VOLUNTEER MARINE RESCUE ASSOCIATION QUEENSLAND Inc.

For and on behalf of

VMR ( )

SPECIFICATION FOR

THE DESIGN, CONSTRUCTION & SUPPLY OF

ONE (1) FAST SPEED RESCUE VESSEL

(USL 2C / 2D / 2E CLASS SEA GOING VESSEL)

1. GENERAL

1.1 Scope of Work

The work involves the design, construction and supply of one (1) fast speed rescue vessel of approximate overall length (_____) metres with extra long cabin as appropriate, as specified in the following clauses and in accordance with the general conditions laid out in this document.

The vessel's design should facilitate easy cleaning and maintenance to suit an operation where the vessel will be stored for extended periods together with a requirement for immediate reliable service at short notice.

Supply of all items is to generally be the responsibility of the Contractor unless otherwise specified.

1.2 Design

A copy of the plans and specifications of the vessel shall become the property of Volunteer Marine Rescue Qld. VMRAQ gives an assurance that these plans will not be used for the construction of further vessels without the express permission of the Contractor, (copyright will be preserved). VMRAQ may request modifications to the design and understands that the contractor may decline to implement the modifications.

No modifications will be approved unless the contractor and marine engineer/surveyor provide absolute assurance that the modifications will not adversely affect the performance of the vessel.

1.3 Requirements

The rescue vessel is required by the VMRAQ Squadron ***VMR (_____)*** for training and rescue operations in adverse conditions and delivery of these services outside of harbour limits and up to 100 nautical miles off shore. It is intended that the vessel will be placed into service in the (_____) operating out of the port of (_____) where it will be stored unattended until required.

1.4 Alternate Proposals

Tenderers may submit alternative proposals which they consider to be more suitable to obtain improvements in operating efficiency and reductions in maintenance or capital costs. Full details of the variations shall be submitted by the tenderer for evaluation. However, no alternative proposal will be considered unless a conforming proposal is also submitted.

1.5 Approved equivalents to fittings and equipment

Wherever trade names are used in this specification, approved equivalents may be provided by the supplier. "Approved equivalent" refers to fittings and equipment to the approval of the VMRAQ Contract Supervisors.

1.6 Survey requirements

Class:

Uniform Shipping Laws Code 2C / 2D / 2E and 2010 NSCV for (___) crew, in survey to Queensland State Authority.

In accordance with the letter of contract acceptance the vessel will be surveyed under the Q.D.O.T. Marine Safety Regulations as a vessel complying with the Uniform Shipping Laws Code requirements to be classified as a 2C / 2D / 2E Seagoing.

The vessel and equipment must meet the requirements and regulations as specified by Maritime Safety Queensland and The Australian Transport Council Uniform Shipping Laws Code herein after referred to as "The Code".

As stated within the Marine (Registration, Survey, Equipment and Load Line) Regulations 1987, three (3) copies of the following plans will be required by the Queensland Transport for survey certification:

(a) the general arrangement plans,

(b) the construction plans, including midship and longitudinal sections,

(c) the lines plans,

(d) plans, specifications or data sheets to cover:

  (i) the scantlings of all members, including deck, shell and watertight bulkheads, and methods of fastening,

  (ii) the details of closing devices,

  (iii) the bilge pumping arrangements and where applicable ballast pumping arrangements,

  (iv) the details of the oil fuel system, including tanks, filling and venting arrangements, and piping and valves,

  (v) where applicable, the arrangements for the loading, carriage and discharge of liquid cargoes,

  (vi) where applicable, the welding schedule, the laminating schedule or plastering program.

  (vii) electrical schematic diagrams.

(e) the stability information: and

(f) such further plans, information, specifications and data as the Marine Board may require to determine the proper method of construction, safety and maintenance of the vessel, its equipment and machinery.

1.7 Construction to be to the Approved Plans

Construction of the vessel is to be strictly in accordance with the approved plans. During fabrication, fitting out etc., no departure is to be made from those approved plans without the approval of the VMRAQ Contract Supervisors and or Surveyor.

1.8 Progressive Inspections

Once plans are approved and the construction is underway the Contractor shall advise the VMRAQ Contract Supervisor and Surveyor giving reasonable notice that the vessel has reached the stages set out below, in order that the Supervisor / Surveyor can examine the construction as it progresses, viz.;

(a) At such time as will allow an internal and external survey of hull and framework before any closing off of any spaces or lining takes place.

(b) The final stages of assembly and prior to fitting out.

(c) The vessel is ready for tank inspection and testing (including void spaces).

NOTE: The Contractor is to carry out the initial testing and repair faults before the Surveyor carries out his final testing. The finish grinding of welds shall not be carried out before the Surveyor has inspected such welds.

(d) The work is ready for an internal inspection of:

(i) The fitting out of a vessel including the electrical installation.

(ii) The steering arrangements.

(iii) The structural strength of bollards and towing posts used for rafting up and towing.

(e) The completion of fitting out including:

(i) Manoeuvring and engine trials.

(ii) Inspection of electrical installation.

(iii) Closing devices, hatches, doors, ports and ventilation arrangements.

(f) The final inspection including measuring, passenger assessment, lifesaving appliances and sea trials.

The above requirements are of a general nature only and do not include the testing of materials, pressure vessels and other items as required by the safety standards of the Marine Board.

The Contractor must consult with the Marine Surveyor to ensure such requirements can be accommodated without loss of progress.

The Marine Surveyor and Contract Supervisor shall be given free access to the construction site during working hours while this project is under construction.

1.9 Payment

Payment shall be as set out in the final contract document to the satisfaction of the manufacturer and the purchaser, and should include detailed estimates of the timings required for each payment from initialisation to completion.

1.10 Information to accompany quotation

The Contractor shall supply information regarding:-

1.10.1 Speed, power requirements and fuel consumption of the vessel. He shall fill in and return the schedule of particulars along with the Quotation.

1.10.2 Drawings and specifications giving sufficient information and details to indicate clearly the type, construction and general details of the vessel. These should include at least the following, drawings to scale:

- General arrangement showing profile and plan views
- A drawing of the wheelhouse showing in plan and elevation, the position of the control station, instruments and navigational gear, stowage and seating arrangements for Skipper and crew.

1.10.3 Detailed breakdown of the vessel's estimated lightship weight shall be supplied.

The weight of the vessel shall be confirmed prior to hand-over with the provision of a weigh bridge certificate.

1.10.4 Detailed calculations confirming the vessels stability in a swamped condition. (Ref 6.2)

1.10.5 General breakdown of the vessels costing. This schedule should indicate brand names to indicate the quality of the equipment nominated.

1.10.6 Detailed estimate of the time required to complete the vessel ready for delivery.

2. PERFORMANCE CHARACTERISTICS AND GENERAL DESCRIPTION

2.1 General

The vessel shall be of a proven high performance and accredited design, with a wheelhouse, foredeck and self draining cockpit aft.

PROTOTYPE HULL DESIGNS WILL NOT BE CONSIDERED.

Because of the vessels possible remote and high risk area of operation, simplicity of design, construction and maintenance, should be high priorities.

The offerer shall present evidence of performance, and if requested, demonstrate to VMRAQ a vessel similar to that which they are offering.

2.2 General Dimensions (To be completed by the Contractor as recommended for operational purposes or supplied with build list)

(Refer uniform Shipping Laws Code for definitions)

Length overall: (___) m

Breadth (Beam): (___) m

Actual Dimensions Of Vessel (To be completed by the Manufacturer)

Length (measured) ……. *metres*
Breadth (measured) ……. *metres*
Depth (measured) ……. *metres*
Draft (fully laden) ……. *metres*
Draft (normal operating) ……. *metres*

2.3 Propulsion Machinery (As recommended by the contractor and marine engineer/surveyor)

Twin engines (Min. speed 25 Knots)

The vessel will be powered by twin or single engines as recommended. (Counter Rotating)

The contractor shall be responsible for any loom extensions and fit up. Pre delivery shall be provided by engine supplier and arranged by contractor.

2.4 Accommodation

Transit or sitting type accommodation for surveyed crew numbers. KAB chairs and bench seating.

2.5 Speed

The continuous speed of the vessel, fully equipped as specified here, and surveyed crew and with fuel tanks full, shall be a minimum of 25 knots.

For the purpose of this contract the *continuous speed* is defined as the speed attained at the continuous engine speed allowed by the engine manufacturer over a period of not less than eight (8) hours. Weather and sea conditions may be considered ideal.

For outboard motors 4500 rpm will be considered as the continuous engine speed.

2.6 Range

300 nautical miles operating at a continuous 20 to 25 knots, equipped as specified here.

2.7 Fuel Capacity

Fuel shall be of sufficient capacity to adequately meet the performance and range criteria as specified (refer 2.6) and to provide a 10% reserve fuel capacity. Fuel filling arrangements should be above deck and designed to eliminate fuel blow-back whilst filling tanks. This is to be achieved by fitting 2 fuel filling pipes per fuel tank.

2.8 Stability

The vessel shall undergo a static stability incline test as specified in the Code for a vessel classified as 2C.

2.9 Stability at Speed

The vessel shall not exhibit any unpredictable properties while undergoing direction changes or manoeuvring at speed. *It shall be noted that the vessel may be required to operate at speed in an area off the coast up to 100 nautical miles in moderate weather conditions.*

2.10 Manoeuvrability

The vessels must remain manoeuvrable when coming alongside ships at speeds up to 10 knots during personnel and equipment transfer operations. The vessel must have the ability to maintain station alongside to effect transfers of personnel and equipment and lay quietly to a head line or anchor.

2.11 General Description

2.11.1 Hull

The hull configuration shall incorporate a raised work-deck forward with a cockpit deck aft. The working decks shall be maintained above the waterline, sealed watertight and self drain to the sea.

2.11.2 Wheelhouse

A long wheelhouse, accessed from aft, where required, shall be provided positioned to provide a clear access to the forward portion of the raised work deck. The wheelhouse shall provide seating accommodation as per Addendum 1.

There shall be no hatches.

2.11.3 Raised Foredeck

A clear and flat foredeck with-out bulwarks shall be provided. This deck shall be used to assist boarding operations. Steps incorporating hand rails shall be installed to provide a safe and easy access to the foredeck from the after cockpit.

There shall generally be nor forward hatch.

2.11.4 Helm Position

The helm position shall be at the forward end and to the starboard in the cockpit. The helm outside diameter to be 460 to 500mm and the centreline of the steering wheel hub needs to be 250 mm higher than the top surface of the seat squab of the helmsperson's chair.
All instrumentation shall be installed at this position. (See note below)

Note:
Main electrical board to be positioned in front of the radio operator and to amid ship.
Duplicate wiper, washer control switching at the helm position and radio operator position.

2.11.5 Windscreen

It is preferred that the windscreens should be angled forward to reduce glare and instrument reflection. Where this is not possible all dash sections shall be covered with matt black material to minimise glare and reflection.

All windscreens shall be fitted with heavy duty windscreen wipers; and washers with two sets of control switches.

2.11.6 Engine Pods

The outboard engines shall mount on the transom and or on pods as recommended.

3. WORKMANSHIP, MATERIALS AND TESTING.

3.1 Workmanship

All work shall be completed in a neat and workmanlike manner and to the satisfaction of the Supervisors. Particular care shall be taken to ensure that the surface of the hull is smooth and fair.

3.2 Finish

All welds shall be free from pits, crevices, slag, spatter etc. Where required by the.
Supervisor, finish grinding may be ordered at the contractor's expense

At completion of fabrication aluminium and or stainless sections shall be acid washed and rinsed using fresh water to remove all welding products. All edges, holes and exposed ends shall be deburred and rounded off to the Supervisor's satisfaction.

The vessel shall be finished in every detail to the satisfaction of the Supervisor.
Rework may be ordered by the supervisor at the Contractor's expense.

All decking will be of best quality non slip finish. No carpet will be used in exposed areas.

3.3 Materials

All materials used in construction of the vessels shall be new and of the best type and quality suitable for the purpose intended. All materials must comply with the relevant Australian Standard Specification.

All non-compatible materials to be joined shall be adequately protected against any galvanic action by a method acceptable to the Supervisor.

All fasteners used are to be 316 Stainless Steel or as per NSCV

3.4 Protection when building

Efficient protection against damage of work completed or in progress shall be provided at all times.
All machinery and other items of equipment, from the time of delivery to the Contractor until installation in the vessel, shall be stored in a lockup store which is secure against theft and gives efficient protection from the weather.

During and after installation in the vessel all machinery and equipment shall be protected from damage by dirt, dust, moisture and other dangers.

Special care shall be taken to ensure that all openings in engines, pipes or other fittings are covered at all times during the construction unless actual work is being carried out on them.

All rubbish and debris, as it accumulates on, in or near the vessel under construction shall be cleaned away at regular intervals and when directed by the Supervisor.

3.5 Testing

3.5.1 General

The Supervisor and Marine Surveyor, when required, shall witness all testing including all hose and tank tests and will examine and test all machinery installations, electrical installations, and steering arrangements.

The Contractor shall notify the Supervisor in advance and arrange for these tests and examinations to be carried out at a time convenient to the Supervisor and Contractor.

The costs of all such tests shall be borne by the Contractor.

VMRAQ will employ an independent Marine Engineer/Surveyor, these costs will borne by the Squad.

3.5.2 Hull Material

Sample pieces may be taken from the main hull and deck and submitted for testing by a recognised Testing Authority if and when directed by the Supervisor.

3.5.3 Hose Testing

Hose testing of the structure, using facilities approved by the Supervisor, may be carried out at such stages of construction as nominated by the Supervisor.

All bulkheads, decks, windows, hatches and closing devices shall pass a hose test.

3.5.4 Pressure Testing

Fuel tanks shall be subjected to a test equivalent of 2.5 metres of fresh water above the top of the tank, or the maximum head to which the tank may be subjected in service, which ever is the greater.

The test shall be carried out prior to installation in the vessel and before weld surfaces are painted.

All pipe systems shall be subjected to pressure tests equivalent to the maximum service conditions.

All watertight void spaces below the main deck may be hydrostatically tested**.**

3.5.5 Electrical Testing.

All electrical equipment and circuit cables shall be thoroughly checked during construction to ensure compliance with the regulations and to ensure that no damage has been sustained.

3.5.6 Equipment testing

On completion of construction, the Supervisors shall be present during the acceptance and sea trails to confirm that the vessel as a whole is operating properly and conforms to this specification.

3.5.7 Trials

Trials shall include, engine running, (___) hour shakedown, speed, stability, handling and systems testing. Compass adjustment and radio survey are all included in the price submitted.

4. DRAWINGS, DELIVERY AND GUARANTEE

4.1 Scantling Detail Drawings

The contractor shall within 14 days of receipt of notification of acceptance of his quotation, supply or provide access to the VMRAQ Marine Engineer/Surveyor construction drawings for the hull and superstructure.

4.2 "As Constructed" Drawings

On completion of the vessel, the Contractor shall provide the Supervisor with one (1) complete set of "As Constructed Layout" Drawings.

4.3 Manufacturer's Manuals

One copy of all manufacturer's installation drawings, brochures and operation/maintenance manuals including stability book relating to all items of machinery and equipment shall be supplied to the Supervisor for reference purposes as soon as they become available.

4.4 Identification Numbers

The Supplier shall maintain an equipment list which includes model and serial numbers for inclusion in each vessel's records to be delivered to the Supervisor on completion.

4.5 Delivery

Upon completion of the trials program and any subsequent adjustments/modifications as required by the Supervisor, the vessels shall be delivered to VMRAQ or collected from the Contractors premises as directed by the Contract Supervisors. Costing for delivery shall be considered separately as a variation to the contract.

4.6 Guarantee

Any defects discovered due to faulty material or workmanship within a period of 52 weeks from the date of delivery shall be corrected to the satisfaction of the Supervisor by the Contractor at the Contractor's cost.

5. CONSTRUCTION SPECIFICATIONS

5.1 Materials

When Fibre Reinforced Plastic (FRP) construction is used, the external hull lay up shall utilise ortho phthalic resins and gel coats complying with AS4132.3 and or NSCV Glass Standards

All timber used shall be selected for marine use, shall be well seasoned or kiln dried and have a moisture content not exceeding 14%. Particular timbers shall be identified on the drawings.

All Aluminium plate, extrusions etc. shall be of a grade suitable for extreme marine environment. Particular grades shall be identified on the drawings.

All stainless steel used shall be marine grade 316 or as directed by the Supervisors.

All bolted fastenings are to be sealed with neutral cure polyurethane or mastic sealants.

All threaded fixings (nuts and bolts) shall be protected using a premium grade anti-seize compound. (anodically compatible).

All timber shall be finally sealed with a preparation designed to prevent rotting.

All fittings, catches, hardware, switches etc. shall be of high quality designed for marine applications.

5.2 Finish

The vessel shall be completely finished in every detail. Materials and workmanship shall be to the highest standard to the satisfaction of the Supervisors, and in addition to the requirements of Maritime Safety Queensland.

All timber joints, all surface imperfections, all nails, screw heads etc. shall be filled and sanded smooth and fair.

All welds shall be free from pits, crevices, spatter etc. Where required by the Supervisors, finish grinding may be ordered at the Contractors cost.

Note: No grinding of welds can take place until after the welds have been inspected by an appropriate accredited Marine Engineer/Surveyor.

All edges, holes and exposed ends shall be deburred and rounded off to the Supervisor's satisfaction.

At completion of fabrication all metal parts shall be acid washed and rinsed using fresh water to remove all welding products.

5.3 Surface Finishing

The vessel shall be finished in the following areas to the colours nominated with this specification.

AREA	**COLOUR**
Hull external	(_____)
Wheelhouse / Cabin external	White cabin top over white cabin, sides with black window highlight.
Targa and Side Panels	White
Wheelhouse / Cabin internal	White fleck, or as agreed.
Dashboard area	Dark Flat (To limit reflection; Colour to be advised)
Decks	White
Hull internal and floor	Light colour, non reflective
Void spaces	White

When a painted finish is required the paints shall be recoatable polyurethane for exterior surfaces and epoxy for interior surfaces.

5.4 Preservation and painting / sign writing

Cathodic protection shall be fitted as required.

Sign writing to be arranged by Contractor in consultation with VMRAQ supervisor.

6. HULL CONSTRUCTION

6.1 General Hull Construction

The hull, or hulls, shall be divided into sufficient watertight compartments so as to comply with the requirements for two compartments standard of subdivision or better.

6.2 Internal Buoyancy

The vessel shall be divided into watertight compartments to provide buoyancy in the event of a swamping.

The buoyancy shall be designed to provide full stabilisation when swamped.

If buoyancy material is used, it shall be efficiently wrapped or sealed to prevent ingress of water into the buoyancy material before being securely stowed.

The stability in a swamped condition shall be verified with calculations supplied to the Squadron with the Quotation. (Ref 1.10.4)

6.3 Void Space Access

Access to void spaces beneath the working deck shall be provided by means of through deck access covers. Access covers shall be 150 mm (min dia.) Bronze or Aluminium screw-out openings positioned to accommodate a wandering bilge suction hose as may be required.
(Ref 8.4.2)

6.4 Decks

The Starboard and Port side decks shall be continuous from the foredeck to the transom and be a minimum width of 150 mm to 200 mm where possible.

The working cockpit deck aft shall be positioned a minimum 150 mm above the waterline when the vessel is fully fuelled and loaded ready for sea, (refer 2.5) and be continuous without steps.

A slight camber to the decks from midships to the extreme sides or transom of the hull may be provided for efficient drainage.

6.5 Freeing Ports

Maximum possible size Freeing Ports shall be provided in the transom as a minimum complying to the Code with a rubber flap or similar device shall be provided, designed to prevent sea-water from entering the working deck while operating astern propulsion

6.6 Fendering

A heavy duty fender shall be securely fitted in accordance with the manufacturer’s instructions as detailed below.

At gunwale height around the vessel the fender shall be fitted in one (1) continuous piece running from the port after corner, around the bow to the starboard after corner.

6.7 Engine Pods

The engines shall be mounted on the transom or on pods as recommended.

6.8 Bulwark Door

Bulwark doors shall be installed in the transom and on the starboard and port sides as appropriate.

7. ACCOMMODATION

7.1 Accommodation General (To be completed by Manufacturer)

A long wheelhouse, where appropriate, with forward bulkhead as far forward as possible having the approximate dimensions of (_____) m wide and (_____) m long shall be positioned on the vessel and positioned longitudinally so that the helmsman is seated forward in the starboard position. Cabin roof overhang (_____) mm aft.

Seating, as appropriate, for the number of surveyed persons shall be provided in the wheelhouse.

A wider than normal padded bench set shall be installed, with storage under, behind the helm position long enough that a stretcher can be accommodated with a slide out seat in the centre as appropriate.

One seat and table, with fiddle, shall be installed behind the navigator position as appropriate.

Accommodation Specific

Forward void space under foredeck accessed via wheelhouse with stowage for lifesaving and general equipment.

Bunk Sections may be retained with storage under and above and a portable or full toilet will be installed as appropriate.

Non-skid flooring to be laid inside the wheelhouse and on aft deck.

Wheelhouse to contain seating as specified with hand rails behind including the helm and navigator seats with box or stainless bases and electronic and navigation equipment.

Water tank as specified for screen washing. Dash with antiglare finish.

Handrails for crew forward of aft two seats and overhead grab rails. Pyrotechnics and first aid gear in watertight containers. Chart and book stowage.

Open cockpit self draining deck aft with scuppers, tow post, access steps to foredeck to port. All weather decks non-slip surfaces.

7.2 Wheelhouse

The Wheelhouse shall be positioned as far forward as possible but to provide a forward boarding deck 1 m minimum length.

The wheelhouse shall have head room as per survey. The side bulkheads of the wheelhouse shall be tumbled inwards approximately 100 mm, as measured at the wheelhouse roof, to provide easier movement along the side decks.

7.2.1 Wheelhouse Windows

The wheelhouse shall have windows port and starboard and shall be manufactured from toughened glass in accordance with Australian Standard AS2080-1983 and be of maximum size and thickness conforming to the code.

All windows shall be mounted in readily removable aluminium mouldings designed to withstand the impact of wind and water.

All windows shall be set with minimum mullions to maximise clear vision.

The forward facing windows shall be fixed.

The side and aft facing windows shall have 50% sliding panels to maximise wheelhouse ventilation. The forward panels shall be mounted in the outboard grooves.

The sliding windows when closed shall be water tight under hose **testing.**

7.2.2 Wheelhouse Access

Wheelhouse access shall be through closed bulkhead with dual doors as specified opening to port and starboard.

7.3 Wheelhouse Outfitting

The wheelhouse shall be fitted out to accommodate (_____) persons safely seated during transits and house the engine and manoeuvring controls. The wheelhouse shall also be provided with cylindrical storage facilities for navigation charts.

7.3.1 Control Console

The console shall house the steering helm, main engine controls, a steering compass and all instrumentation as specified (ref 8.2.1). Main electrical board to be positioned in front of the radio operator and to port side.
Duplicate wiper, washer control switching at the helm position.

7.3.2 Seating

Seating including helmsman and navigator shall be provided in the wheelhouse. Seats shall be as specified, fully upholstered in all weather waterproof fabric set at sufficient height for good control and vision for all persons. (ref. 2.11.4 – Helm Position)

The helmsman's and one navigators seats shall be mounted on a slide to facilitate movement of the seat in a fore and aft position a minimum of 150mm. This is to facilitate manoeuvring to be carried
out from the standing position. In this operation the seat will provide leaning support for the helmsman. The helmsman seat shall be fitted to allow adjustment forward to within 220mm of the helm.

The seats shall be mounted on individual raised platforms. Consideration should be given to the base heights to allow full height adjustment of the seats.

7.3.3 Screen Wipers

All forward facing windows shall be fitted with a single blade, type electric wipers and they shall have dual control switching as appropriate.

7.3.4 Screen Washers

All front windows shall be supplied with screen washers supplying copious fresh water to the screens. The washers shall be electrically operated from the 12 Volt system and have dual controls.

7.3.5 Ships Radios

Ship radios shall be flush mounted in console and be easily accessible for operation. Aerials to be fitted on the roof and hand rails as agreed upon by the supervisor, Squadron overseer and manufacturer.

All radios shall require a 12 volt DC power supply.

All aerials shall be identified at their bases.

Radios supplied and fitted shall be as specified at addendum 1 and 2.

Note: All aerials are to be mounted on the roof aft accessible from the side.

7.3.6 GPS/Depth Sounder/Navigational Equipment

The GPS/Depth Sounder and other navigational equipment shall be installed in the wheelhouse in a position which is accessible for easy operation, and shall be as specified at addendum 1 and 2.

The sounder transducer shall be mounted through hull and easily accessible

7.3.7 DC Power Outlets

12 Volt DC power outlets shall be provided at the port and starboard position ; in the wheelhouse and in the cockpit; for the powering of auxiliary equipment. The power outlets shall be rated at a current rating of 10 amps.

The DC outlets shall be two pin type as nominated by the supervisor.

7.3.8 Wheelhouse Handrails

Handrails manufactured from 25mm thick walled tubing shall be provided on the wheelhouse roof to provide hand grips while moving around the side decks. Short hand rails are to be fitted at the front of the cabin to facilitate the step from the gunnels to the front deck.

Handrails shall be provided along both sides of the wheelhouse mounted on the roof topside 250mm in from the sides and front. Steps to allow access to the cabin roof from the side deck are required.

A handrail shall also be provided across the back of the wheelhouse.

Suitable hand grab rails shall be installed in the wheelhouse, centre on the deck head.

7.3.9 Foredeck Handrails (Fig. 1)

A VMR split handrail system manufactured from 25mm thick walled tubing shall be mounted 700mm above the deck as per pilot boat system.

The space between the island and the wheelhouse front shall be between .....mm and .....mm.

The handrail system shall be powder coated flat black to reduce glare.

7.3.10 Cockpit Handrails

Hand rails manufactured from 25mm diameter thick walled tubing shall be provided mounted on the inside of the cockpit capping on both sides and aft of the vessel. The rails will be used to assist with the movement about the cockpit in a seaway and to make fast equipment stowed in the cockpit.

7.3.11 Hatches

Hatches may be fitted as specified at addendum 1 and 2 and shall be heavy duty and maximum Size permissible.

8. MACHINERY

8.1 General

All machinery shall be installed according to the standard required for high class machinery.

All machinery shall be so arranged that running repairs may be carried out as far as possible without requiring the removal of any large parts from their position in the vessel, and without any modification to the vessel.

When selecting the positions of under water fittings to the hull, due regard shall be given to the accessibility of the securing arrangements for periodic inspection of the fittings.

8.2 Main Engine General

The main engines shall generally be outboard motors and shall utilise a transom height as recommended by the manufacturer.

Propulsion

Engine power shall be that as specified by the manufacturer.

The binnacle controls will be mounted beside the helm position.

8.2.1 Instruments

Engine instruments shall be supplied by the engine manufacturer and fitted along with : 2 x Volt meters for house and radio batteries

8.2.2 Fuel System

The fuel systems shall be fitted in accordance with the Code and the requirements of Maritime Safety Queensland

The fuel systems shall include in-line filters with clear inspection bowl of the type which include a Clear water separating bowl and removable element and with a change over valve to allow for fuel delivery to engines from either tank.

All fuel pipe work shall be, where practicable, manufactured from 316 stainless steel or copper tube utilising flare type fittings or flexible tubing where approved.

All fuel pipe work shall be installed in a manner designed to prevent mechanical damage.

All fuel pipe work shall be clipped to the hull using metal clips in accordance with the Code.

Fuel lines of Gos fireguard. Fuel filling pipes stainless steel with flexible ends, double stainless steel hose clamped. Tanks fitted in separate compartment to comply with USL code.

8.2.3 Fuel Tanks

Petrol fuel tanks shall be constructed in marine grade stainless steel (preferred) or aluminium in accordance with the Code and the requirements of Maritime Safety Queensland.

Tanks shall be provided with a metal filling point utilising a metal filler cap of approximately 38mm diameter marked “PETROL” as appropriate.

Fuel fillers aft and proud of the decks with overflow outboard.

Tanks shall be provided with a metal breathing system in accordance with the Code.

Fuel tank capacity will be specified at addendum 1 and 2..

Access to tanks via bronze or aluminium spin out inspection ports and/or deck plates pop riveted down, removable for full access.

8.2.4 Fuel Gauge (Optional)

Fuel gauges shall be considered only if an integral part of the engine gauges.

Dip sticks with access points shall be provided.

8.2.5 Fuel Tank Mounting

Fuel tanks shall be mounted in accordance with the rule laid down by Maritime Safety Queensland

Tanks shall be mounted in a position which has least effect on the trim of the vessel.

8.2.6 Variable Ratio Oil Tank (Where Required)

NA

8.3 Steering System

The steering system shall be a hand operated hydraulic system.

The hand hydraulic steering system shall be designed to cater for 300 HP engines not using power assist.

8.4 Bilge System

The vessel shall be provided with a bilge system as required conforming to the Code, Maritime Safety Queensland and this specification.

8.4.1 Bilge Pump. (Where Required)

The Vessel shall be provided with a hand operated, double acting, diaphragm type seawater pump, of minimum capacity 130 litres/minute.

The pump shall be permanently mounted on the inside of the bulwark.

8.5 Water Tank

One water tank shall be fitted for windscreen washing and for the recessed tap/shower as specified at addendum 1 and 2.

8.6 Deck Shower

Shower to be positioned aft and on starboard side.

9. ELECTRICAL

9.1 General

The electrical installation shall be constructed and installed in accordance with the requirements of the Marine Board of Queensland publication “Electrical Installations, Extra Low Voltage - All Vessels”.

A 12 Volt DC “Earthed Return” system shall be installed to service the vessel’s electrical requirements.

The system shall utilise the engine starting batteries as the supply source and the engine generating system shall be used to maintain the batteries.

Separate circuits shall be provided for essential services.

The leads between isolators, batteries, and starter motor shall be kept as short as possible.

Electrical equipment shall, within practical limits, be so placed as to have minimum effect on the magnetic compass.

Aerial feeder cables associated with radio or navigational equipment, shall not be run under the same securing devices as any other cables, and shall be separated as far as practicable from any other electrical cable.

Principal structural items shall not be cut to allow access for cables.

All electrical connections and functions shall be designed and arranged to prevent the ingress of water.

Electrical

Fully insulated two wire return 12 volt DC electrical system. All cables marine grade fully tinned copper conductors by **Electra Cables** with V75 PVC/PVC sheathing. Twin starting/house batteries and separate radio battery charged via diode splitter system with isolation switches to both lines.

All batteries to be contained in acid resistant boxes, close up main fuses to batteries, Main switch panel or panels in wheelhouse, illuminated rocker type circuit breakers on custom built trephylite base fully engraved, providing control and protection for all wiring.

NOTE: Stick on labels are unacceptable.

Cabin lights red/white, radio light, roof top spot light, full navigation and towing lights fitted. Power outlet sockets fitted port and starboard.

Electra shield moisture protection to all cable connections.

9.2 Batteries and Battery Space

Batteries shall be provided by the Contractor and shall be 12 Volt minimum capacity of 13 plate 75 amp hour rated deep cycle type or larger if required by the engine manufacturers.

Each battery shall be capable of supplying the main supply and engine starting service.

Both starting batteries must be capable of operating in parallel.

The batteries shall be installed in lockers under the side decks or transom locker.

Twin starting/house batteries and separate radio battery (maintenance free) charged via diode splitter system with isolation switches to both lines. All batteries to be contained in acid resistant boxes close up main fuses to batteries.

9.3 Circuits

The main batteries (2 starting & 1 house) shall feed the following circuits:

(a) Outboard starting, Navigation instruments, instrumentation and accessories

(b) Vessel's Navigation lights Vessel's domestic and deck lighting.

(c) Extra conduit for the inclusion of future electrical work or cabling,

Each individual Navigation light shall be fed by separate circuits. (Individual switching and fusing).

9.4 Radio Supply

A separate battery shall be utilised to supply the needs of all radios. The battery shall be maintained via a blocking diode charge system. The radio battery shall be installed in a position close to the radios.

9.5 Switchboards and Fuses

Switchboards and fuse shall be constructed in accordance with the requirements of Maritime Safety Queensland

Circuit breakers shall be fitted for the protection of all main and sub-distribution circuits.

The primary fuse, and main double pole isolator, shall be mounted in a position close to the batteries.

All auxiliary circuit breakers and switches shall be mounted inside the cabin and be well labelled using an engraved trephylite system.

Note:

Main electrical board to be positioned in front of the radio operator and towards midship position. Duplicate wiper, washer control switching at the helm and navigator position.

Easy access shall be provided to the front and backs of all switches and distribution boards.

All electrical boards shall be positioned to prevent mechanical damage by accidental contact and maintained dry.

9.6 Navigation Lights

The navigation lights shall be supplied from a separately controlled and protected sub-circuit fed from the main domestic board. Each light shall be protected individually by a switch and fuse. Switches and fuses shall be located at the control console.

Navigation lights shall be of watertight construction, Dioptric type lens, 125mm x 90mm approximately designed for the purpose and approved by the Association of Australian Port and Marine Authorities.

The following navigation lights shall be installed in accordance with the requirements of the International Regulations for the Prevention of Collisions at Sea 1972.

Red Port Light

Green Starboard Light

White Stern Light

White Masthead Light

White Anchor Light

Towing lights

Strobe lights Orange

Restricted in ability to manoeuvre lights shall be supplied as portable and stowed in the cabin.

9.7 Lighting

Adequate lighting to the approval of the Supervisor shall be installed in the wheelhouse, the welldeck and the after cockpit.

9.7.1 Instrument Lighting

All instruments shall be lit for night operation either fitted with dimmers or shades to prevent reflection.

9.7.2 Deck Lighting

The after cockpit deck shall be lit with the provision of two waterproof lights mounted under the wheelhouse roof after overhang.

9.7.3 Spot / Flood Lights

Spot and flood lights as specified at addendum 1 and 1.

9.7.4 Wheelhouse Lighting

The wheel house shall be provided with deck head mounted white red monochromatic lights, above the helm, navigator and general cabin positions. The white lights and the red lighting shall be separately switched.

10. MOORING EQUIPMENT

10.1 Anchors and Cables

The main anchor and cable shall be supplied by the Contractor and shall be a 14 kg Danforth type (galvanised), together with 100 m of 16 mm Silver rope and 2m of 8mm galvanised short link chain, spliced and shackled to form an anchor pennant and rode assembly.

This assembly shall be stowed in its own self draining anchor locker in the fore- deck. Provision shall be made to make fast the lines bitter end in the anchor locker.

10.2 Spare Anchor and Cable

N/A

10.3 Deck Bollards

Deck bollards as specified at addendum 1 and 2 shall be manufactured and installed on the side decks and one on the bow, positioned as directed by the Supervisors.

The deck bollards will be used in operations beside the normal berthing and securing operations.

The deck bollards shall be manufactured in the form of crucifix.

The bollards shall be mounted to the hull by through bolting utilising stainless steel bolts. The deck inlay of the bollard shall be suitably reinforced by the addition of doubling plates and other reinforcing.

10.4 Towing Post

A towing post or posts shall be manufactured of aluminium or timber and mounted on the vessel as required. The Towing post shall be manufactured and braced suitable for the towage of small and large vessels weighing up to 25,000 kg and 15 m in length in varying sea conditions.

11. LIFE SAVING AND MISCELLANEOUS EQUIPMENT

11.1 General

The vessel shall be fully equipped with lifesaving equipment to the requirements of Maritime Safety Queensland, the Code and this specification.

The following equipment as specified at addendum 1 and 2 and conforming to the code shall be provided by the Contractor and stowed in a permanent position on board the vessel to the satisfaction of the Supervisor:-

11.2 Horn

1 x sounding device as specified at addendum 1 and 2 shall be supplied and where required fitted.

11.3 Steering Compass

A steering compass with dimmer capability, minimum card diameter of 150 + mm front reading or as nominated, shall be supplied and fitted by the Contractor in a position easily seen by the Helmsman.

The compass shall be swung by a qualified compass adjuster and a deviation table prepared and installed at the helm position.

11.4 Locks

N/A

11.5 Flagstaff

1 x flagstaff complete with halyard shall be supplied and fitted at the aft end of the wheelhouse roof adjacent to the gunwale ladder. The flagstaff shall be easily removable. Flagstaff arrangement to be able to fly code flags and day shapes.

11.6 Tie Down Points (Optional)

N/A

11.7 Rope Lockers

A rope locker as specified at addendum 1 and 2 with hinged padded seat lid and swinging back rest, and self draining to the work deck, shall be installed in the cockpit The locker shall be mounted as required and shall be large enough to accommodate tow lines 150m long x 22mm Silver rope.

11.8 Anchor Lockers

Self draining anchor locker shall be mounted flush in the foredeck. The locker shall be of sufficient dimensions to accommodate either the working anchor together with their respective rode assembly. Provision shall be made to enable the locker lids to be closed while the anchor ropes are deployed. Provision to secure the anchors to prevent locker damage shall be provided.

11.9 Fire Fighting Equipment

The vessel shall be fully equipped with fire fighting equipment conforming to the Code, Maritime Safety Queensland and this specification.

11.9.1 Fire Pump

N/A

11.9.2 Portable Fire Extinguishers

Two 4.5 kg dry powder Extinguishers conforming to the code shall be provided by the Contractor and mounted on the after wheelhouse cabin bulkhead as directed by the Supervisor.

11.9.3 Fire Buckets

Two stainless steel 9 litre buckets painted red and marked “FIRE” shall be supplied by the Contractor. The buckets shall have a 2 m lanyard attached.

11.10 Bow Sprit

There shall be NO bow sprit. An anchor rope guide with split ring shall be fitted.

11.11 Fees

VMRAQ is exempt from all QDOT application fees.

11.12 Spare Equipment

One complete set of spare fuses and lamps shall be provided.

11.13 Emergency Steering

Provision is to be made for locking the steering in the event of hydraulic failure.

ADDENDUM 1.

"General List of Vessel & Fit Out"

NOTE: Addendum 1 may not be altered by the Squadron. Squadron alterations and or additions shall be made at addendum 2.

GENERAL

Insert Y = Yes / N = No

1	*General Vessel Description*	
2	Survey and Compliance Nil DOT Fees	Y
3	*General Cabin description*	
4	Test Panel and Drawings	
5	Stability	
6	6" metal inspection ports as required	
7	Weigh vessel	
8	1 x helmsman console, large steering wheel 460 to 500mm	
9	1 x navigator console recessed as per specification for radios only	
10	(____) x KAB chairs / heavy duty 80-150kg / armrest, adjustable lumbar Consideration to base heights and storage under	
11	1 Person Settee and table at rear of navigator seats with back rest to aft	
12	Storage under settee	
13	(____) litre water tank and pressure system	
14	Equipment List	
15	Heavy duty gunwale fender	
16	Toilet cubicle recess in floor port side of fore cabin	
17	Portable chemical toilet (with tie down straps) or Full	
18	Dash to have overhang moulding to minimize windscreen glare	
19	Sink with retractable shower to port and aft of wheelhouse long enough to reach outside in cockpit	
20		
21	Tow post	
22	Bow to be raised and flattened with non skid	
23	Vinyl door to fore cabin with zippered insert	
24	Radar mounting base to allow swivel.	
25	Ships log book	
26	Nally tub stowage including 4 tubs (under bench seat and forward)	
27	Sign writing as per VMRAQ standards in reflective blue	
28	(____) heavy duty gunwale bollards	
29		
30	Fuel tank compartment venting	
31	Black around windows	
32	Non slip surface to cockpit and centre front cabin	
33	Rope box	
34	Wide Settee at rear of helm position to accommodate a stretcher with back rest fixed to bulkhead window ledge and slide out seat with storage under settee	
35		
36		
37		
	c/fwd	

ELECTRICAL & NAVIGATION

1	(____) x Wynns "Sea Crystal" windscreen wipers, no park	
2	(____) x windscreen washers	
3	Dual controls to washers and wipers	
4	Supply and fit microwave oven and inverter with 240V outlet in wheelhouse	
5	12V electric's to Survey, 2 x starting, 1 x radio, 1 x house batteries, diode charging system, recessed guard over switch panel, D/P master switches to all batteries, House batteries to be sealed type and mounted to front of locker NOTE: Separate fuses to all circuits: tinned wiring, battery parallel, 2 x BEP C/B switch panels	
6	4 x 12V power outlets (2 in wheelhouse / 2 in cockpit	
7	(____) x red white dome lights in wheelhouse	
8	1 x light to fore cabin	
9	Navigation lights (stern, masthead, towing lights)	
10	1 x quarts flood light to cockpit	
11	2 x volt meters to house batteries	
12	2 x VHF Icom radios flush mounted plus aerials	
13		
14	1 x HF Radio as required	
15	1 x CD AM/FM radio	
16	1 x Furuno GPS Radar Sounder Navnet System (Flush Mount)	
17	2 x Screens / 1 navigator 1 helm	
18		
19	Rear bulkhead doors opening port and starboard as appropriate	
20	2 x steps either side of cockpit to bulwarks	
21	2 x 12V heavy duty 2-speed fans	
22	2 x spot/flood lights through roof and on bow	
23	Compass 150 + mm (direct read). Consideration should be given to mounting plane Swing Compass and fit dimmer	
24	Gas detectors to fuel tank spaces	
25		
26	2 x courtesy lights in cockpit	
27		
	NOTE: All lighting to be LED where possible	
	c/fwd	

STAINLESS STEEL / ALUMINIUM

1	(____) x foot rests with foot pads helmsman & navigator	
2	(_____) + litre fuel tanks with dual fillers, passivated welds, Survey Standard	
3	Twin rescue bow rails (NO bow sprit)	
4	2 x vertical rear coming rails	
5	Grab rails to dash board, 1 x horizontal	
6	1 each of vertical and horizontal rails adjacent to helm	
7	1 x overhead rail to wheelhouse with 2 tram holds	
8	1 x grab rail across rear cabin overhang with 2 tram holds	
9	2 x hardtop rails set inward 200 to 250mm from edge	
10	Powder coat bow rails flat black	
11	Engine protection rails	
12	1 x anchor rope guide and rubbing plate and split ring rope guide, incl	
13	1 x Removable flag staffs to rear of cabin roof	
14	Light stand for towing	
15	Ariel base plates to hardtop rails	
16	4 x stainless steel tie downs in rope box	
17	Grab rails adjacent to all chair	
18	Navigation lights to be mounted on roof and forward	
19	All fasteners to be 316 stainless steel	
20	Grab rails on the back of all chairs	
21	1 x side boarding ladder removable	
22		
	c/fwd	

SURVEY/SAFETY EQUIPMENT

1	1 x bilge pump as may be required	
2		
3	1 x First Aid Kit	
4	Flare kit and canister Offshore	
5	Talley plates	
6	1 x 14lb danforth anchor chain and fittings, 100m 16mm silver rope, tie down and straps, with eye bolt	
7	Towing day shapes	
8	1 x boat hook and mounting	
9	(____) x coastal life jacket lights and whistles	
10	N & C Flags	
11	2 x torches and batteries	
12	1 x life buoy light and line (batteries) VMR Karumba.	
13	1 x clock and barometer	
14	1 x "D" flag	
15	1 x 406 Mhz EPIRB	
16	2 x 4kg fire extinguishers	
17	2 x stainless steel fire bucket	
18	Signalling mirror	
19	Sea anchor	
20	2 x safety harnesses, with lines	
21	1 x hand held compass	
22		

	c/fwd	

MACHINERY

1	Engines (As Recommended)	
2	Survey engine fit up	
3	Fit standard gauges	
4	2 x volt meters to house and radio batteries	
5		
6	2 x Racor fuel filters (clear base) with fuel change over valve	
7	Steering locks	
8	Hydraulic steering, upgrade to Survey standard	
9	(____) hour sea trial	
10		
11		
12		
13		
14		
	c/fwd	

MISC. TRAILER / TROLLEY

1	1 x flat bed trolley or trailer to be specified.	
	c/fwd	

GENERAL $
ELECTRICAL $
NAVIGATION $
SURVEY/SAFETY $
S/STEEL $
MACHINERY $
MISC. $

TOTAL $

ADDENDUM 2.

"Squadron List of Alterations & Additions for Vessel & Fit Out"

GENERAL

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
	c/fwd	

ELECTRICAL & NAVIGATION

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
	c/fwd	

STAINLESS STEEL / ALUMINIUM

1		
2		
3		
4		
5		
6		
7		
8		
9		
	c/fwd	

SURVEY/SAFETY EQUIPMENT

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
22		
	c/fwd	

MACHINERY

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
	c/fwd	

MISC. TRAILER / TROLLEY

1		
	c/fwd	

GENERAL $
ELECTRICAL $
NAVIGATION $
SURVEY/SAFETY $
S/STEEL $
MACHINERY $
MISC. $

TOTAL $