Maritime & Coastguard Agency

INSTRUCTIONS FOR THE GUIDANCE OF SURVEYORS ON

CONSTRUCTION, WATERTIGHT AND WEATHERTIGHT INTEGRITY

MSIS27 CHAPTER 2

Rev 11.26



PREFACE

0.1 These Marine Survey Instructions for the Guidance of Surveyors (MSIS) are not legal requirements in themselves. They may refer to statutory requirements elsewhere. They do represent the MCA policy for MCA surveyors to follow.

0.2 If for reasons of practicality, for instance, these cannot be followed then the surveyor must seek at least an equivalent arrangement, based on information from the owner/operator. Whenever possible guidance should be sought from either Principal Consultant Surveyors or Survey Operation Branch, in order to maintain consistency between Marine Offices.

Technical Services Ship Standards
Bay 2/30
Spring Place
105 Commercial Road
Southampton
SO15 1EG

RECENT AMENDMENTS

The amendments made in the most recent publication are shown below, amendments made in previous publications are shown in the document Amendment History.

Version Number	Status / Change	Date	Author Reviewer	Content Approver	Next Review Date/Expiry Date
10.20	• Updated references to MSN 1872 and 1873. Added text to 2.1.1.	27/10/20	D. Fenner	G. Stone	27/10/22
09.21	• Updates to make reference to requirements in MSN1871 Amendment 2	30/08/21	D Fenner	G Stone	30/08/23
01.22	• Update to ensure two sumps required where one sump does not adequately clear water • Clarify that section 2.1.1.5.2 applies only to sections of Chapter 2 of MSN1871 where consideration of requirements being fit for purpose is referred to as applicable to existing vessels	22/01/22	D Fenner	G Stone	30/10/23
08.22	• To update process for addressing water freeing arrangements on vessels of less than 15m LOA • Reference to determining fit for purpose on vessels of less than 15m LOA	12/8/22	D Fenner	G Stone	31/1/2025
11/22	• Vessels which meet the freeboard/positive free height at side, waterfreeing requirements and stability requirements of MSN1871 Amendment 2 shall only have any restrictions applied as set out in MSN1871 Amendment No.2	28/11/22	D Fenner	G Stone	31/1/25
12/22	• Surveyors should refer to sections 1.23 and 1.24 of MSIS27 Chapter 1 when considering modifications to vessels	2/12/12	D Fenner	L Page	31/1/25
03/23	• Clarify workboat coding applies only to RIBs registering for first time	1/3/23	D Fenner	L Page	31/3/25
03.24	• Clarify conditions to be placed on Small FV Certificate if vessel complies using equivalency	8/3/24	D Fenner	L Page	08/3/25
11.26	• All RIBs must maintain vessels to standard they were accepted for Registration, Vessels registering using workboat Coding must also maintain vessels to Workboat Code to retain registration. • Clarified wording as to when RIBs shall be deregistered • Advice on checks to be made for waterfreeing on shelter decks, with special reference to vessels for which there are no mandatory requirements for pumps in shelter decks	14/7/26	D fenner	S Rogers	31/01/28

MSIS27 Chapter 2

CONSTRUCTION, WATERTIGHT AND WEATHERTIGHT INTEGRITY

PREFACE 2

CONSTRUCTION, WATERTIGHT AND WEATHERTIGHT INTEGRITY 5

INTRODUCTION 8

2.1 CONSTRUCTION AND STRUCTURAL STRENGTH 8

2.1.1 GENERAL REQUIREMENTS FOR CONSTRUCTION AND STRUCTURAL STRENGTH 8

2.1.1.4 NEW VESSELS 8

2.1.1.5 EXISTING VESSELS FLAGGING-IN 8

2.1.1.6 FISHING VESSELS OF LESS THAN 15M LOA ON THE REGISTER PRIOR TO THE ENTRY INTO FORCE OF MSN1871 AMENDMENT NO.2 ON 6 SEPTEMBER 2021 10

2.1.1.7 SURVEYS 10

2.2 MATERIAL OF CONSTRUCTION 12

2.2.13.1 FIBRE-REINFORCED PLASTICS 13

2.3 STRUCTURAL ALTERATIONS 14

2.4 SUBMISSION OF PLANS AND PARTICULARS 14

2.5 SURVEYS 17

2.6 STEEL VESSELS 17

2.7 PLATE THICKNESS 18

2.8 WOODEN VESSELS 20

2.9 FIBRE-REINFORCED PLASTIC VESSELS 23

2.10 ALL VESSELS 24

2.11 WATERTIGHT INTEGRITY 25

2.11.2GENERAL REQUIREMENTS FOR WATERTIGHT INTEGRITY 25

2.11.3WATERTIGHT BULKHEADS 26

2.11.3.2 GENERAL REQUIREMENTS - NEW VESSELS 26
2.11.3.3 GENERAL REQUIREMENTS - EXISTING VESSELS 26
2.11.3.4 COLLISION BULKHEADS 27
2.11.4FREEBOARD/WORKING DECK 28
2.11.5DOUBLE BOTTOM 28
2.11.6WATERTIGHT DOORS 28
2.11.7SURVEYS OF SUB-DIVIDED VESSELS 29

2.12 WEATHERTIGHT INTEGRITY 29

2.12.2GENERAL REQUIREMENTS FOR WEATHERTIGHT INTEGRITY 29
2.12.3OPENING AND CLOSING ARRANGEMENTS 29
2.12.4WEATHERTIGHT DOORS 30
2.12.5WINDOWS IN DOORS 30
2.12.6HATCHWAY COVERS 31
2.12.7COAMINGS 32
2.12.8OTHER DECK OPENINGS 33
2.12.9VENTILATORS 33
2.12.10.1 AIR AND SOUNDING PIPES 34
2.12.10.2 AIR PIPES 34
2.12.10.3 SOUNDING PIPES 34
2.12.11 SIDESCUTTLES, WINDOWS AND SKYLIGHTS 35
2.12.12 SIDE OPENINGS 36
2.12.13 INLETS, DISCHARGES AND SCUPPERS, OTHER THAN DECK SCUPPERS 37
2.12.14 HEIGHTS OF COAMINGS, SILLS, ETC 38
2.12.15 FREEING PORTS 38

2.13 SHELTERS OPEN AT BOTH ENDS 41

2.14 HARBOUR DRAINS 42

2.15 SHELTERS SUBSTANTIALLY CLOSED AT THE FORE END 43

2.16 SHELTERS WITH A WEATHERTIGHT BULKHEAD FORWARD 43

2.17 SHELTERS OPEN ONLY AT THE AFTER END 44

2.18 VESSELS HAVING OPENINGS IN THE SIDE AND/OR STERN 45

2.19 FREEING PORT AREA IN OR UNDER THE STERN DOORS OF STERN TRAWLERS 46

2.20 CHECK CALCULATION - BUOYANCY FOR WATER ON DECK 48

2.21 CHECK CALCULATION – WATER ON DECK 48

2.22 CHECK CALCULATION - FREEING OF ENTRAPPED WATER 49

2.23 WATER FREEING FROM SHELTERS 50

2.24 WATER FREEING ARRANGEMENTS – OPEN VESSELS 53

2.25 WATER FREEING ARRANGEMENTS – ADDITIONAL FOR VESSELS OF LESS THAN 15M LOA - EXISITNG VESSELS DECKED VESSELS AND ASSUMES THE DECK IS WATERTIGHT ONLY 53

2.26 PROCESS MAPS FOR DETERMINING FREEBOARD AND WATER FREEING ARRANGEMENTS FOR FISHING VESSELS OF LESS THAN 15M LOA. 55

ANNEX 1 – USEFUL REFERENCES – WATERFREEING ARRANGEMENTS 60

ANNEX 2A – OPEN VESSELS (POSITIVE CLEAR HEIGHT AT SIDE) 63

ANNEX 2B – DECKED VESSELS (FREEBOARD) 64

ANNEX 2C – OPEN VESSELS (WATER FREEING ARRANGEMENTS) 65

ANNEX 2D – DECKED VESSELS (WATER FREEING ARRANGEMENTS) 66

ANNEX 2E – PROCESS MAPS SUPPORTING NOTES 67

DOCUMENT AMENDMENT HISTORY 72

INTRODUCTION

2.1 CONSTRUCTION AND STRUCTURAL STRENGTH

2.1.1 GENERAL REQUIREMENTS FOR CONSTRUCTION AND STRUCTURAL STRENGTH

2.1.1.1 Requirements are contained in MSN 1871 Amendment No.1 Chapter 2 Section 2.1.2, MSN 1872, Chapter 2 Amendment No.1, section 2.1.1; and in MSN 1873 Amendment No.1, Chapter 2, section 2.1.1.

2.1.1.2 The structural strength and construction and the disposition of bulkheads should be adequate for all foreseeable operating conditions in service. The scantlings, arrangements and construction for the hull, bulkheads, superstructures, deckhouses, machinery casings, companionways and other structures should be sufficient to withstand all operational loads arising during the vessel's service, to the satisfaction of the MCA or Fishing Vessel Certifying Authority or Classification Society.

2.1.1.3 Surveyors should refer to Sections 1.23 and 1.24 of MSIS27 Chapter 1 when reviewing modifications to vessels.

2.1.1.4 NEW VESSELS

2.1.1.4.1 The owners should inform the MCA if the vessel is to be operated in areas subject to sea ice conditions. Hull construction and stability requirements will be specially considered for vessels operating in such areas.

2.1.1.4.2 When vessels are built to MCA, Fishing Vessel Certifying Authority or Class requirements, the MCA should be provided with a set of approved main structural plans. On completion, the Fishing Vessel Certifying Authority or Class should submit a 'Partial declaration of survey' (form MSF1326, MSF1333, MSF1370, MSF1371 or MSF1373 as appropriate) to the MCA.

2.1.1.4.3 MGN 322 requires new vessels of 24m and over to be built and maintained in class.

2.1.1.5 EXISTING VESSELS FLAGGING-IN

2.1.1.5.1 ~~The Under 15m Code does not specify any hull structure requirements, but as a minimum~~, The MCA requires vessels to comply with the relevant Seafish standards prior to 21 July 2020 and from that date forward with the Construction and Outfit Standards contained in MGN 628. A Registration Survey prior to 21 July 2020 would be carried out by a Seafish authority surveyor or delegated surveyor or MCA Authorised Surveyor. From 21 July 2020 until 31 December 2020, a Registration Survey can be carried out by an MCA Authorised Surveyor or a

Fishing Vessel Certifying Authority Authorised Surveyor. After 31 December new applications for Registration Surveys can only by carried out by Fishing Vessel Certifying Authority Authorised Surveyors although any existing work being carried out in relation to applications made to MCA Authorised Surveyors prior to 31 December can continue to be undertaken by those surveyors until the vessel is either accepted or rejected by MCA. See Chapter 1 Section 1.8. The resulting reports should be forwarded to the regional Consultant Surveyor, for a decision on whether to accept, accept with conditions, or reject the report and vessel.

2.1.1.5.2 Usually, vessels under MSN1872 are not classed but have been built to the standards of a Certifying Authority. Before such vessels can flag-in, details should be submitted to the MCA indicating that the vessel has been constructed to such a recognised standard. Note that it may be necessary for an inspection to be carried out, prior to flag-in, to confirm that the vessel complies with the relevant construction standards, e.g. by a Fishing Vessel Certifying Authority or other suitably competent surveyor.

2.1.1.5.3 Vessels >24m should generally be built to and maintained 'in class', for consideration of flagging-in. In such cases, surveyors should obtain a copy of the valid certificate of class, and confirmation from the owner that the vessel will remain 'in class'. Such confirmation should be in the form of a statement, setting out the penalty if the vessel is withdrawn from class or becomes unclassed both before registration is completed and afterwards, prepared by the surveyor, and signed by the owner. In addition, the Recognised Organisation surveyor should be requested to complete a 'Record of particulars' (form MSF1301) and 'Partial declaration of survey' (form MSF1333) and return them to the MCA, prior to registration. The forms should be retained on file.

2.1.1.5.4 Confirmation of equivalent standards will be required for any unclassed vessels. This will normally involve the submission of plans and full supporting calculations, but may also involve the use of other organisations, to undertake work on behalf of the MCA. Owners and builders should be made aware that they will be responsible for all costs associated with such verification work.

2.1.15.5 Exceptional cases where classification is not appropriate should be dealt with on a case-by-case basis. To ensure consistency in the application of 'equivalent standards', such decisions should be made by the MCA 'Flag-in panel'.

2.1.1.5.6 Existing vessels that have not been MCA certificated for at least the previous 6 months should be treated, in general, as a vessel flagging-in, with no exemptions. Confirmation of compliance with the applicable standards will be required before these vessels can be re-certificated by the MCA.

2.1.1.6 FISHING VESSELS OF LESS THAN 15M LOA ON THE REGISTER PRIOR TO THE ENTRY INTO FORCE OF MSN1871 AMENDMENT NO.2 ON 6 SEPTEMBER 2021

2.1.1.6.1 Vessels which were built to a Construction Standard should be maintained in such a manner as to be in accordance with the Construction Standard applicable at the time of construction and as set out in the applicable sections of this Chapter. Previous standards include those set out in Chapter 1 Annex 1 Section 4.2.17 and can be found here. If the vessel joined the Register after 16 July 2007 through the Registration Survey process, the vessel must be maintained in accordance with the standard required by the MCA at the time of its Registration Survey to allow its Registration.

2.1.1.6.2 Sections 2.6.3 (Bulkheads), 2.7.4, (Access and Penetrations through Bulkheads), 2.9.4 (Hatches and Coamings), 2.10.3 (Scuttles) 2.14.6 (Ventilators), 2.15.4 (Exhaust systems), 2.16.3 (Air Pipes), 2.17.5 (Sea Inlets and Discharges) and 2.18.4 (Materials for Valves and Associated Piping - Sea Water Systems) of MSN 1871 Amendment No.2 refer to items for existing vessels being considered acceptable if they remain fit for purpose. For the purposes of these Instructions, "fit for purpose" should be interpreted using sections 4.2 of MSIS27 Chapter 1 Annex 1.

2.1.1.7 SURVEYS

2.1.1.7.1 Existing vessels >24m which are classed should be maintained 'in class', to ensure compliance with adequate standards.

2.1.1.7.2 Vessels that are unclassed should be surveyed annually, as detailed in MGN 322 and MGN 439. Existing unclassed vessels should comply with the following survey requirements.

Unclassed Vessel Flag State Survey (4 year cycle) Survey items; entire vessel;	Initial Survey	Annual	Intermediate (Note 1)	Annual	Renewal (Note 2)
Year	0	1	2	3	4
Range dates	0	± 3m	± 3m	± 3m	-3m

Note 1: 2 bottom inspections should be carried out within a 4 year period of validity of the certificate. The Intermediate and Renewal Surveys for unclassed vessels should include a bottom inspection, but the bottom inspection may be deferred for up to 12 months, subject to satisfactory inspection at the intermediate or renewal survey. If the period between bottom inspections has been extended by 12 months, the next bottom inspection should be carried out within 12 months to ensure that the bottom inspection is normally carried out during the renewal or intermediate surveys.

Note 2: Renewal survey can be completed up to 3 months prior to expiry of the certificate.

Classed Vessel Class Survey (5 year cycle) Survey items; Hull, Machinery, Electrical and Control	Initial Survey	Annual	Annual/ Intermediate	Annual/ Intermediate	Annual	Renewal (Note 3)
Year	0	1	2	3	4	5
Range dates	0	± 3m	± 3m	± 3m	± 3m	-3m
Flag State Survey (4 year cycle) Survey items; stability, LSA, FFE, SFP, crew safety and comfort, all remaining items)	Initial Survey	Annual	Intermediate	Annual	Renewal**	
Range dates	0	n/a	± 3m	n/a	-3m	

Note 3: Renewal survey can be completed up to 3 months prior to expiry of the certificate.

2.2 MATERIAL OF CONSTRUCTION

2.2.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.1.1, MSN 1872 Amendment No.1, Chapter 2, section 2.1.2; and in MSN 1873 Amendment No1, Chapter 2, section 2.1.2.

2.2.2 New vessels should be constructed of wood, fibre reinforced plastic (FRP), aluminium alloy or steel or appropriate combinations of such materials. Proposals to use any other construction material should be submitted to Vessel Standards Branch for special consideration and approval.

2.2.3 Existing vessels can be considered to be of acceptable structural strength if it is determined type and characteristics of the material used and the method of construction are acceptable and that it is in a good state of repair.

2.2.4 New vessels with a Hull constructed of Plywood will not be accepted.

2.2.5 Rigid Inflatable boats (RIBs) of less than 8m LOA registering for the first time will only be accepted for Hand Diving activities and only provided they demonstrate they meet the requirements set out in sections 2.2.6 to 2.2.9 below.

2.2.6 The RIB must be in possession of a Workboat Code Certificate. Owners of RIBs must also provide Certification to the Recreational Craft Directive 94/25/EC as amended by 2003/44/EC certification for the RIB which confirms that the hull meets the design and the construction requirements of ISO 6185 Part 3 or demonstrate compliance with the Recreational Craft Regulations 2017 No.737.

2.2.7 Under the terms of Regulation 17; (Equivalent provisions) of The Fishing Vessels (Codes of Practice) Regulations 2017, this construction standard will then be accepted as equivalent to being constructed and outfitted in accordance with the latest release of the construction and outfit standards set out in MGN 628 for Registration as a Hand Diving vessel only.

2.2.8 This equivalence is based on MSN 1892 (M) The workboat code - Edition 3**,** with the operation of the vessel being restricted to (Area Category 4 – up to 20 miles from a safe haven in favourable weather and daylight) –

> *4.5.2.5 An inflatable boat or rigid inflatable boat, of less than 8 metres in length, which is intended to operate as an independent vessel in Area Category 4, 5 or 6 should be of a design and construction which would meet the requirements of ISO 6185 Part 2 or 3. Inflatable boats or rigid inflatable boats meeting the requirements of ISO 6185 Part 1 are not suitable for operation under the Code of Practice.*

2.2.9 The vessel will then only be deemed suitable for registration when:

- The submission is supported by a completed written risk assessment
- Safety Training. All crew working on a UK registered fishing vessel are required to ensure that they have undertaken the approved training courses.

- Risk Assessments; An Operations manual is to be prepared to include
- The Diving at Work Regulations 1997; Risk assessment for the diving operations to comply with Health & Safety Executive (HSE) regulations
- The number of persons carried and the equipment to be provided.
- Confirmation that the diving operation has been notified to the HSE for registration as a commercial fishing vessel for the purpose of a small scale commercial scallop diving operation in compliance with the Diving at Work Regulations 1997.

2.2.10 The Small Fishing Vessel Certificate must record the vessel as being for Hand Diving only.

2.2.11 RIBs shall be deregistered as Fishing Vessels when:

- their method of fishing changes from Hand Diving;
- it is found to be using a method that is not Hand Diving.

2.2.12 All RIBs on the Register must maintain vessels to the standard they were accepted for Registration, Vessels registering with a Workboat Code Certificate must also maintain their Workboat Code Certification to retain registration.

2.2.13.1 FIBRE-REINFORCED PLASTICS

2.2.13.1 When it is intended to use glass-reinforced plastics in the construction of a vessel, details of the extent to which the material is to be used should be submitted well in advance of the date it is proposed to commence work. Depending on the extent to which the material is to be used, further details may be required of the resins, fillers, and glass fibre reinforcements, which should comply with the relevant parts of BS 3532:1990, BS EN 14118:2003, BS EN ISO 3691:2009 and BS 3396 and BS 3749:1991, and are to be acceptable to the MCA.

2.2.13.2 The MCA will require to be satisfied that the premises are suitable, and that persons who are employed have been properly trained for the type of work to be undertaken.

2.2.13.3 Whenever glass-reinforced plastic is used in the construction of the hull, decks, superstructure, deckhouses or bulkheads, the laminates should be self-extinguishing from fire considerations. The self-extinguishing property should be imparted to the whole of the laminate. The test method to be used for ensuring that this requirement is complied with is described in Appendix E to the 'Passenger ship construction classes III to VI(A) - Instructions to surveyors'.

2.2.13.4 Should it be proposed to construct the hull, decks, superstructure, deckhouses or bulkheads with special laminates to afford the same degree of protection against fire as that obtained by the use of self-extinguishing laminates, full details should be submitted for consideration.

2.2.13.5 Vessels may also be of composite construction with, e.g. a glass-reinforced plastic hull, but incorporating frames, decks, bulkheads, engine bearers, longitudinal members and superstructures of wood, steel or other material.

2.3 STRUCTURAL ALTERATIONS

2.3.1 Structural alterations to existing vessels should be, in general, to the same standard as for a new vessel. Where a vessel is classed, the classification society should confirm approval of the alterations and continuation of classification.

2.3.2 Owners should be reminded that structural alterations to a vessel may alter the stability characteristics and this must be taken into consideration.

2.4 SUBMISSION OF PLANS AND PARTICULARS

2.4.1 The hull construction and arrangement drawings should be examined and approved, as complying with the requirements of the relevant Code, by the Recognised Organisation or the MCA, as appropriate. See Chapter 1 Annex 24 on the procedures for plan approvals on vessels under 24m.

2.4.2 All plans, particulars and calculations should be; (a) in English, or include an adequate translation, (b) metric measurements, (c) identify the materials being used and their means of connection, particularly where it is intended to use steels of special quality and aluminium alloy.

2.4.3 Surveyors should acknowledge receipt of plans and documents and make every endeavour to ensure an expeditious return of submitted plans and documents and/or comments appropriate to them.

2.4.4 The hull should be surveyed during construction by the Fishing Vessel Certifying Authority, Recognised Organisation or the MCA, as appropriate, to verify compliance with the approved drawings. The attending Surveyor should be satisfied with the quality, strength and testing of the materials used in the construction of the hull, bulkheads, decks, superstructures and deckhouses; and the materials used in the attachments thereto. An appropriate certificate of construction should be issued on completion of build.

2.4.5 For Under 15m vessels built since 16 July 2007, and registering as a fishing vessel for the first time, the construction and outfit must conform to the recognised standard of a Certifying Authority for small Fishing Vessels or an equivalent standard recognised by the MCA as suitable for Fishing Vessels. Prior to 21 July 2020, this standard was the Seafish Construction and Outfit Standards, from that date forward, the standards are contained in MGN 628. Failure to do so will result in the vessel not being registered. On first registration of these vessels, the owner shall supply the required hull construction and outfit certificates to the Registry of Shipping and Seamen (RSS), together with the Small Fishing Vessel Certificate in order that the vessel can be registered. Further Details are in MSIS27 Chapter 1 and Chapter 1, Annex 1.

2.4.6 For under 15m vessels built prior to 16 July 2007, owners will be required to prove that the condition of the vessel is satisfactory. Until 31 December 2020, this can be carried out by an MCA Authorised Surveyor who will complete a registration survey. From 21 July 2020, this can also be carried out by a Fishing Vessel Certifying Authority Authorised Surveyor. After 31 December 2020, only Fishing Vessel Certifying Authority Authorised Surveyors can conduct new Registration Surveys. This inspection will examine the vessel's structure, and in the case of vessels of 7m and over, their outfit, against either the Certifying Authority's standard for small fishing vessels prior to 21 July 2020 or the standards contained in MGN 628 from that date forward. The MCA will then examine the Survey Report, and either allow registration or require the owner to address areas of concern. Registration will not be allowed to proceed until areas of concern have been addressed to the satisfaction of the MCA. When registering the vessel the owner shall supply the Survey Report from the Fishing Vessel Certifying Authority Authorised Surveyor or MCA Authorised Surveyor and the Small Fishing Vessel Certificate to RSS in order that the vessel may be registered. Alternatively, the vessel should comply with an equivalent standard recognised by the MCA as suitable for fishing vessels. Further Details are in MSIS27 Chapter 1 and Chapter 1, Annex 1.

2.4.7 Under 15m vessels that have previously been on the UK Register, but that are currently off the Register for any reason and apply to re-register after a period of 6 months or more have elapsed since they left the Register will be treated in accordance with 2.4.6 (section 3.11 of MSN 1871) above, regardless of the age of the vessel.

2.4.8 For all under 15m vessels (whether new build or not), an MCA safety inspection must follow the Fishing Vessel Certifying Authority's registration inspection. The MCA inspection will cover the requirements of this Code, the crew qualifications, and any other mandatory requirements.

2.4.9 To Register an Under 15m Fishing Vessel built since 16 July 2007 which has a Construction, and where applicable Outfit Certificate, issued before 21 July 2020 the following is required:

Vessel Length	Hull Construction Certificate issued by a Certifying Authority	Outfit Compliance Certificate issued by a Certifying Authority	Safety Checklist (Annex 1.1-1.6)	Stability Information
7 metres (LOA)	Yes	Recommended	Yes	See MSN1871 Amendment 2 Chapter 3
7 metres (LOA) to less than 12 metres (L)	Yes	Yes	Yes	See MSN1871 Amendment 2 Chapter 3
12 metres (L) to less than15 metres (LOA)	Yes	Yes	Yes	See MSN1871 Amendment 2 Chapter 3

2.4.10 To Register an Under 15m Fishing Vessel whose build was completed on or after 21 July 2020 the following is required:

Vessel Length	Hull Construction Certificate issued by a Fishing Vessel Certifying Authority or MCA	Outfit Compliance Certificate issued by a Fishing Vessel Certifying Authority or MCA	Safety Checklist (Annex 1.1-1.6)	Stability Information
Under 7 metres (LOA)	Yes (FVCA)	Recommended	Yes	See MSN1871 Amendment 2 Chapter 3
7 metres (LOA) to less than 12 metres (L)	Yes (FVCA)	Yes (FVCA)	Yes	See MSN1871 Amendment 2 Chapter 3
12 metres (L) to less than15 metres (LOA)	Yes (MCA)	Yes (MCA)	Yes	See MSN1871 Amendment 2 Chapter 3

2.4.11 To register a fishing vessel built before 16 July 2007, the following is required:

Vessel Length	Registration Inspection by a Fishing Vessel Certifying Authority (or for vessels whose Registration Survey commenced before 31 December 2020)	Safety Checklist (Annex 1.1-1.6)	Stability Information
Under 7 metres (LOA)	Yes	Yes	See MSN1871 Amendment 2 Chapter 3
7 Metres (LOA) to less than 12 metres (L)	Yes	Yes	See MSN1871 Amendment 2 Chapter 3
12 metres (L) to less than 15 metres (LOA)	Yes	Yes	See MSN1871 Amendment 2 Chapter 3

2.4.12 Vessels of 15-24m registered length should be constructed in accordance with the Certifying Authority requirements prior to 21 July 2020 and MCA Construction and Outfit Standards, contained in MGN 629 from that date forward. The procedures for New Build Vessels from 21 July 2020 are contained in MSIS27 Chapter 1 Annex 24. For vessels built before that that, Seafish would have supervised the construction of the vessel and provided the MCA, on completion, with a declaration stating that the vessel complies with the applicable requirements and, in addition, any more onerous MCA requirements.

2.4.13 All vessels of >24m in length should be built to classification society rules and remain ‘in class’ whilst a UK registered fishing vessel. The surveyor should be provided with copies of the classification society approved structural plans. MGN

322 includes a typical list of such plans and MCA should be supplied with copies of plans.

2.5 SURVEYS

2.5.1 Surveyors should satisfy themselves at renewal surveys that the hull, and skin fittings, are in good condition; that the principal structural scantlings are maintained; that the arrangements and details are in accordance with MCA requirements; and the vessel is in all respects fit for its intended service. Any proposals for altering the structure that may affect the main or local strength of the vessel must be submitted for consideration. In the case of a classed vessel, the surveyor should obtain a copy of the classification society's letter to the owner or ship-repairer approving the proposals for the alteration, and place it on the vessel's file for record purposes together with a stamped approved copies of any associated plans.

2.5.2 The surveyor should make a thorough examination of the outside of the hull, generally on a slipway or in a dry dock, after it has been cleaned but before it is painted or otherwise coated. Sufficient clearance should be arranged under the hull to allow ease of access with adequate artificial lighting provided to the surveyor’s satisfaction. Access to the upper parts of the outside of the hull and around the rudder should be by means of a safe arrangement of scaffolding and associated ladders securely fastened in way to meet statutory safety standards.

2.5.3 Under exceptional circumstances, such as an emergency situation, the vessel may be placed on blocks on a clean, hard beach that may require the vessel to be listed, such that satisfactory inspection of every part of the hull can be made.

2.5.4 In general, all repairs should be to the same standard and material as the original structure. For this reason, the application of a glass-reinforced plastics skin, to the inner and outer hull of a wooden boat, cannot be considered to be any more than a simple form of coating. This method of ‘repair’ is not considered to be structural, as the strength of the boat is still reliant on the original wooden framing and planking, and their connections.

2.6 STEEL VESSELS

2.6.1 All external areas of the hull plating and means of connection should be examined, e.g. for damage, corrosion pitting, welding failure, rivet head wastage. Internally, the hull plating, framing and means of connection, in double bottoms, holds, ‘tween decks, peaks and machinery spaces, should be examined. Freeboard/weather deck and superstructure deck plating and beams, should be examined.

2.6.2 Surveyors should carry out a detailed examination of the outer hull, in particular;

- the ‘wind and waterline’,
- any fishroom bilge sump,

- the bottom and keel area, for any signs of grounding damage,
- areas in way of fishing gear, e.g. trawl doors or clam dredges etc,
- bilge keels and their connection to the hull,
- welds, for wear or electrolytic erosion,
- plates, in general, for electrolysis or for localised pitting (possible when earth fault present)
- any riveted butts and seams,
- bow areas, for contact damage,
- areas around previous repairs, particularly if repairs were due to reduced hull thickness,
- any doubler plates, or other un-reported repairs,
- gut and stone chutes bottom plating that form part of the hull, as these areas are particularly prone to wear,
- sacrificial anodes, and
- discharge pipes from toilets/sewage units.

2.7 PLATE THICKNESS

2.7.1 Non-destructive testing (NDT) plate thickness readings, of the hull plating at the 'wind and waterline' and at L/4 bands, should be taken at every re-survey. However, surveyors require only random thickness checks to be taken, after a satisfactory visual examination, at the first re-survey of a vessel. Additional readings should be taken in any suspect areas highlighted by the surveyor for particular examination, e.g. fish room bilge sump, any damaged areas, and any other areas where signs of corrosion or thinning are evident. Normally about 5 readings per plate are sufficient, with additional readings in any highlighted areas. Preferably any paint should be removed to bare steel and, in areas of severe pitting, the pits ground flush to achieve accurate readings. The deck plating should be similarly tested.

2.7.2 The testing should be carried out by a competent person, normally approved by a Classification Society, preferably with the surveyor present. A copy of the thickness report should be placed on file.

2.7.3 If the surveyor has any doubts about the plating thickness, a further examination should be requested and, in borderline cases, drill tests undertaken, i.e. a hole drilled through the plating, and the plate thickness physically measured, following which the hole is sealed up by welding.

2.7.4 In general, the maximum allowance for wastage is of 25% of original design thickness (consequently, original scantlings should be available).

2.7.5 In general, vessels built to one of the MCA recognised classification societies rules should comply with the following corrosion limits.

		Within L/2 midships		Elsewhere	
		Length >100m	Length <100m	Length >100m	Length <100m
Plating:	Bottom	10%	15%	20%	30%
	Topsides	10%	15%	25%	30%
Stiffeners:	Bottom	10%	20%	20%	30%
	Topsides	15%	20%	25%	30%

2.7.6 Local plating strength for steel may be assessed according to the following formula:

$\mathbf{t} = 0{,}004 \times \mathbf{s} \times \sqrt{\mathbf{h}} + \mathbf{c}$

t = minimum plate thickness (mm)

s = stiffener spacing (mm)

h = pressure head (m) (taken to 1m above the deck)

c = corrosion allowance, e.g. for coated steel, min 2mm for period between surveys is > 4yr

Based on a max yield stress in steel of 235N/mm^2, but only applicable to plating subject to hydrostatic pressures only.

2.7.7 Isolated areas of pitting, with a depth not exceeding 50% of the plate thickness, may be repaired by welding, subject to the use of qualified welders, and approved procedures and materials, e.g. classification society approved. In general, hull plate areas below 3mm in thickness should be renewed. Renewed plates should be of sufficient size to reduce problems of excessive stress being locked in, due to shrinkage on cooling. Where the extent of pitting is considered excessive in areas, e.g. >10% of plate area, or due to the depth, the risk of heat distortion or cracking will increase and the defective plate should be cropped out and renewed. Such repairs may require NDT on completion, to the surveyor's satisfaction.

2.7.8 Doubling plates are normally only acceptable as a temporary repair in certain circumstances, e.g. to increase the strength of plating and stiffeners but not on bottom plating (excluding temporary repairs) and only if there is sufficient material in the parent plate to effect an effective weld. Details of the fitting of doubler plates, e.g. welding, plate size, etc., should be to classification society requirements. The welding detail requires special attention. Surveyors should ensure that they have the necessary competence before surveying such repairs. Any doubler plates fitted should be tested and the owner advised of the time limit affecting permanent repairs.

2.7.9 Surveyors should carry out a detailed internal examination, in particular the plating, framing and means of connection, etc., in ballast tanks, double bottom tanks, holds, between decks, peaks and machinery spaces. In other spaces,

ceiling sparring, linings and insulation should be removed, where necessary, to enable inspection of shell plating and frames, etc., to be carried out. The plating and beams of the freeboard/weather and superstructure decks should be surveyed. Areas where any pockets where water may accumulate should be particularly examined and limber/drain holes exposed.

2.7.10 Areas below floor plates and around bilge wells should also be examined (if practical a hose test should be carried out, e.g. from forward and aft of engine room bulkheads).

2.7.11 Where loose ballast is stored in any space a portion should be removed to check that no chafing has taken place.

2.8 WOODEN VESSELS

2.8.1 All external areas of the keel and planking should be examined, for damage, rot, etc. Caulking of garboard and other seams should be thoroughly tested. Internally, the hull (moulding, plating or planking), framing and means of connection, in double bottoms, holds, ‘tween decks, peaks and machinery spaces, should be examined. Freeboard/weather deck and superstructure deck structures (moulding, plating or planking and beams) should be examined. Surveyors should take account of what is observed on the outside of the vessel, when surveying the inside. Prior to carrying out a detailed examination of the outer hull, the surveyor should look inside the vessel and determine those areas that require to be opened up to facilitate examination of the inner hull. The amount of opening up required will initially be determined by what has been observed up to this point, although further opening up may be required depending upon what is subsequently observed.

2.8.2 If a vessel is found at inspection to have been sheathed then the vessel is to be seen out of the water to check for the adhesion and any breaks in the coating.

The hull is to be sounded and probed for soft wood. The term sounding refers to tapping with a hammer to judge the soundness of the material and the tightness of fastenings and fittings. The term probing refers to the use of a thin, sharp pointed steel probe that is pressed into the timber. If the timber is sound the probe will not penetrate, but if decay is present, the probe will penetrate, and the ease and depth will reflect the degree of decay to the experienced inspector.

2.8.3 It is imperative that indiscriminate probing and boring be avoided. Holes made by a probe or drill in the hull exterior are potential entry ways for marine borers. In the hull interior they allow easier moisture penetration and thus aid in starting decay. Probing and boring should be done carefully and only where there is an indication from non-destructive testing that the hull is unsound, not as a matter of routine.

2.8.4 Internally the vessel is to be checked adequate ventilation.

2.8.5 On successful survey only, the owner is to be advised that the vessel be permitted to remain on the register for five years, after which it will be de-registered.

2.8.6 Surveyors should carry out a detailed examination of the outer hull, in particular:

(a) the keel should be examined for any signs of damage from grounding, working of the scarfed joints, etc. and signs of softness or infestation particularly in way of end grain, including the deadwood;

(b) the hull planking should be examined to ensure that seams are tight, there are no indications of leaks and no signs of collision or other damage that may affect the hull strength. No caulking material should be visible. If it is visible, the area has either been incorrectly caulked, needs re-caulking or the plank edges are worn and may require to be replaced. Plank butt blocks should be checked to ensure they are secure and that fastenings in general are sound;

(c) the planking, from garboard to gunwhale, should be examined. Plank seams should be examined to assess the condition of the caulking and paying compound, checking for softness of the plank edge and any signs of infestation. Each plank should be hammer tested every ~1,5m and caulking thoroughly checked, by screwdriver or similar tool, fore and aft and up to the deck level;

(d) the hull should also be examined for signs of tingles (local patches, often of thin copper or lead) over the seams, an indication of problems with leaks. When a tingle plate is found on a seam, (usually a seam just forward of the stern gland), it is common to find the area has been frequently re-caulked, unsuccessfully, and the tingle plate has become the best option available, (note that these should be considered a temporary measure only and permanent repairs should be completed as soon as possible);

(e) attention should be given to areas of end grain exposure (hood ends, butt joints, around hull penetrations etc.) as they are prone to rot and infestation by marine borers. Difficult to paint areas are particularly prone to this, e.g. behind keel coolers, keel strap to keel connections and under inlet grids, such areas often remain unpainted year after year. Also particularly prone are vessels left for periods exceeding one year between painting. The vessel’s operating location can also be a factor, as some docks and quays are more affected by rot than others. Internal areas with poor air circulation will also generally give ideal conditions for rot to develop. In areas where rot is suspected, but there are no indications of a problem with movement or fastenings, then any rot present is unlikely to be causing a significant weakening of the structure;

(f) butt joints should also be examined for signs of splitting at the fastenings and fairness of the butts. If butts are not flush then the fastenings and/or the timber in way of the fastenings may have deteriorated and should be carefully examined. The condition of the hood ends, and associated fastenings, should be exposed and examined, together with the associated caulking. Areas around inlets and discharges should be examined for softness;

(g) fastenings should only be removed for examination where there is clear evidence of problems (e.g. signs of rust, nail sickness, loose fastenings or timbers,

etc.) or where there is no clear evidence of examination in the past 5 years. In such cases, an adequate number of fastenings, usually in every fourth timber of bilge planking, on each side should be drawn out, at various parts of the hull, and examined to ascertain their condition and that of the timbers through which they pass. If the vessel is iron fastened, a number of bolts should be driven out, with at least 6 taken from the lower deck bindings on each side. Where such a sample indicates no or only minor problems, no additional fastenings need be removed. If serious problems are evident then additional fastenings should be removed, to establish the extent of the problem. If these fastenings also show signs of serious problems then the surveyor should consider examining a random sample of fastenings over a larger area, in an attempt to establish if the problem extends to the entire vessel. Prior to removal of fastenings, nail heads which show rust trails should be exposed, then hammer and punch tested, this will usually give an indication of the fastenings condition. Where fastenings shatter or break up on being struck, the most appropriate action is to arrange for adjacent re-nailing rather than fastening removal. It should be noted that electrolysis can occur in wooden vessels resulting in wastage of the fastenings. This is likely to happen if the main engine, etc., has not been correctly earthed, or the hull earthing plate (often a square plate about 500mm x 500mm) is painted over;

(h) if fitted, one chain plate bolt should be backed out, abreast of each rigging and, if in an unsatisfactory condition, additional bolts backed out, as considered necessary. Where metal sheeting is fitted, one sheet from the upper turn of bilge should be stripped off on each side, in line with any rigging, to permit examination;

(i) vessels that have been regularly tied-up alongside with other vessels may have been subject to squeezing, resulting in possible caulking and fastening damage, and will require careful examination of the caulking and fastenings;

(j) it should be noted that hog, particularly in older vessels, is not necessarily an indication of a hull strength problem, but evidence of sag usually is a sign of reduced hull strength. Surveyors should carefully examine vessels for any indication of transverse hog as this can be a sign of inadequate strengthening inside and possible cracks to frames at or around the keel line;

(k) it should also be noted that anodes attached to hull steelwork on wooden vessels, such as boxed keels, steel sheathing and rudders should be maintained in good condition;

(l) the hull framing and deck beams, particularly at the ends, beam shelf, lodging and hanging knees, etc., and floors should be examined for any indications of rot or collision damage. Limber holes should be checked to ensure that they are not blocked and that there is no significant rot or softness of the wood in way of limber holes. Frames and floor connections to the keel and the keel bolts should also be examined. If there appears to be significant signs of corrosion or indications of movement in the bolts then consideration should be given to removing a sample to

assess their condition. Stem and stern structures should be examined internally for any signs of contact damage;

(m) the deck planking should be examined as in (b) above;

(n) the bulwarks, decks and any deckhouses should be examined and the surveyor should be satisfied with their condition and strength. Particular areas to look out for include:

(i) where water may collect resulting in rot;

(ii) caulking of decks especially in way of deck fittings and connections at deckhouses;

(iii) springing of the deck that may indicate loose fastenings or loss of strength in the deck planking/framing;

(iv) raised plank butts or covering boards;

(v) stanchions and frame tops that may appear to be sound but could be hollowed out;

(vi) connection between deck and deckhouse or hatch coaming; and

(vii) areas in way of drains and inside any deck lockers.

2.8.7 Surveyors should carry out a detailed internal examination. If the vessel is fitted with concrete ballast, or other permanent ballast with a concrete capping, the edges of the concrete should be firm next to the planking. Any cracking or gaps at the edges could lead to problems with fastenings and signs of rust may be an indication that problems already exist with the fastenings.

2.9 FIBRE-REINFORCED PLASTIC VESSELS

2.9.1 All external areas of the moulded hull should be examined, e.g. for damage, gel coat cracking, osmosis, blistering. Surveyors should note any deterioration, e.g. delamination, fractures, osmosis, etc., of the components of the laminate particularly in the vicinity of bolt holes, in order to ascertain if the material is suitable to withstand the imposed loads. With vessels of sandwich construction, particular attention should be given to the possibility of delamination. Internally, the hull moulding and framing should be examined. Freeboard/weather deck structures should similarly be examined. Surveyors should examine the vessel carefully both afloat and out of the water and report on the condition describing the appearance of the vessel and the general overall condition. The report should indicate if structural alterations or renewals have been made since the last survey and give detailed information on the condition of the following items;

(a) hull, including outer shell, and hull connections with other structural components;

(b) fastenings, primary and secondary bonds and bonded joints;

(c) decks, waterways and sheer strake;

(d) deck and hold beams and knees;

(e) floors, frames and longitudinals;

(f) apron and breasthooks, etc;

(g) keelson and sister keelsons;

(h) hatchways, hatch coamings and hatchway fittings;

(i) deck openings, skylights, ventilators and companionways;

(j) superstructures and structures which cover deck openings; and

(k) engine bearers.

2.9.2 If the details of the materials used in construction are not already on file, they should be reported, as far as can be ascertained, plus the general quality of workmanship.

2.9.3 The fastenings in all types of fibre-reinforced plastic vessel should be carefully examined and where bolt fastenings are used for any connection the surveyor should consider the removal of a sample of bolts for examination at time of survey.

2.10 ALL VESSELS

2.10.1 The rudder and all other outside fittings and their fastenings should also be examined.

2.10.2 A surveyor may require any part of the ceilings, linings, deck covering, etc., to be removed, and any tank opened up and cleaned as considered necessary, to permit a proper examination of the vessel's structure. Limbers and air courses should be removed and holds cleared, prior to surveys.

2.10.3 Portions of the deck planking, composite or tiling should be removed where deterioration is evident or suspected.

2.10.4 At new and renewal surveys, all tanks, that are an integral part of the hull, should be internally examined and pressure tested, with either liquid or air to a pressure equivalent to the maximum load experienced in service: oil fuel tanks 300mm greater than maximum head or 1bar if heated; others to top of air pipe (maximum air pressure should not exceed 0,2 bar over pressure).

2.10.5 Oil fuel tanks need not be examined internally at every renewal survey; (a) unless as a result of an external examination, (b) once the vessel is 12 years old, or (c) for any other reason the surveyor considers it necessary. Cross-levelling arrangements, if provided, should be examined at every renewal survey.

2.10.6 Tanks used exclusively for the carriage of fresh water or treated fresh water ballast should be examined at each renewal survey, unless the surveyor considers it unnecessary, e.g. if examining a pair of identical tanks where one is found in good internal condition.

2.10.7 Surveyors should examine arrangements for the sealing of spurling pipes, especially canvas or concrete sealing/capping, to ensure that it remains watertight and can be readily returned to a watertight state after deploying the anchor(s). Noting that canvas supported by close fitting steel plates are more efficient at preventing the ingress of water. If cement is used, the quantity of cement must be adequate not only to plug the spurling pipes but also to prevent lateral movement of the cables within. In new vessels, the owners and builders should be advised to locate and arrange chain lockers such that, if inadvertent flooding does occur, it is limited in extent.

2.10.8 Surveyors should also examine mooring bollards and cleats:

(a) to ensure the deck attachments are of adequate strength and in good condition. Welded attachments should be carefully examined;

(b) that any holding down bolts are not corroded. Mild steel bolts should be examined annually, and renewed every two years, if necessary, or replaced by stainless steel bolts;

(c) that the under deck stiffening remains adequate;

(d) stern glands;

(e) propellers;

(f) shafts & brackets;

(g) bulkheads;

(h) decks; and

(i) cathodic protection

2.11 WATERTIGHT INTEGRITY

2.11.1 Requirements are contained in MSN1871 Amendment No.2 Sections 2.3 to 2.16, MSN 1872, Amendment No.1, Chapter 2, section 2.2; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.

2.11.2 GENERAL REQUIREMENTS FOR WATERTIGHT INTEGRITY

2.11.2.1 The number of openings in the watertight structure of the vessel should be the minimum consistent with its safe and practical operation and provided with effective closing arrangements. The closing appliances should be maintained such that corrosion, damage and wear do not adversely affect compliance. Doors and

hatches that contribute to the watertight integrity of the vessel should be maintained in efficient condition and kept closed when not in use.

2.11.3 WATERTIGHT BULKHEADS

2.11.3.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.4 and 2.5, MSN 1872 Amendment No.1,, Chapter 2, section 2.1.6; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.1.6.

2.11.3.2 GENERAL REQUIREMENTS - NEW VESSELS

2.11.3.2.1 Bulkheads, closing devices and closures of openings in these bulkheads, including the methods for their testing, should comply with the requirements of the Fishing Vessel Certifying Authority, MCA or a Recognised Organisation. The strength should be adequate to withstand a head of water to the satisfaction of the Fishing Vessel Certifying Authority, MCA or a Recognised Organisation.

2.11.3.2.2 Bulkheads should extend up to the working deck with a minimum number of openings compatible with the safe operation of the vessel. All penetrations for pipes, cables, etc., should maintain the watertight integrity of the bulkhead in way of the penetrations. As far as practicable, cable transits should be fitted in the highest possible position. Surveyors should also pay special attention to the location of pipework passing through watertight bulkheads, to eliminate the risk of progressive flooding through open ended pipes on one side of the bulkhead, in the event of flooding damage, e.g. bilge piping, CO_2 piping, not forgetting areas below floor plates and around bilge wells. Any drain valves fitted in any watertight bulkhead should be approved by MCA and fitted to ensure that the water flows naturally to the adjacent bilge suction. The drain must be capable of automatically closing and cannot be left open by accident.

2.11.3.2.3 The main and auxiliary machinery for propulsion and safety of the vessel should be in a watertight compartment. In wooden vessels, the aft bulkhead may terminate at a horizontal flat extending aft to the stern.

2.11.3.3 GENERAL REQUIREMENTS - EXISTING VESSELS

2.11.3.3.1 The bulkhead arrangement of an existing vessel should be considered acceptable provided that such arrangements continue to remain efficient in service. The strength of the bulkheads should be adequate to withstand a head of water to the satisfaction of the Fishing Vessel Certifying Authority, MCA or a Recognised Organisation. Vessels of less than 15m on the Register at the time MSN1871 Amendment No.2 entered into force on 6 September 2021 and were built to a Construction Standard, should continue to meet those standards.

2.11.3.3.2 Surveyors should check for corrosion and any unapproved openings or penetrations, to eliminate the risk of progressive flooding through open ended pipes on one side of the bulkhead, in the event of flooding damage, e.g. bilge piping, CO_2 piping.

2.11.3.3.3 The condition and watertight integrity of the bulkheads on wooden vessels should be carefully examined, with special attention given to any modifications that may have resulted in bulkhead penetrations. As far as practicable, the integrity of the bulkheads should be restored and preserved, taking account of the fact that many existing wooden vessels were not built with watertight bulkheads. Where new penetrations are required, or existing penetrations are removed, they should be made as watertight as practicable and positioned only in the upper third of the bulkhead, especially in bulkheads with spaces protected by a fixed gas fire extinguishing system.

2.11.3.3.4 The bulkhead plating thickness should be determined at every survey by non-destructive testing, particularly the lower 1/3, in accordance with the wastage allowance given in the guidance table in paragraph 2.7.5.

2.11.3.4 COLLISION BULKHEADS

2.11.3.4.1 In vessels >24m in length, where a long forward superstructure is fitted, the collision bulkhead should extend weathertight to the deck above the working deck, although this need not be directly over the bulkhead below within the limits specified, and the deck that forms the step is effectively weathertight.

2.11.3.4.2 In vessels of up to 15m in length, the minimum number of openings, capable of being closed weathertight, and compatible with the design and normal operation of the vessel may be fitted.

2.11.3.4.3 In vessels of =>15m in length, doors, manholes, ventilation ducts and other openings should not be fitted in the bulkhead below the working deck, but weathertight doors that are kept closed at sea may be fitted in a bulkhead extension above the working deck (the door should have a **'KEEP CLOSED AT SEA'** warning notice). Note that the extension need not be directly over the bulkhead below, but should be within the permitted limits in para 1.2.16 of MSN 1873.

2.11.3.4.4 All pipe penetrations should have valves, with the valve chest secured to the bulkhead inside the forepeak, and capable of operation from a readily accessible position above the working deck. The valves may be fitted on the after side provided they are readily accessible under all service conditions and the space in which they are located is not a cargo space.

2.11.3.4.5 All pipe penetrations should be fitted with valves capable of operation from above the working deck. In vessels of =>24m in length, the valve chest should be secured to the bulkhead and inside the forepeak. The valves may be fitted on the aft side of the bulkhead provided they are readily accessible under all service conditions and not in a cargo space.

2.11.3.4.6 Surveyors should check the continuity of the collision bulkhead in relation to the deepest operating waterline. No openings should exist in the collision bulkhead up to the next continuous (or freeboard) deck above this. Openings in the collision

bulkhead above the freeboard deck are permissible provided suitable means of closing are fitted.

2.11.3.4.7 Some vessels, built before 1975, will possess an exemption from the fitting of any collision bulkhead. This exemption will still apply. However, in vessels of =>15m in length, that have been lengthened, the position of the collision bulkhead should be re-assessed, especially where exemption from compliance has previously been granted. Only those vessels fitted with collision bulkheads will need to be checked for any other exemption given with respect to openings in that bulkhead.

2.11.4 FREEBOARD/WORKING DECK

2.11.4.1 Freeboard/working decks should be of watertight construction, extend from stem to stern, and have positive freeboard in any condition of loading of the vessel, although they may be stepped, recessed or raised provided these portions are also of watertight construction.

2.11.5 DOUBLE BOTTOM

2.11.5.1 Vessels of =>75m in length should be fitted with a watertight double bottom between the collision bulkhead and the afterpeak bulkhead, as far as practicable.

2.11.6 WATERTIGHT DOORS

2.11.6.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.6, MSN 1872 Amendment No.1,, Chapter 2, section 2.1.7; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.1.7.

2.11.6.2 The number of doors fitted in any watertight bulkhead should be:

(a) the minimum compatible with the normal operation of the vessel;

(b) watertight when closed; and

(c) equivalent in strength to the adjacent bulkhead (the door should have a **'KEEP CLOSED AT SEA'** warning notice).

2.11.6.3 In vessels <45m in length, hinged type doors, that are operable locally from both sides, are acceptable, provided there is no operational requirement to keep the door open at sea.

2.11.6.4 In vessels of =>45m in length, sliding type doors, that are operable remotely from above the working deck, should be fitted, where they are intended to be kept open at sea and located below the deepest operating waterline or lower part of a machinery space, except for those fitted in the crew accommodation.

2.11.6.5 Sliding watertight doors should be capable of local control from both sides, even if manually operated, have remote open/closed indication, normally on the bridge.

2.11.7 SURVEYS OF SUB-DIVIDED VESSELS

2.11.7.1 The surveyor should examine the condition of all watertight bulkheads, decks, etc, for watertightness. Special attention should be given to pipe, cable, etc, penetrations, the condition and operation of any watertight doors, and any valves or fittings that affect the sub-division arrangements.

2.12 WEATHERTIGHT INTEGRITY

2.12.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.3-2.16, MSN 1872 Amendment No.1,, Chapter 2, section 2.2; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.

2.12.2 GENERAL REQUIREMENTS FOR WEATHERTIGHT INTEGRITY

2.12.2.1 The closing appliances should be maintained such that corrosion, damage and wear do not adversely affect compliance. Doors and hatches that contribute to the weathertight integrity of the vessel should be maintained in efficient condition and kept closed when not in use. Freeing ports should be kept free of gear and any hinged flaps maintained in an operational condition.

2.12.3 OPENING AND CLOSING ARRANGEMENTS

2.12.3.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.7, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.1; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.1.

2.12.3.2 The number of openings in the watertight structure of the vessel should be the minimum consistent with its safe and practical operation and provided with effective closing arrangements. Openings other than access openings should be fitted with permanently attached covers of equivalent strength to the structure in which they are fitted, and capable of being closed weathertight. As far as possible, hatches and doorways that may be open at sea, should be as near as practicable to the vessel's centreline.

2.12.3.3 The ramp door, hatch or lid on stern trawlers should be power-operated and capable of being controlled from any position which provides an unobstructed view of the operation of the flaps.

2.12.3.4 Due consideration should be given to the risk of downflooding, location of hatches and doorways with particular regard to hopper hatches below the freeboard deck being in the open position when the main deck hatch is opened.

2.12.3.5 Machinery space openings should be framed and enclosed by casings of a strength equivalent to the adjacent superstructure, and any external access openings fitted with weathertight doors.

2.12.3.6 Vessels where the wheelhouse is fitted directly on the working deck should be provided with a suitable means of closure to any working deck opening within the wheelhouse space. Additionally, the means of drainage of the wheelhouse space should preferably be directly overboard. Vessels where the wheelhouses is fitted over structures above the working deck should have arrangements to allow water to rapidly drain down to the working deck and then directly over the side.

2.12.3.7 Openings in the exposed freeboard/working deck should be properly framed and efficiently enclosed by either superstructures, casings of adequate strength or hatch covers.

2.12.3.8 Openings in weathertight boundaries for warps or wires used in fishing operations should be as small as practicable and should not be submerged with a vessel heel of up to 40° at the deepest draught.

2.12.4 WEATHERTIGHT DOORS

2.12.4.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.6, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.3; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.4.

2.12.4.2 Generally, doors should be constructed of the same material as the external bulkhead of the weathertight structure which they form part of. Weathertight doors should normally open outwards so as to bear against the door frame under the impact of the sea. Where in exceptional circumstances the doors are permitted to open inwards the framing of the door panel and the securing arrangements of the door will be specially considered. The access opening should have a sill of appropriate height. Doors should normally comply with the requirements of BS MA38: 1973, or equivalent standards.

2.12.4.3 Generally only doors in structures that give access below the freeboard deck need be protected by weathertight doors.

2.12.4.4 Wooden doors fitted in external bulkheads should be well framed, robustly constructed and close fitting when closed.

2.12.5 WINDOWS IN DOORS

2.12.5.1 Windows other than side scuttles should not in general be fitted in doors but where necessary for natural lighting or look-out purposes windows may be fitted but only in doors fitted in the sides or aft ends of a superstructure deckhouse or a companionway. In such cases the opening for the window is not to be more than Ø400mm with its centre not less than 1,5m above the uppermost surface of the deck. A suitable storm cover should be provided. The glass should be toughened, not less than 10mm thick and supported in a suitable frame.

2.12.6 HATCHWAY COVERS

2.12.6.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.7, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.2; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.2.

2.12.6.2 Hatchways that give access to spaces below the working deck should be of efficient construction, and provided with effective means of weathertight closure. The coaming should be of a height appropriate to the position of the hatch opening, as specified in the Codes.

2.12.6.3 The hatchway covers may be of hinged, rolling or sliding type, permanently secured to the structure of the vessel. Every cover should be fitted with gaskets and clamping devices, or other equally effective means that are both sufficient to retain the cover in position and ensure weathertight integrity when closed. Discharge hatches that are not open at sea may be of the 'lift-off' type, provided they are weathertight when closed.

2.12.6.4 For new vessels, the covers should be of steel or equivalent material and of sufficient strength to accommodate the expected service loading. For existing vessels, the covers will be acceptable provided they continue to remain efficient in service. This should be assessed during surveys and inspections.

2.12.6.5 Hatchway covers should be of sufficient strength to withstand the greater of:

(a) the weight of cargo intended to be carried on them; or

(b) static load of:

(i) 10,0kN/m^2 for vessels of 24m to <100m in length; or

(ii) 17,0kN/m^2 for vessels of =>100m in length (for intermediate lengths the load values shall be determined by linear interpolation). The load may be reduced to not less than 75% of the above values for hatchway covers situated on the superstructure deck in a position abaft a point located 0,25L from the forward perpendicular.

2.12.6.6 Covers of materials other than mild steel should be of at least the equivalent strength to those made of mild steel and with sufficient stiffness to ensure weathertightness under the loads specified above.

2.12.6.7 Wood hatchway covers should be thick enough to allow for abrasion due to rough handling, with a minimum finished thickness of at least 4mm/100mm of unsupported span, subject to a minimum of 40mm and the width of their bearing surfaces at least 65mm.

2.12.6.8 The closing and securing arrangements, incorporating portable covers, tarpaulins, etc., should be in accordance with the requirements stated in regulations 15 and 16 of Annex I to the International Convention on Load Lines 1966. On any vessel

where the hatches are closed by means of portable covers, steel bars or their equivalent (wire straps) should also be fitted in place before the vessel proceeds to sea. However, if wire straps are fitted, adequate means should be provided for 'tightening up' the wire straps. Surveyors should be satisfied that the securing wires fitted cover each individual hatch board at a suitable and effective position.

2.12.6.9 Weathertight hatches on all exposed decks shall be kept closed at sea, when not in use.

2.12.6.10 Surveyors should record the means of securing hatchway covers on the 'Record of particulars' (form MSF1301) and, if necessary, witness a hose test on the cover in order to test the efficiency of the cover and securing arrangements.

2.12.6.11 Where flush hatches are permitted on the freeboard or superstructure decks, surveyors should pay particular attention to their construction and the means of securing weathertight. In general, the section modulus and moment of inertia of any flush hatch fitted in the forward L/4 should be increased by 15% more than that required to withstand the above assumed loads.

2.12.6.12 A searching hose test should be carried out at the installation of hatchway covers and at the subsequent renewal surveys, or after substantial repairs.

2.12.6.13 If it is the intention to carry a load of fish on top of the hatchways, special consideration should be given to the strength of the hatchway coamings. Additional strengthening should also be provided when covers are loaded with cargo of a density greater than that represented by the loads assumed above and subjected to those loads associated with fishing operations.

2.12.7 COAMINGS

2.12.7.1 The sills of doors provided in exposed companionways, superstructures, deckhouses and machinery casings that give access to spaces leading below the freeboard/working deck should be at least those specified for hatchway coamings for a similar position. For other spaces the heights of door sills may be reduced provided:

(a) there is no access to spaces leading below the freeboard/working deck;

(b) the spaces are small; and

(c) provided the safety of the vessel is not thereby impaired.

2.12.7.2 The Codes allow for coamings to be reduced, or omitted, for hatches on freeboard decks located within shelters, provided the spaces are maintained weathertight whilst at sea and that there is no risk of flooding due to activities within the space. However, in cases such as where ice making machines, and associated chute, are fitted in shelters on the freeboard deck, the work activity clearly produces a lot of water and flooding is a hazard. Consequently, the deck opening should be protected by a full height coaming.

2.12.7.3 Coaming heights or sills may need to be increased if a reduced freeboard has been permitted.

2.12.8 OTHER DECK OPENINGS

2.12.8.1 Flush type deck scuttles, hatches or manholes, e.g. for loading ice into fish holds, may be fitted to weather and superstructure decks, provided they are watertight, permanently attached and closed at sea. The scuttles should be hose tested, at surveys, to demonstrate that they are maintained effectively watertight.

2.12.9 VENTILATORS

2.12.9.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.12, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.7; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.8

2.12.9.2 In exceptional circumstances, the heights of coamings prescribed in the codes may be reduced if they would interfere with the working of the vessel or if restricted operating conditions permit, provided that the Surveyor is satisfied that the closing appliances and other relevant circumstances justify this. In such cases, permanently attached steel weathertight covers must be fitted.

2.12.9.3 Efficient, permanently attached closing appliances should be fitted, as follows, except where permitted otherwise by the codes, e.g. due to excess coaming height:

(a) in vessels >45m in length, the provision of wood plugs and canvas covers are not acceptable, except in the case of an existing installation; and

(b) in vessels of <=45m in length, the various types of ventilator should be treated as follows:

(i) cowl ventilators should be fitted with a substantial weathertight gasketed steel cover, attached by a substantial keep chain secured closed by either bolts or toggles, spaced every 450mm, on the working deck, and 600mm elsewhere, upon removal of the cowl, or alternative equivalent means of being secured;

(ii) gooseneck ventilators should be fitted with a hinged steel gasketed weathertight flap with screw fastening;

(iii) French head ventilators and similar types should be fitted with arrangements so that all openings can be closed by a strong steel gasketed cover, attached to the coaming by a substantial steel chain;

(iv) mushroom ventilators should be fitted with gaskets and be capable of being screwed down weathertight; and

(v) in existing vessels, the continued use of wood plugs with keep chains and canvas covers may be accepted.

2.12.9.4 Ventilators used to ventilate spaces where explosive mixtures of gases or where a suffocating gas may accumulate should not be fitted with a closing appliance, e.g. by an increased coaming height.

2.12.10.1 AIR AND SOUNDING PIPES

2.12.10.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.14, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.7 and 2.2.8; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.9 and 2.2.10.

2.12.10.2 AIR PIPES

2.12.10.2.1 In all new vessels, and existing vessels where the air pipes are renewed:

(a) air pipes to fuel oil tanks should be fitted with flame arrester gauzes; and

(b) air pipes, other than to fuel oil tanks, should be provided with hinged gasketed flaps or closing devices of an automatic type, e.g. ball float valves, except that air pipes leading from tanks used for the carriage of liquids should be of a type that will prevent excessive pressure on the tank boundaries and provision should be made for relieving any vacuum when tanks are being pumped out.

2.12.10.2.2 In existing vessels, the continued use of wood plugs with keep chains and canvas covers may be accepted.

2.12.10.2.3 The means of closing air pipes must be available for immediate use, except in the cases where closing devices of an automatic type are fitted, e.g. ball float valves, where access to the air pipes is difficult on account of the stowage of catch fishing gear or the deck arrangements. A bonnet type head would be acceptable where the head could be lowered from the open to the closed position through a shaped slot fitted in the coaming attachment, in which case no gasket need be fitted.

2.12.10.2.4 It is important to ensure that all ventilators utilising ball float valves are of a construction that is readily dismantled for inspection of the float and the valve seat.

2.12.10.3 SOUNDING PIPES

2.12.10.3.1 Sounding pipes should be provided with permanently attached means of closing and extend to a readily accessible position above the working deck. Any sounding pipes which do not extended above the working deck should be fitted with automatic self-closing device.

2.12.10.3.2 The fitting of other sounding devices does not preclude the fitting of sounding pipes.

2.12.11 SIDESCUTTLES, WINDOWS AND SKYLIGHTS

2.12.11.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.8-2.11, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.5; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.6

2.12.11.2 Sidescuttles are defined as round or oval openings less than 0,16m^2 in area. Round or oval openings of greater area being treated as windows. Windows are defined as rectangular openings generally having a radius at each corner, exceeding 0.16m^2 in area.

2.12.11.3 Sidescuttles, glasses and deadlights should comply with the requirements of ISO 21005:2012, ISO 1751:2012, ISO 5780:1987 type B (medium duty) or, in existing vessels, BS MA 24: 1974, and of approved construction in vessels of 24m in length and over.

2.12.11.4 Windows and their frames should comply with the requirements of ISO 3903:2012, ISO 21005:2012, ISO 5779:1987 type E (heavy duty) or, in existing vessels, BS MA 25:1973.

2.12.11.5 Sidescuttles to spaces below the working deck, to enclosed superstructures, deckhouses or companionways on the working deck, should be fitted with hinged deadlights that can be closed watertight. Sidescuttles fitted less than 1m above the deepest operating waterline should be of the fixed type. Sidescuttles prone to damage by fishing gear should be suitably protected.

2.12.11.6 Windows should not be fitted below the working deck. Any windows fitted in the forward or after bulkheads of exposed working deck erections, should be provided with suitable means of protection. The glass in wheelhouse windows should not be polarised or tinted, although portable tinted screens can be provided.

2.12.11.7 Where heating elements are laminated into toughened safety glass, e.g. wheelhouse windows, the total thickness should be determined from the formula:

$$t_{L1}^2 + t_{L2}^2 + t_{Ln}^2 = t_s^2$$

n = number of laminates

t_L = thickness of laminates

t_s = thickness of toughened safety glass

e.g. for 14mm laminated toughened safety glass made up from 7mm + 7mm laminates, the nearest t_s would be:

$$7^2 + 7^2 = t_s^2 = 98$$
$$t_s = \sqrt{98} = 10mm$$

(minimum preferred standard thickness)

2.12.11.8 Particular attention should be given to wheelhouse windows of a lesser standard, e.g. at a flagging-in, and surveyors should strongly recommend that all such windows and/or frames are replaced with ones that comply with the above requirements. If considered appropriate, such windows may still be accepted as 'equivalent' on the basis that they have proved 'satisfactory in service'. However, such an acceptance should always be conditional on an undertaking from the owner that, in the event of failure, glasses and/or frames will be replaced with items that comply with the above standards.

2.12.11.9 Where existing or flagging-in vessels have wheelhouse windows provided with wooden frames, or metal frames attached to wooden grounds, surveyors should ensure that:

(a) all wooden structure has been maintained in sound condition and free from rot;

(b) wooden parts are securely attached to surrounding steel structure by means of through bolts and solid washers or backing strips, etc. The use of wood screws is not considered to be adequate;

(c) in the case of flagging-in vessels, surveyors should strongly recommend to the owners that wooden frames be replaced by ones complying with the above standards, or reject; and

(d) alternative means, e.g. steel shutters, should be provided for closing any openings in the event of failure of the frame and/or glass.

2.12.11.10 Fixed or opening skylights should have glass thickness appropriate to their size and position as required for sidescuttles and windows. Skylight glasses should be protected from mechanical damage and, where fitted in exposed positions provided with permanently attached robust deadlights or storm covers.

2.12.12 SIDE OPENINGS

2.12.12.1 The means of closing any openings in the shell below the working/weather deck should be designed to ensure the integrity against the sea commensurate with the surrounding plating, having regard to the position of the opening in relation to the waterline. The following principles apply:

(a) the effectiveness of closing appliances depends on regular observations and maintenance;

(b) hose testing is a practical means of verifying the weathertightness or watertightness of the closing appliances; and

(c) consideration should be given to the fitting of leakage detection devices in way of doors in exposed positions.

2.12.12.2 If essential for the working of the vessel, side openings may be accepted submerged provided the safety of the vessel is unimpaired. The fitting of a second inner door of equivalent strength and watertightness is one acceptable arrangement. In that case a leakage detection device should be provided in the compartment between the two doors. Further, drainage of this compartment to the bilges controlled by an easily accessible screw down valve, should be arranged. The outer door should preferably open outwards.

2.12.13 INLETS, DISCHARGES AND SCUPPERS, OTHER THAN DECK SCUPPERS

2.12.13.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.15, MSN 1872 Amendment No.1,, Chapter 2, section 2.2.6; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.2.7

2.12.13.2 Sea inlet valves should be permanently fitted with a positive means of closure from an accessible position, above the floor plates and taking account of any flooding risk, and provided with open/closed indication.

2.12.13.3 All valves should be constructed of corrosion resistant material and maintained in good working order.

2.12.13.4 Scuppers and discharges leading through the hull from; (a) spaces below the working deck, (b) from within an enclosed superstructure, or (c) a deckhouse on the working deck, should have an automatic non-return valve fitted at the hull, with a positive means of closure, and open/closed indication, from an accessible position. However, if the entry of water into the vessel through the opening is unlikely to lead to dangerous flooding, and the thickness of the piping is sufficient, this may be omitted.

2.12.13.5 Where scuppers from open decks penetrate the hull below the freeboard deck they should be made from piping of ‘substantial thickness’:

(a) where external diameter is <=80mm, thickness should be at least 7mm;

(b) where external diameter of 180mm, thickness should be at least 10mm; and

(c) where external diameter is =>220mm, thickness should be at least 12,5mm. Intermediate sizes by interpolation.

2.12.13.6 Such scuppers may be led to other open deck spaces at a lower level. When led to an enclosed space they should be given a separate overboard discharge.

2.12.13.7 Soil and other waste water drainage systems should be designed and fitted with water seals, air vents, storm valves, etc, as necessary, to prevent siphoning, blowback or ingress of water.

2.12.13.8 Where toilet units of the manually operated pump action type (that draw flushing water directly from the sea) are permitted surveyors should ensure that:

(a) the method of closing the soil discharge pipes and the sea inlet arrangements comply with the requirements of the codes;

(b) the supply and discharge pipes are constructed from galvanised heavy gauge steel piping, except in the case of wooden ships when solid drawn copper piping may alternatively be used;

(c) where fitted below the waterline, the overboard discharge pipe is looped up to a position at least 0,02L above the loaded waterline before being led overboard, and a 6mm bore anti-siphonage pipe is led from the top of the loop to atmosphere;

(d) a notice giving instructions for use is prominently displayed adjacent to each toilet;

(e) all valves are readily accessible and clearly labelled to indicate their purpose and with open/closed indication; and

(f) the activating pump within the toilet unit is opened out and fully examined at each renewal survey, as it is essential that the inlet valve within the pump is seating properly.

2.12.13.9 The control of any valve serving a scupper, inlet or discharge system should be sited to allow adequate time for closure in case of influx of water into the spaces, having regard to the time which could be taken to reach and operate the controls. In respect of larger valves, the level to which the space could become flooded with the vessel fully loaded should be borne in mind, and this may require that in some cases remote control or control above the working/weather deck would be required

2.12.13.10 The attachment of valves to the hull should be carefully examined at surveys. The hull ‘stub pipe’ should be hammer tested and any nuts/studs renewed if corroded. Valves should be opened-up for examination at renewal surveys.

2.12.14 HEIGHTS OF COAMINGS, SILLS, ETC

2.12.14.1 The coaming height requirements should be adopted on all new fishing vessels and in those existing vessels when the relevant structural items are being repaired or replaced, or where the height deficiency is not considered acceptable. Coaming heights on existing vessels within 75mm may be accepted provided the surveyor is satisfied with the structural condition.

2.12.15 FREEING PORTS

2.12.15.1 Requirements are contained in MSN1871 Amendment No.2 Section 2.18 (Section 2.19 and 2.20), MSN 1872 Amendment No.1,, Chapter 2, section 2.3.2; and in MSN 1873 Amendment No.1,, Chapter 2, section 2.3.2.

2.12.15.2 Freeing ports are openings in the bulwarks on open deck to allow water to drain directly overboard.

2.12.15.3 Water on deck is a factor which is to be avoided in the day-to-day operation of a fishing vessel. Where the weather deck is enclosed by bulwarks it must have freeing ports, to allow rapid clearing of water under all weather and sea conditions.

2.12.15.4 As constructional precautions against capsizing, at each survey it is to be verified that the vessel has an adequate number of freeing ports in proper locations for getting rid of water rapidly. Reference is to be made to details with respect to freeing ports in the Record of Particulars MSF 1301 during inspections and surveys to ensure that the freeing ports are as stated i.e. for numbers, areas and, if noted, type. Where this is not the case, freeing ports should be reinstated to meet the criteria in paragraph 2.12.15.3 above and 2.12.15.5 to 2.12.15.19 below. In particular, surveyors should check that the freeing ports are not obstructed, welded closed or impeded in any way. Note should also be made of those on wooden vessels where it is possible for freeing port shutters to be held open or left closed and owners reminded of the dangers of trapped water on deck. Freeing port area should be confirmed at renewal surveys and confirmed that the actual area meets the required area.

2.12.15.5 If an emergency exit is located in the well formed by the bulwarks, then freeing ports should be located nearby. The arrangement of the freeing ports shall be carefully considered to ensure the most effective drainage of water trapped on the weather deck.

2.12.15.6 Vessels of 15m RL and Over and Vessels constructed to Seafish Construction Standards, MGN 628 or 629. Rule requirements have been based upon past experience and removal of water trapped on deck makes a significant contribution to the vessel's safety. **Deficient freeing ports on vessels built to the above standards should be brought to standard.** Freeing ports are to be completely free of any obstructions such as pots, nets or debris of any kind. Lower edges of freeing ports shall be as near to the deck as is practicable.

2.12.15.7 Where shutters are fitted to freeing ports the surveyor should ensure that these shutters can operate freely, comply with the requirements, and any safety bars are securely attached.

2.12.15.8 Before vessels depart for areas subject to icing the shutters should be kept in the open position or removed.

2.12.15.9 Where shutters are fitted to freeing ports the surveyor should ensure that these shutters can operate freely, comply with the requirements, and any safety bars are securely attached.

2.12.15.10 When assessing freeing port arrangements, surveyors should ensure that water is removed from the deck as quickly as possible and that freeing ports are disposed in such a way that they will achieve this. Freeing port areas should be calculated using the following formulae:

2.12.15.11 Existing vessels <24m registered length (L) constructed before 23/11/2002, and =>24m L constructed before 01/01/1999. The freeing port area, A, for each well, shall be derived from the formula,

$$A = \frac{(1,0 + 3,5h) \times l \times h}{100}$$

Where l = length of the bulwark (m)

h= mean height of the bulwark (m), and

A= total area of freeing ports in each side of the well (m^2),

subject to a maximum permissible reduction of 25% depending on the minimum freeboard.

New vessels should have the freeing port area, A, for each well, derived from the following formula,

$$A = K \times l$$

Where l need not be taken as greater than 0,7 x L (L = registered length)

K = 0,07 for vessels of =>24m L, 0,035 for vessels of 12m L, intermediate values by linear interpolation.

Where the bulwark is more than 1,2m in average height, the required area should be increased by 0,004m^2/m length of well for each 0,1m difference in height. Where the bulwark is <0,9m in average height, the required area may be decreased by 0,04m^2/m length of well for each 0,1m difference in height.

2.12.15.12 Vessels of <15m LOA should comply with the requirements of the Fishing Vessel Certifying Authority or MCA. For all existing vessels the arrangements as specified in 2.20 apply. For all existing vessels, where the “fit for purpose” criteria may be applied, then the MCA will accept freeing ports, slots, apertures & decks scuppers discharging above the waterline – providing they remain fit for purpose (see section on “fit for purpose” and conditional certificates in MSIS27 Chapter 1 Annex 1).For vessels under 12 m RL, where, due to the nature of the vessel’s design this requirement cannot be met or would prove impractical in operation, alternative arrangements based on MSN1892 The Workboat Code (Edition 2 - Amendment 1) Section 6.3 or any superceding document, or MSIS 27, Chapter 2, 2.20 – 2.21 may be accepted on application to MCA. For sealed deck vessels under 7 m RL in length or which operate no more than 20 miles from shore and at all times in favourable weather, a reduction in required freeing port area may be accepted on application to MCA. Any application to the MCA shall be supported by the designer of the vessel or, where this is not possible, a competent person. A competent person would be an individual of good standard and experience in assessing the construction standards, freeboard, stability criteria etc, for a small fishing vessel and is appropriately qualified holding a relevant qualification The submission should demonstrate equivalence with the standards

2.12.15.13 In all cases, the codes assume that vessels are provided with ‘adequate’ sheer to assist in clearing water. Where this is not provided the freeing port area must be increased. The standard sheer profile in the International Load Line Convention should be used to define ‘adequate’.

2.12.15.14 For vessels with zero sheer, the required freeing port area should be increased by 50%. Vessels with sheer less than standard sheer should have the required freeing port area value increased in proportion to the sheer deficiency.

2.12.15.15 It is implicit that the quantity of water to be discharged through the freeing ports is limited by the height of the bulwark as the vessel rolls or heels, any excess above the bulwark top being discharged over the bulwark instead of through the freeing ports. It should also be noted that the effectiveness of freeing ports can be increased by fitting a flange just above the port inside the vessel.

2.12.15.16 Shelters of increasing strength, size and degree of closure are a feature of vessels causing higher values of ‘A’ (due to the greater height ‘h’). However, as the degree of enclosure increases, the ‘well’ concept of instantaneous flooding becomes less relevant and it becomes necessary to relate the freeing port area to the rate and extent of possible flooding.

2.12.15.17 Paragraphs 2.13, 2.16 and 2.17 provide methods of calculation of the freeing port areas required in vessels having the following arrangements –

2.13.1 Shelters open at both the forward and after ends

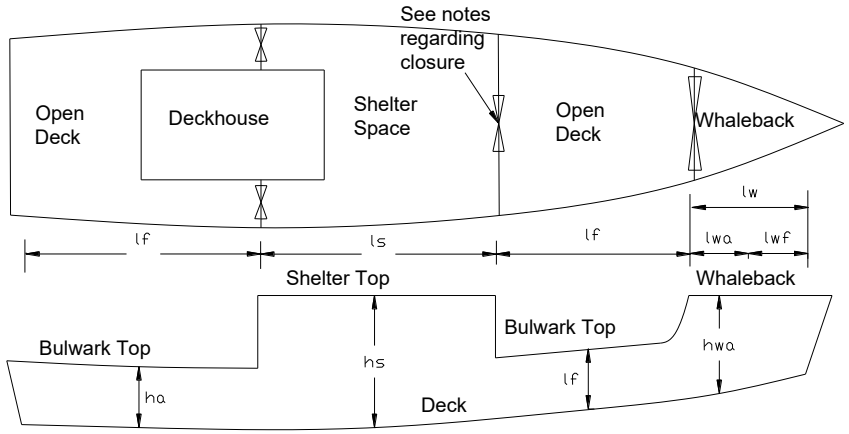
2.16 Shelters open only at the after end

2.17 Vessels having openings in the side and/or stern

2.12.15.18 Paragraph 2.18 provides a restriction on the proportion of the code freeing port area that may be located in or under the stern doors of stern trawlers.

2.12.15.19 Paragraph 2.19 provides advice on assessing, reserve buoyancy, time to remove entrapped water and assessment of water on deck.

2.13 SHELTERS OPEN AT BOTH ENDS



2.13.1 This arrangement should be treated as follows:

The vessel should be divided into four sections, i.e. the whaleback, the forward open deck, the shelter space and the after open deck.

In view of the narrowing of the vessel and the usual sheer, the whaleback length may be reduced to lwa, where

lwa = lwf when the length of the whaleback, lw =0,2L, and

lwa = lw - 0,1L when lw >0,2 L

L = la + ls + lf + lw. Lengths may be measured on the deck, parallel to the centre line.

2.13.2 The freeing port area should be determined for each section according to the formulae applicable to the vessel based on the particular mean heights and lengths (lwa in the case of the whaleback section). The freeing port area determined for each section should be located within that section, except that where the whaleback is wholly open, i.e. there is no forecastle bulkhead, the freeing port areas for lengths lf and lwa may be combined and distributed within the combined length lf + lw, to the surveyors satisfaction, taking account of sheer and the maximum trim likely to be encountered in service.

2.14 HARBOUR DRAINS

2.14.1 There may be small open boats with a sole and no significant freeing ports, and which are fitted with a small limber hole to allow the vessel to shed water when beached ashore on a trailer (or possibly when afloat) for significant periods so it does not fill up with rainwater. Such fittings are common in vessels seeking registration.

2.14.2 Affected vessels are not generally capable of being considered decked due to lack of freeboard, and are consequently not suitable for drainage using freeing ports with a significant area, but can drain rainwater overboard efficiently.

2.14.3 If these are treated as open boats and provided with suitable manual bilge pumping to remove significant quantities of water off the deck, usually from a sump, the limber holes can possibly be retained provided they are replaced with a proprietary drain fitting with a screw-in plug which is permanently attached. The requirement is that the drain should be plugged in operation but may be opened when out of service to protect the vessel.

2.14.4 The risk posed by a small drain is not significant, other than if the vessel takes on a permanent heel which could immerse it and cause the vessel to flood slowly if the plug was not fitted as required.

2.14.5 However, in this case the plug can quickly be fitted or the drain otherwise blocked and the deck cleared using the bilge pump, noting that any water will be taken onto the open deck and should be immediately visible to the crew. In any situation the capacity of the bilge pump will exceed the potential rate of flooding by several orders of magnitude.

2.14.6 The hole should be 25mm diameter at the most.

2.15 SHELTERS SUBSTANTIALLY CLOSED AT THE FORE END

2.15.1 Where the forward bulkhead of the shelter is fitted with a substantial door which closes the opening (apart from small clearances necessary to the operation of the door), but the door is not weathertight, and/or a code height coaming is not provided, the required freeing port area in way of the shelter may be determined as half the area 'A', provided that in no case should the freeing port area be less than that required for a 'Shelter with a weathertight bulkhead forward' as determined in accordance with 3.2.15.

2.15.2 Doors complying with the 'substantial closing' category may be of the hinged, sliding or shutter type.

2.16 SHELTERS WITH A WEATHERTIGHT BULKHEAD FORWARD

2.16.1 Where the forward bulkhead of the shelter is of weathertight construction and any opening therein is fitted with a weathertight means of closure and a code height coaming, the required freeing port area in way of the shelter may be determined by the formula:

$As = 0,04 \times a \times ls \ (m^2)$

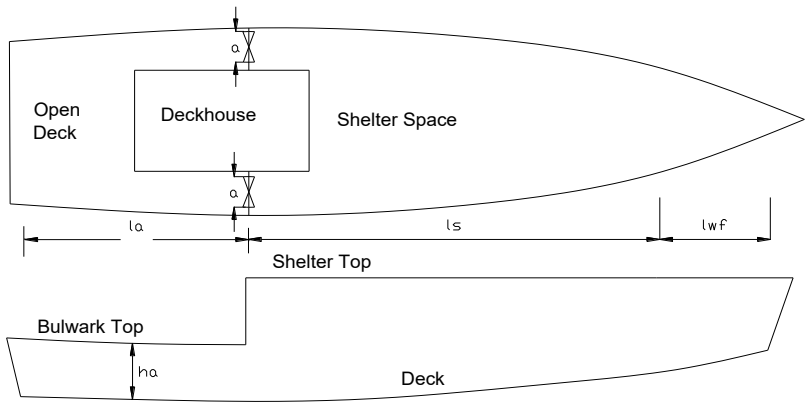
Where 'a' = width of opening in the after end of the shelter (m). (Where the port and starboard openings differ in width the greater value is to be used.)

'ls' = length of shelter (m).

Where the length of the shelter is reduced on one side due to the inclusion of an intact space, the freeing port area may be proportionately reduced on that side. If the deck area is asymmetric the reduction in freeing port area should be added to

that required on the opposite side. 80% of the area of any scupper within the shelter may be included in the freeing port area for the side on which it is located.

2.17 SHELTERS OPEN ONLY AT THE AFTER END



2.17.1 With the arrangement in the diagram, the probability of water entering the shelter space is much reduced. Thus, whilst for the open deck aft the freeing port area should be determined in accordance with the applicable formulae and located in that section, for the shelter space the required freeing port area may be determined in accordance with the following formula:

$As = 0,04 \times a \times ls\ (m^2)$

Where 'a' = width of opening in the after end of the shelter (m). (Where the port and starboard openings differ in width the greater value is to be used).

'ls'= length of shelter assumed (m) = L – la – lwf and

lwf = 0,1L or the length of an intact forecastle whichever is the greater

where

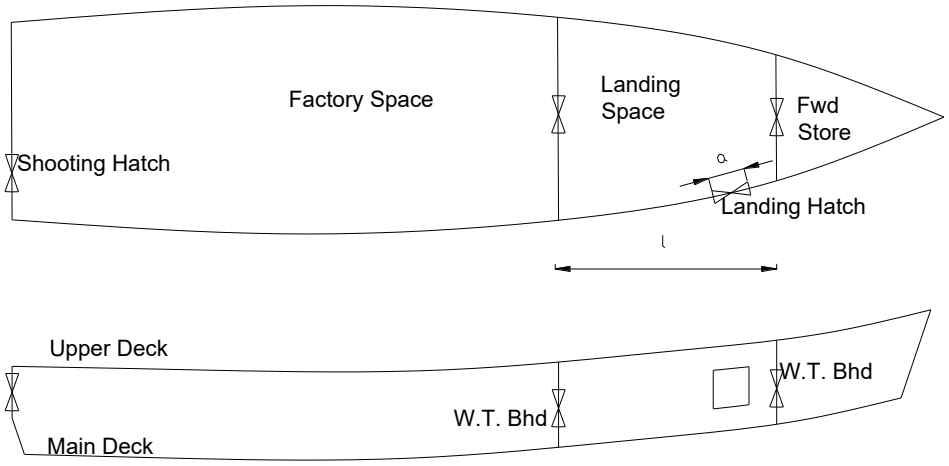
L = la + ls + lwf, i.e the length of the deck.

2.17.2 Where the length of the shelter is reduced on one side due to the inclusion of an intact space, the freeing port area may be proportionately reduced on that side.

2.17.3 If the deck area is asymmetric the reduction in freeing port area should be added to that required on the opposite side. 80% of the area of any scupper within the shelter space may be included in the freeing port area for the side on which it is located.

2.17.4 Where the superstructure is fitted forward of a partial/non weather-tight shelter, 'a' the width of the opening in the after end of the shelter is taken as half of the beam.

2.18 VESSELS HAVING OPENINGS IN THE SIDE AND/OR STERN



2.18.1 In the above arrangement the side hatch is particularly exposed to the risk of flooding due to its forward location, the minimal freeboard to the main deck and the periods during which it is open.

2.18.2 The following approach should be adopted:

(a) the landing space is to be treated as ‘open’ space;

(b) other spaces (i.e. the factory space and forward store) may be treated as ‘intact’ in deriving the cross survey of stability, provided that they are bounded by watertight structure, and any openings in the boundary have weathertight means of closure and appropriate code height coamings;

(c) openings from the ‘open’ landing space into the ‘intact’ spaces are to be kept to the minimum number and size practicable;

(d) doorways and other openings in transverse bulkheads separating the ‘open’ landing space from the ‘intact’ spaces should be kept as close to the centre line of the vessel as practicable. Where the closing appliances to such openings are side hinged the hinged sides are to be nearer to the side landing hatch;

(e) where the shooting hatch in the stern is not greater than 0,25m^2 in area and its coaming is not less than 1,0m above the working deck, and it is capable of being closed weathertight, no special drainage arrangements other than the normal scuppers, or that appropriate to control loose water on decks and in factory spaces in the Instructions to Surveyors if applicable, need to be provided;

(f) as in ‘open’ space the landing space is to be provided with freeing port area in accordance with the following formula:

$A = 0,02 \times a \times l$ (m^2/side)

Where A = the freeing port area

a = the length of the side hatch (m), and

l = the mean length of the open space (m).

80% of the area in any scupper within the open space may be included in the freeing port area for the side on which it is located;

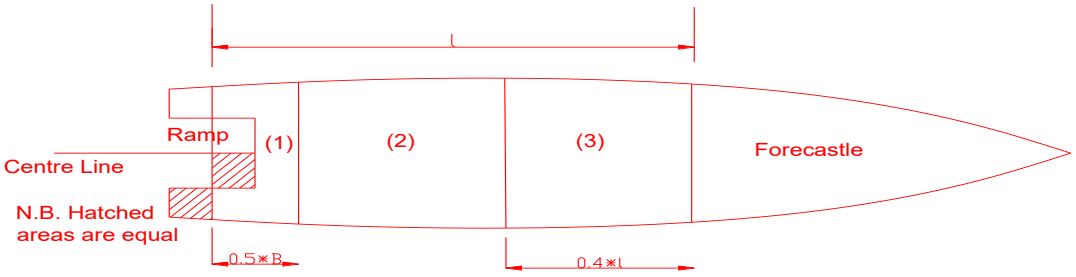
(g) the side hatch should be limited in depth by the provision of a bulwark of appropriate code height in way of the side hatch;

(h) It should be recommended that the side hatch be restricted to the minimum size practicable for the landing operation and be capable of closure by one person;

(i) the status of the side hatch closure should be clearly indicated in the wheelhouse. The hatch should be capable of being closed rapidly, even during fishing operations, in case of emergency; and

(j) where provision of freeing ports of the required area is considered inappropriate due to low freeboard, the requirement may be dispensed with subject sump pumps being fitted at suitable positions within the landing space, these should be able to sufficiently reduce the volume of water which can be entrapped in the landing space within one to two roll periods of the vessel.

2.19 FREEING PORT AREA IN OR UNDER THE STERN DOORS OF STERN TRAWLERS



2.19.1 Freeing ports are required to be arranged throughout the length of the bulwarks. Transom openings in or under the stern doors of stern trawlers can be included in the freeing port area required.

2.19.2 To guard against a possible build-up of water against the forecastle bulkhead of stern trawlers within the high bulwarks normally provided in that region, 66% of the freeing port area should be located in the forward 40% of the length of the trawl deck well. Thus 34% of the required freeing port area remains to be located in the after 60% of the well length, and if a substantial area is provided in way of the

stern doors, the freeing port area in the side bulwarks may be deficient'. It is also probable that freeing port area at the side of the vessel is more effective than that on the centreline at the stern.

2.19.3 The maximum freeing port area in or under stern doors that may be included as part of the freeing port area should therefore be limited to the freeing port area required for a well of length equal to 0,5 x B measured from the stern, where B is the principal breadth. Where the stern is recessed for a ramp, equivalent deck areas should be used, as in the diagram to determine the ‘stern’ point.

A = the freeing port area for a well of length, ‘l’ and height of bulwark, ‘h’ and is given by the formula

$A = 0,01\ (1,0 + 3,5h) \times h \times l\ (m^2)$, where ‘l’ and ‘h’ are in metres.

A_1 = the actual freeing port are in section (1) or $0,005\ (1,0 + 3,5h_1) \times h_1 \times B$ whichever is the lesser.

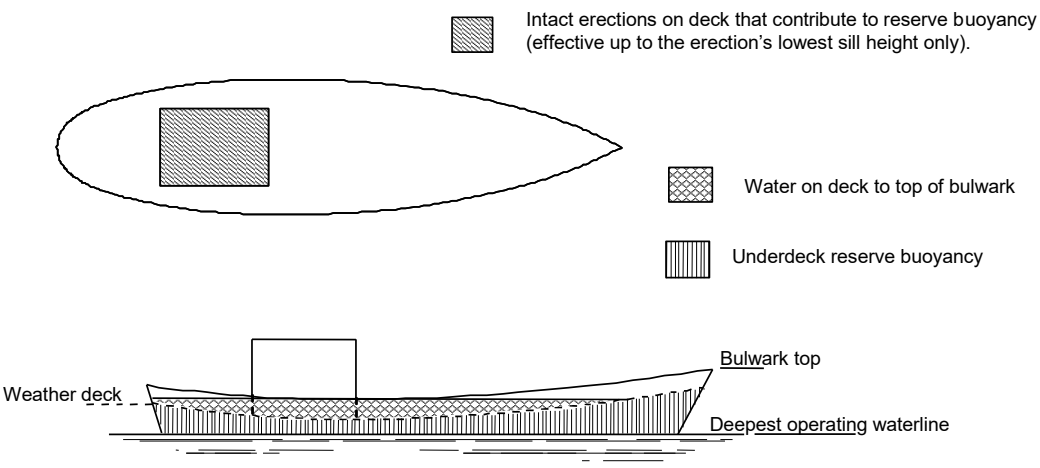
h_1 = the height of bulwark in section (1).

A_2 = the minimum are to be provided in section (2) = $A-A_1- A_3$

A_3 = the minimum area to be provided in section (3) and is to be not less than 0,66 A.

If any length of bulwark contains a step in height, the required freeing port area in accordance with the formula $A = 0,01(1,0 + 3,5h) \times h \times l$ and $A_1 = 0,005\ (1,0 + 3,5h_1) \times h_1 \times B$ is to be the sum of the areas determined separately for the lengths before and abaft the step together with the appropriate heights.

2.20 CHECK CALCULATION - BUOYANCY FOR WATER ON DECK



2.20.1 A check calculation can be carried out should it be suspected that the reserve intact buoyancy of the vessel, when operating at its deepest operating waterline, is less than the volume of water that may be trapped by upper deck bulwarks and deck houses. The reserve intact buoyancy of the vessel is the sum of the under deck buoyancy (calculated from the waterline to the top of the weather deck) plus that part of any intact deck house or erection that contributes buoyancy up to a level corresponding to their lowest coaming or sill height.

2.20.2 The vessel should be assumed upright with water filling any wells up to the lowest overspill point at the top of the bulwarks. Intact deck erections may be considered to contribute buoyancy up to a level corresponding with the top of sill of the lowest access door, hatch or vent opening that leads to such erections.

2.20.3 If, as a result of the above buoyancy check, the vessel is found to be deficient in reserves of buoyancy, the required freeing port areas should be increased to ensure that any water on deck may be rapidly and effectively cleared. Additionally, the heights of sills to hatchways and weathertight doors may be required to be increased in proportion to the deficiency.

2.20.4 Any vessel found to be significantly deficient in reserves of buoyancy should undergo an in-depth examination that covers both the vessel's arrangements for clearing water and its reserves of stability. Limitations on the vessel's maximum operating draught may require to be imposed for vessels with high bulwarks.

2.21 CHECK CALCULATION – WATER ON DECK

2.21.1 Water on deck calculations should be carried out in accordance with para 3.1.2.7 of MSN1873.

2.22 CHECK CALCULATION - FREEING OF ENTRAPPED WATER

2.22.1 The freeing ports should allow the rapid clearing of water from the deck. If the freeing port area calculated using the applicable formulae is considered inadequate for any reason the following check could be used to establish the effectiveness of the freeing ports. The amount of entrapped water should ideally be sufficiently reduced within one to two roll periods of the vessel. If this is not achieved enlarged freeing ports should be considered.

Example: A well with the dimensions and arrangement shown:

Two freeing ports are arranged at the bottom of the well with open dimensions 400 x 300mm

The freeing ports are positioned with their centres 200mm above the bottom of the well.

When the well is full it will contain 9,2m³ of water.

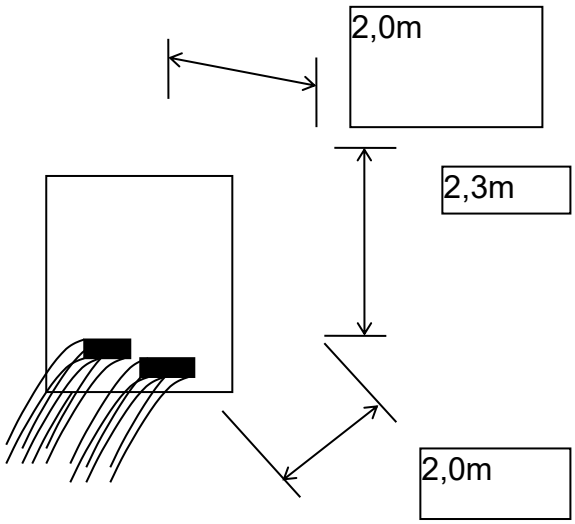
Simple hydraulics theory gives the idealised velocity of

the water through the freeing ports as:

$V = v2gh$

Where g is 9,81m/s²

h is the static head of water



Practical tests carried out on typical freeing ports have

indicated that the ideal fluid velocity will not be met

in practice and that a discharge coefficient of

approximately 0,65 should be used to obtain realistic

flow rates.

The initial velocity of the water discharge is therefore:

V = 0,65 x v(2 x 9,81 x 2,1) = 4,172m/s

And total freeing port area = 2 x 0,4 x 0,3 = 0,24m²

Therefore, the discharge rate is 4,172 x 0,24 = 1,001m³/s

However, the velocity of the discharge (and hence the discharge rate) is proportional to the head and this will reduce as the water discharges.

A tabular calculation can be carried out as follows:

Duration of Discharge (s)	Head above freeing port (m)	Discharge velocity (m/s)	Discharge rate (m^3/s)	Water remaining in well (m^3)	Amount discharged (%)
0	2,100	4.172	1,001	9,200	0
1	1,850	3,916	0,940	8,199	10,884
2	1,615	3,659	0,878	7,259	21,099
3	1,395	3,401	0,816	6,381	30,643
4	1,191	3,142	0,754	5,565	39,515
5	1,003	2,883	0,692	4,810	47,712
6	0,830	2,622	0,629	4,119	55,233
7	0,672	2,361	0,567	3,489	62,074
8	0,531	2,097	0,503	2,923	68,232
9	0,405	1,832	0,440	2,419	73,704

2.23 WATER FREEING FROM SHELTERS

2.23.1 When a weathertight shelter is fitted, surveyors should ensure that the shelter remains intact at all times such as to provide the assumed contribution to the stability of the vessel and also to prevent the accidental influx of water into the shelter with consequential danger due to listing, free surface and extension of flooding.

2.23.2 Difficulties have arisen on some vessels fitted with such shelters in regard to disposal of trash and wash water and this had led in several instances to holes being cut in the shelter sides. Apart from the threat to safety such practices may result the vessels certification becoming invalid. Surveyors should consult with owners prior to any significant modification.

2.23.3 Various acceptable means of disposal are available, e.g. by internal drainage using trash pump, bulwark level chute with flap valve and upper closure, etc, or through aft end of house.

2.23.4 Waste-chutes and similar discharges installed in enclosed spaces on the working deck should be of robust construction and be provided with; (i) an automatic valve with accessible local means of closure, and where only 1,2m above the highest waterline, a remote means of closure from outside the space, with wheelhouse visual indication, should also be fitted, and (ii) an easily accessible, hinged, gasketed and clamped steel cover should be fitted.

2.23.5 In addition openings at deck level may be fitted provided detailed arrangements comply with the following:

New vessels;

(a) an automatic non-return valve should be fitted at the shell. Valve to be balanced and capable of remaining closed at 15° heel. In order to fulfil the required functions, the fitting should be similar to a storm valve, i.e. with flap hinged at upper edge such that the angle of the seat and weight of the flap ensures that the valve remains closed until 15° heel preferably without need for external balance weights, and provides positive non-return operation (commonly referred to as a tonnage valve). The valve should be of steel, bronze or other ductile material and of substantial construction having regard to its function as part of the weathertight superstructure;

(b) the gross size of opening should not exceed 250mm x 150mm;

(c) the bottom of the opening in way of the valve should not be submerged in still water in any anticipated condition of loading at an angle of heel less than 10º;

(d) the operating spindle should not be less than 600mm above the deck. Positive means of securing the valve in the closed position should be fitted in association with the extended spindle;

(e) a notice to be provided above the valve indicating that it should be kept securely closed except when in use. Similar reference should be made in the Stability Booklet;

(f) only one valve on each side of vessel may be fitted; and

(g) where vessel also operates in bulk fishing mode and (c) cannot be met, a watertight bolted plate or hinged cover at inboard and of valve should be provided as additional closure in this mode. Attention should be drawn in notice at (e) and reference made in the Stability Booklet.

2.23.6 For major conversions, lengthening, etc, the requirements for new vessels should be applied unless proved impracticable when the requirements below should be considered.

2.23.7 Existing vessels with weathertight shelters fitted to satisfy stability requirements should, in principle, comply with requirements for new vessels unless proved impracticable to comply with para (c), when the following would be considered:

(a) para(a), (d)-(g), for new vessels, to apply;

(b) the gross size of opening should not exceed 250mm x 75mm;

(c) the minimum freeboard in way of the valve measured from the bottom of the valve opening in the worst anticipated condition of loading should not be less than 150mm.

(d) valves would not be permitted in vessels unable to meet para (c). Internal disposal using trash pump or alternative means would be required.

2.23.8 Special consideration should be given to shelter decks where deck wash is used.

.1 Loose water on deck can cause a significant loss of stability due to free surface effect.

It is imperative that vessels of 15m Length Overall to less than 24m Registered Length built before 23 November 2002 with weathertight compartments such as shelter decks for the protection of the crew, especially if they are spaces for fish processing or have wash water introduced, have scuppers/ tonnage valves or other means fitted to rapidly drain water.

It is strongly recommended such arrangements have an independent means of pumping away wash water with a pumping capacity at least 1.5 times the wash water supply.

Where pumping arrangements are intended to cater for solid waste, discharge shall be arranged via local sumps with pumps suitable for pumping fish waste products. In the event of a build up of water occurring in the processing spaces, the water supply should be stopped immediately until the deck has been cleared;

.2 Where tonnage non-return valves would be immersed at an angle of heel of 10º or less in any loading condition, powered drainage pumps, discharging from a point high in the side of the shelter, must be used; and the non-return valves removed and their openings sealed;

.3 If the vessel does not have independent pumping capability in 2.23.8.1 above, it shall have additional measures in place to adequately address the risk of water accumulation on weathertight shelter decks due to blocked, seized, or shut tonnage valves or other water freeing arrangements;

.4 Crew shall be aware of the potential output of wash water from deck wash pumps and the capacity of the bilge pumps to remove the water;

.5 Deck wash pumps should never be left running unattended

.6 Deck wash pumps shall have controls with readily accessible remote stops;

.7 Tonnage valves and scuppers should not be blocked, function as intended and are not seized.

.8 Decks should be clear of loose gear, canisters etc that could be washed into and block freeing ports and tonnage valves;

.9 Safeguards are in place, for example,

- conduct a risk assessment of flooding in the shelter deck area;
- bilge alarms fitted within the shelterdeck space;
- clear signage on measures to ensure preventative measures are adhered to;
- put in place operational procedures.

2.23.9 In general non-corrodible hinge pins, bearings, etc should be incorporated in the fittings required in these closing arrangements.

2.23.10 Acceptance of valves under the arrangements described above does not exempt a vessel from complying with paragraph 4.9 of MSN1871 Amendment No.2, paragraph 4.3 of MSN1872 or paragraph 4.4 of MSN1873, as applicable.

2.24 WATER FREEING ARRANGEMENTS – OPEN VESSELS

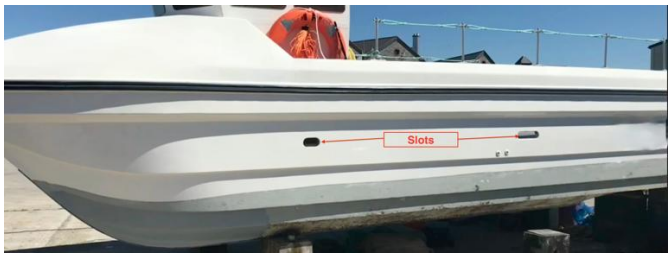
2.24.1 See Section 2.19 of MSN1871 Amendment No.2

2.24.2 Further to 2.19.4.1 of MSN1871 Amendment No.2 where the proposed location does not directly comply with MSN1871 Amendment No.2 due to its location and the location of a sump, would mean that the water would not be draining from the deck in any condition other than a list in the direction of the sump, this arrangement can only be accepted if another sump if fitted to offset this effect.

2.25 WATER FREEING ARRANGEMENTS – ADDITIONAL FOR VESSELS OF LESS THAN 15M LOA - EXISITNG VESSELS DECKED VESSELS AND ASSUMES THE DECK IS WATERTIGHT ONLY

2.25.1 Slots have been previously accepted by the Administration, Certifying Authority and by builders prior to formal construction standards. Slots are routinely found on boats of <7m although may be found on slightly larger vessels. They are accepted by the MCA providing their ability to shed water remains fit for purpose. Attending surveyors may wish to consider the operating restrictions as discussed elsewhere. Caution should be exercise before attempting to comply with current standards. (see diagram and photo below)

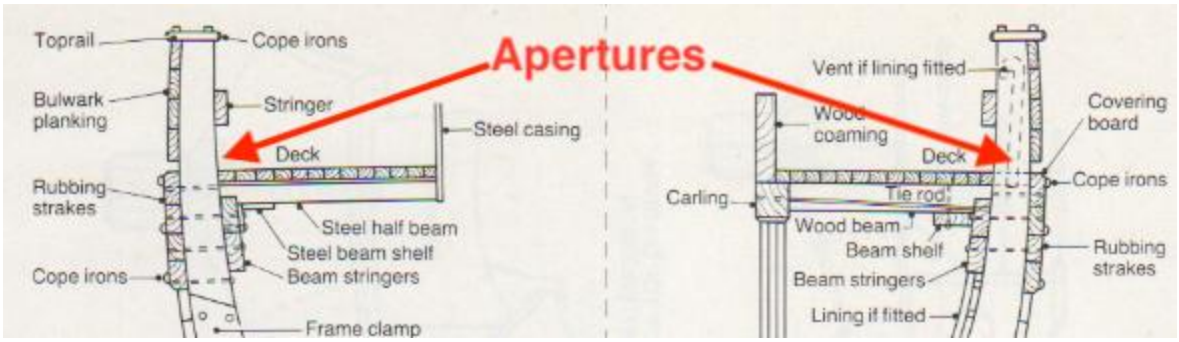
2.25.2 There are no calculation standards for slots. Acceptance of existing arrangements should be recorded on the survey report, proposed and brought to the attention of the verifying grade 7 together with any conditions placed upon the certificate - for acceptance.





2.25.3 Apertures have been previously accepted by the Administration, Certifying Authority, White Fish Authority and by builders prior to formal construction standards. Apertures are routinely found on wooden vessels of all sizes and can be considered to be in lieu of the bottom plank (or ½ plank) in the bulwarks. The aperture may be continuous or semi-continuous along the vessel length thereby allowing water to run-off the deck. (see diagram below)

2.25.4 There are no calculation standards for apertures. Acceptance of existing arrangements should be recorded on the survey report, proposed and brought to the attention of the verifying grade 7 together with any conditions placed upon the certificate - for acceptance..



2.25.5 Deck scuppers are accepted. On small fishing vessels these tend to be channel drains from hatchways or similar. Key areas for consideration are to ensure that the underdeck pipework integrity is equal in strength to the structure that it surrounds, free from accidental or separation from the hull side. Where there is a risk that the under deck scupper may be compromised then new construction guidelines should be followed. The diameter of deck scuppers should be considered but on small vessels with a sealed deck can normally be accepted without question. The water freeing capability should not be compromised by the (often) small diameter of these scuppers and means provided to prevent blockage..

2.25.6 Existing RCD certified vessels with ISO Certification. The Code accepts alternative standards. ISO 12217-1 (Small Craft - Stability & Buoyancy >6m) and ISO 12217-3 (Small Craft – Stability & Buoyancy <6m) or has a workboat certificate. These standards consider swamping of the vessel.

2.25.7 Providing the vessel has not been modified in anyway, that the deck and all fittings remain in good repair then the tally plate in conjunction with the builders ISO certificate for the individual vessel will allow the vessel to continue as a Registered Fishing Vessel. Verification of the ISO certificate should be regarded as integral to ongoing compliance. The absence of the certificate, tally plate or modification of the vessel will require the vessel to be assessed against the code for stability, freeboard and water shedding arrangements.

2.26 PROCESS MAPS FOR DETERMINING FREEBOARD AND WATER FREEING ARRANGEMENTS FOR FISHING VESSELS OF LESS THAN 15M LOA.

2.26.1 Interpreting the Process Maps

2.26.1.1 Vessels which meet the freeboard/positive clear height at side, waterfreeing requirements and stability requirements of MSN1871 Amendment 2 shall only have any restrictions applied as set out in MSN1871 Amendment No.2.

2.26.1.2 The process maps shown in Annex 2 are intended to highlight a path through MSN 1871 Amendment 2 allowing MCA surveyors to provide essential support and guidance to industry in demonstrating compliance or equivalence with the water freeing arrangements and freeboard requirements.

2.26.1.3 All paths either lead to acceptance as complying with the requirements of the legislation or referral to HQ using MSF1261.

Notes highlighted either ● or ● on the process maps guide to further information within this supporting annex.

● Refers to notes associated with Freeboard and Positive Clear Height at Side

● Refers to notes associated with Water Freeing Arrangements

The notes are grouped together for Decked and Open Vessels for simplicity and therefore the numbering is not essential to the process.

2.26.2 Dealing with Non-Compliance

2.26.2.1 See Section 3.8 of MSIS27 Chapter 1 Annex 1 and Section 2.26 of MSIS27 Chapter 2 for details of how to address Vessels not meeting the requirements for stability, water freeing arrangements, freeboard, or positive clear height at side,

2.26.3 Modification

2.26.3.1 Where a vessel has been modified since build, the owner is to present more information to determine if the vessel has been modified within the scope of the build standard and that any modifications comply with the appropriate construction standards requirements.

2.26.3.2 Unauthorised modifications where the MCA have not given prior approval will not be accepted.

2.26.3.3 If a vessel requires repair or modification to achieve compliance with MSN 1871 Amendment 2 then the surveyor should ensure the instructions in MSIS 27 Chapter 1 Section 1.22 to 1.24 are followed.

2.26.4 Equivalence

2.26.4.1 Vessels that joined the register on/after 16th July 2007 will be treated as follows:

- 7m and Over (RL) will be accepted as compliant if no unauthorised modification or alteration has taken place that would impact the initial acceptance criteria based upon the relevant construction standard.
- Less than 7m (RL) must demonstrate that freeboard and water freeing arrangements meet the construction standard. This may not have been assessed at build and therefore vessels will need to be brought into compliance with the standard.

2.26.4.2 Vessels that joined the register before 16th July 2007 will need to demonstrate compliance/equivalence through means identified within this document.

2.26.4.3 Equivalent arrangements may be accepted at the discretion of the MCA with written report, along with a supporting declaration of a Competent Person outlining how the vessel meets an alternative criterion to demonstrate equivalence. A Competent Person would be an individual of good standard and experience in assessing the construction standards, freeboard, stability criteria etc, for a small fishing vessel and is appropriately qualified holding a relevant qualification

2.26.4.4 The Competent Person would be an individual of good standing and experience in assessing the construction standards, freeboard, stability criteria etc… for a small fishing vessel and is appropriately qualified holding a relevant qualification. Prior to submission to HQ S&I using MSF1261, equivalent arrangements must be supported with relevant information and calculations as applicable provided by a Competent Person which may include assessment of the following items:

- Stability and freeboard requirements as per MGN 281 (F)

- Deck arrangement i.e., Continuous Watertight Weather Deck as per MGN 644,
- Bilge pumping arrangements
- Hatches and coaming arrangements, any proposed increase in coaming height, ensuring deck hatches can be closed weathertight
- Ability of the deck to clear water under the trims seen in service i.e., sheer and camber of the deck, position of lowest point of deck
- Buoyancy arrangements including the extent of any weathertight structure fitted and provision of buoyant foam, if any,
- Measurement of the freeboard at various locations along the length of the vessel, to determine if the minimum freeboard figure is a true representation of the freeboards in service,
- Arrangements for the reduction of water on the deck,
- Arrangements for the protection of the crew,
- Point of deck edge immersion under heeling,
- Wave and sea effect on water clearing,
- Proposed restrictions on the loading conditions (e.g., maximum number of pots carried, or no catch on deck, or minimum fuel carried etc.)
- Proposed restrictions on the operating area/weather conditions.
- Calculations for buoyancy as per MSIS 27 Chapter 2 Section 2.20 or other recognised means of demonstrating reserve buoyancy, one e.g. is as below:,
- Practical buoyancy test or equivalent calculation as per Annex XIII of IMO/ILO/FAO 'Safety Recommendations for Decked Fishing Vessels of Less than 12 metres in Length and Undecked Fishing Vessels', Rome 2012.
- Calculations for freeing of entrapped water as per MSIS 27 Chapter 2 Section 2.22 or other recognised means of demonstrating;
- Indications of the level of safety as identified by the Wolfson Method presented in MGN 526 (F) when considering minimum residual freeboard as measured or calculated. By 'minimum residual freeboard' we mean the vessel's minimum freeboard in the worst foreseeable operating condition e.g., when heavily loaded and/or lifting,
- Practical assessment of the water freeing arrangements may be demonstrated to the MCA.
- Demonstrate build specification to equivalent standard i.e., Recognised Organisation (Hull Construction Certificate).
- Proposed restrictions to lifting equipment e.g., maximum winch capacity, if applicable.

Note. This is not an exhaustive list, and HQ S&I will consider alternative means of demonstrating compliance/equivalence.

26.4.5 If the vessel has gone through the equivalency route for acceptance, then the following conditions should be placed on the Certificate.

- If the vessel is decked and freeboard puts it in the Green portion of the Wolfson notice: No additional conditions are required.

- If the vessel is decked and the freeboard puts it in the Amber portion of the Wolfson notice the Conditions should state: **"Area of operation restricted to sea**

states with a significant wave height below XXm, as defined in the vessel's Wolfson Stability Notice."

- If the vessel is decked and the freeboard puts it in the Red portion of the Wolfson notice the condition should state: **"Area of operation restricted to calm sea states, and with extreme caution, with a significant wave height below XXm, as defined in the vessel's Wolfson Stability Notice."**

- If, in addition to the above a decked vessel has a freeboard of 200-300mm and/or has a deficiency in freeing port area accepted through the equivalency route, the following should also be added as a condition: "**Area of operation is limited to 20 miles from a *safe haven* and in *favourable weather* conditions"**.

- If the vessel is an open vessel and the positive clear height at side is in the Green portion of the Wolfson Notice, the condition should state: **"Area of operation is limited to 20 miles from a *safe haven* and in *favourable weather* conditions"**.

- If the vessel is an open vessel and the freeboard places the vessel in the Amber portion of the Wolfson notice the condition should state: **"Area of operation is limited to 20 miles from a *safe haven*, in *favourable weather* conditions, with a significant wave height below XXm, as defined in the vessel's Wolfson Stability Notice."**

- If the vessel is an open vessel and the freeboard places the vessel in the Red portion of the Wolfson notice, the condition should state: **"Area of operation is limited to 20 miles from a *safe haven*, in *favourable weather* conditions and calm sea states, with a significant wave height below XXm, as defined in the vessel's Wolfson Stability Notice."**

26.4.6 Only the conditions set out in MSN1871 Amendment 2 are to be used on vessels that meet the freeboard and stability requirements without using the equivalency route.

2.26.6 Vessels (Beach Launched and Recovered)

2.26.6.1 Drainage – Open Vessels. Any drainage arrangement fitted to an open vessel should comply with the requirements of MSN 1871 (F) 2.19.5. For those vessels where an additional means of rapidly draining the deck or well is considered essential to ensure safe operation e.g., beach launched / recovered vessels, and an increase in the diameter or number of drains is found or proposed, full details should be provided.

2.26.6.2 For open vessels, 'Elephant Trunk' type arrangements would not generally be accepted in isolation. As a minimum, any drain in excess of the dimensions permitted in 2.19.5 should be provided with a positive means of watertight closure e.g., screw down non-return valve or permanently attached hinged, gasketed flap. Any drains should be provided with permanent signage indicating that these must be kept closed at sea. The surveyor should confirm that the integrity of the pipework leading overboard, and any closures provided remains watertight in service.

2.26.6.3 New Vessels (2021), details of any drainage arrangements in excess of the requirements of 2.19.5 should be submitted at the plan approval stage for assessment.

2.26.6.4 Arrangements considered under this heading for vessels that relocate to another area of operation after acceptance and are no longer Beach Launched and Recovered would not be expected to make further changes providing the arrangements remain as agreed.

ANNEX 1 – USEFUL REFERENCES – WATERFREEING ARRANGEMENTS

1.1 MSN 1871 Amendment 2 – Positive Clear Height at Side & Freeboard References

1.1.1 Equivalences may be accepted on application to the MCA under one or more of the following sections:

- COP 3.11.3
- COP 3.12.4

1.1.2 Registered vessels built on or after 16th July 2007 to a construction standard will continue to be accepted, as long as they continue to comply with that standard. Vessels that have been modified outside the scope of the Code of Practice or are being used beyond the limit of the approval standard will not be accepted as meeting the Code of Practice. Continued compliance will be accepted under one or more of the following sections:

- COP 3.12.4
- COP 3.12.6

1.1.3 The Code of Practice does not specify Freeboard and Stability requirements for New Vessels (2007) between 12m (RL) and 15m (LOA).

1.1.4 New Vessels (2007) between 12m (RL) and 15m (LOA) should apply COP 3.12

0 – 12m (RL)	F/V Category	12m (RL) – 15M (LOA)
3.12	Existing Vessels COP 1.2.1.1	3.12
	New Vessels (2007) COP 1.2.1.2	3.12
	New Vessel (2017) COP 1.2.1.3	3.4.6
	New Vessels (2018) COP 1.2.1.4	3.4.6
3.11	New Vessels (2021) COP 1.2.1.5	3.4.6 & 3.11

1.2 MSN 1871 Amendment 2 – Construction Standards References

1.2.1 In addition to the construction standards outlined below, equivalent standards recognised by the MCA such as those of a Recognised Organisation may be accepted.

1.2.2 The MCA will accept vessels built to a recognised standard where it is possible to demonstrate equivalent stability, freeboard and water freeing arrangements have been assessed.

1.2.3 The requirements for Freeboard and Positive Clear Height at Side were introduced into the 2012 SEAFISH Construction Standards under Section 3.9.

Open Vessel – Positive Clear Height at Side	**F/V Category**	**Decked – Freeboard**
SFIA 1980s SFIA 1990s SEAFISH 2001 <12m	Existing Vessels COP 1.2.1.1 Key Date: before 16th July 2007	SFIA 1980s SFIA 1990s SEAFISH 2001 <12m
SEAFISH 2007 (from 16 July 2007) SEAFISH 2012 (from 01 January 2013)	New Vessels (2007) COP 1.2.1.2 Key Date: on/after 16th July 2007	SEAFISH 2007 (from 16 July 2007) SEAFISH 2012 (from 01 January 2013)
SEAFISH 2012 (from 01 January 2013)	New Vessels (2017) COP 1.2.1.3 Key Date: on/after 23 October 2017	SEAFISH 2012 (from 01 January 2013)
SEAFISH 2012 (to October 2019) SEAFISH 2019 (from October 2019)	New Vessels (2018) COP 1.2.1.4 Key Date: on/after 31 December 2018	SEAFISH 2012 (to October 2019) SEAFISH 2019 (from October 2019)
MGN 628 (from 21st July 2020)	New Vessels (2021) COP 1.2.1.5 Key Date: on/after 6th September 2021	MGN 628 (from 21st July 2020)

1.3 MSN 1871 Amendment 2 – Stability References

1.3.1 COP 3.2.1 - All vessels are required to maintain a record of stability tests.

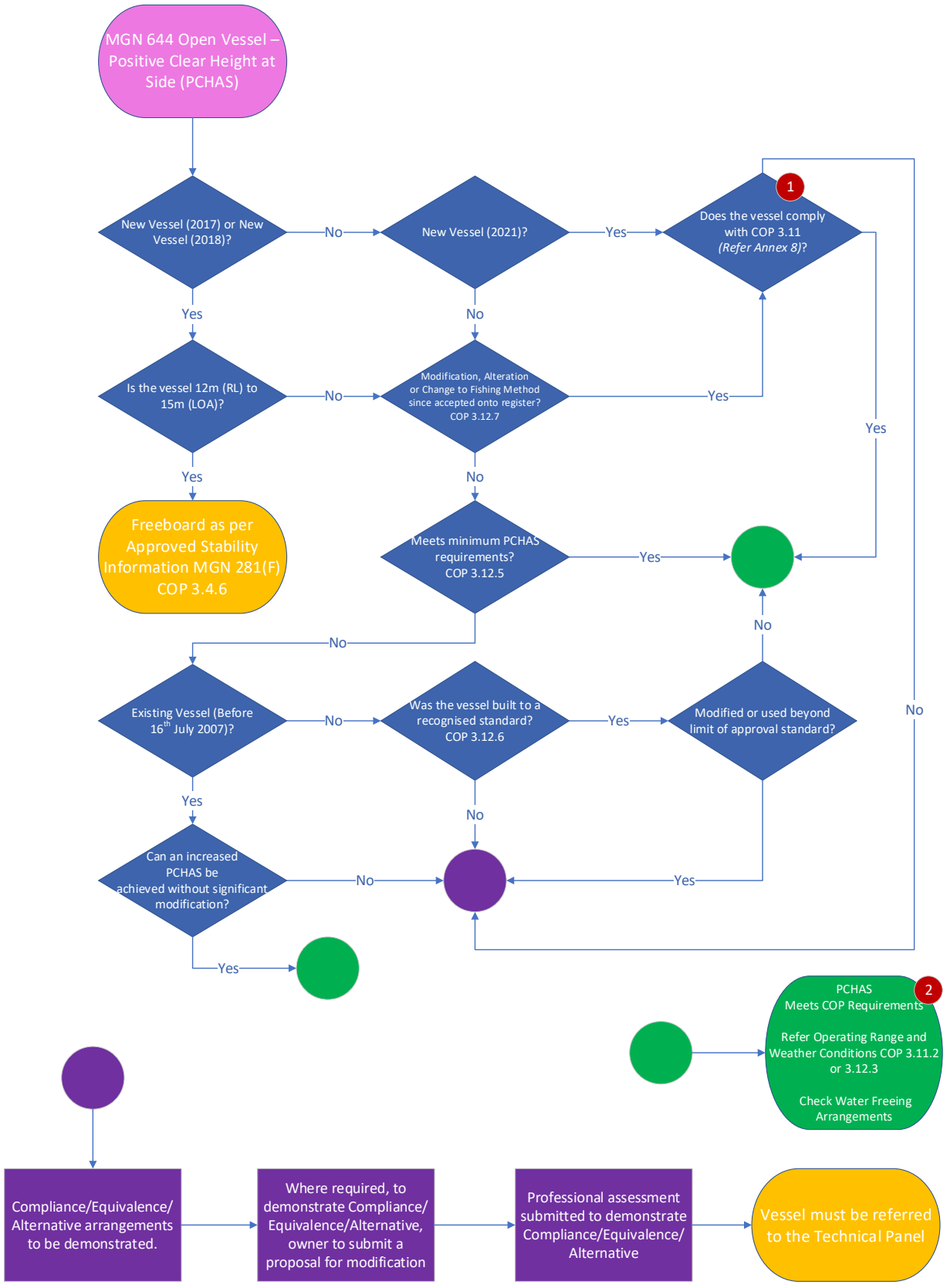
1.3.2 COP 3.4.6 – New Vessels (2017), (2018), (2021) 12m (RL) to 15m (LOA) to be provided with approved stability information.

1.3.3 The Code of Practice does not specify Freeboard and Stability requirements for New Vessels (2007) between 12m (RL) and 15m (LOA).

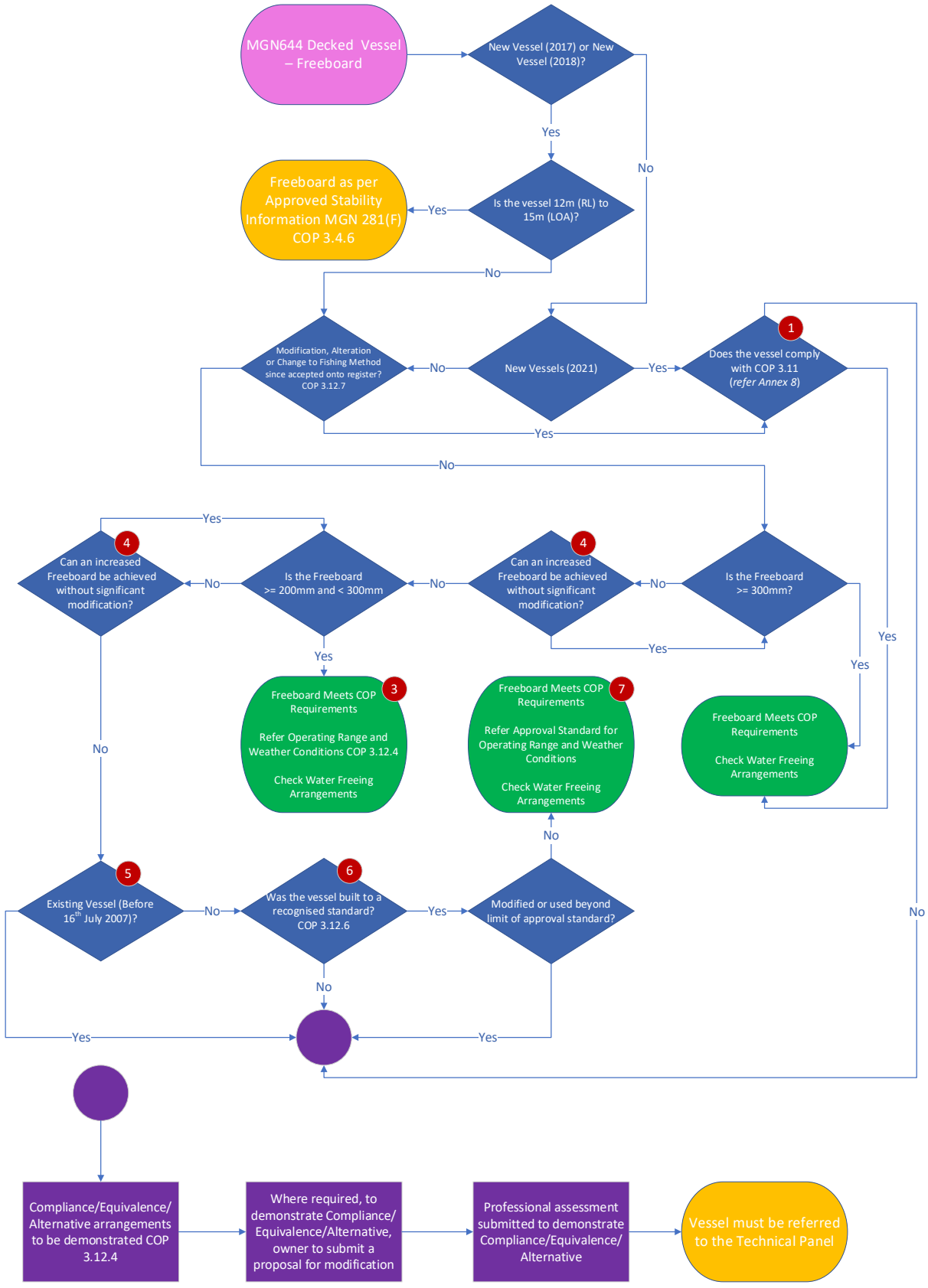
1.3.4 New Vessels (2007) between 12m (RL) and 15m (LOA) should apply COP 3.12

0 – 12m (RL)	F/V Category	12m (RL) – 15M (LOA)
3.12	Existing Vessels COP 1.2.1.1	3.12
3.12	New Vessels (2007) COP 1.2.1.2	3.12
3.12	New Vessel (2017) COP 1.2.1.3	3.4.6 & 3.5 & 3.6
3.12	New Vessels (2018) COP 1.2.1.4	3.4.6 & 3.5 & 3.6
3.8 – Category A 3.9 – Category B 3.10 – Category C	New Vessels (2021) COP 1.2.1.5	3.4.6 & 3.5 & 3.6

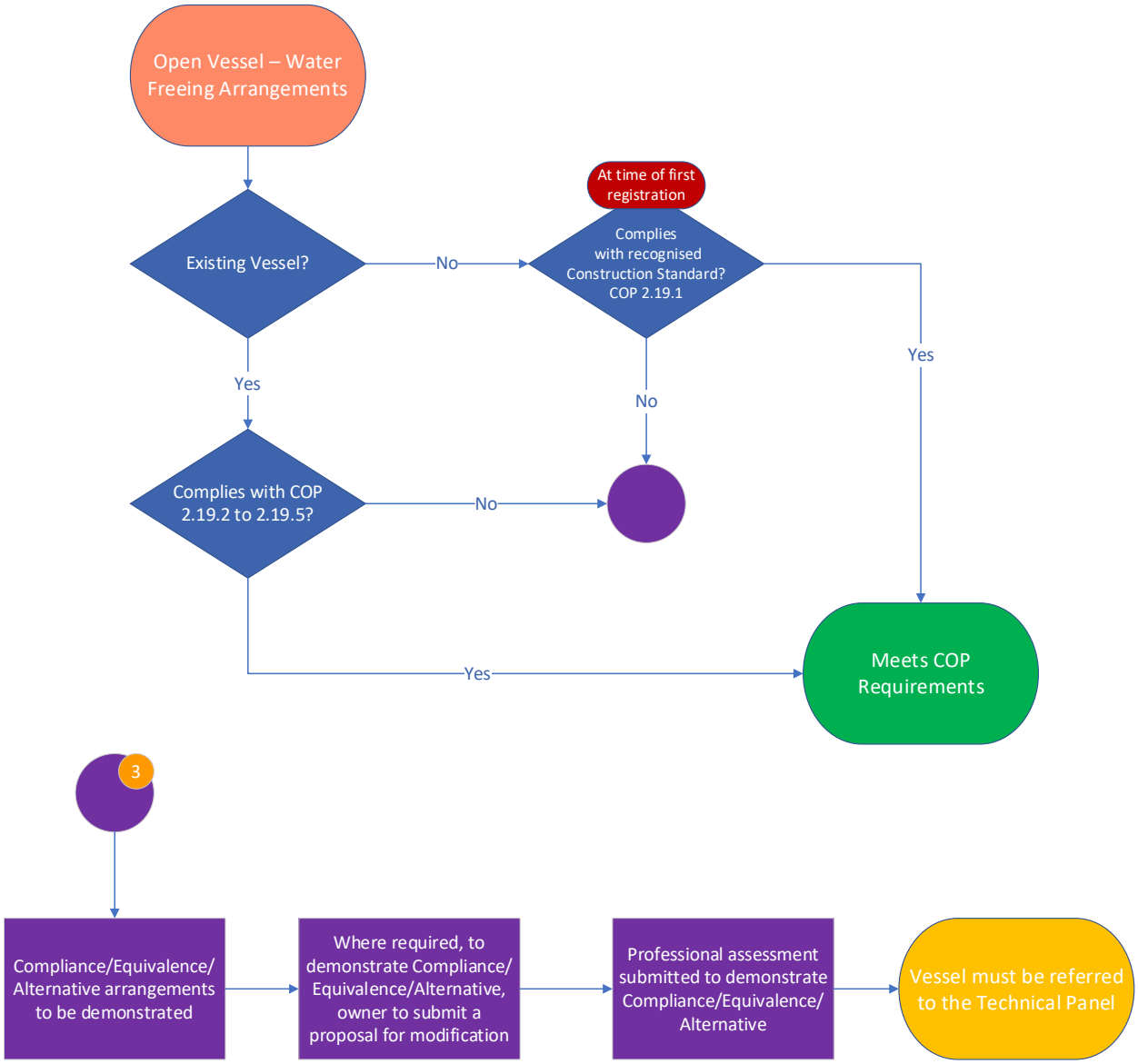
ANNEX 2A – OPEN VESSELS (POSITIVE CLEAR HEIGHT AT SIDE)



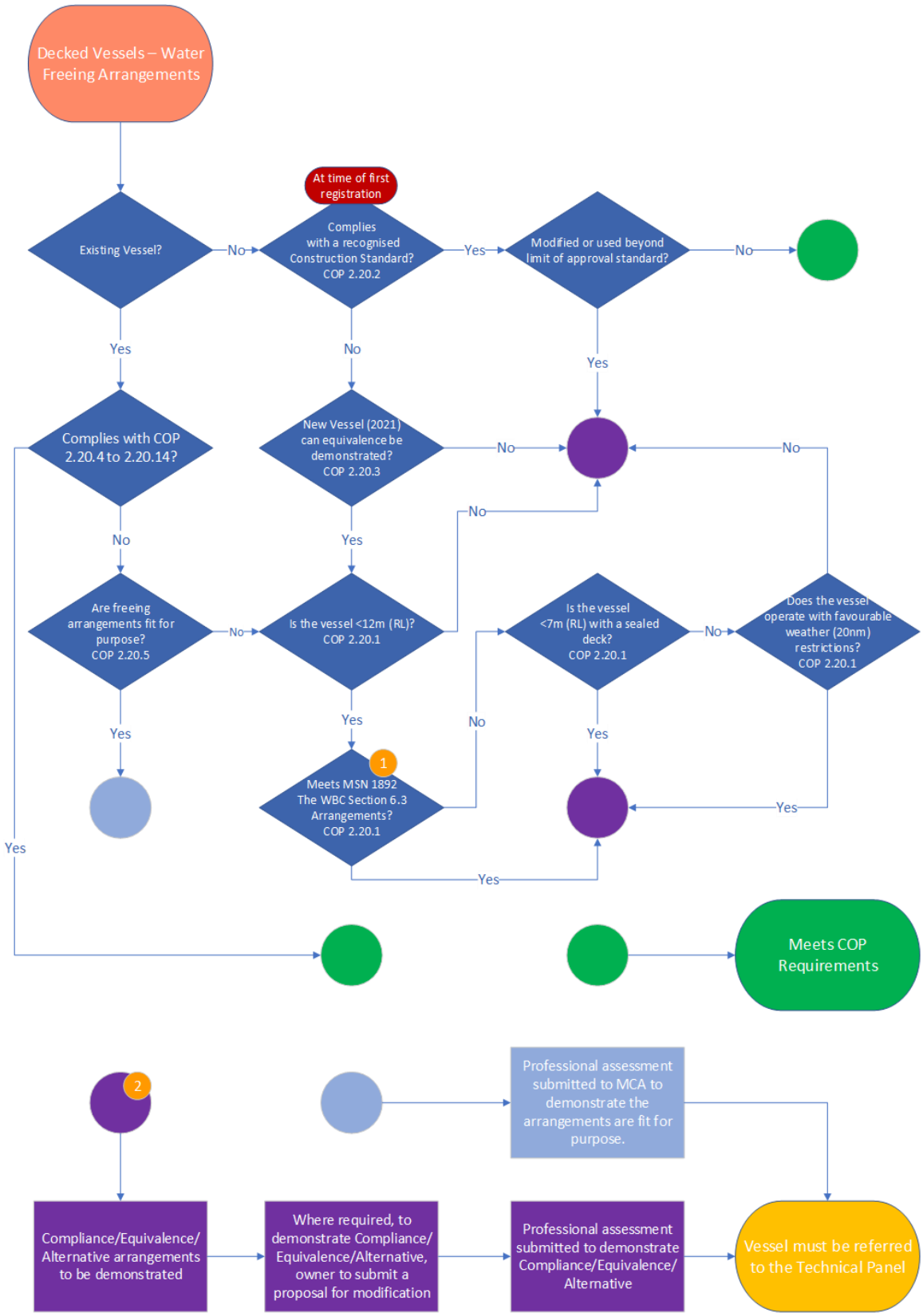
ANNEX 2B – DECKED VESSELS (FREEBOARD)



ANNEX 2C – OPEN VESSELS (WATER FREEING ARRANGEMENTS)



ANNEX 2D – DECKED VESSELS (WATER FREEING ARRANGEMENTS)



ANNEX 2E – PROCESS MAPS SUPPORTING NOTES

Freeboard and Positive Clear Height at Side



1	New Vessels (2021) must meet the requirements of the MSN 1871 Amendment 2 Section 3.11 and Annex 8. New Vessels (2021) which do not fully comply may be accepted on application to the MCA (Maritime and Coastguard Agency) under MSN 1871 Amendment 2 Section 3.11.3. Where possible, the actual freeboard should be measured in all foreseeable operating condition i.e., with all gear and anticipated maximum catch weight onboard, or the load applied through lifting devices would cause the minimum freeboard to be reduced below safe levels. When assessing, surveyors should consider max POB of the vessel and this additional weight should be included, in addition to fishing gear and full tanks, worst case depart port. Potters would be expected to have at least the equivalent maximum weight of pots that the vessel could expect to carry onboard on departure to fishing grounds.
2	Open Vessels are to be limited in their operation to 20 miles from a safe haven and in favourable weather conditions. (COP 3.11.2 or COP 3.12.3)
3	Decked Vessels with freeboard less than 300 mm are to be limited in their area of operation to 20 miles from a safe haven and in favourable weather conditions. The minimum freeboard should be at least 200mm. (COP 3.12.4)
4	Surveyor to discuss the available options with the owner to achieve an increase in freeboard (e.g., removal of excess equipment or weight, confirmation that no water ingress has occurred through hull or deck penetrations, no water is trapped in void spaces, any foam buoyant material fitted is not saturated, etc.). On application to the MCA, modification proposals to achieve compliance may be considered. Modification proposals must include supporting documentation and calculations from a Competent Person . Please consider the points below during discussion with owner: 1. For smaller vessels and those vessels fitted with a completely sealed watertight deck, raising the height of the vessel's main deck is not a preferable option as this may have a negative impact on the vessel's structure, weight, vertical centre of gravity, and stability and may present an increased risk of falling overboard. 2. Measurement of the freeboard at various locations across the length of the vessel may support equivalence – include in referral to panel. 3. Impact of any actions taken to increase the freeboard or support must be documented.
5	Vessels with less than 200 mm Freeboard are to be considered Open Vessels. Where the freeboard is less than the minimum freeboard indicated, where

	equivalence can be demonstrated the MCA may accept alternative arrangements. (COP 3.12.4)

6	Surveyor to review the build standard that is presented and determine if stability, freeboard, and freeing arrangements have been considered. Ensure that the documentation provided is sufficient to determine that the standard is appropriate and that any limitations are complied with. All relevant documentation is to be recorded in the vessel file for future reference.
7	Vessels that are accepted as meeting the requirements of an equivalent alternative standard should only operate within the limits of the conformity assessment, hull construction certificate or equivalent documentation. An example of this would be for vessels assessed to ISO 12217-1 or ISO 12217-3, that do not include or evaluate the effects on stability of towing, fishing, dredging or lifting operations… i.e. mechanical or power assisted recovery of gear or catch, limiting the vessel to methods of fishing identified in the COP 3.7.4 as Category C. A vessel engaged in Category C fishing which has been assessed using ISO 12271 and has not been modified since build should also comply with appropriate water freeing and stability assessment requirements. Vessels accepted under Seafish construction standards, clause 3.9.5 from 2007 to Sept 2021 as being decked vessels may have less than 300mm of freeboard. It is expected that as well as ensuring the vessel has not been modified that there is a buoyant envelope that ensures the functional requirement of remaining afloat and stable remain. Various methodologies exist to verify this, including, but not limited to: ISO 12217 1/3 assessment; Buoyant envelope calculation ≥110% displacement; MSIS 27 water freeing calculations etc...

Water Freeing Arrangements

1	As outlined in COP 2.20.1 with supporting calculations demonstrating compliance with The WBC Section 6.3
2	Decked Vessel initially found non-compliant must meet one of the following requirements: Option 1: Install the required minimum freeing ports as per a New Vessel (2021) Option 2: Meet the requirements of an Open Vessel as outline in COP 2.19 Option 3: Alternative arrangements at the discretion of the MCA submitted as a written report, along with a supporting declaration from a Competent Person, outlining how the vessel meets an agreed equivalent standard.

3	Open Vessels not meeting COP requirements are to be brought into compliance with the applicable construction standard outlined in COP 2.19.

DOCUMENT AMENDMENT HISTORY

Version Number	Status / Change	Date	Author Reviewer	Content Approver	Next Review Date/Expiry Date
10.20	• Updated references to MSN 1872 and 1873. Added text to 2.1.1.	27/10/20	D. Fenner	G. Stone	27/10/22
09.21	• Updates to make reference to requirements in MSN1871 Amendment 2	30/08/21	D Fenner	G Stone	30/08/23
01.22	• Update to ensure two sumps required where one sump does not adequately clear water • Clarify that section 2.1.1.5.2 applies only to sections of Chapter 2 of MSN1871 where consideration of requirements being fit for purpose is referred to as applicable to existing vessels	22/01/22	D Fenner	G Stone	30/10/23
08.22	• To update process for addressing water freeing arrangements on vessels of less than 15m LOA • Reference to determining fit for purpose on vessels of less than 15m LOA	12/8/22	D Fenner	G Stone	31/1/2025
11/22	• Vessels which meet the freeboard/positive free height at side, waterfreeing requirements and stability requirements of MSN1871 Amendment 2 shall only have any restrictions applied as set out in MSN1871 Amendment No.2	28/11/22	D Fenner	G Stone	31/1/25
12/22	• Surveyors should refer to sections 1.23 and 1.24 of MSIS27 Chapter 1 when considering modifications to vessels	2/12/12	D Fenner	L Page	31/1/25