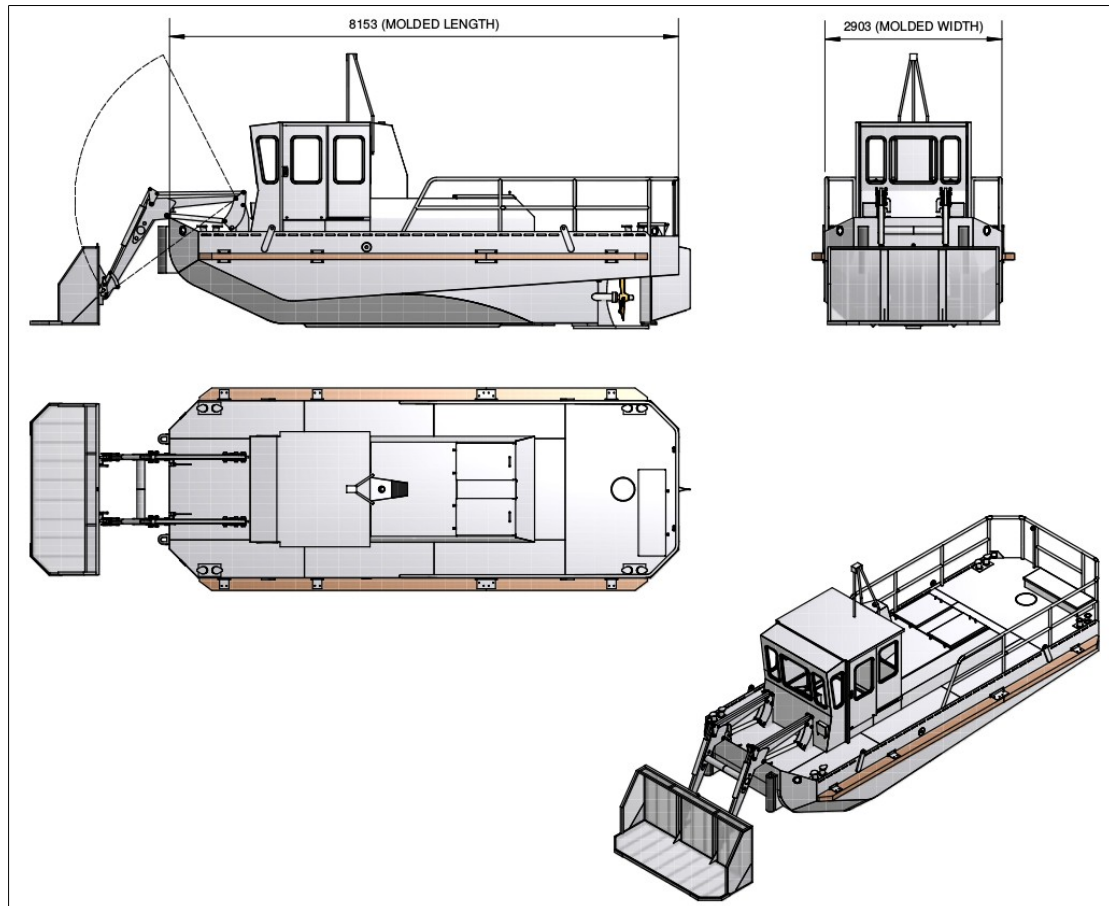




Mark 2 Water Witch — Special Build Technical Specification



Dimensions — Approx

Overall length of hull	8.10m
Overall width of hull	3.00m
Max. operational draught	0.90m
Lightship displacement	12.8 tonne
Max. Lightship speed	8.5 knots
Approx. bollard pull	1.5 tonne
Max. lifting capacity	1000kg*

Headroom — as low as practicable to facilitate easy transportation on ro-ro ferry

*Depending on attachment selection



Design

The boat shall be built in accordance to guidelines approved by an international recognized classification society such as Lloyd's Register Special Service Craft rules. All structural and design calculations shall meet and be calculated according to the approved standards and rules.

The craft should be flat bottomed and easily transported by road. Designed and constructed to the best marine industry standards to operate with adequate stability, navigability, and manoeuvrability within a port or harbour and moderate weather conditions.

The craft will have a single inboard Perkins marine diesel engine with a bollard pull of approx. 1.5 tonne and skin tank cooling, suitable for operating in shallow/turbid waters and weed without blockages.

Highly manoeuvrable and be capable of turning 360 degrees within its own length.

The hull shall be sufficiently strong to withstand all the stresses to which it is normally subjected and protected with twin push bows with heavy duty D section fendering.

Key Features

- Easily transported by road.
- Keel cooled to ensure no loss of performance when working in very contaminated water.
- Highly manoeuvrable and capable of turning 360 degrees within her own length on a single propeller.
- Capable of lifting a payload of up to 1000kg to 3.8m above waterline and option to reach to 3.65m below waterline.
- General purpose front end loader with interchangeable attachments to support a wide range of duties.

Hull

Hull of welded steel construction, all plate certified Lloyds Grade A 275JR+AR shotblasted and primed. The hull to be sufficiently strong to withstand all the stresses to which it is normally subjected. Steel box form, with bluff bow and shaped stern, rigidly constructed in 6mm Lloyds Grade A steel plate with continuously welded butts and seams. Craft longitudinally stiffened by two parallel channel section girders also forming bed for main engine and hydraulic pump, and through interconnection by channel section pillars, disperses load/thrust on heels of hydraulically operated loader beams, rams, etc.

Transverse strength is by angle bar, intermittently welded at 609mm intervals with robust all welded connections to floors and curlings/beams by lapped brackets. Shaped stern stiffened at forward end of transom space by internal channel. Collision bulkhead forward.

External protection at bottom by two parallel keel chocks, and at sides by removable fenders through bolted to retaining brackets or optional rubbing strakes. Protective fixed rubber fendering to bow suitable for pushing. Shaped rudder of suitably stiffened 6mm plate. 10mm Keel plate sufficient to prevent accidental damage when operating in shallow and rough channel conditions.

Decks of 6mm plate. Through hull fittings supplied with inspection certificates.

Grab rails fitted to cabin and skylight tops to facilitate safe access and exit. Tubular guard rail with stanchions fitted at stern with provision to accommodate 2 off life buoys.

Mooring bollards and fareleads fitted along deck edges port, starboard, forward and aft. Four lifting lugs.



Deck edges fitted with safety toe rail. Four sacrificial anodes fitted to hull.

Wheel House/Control Cabin

The cabin to provide good all round visibility and of sufficient size to accommodate 3 personnel.

Fully height and reach adjustable operator's seat with back and arm support for comfort. The seat is easily removable.

Seat with vinyl cushion and storage under. Coat hook.

Cabin accessed by lockable (key alike) and weather-tight sliding doors port and starboard.

Windows of BSMA tinted safety glass fitted, 6mm thick set in satin etch aluminium. Electric windscreen wiper fitted centrally with screen wash.

Cabin sound and heat insulated with wipeable finish. Flooring of composition bound underlay with heavy duty anti-slip covering.

Adequate lighting provided in cabin powered from 24 volt general service batteries.

Deck working floodlights mounted on control cabin.

Control console incorporating instrument panel with tachometer, temperature gauge, oil pressure gauges, audible indicator, high temperature/low oil pressure remote engine shut-down, engine starter unit. Horn push. (2 pcs) 12v outlet/charger socket. Morse single lever engine control. Steering control (joystick). Foot throttle. Hydraulic controls for general purpose loader.

All control levers and monitors placed within comfortable reach of helmsman.

Fuel Tank

The fuel tank has sufficient capacity of approx. 870 litres to permit a minimum of 40 hours continuous operation of the craft. Tank fitted with lockable drain cock and drip trap.

Engine Room

Accessed by twin ladders from skylight at aft end. Compartment fitted with removable 3mm non-slip checker plate on floor.

Design of compartment allows for easy removal and replacement of engine and gearbox.

Two watertight skylights 3mm M.S. plate with overlaps, and fitted rubber jointing with raised sills are located above main engine. Both hatches are capable of being securely locked with a padlock.

Fabricated funnel housing exhaust from main engine and incorporating ventilation. Two engine room vents fitted with weather tight closing facility.

Fuel supply line from tank to engine room fitted with emergency quick closing valve at the tank, which can be remotely operated from the control cabin. All piping to be colour coded or labelled for easy identification.

Adequate lighting provided from 24 volt general service batteries.

Batteries stowed in adequately ventilated box compartments port and starboard.

Hooks for jackets/clothes.



Engine

PERKINS SABRE M190C Turbo Charged Marine Diesel unit with sufficient power to operate all the hydraulic systems. Electric start from control cabin. Heavy duty multi —late oil actuated reverse gearbox. Ahead and astern 3:1 reduction. Bollard pull of approximately 1.5 tonnes.

All engine monitoring, alarms and safety/cut-off systems controlled from control cabin.

Cooling System

The vessel features closed circuit keel cooling for operating in shallow/turbid/polluted waters without blockages.

Electrical 24 Volt

Lead acid Varta 95 Amp.

Engine starting: 2 x 12v Batteries heavy duty commercial

Auxiliary equipment: 2 x 12v Batteries heavy duty commercial

Batteries fitted in boxes ventilated to atmosphere. Both sets to be charged from either alternator or battery system and fitted with change over switch. Battery condition to be provided at control panel in the wheelhouse. Heavy duty (600 amp) battery isolator switches provided to each set of batteries. High current remote operated VSR with emergency parallel function.

Switch/fuse panel mounted in wheelhouse console.

Fixed deck lights/floodlights.

Wheelhouse forward window fitted with window wipers

Navigation Lights & Signals

Navigation mast mounted centrally. Optional drop down facility for navigating under bridges/road transportation. Lights, sounds and signals to comply with the requirements of subject to intended area of operation in protected/sheltered waters. As headroom is restricted when transporting to site, we suggest side lights only and no mast.

Propulsion/Steering

The vessel is propelled by a single stainless steel propeller shaft 63.5mm (2 1/2") diameter through bronze bearings with soft packing stuffing box and gland. Lubrication by grease.

Right-handed three bladed manganese bronze propeller fitted (33" x 26" pitch) suitably protected with skeg plate and Rope Stripper to prevent fouling.

Hydraulic operating levers and engine controls and monitors within comfortable reach of the operator. To facilitate manoeuvrability and turning in confined spaces, the vessel can turn 360 degrees within it's own length.

Fully hydraulic single lever steering control. Hydraulically operated ram quadrant type, located after end of transom space actuated by rotary pump driven from main unit. Rudder angle indicator. Hand operated portable emergency tiller also supplied.



Weed Hatch for access to propeller with flush deck access hatch on aft deck

Deck Gear

Lifting Device

General purpose loader fitted forward, actuated by rotary pump, driven from main unit. The hydraulic system for the loader is separate to the steering.

The loader/lifting arm can be fitted with a range of attachments for a variety of duties. Euro-lock quick release mechanism easy removal of attachments. Hydraulic multi-function lever control with lock facility.

Mesh Scoop Attachment

General purpose collection basket for debris and solid waste collection with 2.5 cubic meter capacity. Welded box section with close mesh.

Heavy duty marine rubber fenders (positioned to suit) to bow for pushing. Anchor points to forward deck port and starboard for ratchet lever lashing hoists.

Hydraulic System

Powered by main engine driven pump. Hydraulic system suitable for arduous, continuous use. Equipped with hydraulic cooler.

Bilge Pump

Two bilge pumps provided, one automatic power driven and one hand operated from outside engine room with hatches shut. Audible alarm on Bilge pump control panel

Life Saving Appliances and Equipment

All safety equipment approved by SOLAS

Two lifebuoys, one with 18m buoyant line and one with immersable light mounted port and starboard on rear guardrail.

First Aid Kit

Fire Fighting Appliances in Control Cabin and Machinery space to an approved system by MCA.

Radio/Navigational Equipment/Miscellaneous

VHF Fixed with DSC (or hand-held)

Inclinometer

Tool Kit

On board maintenance tool set in carrying case.

Ships Miscellaneous Equipment

1 - Anchor, chain rope, towrope



- 1 - Boat Hook
- 1 - Set of Mooring ropes
- 1 - Deck brush
- 1 - Grease Gun
- 1 - Oil Measurer

Spare Parts

On-board spare parts for 2 year's operation supplied including spare propeller — please refer to Spare Parts Addendum, please send.

All Spare Parts available from Liverpool Water Witch direct.. Engine and gearbox Spare Parts and Servicing available from Perkins local dealer.

Painting

Steelwork shotblasted and primed prior to application of paint. Undercoat and top coats of highest quality marine paint to manufacturers instructions and specification. Non-slip paint applied to all deck areas. Colour scheme — green superstructure, black hulls. All decals, logo's and signage to be supplied by customer.

Engine room to have one coat of primer, one undercoat and one finished coat of white to manufacturer's instructions and specification.

Manuals and Documentation

Two copies of Operator Manuals and on board Maintenance Manuals in English language.

Two copies of plans, general arrangement, machinery and electrical layout, and stability booklet to be supplied.

Training

On-site training of personnel in operation and maintenance and local commissioning of vessel for a maximum of 5 working days provided at customer's site.

Specification

The specification may be subject to change and alteration to comply with any local regulations or rules as agreed.

Materials

All materials used in the construction and outfit of the vessel are to be suitable for their purpose and appropriate to the service and operation of the vessel.

Material certificates of conformity are to be supplied as part of the vessel build documentation package (technical file).



Optional Equipment

Echosounder and thru-hull transducer

Lifejackets for all crew