fieldhouse yacht surveys

WHITE EAGLE

Insurance Survey

Completed for

Name,
Address

on Monday 15th January 2018

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TABLE OF CONTENTS

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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 an Insurance Survey on WHITE EAGLE in accordance with instructions received from Name, Address.

1.2. The primary aim of this document is to report on the factual condition for insurance purposes only, of WHITE EAGLE, 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 hard-standing at Chichester Marina on Monday 15th January 2018.

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, Owner

Eur Ing Nic Fieldhouse BEng (Hons) CEng MIMechE AssocIIMS

Marine Surveyor, Fieldhouse Yacht Surveys.

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2. SUMMARY

WHITE EAGLE was seen to be a very good example of a 1988 Sigma 362 sailing vessel. The GRP hull seemed to be in good structural condition and retained a very good finish.

The deck moulding, masthead rig, engine, domestic services and interior finish were generally all in very good condition. In the last ten years, many of the systems on the vessel have been replaced and all have been very well maintained. The sturdy build of the vessel has withstood many years of sailing and has been kept in very good cosmetic condition.

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

2.1. TYPE A2 RECOMMENDATIONS

2.1.1. There were four **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.

2.1.2. Engine exhaust and cooling water were discharged through a stainless steel muffler box and an armoured flexible hose, to a hull fitting at the stern. Where accessible for inspection, the hose was found to be free of cracking or other deterioration. A water leak was noted on the outlet of the stainless steel muffler box. This leakage is likely to be due a leak between the clamped exhaust hose and the outlet pipe of the muffler, but may also be due to a crack in the weld that secured the outlet pipe to the main body of the muffler. It is RECOMMENDED (type A2 recommendation) that the exhaust hose is re-secured to the outlet pipe of the muffler. If the leak continues, the hose should be removed and the weld of the outlet pipe inspected for evidence of cracking (see paragraph 5.5.1.12).

2.1.3. A manual diaphragm bilge pump was located in the side of the cockpit seating, next to the helm, starboard side. The handle was located nearby, but was not tethered to prevent its loss. It is RECOMMENDED (type A2 recommendation) that the bilge pump handle is tethered in order to prevent its loss in the event of a capsize. The inlet to the bilge pump was located in the bilge sump, positioned above the keel. It was correctly fitted with a strum box. The pump was not tested as this would have required a large volume of water to be placed in the bilge. Due to the age of the pump and uncertainty regarding its reliability, it is suggested that the pump is opened up, cleaned and the internal rubber diaphragm inspected for cracking. The seal should be replaced if it is degraded (see paragraph 6.1.2).

2.1.4. It is RECOMMENDED (type A2 recommendation) that all three pumps are tested, with the inlet end of the hose or pump temporarily placed in a bucket of water (see paragraph 6.1.5).

2.1.5. 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 (see paragraph 6.1.6).

2.2. TYPE C RECOMMENDATIONS

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

2.2.2. The bulkheads were secured to the hull & deck by GRP cloth tabbing. Where accessible, the integrity of the tabbing was inspected and found to be free of de-bonding, cracks or movement. Additional strength was provided by mild steel bolts & backing washers, secured through the tabbing and plywood. The majority of these fasteners were corroded. The fasteners located inside the forward anchor locker had completely corroded, with all screw heads missing. One of the securing bolts located beneath the heads sink was completely corroded. It is RECOMMENDED (type C recommendation with an implementation time of two years) that where access permits, all heavily corroded fasteners should be replaced with stainless steel items, with the fastener heads supported by penny washers (see paragraph 5.2.3.1).

2.2.3. The forward lower shroud chain plates were constructed from 10 mm x 11/2" stainless steel plate and each was bolted through the plywood of the main bulkhead by three stainless steel bolts. The internal fasteners of the port chain plate could not be accessed as it was concealed behind the fixed linings of the saloon and forepeak. The three bolts of the starboard forward lower shroud chain plate were found to be secure but with significant surface corrosion. It is RECOMMENDED (type C recommendation with an implementation time of one year) that the interior panelling that conceals the chain plate of the port forward lower shroud chain plate is removed. Access to the chain plate may be achievable by the temporary removal of the music loudspeaker that is installed in the panelling adjacent to the chain plate. The stainless steel fasteners and fittings should be inspected for evidence of significant corrosion (see paragraph 5.4.2.2).

2.2.4. At deck level the shrouds were fitted with white PVC sheathing to protect the genoa from chafing against the wires. The wire beneath the sheathing was wet and very dirty. Stainless steel is susceptible to pitting corrosion in this partially oxygenated environment, where the protective outer layer of the stainless steel can break down, leading to localised corrosion. It is RECOMMENDED (type C recommendation with an implementation time of one month) that the PVC sheathing is temporarily removed. The wires should be thoroughly cleaned before re-fitting the sheathing (see paragraph 5.4.5.4).

2.2.5. A locker drain hose was installed at the bottom of each gas cylinder storage locker in order to allow any leaked gas to escape to the outside of the hull. The outlet of the cockpit drains was suitably located above the waterline. The hoses and attachments were inspected from the cockpit locker and from the access panel located at the aft end of the aft cabin. These were found to be in good order, but a small downward bend in the port locker drain hose had formed a water trap which would prevent any leaking gas from escaping from the port locker. It is RECOMMENDED (type C recommendation with an implementation time of two months) that the drain hose is modified so that no water trap can be formed (see paragraph 5.6.4.5).

2.2.6. The Eberspächer diesel powered heater body appeared to be correctly installed. The exhaust ducting was suitably insulated. It was found that the Eberspächer hose clamp that secured the exhaust duct to the skin fitting on the transom was missing. The location of the missing clamp is circled in red in Figure 4. It is RECOMMENDED (type C recommendation with an implementation time of one month or before the heater unit is used) that that the missing clamp is replaced with an Eberspächer approved exhaust hose clamp. The corroded hose clip shown in Figure 4 should also be replaced.

2.2.7. One Jotron 121.5 MHz EPIRB was stowed on the vessel. The batteries of this unit expired in 2006. It is RECOMMENDED (type C recommendation, to be implemented before an offshore voyage) that the unit is serviced or replaced (see paragraph 6.7.1).

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. The only obstructions were those presented by the four support posts of the cradle. Access to the bottom of the keel was limited to the part not resting on the base of the cradle.

3.2. I was informed by Name of Owner that prior to the survey taking place, the vessel had been ashore for approximately 24 hours.

3.3. At the time of survey the ambient temperature was approximately 8°C, with 100% cloud cover and a light wind.

3.4. 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. Consequently, any part of the vessel, her equipment or fittings, which were unexposed or inaccessible, cannot be confirmed to be free from defect.

3.5. 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.

3.6. Window hatches and external doors have not been tested for water tightness. Heating systems were not checked.

3.7. 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.

3.8. 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.

3.9. 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.

3.10. 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	WHITE EAGLE
Hull ID Number	E 1234
Hull Identification Number	LR-BRS-123456
Mould Number	123
SSR number	12345
Built by	Marine Projects (Plymouth) Ltd
Model	Sigma 362
Type	Bermudian sloop
Build date	1988
Engine manufacturer & Model	Beta Marine B-28HE
Engine type	4 stroke, 3 cylinder diesel, naturally aspirated
Engine power	28 BHP @ 3600 rpm

Table 1: Vessel Details

4.1.1. WHITE EAGLE was seen to be a Sigma 362 - a masthead rigged sailing yacht with a Cast iron & lead fin keel. She was built by Marine Projects (Plymouth) Ltd in 1988.

4.1.2. The hull of WHITE EAGLE was moulded in one piece with hand laid GRP, made up of polyester resin, mixed-strand fibreglass mat and woven rovings, and finished with a white pigmented gel-coat. The fin & bulb keel was made from cast iron, with a cast lead base and was fastened to the hull with stainless steel studs and nuts. The hull was seen to be stiffened internally by foam-filled glass fibre longitudinal stringers and transverse frames. Further reinforcing was provided by bulkheads and the bases of the furniture.

4.1.3. The deck moulding was a balsa and plywood cored GRP composite, finished with white pigmented gel-coat. It incorporated the decks, coachroof and cockpit. The deck was joined to the hull by the in-turned flange joining method.

4.1.4. WHITE EAGLE had a balanced spade rudder constructed from a stainless steel stock encapsulated in a GRP moulding. She had a self-draining cockpit and wheel steering. She had a masthead sloop rig, featuring a deck-stepped mast, a mainsail, roller furling genoa, storm jib and spinnaker.

4.1.5. Accommodation was well laid out with a double berth, storage lockers and sink forward. The saloon had two settee berths and a folding table in the centre. The port berth converts to a double bed using an infill cushion. The galley space was along the port side, aft of the saloon seating. A navigation station lay on the starboard side, just next to the companionway steps, with heads compartment aft of the navigation station. There was a double berth under the cockpit floor and port cockpit seat.

4.1.6. WHITE EAGLE was fitted with a Beta Marine B-28HE, three cylinder diesel engine, with fresh water cooling, driving a three-bladed 16” diameter feathering Flexfold propeller through a reduction gearbox. Engine control was via a single lever, giving forward and reverse gears and throttle control, mounted next to the helm on the starboard side of the helm binnacle. There was one stainless steel fuel tank mounted under the bunk of the aft cabin.

4.2. VESSEL’S NAME

4.2.1. WHITE EAGLE had her name positioned across her stern in blue painted lettering. The lettering was faded but clearly readable.

4.3. DIMENSIONS

Dimension	Metres	Feet / inches
Length Overall	10.97	36 feet and 0 inches
Length on Waterline	8.53	28 feet and 0 inches
Beam	3.50	11 feet and 6 inches
Draft	1.85	6 feet and 1 inch
Displacement	5,806 kg	12,800 lb
Ballast	2,341 kg	5,160 lb

Table 2: Vessel Dimensions (Yachtsnet.co.uk)

4.4. HULL ID NUMBER

4.4.1. The vessel's Hull ID Number was stamped onto an aluminium plate, mounted above the chart table. The number was E 1234, as shown in Figure 1.

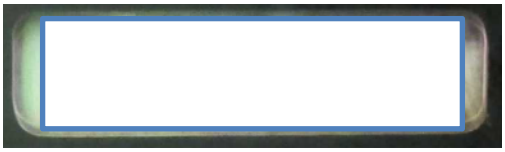

Figure 1: Yard Number

4.5. HULL IDENTIFICATION NUMBER

4.5.1. The vessel's Hull Identification Number was moulded into the port, upper corner of the vessel's transom. The number was LR-BRS-123456, as shown in Figure 2.

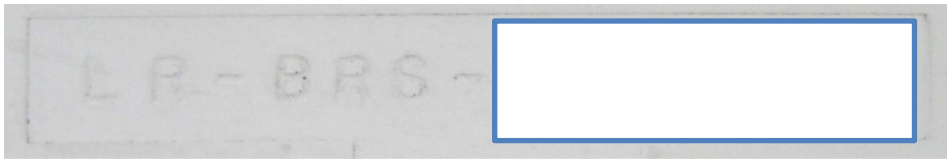

Figure 2: Hull Identification Number

4.6. MOULD NUMBER

4.6.1. The vessel's Mould Number was 123. This number was moulded into the port, upper corner of the vessel's transom, just below the Hull Identification Number detailed in section 4.5. This number is shown in Figure 3.

Figure 3: Mould Number

4.7. PART III REGISTRATION (SMALL SHIPS REGISTER)

4.7.1. The SSR certificate, dated 11th November 2016, stated that the Registered Owner of WHITE EAGLE was Name-of-Owner. Registration number was SSR12345. This certificate expires on 31st December 2022. The certificate detailed the vessel's Hull ID Number as E1234.

5. THE SURVEY

5.1. HULL EXTERIOR

5.1.1. Material & Details of Construction

5.1.1.1. The hull of WHITE EAGLE was moulded in one piece with hand laid GRP, made up of polyester resin, mixed-strand fibreglass mat and woven rovings, and finished with a white pigmented gel-coat. The fin & bulb keel was made from cast iron, with a cast lead base and was fastened to the hull with stainless steel studs and nuts.

5.1.2. General Appearance

5.1.2.1. The hull 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.

5.1.3. Topsides

5.1.3.1. The topsides were finished with unpainted, white-pigmented gel-coat. A trim line and boot topping line ran the length of the hull, positioned just above the top edge of the antifouling. The colour of these red trim lines was given by a hard type of ablative antifouling. A narrow cove line was positioned approximately 1' below the deck edge. The cove line on each side was in good cosmetic condition.

5.1.3.2. The topsides were inspected visually. The gel-coat was very good condition, with no signs of major trauma or stress cracking. The gel-coat retained a very good level of gloss but was in need of a clean and further application of polish. There was no evidence of gel-coat cracking on the topsides due to impact with pontoons or from loading by mooring fenders. There was no evidence of scratching from mooring fenders.

5.1.3.3. The extruded & anodised aluminium toe rails were found to be in good working order, free of significant damage or deformation and well secured to the deck moulding.

5.1.4. Hull Below the Waterline

5.1.4.1. The black ablative type antifouling paint below the waterline was worn and in need of a new application. There was almost no build-up of previous coats, giving a smooth hull surface.

5.1.4.2. Inspection of the hull surface showed that the hull below the waterline had been treated with a number of coats of epoxy resin. I was informed by the Owner that the hull below the waterline has been grit blasted, followed by an application of six coats of epoxy gel coat, followed by two coats of hull primer. This coating was found to be well applied and was bonding well to the underlying gel-coat, with no evidence of peeling, cracking or flaking.

5.1.4.3. The entire hull was visually inspected, except where surfaces were hidden behind the four supports of the cradle. There was no evidence of blistering or other damage attributable to water penetration. No evidence of scratching or chipping of the hull was found.

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 between 12 and 15, which indicate a low moisture level. High readings of 22 to 25 were noted within the topside laminate of the port & starboard quarters.

5.1.5.4. Readings taken of the hull below the waterline were between 17 and 22, with some readings of up to 25 found in the lower bilges. These readings indicate that the hull laminate below the waterline has a medium to high moisture content. These high readings can be attributed to the short period since WHITE EAGLE was lifted out of the water. Additionally, the older orthophthalic resins used prior to the mid 1990's tend to retain moisture for a long period.

5.1.5.5. 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 or poorly resinated laminate, the exterior surfaces of the hull were then tested with a small plastic-headed hammer. The test gave sound returns with no indications of softening, poor lay-up or delamination of the GRP.

5.1.7. Keel

5.1.7.1. The fin keel of WHITE EAGLE was constructed from cast iron, with a lower portion made from cast lead. It was fastened to the hull using stainless steel studs with large stainless steel backing plates. See section 5.2.4 for details of the inspection of the keel studs.

5.1.7.2. The keel was inspected, except where the bottom of the keel was hidden by the base of the cradle, and no evidence of hard grounding or impact was found. The surfaces of the keel were found to be smooth and free of corrosion or evidence of pitting. The paint coatings were in serviceable condition. Light impacts from a hammer indicated the presence of some filler compound.

5.1.7.3. The join between the cast iron and the lead part of the keel was found to be reasonably fair, but with some light weeping of rust. There was no evidence of movement in this join.

5.1.7.4. The hull to keel join was carefully inspected. The stopping compound was found to be intact, with no evidence of significant corrosion at the join. There were no cracks or gaps in the join that could be attributed to flexing in this region. No evidence of lateral movement was found in the keel. The black sikaflex compound, used to fair the join, should be removed and the area faired with a marine grade filler compound.

5.1.8. Rudder & Steering

5.1.8.1. WHITE EAGLE had a semi-balanced spade rudder constructed from a stainless steel stock encapsulated in a GRP moulding. It was inspected visually and by hammer testing and found to be in serviceable condition and free from damage or cracks. There was no evidence of blistering or other damage attributable to water penetration. Moisture levels in the blade were found to be high. This is typical of GRP rudder blades with this type of construction method.

5.1.8.2. The 2¼" diameter rudder stock was inspected where access allowed. The visible portions of the stock were found to be free of pitting corrosion or evidence of cracking. It should be noted that the portions of the rudder stock within the rudder bearings and within the blade could not be accessed for inspection; therefore the condition of the stock cannot be guaranteed.

5.1.8.3. The upper plastic bearing was housed in an aluminium fabrication that was secured to the deck moulding. This unit was in serviceable condition and with no evidence of bearing wear.

5.1.8.4. The lower bearing was housed within a GRP tube that was secured to the hull moulding by GRP tabbing, reinforced with four substantial plywood webs. The GRP tube, webs and join to the hull were inspected via the access hatch at the aft end of the aft cabin. The fabrication was in serviceable condition, with no evidence of damage or delamination. The tabbing was seen to be free of debonding and with no evidence of water ingress. The lower rudder bearing was free of wear. The lower bearing was fed with pressurized grease using a hand operated screw.

5.1.8.5. The eight spoke stainless steel and leather sheathed Whitlock wheel was inspected and found to be adequately secured to the cockpit structure via a cast aluminium binnacle. The wheel operated with full and free movement from lock to lock. The binnacle was very well protected by a white powder coating.

5.1.8.6. The steering gear was driven by a gear and push-rod system. The parts of the mechanism that were located in the steering binnacle were not accessible for inspection.

5.1.8.7. The cast aluminium tiller arm was adequately clamped to the rudder stock by four stainless steel fasteners. The tiller arm and fasteners were inspected via the access hatch at the aft end of the aft cabin and found to be free of corrosion and well secured to the stock. The stainless steel push rod was connected to the end of the tiller arm via a ball joint. This join was found to be free of significant corrosion and adequately lubricated.

5.1.8.8. The upper end of the rudder stock was fitted with a bronze block, clamped to the upper end of the stock with one stainless steel fastener. This bronze block provided a positive location for an emergency tiller. The solid timber and stainless steel emergency tiller was tested and was found to correctly fit on to the end of the stock. The emergency tiller was stowed inside the saloon, behind the starboard saloon seats.

5.1.9. Skin Fittings and Valves

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

Where accessible, the fixing bolts and nuts were hammer tested

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. The skin fittings were all in serviceable condition. All fittings on or below the waterline were bronze or dezincification resistant brass (apart from the plastic speed impeller & depth transducer) and showed no signs of dezincification.

5.1.9.4. All skin fittings located below the waterline were fitted with an isolation valve. There was good access inside the vessel to all valves.

5.1.9.5. The valves of the heads sink outlet, heads shower pump-out, forepeak sink outlet, galley sink outlet and electric bilge pump outlet (port side of the saloon) were constructed from CW617N, also known as Tonval. This is a low quality brass with a high zinc content and is susceptible to dezincification in the marine environment. These were currently in serviceable condition, but in consideration of the age of the vessel, it is suggested that in the next few seasons, all Tonval quarter-turn valves and barbed hose tails are replaced with items constructed from dezincification resistant brass.

5.1.9.6. All hoses were constructed from reinforced material. Many hoses were found to be old and stiff, but were currently in good working order. For all skin fittings positioned below the waterline, the attached hoses were secured at both ends with two stainless steel hoses clips. All hose clips were in good working order, free of significant corrosion and constructed from stainless steel.

5.1.12.Anodes

5.1.12.1. The propeller shaft and propeller were protected by one shaft anode, mounted to the

propeller shaft, just forward of the propeller. This anode was approximately 10% wasted.

5.1.12.2. One pear anode was through-bolted to the hull, positioned 6" to stbd of the propeller shaft. The anode was secured to the hull with two steel studs, each secured with two nuts. The studs and nuts had some minor surface corrosion but were in serviceable condition. The anode was approximately 30 to 40% wasted. Zinc anodes should be replaced when they are approximately 50 to 60% wasted.

5.1.12.3. The electrical connection between the pear anode and the bronze P-bracket and the propeller shaft was tested with a multimeter and the resistance found to be 0.0Ω and 2.2Ω respectively. The recommended maximum resistance is 1.0Ω. It is suggested that the wiring between the anode and the engine is inspected to determine if the wire or end terminals are corroded. The wire & terminals should be replaced if found to be deteriorated.

5.2. HULL INTERNAL STRUCTURE

5.2.1. General Appearance

5.2.1.1. Within the saloon and forepeak accommodation, 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 area, lifting the bunk covers in the forepeak & aft cabin and also via the space located aft of the aft cabin.

5.2.2. Hull Internal Structure

5.2.2.1. The hull was seen to be stiffened internally by foam-filled glass fibre longitudinal stringers and transverse frames. Further reinforcing was provided by bulkheads and the bases of the furniture. In areas that could be accessed for inspection, there was no evidence of separation of the stringers or frames from the hull. The internal white hull paint application was generally in good condition, with a new application of paint in the areas around the keel studs.

5.2.2.2. A stainless steel cylindrical column supported the coachroof and transferred the mast compression load to the hull and keel of WHITE EAGLE. The base of the compression post could not be accessed for inspection.

5.2.2.3. The forepeak bunk and support structure of the saloon sole boards & engine beds were formed from GRP. These were secured to the hull structure with layers of GRP cloth. Where accessible for inspection, the GRP was found to be well secured and free of damage or delamination. The engine support structure was sturdily constructed and free of signs of cracks or deformation.

5.2.3. Bulkheads

5.2.3.1. The bulkheads were secured to the hull & deck by GRP cloth tabbing. Where accessible, the integrity of the tabbing was inspected and found to be free of de-bonding, cracks or movement. Additional strength was provided by mild steel bolts & backing washers, secured through the tabbing and plywood. The majority of these fasteners were corroded. The fasteners located inside the forward anchor locker had completely corroded, with all screw heads missing. One of the securing bolts located beneath the heads sink was completely corroded. It is RECOMMENDED (type C recommendation with an implementation time of two years) that where access permits, all heavily corroded fasteners should be replaced with stainless steel items, with the fastener heads supported by penny washers.

5.2.4. Keel Studs

5.2.4.1. None of the keel studs were removed for inspection. Consequently, the parts of the fasteners that were unexposed or inaccessible cannot be confirmed to be free from defect.

5.2.4.2. The keel was fastened to the hull with M24 stainless steel studs, each secured with a single A2-70 grade stainless steel nut. Each fastener was supported by a 10 x 75 x 75 mm stainless steel backing plate. Where accessible, the exposed studs and nuts were

hammer tested and found to be securely attached, with no evidence of corrosion.

5.2.4.3. There was no evidence of seepage or water ingress around any of the keel studs.

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 in-turned flange joining method. The external joint was concealed behind aluminium toe rails running the full length of the vessel, but not across the stern. These toe rails were bolted through the hull to deck join at 3¾" intervals, with additional strength & water proofing provided by a white sealing compound. The part of the join running across the stern was concealed beneath an aluminium trim cover. The aluminium toe rails were in good condition and free of significant damage.

5.3.1.2. Inspection of the interior faces of the join was limited to the aft cockpit locker, the anchor chain locker and the space behind the port aft cabin. 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 and plywood cored GRP composite, finished with white pigmented gel-coat. It incorporated the decks, coachroof and cockpit. Structurally the deck seemed to be in good condition, with no signs of damage or delamination between core and skin.

5.3.2.2. The gel-coat was very good condition, with only minor scuff and scratch marks, although there were a number of chips to the gel-coat in the cockpit area. The gel-coat generally retained a good level of gloss and with no evidence of UV degradation.

5.3.2.3. Small stress cracks were noted in the gel-coat, positioned on the two aft corners of the cut-out of the foredeck anchor locker.

5.3.2.4. The integrity of the deck structure was checked by applying the Surveyor's weight to the deck surface. No excessive deformation was noted. Particular attention was paid to the condition of the coachroof around the mast foot. No cracks or deformation were noted in the gel-coat or underlying structure.

5.3.2.5. The cockpit floor, seats and coaming were all in good structural condition. There were a number of chips to the gel-coat surfaces at various locations.

5.3.2.6. The helmsman's seat was constructed from a separate GRP moulding, finished in white gel-coat. This seat also functioned as a locker lid for the two LPG gas cylinder storage lockers. The moulding was in good order, with brass hinges and chrome-plated brass securing latches in good condition.

5.3.2.7. The cockpit seats were covered with a synthetic teak material. This covering was found to be well applied and free of damage, peeling or lifting. The cockpit sole was covered in teak strip and black caulking. The wood was found to be very worn and thin, but functioned adequately as a slip-resistant surface.

5.3.2.8. In the cockpit area there were two storage lockers specifically equipped as gas cylinder storage lockers. These lockers were located at each of the aft corners of the cockpit. See section 5.6.4 for details of the inspection of the gas locker.

5.3.2.9. There was one large storage locker located beneath the starboard cockpit seat. This locker gave access to a 4 kg fire extinguisher, the Avon Redcrest inflatable dinghy, the 10 kg Bruce kedge anchor and various warps and buckets. The locker lid was secured by two brass hinges and two lockable chrome-plated brass latches. The lid, hinges and latches were in good working order.

5.3.2.10. A manual diaphragm bilge pump was located in the side of the starboard cockpit coaming. See section 6.1 for a description of the bilge pump.

5.3.2.11. Access to the main cabin was from the cockpit hatch, located on the centreline of the cockpit. The tinted Acrylic sliding hatch and two-piece locking washboard were in good working order. The washboards were very well varnished. One stainless steel louver

vent was installed in the lower board.

5.3.2.12. Padlocks were used to prevent access to the cabin, the cockpit locker and the gas cylinder storage lockers.

5.3.3. Chain Locker & Bulkhead

5.3.3.1. At the time of survey, the main anchor and attached chain was not stowed on the vessel. The cover of this locker was constructed from a GRP moulding, finished with a white gel-coat. The moulding was very good condition, with no evidence of cracking or other damage.

5.3.3.2. The hatch cover was secured to the deck by two stainless steel hinges and a single chrome-plated brass latch. The hinges and latch were in serviceable condition, adequately secured, but with some deformation of the thin plate of the hinges.

5.3.3.3. The internal surfaces of the anchor locker were formed by the sides of the hull moulding and also by a plywood bulkhead. This bulkhead was found to be free of damage or rot and adequately bonded to the hull and deck by GRP tabbing. See paragraph 5.2.3.1 for details of the fasteners that passed through the GRP tabbing of the anchor locker bulkhead.

5.3.3.4. The locker had two drain holes located in the sides of the hull moulding. The drain holes were clear, but allowed a small amount of water to remain inside the locker. It is suggested that a section of plastic matting, such as that found in changing rooms of public swimming baths, is installed in the base of the locker to prevent the anchor chain from sitting in water.

5.3.4. Deck Covering

5.3.4.1. The slip-resistant surfaces of the decks and coachroof were provided by a rough texture moulded into the gel-coat. This was found to be in good cosmetic condition, with very little wear and with only minor scratches. The surfaces were finished with a light grey paint.

5.3.4.2. Additional slip-resistant surfaces on the port & starboard side decks and on the edge of the transom were provided by a bonded ‘sandpaper’ type material. These were found to be well adhered to the deck moulding.

5.3.5. Hatches, Windows & Ventilation

5.3.5.1. One forward hinging Lewmar hatch (600 x 600 mm opening) was installed in the roof of the forepeak. This size meets the recommendation for the minimum dimension to allow escape in an emergency, which is 380mm [BS EN ISO 9094-1:2003, Small Craft - Fire Protection]. It was found to be securely attached and showed no signs of water ingress. The aluminium frame was in good working order. The acrylic window was heavily crazed, but in acceptable condition.

5.3.5.2. One forward hinging Lewmar hatch was installed in the coachroof of the saloon, positioned aft of the mast. It was found to be securely attached and showed no signs of water ingress. The aluminium frame was in very good condition, but the acrylic window was crazed.

5.3.5.3. There were four fixed, acrylic windows bonded into the sides of the coachroof. The acrylic material had light scratching and crazing. They showed some evidence of minor water ingress around the frame seals.

5.3.5.4. Two small, inward opening, aluminium & acrylic Lewmar windows were set into the sides of the coachroof: One in the heads compartment and one in the aft cabin. A further inward opening window was set into the side of the port cockpit seat, looking out to the cockpit from the aft cabin. These were in good condition, free of crazing and with all seals in good working order.

5.3.5.5. There were two stainless steel ECS vents located on the vessel: one in the heads compartment and one in the aft cabin. One dorado vent was installed just forwards of the mast, in the saloon. All were in good working order, adequately secured and free of damage.

5.3.5.6. There was one stainless steel louver vent installed in the lower washboard of the main hatch.

5.3.5.7. Note that in the event of a galley fire there is no suitable escape route out of the aft cabin. Current regulations require that new craft with a similar layout must have a suitably sized escape window installed in the aft cabin.

5.3.6. Deck Fittings and Equipment

5.3.6.1. There were four large aluminium mooring cleats: Two on the foredeck and one at the aft end of each of the cockpit coamings. All were inspected and found to be adequately secured to the deck and were free of damage or distortion, with adequately sized backing pads.

5.3.6.2. There were six aluminium fairleads fitted to the toe rails: Two at the bow, two at the mid-ships and one at each of the aft corners. All were inspected and found to be free of damage and adequately secured to the toe rails.

5.3.6.3. Two 1” diameter tubular stainless steel grab rails were located on top of the saloon coachroof. They were in good working order and securely mounted to the coachroof.

5.3.6.4. Two 1” diameter tubular stainless steel grab handles were mounted on the outside of the coachroof, on either side of the companionway hatch. They were tested with the surveyor's weight and were found secure and in generally good order.

5.3.6.5. A tubular welded stainless steel grab handle was securely fastened to the helm binnacle. This was in good working order and free of damage or distortion.

5.3.6.6. One tubular stainless steel grab rail was fitted to the transom, to assist entry onto the boat from the stern. It was in good condition and securely mounted.

5.3.6.7. The vessel was fitted with a pulpit, side stanchions and pushpit. The four post pulpit was constructed from 1” outside diameter tubular stainless steel. It was mounted to the toe rails by a cast aluminium base at each post. The welded fabrication was adequately secured and free of distortion.

5.3.6.8. The 25” high side stanchions were constructed from solid tapered aluminium. They were connected to the toe rails via cast aluminium bases, each secured to the toe rails with two stainless steel bolts. They were fitted with twin stainless steel, 4 mm diameter, 1 x 19 construction safety wires. The stanchions, bases, fasteners and safety wires were found secure and in good order.

5.3.6.9. The six post pushpit was constructed in two halves from 1” diameter tubular stainless steel and was found secure and in good order. The posts of the pushpit were secured to the deck moulding with a single fastener at each post and to the toe rails via cast aluminium bases. The stainless steel fabrication, bases and fasteners were found secure and in good order.

5.3.6.10. An entry point was provided through the transom. This was closed off by two 5 mm diameter, 5 x 17 construction, stainless steel safety wires, with a pelican hook at one end of each wire. The wires and hooks were in good working order, well manufactured, but the wires were slightly slack.

5.3.6.11. A three step, hinging, welded stainless steel boarding ladder was secured to the hull moulding on the stern of the vessel. 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.

5.4. Rigging and Sails

5.4.1. Mast & Boom

5.4.1.1. The Seldén 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 very 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 was in good condition, with no significant wear of the anodised coating. The gooseneck was in good working order and free of significant wear. The screws that

secure the gooseneck to the mast were adequately secured and free of damage. The boom vang was good working order and free of damage.

5.4.1.4. A grey anodised aluminium spinnaker pole was found on the starboard side of the fore-deck. It was in good condition and free of damage. The end connectors were found to be in good order and functioned correctly.

5.4.1.5. It is advisable to take the mast down for a full inspection every few years, as part of the routine maintenance programme. In the short term, closer examination of the mast, spreaders and masthead gear would be possible once the boat is afloat.

5.4.2. Shroud Chain Plates

5.4.2.1. The shroud chain plates were of the straight plate variety that passed through a slot in the deck moulding.

5.4.2.2. The forward lower shroud chain plates were constructed from 10 mm x 1 1/2" stainless steel plate and each was bolted through the plywood of the main bulkhead by three stainless steel bolts. The internal fasteners of the port chain plate could not be accessed as it was concealed behind the fixed linings of the saloon and forepeak. The three bolts of the starboard forward lower shroud chain plate were found to be secure but with significant surface corrosion. It is RECOMMENDED (type C recommendation with an implementation time of one year) that the interior panelling that conceals the chain plate of the port forward lower shroud chain plate is removed. Access to the chain plate may be achievable by the temporary removal of the music loudspeaker that is installed in the panelling adjacent to the chain plate. The stainless steel fasteners and fittings should be inspected for evidence of significant corrosion.

5.4.2.3. On each side deck, the aft lower shroud, cap shroud and intermediate shroud shared the same chain plate. These were constructed from 1/2" x 4 1/2" stainless steel plate. The lower end of each plate was welded to a 3/4" diameter stainless steel rod. The lower end of each rod was welded to another stainless steel plate, which was bonded to the hull stiffening structure by layers of GRP tabbing. Where accessible for inspection, the plates, rod and welds were found to be free of corrosion. There was no evidence of any cracking or debonding of the GRP tabbing.

5.4.3. Forestay & Backstay Chain Plates

5.4.3.1. The forestay chain plate was formed from stainless steel plate, bolted through the stem of the hull moulding by two stainless steel fasteners and through the deck by six small stainless steel fasteners. The forestay chain plate & fasteners were examined from deck level and from inside the anchor chain locker and found to be free of damage or corrosion, adequately secured to the hull & deck and with no evidence of undue strain on the mountings.

5.4.3.2. The backstay chain plate was constructed from 10 mm thick stainless steel plate. This plate was secured to the hull moulding by six stainless steel bolts. The internal parts of the fasteners were inspected from the space located behind the aft cabin. Four of the six fasteners were supported by a large stainless steel backing plate. There was no evidence of corrosion of the internal parts of the fasteners or of the stainless steel backing plate.

5.4.4. Jib Furling Mechanism

5.4.4.1. The Furlex 200S 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 aluminium alloy luff extrusion appeared to be straight and with no kinks.

5.4.5. Standing Rigging

5.4.5.1. I was informed by the Owner that the rigging wires, terminals and bottle screws were new in early 2010. The masthead standing rigging was formed from 1x19 stainless steel wire, with swaged terminals secured to the chain plates by toggles and bottle screws.

5.4.5.2. The standing rigging comprised 8 mm diameter double lower shrouds, 7 mm diameter intermediate shrouds and 8 mm diameter cap shrouds passing over double spreaders.

There was a 8 mm diameter single backstay terminating on the transom. The forestay (diameter of this wire could not be measured) was formed by the headsail reefing foil. The backstay was tensioned by a manually operated backstay adjuster. This was tested and found to function correctly.

5.4.5.3. 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.

5.4.5.4. At deck level the shrouds were fitted with white PVC sheathing to protect the genoa from chafing against the wires. The wire beneath the sheathing was wet and very dirty. Stainless steel is susceptible to pitting corrosion in this partially oxygenated environment, where the protective outer layer of the stainless steel can break down, leading to localised corrosion. It is RECOMMENDED (type C recommendation with an implementation time of one month) that the PVC sheathing is temporarily removed. The wires should be thoroughly cleaned before re-fitting the sheathing.

5.4.5.5. 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.

5.4.6. Running Rigging, Travellers, Winches & Jammers

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

5.4.6.2. Headsail sheet leads were mounted on travelling cars on the side decks. The aluminium tracks were securely mounted. The plastic rollers were free of wear.

5.4.6.3. The IYE mainsail sheet track was located at the forward end of the cockpit, on top of the bridgedeck. The aluminium IYE track and travelling car were in good condition but with some friction in the plastic rollers of the car.

5.4.6.4. Two primary winches (Lewmar 46, two-speed, self-tailing) were located on the cockpit coaming. They were found to be adequately secured and in good condition. The chrome-plating of the drums was worn.

5.4.6.5. Two spinnaker sheet winches (Lewmar 40, two-speed, non self-tailing) were located on the cockpit coaming, aft of the primary winches. They were found to be adequately secured and in good working order. The chrome-plating of the drums was worn.

5.4.6.6. Two halyard winches (Lewmar 30, two-speed, non self-tailing) were mounted on the coachroof, on either side of the cockpit hatch. They were found to be adequately secured and in serviceable condition.

5.4.6.7. One winch (Lewmar 7, single-speed, non self-tailing) was mounted on the aft face of the mast, between the boom and foot. It was found to be adequately secured and in good working order.

5.4.6.8. A total of seven Spinlock jamming cleats were mounted on the coachroof. They were found to be adequately secured and in good working order.

5.4.7. Inflatable Dinghy

5.4.7.1. The Avon Redcrest inflatable dinghy was stowed in its canvas canvas bag in the starboard cockpit locker. It was not removed from its bag for inspection.

5.4.8. Sails

5.4.8.1. At the time of survey, two sails were stowed on board. One sail was a white Dacron storm jib, with bronze hanks. The second sail was a spinnaker, stowed inside its deployment bag. These sails were not opened up for inspection.

5.4.8.2. At the time of survey, the mainsail and genoa were being stored at the Owner's home. I was informed by the Owner that the vessel's mainsail was new in 2011. This was a Dacron North sail, with three reefing points. The white Dacron North genoa was new in 2013. This sail was not fitted with UV cloth, but was protected on the furling forestay by a genoa sock.

5.5. PROPULSION

5.5.1. Engine & Transmission

5.5.1.1. WHITE EAGLE was fitted with a Beta Marine B-28HE, three cylinder diesel engine, with fresh water cooling, driving through a reduction gearbox. Engine control was via a single lever, giving forward and reverse gears and throttle control, mounted next to the helm on the starboard side of the helm binnacle.

5.5.1.2. The serial number of the engine was 1PA123, Woc Number K12345.

5.5.1.3. The engine hours were not noted from the control panel but I was informed that the engine had run for approximately 123 hours.

5.5.1.4. There was no evidence of engine overheating. The paint coating was in good condition, with some very minor corrosion.

5.5.1.5. The exhaust elbow was inspected and found to be in good working order, with no evidence of significant corrosion or leaking.

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

5.5.1.7. The Kanzaki reduction drive gearbox was a model TTMC35A2-A, serial number 00123. The gearbox oil was inspected and found to be clean, free of moisture and at the correct level.

5.5.1.8. The engine could not be started with the vessel ashore, so it was not possible to fully evaluate its condition.

5.5.1.9. The flexible rubber engine mounts were found to be in good order, with the rubber material free of deterioration and well bonded. The four mounts were fastened to the hull structure via two steel spacer beams. The steel was well painted and free of corrosion.

5.5.1.10. No leaks from the fuel system, cooling system or lubrication system were evident.

5.5.1.11. Access to the engine's coolant impeller, alternator, raw water strainer and oil dipstick were good.

5.5.1.12. Engine exhaust and cooling water were discharged through a stainless steel muffler box and an armoured flexible hose, to a hull fitting at the stern. Where accessible for inspection, the hose was found to be free of cracking or other deterioration. A water leak was noted on the outlet of the stainless steel muffler box. This leakage is likely to be due a leak between the clamped exhaust hose and the outlet pipe of the muffler, but may also be due to a crack in the weld that secured the outlet pipe to the main body of the muffler. It is RECOMMENDED (type A2 recommendation) that the exhaust hose is re-secured to the outlet pipe of the muffler. If the leak continues, the hose should be removed and the weld of the outlet pipe inspected for evidence of cracking.

5.5.1.13. The engine switch panel was mounted on the starboard side of the cockpit, positioned next to the helm wheel. The panel included the rev counter, engine hour meter, start button, engine stop button and lamps for alternator output, oil pressure, engine coolant temperature and pre-start glow plug operation.

5.5.2. Fuel System

5.5.2.1. There was one stainless steel fuel tank mounted under the bunk of the aft cabin. The visible parts of the fuel tank were clean and free of damage or corrosion.

5.5.2.2. Where accessible for inspection, all fuel hoses were found to be in good condition and free of degradation. All were manufactured from suitable fuel grade hose and were adequately secured with one or two stainless steel hoses clips at each end. These stainless steel hose clips were in good working order and free of corrosion.

5.5.2.3. The fuel filler cap was located on the starboard side deck, next to the cockpit. The cap was suitably labelled. The rubber seal attached to the filler cap was in good condition and free of degradation. The short length of chain that secures the filler cap to the main body of the filler pipe was in good order.

5.5.2.4. The paper cartridge & glass-bowl primary fuel filter was in good condition, with all connections free of corrosion. This filter was installed just aft of the engine. It is not

good practise to mount glass bowl filters in the engine space as an engine fire would break the glass bowl. Consideration should be given to the re-positioning of this filter to a location such as the starboard cockpit locker.

5.5.2.5. The fuel shut-off valve was located on the forward end of the fuel tank and was accessed via the lifting covers of the aft cabin bunk. The quarter-turn valve functioned correctly.

5.5.3. Stern Gear

5.5.3.1. The exposed section of the 1" diameter stainless steel propeller shaft was in good condition and as far as could be ascertained, the alignment appeared to be correct. The maximum unsupported length of the shaft was $1^{1}/_{8}$", which was considered to be more than adequate for this diameter of shaft.

5.5.3.2. It was found that the propeller shaft was made from a grade of stainless steel that was magnetic and was therefore possibly made from A2 grade stainless steel, which is more susceptible than the A4 grade to corrosion in the marine environment. It is also possible that the shaft is constructed from Aquamet, which is a high strength and corrosion resistant grade of stainless steel. Martensitic or ferritic stainless steels are also magnetic, but these are rarely found in marine applications. As the grade of stainless steel used in the shaft could not be determined and the fact that the portion of the shaft concealed inside the propeller and cutlass bearing could not be accessed for inspection, the shaft should be carefully inspected for signs of pitting or excessive wear when the cutlass bearing is next replaced.

5.5.3.3. The three-bladed 16" diameter feathering Flexfold propeller was in very good condition, free of damage and securely attached to the propeller shaft. There was no play in the pivot bearings between the bronze boss and the stainless steel blades.

5.5.3.4. The bronze P-bracket was inspected and found to be free of corrosion and adequately secured to the hull. There was minimum wear between the propeller shaft and cutlass bearing in all directions.

5.5.3.5. The inboard shaft seal was of the ceramic plate & rubber type. It was in good working order, with no evidence of perishing or cracking of the plasticised rubber hose. The seal was secured by a total of two stainless steel hose clips at each end. These were in good condition and free of significant corrosion. The seal was water lubricated. I was informed by the current owner that the seal had been replaced during his ownership of the vessel. Ensure that the seal is replaced periodically and within the time limits recommended by the manufacturer.

5.6. Systems and Services

5.6.1. Anchor and Chain

5.6.1.1. At the time of survey, the main anchor and attached chain were not stowed on the vessel. I was informed that the galvanised steel anchor was a 35 lb CQR, connected to 50 metres of chain.

5.6.1.2. A spare anchor and length of chain was stowed in the port cockpit locker. This 22 lb Bruce anchor was in good condition and free of damage or deformation. It was attached to a length of 8 mm diameter chain and a length warp.

5.6.2. Fresh Water System

5.6.2.1. There were two polycarbonate fresh water tanks. They were located under the port & starboard saloon seats. These were found to be adequately secured to the adjacent structure and where access allowed, were found to be free of damage.

5.6.2.2. The suitably labelled filler cap for the fresh water tank was located on the port side deck. Water from the tanks was fed into a pressurised water system. This water system supplied hot & cold water to a tap in the galley, to a tap / shower nozzle in the heads compartment and to a tap at the vanity unit of the forepeak cabin. A calorifier located inside the space that was aft of the aft cabin provided hot water to the taps. The calorifier was heated by either hot water from the engine cooling system or by 240 volts a.c. electric heating.

5.6.2.3. The pump and taps in the heads, forepeak and galley were tested and found to function correctly. The water that came out of the taps was found to be clear. The calorifier was not tested.

5.6.3. Heads

5.6.3.1. The Jabsco manually operated sea toilet was clean and the bowl and pump were adequately attached to the GRP moulding of the heads compartment. The installation could not be fully tested while the vessel was ashore but when the water pump-out mechanism was tested, the pump functioned normally and no leaks were found.

5.6.3.2. The shower tray, sink unit and lower sides of the heads compartment were formed by a GRP moulding which was finished in a white gel-coat. This was in very good cosmetic condition and free of damage. The cupboard doors and cupboard frames were in good cosmetic condition and free of damage.

5.6.3.3. There was a toggle switch next to the sink which operated an electric water pump. This pumped the water out of the shower tray and out of the vessel via a skin fitting located just above the waterline on the starboard topside. The pump functioned correctly.

5.6.3.4. 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.

5.6.3.5. The teak lattice sole board in the heads was in good condition and free of significant wear.

5.6.4. LPG Installation

5.6.4.1. WHITE EAGLE had a Gas Safety certificate with serial number 1234. This inspection was performed on 11th June 2017. The certificate expires on 11th June 2018.

5.6.4.2. In the cockpit area there were two storage lockers specifically equipped as gas cylinder storage lockers. These lockers were located at each of the aft corners of the cockpit.

5.6.4.3. A spare 4.5 kg butane gas cylinder was stored inside the starboard locker. A 4.5 kg butane cylinder was stored in the port locker, connected to the vessel's LPG system.

5.6.4.4. Each gas cylinder locker was constructed from single GRP moulding, finished with a white gel-coat. The moulded GRP lid that covered both lockers was sturdily constructed and free of damage. The two hinges and two chrome-plated brass locking latches were in good working order.

5.6.4.5. A locker drain hose was installed at the bottom of each gas cylinder locker in order to allow any leaked gas to escape to the outside of the hull. The outlet of the cockpit drains was suitably located above the waterline. The hoses and attachments were inspected from the cockpit locker and from the access panel located at the aft end of the aft cabin. These were found to be in good order, but a small downward bend in the port locker drain hose had formed a water trap which would prevent any leaking gas from escaping from the port locker. It is RECOMMENDED (type C recommendation with an implementation time of two months) that the drain hose is modified so that no water trap can be formed.

5.6.4.6. The lockers were not tested for integrity but was considered to be gas-tight to a level above the pressure regulator.

5.6.4.7. Connected to the butane gas cylinder of the port locker was a manual isolation valve and pressure regulator. The regulator body was free of corrosion and was in 'as new' condition.

5.6.4.8. From the isolation valve & pressure regulator, rubber hose led the gas supply to the copper pipe inside the gas locker. The rubber hose was manufactured in August 2016. Gas hose should be replaced every five years. There was no evidence of cracking or degradation of the hose.

5.6.4.9. From the side of the cylinder storage locker, copper pipe then led the supply through to an isolating valve located beneath the stove. This valve functioned correctly. A length of armoured gas hose conveyed the gas supply to the cooker. This hose was manufactured in January 2017. The copper pipe passing through the aft cabin was not accessible for inspection.

5.6.4.10. The Plastimo Neptune 2500 twin hob, grill and oven was secured by a gimbal mechanism to the galley structure. The gimbal lock functioned correctly. The cooker was very clean. All burners lit easily and burned with a clean blue flame.

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

5.6.4.12. 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.

5.6.5. Galley

5.6.5.1. The L-shaped galley was situated on the port side of the vessel, at the bottom of the companionway steps. There was a 12 volt d.c. top-access, Isotherm fridge unit located on the galley worktop, next to the twin rectangular stainless steel sinks. The sinks were supplied with hot & cold fresh water via a chrome mixer tap.

5.6.5.2. There were a range of cupboards with sliding doors and drawer units. The work surfaces and shelves were all fitted with fiddles to prevent items from sliding off when at sea. All were in good cosmetic condition and free of significant damage. The off-white melamine worktop was in very good condition.

5.6.6. Electrical System

5.6.6.1. WHITE EAGLE had a 12 volt d.c. electrical system, with one 180 Amp hour and two 135 Amp hour batteries. These were stowed at the forward end of the saloon, beneath the port saloon seating. The batteries were suitably secured by a timber cross-bar and tie down strap.

5.6.6.2. Battery charging was from the engine alternator or from shore power through two CTEK M200 automatic battery chargers, mounted beneath the sink of the forepeak cabin. These functioned correctly. A battery voltage meter was located at the chart table. This unit worked correctly.

5.6.6.3. A single rotary breaker switch, located above the chart table, controlled the output from the batteries. Service power was then distributed via a switch panel consisting of sixteen push button trip switches. These functioned well. Each switch was fitted with a function lamp.

5.6.6.4. Shore power was connected to the vessel at a plug mounted at the forward end of the cockpit, starboard side. The plug to bulkhead fixture was free of damage and securely mounted. This plug was connected to a 240 volt a.c. master switch unit, located inside a cupboard, positioned aft of the heads toilet. This unit housed the breakers to isolate the shore power. Shore power was distributed to conventional domestic 13 amp sockets.

5.6.6.5. All internal lights functioned correctly. The wiring that could be seen appeared to be serviceable, was well supported and routed clear of the lower bilges. All electrical connections were well terminated and all high voltage connections were suitably protected.

5.6.7. Navigation Lights

5.6.7.1. A transom mounted stern light was adequately attached to the pushpit. The lens was very slightly crazed.

5.6.7.2. A bicolour light was mounted on the pulpit.

5.6.7.3. A steaming light unit was mounted on the mast.

5.6.7.4. A mast-top tricolour and anchor light were installed.

5.6.7.5. The above lights were tested and found to function correctly.

5.6.8. Navigation Equipment

5.6.8.1. A Plastimo Olympic 135 compass was mounted on the helm binnacle. The lens was free of scratches or discolouration and the damping fluid was clear of bubbles.

5.6.8.2. An Icom M423 VHF/DSC radio was mounted above the chart table. The serial number of the unit was 01234567. This unit powered up, received signals, but was not tested for transmission. I was informed that the aerial was new in 2017.

5.6.8.3. A Raymarine Quantum radar scanner was mounted on the mast. This was connected to a Raymarine ES97 'hybrid touch' multi-function display unit (new in 2017), mounted on the starboard cockpit bulkhead. This display unit powered up and gave a GPS position on the colour display and also gave a radar output.

5.6.8.4. A Raytheon ST60 water depth display unit was mounted on the starboard cockpit bulkhead. This unit powered up, but could not provide a depth reading as the vessel was out of the water.

5.6.8.5. A Raytheon ST60 boat speed display unit was mounted on the starboard cockpit bulkhead. This unit powered up, but the impeller was not tested to determine if the display screen gave a speed reading.

5.6.8.6. A Raytheon ST60 wind speed & direction display unit was mounted on the port cockpit bulkhead. This unit powered up and gave an output of wind speed & direction.

5.6.8.7. A Raytheon ST60 'Multi' display unit was mounted on the port cockpit bulkhead. This unit powered up and gave a reading of wind speed.

5.6.8.8. A Philips Navigator MK9 GPS unit was mounted at the chart table. This unit powered up but did not give a latitude & longitude reading during the ten minutes in which it was powered up.

5.6.8.9. A clock & barometer were mounted on the main bulkhead in the saloon. The clock was not running. The barometer had some water behind the display glass.

5.6.8.10. A Pioneer KEH-P5000 radio and cassette player was installed near to the chart table. The radio functioned correctly.

5.6.9. Space Heating System

5.6.9.1. WHITE EAGLE was fitted with an Eberspächer diesel powered heating system. The unit was installed in the space located at the aft end of the aft cabin. The heater was not powered up during the survey.

5.6.9.2. The heater body appeared to be correctly installed. The exhaust ducting was suitably insulated. It was found that the Eberspächer hose clamp that secured the exhaust duct to the skin fitting on the transom was missing. The location of the missing clamp is circled in red in Figure 4. It is RECOMMENDED (type C recommendation with an implementation time of one month or before the heater unit is used) that that the missing clamp is replaced with an Eberspächer approved exhaust hose clamp. The corroded hose clip shown in Figure 4 should also be replaced.

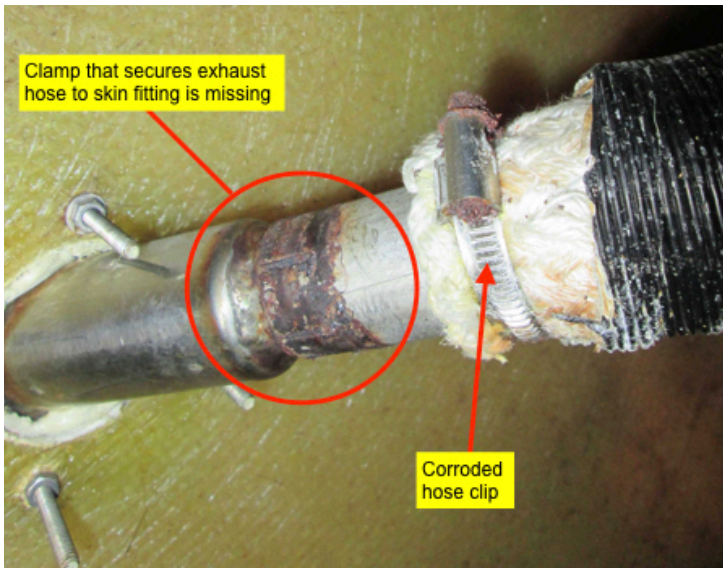

Figure 4: Corroded clip of space heater exhaust hose

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. The bilge pumps were not tested as there was insufficient water in the bilges. Their function and efficiency should be verified.

6.1.2. A manual diaphragm bilge pump was located in the side of the cockpit seating, next to the helm, starboard side. The handle was located nearby, but was not tethered to prevent its loss. It is RECOMMENDED (type A2 recommendation) that the bilge pump handle is tethered in order to prevent its loss in the event of a capsize. The inlet to the bilge pump was located in the bilge sump, positioned above the keel. It was correctly fitted with a strum box. The pump was not tested as this would have required a large volume of water to be placed in the bilge. Due to the age of the pump and uncertainty regarding its reliability, it is suggested that the pump is opened up, cleaned and the internal rubber diaphragm inspected for cracking. The seal should be replaced if it is degraded.

6.1.3. One centrifugal, electric bilge pump was positioned at the lowest part of the bilge, near to the keel studs. It was actuated by a manual switch (labelled ‘Bilge 1’), located at the chart table. When powered up, the pump was found to operate but its efficiency could not be verified.

6.1.4. One diaphragm, electrically powered bilge pump was positioned aft of the gearbox, with the inlet located just below the gearbox. The inlet was correctly fitted with a strum box. It was actuated by a manual switch (labelled ‘Bilge 2’), located at the chart table. When powered up, the pump was found to operate but its efficiency could not be verified.

6.1.5. It is RECOMMENDED (type A2 recommendation) that all three pumps are tested, with the inlet end of the hose or pump temporarily placed in a bucket of water.

6.1.6. 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. There was one fog horn (hand-held compressed gas) found on the vessel. This was tested and found to work. The fog horn was re-charged by compressed air using a hand pump stored alongside the foghorn.

6.2.2. There was no radar reflector found on the vessel. It is suggested that one is installed on the vessel.

6.2.3. There was one motoring cone and one anchor ball found on board.

6.3. FIRE FIGHTING EQUIPMENT

6.3.1. Four fire extinguishers were found on board. These are summarised in Table 3.

Type	Location	Date Stamp	Pressure Gauge
2 kg, ABC dry powder	Aft cabin	Manufactured 2015	Green
2 kg, ABC dry powder	Forepeak cabin	Manufactured 2015	Green
4 kg, ABC dry powder	Cockpit locker	New in 2016	Green
Halogen replacement type activated by a heat sensitive glass vial	Engine compartment, above engine	Not checked	Not checked

Table 3: Fire Extinguishers on board WHITE EAGLE

6.3.2. 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.

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

6.3.4. The engine compartment was fitted with a fire extinguisher injection port.

6.4. First Aid Kit

6.4.1. There was one first aid kit found on the vessel, stowed in the locker of the aft cabin. The contents should be checked and any items that have expired or are missing should be replaced.

6.5. Carbon Monoxide Alarm

6.5.1. There was one Carbon Monoxide alarm installed on WHITE EAGLE. It was tested and found to function. This battery was suitably constructed to the standards of EN 50291-2. These are best suited for boats. Ensure that the alarm is replaced when seven years old.

6.6. Gas (LPG) Alarm

6.6.1. A 'Pilot' gas (LPG) detector and alarm was installed on WHITE EAGLE. The sensor for this device was mounted in the bilge space beneath the galley sole. The alarm was tested by exposing the gas sensor to the gas from an un-lit cigarette lighter. The alarm was found to function normally.

6.7. EPIRB

6.7.1. One Jotron 121.5 MHz EPIRB was stowed on the vessel. The batteries of this unit expired in 2006. It is RECOMMENDED (type C recommendation, to be implemented before an offshore voyage) that the unit is serviced or replaced.

6.7.2. These are the details of the EPIRB are:

Serial Number:	1234
Model	Tron 1E, mkII

6.8. Strong points

6.8.1. Three lifeline strong points were secured to the hull moulding, one on each side of the helm position and one on the starboard side of the companionway hatch. The loops were free from deformation and were well secured to the deck moulding. One was accessible from the cockpit entrance.

6.8.2. The vessel was not fitted with jackstays. Strong consideration should be given to fitting these on both side decks.

6.9. Man Overboard Recovery Equipment

6.9.1. The vessel's inventory included two new horseshoe buoys. These were stored at the Owner's home. The brackets for these buoys were positioned on each side of the pushpit. One flotation lamp was stowed inside the vessel. One of the lifebuoys should be fitted with the flotation lamp and a buoyant lifeline at least 18 metres in length. The buoys should be labelled with the vessel's name.

6.9.2. The vessel's inventory included one new man-overboard recovery sling. This was stored at the Owner's home.

6.9.3. One danbuoy was stored in the saloon. The mounting frame for this danbuoy was located on the pushpit.

6.9.4. One 'Pickup Sail', emergency boarding ladder, manufactured by Kim Safety Products, was stowed in the saloon. This device was nearly new.

6.10. PYROTECHNICS

6.10.1. No emergency flares were found on the vessel. Ensure that a set of flares (size and quantity appropriate to the sea areas and sea states expected to be encountered) is 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
UV	Ultra Violet
VHF	Very High Frequency