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Survey Report

Vessel Name

Too Doo

Survey Dates: July 1st, 2021 & April 4th, 2022
updated on October 28th, 2022

Client

[redacted]

[redacted]

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1 Summary

On July the 1st 2021 an in the water survey was carried out, this was followed by an out of the water survey on April the 4th 2022. An update on the progress of the refit of the boat was provided by the owner on the 28th of October 2022

Too Doo is a Cruiser stern design steel narrow boat. It was found to be structurally sound during the in and out of the water surveys however there appeared to have been a lack of routine maintenance and remedial action was needed.

My list of recommendations is given on page 10

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Insurance Valuation

I value the 45 feet long steel narrow boat called Too Doo at £34,000 The Insurance Valuation given in this report represents the estimated cost of replacing the boat surveyed with the same or similar type, in similar condition, in the case of a total loss. It is not a recommended buying price for the steel canal boat called Irene.

Valuations are based on opinions only and are not representations of fact, nor do they carry with them any guarantee of the particulars or information on which opinions are based. Valuations assume a willing buyer and willing seller and market conditions applicable at the time of valuation.

[redacted]

2 Introduction

2.1 Client Information

Name	[redacted]
Address	
Contact Number	
Email	
Brief	

2.2 Scope of Survey

Survey Locations	[redacted]
Moored Location	[redacted]
Survey Dates	July 1st, 2021, and April 1st, 2022
Present at the survey	[redacted]
Description	**The vessel was inspected in and out of the water.** **Limited access to the interior of the hull was possible however the internal floorboards could not be lifted without damage to the boards and floor coverings. Internal inspection beneath these boards was not possible. No bolts were removed for inspection and no linings removed in any part of the vessel, her equipment or fittings, which were unexposed or inaccessible, cannot be confirmed to be free from defect.** **The vessel and her equipment were not assessed for design, suitability for any particular purpose, or compliance with any rules, regulation, standard or code. Note that the terms "serviceable" or "serviceable condition", as used in the report, means that the item remained usable, despite possible wear or deterioration. The item may nevertheless require maintenance or replacement in due course.**

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2.3 Vessel Information

Vessel Type	Cruiser stern narrow boat	**Name**	Too Doo
Builders	N/A	**CIN**	N/A
Year of Manufacture	N/A	**Registry**	CRT
Hull Type	Displacement	**CE Marked**	No
Overall length	45 feet	**Hull Material**	Steel
Draft	Estimated at 23 inches	**Beam**	Est 7 feet
Engine run	Yes	**Maximum speed**	Estimated at 5 knots
Waterline Length	Estimated at 40 feet	**Displacement**	Not known
Air height	Estimated at 6 feet 6 inches	**Freeboard Height**	Estimated at 200 mm
Oil discharge	None	**Steering**	Steel plate rudder / Tiller
Engine Type	Isuzu Marine	**Engine age**	N/A
Engine HP	Est 27 Hp	**Engine Fuel Type**	Diesel
Location of fuel tank	Integral tank in the stern - serviceable	**Location of water tank**	1 x integral tank in the bow - serviceable
Gas bottle locker	Steel locker on the aft deck	**Bilge Pumps**	1 x electric in the engine bay - serviceable
Exhaust system	Rigid / lagged - serviceable		
Construction	Cruiser stern design steel narrow boat with engine in the stern. Steel hull, steel deck housing and superstructure. Gas bottle storage aft and freshwater tank in the bow, integral diesel tank in the stern.		
Normal use	Leisure or Live aboard		

[redacted]

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Survey Report

Equipment viewed with the boat in the water.

Steering System

Too Doo had a traditional steering system with a steel plate rudder supported by a steel channel skeg extending from the boats stern and a steel tiller. There were no signs of damage or trauma to the steering system above the water line or significant wear felt in the rudder bearings which moved freely.

Through the Hull Fittings

With the exception of the weed trap the through hull fittings that could allow water to enter the interior of the boat were all located at least 200 mm above the water line as recommended. The weed trap could be securely sealed from inside the boat.

4 Internal examination of the hull and equipment

Too Doo was fitted out at the time of this survey which prevented a full examination of the interior of the hull; the fit out limited the internal inspection to the bow and stern sections and areas of the hull amidships and in the stern that could be seen under the lounge seats and the bed.

No areas of significant corrosion was found inside the bow but slight surface corrosion was found on the top of the base plate adjacent to the freshwater pump just aft of the freshwater tank. See picture on the right

Slight surface corrosion was also found on the areas of the base plate that could be seen under the lounge seats and the bed. At this stage this corrosion is not affection the structural integrity of the hull. Remedial action can be taken during the next maintenance period.

Extensive surface corrosion was found in all areas of the engine bay, see picture on the right.

The engine cooling system tank on the port side of the engine bay was badly affected by surface corrosion. The cooling system tank upper connection is shown on the right.

Surface corrosion was also found on the aft deck floorboard support frame.

Extensive surface corrosion was found on and around the engine cooling system tank lower connection – picture on the right.

Note the extensive surface corrosion on the engine cooling system tank connections is a serious cause for concern as leaks from these connections can cause engine overheating and damage in addition to adding to the corrosion in the engine bay. Remedial action should be taken as soon as possible.

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4.1.1 Engine and control system

The engine running hour meter was not working. The engine started easily and ran normally during a 10 minute running test. The engine temperature remained in the normal range, no evidence of major damage or trauma and no leak paths were found on the engine or the fuel or exhaust pipe work. Inspection showed that the engine fuel and exhaust pipe work and fixings were sound and the engine mountings secure. Surface corrosion was found on the engine but it appeared to have been reasonably well maintained.

No damage was found on the Matrix Controls Ltd engine control panel and the single lever engine control worked normally.

Note: The surveyor is a not a marine engine specialist, an engine survey was not carried out. If no professional engine service records and available and continuous cruising is planned it would be prudent to have the engine inspected / serviced.

4.1.2 Electrical System

The boat had 12 and 240-volt electrical systems. The boats batteries were charged by the engine driven alternator and a Weaco marine battery charger on the 240-volt system. There were Lead Acid batteries securely housed in the engine bay for engine starting and the domestic supply. The 12 and 240-volt systems were controlled by isolator switches, and a 12 volt fuse box. Power was available to all the 12 volt circuits and the lights and equipment worked normally. It was noted that the 12 volt light bulbs were old type filament ones, replacing these with low wattage LED bulbs should be considered.

The 240-volt system was made up of good quality equipment and included a marine consumer unit 3 pin socket outlets and marine wiring which appeared to have been installed to professional standards. The 240-volt shore power system equipment operated normally during this survey.

4.1.3 Water Systems

Fresh water was stored in the integral tank in the bow; access to the interior of this tank was not possible. No physical damage, serious internal corrosion or signs of water leaks were found in the visible areas but minor surface corrosion was found on the aft side of the tank where this insulation foam had been removed.

Pressurised water was supplied by UK domestic type push fit pipes and a 12-volt pressure sensitive pump. No physical damage to the hot or cold-water system was found. The water system was tested when the boat was on shore power, water was available at the taps and the shower. The wastewater from the sinks and shower was discharged directly overboard.

4.1.4 Gas Installation

Two LPG bottles could be housed in a dedicated gas bottle storage locker on the aft deck. Rigid copper pipes run to the cooker position in the kitchen. No cooker was installed.

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4.1.5 Heating System

A Bubbles solid fuel room heater was securely located in the lounge area. No physical damage was found on the heater of flue pipes and no signs of water ingress or flue gas leaks were found.

The heater appeared to have been recently installed, it was not tested during this survey.

5 Interior fit out

The internal fixtures and fittings were win poor condition, an extensive refit and equipment upgrades are needed to bring the boat up to today's normally accepted standards

Note It was reported that a complete internal refit is currently underway.

5.1 Windows, Doors and Security

Access to the inside of the boat was via hinged doors and a sliding hatch at the steering position and through hinged glazed wooden doors in the forward bulkhead at the bow. Single glazed windows in metal / wood frames were set into each side of the superstructure.

The doors in the bow and the stern and the windows were in very good condition with no signs of forced entry damage or serious water ingress found. The windows have been replaced.

External examination of the hull in the dry dock

The nominal thickness of the steel plating on the vessels bottom (10 mm) and counter plating (10 mm) and the hull side plating (6 mm) was established using an UM-1D double echo Ultrasonic thickness tester (S/N 5104705) which was calibrated at the start of this survey. It should be recognised that the readings do not make allowance for pitting of the steel plate, so where pitting is significant plate thicknesses may be substantially less than indicated. It should be understood that the recorded readings represent the plate thickness measured in many places following visual inspection and is believed to represent the general condition, there can be no guarantee that areas of severe corrosion do not lie in untested areas. "Pin holing" sometimes occurs very locally, whilst satisfactory thickness readings are obtained a few centimetres away. The Ultrasonic gauge readings are 'point readings' and represent the plate thickness directly under the probe. Plate thickness should not be estimated and assumed by interpolating point readings to obtain a thickness of untested areas, no matter how close the point readings are.

The boat was inspected whilst supported by 600 mm high wooden sleepers. Access to the underside of the boat was limited to outer edges only for safety reasons. The blacking on the hull sides was cleaned but not removed in approximately 30 places, the marine growth was removed from the base plate which was cleaned back to bright metal in approximately 15 places by scraping and light sanding. The thickness of the metal sides, counter and base plates plate was measured.

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Lower hull, Base and Counter plates below the water line

The hull was found to have vertical side plates and flat horizontal base and counter plates. The steel sheets making up the sides, counter and base were joined by continuous welding. Readings taken on the sides at intervals just below the water line from the bow to the stern were between 5.9 and 6.0 mm on both sides, just above the weld joining the sides to the base they were between 5.7 and 6.0 mm. Readings taken on the counter plate were between 9.7 and 10 mm. Extensive silver coloured pitting was found on the sides from the base up to just above the water line, most of the pits ranged from 5 to 10 mm in diameter and from 0.2 to 0.5 mm deep, a small number of deeper pits between 0.7 and 1.3 mm deep were found. At this stage the pitting is not affecting the strength of the hull however filling the deeper pits with weld should be considered. No significant pitting was found on the counter plate but slight damage was found on the weld between the underside of the counter and the rudder stock tube.

Access to the underside of the boat was limited to the outer edges of the base plate. The plate was cleaned back to bright metal by hand scraping and sanding in 15 places approximately 100 mm in from the edges Additional readings were taken 200 mm in from the edge on both sides of the base where this area could be reached. Readings on both sides 100 and 200 mm in from the edge were between 8.7 and 9.8 mm

Extensive silver coloured pitting was found on the base plate - see picture on the right. The pits were between 5 and 30 mm in dimeter and from 0.2 to 1.0 mm deep.

It was found that from 1.5 to 11.5 meters aft of the bow the thickness of the outer edge of the base plate on both sides was worn down presumably by grounding damage. The thickness of the outer edge averaged 3 to 4 mm.
I recommend that the worn area is doubled up by welding a 150 mm wide strip of 6 mm thick steel plate on the underside on the base from 1 to 17 meters aft of the bow. The plate should extend approximately 20 mm beyond the edge of the original base plate and be attached by continuous welding along all edges.

When steel boats of this type are made it is normal practice to leave approximately 20 mm of the outer edge of the base and counter plates extending beyond the weld that joins the bottom edge of the sides to them. This is to give protection of the weld. Over time contact with bridges and quays wears down the outer edge of these plates eventually leaving the weld exposed to damage. In this case the outer edge of the base plate was found to be worn down to within 3 to 4 mm of the weld from 1.5 10 11.5 meters aft of the bow on both sides.

I recommend that the worn area is doubled up by welding a strip of at least 6 mm thick steel plate on the underside on the base. The plate should extend approximately 20 mm beyond the edge of the original base plate and be attached by continuous welding along all edges.

All measurements were taken along the water line.

Close inspection and hammer testing along the accessible welds joining the sheets of metal that made up the bow, stern, sides and counter found them to be secure. No failed or cracked welds were found.

Minor surface corrosion was found inside the weed trap at the stern (the access panel directly above the propeller) A suitable anti corrosion treatment should be applied during the next maintenance schedule. The trap could be securely closed off from inside the boat as recommended.

Note The extensive silver coloured pitting on the sides and base below the water line indicates that the boat has suffered from the effects of stray electrical current in the water surrounding it. This can be caused by the faults in the 12 or 240 volt electrical systems, faults in an adjacent boats electrical systems or faults in the shoreline supply system. Remedial action should be taken now to avoid serious pitting affecting the structural integrity of the hull

[redacted]

Hull, bow, stern and side areas above the water line

The hull above the water line was found to be in reasonable condition with no evidence of serious impact damage found. Extensive corrosion was found under the deck drain on the starboard side and minor dents scuffs and scrapes were found on the bow, stern and both sides. A tap test using an engineer's hammer found no signs of failure of the welds joining the metal sheets.

Note The D shaped rubbing strips around the hull had been attached by continuous welding along the top edges and tack welding along the lower edges. This is regarded as bad practice as it leads to crevice corrosion forming under the strips which in turn leads to pin holes forming in the hull sides under the strips. Evidence of crevice corrosion was found under a section of the upper rubbing strips on the starboard side on the stern. Sight surface corrosion had formed on the hull side plates under the strip. It is reasonable to assume some corrosion of the side plates under the strips has taken place but this cannot be confirmed without removing the strip. Severe crevice corrosion can force the lower edges of the rubbing strips away from the side plates. Inspecting the strips should be included in all future maintenance schedules if gaps between the lower edges of the strips and the side plates have developed the strips should be removed and remedial action taken.

6 Conclusions

The 45 foot steel narrow boat called Too Doo was found to be structurally sound but in need of extensive remedial structural work and a full internal refit. No evidence or serious damage or, trauma was found but the corrosion inside the engine bay at the stern, the extensive pitting on the sides and base below the water line and the wear on the edge of the base plate found during the out of the water survey are a cause for concern. Remedial action should be taken as soon as possible if serious structural problems are to be avoided.

The external repainting and replacement of the windows and canvas covers over the bow and stern have completed the external refit. A full internal refit is now needed to bring the boat up to today's normally accepted standards.

The preparation of a full refit schedule is not within the scope of this survey.

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7 Recommendations following the out of the water survey

These recommendations represent the minimum amount of work needed to the boats hull to ensure the safety of the vessel its crew and the environment.

Work to be carried out as soon as possible

Remove the surface corrosion in the engine bay including on the engine cooling tank connections and apply a suitable corrosion protective coating.

Remove the surface corrosion on the aft deck support frame and apply a suitable corrosion protective coating.

Remove the surface corrosion in the bottom of the gas bottle locker and apply a suitable corrosion protective coating.

Double up the corroded area of the hull sides under the deck drain on the starboard side

Test the 12 and 240 volt electrical system for leakage and consider commissioning an in the water electrical leakage survey

Attach 2 equally spaced anodes to each side below the water line

Repair the damaged weld around the underside of the counter plate and the rudder stock tube

Fit reinforcement plates to the worn edges of the base plate

Remove the section of the upper rubbing strip on the starboard side of the stern where crevice corrosion can be seen and repair any holes found under the strip before replacing it

During future maintenance periods

Remove the surface corrosion on the top of the accessible parts of the base plate and apply a suitable corrosion protective coating.

Signed

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[redacted]

Basic nautical definitions relating to Steel and GRP canal boats

Air draft	The maximum height of the boat above the water line
Aft deck	The external seating area
Base Plates	The horizontal steel plates that make up the bottom of a canal boat
Beam	The width of the hull.
Bow	The front of the boat.
Bilge	The lowest inner part of a ship's hull. Bilge Water collects in the bilge.
Bilge Pump	Pump used to empty the bilge
Bimini	Canvas cover over the aft deck
Bulkhead	A wall within the hull of a boat, they provide support and usually separate different sections to reduce the risk of flooding.
Butty boat	A steel narrow boat with no engine
Camber	Decks normally have a slight curvature to assist with drainage and impart
Calorifier	The hot water tank (similar to the emersion tank found in houses)
Counter plates	Horizontal steel plates directly above the propeller on a canal boat
Chine	The horizontal edge where 2 steel sheet meet. If a boat is moulded and round shaped it has no chines.
Daggerboard	A shaped plank which can be lowered into the water to act as a keel to provide resistance to lateral drift, usually found in sailing dinghies and catamarans.
Davit	Device for hoisting and lowering a dinghy or outboard motor
Displacement Hull	Hulls that stay in the water when the boat is under way
Dodger	Canvas shield against rain or spray
Double Ended	A boat that is pointy at both ends such as a canoe
Draft	The measurement from the water line to the bottom of the keel
To Fair	To smooth out. When building or repairing a boat great care is taken to smooth the surface.
Frame	Some steel boats are built by steel plates attached to frames.
Freeboard	The distance between the water line and the top of the gunwale.
Galley	The kitchen on a boat
Galvanic Isolator	An electrical safety unit designed to reduce external stray current corrosion
GRP	Glass Reinforced Plastic (Fibreglass)
Hawsepipe	A pipe in a boats bow where the anchor scope fits through.
Hatch	A trapdoor or cover
Heads	The toilet on a boat
Holding Tank	A tank for holding toilet waste (also called a black water tank)
Hull Speed	The maximum efficient speed of a displacement-hulled vessel.
Kedge	Small anchor often used at the stern
Keel	The central beam running the length of the bottom in some motor cruisers and sailing yachts the keel is often made of metal and bolted to the outside of the hull.
Knots	Boat speed
LOA	The Length Over All measured from one end of the hull to the other.
LPG	Liquid Petroleum Gas
M.O.B	Man Overboard
Morse control	A combined throttle and gear selector unit that controls the engine
Port	The left side of the boat when facing the bow
Port lights	Small hinged hatches
Pump Out	A means of emptying the holding tank
Rudder	The part of the steering system that is in the water
Skeg	A downward or backward projection from the stern. Used to support the rudder
Stanchion	Vertical post near a deck's edge that supports the guard wires
Starboard	The right side of the boat when facing the bow
Stern	The back of the boat, bow at the front stern at the back.
Stuffing Box	The internal sealing valve that the propeller shaft passes trough
Swim plates	The curved vertical steel plates running forward from the propeller
Tabbing	Strips of GRP used to attach bulkheads to the hull in Fibreglass boats
Tiller	The bar used to steer the boat
Transom	A flat board at the stern of a boat.
Ultrasound	A method of measuring the thickness of steel plate from one side
V-Bottom	Refers to the shape of the hull.
Weed Trap	The closed of tunnel that gives access to the propeller from inside the boat
Waterline	The line on the hull between water and air.