fieldhouse yacht surveys

MAYFLY

Pre-purchase Survey

Completed for

[Name & address removed]

On Friday 18th November 2019

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Law and Jurisdiction

This document is to be construed under English Law and English Law shall be used in interpreting the document and for resolving all claims or disputes arising out of or connected with the document.

1. INTRODUCTION

1.1. This is to certify that Nic Fieldhouse, Principal Surveyor of Fieldhouse Yacht Surveys and Consulting Ltd, carried out a pre-purchase survey on MAYFLY in accordance with instructions received from *[Name & address removed]*.

1.2. The primary aim of this document is to report on the factual condition of MAYFLY at the time of the survey. Where the equipment has been inspected or tested and found to be in an unsatisfactory condition, recommendations for rectification, repair or replacement will be detailed in this report. These recommendations will be assigned one of the five categories detailed in Section 7. For clarity, all recommendations will be printed in upper case and red font thus: RECOMMENDED.

1.3. Where reference is made to the condition, this must be considered in relation to the age of the vessel.

1.4. The vessel was inspected whilst ashore on the shingle shoreline at Wilson's Boatyard, Hayling Island, Hampshire, England on Friday 18th November 2019. A brief sea trial was performed in Chichester Harbour on the same date, whilst the vessel was being returned to her berth at Thornham Marina.

1.5. The survey was conducted by Nic Fieldhouse, Principal Surveyor of Fieldhouse Yacht Surveys and Consulting Ltd.

1.6. The survey was carried out in accordance with Fieldhouse Yacht Surveys Standard Terms and conditions and with relevant codes of practice published by the International Institute of Marine Surveying.

1.7. Those present during the survey were:

[Name removed], Client (for sea trial)

[Name removed], Client (for sea trial)

[Name removed], Broker (for sea trial)

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2. SUMMARY

2.1. MAYFLY was seen to be a fair example of a 1988 Fountaine Pajot Maldives 32, a fractional rigged sailing catamaran with twin fin keels.

2.2. The GRP hull was in need of some repair work in order to address the numerous impact fractures in the topsides. The starboard keel was in need of replacement.

2.3. The deck moulding, fractional rig, outboard motor, domestic services and interior finish were generally all in fair condition. Some parts of the electrical system required some attention.

2.4. Once the recommendations detailed below have been addressed, there is no reason why MAYFLY should not give good service.

2.5. TYPE A2 RECOMMENDATIONS

2.5.1. There were ten **type A2 recommendations** that must be implemented before the vessel is taken cruising. Please refer to Section 7 for a full description of the categories of recommendations used in this report.

2.5.2. The hose of the heads toilet inlet (item 2 in Figure 8 and Table 3) was secured with a single stainless steel screw clip. It is RECOMMENDED (type A2 recommendation) that because this fitting was located below the vessel's waterline, the hose should be secured at both ends with two stainless steel hose clips.

2.5.3. The anchor locker hatch cover was secured to the deck by two aluminium hinges and a single stainless steel latch. The hinges were in good working order and adequately secured. Two of the four stainless steel fasteners that secured the latch in place were missing. It is RECOMMENDED (type A2 recommendation) that that these fasteners are replaced. It is suggested that two additional stainless steel latches are fitted to the forward end of the locker, to prevent breaking waves from forcing open the locker. The securing line that held the lid in the open position was broken. This should be replaced.

2.5.4. There was one stainless steel D-loop secured to the aluminium cross-beam, located directly in front of the forestay chainplate. One of the two securing rivets was missing. It is RECOMMENDED (type A2 recommendation) that the missing rivet is replaced.

2.5.5. The two steel shackles that secured the anchor to the chain were heavily corroded. One of the shackles was considered to be too small. It is RECOMMENDED (type A2 recommendation) that both shackles are replaced with galvanised steel or stainless steel items. Additionally, seizing wire should be used to lock the shackle bolts, or the ends of the threads should be peened over to prevent loosening.

2.5.6. It is RECOMMENDED (type A2 recommendation) that the port navigation lamp is repaired. The anchor light and tricolour at the mast head should be tested at night time. If these do not function, they should be repaired.

2.5.7. One Whale Gusher Mk_V manual diaphragm bilge pump was located in the port locker of the aft cockpit coaming. The handle was located nearby, but was not tethered to prevent its loss. The inlet of the pump was connected to 11 metres of reinforced hose. The end of the hose was not fitted with a strum box. The pump was tested and found to function correctly. It is RECOMMENDED (type A2 recommendation) that the bilge pump handle is tethered in order to prevent its loss. The end of the inlet hose should be fitted with a strum box.

2.5.8. It is RECOMMENDED (type A2 recommendation) that two buckets (with lanyards) are stowed on board. These should be between 9 and 14 litres in capacity.

2.5.9. Two small fire extinguishers were found on board. These were approximately five years old and are summarised in Table 4. It is RECOMMENDED (type A2 recommendation) that both units are replaced with 1 kg units. It is suggested that a third 1 kg unit is purchased and mounted inside one of the cockpit lockers.

2.5.10. One yellow horse shoe life buoy was stowed in the starboard cabin. It was not labelled with the vessel's name. The wire frame for the buoy was securely mounted to the safety wires on the port side of the cockpit. The buoy was old and decayed. The flotation lamp did not function. It is RECOMMENDED (type A2 recommendation) that two lifebuoys are carried on board, each stowed on a stainless steel frame. One of the lifebuoys should be fitted with a self-igniting light and a buoyant lifeline at least 18

metres in length. The vessel's name should be applied to both sides of the buoys in large black lettering.

2.5.11. No red or orange emergency flares were found on the vessel. It is RECOMMENDED (type A2 recommendation) that a set of flares (size and quantity appropriate to the sea areas and sea states expected to be encountered) is procured and stowed ready for use.

2.6. TYPE C RECOMMENDATIONS

2.6.1. There were twenty four **type C recommendations** that do not require immediate attention but are to be dealt with within a specified time period:

2.6.2. There were numerous areas of gel-coat repair on both outboard topsides, particularly on the port hull. These were typically 60 mm in diameter. The gel-coat of some of these repairs was cracked and loose. There were numerous small impact cracks and dents, with arc-shaped or circular-shaped rings of cracks around these. An example of one area of impact is shown in Figure 2. This damage was located on the outboard side of the port hull, positioned 2070 mm forward of the stern and 310 mm up from the waterline. With very little force, the surveyor's spike (shown in the photograph) was able to penetrate into the foam core. These areas of impact damage were inspected with a moisture meter. Moisture levels were found to be significantly higher than the un-damaged areas of the topsides, indicating that some moisture has penetrated into the adjacent parts of the foam core. The areas immediately adjacent to the holes and cracks gave a dull return when tested with a small plastic headed hammer, giving further evidence that the foam core around the visible damage has de-bonded from one or both GRP skins. There was one area of the port topside, located just forward of the shroud chain plate, where hammer testing indicated that an area of foam core approximately 500 mm wide and 400 mm high was poorly bonded, due to the numerous cracks and impact holes in this region. It is RECOMMENDED (type C recommendation with an implementation time of one year) that on all topsides, all cracks and impact holes, including previously repaired damage, are cut out. Any crushed, rotten or debonded foam core should also be removed. All exposed core material should be thoroughly dried. Any removed core should then be replaced and the outer skin repaired, ensuring that the finished gel-coat surface is fair and smooth. In order to return the same strength to the areas of repair, consideration should be given to using a good quality epoxy resin for these repairs.

2.6.3. Figure 3 shows an area of gel-coat cracking on the inboard side of the port hull. The depth of this defect could not be determined. It is RECOMMENDED (type C recommendation with an implementation time of one year or before an offshore voyage) that when the recommendation detailed in paragraph 5.3.8.9 is being addressed, the extent of this damage should be investigated from inside the forepeak of the port hull and suitably repaired.

2.6.4. The pits of the hull blisters (below the waterline) were typically 2 to 3 mm in diameter. The material in the base of each blister pit was was a smooth, white resin, with no evidence of glass fibre or fibre pattern. See Figure 5 for a magnified view of some of the blister pits. The evidence gathered suggested that these pits were the remains of blisters that have developed due to hydrolysis within the gel-coat. Referring to the publication 'Repairs to Blisters in Glass Fibre Hulls [British Plastics Federation, November 1984], these blisters are of type 3A, which occur in craft with double gel-coats. This condition whilst unsightly is not structurally significant. In the case of broken blisters, rectification should be undertaken at the earliest opportunity. It is RECOMMENDED (type C recommendation with an implementation time of one year) that any broken blisters or blisters that are readily breakable should be thoroughly cleaned out and dried. The shallow cavity should then be filled with epoxy filler. All hull surfaces below the waterline should then be suitably cleaned, dried and then treated with a number of coats of epoxy gel-coat.

2.6.5. The majority of the starboard keel moulding was missing, with only ⅓ of the moulding still bonded to the underside of the starboard hull. Figure 6 shows the extent of the damage. Note that the red & white tape measure in the images is 2 metres long. Where the keel moulding was missing, the exposed parts of the hull moulding were found to be in sound condition and free of evidence of significant damage. It is RECOMMENDED (type C recommendation with an implementation time of one month) that that the starboard keel is replaced. If this repair is delayed for any significant length of time, damage of the surrounding hull moulding or the starboard rudder

assembly may occur, where the starboard hull and rudder rest on the mud of her drying berth.

2.6.6. Where accessible for inspection, both rudder assemblies were inspected visually and by hammer testing and found to be in serviceable condition and free from significant damage or cracks. There was no evidence of blistering or other damage attributable to water penetration. Moisture levels in both blades was found to be high. This is typical of GRP rudder blades with this type of construction method. The lower edge and aft edge of the port rudder blade had some wear and chipping of the gel-coat surface. It is likely that the lower edge of the starboard rudder was in similar condition. It is RECOMMENDED (type C recommendation with an implementation time of one year) that any damaged laminate of the lower edges of both blades is cut back to sound material. The blades should then be repaired with layers of GRP, ensuring that the outer layer is resin-rich, to provide a waterproof seal.

2.6.7. The 50 mm diameter aluminium rudder stocks were inspected where access allowed. The visible portions of the stock were found to be heavily pitted, with some loss of strength of each stock. This pitting corrosion was located located at the point where the stock emerges from the blade, just beneath the lower rudder bearing (see Figure 7). It is RECOMMENDED (type C recommendation with an implementation time of six months or before an offshore voyage) that both rudder assemblies are removed from the vessel. The exposed parts of each stock should be thoroughly cleaned and inspected for evidence of cracking or significant corrosion. The depth of any corrosion pits should be measured. If the diameter of either stock has been reduced by more than 10% in any one location, both rudder assemblies should be replaced before undertaking an offshore voyage. It should be noted that the portions of the rudder stocks within the rudder tubes and within the blades could not be accessed for inspection; therefore the condition of the hidden parts of the stocks cannot be guaranteed.

2.6.8. The isolation valves of the heads toilet inlet and heads bilge pump outlet (items 2 and 4 in Figure 8 and Table 3) were found to be partially corroded and were stiff. These valves were constructed from Tonval. This is a low quality brass with a high zinc content and is susceptible to dezincification in the marine environment. The heads toilet inlet valve showed evidence of external corrosion, particularly where the valve was connected to the skin fitting and the barbed hose tail. In consideration of the age of the vessel and the developing corrosion of the two valves & fittings, it is RECOMMENDED (type C recommendation with an implementation time of six months) that both quarter-turn valves, skin fittings and hose tails are replaced with items constructed from dezincification resistant brass.

2.6.9. Particular attention was paid to the condition of the coachroof around the mast foot. Numerous gel-coat cracks were noted around the perimeter of the mast foot. On the port side of the mast foot, the gel-coat and underlying laminate were found to be cracked and raised upwards by approximately 2 mm. The upward projecting crack indicated that the deck moulding has dropped down in this area, due to high compression loads from the mast. This damage corresponds to the defect described in paragraph 5.2.2.2. It is RECOMMENDED (type C recommendation with an implementation time of one year or before an offshore voyage) that the mast is unstepped from the vessel and the deck plate temporarily removed. The damaged GRP tabbing described in paragraph 5.2.2.2 should be cut back to sound material. The deck moulding in the region of the mast base should be temporarily supported so that the location of the mast deck plate is returned to its original position. The plywood bulkhead, mast compression post and underside of the deck should then be suitably reinforced with marine grade plywood and GRP cloth, using a good quality epoxy resin. The repair should be stronger than the original structure. The cracks on the outer surface of the deck moulding should then be cut back to sound material and repaired with layers of GRP, finished with white gel-coat.

2.6.10. Access to the main cabin was from two hinging acrylic doors, mounted on each side of the cockpit. The reinforced nylon hinges of each door were in good working order. The acrylic material of each door had some light crazing. The locking latch of the port door was in serviceable condition. The latch of the starboard door was broken. Neither door was fitted with a means of holding the door in the open position or closed position. It is RECOMMENDED (type C recommendation with an implementation time of one month) that the lock of the starboard door is replaced. Both should be fitted with hold-open and hold-closed latches.

2.6.11. There were a total of five small rectangular, hinges hatches in the coachroof and decks: two in each of the port & starboard hulls and one above the galley. The friction stays, latches and aluminium frames were in serviceable condition. It was found that when the hatch above the toilet was fully closed, there was still a small gap between the rubber seal and the aluminium frame. The acrylic material of each hatch was heavily crazed. It is RECOMMENDED (type C recommendation with an implementation time of two years) that the acrylic panels of these five hatches are replaced. Where the rubber sealing material of each hatch fails to make a water-tight seal, these should be replaced.

2.6.12. There were two small rectangular, inward hinging ports installed: One in the outboard side of each hull. The latches of each port were in good working order. The acrylic material in both ports was heavily crazed. It is RECOMMENDED (type C recommendation with an implementation time of two years) that the acrylic panels of these two ports are replaced.

2.6.13. One round, fixed acrylic port was installed in the aft end of each hull. The clear acrylic panels were fastened by stainless steel bolts and sealed by a mastic compound. The acrylic material in each port was heavily crazed. There was no evidence of water ingress around the seals of these ports. It is RECOMMENDED (type C recommendation with an implementation time of two years) that the acrylic panels of these two ports are replaced.

2.6.14. An extruded aluminium cross-beam was secured between the forward ends of the two hulls. This cross-beam provided additional strength and stiffness to the hull structure. It also provided a means of securing the lower end of the forestay, provided a mounting point for the stainless steel bow roller and provided a means of securing the forward edge of the trampoline net. The port & starboard ends of the cross-beam were secured to each hull via a welded stainless steel bracket and four stainless steel bolts. The stainless steel brackets were carefully inspected and found to be free of damage or cracking. It was noted that of the four stainless steel bolts that secured these brackets to each hull, one bolt on each side was found to be too short, resulting in partial engagement of the securing nut. It is RECOMMENDED (type C recommendation with an implementation time of one year or before an offshore voyage) that the two short bolts are replaced. Note that these can be accessed from the forward end of each hull, located in the forepeak of the port & starboard hulls.

2.6.15. I was informed by the Broker that the trampoline net was five years old and that the recommended life of these is four years. It is RECOMMENDED (type C recommendation with an implementation time of six months or before an offshore voyage) that the net is replaced.

2.6.16. There was no evidence of engine overheating. The paint coating of the drive leg was in good condition, but with some corrosion of steel items located beneath the top cover. These rusty items were mainly located at the forward end of the engine. This indicated that some sea water may have been splashed into the engine whilst it has been stowed in the tilted position. It is RECOMMENDED (type C recommendation with an implementation time of three months) that the corroded parts of the engine are cleaned of all loose rust and then painted or protected with a coating of oil.

2.6.17. The engine's ahead and reverse gears engaged normally. At tick-over speed, the engine was found to stall on two occasions. It is RECOMMENDED (type C recommendation with an implementation time of six months or when the engine is next serviced) that the engine's idling speed is adjusted.

2.6.18. The fresh water storage container supplied cold water to the foot-operated Whale tap in the heads and one hand-operated Whale tap at the galley sink. Both taps functioned correctly, but the unit in the galley was found to leak onto the worktop when tested. It is RECOMMENDED (type C recommendation with an implementation time of three months) that the seals of this pump are replaced.

2.6.19. The Raske & Van Der Meyde RM69 manually operated sea toilet was clean and the bowl and pump were adequately attached to the GRP moulding of the heads compartment. The installation was tested and was found to function, but significant quantities of water leaked from around the piston of the pump. It is RECOMMENDED (type C recommendation with an implementation time of three months) that the toilet pump is serviced and all seals replaced.

2.6.20. A locker drain hole was drilled through the bottom of the LPG cylinder locker in order to allow any leaked gas to escape to the outside of the hull. This drain hole was approximately 4 mm in diameter. This was considered to be too small as the hole could easily become blocked with debris. Boat Safety Scheme guidelines state that for this size of gas cylinder, the diameter of the drain hole should be at least 12 mm [Boat Safety Scheme Essential Guide, 2nd Edition, August 2005]. It is RECOMMENDED (type C recommendation with an implementation time of six months) that this hole is enlarged to at least 12 mm in diameter.

2.6.21. Connected to the LPG butane gas cylinder was an isolation valve and pressure regulator. From the pressure regulator, rubber hose led the gas supply through the side of the locker and to a copper T-junction, located behind the stove in the galley. From the copper T-junction, one length of hose lead directly to the Dometic LPG / 12 volts d.c. / 240 volts a.c. refrigerator. A second length of hose lead directly to the Eno hob unit. It is considered bad practise to use flexible gas hose in place of copper gas pipe. All lengths of hose were manufactured in January 2018. These should be replaced every five years. Discussions with the two Clients revealed that it was their intention to remove and replace the Dometic refrigerator. It is therefore RECOMMENDED (type C recommendation with an implementation time of six months) that the refrigerator and attached hose are removed. The copper T-junction and the hose connected to the stove should also be removed. The existing length of hose in the gas cylinder locker should then be connected to the Eno hob unit via an isolation valve and length of copper gas pipe. Ensure that the isolation valve is not installed behind the cooker, so that it can be accessed safely from the galley in the event of a galley fire. The copper pipe should be protected from damage and should be supported with plastic P-clips at spacings of less than 500 mm.

2.6.22. The Dometic refrigerator was not tested. Due to the age of the unit, it is RECOMMENDED (type C recommendation with an implementation time of six months or before being powered by gas) that this refrigerator is serviced.

2.6.23. The three-hob Eno, fixed cooker unit was in good cosmetic condition. The burners were tested. The left burner and forward right burner were found to burn with a clean blue flame. The safety cut-off devices of these two burners functioned correctly. The aft right burner did not function correctly, and burned with an erratic flame pattern. It is RECOMMENDED (type C recommendation with an implementation time of six months or before using the aft right burner) that this cooker unit is serviced.

2.6.24. One spare 2.75 kg LPG (butane) gas cylinder was stored in the port cockpit locker, located inside the aft cockpit coaming. This locker was not fitted with a drain hole to allow any leaking gas to escape to the outside of the boat. It is RECOMMENDED (type C recommendation with an implementation time of six months or before an offshore voyage) that a drain hole is drilled into the base of this locker. In accordance with Boat Safety Scheme best practise, this hole should be at least 12 mm in diameter.

2.6.25. The 12 volts d.c. wiring that could be seen appeared to be serviceable, was reasonably well installed and routed clear of the lower bilges. It was found that the power cables connected to the port & starboard navigation lights were constructed from solid core, domestic quality cable. This type of cable is vulnerable to failure from vibration-induced fatigue. It is RECOMMENDED (type C recommendation with an implementation time of one year) that these cables are replaced with marine grade, twisted strand wire.

3. SCOPE & LIMITATIONS

3.1. The vessel was inspected while she lay ashore. There was good, all-round access to the exterior of the hull. Access to the bottom of the two keels and starboard rudder blade was limited to the parts not resting on the ground.

3.2. Prior to the survey taking place, the vessel had been ashore for one tide. At the time of survey the ambient temperature was approximately 14°C, with 80% cloud cover and strong wind. There were a few rain showers during the survey and heavy rain during the preceding day.

3.3. Internal inspection was limited to the areas that are normally accessible directly or through lockers, inspection hatches, removable panels, etc. No part of the vessel was dismantled; no bolts were removed for inspection and no linings removed, except in order to gain access to the parts of the mast compression post & bulkhead, located behind the fixed plywood panel of the cupboard in the heads compartment. Consequently, any part of the vessel, her equipment or fittings, which were unexposed or inaccessible, cannot be confirmed to be free from defect.

3.4. All tanks were inspected where visible but not internally inspected and they have not been pressure tested; their contents have not been tested for contamination.

3.5. Window hatches and external doors have not been tested for water tightness.

3.6. We have not inspected fibreglass laminate, woodwork or other parts of the structure which are covered, unexposed or inaccessible and we are, therefore, unable to report that any such part of the structure is free from defects, rot or deterioration.

3.7. The vessel and her equipment were not assessed for design or suitability for any particular purpose, or compliance with any rules, regulation, standard or code.

3.8. 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.

3.9. No dismantling of the engine took place and so the internal condition of the engine cannot be commented upon. Components hidden from view, such as the sump, crankshaft, camshafts, pistons, valves and cylinder head gaskets could not be examined for latent defects. No compression tests of the cylinders took place. Comments can only be made with regard to the general condition of the engine on the day of the inspection. No guarantee can be made regarding the life expectancy of the engine.

4. THE VESSEL

4.1. DETAILS

Name	MAYFLY
Hull Identification Number	*[Data removed]*
Built by	Fountaine Pajot
Model	Maldives 32
Type	Cruising catamaran with sloop rig
Build date	1988 (Broker's data sheet)
SSR number	*[Data removed]* (Certificate not inspected)
Engine manufacturer & Model	Honda BF20D
Engine type	4 stroke petrol outboard
Engine power	14.7 kW

Table 1: Vessel Details

4.1.1. MAYFLY was seen to be a Maldives 32 - a fractional rigged sailing catamaran with twin fin keels. She was built by Fountaine Pajot in 1988.

4.1.2. The hull topsides of MAYFLY were of sandwich construction, with a low-density foam layer sandwiched between the inner and outer layers of GRP. The hull moulding below the waterline was of monolithic (no foam core) GRP construction. The GRP was made up of polyester resin, mixed-strand fibreglass mat and woven rovings and finished with a white pigmented gel-coat. The keel on each hull was constructed from a foam-filled GRP moulding, bonded to the underside of each hull moulding.

4.1.3. The deck moulding was a balsa or foam cored GRP composite, finished with white pigmented gel-coat. It incorporated the port & starboard decks, coachroof and cockpit. Hull to deck join was of the shoebox type.

4.1.4. MAYFLY was fitted with twin unbalanced spade rudders. Each assembly was constructed from an aluminium stock encapsulated in a GRP moulding. She had a self-draining cockpit and tiller steering. She had a fractional sloop rig, featuring a deck-stepped mast, a mainsail, roller furling jib and spinnaker.

4.1.5. Accommodation was well laid out with double berths in each of the aft quarters and single berths in each of the forward quarters. The saloon had a settee and a fixed table in the centre. The galley was situated at the aft end of the saloon, spanning between the two hull compartments. A navigation station lay in the starboard hull, just next to the companionway steps, with heads compartment in the port hull.

4.1.6. A Honda 20, 4-stroke, twin cylinder, long shaft, petrol fuelled outboard motor drove a four blade, 9" diameter, fixed pitch aluminium propeller. The motor was mounted on a GRP lifting frame, installed in the floor of the cockpit.

4.2. VESSEL'S NAME

4.2.1. MAYFLY had her name positioned on her stern and also on the outboard side of each hull, located close to the stems. These were applied in red self-adhesive lettering. The PVC material was heavily faded. Here name was also applied with white, sewn on canvas to each side of the black canvas mainsail cover.

4.2. DIMENSIONS

Dimension	Metres	Feet / inches
Length Overall	9.75	32 feet and 0 inches
Length on Waterline	9.45	31 feet and 0 inches
Beam	5.31	17 feet and 5 inches
Draft	0.90	3 feet and 0 inches
Displacement	3,000 kg	6,614 lb

Table 2: Vessel Dimensions (Sailboatdata.com)

4.3. HULL IDENTIFICATION NUMBER

4.3.1. The vessel's Hull Identification Number was moulded into the inboard side of the starboard hull, located near to the stern. The number was *[Data removed]*, as shown in Figure 1.

[Image removed]

Figure 1: Hull Identification Number

4.4. BILLS OF SALE AND EVIDENCE OF VAT PAID

4.4.1. None of the vessel's documents were seen. The Buyer should ensure that the current Vendor is the legal Owner of the vessel. The Buyer should satisfy himself that there is enough evidence to prove that VAT has been paid on the vessel.

5. THE SURVEY

5.1. HULL EXTERIOR

5.1.1. Material & Details of Construction

5.1.1.1. The hull topsides of MAYFLY were of sandwich construction, with a low-density foam layer sandwiched between the inner and outer layers of GRP. The hull moulding below the waterline was of monolithic (no foam core) GRP construction. The GRP was made up of polyester resin, mixed-strand fibreglass mat and woven rovings and finished with a white pigmented gel-coat.

5.1.1.2. The keel on each hull was constructed from a foam-filled GRP moulding, bonded to the underside of each hull moulding.

5.1.2. General Appearance

5.1.2.1. The hull moulding was sighted from a distance fore and aft and visually inspected all round. Her lines were symmetrical, fair and true, with no signs of distortion or flat areas. The majority of the starboard keel moulding was missing, with only ⅓ of the moulding still bonded to the underside of the starboard hull. This damage is discussed further in paragraph 5.1.7.2.

5.1.3. Topsides

5.1.3.1. The topsides were finished with unpainted, white pigmented gel-coat. On the outboard sides of each hull, two narrow yellow and silver trim lines ran the length of each hull, positioned just below the deck edge. Two narrow yellow, one narrow silver and one wide silver trim lines ran the length of each hull, positioned just above the top edge of the antifouling. On the inboard side of each hull, one narrow black trim line ran along each hull, located just above the top edge of the antifouling. The trim lines were made from PVC tape. All were found to be heavily faded and worn.

5.1.3.2. The white gel-coat of the topsides was found to be dull and faded, with numerous horizontal scratches and with some fender wear. After the repairs described in paragraph 5.1.3.3 have been carried out, the white gel-coat should be cleaned and treated with a light rubbing compound, followed by an application of fibreglass polish.

5.1.3.3. There were numerous areas of gel-coat repair on both outboard topsides, particularly on the port hull. These were typically 60 mm in diameter. The gel-coat of some of these repairs was cracked and loose. There were numerous small impact cracks and dents, with arc-shaped or circular-shaped rings of cracks around these. An example of one area of impact is shown in Figure 2. This damage was located on the outboard side of the port hull, positioned 2070 mm forward of the stern and 310 mm up from the waterline. With very little force, the surveyor's spike (shown in the photograph) was able to penetrate into the foam core. These areas of impact damage were inspected with a moisture meter. Moisture levels were found to be significantly higher than the un-damaged areas of the topsides, indicating that some moisture has penetrated into the adjacent parts of the foam core. The areas immediately adjacent to the holes and cracks gave a dull return when tested with a small plastic headed hammer, giving further evidence that the foam core around the visible damage has de-bonded from one or both GRP skins. There was one area of the port topside, located just forward of the shroud chain plate, where hammer testing indicated that an area of foam core approximately 500 mm wide and 400 mm high was poorly bonded, due to the numerous cracks and impact holes in this region. It is RECOMMENDED (type C recommendation with an implementation time of one year) that on all topsides, all cracks and impact holes, including previously repaired damage, are cut out. Any crushed, rotten or debonded foam core should also be removed. All exposed core material should be thoroughly dried. Any removed core should then be replaced and the outer skin repaired, ensuring that the finished gel-coat surface is fair and smooth. In order to return the same strength to the areas of repair, consideration should be given to using a good quality epoxy resin for these repairs.

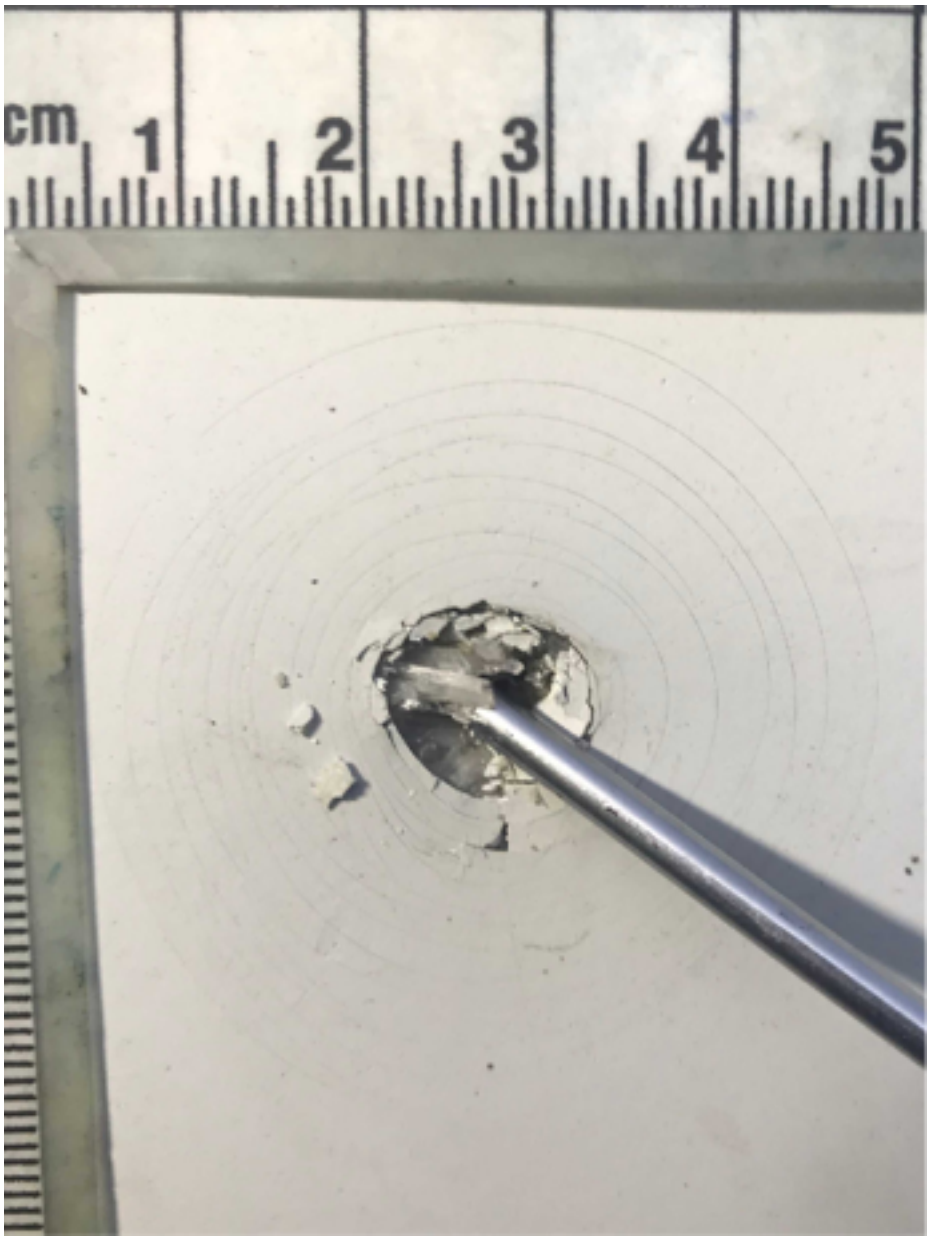

Figure 2: Impact damage of topsides

5.1.3.4. The internal surfaces of the port & starboard stems could be accessed for visual inspection via the forepeak bunk areas. Inspection of these surfaces showed that the upper parts of both stems have been repaired.

5.1.3.5. Some small areas of the topsides were found to have a number of small blisters. These blisters were typically about 3 mm in diameter and all were a flattened dome shape. A few were located close to the waterline but the majority of these were found along the hull-to-deck join. A small number were found to be broken, leaving very small 'half-moon' scars on the surface of the gel-coat. A number of the blisters were broken open by the surveyor. The material disclosed beneath the surface of the broken blisters was a smooth, white resin surface, with no evidence of glass fibre or fibre pattern. These blisters should be cut out and repaired at the same time as the blisters described in paragraph 5.1.4.4.

5.1.3.6. Figure 3 shows an area of gel-coat cracking on the inboard side of the port hull. The depth of this defect could not be determined. It is RECOMMENDED (type C recommendation with an implementation time of one year or before an offshore voyage) that when the recommendation detailed in paragraph 5.3.8.9 is being addressed, the extent of this damage should be investigated from inside the forepeak of the port hull and suitably repaired.

Figure 3: Crack on port hull, where aluminium cross-beam is mounted to hull

5.1.4. Hull Below the Waterline

5.1.4.1. The blue ablative type antifouling paint below the waterline was very worn and in need of a new application. A black antifouling primer had ben applied beneath the antifouling.

5.1.4.2. The entire hull was visually inspected. Additionally, the antifouling was scraped off in a number of areas in order to inspect the condition of the underlying gel-coat. No evidence of significant scratching or chipping of the hull was found. See paragraph 5.1.7.2 for details of the damaged keel of the starboard hull.

5.1.4.3. After pressure washing it was found that the majority of the port & starboard hull surfaces, located below the waterline, were found to be covered with the remains of blisters. The majority of these were not visible before power washing, indicating that the pressure of the water jet had forced off the heads of the blisters, leaving numerous shallow blister pits. Some of the pits were coated in antifouling, indicating that some of the pits have existed for some time and certainly prior to the most recent application of antifouling. A typical area of the hull surface is shown in Figure 4.

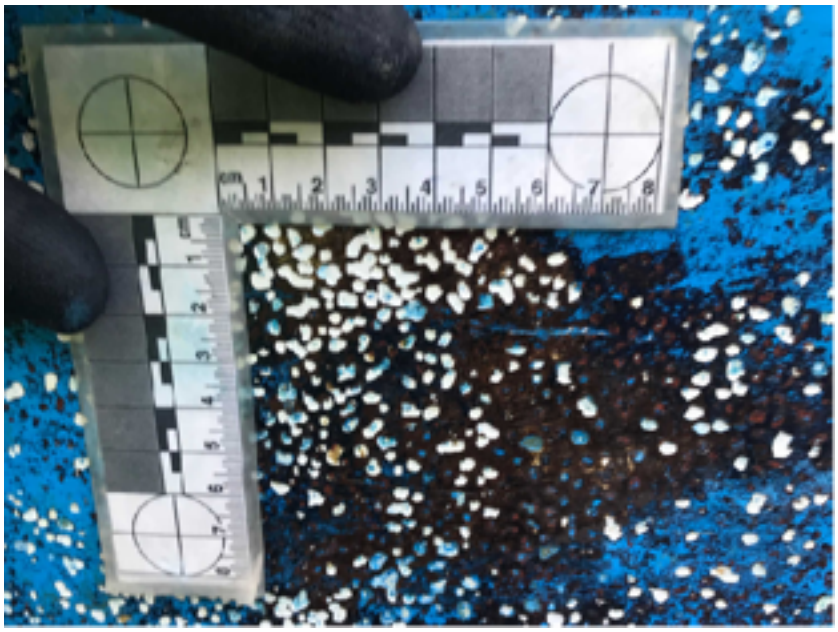

Figure 4: Remains of blisters in hull gel-coat

5.1.4.4. The pits of the hull blisters were typically 2 to 3 mm in diameter. The material in the base of each blister pit was was a smooth, white resin, with no evidence of glass fibre or fibre pattern. See Figure 5 for a magnified view of some of the blister pits. The evidence gathered suggested that these pits were the remains of blisters that have developed due to hydrolysis within the gel-coat. Referring to the publication 'Repairs to Blisters in Glass Fibre Hulls [British Plastics Federation, November 1984], these blisters are of type 3A, which occur in craft with double gel-coats. This condition whilst unsightly is not structurally significant. In the case of broken blisters, rectification should be undertaken at the earliest opportunity. It is RECOMMENDED (type C recommendation with an implementation time of one year) that any broken blisters or blisters that are readily breakable should be thoroughly cleaned out and dried. The shallow cavity should then be filled with epoxy filler. All hull surfaces below the waterline should then be suitably cleaned, dried and then treated with a number of coats of epoxy gel-coat.

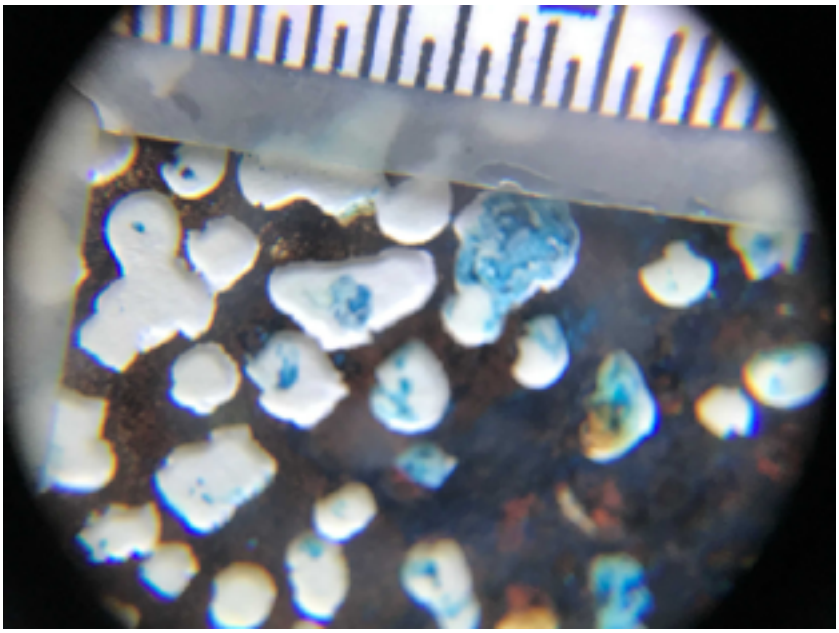

Figure 5: Close-up view of typical blisters

5.1.5. Moisture Readings

5.1.5.1. Moisture readings were taken using a Tramex Skipper Plus capacitance type moisture meter. The meter was set to range 2, which measures deep into the layup. Figures quoted are from the meter's percentage H_20 scale. Note that by convention, moisture meters are calibrated for timber, so the percentage moisture readings are not directly applicable to GRP. The true moisture content of GRP is very approximately 10% of those quoted.

5.1.5.2. Readings were taken both above and below the waterline in order to obtain a comparison. Note that high moisture content is not generally a structural defect and is to be expected in older boats. Where some moisture has been absorbed, the likelihood of moisture related problems occurring are higher. When this occurs, the actual state of the laminate cannot be completely guaranteed without destructive testing and chemical analysis. The opinion given in this survey report is based on all the evidence available at the time but without destructive testing.

5.1.5.3. Moisture readings taken on the topsides were typically between 10 and 12, indicating a low moisture level. In the areas of topside damage described in paragraph 5.1.3.3, moisture readings were between 20 and 25, which indicate a high moisture content.

5.1.5.4. Readings taken of the upper parts of the hull below the waterline were between 10 and 15, which indicate a low moisture content. These low readings may be attributed to the fact that these parts of the hull dry out during low tide, when the vessel dries out on her mud berth.

5.1.5.5. Readings taken of the lower bilges were between 20 and 25, with some readings of up

to 30. These readings indicate that the hull laminate below the waterline has a high moisture content. These high readings can be attributed to the short period since MAYFLY had dried out on the shore. Additionally, the older orthophthalic resins used prior to the mid 1990's tend to retain moisture for a long period.

5.1.5.6. To limit the moisture levels in the hull laminate, the boat should ideally be stored ashore for a few months each winter. The owner should endeavour to keep the bilges as dry as possible. Sources of any leakage into the vessel should be found and cured. When the vessel is to be left unattended for more than a few days, the sole boards and internal locker covers should be opened up to allow the moisture in the bilges to evaporate.

5.1.6. Hammer Testing of Hull Surfaces

5.1.6.1. In order to identify any areas of delamination, poorly resinated laminate or poorly bonded foam core, the exterior surfaces of the hull (above and below the waterline) were tested with a small plastic-headed hammer. The test gave sound returns with no indications of softening, poor lay-up, de-bonding of the foam core or delamination of the GRP, except for those areas of damage described in paragraph 5.1.3.3.

5.1.7. Keels

5.1.7.1. The keel on each hull was constructed from a foam-filled GRP moulding, bonded to the underside of each hull moulding. At the time of the survey, the port keel was resting on the ground, preventing the inspection of the underside of this moulding. Where accessible for inspection, the surfaces of the port keel were free of any evidence of damage or significant wear. The bond between the port keel moulding and the hull was free of cracking or any other evidence of movement.

5.1.7.2. The majority of the starboard keel moulding was missing, with only ⅓ of the moulding still bonded to the underside of the starboard hull. Figure 6 shows the extent of the damage. Note that the red & white tape measure in the images is 2 metres long. Where the keel moulding was missing, the exposed parts of the hull moulding were found to be in sound condition and free of evidence of significant damage. It is RECOMMENDED (type C recommendation with an implementation time of one month) that that the starboard keel is replaced. If this repair is delayed for any significant length of time, damage of the surrounding hull moulding or the starboard rudder assembly may occur, where the starboard hull and rudder rest on the mud of her drying berth.

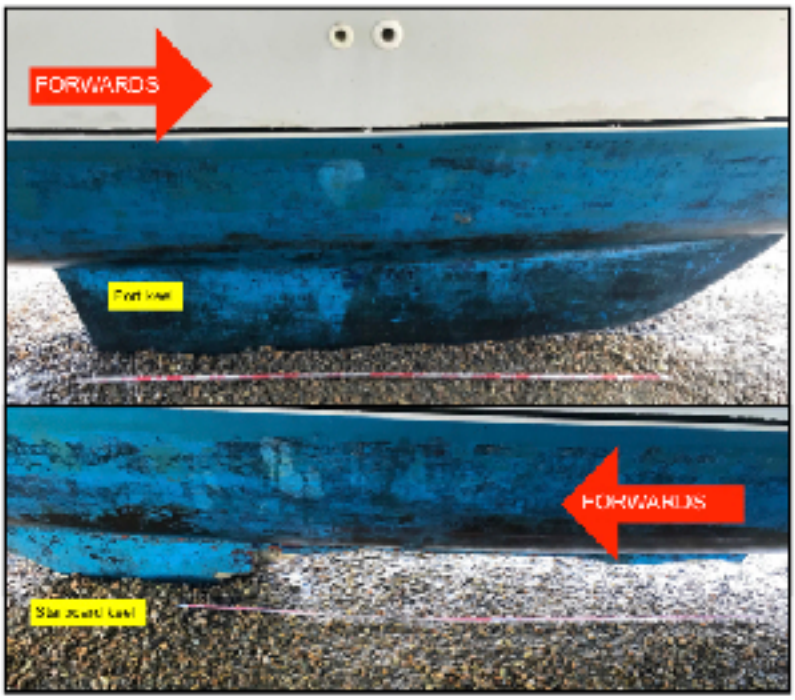

Figure 6: Port & starboard keels

5.1.8. Rudder & Steering

5.1.8.1. MAYFLY was fitted with twin unbalanced spade rudders. Each assembly was constructed from an aluminium stock encapsulated in a GRP moulding. During the out-of-water part of the survey, the lower edge of the starboard rudder blade was resting on the ground, preventing the inspection of this part of the blade. Additionally, the condition of the bearings of the starboard rudder assembly could not be fully assessed.

5.1.8.2. Where accessible for inspection, both rudder assemblies were inspected visually and by hammer testing and found to be in serviceable condition and free from significant damage or cracks. There was no evidence of blistering or other damage attributable to water penetration. Moisture levels in both blades was found to be high. This is typical of GRP rudder blades with this type of construction method. The lower edge and aft edge of the port rudder blade had some wear and chipping of the gel-coat surface. It is likely that the lower edge of the starboard rudder was in similar condition. It is RECOMMENDED (type C recommendation with an implementation time of one year) that any damaged laminate of the lower edges of both blades is cut back to sound material. The blades should then be repaired with layers of GRP, ensuring that the outer layer is resin-rich, to provide a waterproof seal.

5.1.8.3. The 50 mm diameter aluminium rudder stocks were inspected where access allowed. The visible portions of the stock were found to be heavily pitted, with some loss of strength of each stock. This pitting corrosion was located located at the point where the stock emerges from the blade, just beneath the lower rudder bearing (see Figure 7). It is RECOMMENDED (type C recommendation with an implementation time of six months or before an offshore voyage) that both rudder assemblies are removed from the vessel. The exposed parts of each stock should be thoroughly cleaned and inspected for evidence of cracking or significant corrosion. The depth of any corrosion pits should be measured. If the diameter of either stock has been reduced by more than 10% in any one location, both rudder assemblies should be replaced before undertaking an offshore voyage. It should be noted that the portions of the rudder stocks within the rudder tubes and within the blades could not be accessed for inspection; therefore the condition of the hidden parts of the stocks cannot be guaranteed.

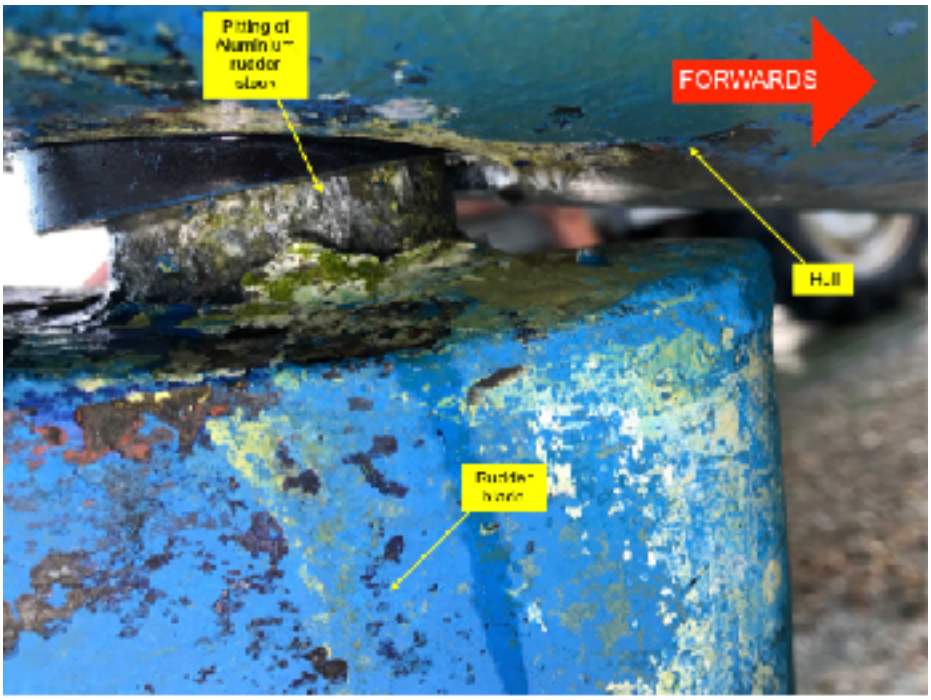

Figure 7 : Pitting corrosion of aluminium rudder stock

5.1.8.4. The wear of the bearings of the starboard rudder could not be assessed. The bearings of the port rudder were found to have approximately 3 to 4 mm of wear. This level of wear was considered to be acceptable, but the plastic bushes may need to be replaced in the next few years. It is suggested that these are replaced when the two rudder assemblies are withdrawn for inspection, as discussed in paragraph 5.1.8.3.

5.1.8.5. The upper end of each rudder stock was clamped to the stainless steel tiller arm & bracket by five A4-70 grade stainless steel bolts, each secured with a single nyloc nut. All were inspected and found to be secure, free of distortion and free of significant corrosion. The tiller arms were joined together by a tubular aluminium cross-bar, with pivot joints provided by stainless steel bolts and nyloc nuts. The cross-bar and pivot joints were in serviceable condition and free of significant corrosion.

5.1.8.6. The GRP rudder tubes (these are the tubes that are fixed to the hull & deck mouldings, through which the rudder stocks pass) were inspected from the aft sleeping berths in each hull. They were found to be secured to the hull with GRP tabbing. The GRP tubes and tabbing were in good condition and free of delamination, cracks or debonding.

5.1.9. Skin Fittings and Valves

5.1.9.1. Figure 8 and Table 3 below show the location and function of the skin fittings, together with the condition of the valves, hoses and clips. The items in red text in Table 3 indicate a defect or poor condition of the items and are addressed in the recommendations below.

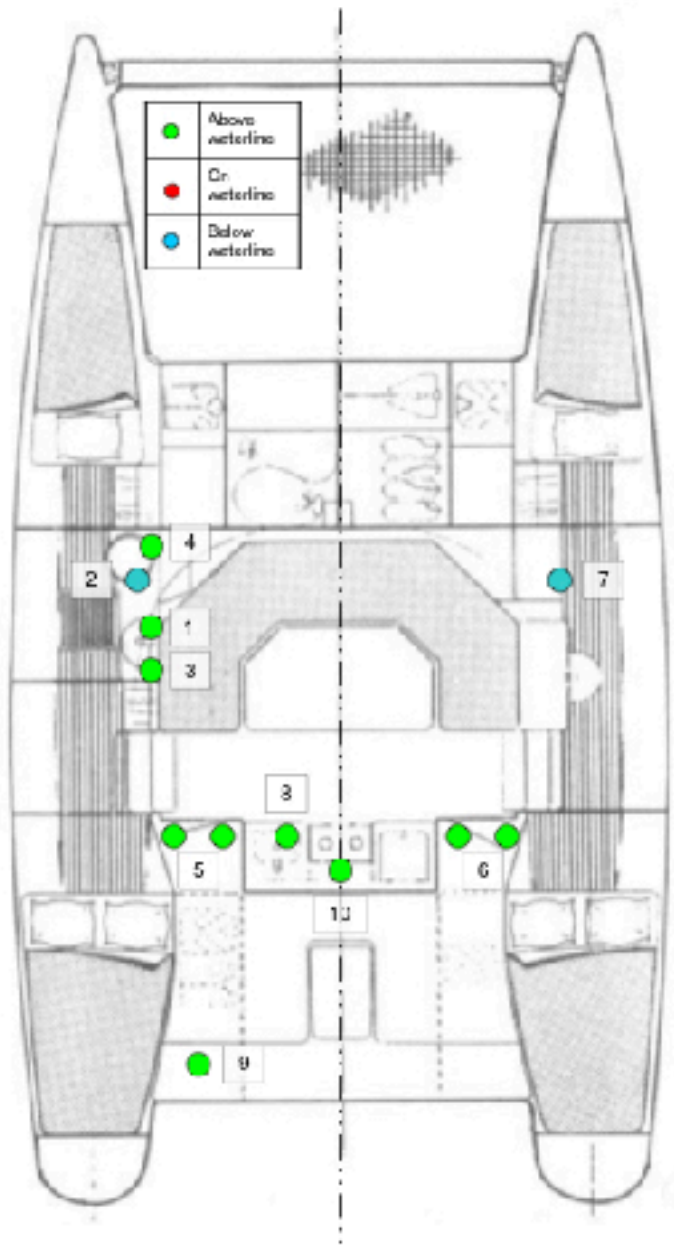

Figure 8: Location of skin fittings (plan view looking from above)

#	Function	Above / Below WL	EXTERNAL		INTERNAL							
			Skin Fitting		Valve			Hose		Clips		
			Mat.	Cond.	Type	Mat.	Cond.	Reinf.	Cond.	#	Mat.	Cond.
1	Heads outlet	A	PVC	✓	None			✓	✓	1	ss	✓
2	Heads inlet	B	Br	✓	Ball	Br	Corroded	✓	✓	1	ss	✓
3	Heads sink outlet	A	PVC	✓	None			No	✓	1	ss	✓
4	Heads bilge pump outlet	A	Br	✓	Ball	Br	Old, stiff	✓	✓	1	ss	✓
5	Cockpit drains port	A	PVC	✓	Polyethylene flap valve		✓	N/A				
6	Cockpit drains starboard	A	PVC	✓	Polyethylene flap valve		✓	N/A				
7	Speed Impeller	B	Pl	✓	N/A							
8	Galley sink outlet	A	PVC	✓	None			✓	✓	1	ss	✓
9	Manual bilge pump outlet	A	PVC	✓	None			✓	✓	1	ss	✓
10	Gas locker drain	A	GRP	✓	Through-hole to engine support							

WL	Waterline	Pl	Plastic
Mat.	Material	ss	Stainless steel
Cond.	Condition	ms	Mild Steel
Br	Bronze or brass	DZR	Dezincification resistant Brass

Table 3: Function and condition of skin fittings, valves, hoses and clips

5.1.9.2. No skin fittings or valves were dismantled as part of the survey but the following tests were performed:

Examination from outside and inside the vessel

All valves opened and closed to their full extent

The through-hull fittings, hose clips and valve bodies were hammer tested

The fittings were aggressively tested to assess their security of attachment to the hull

Where accessible, hose clips were inspected and hoses were aggressively tested

5.1.9.3. There was reasonably clear access inside the vessel to the two isolation valves. The skin fittings were all in serviceable condition. All fittings on or below the waterline were bronze or brass (apart from the plastic speed impeller) and showed no signs of dezincification. All skin fittings located below the waterline were fitted with an isolation valve.

5.1.9.4. The isolation valves of the heads toilet inlet and heads bilge pump outlet (items 2 and 4 in Figure 8 and Table 3) were found to be partially corroded and were stiff. These valves were constructed from Tonval. This is a low quality brass with a high zinc content and is susceptible to dezincification in the marine environment. The heads toilet inlet valve showed evidence of external corrosion, particularly where the valve was connected to the skin fitting and the barbed hose tail. In consideration of the age of the vessel and the developing corrosion of the two valves & fittings, it is RECOMMENDED (type C recommendation with an implementation time of six months) that both quarter-turn valves, skin fittings and hose tails are replaced with items constructed from dezincification resistant brass.

5.1.9.5. All hoses were in serviceable condition. The galley sink drain hose (item 8 in Figure 8

and Table 3) was not constructed from reinforced material. It is suggested that this hose is replaced with reinforced hose.

5.1.9.6. The hose of the heads toilet inlet (item 2 in Figure 8 and Table 3) was secured with a single stainless steel screw clip. It is RECOMMENDED (type A2 recommendation) that because this fitting was located below the vessel's waterline, the hose should be secured at both ends with two stainless steel hose clips.

5.2. HULL INTERNAL STRUCTURE

5.2.1. Access to Hull Structure

5.2.1.1. Within the port & starboard hulls, there were a number of removable sole boards. These were all lifted in order to inspect the internal hull and stiffening structure. Access to the hull structure was also gained by lifting the seats in the saloon, by lifting the bunk covers in the four sleeping areas and also via the galley & cockpit lockers.

5.2.1.2. Access to the vessel structure could not be gained in areas that were hidden by bonded carpet linings, hidden beneath the fresh water tank or hidden behind the GRP Internal Mouldings of the heads area, galley, saloon and the steps that lead down to the port & starboard hulls.

5.2.2. Hull Internal Structure

5.2.2.1. The hull structure was seen to be stiffened internally by plywood bulkheads and locker panels. These were secured to the hull & deck mouldings by GRP cloth tabbing. Where accessible for inspection, the integrity of the tabbing was found to be free of de-bonding, cracks or movement, except for an area of GRP tabbing located immediately beneath the mast. This is discussed in paragraph 5.2.2.2.

5.2.2.2. There was one large plywood bulkhead that spanned the width of the saloon, located forward of the saloon seats. This bulkhead formed the aft panel of the anchor chain locker. Limited access to the aft face of this bulkhead was gained by removing the screwed down locker panel located just above the heads toilet. From this location, the bulkhead was found to be in serviceable condition and free of significant water damage. When inspected from inside the anchor chain locker, it was found that the GRP tabbing located immediately beneath the mast was found to be fractured. This tabbing secured the plywood bulkhead and the timber mast compression post to the underside of the deck moulding. See paragraph 5.3.2.6 for details of the recommendation relating to the repair of this damage and the corresponding damage of the deck moulding, located at the base of the mast.

5.2.2.3. Cracks were noted along the edges of the Internal Moulding that formed the sole of the saloon and the steps that lead down to the port & starboard cabins. These cracks were located where this moulding made contact with the frame of the cockpit doors and also where it made contact with the moulding of the saloon seating frame. These cracks were carefully inspected with a metal spike and found to be within the fillet of white fairing compound that originally concealed the join between the mouldings. In one area of inspection, this cracked fillet was removed with the metal spike. At this location, there was no evidence of any GRP tabbing joining the two mouldings, indicating that these cracks were non-structural.

5.2.2.4. Minor cracking of the gel-coat was noted near to the locations described in paragraph 5.2.2.3, located at the top of the steps that lead down to the port & starboard cabins. Impact testing with a light hammer indicated that the adjacent areas of laminate were free of any significant structural damage.

5.2.2.5. Where accessible, the plywood bulkheads and locker panels were inspected and found to be sound, with no evidence of moisture ingress, wood rot or delamination.

5.3. DECK AND EXTERNAL FITTINGS

5.3.1. Hull / Deck Join

5.3.1.1. The deck was joined to the hull by the shoe box joining method. The external joint was concealed by layers of GRP cloth, finished to a good standard with white gel-coat. Inspection of the interior faces of the join was limited to the forward ends of each hull

and in a few areas where the carpet lining was loose. As far as could be ascertained, the hull to deck joint appeared to be sound and in areas that could be accessed for inspection, there was no evidence of water ingress to the vessel interior through this joint.

5.3.2. Deck Moulding

5.3.2.1. The deck moulding was a balsa or foam cored GRP composite, finished with white pigmented gel-coat. It incorporated the port & starboard decks, coachroof and cockpit. The parts of the deck moulding that were concealed beneath the fixed carpet linings of the decks & coachroof could not be accessed for inspection, therefore their condition could not be fully assessed. Where accessible for inspection, the moulding was found to to be in good structural condition, with no signs of damage or delamination.

5.3.2.2. The gel-coat was in fair condition with various minor scuff and scratch marks. The gel-coat generally retained a fair level of gloss but would benefit from a treatment with a light rubbing compound, followed by an application of marine-grade polish.

5.3.2.3. There were small gel-coat cracks in the deck moulding, where the aft ends of the coachroof meet the cockpit coamings. Similar gel-coat cracks were noted at the forward corners of the coachroof, where this section of the moulding meets the port & starboard side decks. These were examined and found to be limited to the gel-coat only. Moisture levels in the area of gel-coat around the cracks were found to be low. Hammer testing of these areas gave no indication of structural damage.

5.3.2.4. There were a number of gel-coat cracks at the bases of the stanchion posts, pushpit posts and pulpit posts.

5.3.2.5. The integrity of the deck structure was checked by applying the Surveyor's weight to the deck surface. No excessive deformation was noted. Moisture levels in the deck and coachroof moulding were measured at regular intervals, paying particular attention to the laminate adjacent to deck fittings. All readings were found to be low.

5.3.2.6. Particular attention was paid to the condition of the coachroof around the mast foot. Numerous gel-coat cracks were noted around the perimeter of the mast foot. On the port side of the mast foot, the gel-coat and underlying laminate were found to be cracked and raised upwards by approximately 2 mm. The upward projecting crack indicated that the deck moulding has dropped down in this area, due to high compression loads from the mast. This damage corresponds to the defect described in paragraph 5.2.2.2. It is RECOMMENDED (type C recommendation with an implementation time of one year or before an offshore voyage) that the mast is unstepped from the vessel and the deck plate temporarily removed. The damaged GRP tabbing described in paragraph 5.2.2.2 should be cut back to sound material. The deck moulding in the region of the mast base should be temporarily supported so that the location of the mast deck plate is returned to its original position. The plywood bulkhead, mast compression post and underside of the deck should then be suitably reinforced with marine grade plywood and GRP cloth, using a good quality epoxy resin. The repair should be stronger than the original structure. The cracks on the outer surface of the deck moulding should then be cut back to sound material and repaired with layers of GRP, finished with white gel-coat.

5.3.3. Cockpit

5.3.3.1. The cockpit floor, seats and coaming were all in serviceable condition. There were a number of chips to the gel-coat surfaces at various locations. The cockpit seats were finished with teak planks. The wood was free of damage or rot and adequately secured to the cockpit moulding.

5.3.3.2. The hinging GRP doors of the two small cockpit lockers, mounted in the aft coaming of the cockpit, were found to be in good working order.

5.3.3.3. In the cockpit area there was one storage locker specifically equipped as a gas cylinder storage locker. The gas locker was installed in the forward cockpit bulkhead, on the vessel's centreline. See section 5.6.4 for details of the inspection of the gas locker.

5.3.3.4. The cover of the outboard motor well was constructed from GRP and finished with white gel-coat and strips of teak. The moulding, hinges and teak strips were found to be in good cosmetic condition and all functioned correctly.

5.3.3.5. A manual diaphragm bilge pump was installed on the port side of the cockpit, mounted in the aft face of the cockpit coaming. See section 6.1 for a description of the bilge pump.

5.3.3.6. Access to the main cabin was from two hinging acrylic doors, mounted on each side of the cockpit. See paragraph 5.3.7.1 for a description of these doors.

5.3.4. Outboard Motor Support Structure

5.3.4.1. The 20 horsepower Honda outboard motor was supported by a GRP moulding. This box-shaped moulding was secured at its forward end to the underside of the hull moulding by two large welded stainless steel hinges. These hinges were secured with stainless steel bolts. The height of the outboard motor could be adjusted by raising or lowering the hinged moulding. This was achieved by means of a block & tackle lifting mechanism, which was secured to the two aft corners of the moulding. This lifting mechanism function well, but with some friction of the lifting lines. It is suggested that these lines are replaced with new rope. The GRP moulding and stainless steel hinges were in good working order and free of damage. The moulding also provided stowage for the engine's polyethylene fuel tank.

5.3.5. Chain Locker & Bulkhead

5.3.5.1. The two anchors and attached chain & warp were stowed in a locker, located in the foredeck, just forward of the mast. The cover of this locker was constructed from a cored GRP moulding, finished with a white gel-coat. The moulding was good condition, but with a number of scratches and gel-coat cracks.

5.3.5.2. The hatch cover was secured to the deck by two aluminium hinges and a single stainless steel latch. The hinges were in good working order and adequately secured. Two of the four stainless steel fasteners that secured the latch in place were missing. It is RECOMMENDED (type A2 recommendation) that that these fasteners are replaced. It is suggested that two additional stainless steel latches are fitted to the forward end of the locker, to prevent breaking waves from forcing open the locker. The securing line that held the lid in the open position was broken. This should be replaced.

5.3.5.3. The internal surfaces of the anchor locker were formed by the hull moulding and also by a plywood bulkhead and several plywood locker panels. The damage of the GRP tabbing of the bulkhead is discussed in paragraph 5.2.2.2. All other locker panels were in serviceable condition and free of significant damage or deterioration.

5.3.6. Deck Covering

5.3.6.1. The slip-resistant surfaces of the cockpit sole, coachroof, anchor locker lid and central area of the foredeck were provided by a rough texture moulded into the gel-coat. This was found to be in serviceable condition, but with some wear and scratching.

5.3.6.2. The slip-resistant surfaces of the side decks were provided by a grey paint. These were in good condition, with no significant wear.

5.3.7. Hatches, Windows & Ventilation

5.3.7.1. Access to the main cabin was from two hinging acrylic doors, mounted on each side of the cockpit. The reinforced nylon hinges of each door were in good working order. The acrylic material of each door had some light crazing. The locking latch of the port door was in serviceable condition. The latch of the starboard door was broken. Neither door was fitted with a means of holding the door in the open position or closed position. It is RECOMMENDED (type C recommendation with an implementation time of one month) that the lock of the starboard door is replaced. Both should be fitted with hold-open and hold-closed latches.

5.3.7.2. Four large, fixed, tinted acrylic windows were installed in the forward end of the coachroof. The rubber sealing material and all fasteners were in good condition. There was no crazing of the panels, but with some minor scratching. There was no evidence of water ingress around these windows.

5.3.7.3. There was one fixed, aft facing acrylic window in the galley area. This window was secured by stainless steel bolts. The acrylic was free of crazing, but with some scratching.

5.3.7.4. There were a total of five small rectangular, hinges hatches in the coachroof and decks: two in each of the port & starboard hulls and one above the galley. The friction stays, latches and aluminium frames were in serviceable condition. It was found that when the hatch above the toilet was fully closed, there was still a small gap between the rubber seal and the aluminium frame. The acrylic material of each hatch was heavily crazed. It is RECOMMENDED (type C recommendation with an implementation time of two years) that the acrylic panels of these five hatches are replaced. Where the rubber sealing material of each hatch fails to make a water-tight seal, these should be replaced.

5.3.7.5. There were two small rectangular, inward hinging ports installed: One in the outboard side of each hull. The latches of each port were in good working order. The acrylic material in both ports was heavily crazed. It is RECOMMENDED (type C recommendation with an implementation time of two years) that the acrylic panels of these two ports are replaced.

5.3.7.6. One round, fixed acrylic port was installed in the aft end of each hull. The clear acrylic panels were fastened by stainless steel bolts and sealed by a mastic compound. The acrylic material in each port was heavily crazed. There was no evidence of water ingress around the seals of these ports. It is RECOMMENDED (type C recommendation with an implementation time of two years) that the acrylic panels of these two ports are replaced.

5.3.7.7. There was one large hinging & lifting roof panel in the coachroof. This panel was constructed from GRP, finished with a white gel-coat. The moulding was found to be in good structural condition and free of significant damage. The stainless steel hinges functioned well. The hold-open hydraulic struts functioned well, but with some surface corrosion on the steel pistons. The two reinforced nylon securing latches were in serviceable condition. It was found that when closing the roof panel, the port & starboard edges would catch on the mating faces of the coachroof. This interference has lead to some scratching of the gel-coat surfaces.

5.3.7.8. There were no ventilators installed in the coachroof of MAYFLY. Ensure that adequate ventilation is provided at all times, particularly when using the galley stove.

5.3.8. Deck Fittings and Equipment

5.3.8.1. There were five large aluminium mooring cleats: One on each foredeck, one at each of the aft corners and one mounted just forward of the mast. All were inspected and found to be adequately secured to the deck.

5.3.8.2. Two hardwood grab rails were mounted on the cockpit bulkhead. They were in serviceable condition, securely mounted and with all wooden plugs intact.

5.3.8.3. The two 28 mm diameter stainless steel bars that formed the hinges of the hinging roof panel (described in paragraph 5.3.7.7) also functioned as grab handles. These were in good working order and free of damage.

5.3.8.4. The bow roller assembly was fabricated from stainless steel plate and was secured to the starboard side of the aluminium cross-beam. It was considered that the stainless steel plate was too thin and this may have resulted in the distortion of the fabrication.

5.3.8.5. The three post pulpits were constructed from 25 mm outside diameter tubular stainless steel. Each was mounted to the deck by a single fastener at each post. The welded fabrications were adequately secured to the decks and free of distortion.

5.3.8.6. The 610 mm high side stanchion posts were constructed from tapered stainless steel. Each was secured to the deck with four stainless steel bolts. They were fitted with twin stainless steel, 4 mm diameter, 1 x 19 construction safety wires. The wires were covered in white PVC sheathing. The forward ends of the wires were secured to the pulpits with swaged stainless steel fittings. The aft ends of the wires were secured to the pushpits with stainless steel bottle screws. The stanchions, bases, fasteners and safety wires were found to be in good order.

5.3.8.7. Each pushpit was constructed from 25 mm outside diameter tubular stainless steel. These were in good order and adequately secured.

5.3.8.8. A five step, hinging, welded stainless steel boarding ladder was secured to the aft end of the starboard hull. It was found to be adequately secured and free of cracks or distortion. When folded down, the ladder extended well below the waterline in order to

aid man overboard recovery.

5.3.8.9. An extruded aluminium cross-beam was secured between the forward ends of the two hulls. This cross-beam provided additional strength and stiffness to the hull structure. It also provided a means of securing the lower end of the forestay, provided a mounting point for the stainless steel bow roller and provided a means of securing the forward edge of the trampoline net. The port & starboard ends of the cross-beam were secured to each hull via a welded stainless steel bracket and four stainless steel bolts. The stainless steel brackets were carefully inspected and found to be free of damage or cracking. It was noted that of the four stainless steel bolts that secured these brackets to each hull, one bolt on each side was found to be too short, resulting in partial engagement of the securing nut. It is RECOMMENDED (type C recommendation with an implementation time of one year or before an offshore voyage) that the two short bolts are replaced. Note that these can be accessed from the forward end of each hull, located in the forepeak of the port & starboard hulls.

5.3.8.10. The internal surfaces of the aluminium cross-beam could not be accessed for inspection, therefore no assessment could be made of the levels of corrosion inside this structure. The starboard end of the cross-beam was found to have some light impact damage, with a small crack in the aluminium. The location of this crack indicated that this defect was non structural. There was some surface corrosion of the cross-bar, particularly where stainless steel items are attached or where rivets pass through the extrusion. The white paint coatings on the cross-beam were in poor condition.

5.3.8.11. I was informed by the Broker that the trampoline net was five years old and that the recommended life of these is four years. It is RECOMMENDED (type C recommendation with an implementation time of six months or before an offshore voyage) that the net is replaced.

5.3.9. Inflatable Dinghy

5.3.9.1. The Bombard AX2-1 inflatable, three-person dinghy was stowed in its bag in the anchor chain locker. The serial number of the dinghy was 0727. The Craft identification Number of the dinghy was XDC_U2252_G192. This number indicated that the dinghy was manufactured in July 1991.

5.3.9.2. The dinghy was un-rolled for inspection, but was not inflated. The black & red coloured, hard-transom hull and floor were in fair condition, but some of the seams and joins were found to be de-bonded. One repair of the hull material was noted. The valve of the port sponson was missing.

5.4. Rigging and Sails

5.4.1. Mast & Boom

5.4.1.1. The deck-stepped mast could not be ascended with safety, so the rig was examined as far as possible from the deck. The lower part of the mast was in sound condition, with no sign of significant corrosion or physical damage. The grey anodised protective coating was in good cosmetic condition. There was minor corrosion of the aluminium where stainless steel hardware has been attached to the mast.

5.4.1.2. The cast aluminium deck plate was closely inspected and found to be free of cracks and was securely mounted to the coachroof with four stainless steel screws.

5.4.1.3. The boom and gooseneck were in serviceable condition, with a small amount of wear on the gooseneck pivots.

5.4.2. Rigging Chain Plates

5.4.2.1. The stainless steel shroud chain plates were of the straight plate variety. Each plate was secured to the hull topside with five stainless steel bolts, each secured with a stainless steel dome nut. Where accessible for inspection, all were examined and found to be secure, with no significant corrosion and with no undue strain on the mountings.

5.4.2.2. The forestay chain plate was formed by a stainless steel D-loop. This D-loop was secured to the centre of the aluminium cross-beam that spanned the forward ends of

the two hulls. The chain plate was found to be free of distortion, cracking and was adequately secured to the cross-beam. The parts of this chain plate that were located inside the aluminium cross-beam could not be accessed for inspection, therefore their condition could not be assessed.

5.4.2.3. There was one additional stainless steel D-loop secured to the aluminium cross-beam, located directly in front of the forestay chainplate. One of the two securing rivets was missing. It is RECOMMENDED (type A2 recommendation) that the missing rivet is replaced.

5.4.3. Jib Furling Mechanism

5.4.3.1. The Harken Mk_IV roller furling equipment was tested as far as practical and found generally in good working order. The drum was examined and no defects were seen in either the bearings or in the rigging screw attachment. The Broker's details stated that this assembly was new in 2013.

5.4.3.2. The aluminium alloy luff extrusion appeared to be straight and with no kinks.

5.4.4. Standing Rigging

5.4.4.1. The Broker's details stated that the rigging wires were new in 2005 and that the shrouds (side stays) were new in 2012. To be safe, stainless steel standing rigging should be replaced every ten years on a cruising yacht. When the rigging wires are more than ten years old, they should be carefully monitored for evidence of cracks in the swaged fittings and for evidence of broken, worn or pitted wire. Even in the absence of problems, replacement of rigging wires that are more than ten years old should be considered before embarking on major offshore passages or extended cruises.

5.4.4.2. The fractional standing rigging was formed from 1x19 stainless steel wire, with swaged terminals secured to the chain plates by toggles and bottle screws.

5.4.4.3. The standing rigging comprised 8 mm diameter cap shrouds extending from the decks directly to the upper end of the mast. The 7 mm diameter diamond stays extended from just above deck level to the upper end of the mast, via a pair of port & starboard spreaders and one forward facing spreader. The forestay (diameter of this wire could not be measured) was formed by the headsail reefing foil.

5.4.4.4. The swaged terminals at deck level were inspected and appeared to be free from any bending or distortion that might occur during their manufacture. As far as could be ascertained, the bottle screws and toggles appeared to be in serviceable condition, with no signs of bending, splitting, cracking or other failure.

5.4.4.5. For the aluminium cross-beam, the bending loads induced by the tension in the forestay were reacted by two tension wires. The inboard ends of these two wires were joined to each other via an aluminium A-frame. The Broker's information sheet stated that the A-frame was new in 2009. The A-frame, tension wires and end-fittings were found to be free of significant corrosion, secure and with no evidence of distortion or damage.

5.4.4.6. As far as could be ascertained, those parts of the shrouds and stays that could be inspected from the deck appeared to be serviceable. The owner should appoint a rigger if a second opinion or a full survey of the rig is required.

5.4.5. Running Rigging, Travellers, Winches

5.4.5.1. The running rigging that was stored on the vessel was inspected and showed only minor signs of wear. These all remain serviceable.

5.4.5.2. Barton headsail sheet leads were mounted on travelling cars on the foredeck. The aluminium tracks were securely mounted. The plastic sheaves were in good condition and free of wear.

5.4.5.3. The Amiot mainsheet track and car were securely mounted to the aft cockpit coaming. This assembly was free of damage and in good working order.

5.4.5.4. Two primary winches (Lewmar 40, two-speed, non self-tailing) were located on the cockpit coaming. They were found to be adequately secured and in serviceable condition. The chrome plating of the drums was worn.

5.4.5.5. Three self-tailing winches were mounted to the mast: One Lewmar 43 (two speed), one Lewmar 16 (single speed) and one Lewmar 40 (two speed). These were in good working order, but the chrome plating of the drums was worn.

5.4.6. Sails

5.4.6.1. The Sanders mainsail was mounted on the boom, stowed beneath its single-piece sail cover. The mainsail was partially opened up for inspection but due to the high winds, was not hoisted. The white Dacron cloth and double stitching were in good condition, with minor evidence of wear and stretching. The batten pockets were in good order and generally free of wear. The mast sliders and aluminium headboard were in serviceable condition and generally free of damage.

5.4.6.2. The white Dacron jib was fully unfurled for inspection, but was not taken down. This sail was used during the sail between Wilson's Boatyard and Thornham Marina. The white cloth and double stitching were generally in good condition, with no evidence of excessive wear. The off-white sacrificial UV strips were in serviceable condition. The luff tape and stainless steel clew eye were secured and free of damage.

5.4.6.3. One red, orange, yellow & blue spinnaker was stowed inside its deployment bag in one of the forepeak cabins. This sail was partially opened up and inspected. It was found to be clean, dry and with no evidence of heavy use or evidence of repairs.

5.4.6.4. The black canvas sail cover was found to be in serviceable condition and free of fading, but with minor tears at the forward end and aft end. The zip, straps and plastic attachment clips were in good working order.

5.5. PROPULSION

5.5.1. Engine

5.5.1.1. MAYFLY was fitted with a Honda 20, 4-stroke, twin cylinder, long shaft, petrol fuelled outboard motor. The serial number of this engine was BAMJ-*[Data removed]*. It was rated at 14.7 kWatts (20 horsepower).

5.5.1.2. Engine control was via a single lever, giving forward and reverse gears and throttle control, mounted on the starboard side of the engine housing.

5.5.1.3. There was no evidence of engine overheating. The paint coating of the drive leg was in good condition, but with some corrosion of steel items located beneath the top cover. These rusty items were mainly located at the forward end of the engine. This indicated that some sea water may have been splashed into the engine whilst it has been stowed in the tilted position. It is RECOMMENDED (type C recommendation with an implementation time of three months) that the corroded parts of the engine are cleaned of all loose rust and then painted or protected with a coating of oil.

5.5.1.4. The engine oil was inspected and found to be clean, free of moisture and at the correct level.

5.5.1.5. The engine was used to motor the vessel for part of the journey between Wilson's Boatyard and Thornham Marina. The engine started readily from cold. Exhaust gases were clear and free of smoke. When under medium load, no fuming was noted.

5.5.1.6. Ahead and reverse gears engaged normally. At tick-over speed, the engine was found to stall on two occasions. It is RECOMMENDED (type C recommendation with an implementation time of six months or when the engine is next serviced) that the engine's idling speed is adjusted.

5.5.1.7. The electric tilt mechanism functioned normally.

5.5.1.8. The anode of the outboard drive leg was intact, with no evidence of wasting. The anode of the mounting bracket was approximately 20% wasted. Ensure that these anodes are replaced when they are greater than 50% wasted. It was noted that the electric tilt mechanism was not fitted with its own anode. It is suggested that if any significant corrosion of this unit is noted, a zinc anode should be installed on the tilt mechanism.

5.5.1.9. The four blade, 9" diameter, fixed pitch aluminium propeller assembly was in good condition and free of significant wear or impact damage. It was adequately secured to the propeller shaft with a bronze castle nut and stainless steel split pin. There was

some minor wear in the contact surfaces between the propeller and shaft.

5.5.1.10. The rubber fuel hose and priming bulb were in good condition, with no evidence of perishing of the material. The hose connections were secure and free of damage.

5.5.1.11. Two 12 litre fuel containers and two 25 litre fuel containers were stowed on the vessel. All were constructed from red polyethylene and were found to be in serviceable condition.

5.5.1.12. The gearbox oil of the drive leg was not inspected. This should be changed when the engine is next serviced.

5.6. Systems and Services

5.6.1. Anchor and Chain

5.6.1.1. The 20 kg galvanised steel CQR anchor was in serviceable condition, but with some minor corrosion. The anchor was stowed in the anchor locker on the central foredeck.

5.6.1.2. The two steel shackles that secured the anchor to the chain were heavily corroded. One of the shackles was considered to be too small. It is RECOMMENDED (type A2 recommendation) that both shackles are replaced with galvanised steel or stainless steel items. Additionally, seizing wire should be used to lock the shackle bolts, or the ends of the threads should be peened over to prevent loosening.

5.6.1.3. The chain was generally free of wear & corrosion and in serviceable condition. The chain was attached to a length of suitably sized rope with a steel shackle. This shackle was corroded and should be replaced at the same time as the shackles described in paragraph 5.6.1.2.

5.6.1.4. The anchor chain was made from short plain-linked galvanised steel. Dimensions of the chain were 8 mm x 29 mm x 40 mm. The length of the chain was measured and found to be 1.7 metres long. It was shackled to a length of 18 mm diameter warp. The Broker's information sheet stated that this warp was 50 metres long.

5.6.1.5. The method of attachment of the warp to the vessel was not determined. Ensure that the bitter end of the warp is tethered to the inside of the anchor chain locker by a length of line that could easily be cut in an emergency.

5.6.1.6. A 20 kg lead weight was also stowed inside the anchor locker. This was connected to a stainless steel snap shackle. The purpose of the weight is for attaching it to the mid-length of the anchor warp, to weigh down the warp and hold it close to the sea bed. This helps the anchor to hold the ground more efficiently, without having to make use of a long length of heavy anchor chain.

5.6.1.7. A spare anchor and length of 18 mm diameter warp (no chain) was also stowed in the anchor chain locker. This 20 kg Danforth anchor was in serviceable condition and free of damage or deformation.

5.6.2. Fresh Water System

5.6.2.1. There was one flexible, 150 litre, blue canvas fresh water tank located beneath the seating in the saloon. This container was adequately secured to the adjacent seating structure.

5.6.2.2. This container supplied cold water to the foot-operated Whale tap in the heads and one hand-operated Whale tap at the galley sink. Both taps functioned correctly, but the unit in the galley was found to leak onto the worktop when tested. It is RECOMMENDED (type C recommendation with an implementation time of three months) that the seals of this pump are replaced.

5.6.2.3. It is suggested that the fresh water tank and attached hoses are disinfected with a solution of Milton cleaning fluid.

5.6.3. Heads

5.6.3.1. The Raske & Van Der Meyde RM69 manually operated sea toilet was clean and the bowl and pump were adequately attached to the GRP moulding of the heads compartment. The installation was tested and was found to function, but significant quantities of water leaked from around the piston of the pump. It is RECOMMENDED

(type C recommendation with an implementation time of three months) that the toilet pump is serviced and all seals replaced.

5.6.3.2. The sole board, sink frame, toilet support and sides of the heads compartment were formed by a GRP moulding and were finished in a grey gel-coat. This was in good cosmetic condition and free of significant damage.

5.6.3.3. Two foot-operated water pumps were installed in the heads compartment. The forward pump delivered fresh water to the tap of the sink. This was tested and found to function correctly. Note that the sink tap must be in the 'open' position before this pump is used. The aft pump was connected to a short length of hose located in the heads bilge, beneath the sole boards. The outlet of this pump was connected to an isolation valve and skin fitting on the inboard topside of the port hull (item 4 in Figure 8 and Table 3).

5.6.3.4. The white plastic sink and chrome-plated fresh water tap were in good condition and were free of damage.

5.6.3.5. The toilet inlet and outlet hoses were of suitable material. Both hoses correctly extended upwards behind the toilet to form anti-siphon loops. The apex of these loops reached as far upwards as the underside of the deck.

5.6.4. LPG Installation

5.6.4.1. In the cockpit area there was one storage locker specifically equipped as a gas cylinder storage locker. The gas locker was installed in the forward cockpit bulkhead, on the vessel's centreline.

5.6.4.2. One 2.75 kg LPG (butane) gas cylinder was stored in the gas cylinder locker. The locker was constructed from GRP, finished with a white gel-coat. Where the locker moulding was secured to the inner surface of the cockpit bulkhead, the GRP tabbing was found to be secure, continuously applied and free of damage. The locker was not tested for integrity but was considered to be gas-tight to a level above the pressure regulator.

5.6.4.3. A locker drain hole was drilled through the bottom of the LPG cylinder locker in order to allow any leaked gas to escape to the outside of the hull. This drain hole was approximately 4 mm in diameter. This was considered to be too small as the hole could easily become blocked with debris. Boat Safety Scheme guidelines state that for this size of gas cylinder, the diameter of the drain hole should be at least 12 mm [Boat Safety Scheme Essential Guide, 2nd Edition, August 2005]. It is RECOMMENDED (type C recommendation with an implementation time of six months) that this hole is enlarged to at least 12 mm in diameter.

5.6.4.4. Connected to the LPG butane gas cylinder was an isolation valve and pressure regulator. From the pressure regulator, rubber hose led the gas supply through the side of the locker and to a copper T-junction, located behind the stove in the galley. From the copper T-junction, one length of hose lead directly to the Dometic LPG / 12 volts d.c. / 240 volts a.c. refrigerator. A second length of hose lead directly to the Eno hob unit. It is considered bad practise to use flexible gas hose in place of copper gas pipe. All lengths of hose were manufactured in January 2018. These should be replaced every five years. Discussions with the two Clients revealed that it was their intention to remove and replace the Dometic refrigerator. It is therefore RECOMMENDED (type C recommendation with an implementation time of six months) that the refrigerator and attached hose are removed. The copper T-junction and the hose connected to the stove should also be removed. The existing length of hose in the gas cylinder locker should then be connected to the Eno hob unit via an isolation valve and length of copper gas pipe. Ensure that the isolation valve is not installed behind the cooker, so that it can be accessed safely from the galley in the event of a galley fire. The copper pipe should be protected from damage and should be supported with plastic P-clips at spacings of less than 500 mm.

5.6.4.5. There was no date on the regulator to indicate its age but it is likely that the regulator is much less than ten years old. Pressure regulators should be replaced when ten years old.

5.6.4.6. Strong consideration should be given to installing a bubble leak tester on MAYFLY.

5.6.4.7. The Dometic refrigerator was not tested. Due to the age of the unit, it is RECOMMENDED (type C recommendation with an implementation time of six months or before being powered by gas) that this refrigerator is serviced.

5.6.4.8. The three-hob Eno, fixed cooker unit was in good cosmetic condition. The burners were tested. The left burner and forward right burner were found to burn with a clean blue flame. The safety cut-off devices of these two burners functioned correctly. The aft right burner did not function correctly, and burned with an erratic flame pattern. It is RECOMMENDED (type C recommendation with an implementation time of six months or before using the aft right burner) that this cooker unit is serviced.

5.6.4.9. The installation was not further inspected or pressure tested for leaks.

5.6.4.10. Note that this survey is not any kind of gas safety certificate. This is only obtainable after comprehensive pressure testing and assessment by a qualified person listed on the gas safety register. The above recommendations should be undertaken by a qualified gas technician, such as those listed on the gas safety register. See http://www.gassaferegister.co.uk for further details.

5.6.4.11. One spare 2.75 kg LPG (butane) gas cylinder was stored in the port cockpit locker, located inside the aft cockpit coaming. This locker was not fitted with a drain hole to allow any leaking gas to escape to the outside of the boat. It is RECOMMENDED (type C recommendation with an implementation time of six months or before an offshore voyage) that a drain hole is drilled into the base of this locker. In accordance with Boat Safety Scheme best practise, this hole should be at least 12 mm in diameter.

5.6.5. Galley

5.6.5.1. The galley was situated at the aft end of the saloon, spanning between the two hull compartments.

5.6.5.2. There was a Dometic LPG/ 12 volts d.c. / 240 volts a.c. refrigerator mounted beneath the worktop on the starboard side of the galley. This unit was not tested. The model of the refrigerator was 4210S. The serial number of the unit was 100008.

5.6.5.3. The stainless steel sink and drainer unit were in serviceable condition. See paragraph 5.6.2.2 for the recommendation relating to the leaking fresh water tap.

5.6.5.4. The moulded GRP galley unit was in serviceable condition. There were a range of cupboards with canvas ‘doors’. One of these pieces of canvas was lightly torn.

5.6.6. Electrical System

5.6.6.1. MAYFLY had a 12 volt dc electrical system, with an engine starting battery and a single battery (both 75 Amp hour capacity) for services. The batteries were located beneath the chart table, in an adequately ventilated area. The batteries were supported by the sides of the shelving unit and were each held down by a canvas strap, each secured with plastic clips. These were found to be secure and in good working order.

5.6.6.2. The batteries were load tested. The aft-most battery was in poor condition. The forward battery was in good condition.

5.6.6.3. Battery charging was from the 12 Amp charger output of the Honda outboard motor or from shore power through a Sterling Power Products 5 Amp automatic battery charger located beneath the chart table. These methods of battery charging were not assessed during the survey.

5.6.6.4. Two red, quarter turn battery isolation switches for the engine and service batteries were located next to the two batteries. A third red, quarter turn battery isolation switch was labelled ‘masse’, which was used to connect the two batteries.

5.6.6.5. Service power was then distributed via a switch panel consisting of twelve fused rocker switches. There were two further switches, but either the fuse or the switch was missing.

5.6.6.6. All internal lights, except for the one above the saloon table, functioned correctly.

5.6.6.7. The 12 volts d.c. wiring that could be seen appeared to be serviceable, was reasonably well installed and routed clear of the lower bilges. It was found that the power cables connected to the port & starboard navigation lights were constructed from solid core, domestic quality cable. This type of cable is vulnerable to failure from vibration-induced fatigue. It is RECOMMENDED (type C recommendation with an implementation time of one year) that these cables are replaced with marine grade, twisted strand wire.

5.6.6.8. Shore power was connected to the vessel at a socket mounted in the aft cockpit coaming, starboard side. This was connected to a 240 volt a.c. breaker switch unit, located inside the starboard locker of the aft cockpit coaming. Shore power was distributed to European domestic 13 amp sockets. Where accessible for inspection, all shore power cables were found to be of suitable quality and adequately installed. All cables were routed clear of the lower bilges. The 240 volt a.c. system was not tested.

5.6.7. Navigation Lights

5.6.7.1. A transom mounted stern light was adequately attached to the pushpit. The lens was in good condition. and free of condensation. This lamp functioned well.

5.6.7.2. Port & starboard lights were mounted on the two pulpit rails. The starboard lamp functioned, but the port lamp did not.

5.6.7.3. The steaming light on the mast functioned normally.

5.6.7.4. The anchor light and tricolour at the mast head could not be seen to be working due to the bright sunlight.

5.6.7.5. It is RECOMMENDED (type A2 recommendation) that the port navigation lamp is repaired. The anchor light and tricolour at the mast head should be tested at night time. If these do not function, they should be repaired.

5.6.8. Navigation Equipment

5.6.8.1. Two Raymarine ST60 wind speed & wind direction indicator units were mounted on each of the port & starboard cockpit bulkheads. These functioned correctly, but the accuracy of the readings could not be assessed.

5.6.8.2. Two Raymarine ST60 boat speed & water depth units were mounted on each of the port & starboard cockpit bulkheads. These functioned correctly, but the accuracy of the readings could not be assessed.

5.6.8.3. One Simrad TP22 autopilot was stowed on board. The serial number of this unit was *[Data removed]*. This unit was tested and found to function normally.

5.6.8.4. One Philips AP Navigator, GPS system was mounted on the central cockpit bulkhead. This unit powered up and subsequently gave a latitude & longitude reading.

5.6.8.5. An Icom IC-M505 VHF/DSC radio unit was mounted at the chart table. This unit powered up, received signals, but was not tested for transmission. The serial number of this radio was *[Data removed]*.

5.6.8.6. A Silva compass was mounted on the central cockpit bulkhead. The lens was clear and free of scratching. The damping fluid was free of bubbles.

5.6.8.7. A clock & barometer were mounted at the chart table. These were broken.

5.7. Accommodation and Décor

5.7.1. Access to the main cabin was from two hinging acrylic doors, mounted on each side of the cockpit. See paragraph 5.3.7.1 for a description of these doors.

5.7.2. The single-piece, melamine covered dining table was in serviceable condition. The varnished timber edges were worn.

5.7.3. The GRP moulding of the saloon seating frame was in good condition, but with one fracture beneath one of the seats. This should be repaired.

5.7.4. The fabric covering of the seating cushions and sleeping mattresses was in acceptable condition, but with some fading and degradation where these have been exposed to sunlight. The carpet lining of the saloon coachroof was adequately bonded, but the material was breaking down, giving a fine dust when abraded. The carpet lining of the side hulls was in fair condition, but with some debonding in numerous areas.

5.7.5. The zips of the canvas doors of the two side hulls were stiff and in need of a clean and treatment with a light Teflon oil.

5.7.6. The teak & holly faced plywood sole boards were in fair condition. The boards were not screwed down. These would benefit from a treatment with sandpaper and varnish.

6. Safety Equipment

Refer to the Boat Safety Handbook [RYA publication, 2012, ISBN 978-1-906435-53-0]. This book gives recommendations and advice concerning the selection and installation of safety equipment.

6.1. Bailing / Bilge Pumping

6.1.1. One Whale Gusher Mk_V manual diaphragm bilge pump was located in the port locker of the aft cockpit coaming. The handle was located nearby, but was not tethered to prevent its loss. The inlet of the pump was connected to 11 metres of reinforced hose. The end of the hose was not fitted with a strum box. The pump was tested and found to function correctly. It is RECOMMENDED (type A2 recommendation) that the bilge pump handle is tethered in order to prevent its loss. The end of the inlet hose should be fitted with a strum box.

6.1.2. Consideration should be given to installing a second manual bilge pump or an electric bilge pump.

6.1.3. It is RECOMMENDED (type A2 recommendation) that two buckets (with lanyards) are stowed on board. These should be between 9 and 14 litres in capacity.

6.2. Detection Equipment

6.2.1. One mouth operated brass fog horn was found on the vessel.

6.2.2. A tube type, passive type radar reflector was secured to the mast.

6.2.3. There was one motoring cone and one anchor ball stowed inside the anchor locker.

6.3. Fire Fighting Equipment

6.3.1. Two small fire extinguishers were found on board. These were approximately five years old and are summarised in Table 4. It is RECOMMENDED (type A2 recommendation) that both units are replaced with 1 kg units. It is suggested that a third 1 kg unit is purchased and mounted inside one of the cockpit lockers.

Type	Location	Date Stamp	Pressure Gauge
0.8 kg ABC dry powder, manually operated	Steps that lead down to port hull	Manufactured 2014	Green
0.8 kg ABC dry powder, manually operated	Steps that lead down to starboard hull	Manufactured 2015	Green

Table 4: Fire Extinguishers on board MAYFLY

6.3.5. Most fire extinguishers have a five year service life. Ensure that the extinguishers are serviced or replaced after this five year period. Regularly shake dry powder extinguishers to prevent the powder coagulating.

6.3.6. A fire blanket was hanging in the galley area. It was located within suitable distance of the cooker.

6.4. Strong Points

6.4.1. The vessel had webbing jackstays. These appeared to be in serviceable condition and free of damage. The Broker's information sheet stated that these were new in 2000. It is strongly suggested that these are replaced.

6.4.2. There were no lifeline strong points secured to the deck moulding in the cockpit. Strong consideration should be given to fitting four of these in the cockpit. One of the fittings should be accessible from each cockpit door and one at each helm position.

6.5. MAN OVERBOARD RECOVERY EQUIPMENT

6.5.1. One yellow horse shoe life buoy was stowed in the starboard cabin. It was not labelled with the vessel's name. The wire frame for the buoy was securely mounted to the safety wires on the port side of the cockpit. The buoy was old and decayed. The flotation lamp did not function. It is RECOMMENDED (type A2 recommendation) that two lifebuoys are carried on board, each stowed on a stainless steel frame. One of the lifebuoys should be fitted with a self-igniting light and a buoyant lifeline at least 18 metres in length. The vessel's name should be applied to both sides of the buoys in large black lettering.

6.6. PYROTECHNICS

6.6.1. One white ant-collision flare was found on board. This item had expired in December 2018.

6.6.2. No red or orange emergency flares were found on the vessel. It is RECOMMENDED (type A2 recommendation) that a set of flares (size and quantity appropriate to the sea areas and sea states expected to be encountered) is procured and stowed ready for use.

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7. TYPES OF RECOMMENDATIONS USED IN THIS REPORT

The recommendations detailed within the body of this report are presented in five categories and are classified as follows:

Type A1	Structural, mechanical or other defects requiring IMMEDIATE attention i.e. those affecting structural strength, seaworthiness or safety which MUST be repaired BEFORE the vessel is relaunched at this time.
Type A2	Structural, mechanical or other defects affecting strength, seaworthiness or safety which may be repaired after the vessel is relaunched but MUST be repaired before the vessel is taken to sea.
Type B	Defects not affecting strength, seaworthiness or safety but which, by their nature, should be dealt with before putting the vessel afloat.
Type C	Structural, mechanical or other defects NOT requiring immediate attention but are to be dealt with within a specified time period.
Type D	Non-essential or cosmetic defects whose repair may be left to the Owner's convenience. All suggestions are, unless noted otherwise, of this type.

These recommendations are intended to be only a guide to necessary rectification work. Both type A and type B recommendations cover urgent remedial work to be carried out as soon as practical. Type C recommendations cover significant remedial works to be carried out within the specified time period. It should also be noted that, in some instances, defects are noted within this report without a covering recommendation. In such cases either no action is necessary or the remedy is self-evident.

8. Abbreviations Used in This Report

a.c.	Alternating current
CQR	A design of anchor
d.c.	Direct Current
DSC	Digital Selective Calling
GRP	Glass Reinforced Plastic
HP	Horse Power
IIMS	International Institute of Marine Surveyors
LPG	Liquid Petroleum Gas
PVC	Polyvinylchloride
UV	Ultra Violet
VHF	Very High Frequency