propelled by two marine diesel engines, each driving a propeller. The propulsion engines are to be freshwater cooled and electrically started. The Ferry shall operate at a speed of not less than 22 knots at 85% Maximum Continuous Rating (MCR) in the conditions as described in clause C1.2 of this document. Full details of the propulsion units being offered are to be submitted with the Bid submission, with an emphasis on fuel efficiency in the range of 75% to 90% MCR, reliability, maintainability and the local availability of spares.

**C3.2. Payload Capacities**

- Total complement of Passengers pax 180-200
- Total complement of Crew As per SAMSA requirements

**C4. Classification**

**C4.1. Classification Society**

The Ferry shall be classed by one of the Classification Societies as recognized by SAMSA in Marine Notice No. 14 of 2016 “List of Recognized Organizations”. All costs associated with Classification of the vessel are to be borne by the Bidder.

**C4.2. Flag Administration**

The Ferry design shall be approved and built to comply with the regulations and legislations of the flag state, South Africa. The governing authority is SAMSA.

**C4.3. Where applicable, the Ferry and her equipment shall also meet the Rules and Regulations - including Amendments at the date of contract of:**

- International Convention on Load Lines, 1966
- International Convention on Tonnage Measurement of Ships, 1969
- International Convention for the Prevention of Pollution from Ships (MARPOL)
- Convention on the International Regulations for Preventing Collisions at Sea (COLREG), 1972
- Independent Communications Authority of South Africa (ICASA)
- South African Maritime Safety Authority (SAMSA) for a Class II or Class VI vessel (whichever is applicable), as far as applicable and or practicable for this type of vessel. In case of a discrepancy with the latest issue of the concerning International Rules and Regulations, the latter will prevail.

C4.4. The Ferry shall comply with the latest HSC Code.

C5. Certificates

C 5.1. The following Certificates shall be delivered with the Ferry:

- Where applicable: All necessary certificates relating to safety equipment
- Registry and Tonnage documentation
- Class Certificates
- Type Approval Certificates
- Load Line Certificate
- International Oil Pollution Prevention Certificate (MARPOL)
- Builder’s Certificate
- Safe Manning Certificate
- SAMSA Safety Equipment Certificate (LGSC)
- Carving and Marking note
- Radio License
- Lifesaving Equipment Certificate
- Compass Adjustment Certificate
- Electrical compliance Certificate

Any other certificates, as required by the Classification Society or SAMSA, not mentioned herein shall also be included upon the date of delivery of the Ferry. All costs incurred to obtain certification/licensing shall be borne by the Builder, with the exception of vessel registration with SAMSA.

C6. Drawings and Documentation

C6.1. The Bidder shall submit a list of all working or detail drawings to be prepared for the construction of the Ferry with the Bid. The detailed engineering design, systems engineering requirements and all working and/or detail drawings will be the responsibility of the Bidder. Drawings must be available immediately upon request from RIM. Frame spacing and all scantlings are to be clearly indicated. Drawings requested by Class and SAMSA are required to be submitted by the Bidder for approval.
C6.2. The following detail drawings and documents shall be submitted in high definition electronic format (not scanned copies) with the Bid:

- General Arrangement
- Deck Arrangements
- Anchor Arrangement
- Tank Capacity Plan
- Steering Arrangement
- Propulsion Arrangement
- Integrated Ramp Details
- Preliminary Safety Plan
- Preliminary Evacuation Plan
- Preliminary Fire Control Plan
- Preliminary Weight Estimate
- Preliminary Resistance and Powering calculations
- Main Engine Performance Data

C6.3. Documentation to be delivered with the vessel.

- Ownership transfer documentation.
- An equipment list, showing manufacturer, model number, and nearest agent to RIM’s place of business, on all machinery and equipment.
- Maintenance and operational manuals for all equipment in duplicate.
- Manufacturer’s data/record book.
- Three copies of test certificates for machinery and equipment are to be supplied, one original and two copies.
- All test/trial reports
- Inventory List
- Final Stability Book
- Ship’s Handbook (Training manual on equipment)
- Detail drawings of Docking Cradles for the Ferry.
- Maneuvering diagram
- Shaft Alignment measurement data

Lists of:

- Auxiliaries in Engine Room Fittings/name plates
- Pipe Colour Coding List
- Lube Oil list
- Coolant list

C6.4. At delivery of the Ferry, “AS BUILT” drawings shall be delivered in CAD and PDF format, in duplicate on paper print and folded to A4 size, and be filed and numbered accordingly. The following “AS BUILT” drawings shall be delivered:

- General Arrangement
- Docking Plan (clearly showing positions and number of blocks/cradles)
- Deck Arrangements
- Mess Room Arrangement
- Engine Room Arrangement
- Propulsion Arrangement
- Steering Arrangement
- Shafting Arrangement
- Anchor Arrangement
- Wheelhouse Arrangement
- Arrangement Doors and Windows
- Arrangement Watertight Doors and Hatches
- Position Loadline and Draft marks (as applicable)
- Safety Plan
- Fire Control Plan
- Evacuation Plan
- Navigation Lights Arrangement
- Mast Arrangement
- Wheelhouse Console Layout
- Tank Capacity Plan
- Construction Sections (Frames, Decks, Longitudinals)
- Lines plan
- Integrated Ramp Arrangement & Details
- Systems Diagrams, Piping and Instrumentation Diagrams (P&ID Systems Diagrams)
- Electrical Installation Diagrams
- Air Conditioning system, mechanical ventilation system and natural ventilation system
- Hull Thickness Plan indicating measured hull thicknesses at prescribed points.

C6.5. All electronic media files shall be delivered on DVD-ROM, CD-ROM.

C6.6. All costs in connection with certificates, surveys by SAMSA and the Classification Society, are to be borne by theBidder and will be deemed included in the tendered rates. Cost for the registration of the vessel shall be borne by RIM. All accompanying documents shall be written in English.

C7. Miscellaneous:

C7.1. All documents as prescribed by Class and SAMSA shall be displayed in suitable locations inside the Ferry.

C7.2. The following shall be fitted in Aluminium frames and displayed at suitable locations inside the Ferry:

- Evacuation Plan with Muster List
- Safety Plan / Life Saving Appliances
- Fire Control Plan

One Additional Fire Control Plan shall be placed outside a main entrance in a watertight container.
C7.3. A permanently displayed poster in the Ferry wheelhouse showing maneuvering information shall be supplied by the Builder/Bidder.

C7.4. A Ferry speed/wave diagram shall be supplied and permanently displayed in the wheelhouse.

C7.5. The Preliminary Stability Booklet shall be provided two (2) months before the launch of the Ferry.

C7.6. Torsional vibration calculations must be made for the propulsion and generator-drive, and shall be submitted to RIM no later than two (2) months after Bid award.

D. TESTS AND TRIALS

D1. General

D1.1. Tests and Trials will be carried out according to a program drawn-up and supplied by the Builder, based on this specification, and in accordance with the requirements of the required Authorities. An additional Acceptance and Handover Framework document is supplied with the bid document as a guideline for conducting trials related to deficiencies specified in the BIMCO New Build Contract. The Tests and Trials will be affected in the presence of RIM and shall be at the expense and risk of the Bidder. The Bidder shall give RIM sufficient notice of the date of the Tests and Trials to enable RIM’s representative to attend.

D1.2. Test and Trial protocols must be supplied containing readings of temperatures, currents, voltages, pressures etc. necessary to show the good working and adjusting of the Ferry. A detailed report of all Tests and Trials must be delivered with the Ferry. All systems must be flushed before trials begin.

D1.3. The below mentioned Tests and Trials are indicative only and may change based upon final requirements of the Classification Society and SAMSA, and in agreement with RIM.

D2. Basin Trials

D2.1. As soon as the Ferry has been sufficiently completed, the Ferry shall undergo Basin Trials during which the main and auxiliary engines, electric and hydraulic systems, special installations and instruments are tested separately in accordance with the requirements of the Authorities and the Builder’s best practice.

D2.2. All Tests and Trials required by SAMSA, the Classification Society and Robben Island Museum shall be carried out. Instruments and controls shall be tested and calibrated as far as possible. Additional Tests and Trials shall also include:

- Anchor Equipment
- Hose Test of Windows, Weathertight Doors, Windows and Hatches
- Navigation Equipment
- Primary Ship Systems (Bilge, Fuel, Fresh Water, Waste Water, Ship’s Fire Fighting System)
- Air Conditioning and Ventilation
- Lighting Systems
- Electrical Systems Including Wiring Megger Test
- Machinery and Alarm Monitoring System

D3. Inclining Test

D3.1. An Inclining Test shall be carried out with the Ferry in a state as complete as practicable in order to determine the Ferry’s light weight and Center of Gravity in vertical, longitudinal and athwart ships position.

D3.2. The results of the Inclining Test, together with calculations of stability for the ship in different loading conditions, shall be handed over in an Intact Stability Booklet, which shall be authenticated by the Classification Society and additionally approved by SAMSA.

D4. Sea Trials

D4.1. Before commencement of the Sea Trials the following shall be carried out:

- Adjustment of Compasses
- Checking of Echo Sounder, Radar, VHF, Radio Equipment and Further Nautical Instruments
- Testing of Hydraulic Systems
- Checking of Communication Between Wheelhouse and Engine Room, and Wheelhouse and Steering Flat

D4.2. During the below listed Tests and Trials the following data shall be recorded. Wind speed, wave heights (swell), air temperature, seawater density, sea water temperature, water depth, Ferry’s draft, trim and displacement.

D4.2.1 Preliminary Sea Trials:

D4.2.1.1. If the Builder deems it necessary, they may carry out preliminary Sea Trials. These Sea Trials may be attended unofficially by RIM’s inspectors or RIM’s representative, but no official records will be taken.

D4.2.2 Official Sea Trials:

D4.4.2.1. All Sea Trials shall be held in the vicinity of the coast of the Republic of South Africa with permissions obtained from SAMSA prior to the commencement of the Sea Trials. The request must be made to SAMSA that the Sea Trials are to be carried out between the V&A Waterfront and Robben Island.
D5. Speed Trials

D5.1. Speed Trials shall be held with the Ferry in a fully loaded condition, at the fully loaded draught and under favorable weather conditions (maximum wind force Beaufort 4), or as weather conditions permit.

D5.2. The Trial speed will be measured by means of a GPS system and will be calculated from the results of four runs by the “mean of means” method. The equivalent power of the main propulsion diesel engines shall be verified by measurements of torque and speed at propeller shafts.

D5.3. Should the conditions of the Ferry and/or the weather differ from those stated in item C3 Speed, a suitable calculation shall be made to present the results in accordance with the conditions stated in said item.

D6. Endurance Test

D6.1. The Ferry shall run for a total of one (1) hour at uninterrupted full power. In this one (1) hour, the time needed for the turning circle shall be included.

D6.2. Readings of the main propulsion diesel engines, the exhaust gas temperature, cooling water temperature, and lubrication oil temperature shall be taken and recorded during the Endurance Test. The approximate fuel consumption shall also be measured from the difference in tank soundings that are recorded before and after the Endurance Test.

D6.3. Readings of noise levels shall be taken and recorded in the engine rooms, wheelhouse, passenger decks (front, middle and back) and toilets. Additional noise level readings shall be taken and recorded from outside the Ferry, 25 m away, with engines idling. During the Endurance Test, the behavior of the automated engine room installation shall be checked and verified.

D7. Maneuvering and Steering Tests

The following Maneuvering Tests/Trials shall be carried out:

- Crash Stop Astern
- Steering Test
- Turning Circle
- Zig Zag Test

D7.1. Crash Stop Astern

A Crash Stop Astern test, with a fully loaded Ferry at full speed, shall be carried out. The necessary time to stop, and the stopping distance, shall be determined by means of a GPS system or other method suggested by the Builder, and approved by RIM.

D7.2. Steering

The Steering Gear shall be tested with both hydraulic pumps running. The times shall be recorded to bring the helm from:
- Amidships to SB
- SB to PS
- PS to SB
- SB to amidships

D7.3. Turning Circle

With a fully loaded Ferry, a full turning circle shall be made at full speed ahead.

The diameter of the Turning Circle shall be determined by means of a GPS system.

D7.3. Zig-Zag Test

With a fully loaded Ferry the following Zig-Zag Tests shall be performed (with and against current, if any):

- 10°/10° Zig-Zag Test
- 20°/20° Zig-Zag Test

The Ferry heading shall be recorded at time intervals.

D8. Black-out Tests:

D8.1. A total black-out shall be simulated. The time needed for the automatic recovery of the ship's power supply shall be recorded.

D9. Anchor Tests:

D9.1. The anchor shall be dropped and a minimum of 4 to 5 lengths of chain paid out. During Anchor Test this shall be at "dead slow" astern.

D9.2. With stopped main propulsion engines, the chains shall be hauled and the anchor housed. Water depth, hauling speed and winch readings shall be taken and verified.

D10. Evacuation Test

D10.1. If so prescribed by Class, SAMSA or the HSC code, an Evacuation Test shall be carried out. RIM representatives/crew shall be invited as part of the crew and for familiarization training.

E. STANDARDISATION

All equipment performing similar functions, in so far as practical, shall be of the same brand/OEM. The Builder shall be expected to reduce the number of equipment suppliers and the variety of different items performing similar functions.

Where applicable and/or practical in designing and manufacturing equipment and installations, ISO norms shall be employed.

Metric screw thread (ISO) shall be employed throughout the Ferry design, except where the use of such thread on purchased machinery is not feasible.
Only one type of grease nipple shall be used, except where in purchased items replacement is impractical.

Piping and hull equipment such as, but not limited to, manholes, bulwarks, railings, ladders, platforms, stairways, separate tanks, bollards, fairleads, mooring ports, etc. shall be executed according the Builder’s Standard.

Non-described execution, design parameters and details of equipment shall be according to manufacturer’s standards (i.e. commercial off-the-shelf).

E1. Makes

E1.1. The Builder shall ensure that makes of chosen equipment are well supported in the South African market. Lead times to respond to breakdowns must be within acceptable industry norms and shall not exceed three (3) calendar days. It is understood that a Builder will only deal with reputable suppliers who have a long history of supply to the Builder.

E2. Spare Parts, Tools and Inventory

E2.1. Recommended spare parts as listed by the chosen Classification Society and specified in Annexure F1 “Integrated Logistic Support Plan (ILSP)” of Annexure F of the RFP, shall be included. Spare parts, tools and inventory, as far as being delivered by the Builder in accordance with this Specification and the ILSP, shall be supplied and placed/fitted on board and securely stowed where possible in a position adjacent to their use in case of heavy items. Small parts shall be stowed in standard plastic container boxes, suitably labeled, complete with a list of components stored in each container box. The boxes shall be stored in racks. Suitable racks shall also be provided for stowage of spare parts that cannot be conveniently boxed. On-board spare parts and inventory delivered by RIM shall be placed on-board the Ferry and securely stowed. Securing of spare parts shall be by means of bolts, lugs, etc. without temporary welding connections.

E3. Assembling, Welding, etc.

E3.1. Welding shall be carried out in accordance with the, Builder’s "Quality Standard for Welding" which shall meet or exceed the rules of the Classification Society. Scribing, working up materials and compiling ship structures shall be performed according to appropriate IACS Standards.

E3.2. Permissible deviations in aligning of steel ship constructions shall meet or exceed appropriate IACS Standards. This Standard provides directives for the maximum tolerable deviations when aligning structural elements, welding and arranging the hull construction. Execution of the directives given in this standard shall be in concert with the views of the attending surveyor of the Classification Society.

E3.3. Major rotating machinery must be fitted in place after launching the Ferry by means of:

- resin chocks for
  - each main diesel engine
  - each gearbox for: propeller drive

universal adjustable steel chocks for:
E3.4. The alignment of all engine installations shall be checked and verified prior to Basin Trials.

E3.5. Tanks shall be tested in accordance with the Rules of the Classification Society.

E4. Noise Reducing Measures

E4.1. Noise Measurements

E4.1.1. Noise levels shall be in accordance with the requirements as laid down in the latest HSC Code. In general, noise levels shall not exceed the following:

- Mess room \( \leq 75 \text{ dB} \)
- Wheel House (Captains Position) \( \leq 65 \text{ dB} \)
- Engine Room \( \leq 85 \text{ dB} \)
- Passenger Areas \( \leq 75 \text{ dB} \)
- All other public spaces \( \leq 75 \text{ dB} \)
- Outside the vessel, 25m away from the aft main deck, the Ferry moored alongside, engines idling QUIT

E4.1.2. The arrangement of noise generating machinery, insulation and anti-vibration fittings to reduce the noise levels in relation to the above requirements shall be in accordance with the Builder’s best practices and standards in use.

E4.1.3. Noise levels shall be judged to be in accordance with above mentioned requirements for the Ferry sailing at full speed in a fully loaded condition.

E4.2 Noise Reducing Measures Guidelines

- Floating sound-insulated floor coverings in passenger areas and the wheel house shall be installed, where necessary, to obtain the specified noise levels.
- All weather exposed-outer walls of passenger spaces shall be insulated.
- Paneling, partition walls and ceilings shall consist of insulated sandwich panels.
- Paneling, partition walls and ceilings in accommodation shall not be in contact with steel/aluminium bulkheads and decks.
- Window casings shall not be in contact with steel/aluminium bulkheads.
- Flexible suspension of exhaust gas pipelines shall be incorporated.
- Special attention shall be paid to the exhaust silencers of the diesel engines.
- Special attention shall be paid to the ventilation system.

E4.2.1. Arrangements and steps taken for noise reduction as mentioned above, must be increased or decreased depending on the final reports of the Builder.

F. TECHNICAL GUIDELINES

F1 Hull

F1.1. General Arrangement

F1.1.1. The Ferry shall be of a multiple deck type with a wheelhouse located forward. The Ferry shall be designed with sufficient watertight compartments to comply with the latest stability requirements as defined by IMO conventions and/or codes, Class and SAMSA Construction Regulations pertaining to this type of vessel.

F1.1.2. The Ferry must be constructed of new, Class Approved Grade A steel and/or Marine Grade Aluminum.

F1.1.3. Where Stainless Steel is used, it must be of Grade 316L.

F1.2. Hull Construction and Scantlings

F1.2.1. Indicative and preferred Shell Plating Thicknesses are as shown below. Should the bidder’s proven design not meet this requirement, suitable proof shall be provided by the bidder that the vessel hull, regardless of use of provided cradles, will not be damaged should alternative best practice docking methods be used for drydocking.

- Aluminum ≥ 6 mm
- Steel ≥ 5 mm

Note: Final scantlings shall be determined in the detail design and approved by Class.

F1.2.2. The hull shall be constructed under the supervision of the Classification Society and meet the additional requirements as stipulated by SAMSA.

F1.2.3. The hull shall be of fully welded construction and built to the longitudinal frame system supported by transverse web frames.

F1.2.4. The materials used in the construction of the hull and the scantlings shall fully comply with the requirements of the Classification Society and the accepted Specification.
F1.2.5. Non-destructive testing of welds of main structural parts shall be carried out to the extent required by the Classification Society.

F1.2.6. Non-destructive testing shall be carried out by means of magnetic testing, ultrasonic testing, or by X-ray photographs. The non-destructive testing method used shall be decided upon by the Builder in close concert with the Classification Society’s surveyor.

F1.2.7. Drain holes shall be cut in all bottom floors, as low as possible, to facilitate adequate drainage and a good flow to the suctions.

F1.2.8. Discontinuities in structure shall be avoided as far as practicable.

F1.2.9. The main propulsion and diesel generator engine foundations shall be designed to minimize hull vibrations exerted by these engines. The foundations must be made as continuous longitudinal beams that form a part of the hull structure.

F1.2.10. Scantlings and reinforcements which are not prescribed by the Classification Society shall be governed, and fitted by, the Builder’s best practice.

F1.2.11. Continuous welding shall be applied for all welding work unless agreed otherwise. For example, except for longitudinals on tween decks and for non-watertight welding work in deckhouses, stiffeners on bulkheads and deck longitudinals which may be fitted by intermittent welding.

F1.3. Hull General

F1.3.1. No extensions or protrusions that can easily be damaged shall be fitted e.g. thin bulbous or wave piercing bow structures. The Hull shall be designed to avoid slamming in the relevant sea-states mentioned herein. The Hull shall also be designed to minimize broaching affect.

F1.3.2. An effective spray rail shall be fitted forward, above the waterline.

F1.4. Hull Plating

F1.4.1. The Hull Plating shall be reinforced around openings. A big part of the Hull shall be strengthened by longitudinal frames, transversely supported by web frames. Drain plugs shall be fitted in all tanks and bunkers.

F1.4.2. The hull plating below the waterline shall be double skinned as per SAMSA requirements.

F1.5. Decks

F1.5.1. All Decks shall be without sheer and without camber, and shall be parallel with the baseline. All Decks shall be made of steel or aluminum with insert plates of increased thickness where required by the Classification Society. The Decks shall be longitudinally framed and supported by web beams.
Scuppers sufficient in number and size shall be fitted where necessary and be led to the next lower Deck.

**F1.6. Stem and Stern**

F1.6.1. The Stem shall be suitably strengthened by means of frames and stringers with preferably no protrusions from the bow e.g. thin bulbous bow structures.

**F1.7. Deckhouses**

F1.7.1. Deckhouses shall be of welded steel or aluminum construction, suitably stiffened. The Decks shall be without sheer and without camber. Web frames, or partial bulkheads, shall be fitted according to Classification Rules or, as far as necessary, at the Builder’s recommendation to ensure sufficient transverse strength of Deckhouses. Where possible, these web frames shall be fitted in line with the web frames of the Hull.

F1.7.2. The free space between Decks in passenger spaces shall be 2.20 m, or in accordance with Classification Society requirements. The free space between Decks in the Wheelhouse shall be 2.30 m, or in accordance with Classification Society requirements.

**F1.8. Propeller Shaft Brackets**

F1.8.1. The Propeller Shaft Brackets must be of sufficient strength and have a streamlined cross-section. The supporting arms must be suitably connected to the structural members, both longitudinally and transversely.

**F1.9. Rudders**

F1.9.1. Rudders shall be efficiently designed for slow and high-speed maneuvering with a streamlined cross section. Rudders shall be adequately stiffened and be of an all-welded construction.

F1.9.2. An automatic continuous grease lubricating system shall be provided for the Rudder stock bearings. Drain plugs shall be fitted. Provisions shall be made to prevent the rudders from lifting.

F1.9.3. The Rudder arrangement shall permit a maximum rudder angle of 35°, or as per regulation, from center to each side. Any special tools required for mounting/dismounting of the rudder shall be provided to RIM on vessel delivery. The shaft shall be threaded at the top end to allow for a lifting eye bolt to be screwed in. The lifting eye bolt shall also be supplied by the Builder.

**F1.10. Propellers**
F1.10.1. Propellers shall be of a Fixed Pitch type and driven directly by the Main Engines through the required gearbox. The Propellers shall be designed to take nominal diesel engine output at the Ferry’s full loading condition. Propellers shall be statically balanced and counter rotating.

F1.10.2. Each Propeller must be mounted with the Maker’s name, serial number, diameter pitch, blade area ratio, weight and direction of rotation marked onto it.

F1.11. Fendering

F1.11.1. Vessel Fendering should consider that the Ferry manoeuvres in confined spaces and berths, several times a day, to quays of varied heights. No structure shall protrude past the vertical line of the fenders. Fendering shall not interfere with the boarding distance from the key side.

F1.11.2. The Fendering system shall be of longitudinal “U” profile steel or aluminum, welded longitudinally to the ship side.

F1.11.3. Rubber Fendering with a hollow “D” section, affixed with stainless bolts, and with a polyethylene low friction top side shall be considered in the following locations:

- Stern quarters and
- Bow quarters.

F1.12. Tanks

F1.12.1. The fuel, freshwater, bilge holding and sewage Tanks shall be of sound construction and in accordance with the requirements of the Classification Society.

F1.12.2. The bilge holding and sewage Tanks shall be equipped with a pump and discharge pipes to the main deck for connection to shore. The shore connections shall be by means of Camlock/MARPOL Couplings.

F1.12.3. All Tanks shall have high-level alarms connected to the machinery alarm panel.

F1.12.3. All Tanks shall be provided with manhole access, stainless steel drain plugs, venting and sounding arrangements.

F1.13. Tank Capacities

F1.13.1. Fuel Oil - Sufficient Fuel Oil shall be carried to allow the Ferry to perform its duties described in C.1, for 3 days of operation before requiring bunkering.

F1.13.2. Fresh Water – Sufficient Fresh Water (greater than 3000 L) shall be carried for a vessel of the size and number of passengers and crew, as specified herein, to allow the Ferry to perform its duties as described in C.1. A Fresh Water toilet flushing system shall be taken into consideration when determining this volume.

F1.13.3. Dirty Oil – Sufficient Tank capacity shall be provided to drain the main propulsion and diesel generator engine sumps.
F1.13.4. Sewage – Sufficient Tank capacity shall be provided for the intended purpose of the Ferry.

F1.13.5. A Tank Capacity Plan drawing shall be submitted as part of the Bid Submission.

F1.14. Various Separate Tanks

F1.14.1. System Tanks for fuel oil systems, cooling water systems, lubricating oil systems, hydraulic systems, etc., shall be provided in accordance with the recommendations of the manufacturers of the components in the relevant systems, Regulatory Bodies and the Builder’s best practice; depending on the final lay-out of the systems.

F1.15. Hatches

F1.15.1. All enclosed compartments shall be fitted with suitable access Hatches. Hatches must be of steel or aluminium construction. Securing mechanisms for Hatches must have stainless steel pins and dogs, and be fitted with grease nipples.

F1.15.2. Drains are required on hatches with recesses in way of seal.

F1.15.3. Hatch securing mechanisms shall either be centrally located or fitted around the perimeter, and must provide a waterproof seal.

F1.15.4. All hatchways shall be watertight and have coamings with a height according to the regulations of the Authorities. Hatchways shall be provided with hinged hatch covers and with rubber packing.

F1.15.5. Arrangements for securing Hatches in the open position shall be provided.

F1.15.6. Escape Hatches shall be fitted, as required by the Authorities.

F1.15.7. One flush watertight Hatch must be provided above each engine room and/or genset for removal of the main engines and gensets. The Hatches must be secured by bolts. The lifting method used for engine or generator set removal shall be to the approval of RIM.

F1.15.8. Storm Covers for the superstructure shall be made of a suitable material and shall be provided with suitable stowage, if required by Class.

F1.16. Hawse Pipes

F1.16.1. An anchor Hawse shall be made of tube, arranged at the centerline of the Vessel’s bow, and must be seamed with round bars.

F1.16.2. The Hawse Pipe can be closed on its upper side by means of a splash cover.

F1.17. Ladders and Stairways
F17.1. Where stairways are provided to compartments below deck, they shall have non-skid steps with handrails of steel or aluminium tube provided. The angle of inclination of Stairways shall not be more than 50 degrees with the horizontal.

F17.2. All external stairways shall have side rails and non-skid steps.

F17.3. Where vertical ladders are provided to compartments below deck, they shall have side rails of flat material and rungs of square sections spaced 30 cm apart.

F17.4. A ladder or rungs shall be fitted to the mast to be able to access the top of the mast. A safety cage shall be fitted if required by the Regulatory Bodies.

F1.18. Floor Plates and Gratings in Engine and Machinery Rooms

F1.18.1. Floor plates shall be fitted in the engine room consisting of suitable raised pattern plate, secured with self-tapping screws, and supported to the ship's structure.

F1.18.2. Platforms, gratings and ladders shall be fitted, where required, for accessibility. Control railings shall be installed and arranged, where required, for safety.

F1.18.3. Steel covers in floor plates giving access to valves and similar fittings shall be clearly marked with screwed in, engraved, brass nameplates.

F1.19. Manholes

F1.19.1. Manholes of Ø400 mm (approx.) shall be provided and arranged as needed for fuel, freshwater, bilge holding and sewage tanks. Each manhole shall come with a cover plate, rubber gasket, stainless steel bolts and nuts.

F1.19.2. All manholes shall be according to the Yard's Standard.

F1.19.3. Manholes shall be provided with a mounting ring on which a cover plate shall be bolted.

F1.19.4. All built-in tanks shall have two Manholes.

F1.20. Doors

F20.1. Watertight Doors shall be fitted on watertight bulkheads below deck. The Watertight Doors shall be fire insulated to the same standard as the bulkheads, where applicable. The Watertight Doors shall have grease lubricated hinges and open/closed transmitters for indication in the wheelhouse.

F20.2. Outside Doors giving access to spaces below deck, to the accommodation deckhouse, store spaces and further service spaces shall be Watertight Doors. These Watertight Doors shall be closed by means of four toggles, suitable for one-handle operation.

F20.3. All hinges and dogs of Watertight Doors shall be provided with grease nipples.
F1.21. Bulwarks and Railings

F1.21.1. All Bulwarks and Railings shall be of sufficient strength and design to meet Class requirements.

F1.21.2. Bulwarks and Railings shall be fitted in positions as required, with stays suitably spaced.

F1.21.3. Where not provided with Bulwarks, the main deck and the open sides of decks shall be provided with an open railing according to the Builder’s Standard.

F1.21.4. All open deck areas must be protected against sea water spray over the bow and sides of the Ferry when passengers are in a seated position.

F1.21.5. Freeing ports shall be arranged in suitable positions.

F1.21.6. In way of the magnetic compass on top of the Wheelhouse, railings shall be fitted of the same construction, however the railings shall be of a non-magnetic material where necessary.

F1.22. Drain Plugs

F1.22.1. With the exception of dry tanks, each tank and bunker shall, at the lowest point, be fitted with a stainless-steel drain plug according to the Builder’s Standard.

F1.22.2. Drain Plugs shall be situated sufficiently far from the centerline in order to be free from the keel blocks when dry – docking the Ferry.

F1.22.3. The name of the relevant compartment shall be indicated on the shell adjacent to each Drain Plug by means of weld beads.

F1.23. Nameplates, Ships Identification Number, Draught Marks, etc.

F1.23.1. In general, the branding of the vessel must follow the RIM branding/colour regime.

F1.23.2. Painted characters must be applied in capital letters for the Ferry name on the bow, and for the Ferry name and port of registry on the stern. A Company Emblem shall be fixed on the wheelhouse front, if required by RIM.

F1.23.3. At both sides of the bow and the stern, Draught Marks shall be painted and marked on the hull. Marking shall be done by punching and painting in a contrasting colour, so as to be clearly visible.

F1.23.4. The Ship's Identification Number must be permanently marked, complying with the requirements of the Regulatory Bodies.

F1.23.5. Freeboard Marks, as required by the Classification Society, shall be welded to the shell and painted in a contrasting colour so as to be clearly visible.

F1.23.6. A clear docking point indicator must be permanently marked and painted in a contrasting colour on the hulls showing the positions of the docking cradles.
F1.23.7. All doors in passenger and crew spaces shall be fitted with nameplates.

F1.23.8. All doors below decks shall be fitted with nameplates.

**F1.24. Labels and Signs**

F1.24.1. All switchboards, instrument panels, boxes, breakers and switches shall be clearly labelled. Recognized IMO signage shall be used, where possible, to eliminate the need for written signs. Written signs for passenger information shall be in the English language.

F1.24.2. Nameplates affixed to important parts of the machinery installation shall be of brass with engraved letters and securely attached.

F1.24.3. The Builder’s nameplate, plate with building number and year, and patent data plate, shall be fixed in suitable positions.

F1.24.4. Two propeller warning boards shall be fitted on the railings at the stern.

F1.24.5. All nameplates shall be provided with English text.

F1.24.6. The baby change area shall have suitable warning labels to indicate that a baby must remain in sight/not unattended by the parent/caregiver while using the change area.

**F1.25. Cathodic Hull Protection**

F1.25.1. Cathodic protection shall be by means of an impressed current system.

F1.25.2. Zinc or Aluminium anodes shall be used where required and shall be in accordance with the Builder’s standard. Anodes shall be suited for at least two (2) years operational use. Zinc and Aluminium anodes shall not be mixed.

**F1.26. Painting and other Protective Processes**

F1.26.1. The Paint used shall be in accordance with International Marine Coatings, or equivalent. Painting shall be carried out in strict compliance with the manufacturer’s instructions. Colour shall be according to RIM’s brand selection and based on the Builder’s proposals.

F1.26.2. The final Painting scheme shall be in accordance with the manufacturer’s specification.

F1.26.3. Oil and grease shall be removed with a suitable detergent prior to Painting.

F1.26.4. The surfaces shall be submitted for approval before Painting.

F1.26.5. No Painting shall be executed during periods of rain, too low temperatures, too high relative humidity and too intensive sunshine.

F1.26.6. Conditions and drying times as specified in the Paint product data sheets of the manufacturer shall be adhered to at all times.
F1.26.7. Deviations from the Paint product data sheets shall have the prior approval of the manufacturer. To meet the required climate conditions on the data sheets, the Builder has the right to apply a winter system.

F1.26.8. Painting shall be executed in accordance with the Paint supplier’s prescriptions.

F1.26.9. The surface preparation and Painting of the deck equipment shall be executed before erection on-board the Ferry. Cableways, pipe clamps etc. shall be painted before fitting cables and pipes.

F1.26.10. Spaces and structures which will become inaccessible after mounting of equipment shall be painted with the indicated number of coatings before erection of these parts.

F1.26.11. Non-accessible spaces shall be painted with Bitumastic or an approved equivalent, and/or closed airtight, in accordance with the Builder’s best practice.


F1.26.13. For the outer Hull and large surfaces only airless spraying shall be used. After applying and drying, each layer shall be checked.

F1.26.14. The film thickness shall be specified as a Dry Film Thickness and measured as follows:

Procedure:

1. for tanks: according to the "90 - 10" rule
2. other spaces: according to the "80 - 20" rule

The first number (90 or 80) means that no measurement may be below 90% or 80% of the specified layer thickness.

The second number (10 or 20) means that no more than 10% or 20% of the measurements may be in the range from 90 - 100%, or 80 - 100%, of the specified layer thickness.

However, if one spot measurement is below the 90% or 80% threshold, five extra measurements will be taken around this spot, the lowest value expires.

F1.26.15. The quantity of the measurements shall be taken randomly per section.

F1.26.16. Dry Film Thickness shall not be measured for machinery; equipment, outfitting, pipes, pipe supports, seats, welding beads and edges of structural members.

F1.26.17. Painting surfaces shall be smooth and without sags.


F1.26.19. Painting of machinery and auxiliaries delivered by subcontractors shall be cleaned from grease and other contaminants. If necessary, this machinery and auxiliaries shall then be treated with the final coat of Paint with the exception of switchboards, control desks, refrigerators and the like.
F1.26.20. The chamber for a rubber seal shall be Painted with epoxy primer before fitting the seal. Cable trays and all piping (if not specified otherwise) shall be Painted in the colour of the surrounding structures. No electric cables shall be painted.

F1.26.21. Pipes shall be marked with coloured rings to denote the nature of the fluid or gas passing through it.

F1.26.22. Where anodes might be used, these anodes are not to be painted.

F1.26.23. Before launching of the Ferry, all painting must be complete.

F1.26.24. Painting and surface preparation shall be executed under the supervision of an authorized and experienced inspector of the paint manufacturer for the important parts, i.e. the underwater hull, the fresh water tanks and the ballast tanks.

F1.26.25. The preferred Antifouling paint to be used shall be “Intersmooth”, or an approved equivalent.

**F1.27. Hull Insulation**

F1.27.1. Each engine room shall be fitted with structural fire insulation.

F1.27.2. The engine room hull sides, deck head and bulkheads, shall be fire insulated below the main deck down to the waterline. The insulation material shall also reduce noise levels in the passenger area and shall be finished with perforated Aluminium sheeting.

F1.27.3. The engine room air inlet ducts must be cladded with noise reducing insulation.

F1.27.4. Insulation must be of an approved type.

**F2. Equipment**

**F2.1. Steering Gear**

F2.1.1. The Steering Gear shall be of the electric-hydraulic type.

F2.1.2. Emergency Steering shall be fitted in accordance with the requirements of Class and/or the latest HSC Code, whichever is more stringent for this class of vessel.

F2.1.3. The hydraulic system of the Steering Gear shall be fed by two electrically driven hydraulic pumps, both normally in operation.

F2.1.4. Each pump, together with its driving motor, shall be mounted in each hull.

F2.1.5. The pumps shall be installed in the engine room aft and started locally. Additionally, the pumps shall also be able to be started from the navigation control console in the wheelhouse.

F2.1.6. The time to bring the rudders from 35° on either side, to 30° on the other side, shall not exceed 28 seconds using one pump, at the maximum service speed of the Ferry. The maximum rudder angle shall be 70° Port and Starboard.

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F2.1.7. The Steering Gear must be controlled from the navigation control console in the wheelhouse. It is preferred that the emergency steering system mentioned in F2.1.2 is also controlled from the navigation control console in the wheelhouse.

F2.1.8. Visual and audible alarms of the Steering Gear shall be fitted in the navigation control console in the wheel house as required by the Classification Society.

F2.1.9. Care shall be taken to ensure that there is no danger of the inboard Steering Gear being fouled by working components. The operating rods shall be suitably protected along all exposed lengths.

F2.1.10. The equipment shall be so arranged as to provide easy access for maintenance, repair, and/or removal thereof.

F2.1.11. An autopilot system shall be fitted.

F2.1.12. Rudder angle must be indicated in the wheelhouse and shown in the steering flat at the Steering Gear.

F2.2. Forward Windlass and Chain Stopper

F2.2.1. One electro or electro-hydraulic driven anchor Windlass with drum shall be mounted on the foredeck and secured by stainless steel bolts. The anchor Windlass shall be provided with a manual operated drum brake for laying out. An anchor Stopper shall be provided to secure the anchor in a stowed position so as to not cause banging.

F2.2.2. The Windlass shall be capable of a hauling speed of at least 9 m/min, or as required by Class.

F2.2.3. The Windlass shall be controlled locally.

F2.2.4. A chain Stopper (devil’s claw) combined with a guide roller and turnbuckle shall be fitted between the Windlass and Hawse Pipe.

F2.2.5. Windlass control shall include powered veer and hauling.

F2.3. Anchor and Chain Cable

F2.3.1. One bow Anchor, of a high holding power type, shall be provided.

F2.3.2. The Stud Link Chain and Anchor are to be of a sufficient weight and construction to meet the minimum requirements.

F2.3.3. Each length of Chain Cable shall be fitted with "KENTER" joining shackles. The anchor shall be mounted to the Chain Cable by means of a swivel.

F2.4. Bollards, Fairleads and Mooring Ports

F2.4.1. The ship shall be provided with Bollards, Fairleads and Mooring Ports, to enable efficient and adequate use of the mooring equipment.
F2.4.2. All equipment shall be suitably rated as per Class requirements for the maximum conditions of operation.

F2.4.3. Bollards shall be of a welded construction to the Builder’s Standard (with welded plate foundations)

F2.4.4. Fairleads and Mooring Ports shall be in accordance with standard designs.

F2.4.5. The Rollers shall be fitted with self-lubricating, maintenance-free, bearing bushes.

F2.4.6. Additional stiffeners and stays shall be fitted, where necessary, to provide sufficient support for the Mooring Ports at the maximum breaking load of the rope or cable for which they are designed.

F2.5. **Mooring System**

F2.5.1. Mooring lines supplied with the Ferry must be sufficient in length and in strength for a vessel of its size, with a 1.5 m eye spliced into both ends.

F2.5.2. Mooring lines shall be two (2) headlines, two (2) breast lines and two (2) spring lines.

F2.5.3. Two (2) heaving lines, length each 40 m, diameter 6 mm, with a filled leather bag at one end, shall be supplied.

F2.5.4. Four (4) portable fenders, with 3 m of rope each, shall be supplied and be stored on the main deck (2 forward and 2 aft).

F2.5.5. Sufficient stowage space shall be provided for all mooring lines and fenders.

F2.6. **Motor Rescue Boat**

F2.6.1. Consideration must be given to a SOLAS Approved Motor Rescue boat and it’s launching and retrieving system as a requirement of SAMSA, unless an exemption is granted by SAMSA upon the Bidder’s request.

F2.7. **Boarding and Integrated Ramps**

F2.7.1. The Ferry shall have two (2) boarding positions on either side of the vessel viz. four (4) in total. Two (2) of these accesses, one (1) on either side, must be integrated ramps, automatically operated with easily operated manual overrides in the event of failure.

F2.7.2. The integrated ramp shall be at least 1.5m in width, sufficient to allow wheelchairs or small cargo containers access to the Ferry. The integrated ramp surface shall be non-slip/skid.

F2.7.3. The integrated ramps shall be provided with foldable, fixed, hand railings.

F2.7.4. Two (2) access points, one (1) on either side, shall be boarding/evacuation gates built into the bulwark.
F2.7.5. The Ferry shall be provided with a platform onto which a loose gangway can be attached, suitable for use by ship’s personnel from deck to shore when the Ferry is berthed elsewhere on higher berths at the V&A Basin.

F2.7.6. Boarding Arrangements shall be made in consideration to the existing RIM infrastructure

F2.8. Mast and Rigging
F2.8.1. A mast shall be provided, mounted on the wheelhouse roof and fitted with the necessary brackets and supports to hold the necessary equipment. Steps/rungs, with a safety guard, shall be provided on the mast for access to equipment. The mast shall also be fitted with platforms for the radar installation.

F2.8.2. Halyards for the hoisting and lowering of day signals shall be provided.

F2.8.3. Wires, blocks, shackles etc. shall be in accordance with the requirements of the Authorities. A flag staff shall be fitted at aft deck.

F2.9. Hoisting Gear in Engine Room
F2.9.1. A securing point arrangement shall be provided below the superstructure transverse beams to facilitate the installing of trolley beams for the lifting of engine parts. The Safe Working Load of the securing points shall be clearly marked by way of painted weld beads.

F2.9.2. Hoisting gear shall be rated to the largest piece of equipment that would generally be lifted in each area. The hoisting gear shall be supplied.

F2.10. Fixed Fire Extinguishing System
F2.10.1. Two electrically driven, self-priming bilge/fire pumps shall be fitted, one in each machinery room. The pumps shall be connected to the bilge/fire mains piping system. The fire pumps shall be controlled from the bilge manifold. Cross-connection shall be possible via the manifold for the two pumps. Each pump shall draw seawater from its respective sea chest and supply the fire mains to the hydrants when used as a fire pump.

F2.10.2. The Ferry shall be provided with hydrants in locations as required. A red GRP storage locker, with IMO marking, including a hose of sufficient length, shall be installed near each hydrant.

F2.10.3. A sprinkler system shall be fitted in public spaces, service spaces and storage areas.

F2.10.4. Either a Novec 1230 (or similar clean agent) or CO₂ system must be installed for extinguishing fire in engine rooms. The quantity required shall be in accordance with Class requirements. The clean agent or CO₂ system storage room shall preferably be located separately, and shall be accessible from the open deck. Opening of the clean agent or CO₂ system storage room door shall activate the alarms in both engine rooms. Separate activation for each engine room shall be arranged.

F2.10.5. The required electrically operated signaling and alarm equipment shall be installed to warn personnel inside the engine room before discharging the clean agent or CO₂.

F2.10.6. The ventilation units of the engine room shall be stopped automatically when the agent is released.

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F2.10.7. Piping shall be of galvanized steel or suitable Class approved, corrosion resistant material.

**F2.11. Integrated Fire Detection, Alarm System and Smoke Detection System**

F2.11.1. A fixed integrated fire detection, alarm and smoke detection system shall be installed as required by the Authorities.

F2.11.2. The fire alarm control panel shall be a conventional panel with the required zones connected in loops. It shall be provided with an alarm buzzer and lamps indicating which zone is on fire. If the initial indicating buzzer is unanswered, main alarms must be activated.

F2.11.3. The fire detection and alarm central unit shall be installed in the wheelhouse.

F2.11.4. Fire detectors and push buttons shall be arranged, as required, by the regulations of the Authorities.

F2.11.5. Visible and audible alarms shall be provided in engine rooms.

F2.11.6. Audible alarms shall be provided in the wheelhouse and passenger spaces.

F2.11.7. The fire alarm system shall be fitted with dual power supplies and must be of a Class approved type.

**F2.12. Loose Fire Fighting Equipment**

F2.12.1. Loose Fire-Fighting Equipment shall be provided, as far as execution, number and capacity, as described according to final design requirements and administration approval. Loose Fire Fighting Equipment shall mainly consist of:

- Fire Hoses
- Portable Fire Extinguishers
- Fire-Fighter's Outfits with Air Breathing Apparatus - Emergency Escape Breathing Devices

F2.12.2. The extinguishers shall be of an approved type, accessible and mounted at suitable locations. Spare charges shall be supplied according to the requirements of the Authorities.

F2.12.3. All fire hoses shall be stowed in wall mounted, red GRP storage lockers with IMO marking.

**F2.13. Life-Saving Appliances**

F2.13.1. All Life-Saving Appliances shall require the approval of SAMSA and Bidders shall ensure compliance.

F2.13.2. Lifebuoys

The required number of Lifebuoys equipped with 30 m line, smoke signals and lights shall be provided and located at appropriate positions on the main and upper decks as required by the authorities.

F2.13.3. Lifejackets

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The required number of Lifejackets, of a SAMSA approved type, shall be provided for crew and passengers (adults and children) and shall be stored in seats and in clearly marked lockers within the passenger accommodation space(s) and wheelhouse. All lifejackets shall be equipped with water activated lights. The requirements of SAMSA to permit up to 50 children onboard must be met. The SAMSA approved lifejackets for the children must be provided, preferably of the zip up type.

F2.13.4. Life Rafts
A sufficient number and capacity of Life Rafts shall be equally divided port and starboard of the Ferry as per Class, HSC and SAMSA requirements

F2.13.5. Marine Evacuation System
An appropriate Marine Evacuation System as required by the HSC Code and SAMSA shall be considered.

F2.13.6. Line Throwing Apparatus
A Line Throwing Apparatus shall be provided, as required by SAMSA.

F2.13.7. Emergency Signals
Emergency Signals shall be provided, as required by SAMSA.

F2.13.8. Parachute Flares and Handheld Flares
Parachute Flares and Handheld Flares, as required by SAMSA, shall be stored in the wheelhouse in a plastic container which is suitable for the storage of pyrotechnics.

F2.14. Repair Areas
F2.14.1. A machinery Repair Area shall be situated in either of the hulls. The room may be situated in the engine room, machinery room, or have its own dedicated space. The Repair Area shall be equipped with a workbench with two drawers, a 140 mm vice and one electrical socket.

F2.14.2. Tools
A standard tool set shall be supplied as recommended by the propulsion engine manufacturer(s).

A standard tool set shall be supplied as recommended by the diesel generator manufacturer(s).

F2.14.3. Tool kit
A lockable Tool Kit mounted in the machinery Repair Area may be offered as an optional item

F2.15. Storage Spaces
F2.15.1. A small luggage Storage Space shall be provided for passengers and crew. This storage space shall consist of lockers and cubicles/shelving. Adequate provision shall be made to prevent shifting during passage making.

F2.15.2. Lockers shall be situated as close as possible to the Repair Area for basic engine consumables.
F2.16. Protection Covers
F2.16.1. Protection Covers manufactured from waterproof acrylic fabric shall be provided for deck-mounted electric motors, radar scanners, standard compass on the wheelhouse, searchlight, loudhailers, controllers of deck-machinery, and, if not closable, torpedo ventilators, cowls, goose necks, vent pipes, and where required by Rules and/or suppliers.

F3. Accommodation

F3.1. Passenger Arrangement

F3.1.1. Seating shall be arranged in such a way that all 180 - 200 passengers and additional crew can be seated inside the enclosed Ferry whilst underway. Additional outside seating for a minimum of 30 passengers shall be provided, but it must be partially covered/enclosed to protect against possible sea spray and/or rain. The additional seating is NOT to be understood as increasing the vessels capacity by 30 people.

F3.1.2. Within the passenger space must be overhead handles/toggles for holding onto when moving in this area (for example: a passenger from a seated position towards the ablution facilities).

F3.1.3. There shall be an area of existing seating which can be easily collapsed or folded away, which is to be made available for at least four [4] to eight [8] wheelchair bound passengers. The wheelchairs shall be able to lock/secure in place to avoid movement in a seaway.

F3.1.4. Three on-board ablution facilities shall be made available. One of the three ablution facilities shall be easily accessible to wheelchair bound passengers and also serve as a baby change area.

F3.1.5. Passengers shall be provided with a central facility to charge cellphones.

F3.1.6. Seated passengers shall be afforded all around visibility, as far as is reasonably practical.

F3.1.7. The lay-out regarding the passenger routing shall be arranged in such a way that embarkation times are kept to a minimum and ensures safe evacuation.

F3.1.8. A General Arrangement drawing shall be submitted as part of the Bid submission.

F3.2. Wheelhouse Arrangement

F3.2.1. The wheelhouse shall be located on the upper deck, forward, and arranged for maximum comfort and view with minimum obstruction to the front and side views. Windows shall be provided all round.

F3.2.2. Main and side vessel conning positions shall be well positioned to allow for the best visibility and ergonomical suitability to the navigator with all required controls close to hand.

F3.2.3. The bridge wings shall preferably extend over the full width of the Ferry to obtain visibility to the ship’s sides.

F3.2.4. The arrangement of the wheelhouse shall be designed for a three-crew operation.
F3.2.5. An area in the wheelhouse shall be fitted with a chart table. The chart table shall have a built-in chronometer box and flag locker, and shall have a chart lamp with dimmer.

F3.2.6. Rolling type solar blinds shall be fitted on all front and side wheelhouse windows.

F3.2.7. The wheelhouse contains the various control consoles and equipment for navigation and communication as mentioned in the relevant items of this specification. Furthermore, the following items/equipment shall be fitted and/or provided in the wheelhouse:

- Ships clock with Radio Zone
- Barometer
- Divide Ruler
- Binoculars
- Binocular Box
- Brass Compasses
- Table for Radio Equipment
- Small Refrigerator
- Small Washbasin with Cold Running Water.
- Kettle/Coffee Station
- Locker
- Seat for Helmsman
- Seat for Chief Engineer/Radio Operator
- Seat for Navigator

F3.2.8. One suitable First Aid Kit shall be supplied and located in the wheelhouse.

F3.2.9. Effort shall be made to avoid the installation of equipment at window height, whereby the view would be obstructed.

F3.2.10. A settee with small table should be considered at the aft end of the wheelhouse for officers or crew to complete documents and filing. The settee can double as storage.

**F3.3. Crew Mess**

F3.3.1. The Crew Mess must accommodate up to four seated personnel at a table and have small stainless-steel washing up basin with hot and cold-water supply.

F3.3.2. Furthermore, the following items/equipment shall be fitted and/or provided in the crew Mess:
- Battery Operated Clock
- Small Refrigerator
- Microwave
- Kettle/Coffee Station
- 4 Coat Hooks
- Curtains Over Each Window.

**F3.4. Kiosk**

F3.4.1. A catering area/kiosk shall be arranged on the main deck passenger saloon.

F3.4.2. This area shall have a working bench, a sink with hot and cold water, lockers, shelves, refrigerator, top loading deep freeze, and service counter.

F3.4.3. All interior materials shall be non-combustible and the associated surfaces durable and easy to clean.

F3.4.4. The catering area/kiosk must be able to be enclosed and locked.

**F3.5. Sanitary Equipment**

F3.5.1. Each of the three sanitary spaces/ablution facilities shall be equipped as follows:

- 1 Vacuum Toilet System with Fresh Water Flushing to a Biological Sewage Treatment System
- 1 Wash Basin with Hot and Cold Water Self-Closing Cock
- 1 Mirror
- 2 Towel-Hooks
- 1 Soap Dispenser
- 1 Hand Blower
- 1 Grip
- 1 Toilet Paper Holder
- 1 Waste Basket

F3.5.2. One sanitary space/ablution facility shall be arranged to be easily accessible for wheelchair bound passengers. This sanitary space/ablution facility shall also be fitted with a fold down baby change table.

**F3.6. Panelling, Partition Bulkheads and Ceilings**

F3.6.1. The design and interior finish must be of a high and contemporary standard, whereby care must be taken to minimize the weight of lining, upholstery etc. Internal webs, pillars and bulkheads must be arranged in such a way as to minimize vibrations and to keep continuity of strength.
F3.6.2. All interior materials of the Ferry shall be of good quality and light in weight. Surface finishing in accommodation spaces must be painted. The required colour scheme shall be approved by RIM, as per RIM branding.

F3.6.3. All joinery work shall be in accordance with the Builder’s standards. All interior materials must be of non-combustible type with type/test certificate accepted by the Class. All surfaces shall be durable and easy to clean.

F3.6.4. The free space between decks in passenger spaces shall be 2.20 m, or in accordance to Classification Society requirements.

F3.6.5. The free space between decks in the wheelhouse shall be 2.30 m, or in accordance to Classification Society requirements.

F3.6.6. Paneling, Partition Bulkheads and Ceilings shall be delivered in the same colours.

F3.6.7. The bulkheads in the wheelhouse and accommodation decks shall be made of painted aluminium lightweight panels, with clear anodized joiner profiles.

F3.6.8. Consoles shall be constructed of aluminium and painted.

**F3.7. Doors in Accommodation**

F3.7.1. The interior doors shall be made of sound, good quality, material with locks fitted on all doors.

F3.7.2. Six master keys, and three keys for each lock, shall be delivered.

F3.7.3. Arrangements for securing of the doors in open position must be fitted (except on fire rated doors).

F3.7.4. The door handles shall be of unpainted stainless steel. Fire doors shall be fitted as per Class requirements.

F3.7.5. A lockable fire-retardant door with fire rated peephole shall be installed for the Wheelhouse.

**F3.8. Windows**

F3.8.1. All windows must be non-opening and of a thickness satisfying Class and SAMSA Requirements.

F3.8.2. All windows shall be mounted to the satisfaction of Class and SAMSA to ensure integrity and water tightness.

F3.8.3. Windows shall be fitted to the sides of the saloons and to the front of the main deck saloon. The Windows shall be of tinted, tempered glass.

F3.8.4. The Windows in the wheelhouse shall be sized for maximum visibility. The blind sectors formed by the Window posts shall be better than Class requirements.

F3.8.5. Wheelhouse Windows must be tempered clear glass.
F3.9. Stairways

F3.9.1. Where required, internal Stairways must be non-skid and handrails of steel or aluminium tube shall be provided.

F3.9.2. Stairways must be sufficiently wide to enable passengers to move freely between decks and to allow for safe and quick evacuation.

F3.9.3. The angle of inclination of Stairways shall not be more than 50 degrees with the horizontal.

F3.10. Accommodation Insulation

F3.10.1. Thermal insulation covered with aluminium foil shall be fitted at the following locations:

- All exposed decks in the superstructure.
- The side, front and aft bulkheads above/below the windows in the superstructure.

F3.10.2. The wheelhouse shall be fire insulated with foil faced material.

F3.10.3. Insulation must be of an approved type.

F3.11. Floor Coverings

F3.11.1. Floor coverings, in general, shall be of a non-slip nature.

F3.11.2. Floor coverings at main entrances shall be of a water trap/absorbing material type to avoid slipping on decks when passengers enter the space from a wet outside deck.

F3.11.3. All flooring shall be colour coordinated with the interior and surfaces shall be of an approved type for use on-board passenger ferries.

F3.12. Furniture

F3.12.1. Passenger accommodation seats shall be made of fire retardant components and must be upholstered with a fire-resistant fabric.

F3.12.2. All passenger seats shall be rail mounted for flexibility of rearranging the seating layout, if required.

F3.12.3. The passenger seats shall have magazine pockets and lifejacket stowage spaces.

F3.12.4. Seat belts shall be installed on the first row of passenger seats as required by Class and/or the HSC Code.
F3.12.5. The three wheelhouse seats must be fully adjustable navigation seats, dampened, fitted with armrests, headrests, footrests and safety belts. The seats shall be on sliding rails and of an approved type.

F3.13. Domestic Refrigerators and Freezers

The following domestic refrigerators and freezers shall be installed, and provided, on-board the Ferry:
- 1 refrigerator in the Wheelhouse, approx. 60L
- 1 refrigerator in the Mess Room, approx. 100L
- 1 refrigerator in the Kiosk, approx. 260L
- 1 freezer in the Kiosk, approx. 260L

F4. Navigation and Communication Equipment

The Navigation and Communication Equipment is indicative. Consideration must be given to any additional requirements which may come about by Class, HSC Code and/or SAMSA regulations/requirements. Consideration must also be given to maintaining a consistent make of navigation and communication equipment throughout the Ferry for the purposes of standardisation. All equipment must be of the latest, current model and be in full compliance with IMO.

F4.1. Magnetic Compass

F4.1.1. The magnetic compass of make CASSENS & PLATH (type, REFLECTA 1), or magnetic compass of equal function, shall be mounted on the wheelhouse top deck, comprising of a glass fiber reinforced plastic binnacle.

F4.2. Gyro Compass

F4.2.1. A suitable maintenance free Gyro compass shall be installed, with repeaters, on the wheelhouse main control console conning positions.

F4.3. Electric Steering System

F4.3.1. An electrically controlled (24V) steering gear system shall be installed, operated via levers on the centre and wing consoles in the wheelhouse and joysticks situated on the centre main control console.

F4.4. Electric Rudder Position Indicating System

F4.4.1. Rudder position indicators, illuminated at night, must be mounted in the following locations:
- At each control station
F4.5. Autopilot

F4.5.1. An Autopilot shall be installed, suitable to work in conjunction with the:
- Gyro Compass
- Steering System
- Steering Gear

F4.5.2. The Autopilot must effectively control the Ferry’s heading and shall have an off-course alarm.

F4.6. Navigation Echo-Sounding Equipment

F4.6.1. Echo-Sounding Equipment with a 200kHz transducer mounted through the hull fitting in the ship’s bottom, and with depth alarm, shall be fitted.

F4.6.2. A digital repeater must be supplied and fitted in the main control console in the wheelhouse.

F4.6.3. The Echo Sounding Equipment must interface with the Electronic Chart Display and Information System (ECDIS)

F4.6.4. The Echo Sounding Equipment shall have the following selectable scale ranges:
- 0 - 10m
- 0 - 20m
- 0 - 50m
- 0 - 100m
- 0 - 200m

F4.7. Automatic Identification System

F4.7.1. An AIS Transponder with control/display unit fitted in the main control console in the wheelhouse, and necessary antenna, must be installed and interface with the:
- Gyro compass
- Radar
- Global Positioning System (GPS) for Navigation Purposes
- Electronic Chart Display and Information System (ECDIS)
F4.8. Water Track Speed Log

F4.8.1. A Water Track Speed Log, with hull sensor, shall be supplied and fitted with a repeater in the main control console in the wheelhouse.

F4.9. Radar Installations

F4.9.1. A 3 cm (9 GHz) true motion ARPA Radar Installation shall be installed, consisting of:

- 18.1" colour TFT daylight viewing high resolution display unit with an effective radar picture of 250 mm.
- Range scale: 0.125 - 96 nautical miles.
- 10 kW X-band transceiver, enclosed in an antenna unit.
- Performance Monitor
- Inter Switch

F4.9.2. The radar must interface with the:

- Gyro Compass
- Water Track Speed Log
- All VHF DSC Channel 70 Watch Keeping Receivers
- Electronic Chart Display and Information System (ECDIS)
- Global Positioning System (GPS) for Navigation Purposes
- Electronic Chart Display and Information (ECDIS) for ARPA Targets Only

F4.10. Global Positioning System (GPS) for Navigation Purposes

F4.10.1. One GPS for navigation purposes, with antenna, shall be installed with a display unit fitted at the main control console in the wheelhouse, and must interface with the:

- Gyro Compass
- Radar
- All VHF DSC Channel 70 Watch Keeping Receivers
- Electronic Chart Display and Information System (ECDIS)
**F4.11. Wind Measuring System**

F4.11.1. A wind meter set with combined wind direction and wind speed sensor shall be provided.

F4.11.2. A combined wind direction and wind speed display unit must be fitted in the main control console in the wheelhouse, and interface with the Electronic Chart Display and Information System (ECDIS).

**F4.12. Radio Communication and Safety Equipment**

F4.12.1. One 25-Watt simplex/semi duplex VHF radio telephone of make THRANE & THRANE (type Sailor RT 5022), or VHF radio telephone of equal function, must be supplied and shall be fitted in the main control console in the wheelhouse, comprising of:

- Transceiver Unit
- Transceiver Control Unit, complete with:
  - DSC modem with channel 70 watch keeping receiver - built-in loudspeaker.
  - handset in holder.
- Necessary Antenna
- must interface with the global positioning system (GPS) for navigational purposes.

F4.12.2. One Navtex receiver with antenna, operating at 24V, shall be supplied and fitted in the main control console in the wheelhouse.

F4.12.3. An emergency power supply for the Radio Communication and Safety Equipment shall be supplied, comprising of:

- 24V-DC lead acid battery with battery box.
- Battery charger – AC/DC and SOLAR power supply.
- The necessary distribution boxes.

F4.12.4. Note: The Battery Box shall not be installed in the wheelhouse unless contained in a separate compartment which is adequately ventilated to outside of the wheelhouse into the atmosphere.

**F4.13. Electronic Chart Display and Information System (ECDIS)**

F4.13.1. An ECDIS system shall be installed, suitable for supporting vector chart data (ENC) as well as ARCS raster chart data (RNC), and interface with the:

- Gyro Compass
- Radar (for targets only)
- Navigation Echo-Sounding Equipment
- Water Track Speed Log
- Global Positioning System (GPS) for Navigation Purposes
- Wind Measuring System

F4.13.2. A suitable PC shall be installed in the wheelhouse capable of running the ECDIS chart software.

F4.13.3. An Uninterrupted Power Supply (UPS) with a transitional capacity of 10 minutes shall be installed.


F4.14.1. An internal talk-back/intercom, with talk-back loudspeakers, system shall be provided, with a central station in the wheelhouse with remote control units for:

- Port and Starboard Machinery Rooms (with head set).
- Port and Starboard Steering Flats (with head set).
- Two Weathertight Loudspeakers Aft Deck (Port and starboard side) with Talk-Back.
- Two Weathertight Loudspeakers Fwd. Deck (Port and Starboard side) with Talk-Back.
- Lower Passenger Space Port and Starboard Midship.

F4.14.2. A public address and audio entertainment system shall be provided consisting of:

- One central unit with necessary equipment for amplifying and control of the PA.
- One public address microphone in the wheelhouse and one in the kiosk.
- Loudspeakers for the PA system located in the inside passenger space and the outside passenger space.
- One watertight PA loudspeaker fitted on the mast.

F4.14.3. A television supervision system for supervising the craft shall be installed, complete with two monitors and selector switches installed in the wheelhouse main control console.

F4.14.4. Sufficient cameras shall be connected to the system to supervise the engine rooms, gangway stations, bows (for docking) and transom.

F4.14.5. A television system and DVD player shall be installed, with sufficient LED screens for all passengers to clearly view the safety videos when seated.

F4.14.6. The Ferry must have Wi-Fi internet available to the passengers onboard during transit. A suitable PC and router shall provide this utilizing existing network provider ground stations. Any
required antenna must be appropriately positioned so as not to interfere with navigational equipment and pose any danger to passengers. Provision must be made for this system, but shall be fitted for, but not with.

F4.14.7. An AM/FM radio with CD player must be provided in the wheelhouse and be able to play over the speakers in the Wheelhouse for entertainment purposes, whilst the vessel is at idle or alongside.

F4.15. Navigation Lights

F4.15.1. Single lantern Navigation Lights shall be fitted and controlled from the Navigation Light control panel in the wheelhouse.

F4.15.2. The following lights shall be installed

- Two sides lights.
- One white stern light.
- One white masthead light fitted to the mast.
- One white anchor light fitted to the mast.
- Two red NUC lights fitted to the mast.
- One yellow flashing light, near the mast top, for high-speed craft.
- Any other navigation lights as may be required by SAMSA.

F4.15.3. The Navigation Lights shall be fed by two separate power supplies: the main power supply and the emergency power supply.

F4.15.4. A visual and audible alarm should warn the vessel in the event that any navigation light is not working, and should be specific to the non-functioning navigation light.

F4.16. Day Signals

F4.16.1. The following shapes shall be provided as day signals to indicate the obstruction/passing side of the Ferry; the Ferry is not under command, restricted in maneuverability, at anchor and aground respectively:

- seven black balls
- five black diamonds

F4.16.2. The necessary halyards etc. for hoisting of the shapes shall be provided.

F4.17. Daylight Signalling Lamp
F4.17.1. A long-range daylight signaling lamp shall be supplied, complete with sighting telescope, portable battery box with feeding cable and a transformer/rectifier for power supply from the ship's main supply via a connection box at each bridge wing.

F4.18. Horn

F4.18.1. A 24V electronic Horn with automatic signal shall be fitted on the wheelhouse roof. A push button for operation of the Horn shall be situated in the wheelhouse.

F4.19. Searchlight

F4.19.1. A 220V/650W Searchlight must be mounted on the wheelhouse top deck, operated by a control handle and switch near the steering position inside the wheelhouse.

F4.20. Window Wipers

F4.20.1. The front windows of the wheelhouse must be equipped with 2 speed Window Wipers.

F4.20.2. The front windows must be provided with a fresh water washing system drawn from a dedicated storage tank, or from the ship’s freshwater system.

F4.20.3. The fresh water washing system nozzle(s) may either be fitted on the wipers, or above the windows.

F4.21. Clocks

F4.21.1. Three battery operated Clocks of adequate size dials shall be located in the following areas:
   - One (1) in the wheelhouse equipped with red marked wireless silence period sectors and a large sweep seconds-hand.
   - One (1) in the mess room.
   - One (1) in the kiosk.

F4.21.2. A minimum of two (2) Clocks in each passenger area, depending on the Ferry’s general arrangement, of adequate dial size.

F5 Inventory

F5.1. Deck Inventory

F5.1.1. The following equipment shall be provided:
   - Two (2) boat hooks, 3m length.
   - One (1) aluminium flagpole.
- One (1) key box.
- One (1) tank sounding tape, 20m, with weight.

**F5.2. Nautical Inventory**

F5.2.1. The following equipment shall be provided:
- Battery Operated Quartz Chronometer
- One (1) Aneroid Barometer
- Two (2) Inclinometers
- One (1) Pair of Prism Binoculars 7 x 50
- One (1) Parallel Ruler 16"
- Two (2) Pairs of Chart Dividers
- Two (2) National Flags
- One (1) Full Set of Signal Flags
- 1 International Code of Signals Book
- One (1) illustrated table describing the life-saving signals.
- One (1) International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual
- One (1) bronze fog bell (300 mm), with vessels name and year of construction engraved.

**F5.3. General Outfit**

F5.3.1. The following equipment shall be provided:
- 2 x 15 m nylon deck wash hoses with nozzle and coupling, diameter 2".

**F6. Air Conditioning, Heating and Ventilation**

**F6.1. General Design Conditions**

F6.1.1. The air conditioning system shall be designed to sufficiently maintain the temperature inside all passenger and crew spaces at 20°C (° C), in all environmental operating conditions, year-round.

F6.1.2. Consideration must be given to minimizing the use of deck space for condenser units. In respect to this, a centrally located and enclosed air handling unit would be preferred.
F6.1.3. In the event of split-type units being installed, they shall be fully protected against the marine environment by way of “Bluchem” treatment, or equal.

F6.1.4. It shall be possible for the temperature to be controlled independently in the wheelhouse. A separate unit may be considered for this requirement.

F6.1.5. All air conditioning machinery shall be mounted on resilient mountings with flexible connections.

F6.2. Air Conditioning

F6.2.1. The Air Conditioning for accommodation spaces shall be designed for 50% return air to be used under the most extreme conditions.

6.2.2. The number of air changes per hour for the air-conditioned spaces shall be based on the transmission heat loss in winter time, and the heat load in summer time.

6.2.3. For further design and calculations, the following ISO standard “ISO 7547:2002(E) - Ships and marine technology - Air conditioning and ventilation of accommodation space shall be followed.

F6.2.4. The Air Conditioning shall service the following areas:

- Wheelhouse
- Mess Room
- Kiosk
- Each Sanitary Space
- Inside Passenger Spaces

F6.3. Heating

F6.3.1. The Heating system shall be by means of electric air heaters integrated in the Air Conditioning unit/s, and shall serve the same areas as the Air Conditioning.

F6.4. Mechanical Ventilation

F6.4.1. The engine room shall be provided with air inlet ducts.

F6.4.2. Each engine room shall be ventilated by means of one electrical axial exhaust fan of a capacity to suit the engine requirements, so that the ventilation air is distributed over the engine room and other spaces in such a way that no hotspots or accumulation of oil moisture will occur, and the relevant diesel engines, generators, motors, etc. are provided with sufficient air supply.

F6.4.3. The air inlet and outlet in each engine room shall be equipped with automatically operated fire dampers, with manual reset.

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F6.4.4. Forced ventilation to machinery rooms and aft peaks shall be provided by means of electric fans.

F6.4.5. Direct centrifugal exhaust fans shall be provided for ablution facilities. The fans shall be installed behind interior bulkheads, or in the ceiling, with access through flush hatches.

F6.4.6. Special care must be taken in way of preventing/reducing excessive fan noise.

**F6.5. Natural Ventilation**

F6.5.1. Spaces which are not connected to the mechanical ventilation or air conditioning system shall be naturally ventilated by means of gooseneck or mushroom type ventilating shafts.

F6.5.2. Air ducts and ventilators shall be fitted with weathertight covers, if required by Class.

**F6.6. Air Inlet Mist Eliminators**

F6.6.1. To make aspiring of moisture or drops of water as low as possible, air inlet mist eliminators, of a sea water resistant aluminium type, shall be provided for the air conditioning systems and all mechanical ventilation supply systems.

F6.6.2. Air speed through the gross width of the mist eliminator shall be 5 m/s.

**F7. Control Consoles and Instruments**

**F7.1. General**

F7.1.1. A main control console shall be fitted in the wheelhouse, and shall be laid out in consideration of three distinct functions:

- Navigating
- Engineering
- Manoeuvering (Port and Starboard Conning Positions)

F7.1.2. Control panels shall be installed in the engine room, one at each position of each main diesel engine.

F7.1.3. All control panels and equipment provided with lighting shall be fitted with dimmer switches. The colour for the walls and ceiling shall be in a dark colour.

F7.1.4. Construction of the console shall be with steel or aluminium profiled frames, with removable panels on the front side, and hinged top covers to give good access to the inside of the console.

F7.1.5. The console shall have a smooth finish and shall be provided with a storm rail.
F7.1.6. The angle of inclination of the console must be sufficient to avoid glare from the sun obscuring the instrumentation displays, and be of sufficient angle to be clearly visible from the seated positions.

F7.1.7. Sufficient space shall be provided to fit any mentioned optional equipment.

**F7.2. Main Control Console**

F7.2.1. Instruments and controls shall be so arranged to enable the wheelhouse crew to carry out their wheelhouse duties while seated.

F7.2.2. The Main Control Console shall be so arranged as to offer efficient operation of all navigation and engineering systems.

F7.2.3. All navigation and engineering equipment, as required by SAMSA and Class, shall be set out in the console in order to achieve full operational functionally in way of indicators for both main engines, control levers, clutching in/out, activation/indication, speed control, alarm indication, and station control indication.

F7.2.4. Prior to final construction and layout of the main control console, a full-scale mock-up of the wheelhouse and its consoles shall be constructed for approval by RIM.

F7.2.5. The navigation suite shall be fully integrated and housed in appropriate consoles.

F7.2.6. A part of the console shall comprise of distribution for the following systems:

   Controls for:
   - Navigation Lights
   - Deck Lighting
   - Nautical Instruments

**F7.3. Control Panels Engine Room**

F7.3.1. A control panel shall be fitted in the vicinity of the control position of each main diesel engine, and must include all required push buttons, alarms and indicators.

**F7.4. Tank Sounding Installation**

F7.4.1. An electric tank sounding system shall be provided for all tanks and must continuously monitor the tank levels. Tank level indication panels shall be located in the wheelhouse.

F7.4.2. The tank sounding systems shall be connected to the engine room alarm and monitoring system for read out and alarm. The system shall be provided with a list, trim and specific gravity correction.

F7.4.3. The following tanks shall be provided with a set point for low level alarm:

[Signature]
- each fuel oil daily service tank

**F8. Electrical Installation**

**F8.1. General**

F8.1.1. The design and layout of the electric system, the materials, installation and testing shall be to Builders’ standards and in accordance with the requirements of the Class and SAMSA. All electrical equipment must be suitable for marine use. All switchboards, panels, boxes, switches, breakers etc. must be clearly marked with nameplates.

F8.1.2. The electrical installation shall consist of an A.C. system for 380/220 V supplies, and a DC system for 24 V supplies.

- **AC system**: 380V 50 – 60 Hz 3 phase/220 V 50 – 60 Hz 1 phase
- **DC system**: 24V DC

F8.1.3. The Ferry’s electrical/electronic installation shall be such that mutual electromagnetic interference (EMI) does not prevent any equipment from reaching its specified performance.

F8.1.4. Insulated rubber matting shall be placed in front of each switchboard as a preventative safety measure against electrical shock.

F8.1.5. Specific measures must be taken to prevent shaft eddy currents.

**F8.2. AC Generators**

F8.2.1. The AC system shall be supplied from the two (2) diesel driven generating sets. Each of the generating sets must give sufficient power for the normal operation of the Ferry.

F8.2.2. The two alternators shall be of a brushless design, self-ventilated, self-excited, single bearing, self-regulated type with automatic voltage regulator (A.V.R.) that keeps the voltage with ± 1.5% of rated voltage under all steady conditions from zero to full load (100%).

F8.2.3. The AC generators shall be capable of supplying 380V/50 – 60 Hz/3 Phase.

F8.2.4. The AC generators shall be capable of supplying 220V/50 – 60 Hz/Single Phase.

F8.2.5. A low voltage system, with battery backup, for navigation and control equipment shall be provided.

**F8.3. Main Switchboard**

F8.3.1. All materials and constructions must be sufficiently shockproof for this type of Vessel, suitable for the Ferry’s operating conditions, and according to the Classification requirements for this type of Vessel.
F8.3.2. The control system of the Main Switchboard shall be incorporated in the control systems machinery installations.

F8.3.3. The Main Switchboard shall be separated into two equal switchboards (Starboard & Port). Each switchboard shall be connected to its respective generator. These two switchboards are normally linked together by means of a cable. In case of an emergency the switchboards shall be electrically separated by a Moulded Case Circuit Breaker (MCCB) in each switchboard. The Main Switchboard shall be fabricated in aluminium, be drip proof (IP22), and with dead front.

F8.3.4. Each Main Switchboard shall have one section for the generator breaker, one section for generator instrumentation, one section for motor starters and one section for outgoing feeders.

F8.3.5. The feeders shall be divided into the two switchboards in such a way that maneuverability of the Ferry and facilities for the comfort of the passengers shall be maintained in case of failure in one of the switchboards.

F8.3.6. The generator breakers shall be internally interlocked (no parallel running) and interlocked against shore connection.

F8.4. Anti-Condensation Heating

F8.4.1. Anti-Condensation Heating shall be provided for:

- Transformers 380V/220V
- Switchboards
- Control Consoles

The Anti-Condensation Heating for generators, motors and transformers shall be switched on automatically when the main switch or starter concerned is switched off and the heating is signalized on the concerning starter or switchboard.

F8.5. Emergency Switchboard - 380 V

F8.5.1. The Emergency switchboard shall be fed by the Main Switchboard and shall be in accordance to the Classification Society requirements.

F8.6. Shore Supply 380/220 V

F8.6.1. The shore connection shall consist of two separate systems and be connected to the shore supply sections of the main switchboard.

- 380V, 50 – 60 Hz, 60A
- 220V, 50 – 60 Hz, 32A

F8.6.2. Two 30 m flexible cables must be provided. One (1) cable each for the 220V and 380V shore supply.

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F8.6.3. Type: 4 pin IP67 plug.

F8.6.4. A Phase Rotation Meter shall be installed in the Main Switchboard to indicate phase changes when connecting to the Shore Supply.

**F8.7. Accumulators**

F8.7.1. Suitable 24V batteries and charging shall be supplied for starting main engines and generators

F8.7.2. Suitable 24V batteries and charging shall be installed for monitoring purposes.

F8.7.3. Suitable 24V batteries and charging shall be installed for radio equipment

F8.7.4. Suitable 24V batteries and charging shall be installed for emergency service.

F8.7.5. Batteries and charger capacities must suit the final system requirements.

**F8.8. Transformers 380 V / 220 V**

F8.8.1. Two identical transformer banks 380 V / 220V 50 – 60 Hz AC supply for lighting, small electric motors and other appliances shall be provided; each having the following specification:

- Voltage primary 3 x 380 V
- Voltage secondary 3 x 220 V
- Frequency 50 – 60 Hz

**F8.9. Power Distribution Boxes**

F8.9.1. The AC distribution board shall be located in the wheelhouse and consist of the necessary circuit breakers for outgoing feeders and switches.

F8.9.2. The 24V DC system distribution boards shall be located in the wheelhouse and consist of:

- the necessary circuit breakers for batteries;
- voltmeter;
- emergency light switches;
- test equipment for earth fault; and

supplies to emergency equipment as required by the Classification Society/HSC/SAMSA, whichever is more stringent.

F8.9.3. Separating switches for starters for main and auxiliary engines, and for cross-connection to the opposite distribution board, shall be included.
F8.10. Cables and Cable Trays

F8.10.1. All power cables shall be approved by the Class. All conductor ends shall be provided with crimped type cable lugs, ferrules etc., depending on the terminal's type.

F8.10.2. Where cables pass through decks or watertight bulkheads, watertight passages shall be used.

F8.11. Main Lighting

F8.11.1. All Main Lighting shall be 220V AC supply. The interior of the Ferry shall be adequately lit with marine-type florescent tube lights. All exterior lights shall be of a waterproof marine-type. In passenger saloons, engine rooms and stairways, average illumination shall be approximately 100 lux measured 1 m from the light source.

F8.11.2. Interior luminaries in passenger and crew spaces shall be installed being sufficient in quantity to suit the layout and lux requirements.

F8.11.3. Exterior lighting must be sufficient in quantity and lux, and placed on the aft deck, foredeck and walkways, where necessary.

F8.11.4. Exterior watertight floodlights must be of sufficient brightness and shall be placed in all required areas, facing forward, aft, and near life rafts.

F8.11.5. Below main deck lighting shall be installed and must be sufficient in quantity and lux in each compartment.

F8.12. Socket outlets for general use in covered spaces

F8.12.1. Sockets with an output of 220 V shall be fitted at the following locations:

- Wheelhouse (4)
- Mess Room (4)
- Engine Room (2), Each Room
- Machinery Room (1), Each Room
- Passenger Space (6)
- Passenger Space Phone Charging Station (4)

The exact quantity and type of lighting and sockets (main and emergency) shall depend on the actual design of the interior as approved by RIM.
F8.13. Emergency Lighting

F8.13.1. All emergency lighting shall be 24V DC supply, positioned adequately above and below deck. Escape route markers shall be mounted on all emergency exits. Guide lights shall be mounted in the passenger spaces.

F8.13.2. Approximately half the numbers of the 220 VAC lighting points shall serve for emergency lighting, for which purpose they shall be connected to the emergency switchboard.

F8.13.3. The emergency lighting shall be able to be switched-on automatically and shall be in accordance with Class requirements.

F8.13.4. The positions and quantity of emergency lights shall be in accordance with Class requirements.


F8.14.1. A General Emergency Alarm System shall be provided in accordance with the Regulatory Bodies.

F8.14.2. This system must be incorporated in the public-address system.

F8.15. Engine Room Alarm and Monitoring System

The alarms for the diesel engines, and others, shall be displayed on the main console in the wheelhouse. The alarm system shall be designed to give an alarm only at abnormal condition. To achieve this all level switches shall be delayed and all pressure switches and flow switches shall be inhibited when the machinery is not running. In both engine rooms, a combination of visual and audible alarms shall be arranged. An alarm reset pushbutton shall be installed in each machinery room and wheelhouse.

F8.15.1. Monitoring at the main console in the wheelhouse and in the engine rooms shall be achieved by means of the main engine monitoring system and local operation panels.

F8.15.2. Typical alarms are mentioned below, however, these alarms are subject to the engine manufactures recommended scope:

- Lube oil pressure low.
- Lube oil filter differential pressure high.
- Lube oil temperature high.
- Lubricating oil to turbocharger inlet pressure low.
- Coolant temperature high.
- Coolant pressure low.
- Fuel pressure low.
- Fuel-pipe leakage level high.
- Raw water pressure low.
- Exhaust temperature high.
- Emergency stop.
- Power supply failure.
- Safety shutdown.
- Start interlock.
- Speed sensor failure, shutdown.

F8.15.3. Typical gear alarms monitored at the main console in the wheelhouse and in the engine room:
- Control oil pressure low.
- Control oil temperature high.
- Oil filter diff. pressure high.
- Oil tank level low & too low.

F8.15.4. The machinery alarm system indication panel in the wheelhouse main console shall contain the following functions:
- Alarm indication light, when activated.
- Lamp test push button.
- Function test push button.
- Push button for silencing alarm buzzer and siren.
- Alarm reset push button.

F8.15.5. Miscellaneous alarms and monitoring points at the wheelhouse main console shall cover the following:
- Power failure alarm panel.
- Power failure for fire pump & engine room fan.
- Open hatch/doors engine room (Port & Starboard).
- High bilge water level for all below deck compartments.
- Sewage tank level high and low.
- Fuel oil overflows & low level (Port & Starboard).
- Low fresh water level.
- High sludge tank level.
- Power failure of fuel shut off system.

The exact number of alarms and monitoring points shall depend on the final design, must be suitable for unmanned operations, and shall satisfy the requirements of the regulatory bodies.

**F9. Machinery Installation**

**F9.1. General**

F9.1.1. The machinery installation shall comprise of the following diesel engines:

- **PS main diesel engine**, driving:
  - At flywheel side, a propeller installation through a flexible coupling and a reduction gearbox.
  - The gearbox is at the propeller side.

- **SB main diesel engine**, driving:
  - At flywheel side, a propeller installation through a flexible coupling and a reduction gearbox
  - The gearbox is at the propeller side

- Two diesel engines driving two main generators.

F9.1.2. Engine powers shall be stated at maximum continuous ratings developed under the following conditions:

- ambient air temperature 45°C
- raw water temperature 32°C
- fresh water temperature of central cooling water system 38°C
- air pressure 1 bar
- maximum relative humidity 90 % at abt. 35°C
F9.2. Control Systems Machinery Installations

F9.2.1. The Control Systems of the Machinery Installations shall be based on independent Programmable Logic Controllers (PLC’s), which communicate with each other over a redundant network.

F9.2.2. The PLC system shall monitor and control the relevant systems.

F9.2.3. Each propulsion system shall be suitably controlled from the wheelhouse conning stations through independent controllers.

F9.3. Main Diesel Engines

F9.3.1. The main engines shall have integrated systems for lubrication oil, cooling water and fuel oil and shall be provided with turbo charging and charge air-cooling.

F9.3.2. The design and layout of the propulsion installation shall be in accordance with the Builder’s standard and with the relevant rules of the Class. It shall be such that permanent attendance in the engine room will not be required.

F9.3.3. The Main Diesel Engine in each engine room shall drive a fixed pitch propeller through a reduction gearbox.

F9.3.4. Each Main Diesel Engine shall be able to be removed and replaced through the engine hatchway.

F9.4. AC Generator Diesel Engines

F9.4.1. Two diesel generators must be fitted, of which one is a stand-by.

F9.4.2. Starting and stopping of diesel generators shall be from the engine room and the wheelhouse.

F9.5. Couplings for Propeller Drive

F9.5.1. Between each Main Diesel Engine and its respective reduction gearbox for propeller drive, a flexible coupling shall be mounted.

F9.6. Gearboxes for Propeller Drive

F9.6.1. The Main Diesel Engines shall drive a reverse/reduction gearbox through a flexible coupling. The gearboxes will be fixed and securely mounted on their foundations.

F9.6.2. The reduction ratio shall be selected to meet the Ferry’s performance with an optimised propeller design.
F9.6.3. The built-in clutches for reverse, neutral and forward operation shall be hydraulically operated with a built-on, direct driven hydraulic pump. The gearbox shall be able to de-clutch the propeller shaft.

F9.6.4. The gearbox shall also be provided with a built-on lubrication oil cooler, connected by a bypass to the engine cooling water system.

F9.6.5. The gearbox shall be equipped with a built-in thrust bearing, and take the axial thrust of the propeller.

F9.7. Propeller Shaft Earthing

F9.7.1. To avoid potential corrosion in the Ferry and parts of its machinery, a current conductor shall be fitted on each propeller shaft for earthing the propeller shaft with the hull.

F9.8. Propeller Shaft Locking Device

F9.8.1. Each propeller shaft shall be provided with a hand-operated Propeller Shaft Locking Device, if required.

F9.9. Stern Tube and Seals

F9.9.1. Each stern tube shall be made of thick-walled, seamless, steel tube welded in the ship's structure where the propeller shafts pass through the hull.

F9.9.2. Shaft seals and bearings shall be fitted at each end of the stern tube.

F9.9.3. The propeller shafts may either be oil or water lubricated. Selection of shaft lubrication shall aim to reduce maintenance, with major preventative maintenance coinciding with dry docking intervals.

F10. Auxiliaries

F10.1. Bilge/Fire/General Service Pumps

F10.1.1. All hull compartments shall be fitted with a bilge pumping system.

F10.1.2. Two electrically driven, self-priming, centrifugal pumps shall be installed in the engine room and can be used as a:

- Bilge Pump
- Fire Pump
- General Service Pump
F10.1.3. Each pump shall have a capacity in accordance with the requirements of the Regulatory Bodies.

F10.1.4. Two manually operated bilge pumps, situated on the fore deck, shall be provided and can be used to empty the fore peak compartments.

F10.1.5. An emergency portable submersible bilge pump shall be supplied, if required by the Regulatory Bodies.

**F10.2. Emergency Fire Pump**

F10.2.1. The Ferry shall be equipped with the necessary Emergency Fire Pump/s to fulfil the requirements of the regulation Authorities.

**F10.3. Sewage Treatment Unit**

F10.3.1. A sewage treatment unit for biological treatment of the sewage discharge shall be installed in the technical space, serving the separate black and grey water discharge systems of the Ferry. The unit, using a vacuum toilet flushing system, shall meet the latest internationally accepted requirements.

F10.3.2. The sewage treatment unit shall be in accordance with MARPOL IV: Prevention of Pollution by Sewage from Ships, and, if possible in the regulatory framework, allow for the overboard discharge of treated effluent whilst the vessel is underway.

F10.3.3. A by-pass line for direct discharge overboard shall be provided, inclusive of an international shore discharge connection.

F10.3.4. Automatic pump stops shall be introduced at low level to prevent pump damage.

**F10.4. Water Pressure Sets**

F10.4.1. The fresh water sanitary system shall have its own hydrophore pumps with automatic start-and-stop controlled by a pressure switch mounted on a hydro-pressure tank.

F10.4.2. A low-level switch shall be mounted for automatic stop of the freshwater pump, in the event of an empty tank, to protect the electric motor against overheating.

F10.4.3. Two units shall be fitted, both for fresh water.

F10.4.4. The freshwater pressure set shall supply toilet flushing (if required by the Bidder’s selected system), drinking water and wash basins.

**F10.5. Fresh Water Disinfection Installation**

F10.5.1. An ultraviolet disinfection installation (including pre-filter system) shall be installed in the engine room, serving the drinking water system. The unit shall be flexibly mounted.
F10.5.2. The installation shall have a capacity which is adapted to the domestic drinking water system, and shall be fitted in the pressure pipeline of the drinking water pressure system.

F10.6. Domestic Hot Drinking Water Circulating Pump

F10.6.1. For the closed hot drinking water circuit an electrically driven, close-coupled, in-line, non-self-priming, centrifugal circulating pump shall be fitted.

F10.7. Calorifiers

F10.7.1. The following calorifier shall be installed:

- Serving the hot drinking water ring main system in the Ferry, one thermostatically controlled electric calorifier, with a capacity of 50 litres.

F10.7.2. The calorifier shall be of the indirectly heated double walled type.

F10.8. Fuel Oil Transfer

F10.8.1. A suitable method of Fuel Oil Transfer shall be incorporated into the system to allow fuel to be transferred from one tank to the other via a crossover line, making it possible to use either tank for any engine.

F10.8.2. A ‘Duplex’ Racor filter shall be provided to each main engine fuel supply system.

F10.8.3. Solenoid valves shall be fitted on the fuel lines, inside the compartment with fuel oil tanks, to the diesel engines to isolate fuel oil to the engine room in case of emergency. The remote control thereof shall be located on the main console in the wheelhouse.

F10.9. Lubricating Oil Pumps

F10.9.1. Each main engine and generator shall be fitted with engine driven lubrication oil pumps and built in electronically driven pre-lubricating oil pumps.

F10.9.2. Suitable pumps shall be fitted for the engine crankcases.

F10.9.3. Gearboxes shall be fitted with gearbox driven lubrication oil pumps.

F10.9.4. Suitable Centrifugal Pumps shall be fitted to supply lubrication oil to the propeller shafts if such a type of shaft lubrication system is selected by the Bidder.

F10.10. Sludge/Dirty Oil Pump

F10.10.1. The sludge/Dirty oil pump shall be an electrically driven pump of the diaphragm type, required to discharge the dirty oil tank.
F10.11. Cooling Water Systems

F10.11.1. The main engines shall be seawater cooled via an inter-cooling system, comprising of a closed freshwater system and an open seawater system. A heat exchanger shall be fitted to cool the freshwater system with the seawater system. One sea inlet for cooling water shall be fitted in each hull; one for Starboard main engines, auxiliary engine and fire pump, and one for Port main engines, auxiliary engine and fire pump. All seawater piping shall be made of Cunifer.

F10.11.2. The freshwater cooling system shall be a closed system integrated in the engine layout, with a built on freshwater cooling pump.

F10.11.3. The seawater inter-cooling system shall contain a sea inlet with strainer, sea water pump driven by the main engine, and discharge from the engine overboard.

F10.11.4. Each hull shall be provided with one sea-inlet. Each inlet shall have a strainer box made of stainless-steel, coated internally and fitted with a stainless-steel strainer inside.

F10.11.5. The seawater cooling shall discharge from the main engines and auxiliary engines directly overboard, above the waterline.

F10.11.6. The auxiliary engines cooling system shall be taken from the main engine sea chest.

F10.12. Sea Chests

F10.12.1. Seawater inlets in each hull shall be streamlined for minimal drag and cavitation as well as for efficient water inflow. Each seawater inlet shall be fitted with a valve and a strainer.

F10.13. Pre-Heating for Diesel Engines

F10.13.1. The following pre-heating systems shall be installed for each main diesel engine and AC generator:

- pre-heating unit; comprising:
  - electrically driven, non-self-priming, centrifugal circulating pump.
  - thermostatically controlled electric heater.

F10.13.2. The capacity and pressure of the pumps and heaters shall be in accordance with the requirements of their duty.

F10.13.3. The necessary thermostatic control valves shall be fitted.

[Signature]
F10.14. Exhaust Silencers

F10.14.1. The exhaust gas pipe line of each diesel engine shall be provided with an exhaust silencer with spark arrestor.

F10.14.2. To reduce the exhaust sound level, special attention must be paid to the exhaust silencers of the main diesel engines.

F10.15. Hydraulic Installations

F10.15.1. The gearbox built-in clutches for reverse, neutral and forward operation shall be hydraulically operated with a built-on, direct driven hydraulic pump.

F10.15.2. Each steering gear shall be connected to a main engine PTO driven hydraulic pump.

F10.15.3. One electro or electro-hydraulic driven anchor windlass shall be installed.

F11. Ship Piping Systems

F11.1. General

F11.1.1. The design and layout of the piping system, the materials, and its installation shall be to the Builder's Standards.

F11.1.2. Pipes shall be adequately supported to prevent undue vibration. Where necessary, flexible connections shall be made use of.

F11.1.3. All piping systems required for the satisfactory functioning of the installations shall be installed together with all fittings such as flow control valves, cocks, filters, pressure gauges, thermometers, etc.

F11.1.4. The requirements of the Regulatory Bodies must be met where applicable. Where required by the Regulatory Bodies, the pipe lines shall be tested for leaks to the prescribed pressure.

F11.1.5. The pipes and pipe ends on machinery shall be blanked prior to final installation.

F11.1.6. After completion of fabrication work, all lubricating oil pipe lines and fuel oil pipe lines from daily service tanks to the consumers will be pickled, oiled and blanked prior to final installation.

F11.1.7. After completion of fabrication work all hydraulic pipe work will be cleaned internally, oiled and blanked prior to final installation.

F11.1.8. All piping in machinery spaces shall be marked with a coloured ring to denote the nature of fluid or gas passing through it.
F11.2. Materials

F11.2.1. All materials used in the piping systems shall be suitable for the type of vessel and material used in the construction of the Ferry.

F11.3 Bilge Piping

F11.3.1. All hull compartments shall be fitted with a bilge pumping system.

F11.3.2. The engine room bilge pumps may be used as fire pumps. Isolation shall be by means of valves and a manifold. Strainer baskets shall be fitted at the suction side.

F11.3.3. In engine rooms and machinery rooms, the system shall discharge either overboard, or to a bilge holding tank. All bilge lines shall be installed in such a manner so that they can be dismounted.

F11.3.4. Individual submersible electric pumps, controlled from the wheelhouse, shall pump the remaining compartments and void spaces.

F11.4. Air Pipes

F11.4.1. Suitable de-aeration pipes shall be arranged to all tanks, double bottoms, cofferdams, tunnels and other spaces; which are not fitted with alternative ventilation arrangements.

F11.4.2. Air pipes of fuel oil bunkers and other oil tanks extending above deck shall be provided with a tank vent check valve with flame screen and PVC float ball.

F11.5. Filling Pipes

F11.5.1. Filling pipes of lubricating oil storage tanks and drinking water tanks shall be extended above the deck and be provided with a blank flange and save all.

F11.5.2. Filling pipes of fuel oil bunkers shall be extended above the deck and be provided with a cam-lock coupling and save all.

F11.6. Sounding Pipes

F11.6.1. All Sounding Pipes shall be provided with a bronze screw cap, and where required by the Regulatory Bodies, extended above deck.

F11.6.2. The Sounding Pipes of tanks in engine rooms shall be supplied with a stand pipe and bronze self-closing sounding cock.

F11.6.3. Striking pads shall be fitted under the sounding pipes in all tanks and compartments.

F11.7. Scuppers

F11.7.1. Scuppers, sufficient in number and size, shall be fitted in all-weather exposed decks of the deckhouse, and led to the next lower deck.
F11.7.2. Scupper pipes in floors in sanitary spaces, galley, passages, etc. shall be provided with a water lock and led to a main drain.

F11.8. Fire Fighting and Deck Wash System

F11.8.1. The placing and number of fire-fighting and deck wash valves, inclusive of the diameter of the piping, shall be in accordance with the requirements of the Regulatory Bodies.

F11.8.2. A salt water deck wash will not be required, however, a freshwater wash on each deck will be preferred.

F11.8.3. Two international shore connections complying with the requirements of the Regulatory Bodies shall be provided.

F11.9. Domestic Pipelines

F11.9.1. Each toilet shall be provided with a washbasin with cold and hot water tap.

F11.9.2. The mess room shall be provided with a cold and hot water tap.

F11.9.3. The kiosk shall be provided with a cold and hot water tap.

F11.9.4. A cold-water tap shall be provided in the machinery room.

F11.9.5. A cold-water tap shall be provided in the wheelhouse.

F11.9.6. The toilets shall discharge into the sewage treatment plant.

F11.9.7. Washbasins shall drain direct over board.

F11.9.8. The hot drinking water system shall be closed circuit fitted with an electrically driven circulating pump and calorifier and kept under pressure by the drinking water pressure set.

F11.9.9. The separate black and grey water pipe systems shall each be provided with siphons and shall be led into separate collecting pipes which end into the sewage unit with by-pass for direct discharge overboard.

F11.10. Exhaust Gas Systems

F11.10.1. The exhaust gas pipe lines of diesel engines shall each be provided with a silencer with spark arrestor and the necessary expansion pieces, vibration dampers and flexible connections to allow free expansion and to prevent vibration.

F11.10.2. At a suitable place, each exhaust gas pipeline shall be fitted with a drain point.
F11.11. Insulation

F11.11.1. The exhaust gas pipe lines of diesel engines shall be sufficiently insulated and lagged to prevent heat, reduce noise, and allow for safe working conditions.

F11.11.2. The ring lines for domestic hot and cold water inside the accommodation shall be insulated by a synthetic foam rubber material.

G. DISCLAIMERS

G1.1. Any omissions from this specification, which is a requirement by SAMSA, the Classification Society, or any other regulatory body for a vessel of this type, must be included in the final build specification submitted by the Bidder, and agreed upon, upon Contract Award.

G1.2. Where any requirements of SAMSA, the Classification Society, or any other regulatory body differs from that which is prescribed in this Technical Specification, the stricter of the requirements shall be applied.
2. Annexure B2: Bidder’s Design
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 ROBBEN ISLAND.

Annexure B2: BIDDER’S DESIGN

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<th>Value / Detail</th>
<th>Design criteria and/or applicable standard</th>
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</table>

NOTE: Bidders may make use of a separate document/pages/spreadsheet appended to Annexure B2 in order to list/describe the Bidder’s Design with greater ease.
3. Annexure B3: Plant and Materials
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 ROBBEN ISLAND.

Annexure B3: PLANT AND MATERIALS

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<tr>
<th>Component &amp; Application</th>
<th>Type</th>
<th>Rating/size</th>
<th>Supplier/make/model</th>
<th>Motivation</th>
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NOTE: Bidders may make use of a separate document/pages/spreadsheet appended to Annexure B3 in order to list/describe the Bidder’s selected Plant and Materials with greater ease.
4. Annexure B4: Technical Data

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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 ROBBEN ISLAND.

Annexure B4: TECHNICAL DATA

All information, technical details and/or data [or particulars of the offer] called for in the Vessel Technical Specification (Annexure B1) must be submitted by the Respondent with its RFP as separate returnable schedules. Each schedule will be titled to reflect its content and will be signed and dated by the Respondent. A list of such schedules must be recorded below:

<table>
<thead>
<tr>
<th>Summary of schedules attached to this Annexure:</th>
</tr>
</thead>
</table>

NOTE: Bidders may make use of a separate document/pages/spreadsheet appended to Annexure B4 in order to list/describe the Technical Data.
5. Annexure B5: Proposed Subcontractors/Consultants
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 ROBBEN ISLAND.

Annexure B5: PROPOSED SUBCONTRACTORS/CONSULTANTS

Respondents must complete the following declaration:

We notify you that it is our intention to employ the following subcontractors / consultants for work on the contract.

By submitting this proposal, we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors / Consultants in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

<table>
<thead>
<tr>
<th>Name and address of proposed Sub Contractor</th>
<th>Nature and extent of work</th>
<th>B-BBEE Level</th>
<th>Previous experience with Subcontractor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>9.</td>
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</table>

NOTE: Bidders may make use of a separate document/pages/spreadsheet appended to Annexure B5 in order to list the Bidder’s proposed Subcontractors/Consultants.
6. **Annexure B6: Management and CV's of Key Persons**

[Blank Page]
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 ROBBEN ISLAND.

Annexure B6: MANAGEMENT AND CV’S OF KEY PERSONS

| Summary of documents attached to this Annexure: |
7. Annexure B7: Quality Control Plan

[Blank Page]
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 ROBBEN ISLAND.

Annexure B7: QUALITY CONTROL PLAN

Provide a detailed description of the Quality Control Plan for the Ferry build.

NOTE: Bidders may make use of a separate document/pages appended to Annexure B7 in order to define the Bidder’s detailed Quality Control Plan.
8. Annexure B8: Programme and Method Statement
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 ROBBEN ISLAND.

**Annexure B8: PROGRAMME AND METHOD STATEMENT**

Bidders are to provide comment here if necessary and append their detailed Project Programme and Method Statement to this Annexure:
9. Annexure B9: Technical Pre-Qualification

[Blank Page]
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 ROBBEN ISLAND.

Annexure B9: TECHNICAL PRE-QUALIFICATION

Respondents must meet the below-listed minimum Technical Pre-Qualification criteria. By indicating compliance, Bidders acknowledge that these criteria and their corresponding requirements as listed in the RIM Vessel Specification (Annexure B1) will be met on vessel handover to RIM regardless of what is stated in the Bidders responding documents to this Bid.

<table>
<thead>
<tr>
<th>SECTION C – DESIGN CRITERIA</th>
<th>Comply Yes or No</th>
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<tbody>
<tr>
<td>C1 – Design Conditions</td>
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</tr>
<tr>
<td>- Passenger Capacity</td>
<td>180-200</td>
</tr>
<tr>
<td>- Additional Outside Seating</td>
<td>≥ 30</td>
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<tr>
<td>- Maximum outside temperature</td>
<td>45°C</td>
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<tr>
<td>- Minimum outside temperature</td>
<td>5°C</td>
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<tr>
<td>- Engine room temperature</td>
<td>55°C</td>
</tr>
<tr>
<td>- Maximum sea water temperature</td>
<td>25°C</td>
</tr>
<tr>
<td>- Minimum sea water temperature</td>
<td>8°C</td>
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<tr>
<td>- Relative humidity</td>
<td>80% @ 30°C</td>
</tr>
<tr>
<td>C2 – Main Particulars</td>
<td></td>
</tr>
<tr>
<td>- Proven Design</td>
<td>Built in last 10 years, been in operation for at least one [1] year</td>
</tr>
<tr>
<td>- Maximum Length Overall</td>
<td>36.00m</td>
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<tr>
<td>- Maximum Beam Overall</td>
<td>10.00m</td>
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<tr>
<td>- Maximum Loaded draft</td>
<td>1.80m</td>
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<tr>
<td>C3 – Speed</td>
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<tr>
<td>- Speed at 85% MCR – fully loaded, in conditions of Wind Beaufort 4 and Swell 3.5 m</td>
<td>22 knots</td>
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<tr>
<td>C4 – Classification</td>
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<tr>
<td>- Vessel Class Proposed</td>
<td>SAMSA Recognised Organisation i.a.w. referenced Marine Notice</td>
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[Signature]
- Vessel compliant to latest HSC Code

**SECTION E – STANDARDISATION**

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<tr>
<th>E4 – Noise Reducing Measures</th>
<th>Comply Yes or No</th>
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<tbody>
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<td>- Noise Levels</td>
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**SECTION F – TECHNICAL GUIDELINES**

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<tr>
<th>F3 – Accommodation</th>
<th>Comply Yes or No</th>
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<tbody>
<tr>
<td>- All Passengers enclosed seating</td>
<td>To be included</td>
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<tr>
<td>- Wheelchair friendly</td>
<td>To be included</td>
</tr>
<tr>
<td>- Three Ablution facilities</td>
<td>One Wheelchair capable</td>
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<tr>
<td>- Crew Mess allocation</td>
<td>To be included</td>
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<tr>
<td>- Kiosk</td>
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<table>
<thead>
<tr>
<th>F4 – Navigation and Communication Equipment</th>
<th>Comply Yes or No</th>
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</thead>
<tbody>
<tr>
<td>- Integrated Communication, Public Address and Television System</td>
<td>For on board public addressing</td>
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<table>
<thead>
<tr>
<th>F6 – Air Conditioning, Heating and Ventilation</th>
<th>Comply Yes or No</th>
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</thead>
<tbody>
<tr>
<td>- AC for all passenger and crew spaces</td>
<td>To maintain 20°C</td>
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<thead>
<tr>
<th>F7 – Control Consoles and Instruments</th>
<th>Comply Yes or No</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Navigation and Engineering functions on wheelhouse</td>
<td>For UMS operations</td>
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</table>

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<thead>
<tr>
<th>F9 – Machinery Installation</th>
<th>Comply Yes or No</th>
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</thead>
<tbody>
<tr>
<td>Must be Direct Drive (Waterjet Propulsion will not be considered)</td>
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</table>

Number of Main Engines: 2
Number of main generators: 2 x 100% Capacity

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<thead>
<tr>
<th>F10 – Auxiliaries</th>
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<tbody>
<tr>
<td>Sewage Treatment Plant</td>
<td>To be included</td>
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**NOTE:** Non-compliance to a single line item as listed in the table above will result in the Potential Bidder’s Bid being disqualified.
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<th>FINAL POINT</th>
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<td>Full drawings outline. Photos of previous build.</td>
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<td>180 - 200 Passengers allocated Internal Space</td>
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<tr>
<td>Fuel Capacity = 3 days of 4 return trips per day</td>
<td>C1.12</td>
<td>0.5</td>
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<td>Unmanned/automated Engine Room. Monitor from W/House</td>
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<tr>
<td>Proven Catamaran Design – Built in last 10 years, operational for at least 1</td>
<td>C2</td>
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<tr>
<td>Good Wheelhouse visibility with Side Conning Stations</td>
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<tr>
<td>Additional Space for Passengers - i.e. Outside Decks and outside seating for minimum 30 Passengers</td>
<td>C2.2</td>
<td>0.5</td>
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<tr>
<td>Fold away seating and securing for 4 - 8 Wheel Chairs</td>
<td>C2.7</td>
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<td>Separate Crew Mess Room</td>
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<td>Vessel Integrated ramps/boarding design</td>
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<td>Maximum Length = 36.00m</td>
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<td>Maximum Beam = 10.00m</td>
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<td>Maximum loaded Draft = 1.80m</td>
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<td>Noise level limitations met</td>
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<th>4. HULL</th>
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<td>Hull Scantlings: Aluminium ≥ 6 mm, Steel ≥ 5 mm</td>
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<td>Hull form and design</td>
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<td>Free space between decks - 2.20m Pax Space, 2.30m W/House</td>
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<tr>
<td>Rudders design and functionality</td>
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<td>Propellers design and functionality</td>
<td>F1.10</td>
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<tr>
<td>Fendering design and functionality</td>
<td>F1.11</td>
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<tr>
<td>Tanks - Design, access, alarms, filling, draining and measure</td>
<td>F1.12</td>
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<tr>
<td>Tanks - Capacities</td>
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<td>Paint Specification</td>
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<th>5. EQUIPMENT</th>
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<td>Steering Gear - Design and Functionality</td>
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<tr>
<td>Windlass, Chain and Anchor arrangement</td>
<td>F2.2 and F2.3</td>
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<tr>
<td>Bollards, fairleads and mooring arrangement</td>
<td>F2.4</td>
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<tr>
<td>Integrated Ramps and gates arrangement</td>
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<tr>
<td>Fixed Fire Fighting System - functionality</td>
<td>F2.10</td>
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</tr>
<tr>
<td>Integrated fired detection and alarm system - functionality</td>
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<tr>
<td>Loose firefighting equipment</td>
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<tr>
<td>Life Saving Appliances</td>
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<th>6. ACCOMMODATION</th>
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<tr>
<td>Accommodation - Passenger Space Arrangement</td>
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| Accommodation - Wheelhouse Arrangement | F3.2 | 3 | 0 |
| Accommodation - Crew Mess Arrangement | F3.3 | 2 | 0 |
| Accommodation - Kiosk Arrangement | F3.4 | 2 | 0 |

7. NAVIGATION AND COMMUNICATION EQUIPMENT

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<thead>
<tr>
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<tbody>
<tr>
<td>Magnetic Compass</td>
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<td>Gyro Compass</td>
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<td>Electric Steering System</td>
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<td>Electric Rudder Position Indicating System</td>
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<td>Auto Pilot</td>
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<tr>
<td>Echo Sounding Equipment, Automatic Identification System, Water Speed Log, Radar Installation Global Positioning System (GPS), Wind Measuring System</td>
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<td>Radio and Safety Communication Equipment</td>
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<td>Electronic Charts Display and Information System (ECDIS)</td>
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<td>Integrated Talkback System and Public-Address system</td>
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<td>Navigation Lights, Day Signals, Signaling Lamp, Horn, Searchlight, Window Wipers, Clocks</td>
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8. INVENTORY

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9. AIR CONDITIONING, HEATING AND VENTILATION

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<td>Mechanical Ventilation</td>
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<td>Natural Ventilation</td>
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<td>Air Inlet Mist Eliminators</td>
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### 10. CONTROL CONSOLES AND INSTRUMENTS

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<td>Main Control Consoles</td>
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<td>Control Panels in Engine Room</td>
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<td>Tank Sounding Installation</td>
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### 11. ELECTRICAL INSTALLATION

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<td>AC Generators</td>
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<tr>
<td>Main Switchboard</td>
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<td>Anti-condensation heating</td>
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### 12. MACHINERY INSTALLATION

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<td>Couplings for Propeller Drive</td>
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<td>Gearboxes for Propeller Drive</td>
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<td><strong>Propeller Shaft Earthing</strong></td>
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<td><strong>Propeller Shaft Locking</strong></td>
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<td><strong>Stern Tube and Seals</strong></td>
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### 13. AUXILIARIES

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### 14. SHIP PIPING SYSTEMS

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<td>Fire Fighting Sea Water system</td>
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11. Annexure B11: Certificate of Acquaintance with Specifications

[Blank Page]
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 ROBBEN ISLAND.

Annexure B11: CERTIFICATE OF ACQUAINTANCE WITH SPECIFICATIONS

I/We

______________________________
SIGNATURE OF WITNESS

______________________________
SIGNATURE OF BIDDER

do hereby certify that I/we acquainted myself/ourselves with all the documentation comprising the Specifications and Drawings for the carrying out of the proposed supply for which I/we submitted my/our Proposal.

I/We furthermore agree that Robben Island Museum shall recognise no claim from me/us for relief based on an allegation that I/we overlooked any provisions of the Specifications and Drawings or failed to take it into account for the purpose of calculating my/our offered prices or otherwise.

SIGNED at ___________________________ on this _____ day of ___________________20___
12. Annexure B12: Manufacturers
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 ROBBEN ISLAND.

Annexure B12: MANUFACTURERS

Local Manufacturer(s) for the Goods tendered for:

<table>
<thead>
<tr>
<th>ITEM</th>
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<th>BUSINESS ADDRESS</th>
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NOTE: Bidders may make use of a separate document/pages/spreadsheet appended to Annexure B12 in order to list Local Manufacturers of specific items if needed.
13. Annexure B13: Warranty Requirements

[Blank Page]
## Contents of Warranty Requirements

1. Introduction .................................................................................................................. 104
2. Background .................................................................................................................. 104
3. Documents .................................................................................................................... 104
   3.1. Reference Documents ............................................................................................ 104
4. Warranty Period Requirements ..................................................................................... 104
   4.1. General .................................................................................................................. 104
   4.2. Defects and Failures .............................................................................................. 105
   4.3. Technical Manuals and Maintenance Schedules/Plans ........................................ 105
   4.4. Warranty Spares .................................................................................................... 105
5. Post Warranty Period Defects/Failures ......................................................................... 106
6. Disputes ....................................................................................................................... 106
7. Dispute Resolution ....................................................................................................... 107
8. Preferred Bidder Obligations ....................................................................................... 107
9. Completion of Rectification Work and Warranty Claims ................................................ 107
10. Data ............................................................................................................................. 108
11. Enclosure A: Acronyms ............................................................................................... 108
1. Introduction

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 miles away from Table Bay Harbour.

1.2. As RIM provides an essential ferrying service to both local and international tourists, they find themselves constantly in the public and political spotlight and may endure negative reviews and criticism due to unforeseen, unplanned and/or inherent failures and defects to their Vessel components, equipment, on-board systems and sub-systems that will lead to a reduced operational capability.

2. Background

2.1. A Warranty Period (WP) shall be enforced to ensure that no failure or defect caused by faulty and/or incorrectly selected/installed components, equipment, systems or sub-systems, because of the Preferred Bidder’s (PB) internal actions/involvement, shall negatively affect RIM’s reputation and the Ferry’s operational requirements and capability.

3. Documents

3.1. Reference Documents


3.1.2. Ferry BIMCO New Build Contract

4. Warranty Period Requirements

4.1. General

4.1.1. The WP shall be at least twelve (12) months (one (1) year), and shall come into effect upon hand-over of the Vessel to RIM. This WP shall cover the Ferry, all the on-board components, equipment, systems and sub-systems and will not waiver the Preferred Bidder’s responsibility related to Consequential Damages as stipulated in the Ferry New Build Contract.

4.1.2. All Potential Bidders shall, as part of their Bid submission, include a costed five (5) year Extended WP to commence upon completion of the twelve (12) month WP stated in Section 4.1.1. above. This costed, extended, WP option may be considered by RIM.

**NOTE:** The Extended WP shall be a costed option and must therefore be costed for separately. This cost must not be included as part of the final Bid price. Additionally, the Extended Warranty Period costed for by the Bidder shall not include items that have an OEM specific Warranty Period exceeding the initial 12 Months, that will be covered partially, or completely, during the Extended Warranty Period.

4.1.3. Where certain on-board components, equipment, systems or sub-systems are covered by an Original Equipment Manufacturer (OEM) WP, in excess of the prescribed minimum PB WP of twelve (12) months, RIM shall be informed accordingly by the PB to ensure OEM specific WP requirements
shall be complied with. This shall allow RIM to resolve any future defect or failure that might constitute a Warranty Claim (WC) after the completion of the PB twelve (12) month WP.

4.1.4. In support of Section 4.1.3. above, the PB shall supply RIM with a list of OEM Accredited Service Providers (ASP) for all components, equipment, systems or sub-systems on-board the Ferry prior to the delivery and handover of the Ferry.

4.1.5. The WP shall coincide, and run parallel with, the Interim Support Period as specified in Annexure F1 Integrated Logistic Support Plan.

4.1.6. In the event where specific on-board components, equipment, systems or sub-systems have not yet been installed post hand-over of the Ferry to RIM, such items shall be under the same WP prescripts stated in this document after being installed and placed in service by the PB.

4.1.7. It shall be the responsibility of both the PB and RIM to report any defect and/or failure on the Ferry, its components, equipment, systems and sub-systems that might constitute a WC, during the twelve (12) month WP, to the Warranty Claims Manager (WCM) internal to, or appointed by, the PB.

4.1.8. The mutually agreed upon Warranty Requirements as stipulated in the Ferry BIMCO New Build Contract shall take precedence over this document upon Contract Award

4.2. Defects and Failures

4.2.1. Any repair of a defect/failure of components, equipment, system, or sub-system of the Ferry that has been determined to constitute a WC, and has been made known to the WCM, shall be rectified and executed, as soon as reasonably possible, based on the impact that the defect/failure might have on RIM’s operational requirements for the Ferry. This WC shall be rectified and executed at the PB’s cost, and once executed shall ensure that the defect/failure does no longer exist or affect the operational requirements of the Ferry.

4.2.2. Upon rectification of the defect/failure as described in 4.2.1. above, the affected on-board component, equipment, system, or sub-system shall incur a further PB WP of twelve (12) months. In the event that such a defect/failure shall occur on the same component, equipment, system, or sub-system again, and has been determined to constitute a WC, another twelve (12) month PB WP shall be instituted upon rectification of that defect/failure.

4.3. Technical Manuals and Maintenance Schedules/Plans

4.3.1. Where it is determined that any defect/failure that had to be rectified, as per Section 4.2., might be avoided in future by revising and amending the associated Maintenance Schedule/Plan or Technical Manual for the component, equipment, system, or sub-system, it shall be the responsibility of the PB. This shall be for the PB’s cost.

4.3.2. Additionally, where it is determined by either RIM or the PB that errors or omissions exist in the Maintenance Schedule/Plan, or the associated Technical Manuals of the on-board component, equipment, system, or sub-system, which could cause damage to the component, equipment, system, sub-system or personnel, it shall be deemed to constitute a WC.

4.4. Warranty Spares

4.4.1. Any, and all, spare and replacement parts that shall be required to satisfy the WP agreement between RIM and the PB shall be the responsibility of the PB. This is inclusive of the cost and Packaging, Handling, Storage and Transportation (PHS&T) of spare and replacement parts.
5. Post Warranty Period Defects/Failures

5.1. Any defect/failure of the Ferry’s on-board components, equipment, systems or sub-systems, which becomes apparent or cannot be readily identified by RIM after the twelve (12) month WP has expired, shall be subjected to the following requirements:

   a. The PB and ASP (refer Section 4.1.4.) shall, when approached by RIM, investigate, search, test and conduct an in-depth fault finding exercise to identify both the defect/failure, as well as the cause of the defect/failure, within 24 hours of being contacted. In addition to this requirement the PB, or ASP, shall:
      i. provide direction and advice in relation to the rectification of the defect/failure;
      ii. where applicable, review and amend the Maintenance Schedule/Plan and/or Technical Manuals to ensure that the risk of re-occurrence of such a defect/failure is nullified;
      iii. if required by RIM, a rectification plan inclusive of any necessary Engineering Changes (EC); and
      iv. a market related quote for repairing the defect/failure.

   b. If the rectification plan and/or EC, inclusive of the PB or ASP’s quote, as requested by RIM are accepted, the PB or ASP shall commence with the rectification works at a mutually agreed time and place.

   c. If RIM intends to externally procure the works required, via an ASP or third party, to rectify the defect/failure after receiving a rectification plan and/or EC, inclusive of the quote, from the PB, RIM shall maintain all documentation and input received from the PB and other possible ASP’s as confidential and shall not be disclosed to any other third party contractor, unless otherwise agreed upon by the PB in writing.

6. Disputes

6.1. If RIM and the PB are unable to agree on a defect/failure rectification plan, or whether a defect/failure constitutes a WC, the matter shall be treated as a Dispute and resolved in accordance with Chapter 7 below. In addition to this requirement and process, the PB shall also:

   a. promptly provide RIM with all available data in respect of that defect, failure, damage, breakage or any form of component, equipment, system, or sub-system performance degradation, inclusive of all the diagnostic processes used by the PB to determine the root cause thereof;

   b. attend to, and execute, any rectification of that defect, failure, damage, breakage or any form of component, equipment, system, or sub-system performance degradation as if it is a defect/failure as specified in Section 4.2.; and

   c. if the matter is determined to be substantially in favour of the PB, RIM shall reimburse the PB for all costs reasonably incurred by the PB in attending to the rectification of that defect, failure, damage, breakage or any form of component, equipment, system, or sub-system performance degradation.
7. Dispute Resolution

7.1. If a WC dispute arises between RIM and the PB/WCM during the twelve (12) month WP, all parties shall make every effort to resolve amicably such dispute by means of mutual consultation between the RIM Steering Committee and those persons appointed by the PB.

7.2. If, after thirty (30) days, both parties have failed to resolve the WC dispute by means of mutual consultation, then either RIM or the PB may give notice to the other party of its intention to commence with mediation. Mediation shall only commence if such a notice has been given to the other party.

7.3. If, by exhausting every other necessary means, no settlement of a WC dispute can be achieved by means of mediation, it may be settled in a court of law.

7.4. All mediation proceedings shall be conducted in accordance with the rules and procedures as specified in the New Build Contract.

8. Preferred Bidder Obligations

8.1. The PBs obligations and responsibilities as stated and specified in this document shall apply to the Ferry and any on-board components, equipment, systems or sub-systems supplied by, or on behalf of, the PB only.

8.2. The PB shall have no obligation to execute and rectify a WC because of a defect and/or failure when it has been determined by the WCM, in agreement with RIM, that the defect/failure was directly as result of:

   a. Normal wear and tear associated with the normal day-to-day use of the on-board components, equipment, systems or sub-systems.
   b. Components, equipment, systems or sub-systems not being maintained, installed or repaired by RIM in accordance with the stipulated PB Technical Manuals, Maintenance Schedules/Plans or the PB’s prior approval.
   c. The incorrect use of on-board components, equipment, systems, or sub-systems by any other person than the PB or the PBs approved sub-contractor.
   d. An accident.
   e. RIM using spare or replacement parts not approved by the PB.
   f. RIM using spare or replacement parts not sourced from the OEM.
   g. RIM using, or replenishing, with the incorrect fuel oil, lube oil and any required water additives that have not been specified by either the PB or the OEM for the associated components, equipment, systems or sub-systems.
   h. RIM conducting repairs to the Vessel or any of its components, equipment, systems, or sub-systems that does not meet the requirements as specified within the PB supplied Maintenance Schedule/Plan.

9. Completion of Rectification Work and Warranty Claims

9.1. The PB shall be obliged to complete all rectification work in terms of defects/failures of the Ferry’s onboard components, equipment, systems, or sub-systems associated with an approved WC that occurs, or becomes apparent, during the WP.
9.2. Such work shall be completed in accordance with the mutually agreed time schedules and with minimum disruption to the operation of the Ferry, regardless of whether such work can be completed prior to the expiry of the WP.

10. Data

10.1. The PB shall, during the WP, record, maintain and provide to RIM on a monthly basis appropriate data related to any defect, failure, damage, breakage or any form of component, equipment, system, or sub-system performance degradation, of whatever nature, suffered by the Ferry, resulting in a repair or replacement of on-board components, equipment, systems or sub-systems. This shall also include any such defect, failure, damage, breakage or any form of component, equipment, system, or sub-system performance degradation attributable to the actions or omissions of RIM or its employees.

10.2. The provision of data shall include, but not be limited to, that data that can be discovered during trouble shooting exercises conducted by the PB, on site, while the Ferry is at RIM’s facilities.

11. Enclosure A: Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASP</td>
<td>Accredited Service Provider</td>
</tr>
<tr>
<td>EC</td>
<td>Engineering Change</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
</tr>
<tr>
<td>PB</td>
<td>Preferred Bidder</td>
</tr>
<tr>
<td>PHS&amp;T</td>
<td>Package, Handling, Storage and Transportation</td>
</tr>
<tr>
<td>RI</td>
<td>Robben Island</td>
</tr>
<tr>
<td>RIM</td>
<td>Robben Island Museum</td>
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<tr>
<td>RIMFP</td>
<td>Robben Island Museum Ferry Project</td>
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<tr>
<td>RSA</td>
<td>Republic of South Africa</td>
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<tr>
<td>WC</td>
<td>Warranty Claim</td>
</tr>
<tr>
<td>WCM</td>
<td>Warranty Claims Manager</td>
</tr>
<tr>
<td>WP</td>
<td>Warranty Period</td>
</tr>
</tbody>
</table>
# Contents of Facilities Report

1. Introduction .......................................................................................................................... 111
2. Nelson Mandela Gateway Facility ......................................................................................... 111
3. Jetty 1 Facility ..................................................................................................................... 112
4. Robben Island – Murray’s Bay Harbour Facility ................................................................. 112
5. Bunker Point ....................................................................................................................... 113
6. Surveyor’s Comments ......................................................................................................... 113
7. Summary ............................................................................................................................ 114
1. Introduction

1.1. This document serves as professional advice by RIM’s representative, appointed by Robben Island Museum, hereon “RIM”, as transactional advisor for the procurement of one new passenger ferry as with tender number RIM FER 03-2015/2016.

1.2. This document forms part of the required information necessary to produce the final documents that is the tender specifications and guideline, which will be released by RIM to the yards to enable them to successfully participate in the tender to build and deliver the Ferry.

1.3. RIM’s representative in their role provides the advice and documentation to ensure that the vessels will be safe, reliable, predictable (maintenance) and fit for the purpose required by RIM.

1.4. The scope of the Facilities Report includes the gathering of information on current available facilities at the Nelson Mandela Gateway, Jetty 1 Maintenance Facility and Robben Island Murray’s Bay harbour facility. The information gathered is aimed at giving background and information specifically applicable to a vessel required to operate in this area and does not comprehensively give insight into the facilities as a whole.

2. Nelson Mandela Gateway Facility

2.1. The Nelson Mandela Gateway is the main RIM floating jetty passenger boarding facility. Tickets are purchased and security checks completed in the building. Passengers, including wheelchair passengers, move from the Ticket Office level down one level to the security checkpoint where they are mustered for boarding the ferries via a floating dock connected to the building. Ferries tie up to the floating dock where they depart to and arrive from Robben Island.

2.2. The floating Jetty is the property of Victoria and Alfred Waterfront, who is responsible for its upkeep and maintenance. The Southern Side of the Jetty is allocated for use exclusively by RIM ferries, however, the northern side is frequently utilised by RIM vessels if no vessels are berthed on it.

2.3. We have requested a meeting with the current V&A Waterfront harbour Master, Captain Steven Bentley, to gather technical drawings and specification of, especially the V&A Floating dock as well as dredged depths around that area. Important information for a new build vessel would be the strength of the rope bollards on the Jetty and the structural strength of the floating Jetty as a whole considering that several vessels may be moored to it at the same time.

The floating jetty dimensions are roughly recorded as:

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>45m</td>
</tr>
<tr>
<td>Width</td>
<td>8m</td>
</tr>
<tr>
<td>Height from water (Level 1)</td>
<td>75cm</td>
</tr>
<tr>
<td>Height from water (Level 2)</td>
<td>175cm</td>
</tr>
<tr>
<td>Depth at the Jetty:</td>
<td>5.4m (Chart Datum SAN 1014)</td>
</tr>
</tbody>
</table>

2.4. The heights above the waterline will remain fixed as the jetty moves with the tides, but will change slightly with the load of people on it.

2.5. The fitted bollards are not spaced evenly with the distances between bollards varying between 2 and 8 meters apart, however, the jetty can easily be modified to suit.
2.6. Solid rubber fendering is fitted to the floating Jetty with extended sections mounted vertically to allow for vessels berthing with greater freeboards. It is estimated that the highest fender arm ends 2.5 meters above the waterline. Some of the extensions are fitted with spring compensators.

2.7. The jetty in Cape Town, as for the jetty at Robben Island, is covered with a non-skid rubber material.

2.8. Power supplied to the Jetty is 220V (16 & 32 Amp breakers). It was however reported that the power supply to the Cape Town floating jetty was currently out of order.

2.9. Fresh water is supplied at low domestic pressure and vessels are topped up with fresh water using a standard garden hose.

2.10. Access to the synchro lift facility is easy as it is situated in the Alfred Basin, which is adjacent to the Victoria Basin and requires the opening of the Swing Bridge, which is done frequently. The depths up to the synchro lift is in excess of 5.5 meters.

2.11. The turning basin between the RIM floating jetty and the fishing vessels berthed at Collier Jetty is limited to around 60 meters. Vessels are often triple banked on Collier Jetty making the space smaller.

3. Jetty 1 Facility

3.1. The facility is equipped with Offices for Technical Staff and a maintenance jetty to conduct repairs, surveys, maintenance and inspections of the vessels.

3.2. The berth at the JETTY 1 maintenance facility is only around 30 meters long and the width/basin distance to the next floating jetty restricted and measuring around 23 meters’ water distance between each other.

3.3. This jetty is being leased from the V&A Waterfront, which may expire prior to the estimated completion of the new build vessel. It was not indicated if another maintenance quay space will be considered or the current lease be renewed.

4. Robben Island – Murray’s Bay Harbour Facility

4.1. The infrastructure of the island such as roads, power generation, buildings and so forth, which includes the harbour, quay spaces and floating jetty, is the responsibility of the Government Department of Public works.

4.2. The entrance channel to Murray’s Bay harbour is around 50m wide and often exposed to running sea waves running into the harbour.

4.3. The floating jetty was noted to be in a moderate condition with steel areas found to be corroded to varied degrees in some areas and the rubber deck covering warn and completely torn in places. This poses a passenger risk when walking on the jetty.

4.4. The jetty’s vessel berthing side was noted to be foaled with kelp and other sea growth. The growth may cause blocking of a vessel’s seawater intakes when berthed alongside it.
The floating jetty dimensions are roughly recorded as:

- **Length:** 55m
- **Width:** 4m
- **Height from water (Level 1):** 85cm
- **Height from water (Level 2):** 180cm
- **Depth at the Jetty:** 3.9m (TRITAN hydrographic report)

4.5. The height of the main quay was measure to be 1.80m from the waterline at 09:00 on 16 February 2016, which was around the time of high water. The tidal range is around 1 – 1.6 meters. The floating jetty has similar fixed rubber fendering to that of the Cape Town floating jetty.

4.6. The main quay space at the end of and perpendicular to the floating jetty is around 155 meters long and is fitted with tyre fenders and large rope bollards. The depth (datum) on this quay reduces from 3.5m to 2m over the length of the berth going west and reduces rapidly at the inner end of the quay. Suffice to say that three RIM size ferries can easily berth on this quay simultaneously.

5. **Bunker Point**

5.1. Refuelling of the vessels are done at Bunker point, which is situated at the entrance to the Victoria Basin. The facility at Bunker Point holds 80,000L of 500ppm MGO and there are two filling stations, which are both fitted with fuel hoses of around 10-15 meters and a standard low pressure-fuelling nozzle with spring valve. The pumps may be started or stopped at the bunker position and is recorded on an attached flow meter.

5.2. It is noted that the current RIM Owned vessels refuel by dropping straight into the filling line of the vessel’s tanks, but that on the THEMBEKILE the vessel is fitted with Cam Lock couplings and a small extension piece that end in a standard road tanker type screw fitting. The road type screw fitting is not suitable for seagoing conditions and therefor the Cam Lock coupling is required. When connected with the fixed fittings the vessel can refuel safer and quicker at increased pressure.

6. **Surveyor’s Comments**

6.1. It would be advised that the floating jetty at Robben Island be repaired/upgraded to facilitate safer vessel and passenger handling.

6.2. Transnet operates the synchro lift docking facility. At times, the facility is booked well in advance and docking access for vessels are not available immediately. One may want to consider that the ferry might have to be lifted out of the water by crane. The current floating crane in Cape Town has a 200T capacity. If this is considered, then the vessel should also be of such a design that lifting is easily facilitated.

6.3. The vessel should be fitted with Cam Lock couplings and extension for a standard road tanker fitting which is what is available at bunker point.

6.4. Vessel mooring is primarily done by hand and ropes laid out at predefined lengths. Mooring should be a smooth and easy process. Vessels normally only attach one headline, one forward spring, one aft spring and one stern line when boarding passengers. Bit positions and moving space around these bits should be carefully considered. Mooring lines that are easily handled should be fitted.
6.5. Passengers should be easily boarded on both the port and starboard side of the vessel to not restrict the vessel on which side it may go alongside. This counts also for filling and discharge points for fuel, water, grey water and so forth.

6.6. It was mentioned during conversation with Captain Steven Bentley that berthing space is often limited, in the V&A Basin, to berth vessels overnight. It does appear that this may become a bigger concern in the future and perhaps RIM vessels will have to be berthed at Robben Island over night from time to time.

6.7. It should also be considered that RIM ferries may berth at any other berthing facilities within the Victoria Basin and the height of the quay should be considered with vessel boarding access perhaps made available also on decks higher up.

7. Summary

7.1. The current Robben Island Facilities are suitable for a smooth ferry service between Cape Town and Robben Island. Upgrading of the floating jetty at Robben Island should be considered.

7.2. The vessel design should be such that it can effectively use the existing infrastructure without having to modify anything.

7.3. The vessel design should take into consideration the heights of the floating docks so to easily deploy the passenger boarding platforms, which should be wheelchair friendly.

7.4. The turning circle at the Nelson Mandela Gateway is tight and vessels are often required to make these turns in strong swirling winds. The vessels manoeuvring station/console, fendering, securing bits, CCTV system should take this into consideration.

7.5. The vessel should be fitted with Cam Lock type filling and discharging deck stations and have shore supply power capability and connectors for both 220V single phase and 380V 3 phase power.

Appended:

Various photographs of the facilities.
RIM Floating Jetty – V&A Side

RIM Floating Jetty – RIM Side

Turning Basin off Floating Jetty

Ramp from building to Floating Jetty

RIM Ferry terminal entrance

Information counter
Security Checkpoint

Ramp to floating jetty

Passengers disembarking

Portable Gangway used for access

DIAS alongside V&A floating dock

Bollards at V&A Floating Dock
Spring fender at V&A Floating Dock

Rubber fendering at V&A Floating dock

Portable gangway used

Cargo taken with early AM Passengers

Refuelling line at Bunker Point

Road tanker type screw fitting
Refuelling hose

Berth space at bunker point

SUSAN KRUGER at Jetty 1 Facility

Jetty 1 Facility

Murray’s Bay Harbour

Robben Island Floating Jetty
Approaches to Robben Island

alongside the Main Quay at Robben Island

Floating Jetty at Robben Island

Foaling of floating Jetty at RI

Cargo vessel BLOMBERG at RI

Passengers disembark at RI on floating Jetty
15. Annexure B15: Life Cycle Requirement Guideline

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Contents of Lifecycle Requirement Guideline

1. Introduction .................................................................................................................. 122
2. Background .................................................................................................................. 122
3. Documents .................................................................................................................. 122
   3.1 Reference Documents .......................................................................................... 122
4. Total Life Cycle Requirement .................................................................................. 122
5. Life Cycle Cost (LCC) .................................................................................................. 123
   5.1.1. Period 1, Bid Submission ........................................................................... 123
   5.1.2. Period 2; Post Contract Award and Vessel Build .................................. 123
   5.1.3. Period 3: Interim Support Period ................................................................. 123
7. Enclosure A: Acronyms .............................................................................................. 124
1. Introduction

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 miles away from Table Bay Harbour.

1.2. The RIMFP covers the procurement and Interim Support Period of one (1) Ferry. For a more in-depth overview of the RIMFP, especially Life Cycle (LC) as part of Logistic Support concept of the Vessel, please refer to Annexure F1 “Integrated Logistic Support Plan”.

2. Background

2.1. To ensure that a suitable, cost effective, RIM passenger ferrying capability will exist throughout the Ferry’s Life Cycle, and to ensure that the RIM Business Plan/Model can be executed accordingly, the Ferry shall conform to the expected LC and Life Cycle Cost (LCC) requirements as specified herein.

2.3. This document serves to list the various RIM requirements, as part of the Bid, to obtain the total Vessel LC as specified.

3. Documents

3.1 Reference Documents


3.1.2. Annexure B1 - Technical Specification

4. Total Life Cycle Requirement

4.1. The following requirements regarding Total LC shall apply to this Bid:

   a. Total Life Cycle (Handover to Disposal) of the Vessel shall not be less than thirty (30) Years.

   b. The proven Vessel design and selection of proven equipment, systems and sub-systems shall allow for ease of maintenance, in support of lowering LCC.

   c. The proven Vessel design and selection of proven components, equipment, systems and sub-systems shall allow for ease of operation, in support of lowering LCC.

   d. Guaranteed availability of spare and replacement parts for the total LC of the Vessel, with the aim of ensuring local availability and/or local supply of parts within the RSA in order to reduce LCC.

   e. Guaranteed availability of technical maintenance knowledge and general support of installed components, equipment, systems and sub-systems within the RSA, as far as reasonably possible.

4.2. Potential Bidders are encouraged to submit documentation in support of their compliance to the requirements stated in Sections 4.1. (a) – (e).

4.3. An LCC Plan/Breakdown, which shall be supplied as part of the bid submission by all Potential Bidders, shall be used to evaluate the requirements as specified in 4.1 (b) and 4.1. (c).
5. Life Cycle Cost (LCC)

5.1. LCC for the Ferry shall be determined during three set periods, by means of data provided by both Potential and Preferred Bidders. These periods, their requirements, expected deliverables and purpose are described in Sections 5.1.1, 5.1.2, and 5.1.3 below.

5.1.1. Period 1, Bid Submission

5.1.1.1. All Potential Bidders shall submit as part of their Bid submission a complete, and as accurate as possible, Issue 1 LCC Plan/Breakdown.

5.1.1.2. Verified trade-off studies, inclusive of all supporting documentation, shall also be submitted as part of the Bid submission where the Potential Bidder identifies a vessel system/sub-system that will considerably decrease the total LCC of the Ferry and allow for greater ease of maintenance, support, and operation. This shall only be an inclusion, and all efforts shall still be made by Potential Bidders to meet the requirements as stated within Annexure B1 “Technical Specification”.

5.1.1.3. The LCC Plan/Breakdown and trade-off studies shall be done with the proposed Potential Bidder maintenance schedule, maintenance and operational cycle, and operational environment, as specified in Annexure F1 “Integrated Logistic Support Plan”, in mind. Total LCC shall be indicated in 1-yearly increments of operation for the first five (5) years of Ferry operations. Additional Total LCC, in 5-yearly increments, up until a maximum total Ferry operating period of at least thirty (30) years, shall also be provided.

5.1.1.4. The following systems/sub-systems requires an in-depth LCC Plan/Breakdown (estimation), inclusive of spares cost, labour/service costs, hours for labour, as well as consumables cost (fuel oil, lube oil, anti-fouling paint etc.):
   a. Main Propulsion Engines
   b. Diesel Generator Sets
   c. Hull Structure (Paint, Cathodic Protection Anodes, General Maintenance etc.)

5.1.1.5. The LCC Plan/Breakdown shall be reviewed, by RIM, per Potential Bidder.

5.1.2. Period 2, Post Contract Award and Vessel Build

5.1.2.1. This period shall allow for the final refinement and elaboration, inclusive of any Engineering Changes recorded and carried out during the Ferry build, on the estimated theoretical LCC Plan/Breakdown, by the Preferred Bidder, estimated during Period 1.

5.1.2.2. The Preferred Bidder shall supply an Issue 2 LCC Plan/Breakdown as part of the handover of the Vessel to RIM.

5.1.3. Period 3, Interim Support Period

5.1.3.1. This period shall serve as a verification method regarding the accuracy of the LCC.

5.1.3.2. The Preferred Bidder shall incorporate any changes to the LCC that might occur during the Interim Support Period, and release an Issue 3 LCC Plan/Breakdown to RIM upon completion of the Interim Support Period.
7. Enclosure A: Acronyms

LC - Life Cycle
LCC - Life Cycle Cost
RIM - Robben Island Museum
RIMFP - Robben Island Museum Ferry Project
RSA - Republic of South Africa