THE HOVERCRAFT CODE OF PRACTICE

DRAFT Revision 9
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APPENDICIES

1 Foreword

1.1.1 This Code has been developed for application to United Kingdom (UK) Hovercraft classes listed below when used on domestic voyages. For international voyages this code could be used as guidance.

- Light < 1000 kg unladen weight up to 8 persons
- Small > 1000 kg unladen weight up to 12 passengers (less than 24 metre)

These rules are applicable to Hovercraft which are engaged in navigation and are used for reward, which carry cargo and/or not more than 12 passengers, or provide a service in which neither cargo nor passengers are carried.

1.1.2 This Code applies to Light and Small Hovercraft which are United Kingdom craft wherever they may be, and to other Light and Small Hovercraft operating from United Kingdom ports whilst in United Kingdom waters.

1.1.3 Light Hovercraft which are being used for reward but are not navigating i.e. carrying out mud surveys are defined as “Ultra Lights” and are not controlled by the MCA, however it is recommended that they comply to this code.

1.1.4 Light hovercraft (i.e. those below 1000kg unladen weight), which are not used for reward do not have to comply with the legislative requirements for registration and certification. This comparative freedom from legislation is, in part, based on an assumption that the light hovercraft will, as a matter of self-discipline, pay proper regard to safety matters. A major factor in making this assumption valid has been the formulation, publication and implementation of codes of construction and operation for light hovercraft by the Hovercraft Club of Great Britain Ltd.

1.1.5 Large Hovercraft (i.e. those over 24 metres hard structure length or which carry more than 12 passengers) are not covered by this code. High Speed Craft Regulations cover the constructional and operational rule requirements for Large Hovercraft.

1.1.6 In addition, this Code is recommended for application to Light and Small Hovercraft which are not used for reward.

1.1.7 Compliance with the Code in no way obviates the need for hovercraft operations to comply with relevant bylaws made by either the local/navigation authority or the port/harbour authority for the area in which the craft operates. Local authorities may, for instance, have powers to require craft to have passenger liability and third-party insurance cover, and to set the level of that cover. Additionally, recognising that some craft operate both at sea and on inland waterways, attention is drawn to the common approach to craft safety adopted by the major UK Inland Navigation Authorities. Owners/managing agent(s) of such craft should also comply with any applicable requirements of any relevant authority for the area of operation. It should also be noted that local authorities may also have powers over the use of the foreshore and landing places, and to issue licenses for their use.

1.1.8 Compliance with the Code in no way obviates the need for hovercraft operations to respect any environmental designations applicable to the area in which the craft operates. For example, in England, Marine Protected Areas (MPAs) are designated in territorial waters to protect marine wildlife of national and international importance.

These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Specific Scientific Interest (SSSIs), Ramsar sites and Marine Conservation Zones (MCZs). A large proportion of estuaries, for example, will have one or more of these designations. Operating a hovercraft in designated areas, particularly at times of the year when there is the potential for disturbance to wildlife (e.g. migrating birds), may be an activity which requires assent from the relevant environmental or conservation authority and their advice should be sought.

1.1.9 The organisations who contributed to The Hovercraft Code of Practice were as follows:

The Hovercraft Manufacturers Association
Bill Baker Vehicles Ltd
Flying Fish Hovercraft Ltd
Griffon Hoverwork Ltd
Hov Pod Ltd
Ivanoff Hovercraft
K and M Products Ltd
Vortex Hovercraft Ltd
The Hovercraft Club of Great Britain
The Hovercraft Cruising Club
Lloyds Register
British Marine Federation
Royal Institution of Naval Architects
Hovercraft Society
Royal National Lifeboat Institution
Intertidal Ltd.

1.1.10 The primary aim in developing the Code has been to set standards of safety and protection for all on-board and particularly for those who are trainees or passengers. The level of safety it sets out to achieve is considered to be commensurate with the current expectations of the general public. The Code relates especially to the construction of a craft, its' machinery, equipment and stability and to the correct operation of a craft so that safety standards are maintained.

In addition, designers and builders of hovercraft will need to pay special regard to the intended area of operation and the working conditions to which a craft will be subjected when selecting the materials and equipment to be used in its construction.

1.1.11 The builder, repairer or owner/managing agent of a hovercraft, as appropriate, should take all reasonable measures to ensure that a material or appliance fitted in accordance with the requirements of the Code is suitable for the purpose intended, having regard to its location in the craft, the area of operation and the weather conditions which may be encountered.

In addition to the guidance on application and interpretation in Section 3.5, the Code requirements will be regularly reviewed by a Technical Committee, comprising representatives from the organisations listed in Section 1.1.9. Amendments will be promulgated and a formal review of the Code will be conducted not later than five years from the date of publication, and thereafter at intervals not exceeding five years.

When new standards are developed and finalised by the British Standards Institution (BSI), European Committee for Standardization (CEN), International Maritime Organization (IMO), International Organization for Standardisation (ISO) or any other international body, which impact upon the requirements of the Code, amendment of the

Code may be considered immediately. In the interim period, draft standards may be applied where the MCA have accepted them as an equivalent standard.
The Commission of the European Communities' general mutual recognition clause should be accepted. The clause states:

"Any requirement for goods or materials to comply with a specified standard shall be satisfied by compliance with:

.1 a relevant standard or code of practice of a national standards body or equivalent body of a Member State of the European Community;

.2 any relevant international standard recognised for use in any Member State of the European Community;

.3 a relevant specification acknowledged for use as a standard by a public authority of any Member State of the European Community;

.4 traditional procedures of manufacture of a Member State of the European Community where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified; or

.5 a specification sufficiently detailed to permit assessment for goods or materials of an innovative nature (or subject to innovative processes of manufacture such that they cannot comply with a recognised standard or specification) and which fulfil the purpose provided by the specified standard; provided that the proposed standard, code of practice, specification or technical description provides, in use, equivalent levels of safety, suitability and fitness for purpose.

1.1.12 It is important to stress that, whilst all reasonable measures have been taken to develop standards which will result in the production of safe and seaworthy craft, total safety at sea can never be guaranteed. As a consequence, owner/managing agents of a craft are encouraged to take out a policy of insurance for all persons who are part of the craft's complement from time to time. It is advised such insurance provide cover against any foreseeable claims that may arise. It is advised if a policy of insurance is in force, a copy of the Certificate of Insurance be either displayed or available for inspection by persons onboard the craft.

1.1.13 When a craft to which the Code is applicable is permanently based abroad and subject to Rules, Regulations and examination by the Administration of the country from which it operates, the owner/managing agent may approach a Certifying Authority with the purpose of establishing "equivalence" with the Code.

.1 "Equivalence" should be established for the construction of a vessel, its machinery, equipment, stability, correct operation and examination of the craft.

.2 The Certifying Authority, when it is satisfied that it is appropriate to do so, may make recommendations in order to issue a certificate based on declaration(s) and report(s) from the administration of the country in which the vessel is permanently based.

.3 The Certifying Authority should make its recommendations to the UK Administration for approval by the Secretary of State.

It should also be noted that United Kingdom registered craft to which this Code applies, when operating outside of United Kingdom waters, may be subject to additional requirements of the port state or overseas administration, over and above this Code of Practice. Owners/managing agents should contact the administration controlling these waters for further information.

1.1.14 How to Use This Code.

It should be noted by owners, managers, operators and skippers of Hovercraft that the Schedules to the Statutory Instruments that enable this Code only dis-apply certain regulations. There are a number of other regulations which must be complied with. This Code provides information on many of those regulations that are not dis-applied, but is not definitive. This information is provided in italics. The owner, manager, operator or skipper may need to consult those regulations and the associated guidance to ensure they are compliant. This Code does not provide information on Statutory Instruments coming into force after the date of its publication which are required to be complied with. Statutory Instruments, Merchant Shipping Notices, Marine Guidance Notes and Marine Information Notes can be found on the MCA website at www.mcga.gov.uk.

1.1.15 Authorisation of Survey and Certification to Certifying Authorities

The MCA is an Executive Agency of the Department for Transport, and has responsibility and accountability for the UK Merchant Shipping Regulations and their enforcement. The Agency has authorised to Certifying Authorities the examination (survey) and certification of craft to which this Code applies, and the Certifying Authorities and the MCA have a written agreement which defines this relationship. The MCA, however retains the enforcement duties of the Code and is responsible for auditing the Certifying Authorities, although it remains an active Certifying Authority itself.

1.1.16 The authorisation of Certifying Authorities has been influenced by the requirement to have a local capability for the efficient handling of the needs of owners/operators of craft. Certifying Authorities authorised may charge owners/operators of craft a fee appropriate to the effort which is required from them for a craft to be examined and certificated.

1.1.17 Health and Safety Regulations

1.1.17.1 The owner/skipper of a craft is responsible for the health and safety of anyone working on the craft and others. When the owner/skipper employs crew, the Merchant Shipping Health and Safety Regulations apply.

1.1.17.2 Every employer is to be aware of any risks affecting workers and others and ensure that appropriate measures are taken to minimise them through improving procedures or equipment where necessary. Employers must instruct those affected about the risks and how to ensure their own health and safety and the health and safety of others.

2 Definitions

In this Code:

“Administration” means the Government of the State whose flag the craft is entitled to fly;

"All Up Weight" means the actual maximum total permissible weight of the craft in tonnes with cargo, fuel, lubricating oil, ballast water, freshwater, consumable stores, passengers and crew and their effects including activity related equipment i.e. diving equipment;

"Annual examination" means a general or partial examination of the craft, its machinery, fittings and equipment, as far as can readily be seen, to ascertain that it had been satisfactorily maintained as required by the Code and that the arrangements, fittings and equipment provided are as documented in the Record of Particulars and Record of Equipment report forms Number??.The hull, shell fittings, external steering and propulsion components of the craft should be examined out of the water at intervals not exceeding 5 years. The Certifying Authority may stipulate a lesser interval in consideration of hull construction material or the age or the type and service of the craft;

"Approved" means approved by or acceptable to the MCA under Merchant Shipping legislation, unless otherwise specified in the Code;

"as amended" refers to any other document that replaces, revokes or amends the document that the term "as amended" follows;

"Authorised person" means a person who by reason of relevant professional qualifications, practical experience or expertise is authorised by the Certifying Authority chosen by the owner/managing agent to carry out examinations required under Section 23 of the Code;

"Cargo" for the purpose of the Code means all items which are transported by the craft except fuel for the craft, ballast (either solid or liquid), consumables to be used on board, permanent outfit and equipment of the craft, stores and spare gear for the craft, crew and their personal baggage and passengers and their personal baggage, and activity related equipment;

"Category C waters" means waters designated category C waters in the Merchant Shipping (Categorisation of Waters) Regulations 1992, (SI 1992 No. 2356), as amended, and Merchant Shipping Notice MSN 1827(M) – Categorisation of Waters;

"Category D waters" means waters designated category D waters in the Merchant Shipping (Categorisation of Waters) Regulations 1992, (SI 1992 No. 2356), as amended, and Merchant Shipping Notice 1827(M) – Categorisation of Waters;

"Certificate" means the certificate appropriate to a craft to which the Code is applied;

"Certifying Authority" means either the MCA or one of the organisations authorised by the MCA to:

a) appoint persons for the purpose of examining craft and issuing and signing Declarations of Examinations; and
b) issue Certificates.

"Code" means this Code unless another Code is specified;

"Compartment" means all living and working spaces within the watertight or fire-resisting boundaries on any one level which have inter-communicating access;

"Competent harbour authority" has the same meaning as it has in the Pilotage Act 1987;

"Compliance examination" means an examination of the craft, its machinery, fittings and equipment, by an authorised person, to ascertain that the craft's structure, machinery, fittings and equipment comply with the requirements of the Code. All examinations should be conducted when the craft is out of the water.

"Control position" means a conning position which is continuously manned whilst the craft is under way;

"Commercial" includes any craft, including any "pleasure vessel" while it is in possession of a broker, ship repairer or other such person for the purposes of his business;

"Crew" means a person employed or engaged in any capacity on-board a craft on the business of the vessel;

"DfT" means the UK Government's Department for Transport;

"Efficient" in relation to a fitting, piece of equipment or material means that all reasonable and practicable measures have been taken to ensure that it is suitable for the purpose for which it is intended;

"Favourable weather" means conditions existing throughout a voyage or excursion in which the effects either individually or in combination of swell, height of waves, strength of wind and visibility cause no hazard to the safety of the craft, including handling ability;

In making a judgement on favourable weather, the skipper should have due regard to official weather forecasts for the service area of the craft or to weather information for the area which may be available from the MCA or similar coastal safety organisation;

"Forms and Certificates" used by Certifying Authorities are typically:

- Record of Equipment for a Light/Small Commercial Hovercraft (MSF 2502)
- Record of Particulars for a Light/Small Commercial Hovercraft
- Light/Small Commercial Hovercraft Builders Certificate (Builder)
- Operating Permit for a Light/Small Commercial Hovercraft (MCA or Certifying Authority)

"Freeboard" means the distance measured vertically downwards from the lowest point of the upper edge of the weather deck to the floating waterline in still water or, for an open craft, the distance measured vertically downwards from the lowest point of the gunwale to the floating waterline or, the lowest point of the crafts structure that will allow flooding to occur;

"Hovercraft" or Air Cushion Vehicle (ACV) is a craft such that the whole or a significant part of its weight can be supported, whether at rest or in motion, by a continuously generated cushion of air dependent for its effectiveness on the proximity of the surface over which the craft operates.

"Immersion Suit" means a protective suit which reduces the body heat-loss of a person wearing it in cold water and complies with the requirements of Schedule 10, Part 1 of Merchant Shipping Notice MSN 1676 (M) – "The Merchant Shipping (Life-Saving Appliances for Ships Other than Ships of Classes III to VI(A)) Regulations 1999. The Merchant Shipping (Life Saving Appliances for Passenger Ships of Classes III to VI(A)) Regulations" (SI 1999 No. 2721, SI 1999 No. 2723), as amended;

"Land" means the sea shore above the line of mean high water mark;

"Length means the overall hard structure length from the foreside of the foremost fixed permanent structure to the aft side of the aftermost fixed permanent structure of the rigid hull, excluding removable parts that can be detached in a non-destructive manner without affecting the structural integrity of the craft such as skirts and stem head fittings;

"Lift Fan" means any fan that provides a flow of air to the hovercraft air cushion, at suitable pressure, to provide lift. This category of fan includes axial, centrifugal and mixed flow.

"Loose Water" means minimal amounts of water that have accumulated within spaces on a craft through operational use but which are not associated with hull damage;

"Marine Information Note" (MIN) means a Note described as such and issued by the MCA, and reference to a specific Merchant Shipping Notice includes reference to any Marine Information Note amending or replacing that Note which is considered by the Secretary of State to be relevant from time to time;

"Marine Guidance Note" (MGN) means a Note described as such and issued by the MCA, and reference to a specific Marine Guidance Note includes reference to any Marine Guidance Note amending or replacing that Note which is considered by the Secretary of State to be relevant from time to time;

"Maritime and Coastguard Agency" means the Maritime and Coastguard Agency (MCA), an executive agency of the Department for Transport, and any superseding organisation;

"Member State of the European Economic Area" means a State which is a contracting party to the Agreement on the European Economic Area signed at Oporto on 2 May 1992, as adjusted by the Protocol signed at Brussels on 17 May 1993 and subsequently by the 2004 EEA Enlargement Agreement, and subsequently by the 2007 EEA Enlargement Agreement;

"Merchant Shipping Act", "Merchant Shipping Order", "Merchant Shipping Regulations" and "Merchant Shipping Rules" referred to in the Code mean the reference specified and includes the document issued under the appropriate statutory power which either amends or replaces the reference specified;

"Merchant Shipping Notice" (MSN) means a Notice described as such and issued by the MCA, and reference to a specific Merchant Shipping Notice includes reference to any Merchant Shipping Notice amending or replacing that Notice which is considered by the Secretary of State to be relevant from time to time and is specified in a Merchant Shipping Notice;

"Mile" means a nautical mile of 1852 metres;

"Officer", in relation to a body corporate, means:

(a) a director, manager, secretary or other similar officer of the body corporate, or a person purporting to act in any such capacity; or

(b) an individual in accordance with whose directions or instructions the directors of that body corporate, or of any other body corporate which is its controller, are accustomed to act;

"Open craft" for the application of the Code means a craft which within its length is:

.1 not fitted with a watertight weather deck; or

.2 is fitted with a watertight weather deck over part of its length.

"Owner/managing agent" means the registered owner, or the owner or managing agent of the registered owner or owner, or owner ipso facto, as the case may be, and "Owners/managing agents" should be construed accordingly;

"Passenger" means any person carried on a Hovercraft except:

(a) a person employed or engaged in any capacity on the business of the craft,

(b) a person on board the craft either in pursuance of the obligation laid upon the master to carry shipwrecked, distressed or other persons, or by reason of any circumstance that neither the master nor the owner nor the charterer (if any) could have prevented or forestalled,

(c) a child of under one year of age.

"Pleasure vessel" as defined in the Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 1998 (SI 1998 No. 2771), as amended, means;

(a) any vessel which at the time it is being used is:

(i) *(aa) in the case of a vessel wholly owned by an individual or individuals, used only for the sport or pleasure of the owner or the immediate family or friends of the owner; or*

(bb) in the case of a vessel owned by a body corporate, used only for sport or pleasure and on which the persons on board are employees or officers of the body corporate, or their immediate family or friends; and

(ii) on a voyage or excursion which is one for which the owner does not receive money for or in connection with operating the vessel or carrying any person, other than as a contribution to the direct expenses of the operation of the vessel incurred during the voyage or excursion; or

(b) any vessel wholly owned by or behalf of a members' club formed for the purpose of sport or pleasure which, at the time it is being used, is used only for the sport or pleasure of members of that club or their immediate family, and for the use of which any charges levied are paid into club funds and applied for the general use of the club; and

(c) in the case of any vessel referred to in paragraphs (a) or (b) above no other payments are made by or on behalf of users of the vessel, other than by the owner.

In this definition "immediate family" means-

In relation to an individual, the spouse or civil partner of the individual, and a relative of the individual's spouse or civil partner;

and "relative" means brother, sister, ancestor or lineal descendant.

For the purposes of this code Pleasure Vessel also encompasses Pleasure Craft or Pleasure Hovercraft.

“Renewal examination” means a similar examination to the Compliance examination.

“Plough In” – a divergent pitch motion involving an increase in drag and reduction in pitch attitude.

“Propulsion fan” means an axial fan producing propulsive forces for a hovercraft. In this code these fans are considered to be mulit-bladed fans commonly manufactured for use in ventilating devices and comprise of fixed pitch injection moulded thermoplastic blades clamped in a hub. Allowable fans of this type have been checked and approved for use in cruising craft by the Hovercraft Club of Great Britain. Such fans will be fixed pitch (or ground adjustable) and would normally be installed as a part of a ducted unit. Note fans used for both lift and thrust are considered as propulsion fans.

“Propulsion Propeller” means an axial device specifically selected for providing a propulsive force for hovercraft. In this code it consists of up to 7 blades with blades of composite materials (including timber products) located in a metal hub. The device will have been designed to provide thrust for transport. The propeller can be either fixed or variable pitch and would normally be installed as part of a ducted unit.

"Safe haven" means a harbour or shelter of any kind which affords safe entry and protection from the force of weather; this includes areas of land such as beaches that a Hovercraft can land on.

“Shore” means the edge of the land/water at the time of operation.

“Skipper” means every person (except a marine pilot) having command or charge of the craft. The terms Captain, Driver, Master, Coxswain should be taken as having the same meaning for the purposes of this Code of Practice.

“SOLAS” means the International Convention for the Safety of Life at Sea, 1974, and its Protocol of 1988, as amended;

Standards such as BS (British Standard), EN (European Standard accepted by the European Committee for Standardization, CEN), IEC (International Electrotechnical Commission) and ISO (International Organization for Standardization) identified in the Code should include any standards which amend or replace them;

"To sea" means, for the purpose of this Code, beyond Category D waters, or Category C waters if there are no Category D waters, as defined in Merchant Shipping Notice 1827 (M) – “Categorisation of Waters”;

“Vessel” means any ship to which the Merchant Shipping (Small Workboats) Regulations 1998 (SI 1998 No. 1609), as amended or the Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 1998 (SI 1998 No. 2771), as amended, apply; In addition the term “Vessel”, Craft and “Hovercraft” are interchangeable within this document.

Unladen Weight or Light Craft Weight means the actual weight of the craft in tonnes without cargo, fuel, lubricating oil, ballast water, freshwater, consumable stores, passengers and crew and their effects;

"Watertight" means capable of preventing the passage of water in either direction;

"Weather deck" means the main deck which is exposed to the elements;

"Weathertight" means capable of preventing the admission of a significant quantity of water into the vessel when subjected to a hose test;

“Yaw angle” The yaw angle, in the horizontal plane, is the angle between the longitudinal axis of the hovercraft and instantaneous direction relative to the sea bed.

3 Application and Interpretation

3.1 Application

3.1.1 This Code applies to United Kingdom (UK) Hovercraft classes as listed below:

- Light < 1000 kg unladen weight up to 8 persons
- Small > 1000 kg unladen weight up to 12 passengers

The code is applicable to hovercraft which are engaged in navigation in activities for reward, which carry cargo and/or not more than 12 passengers, or provide a service in which neither cargo nor passengers are carried, and in addition this code is recommended for hovercraft up to 4 persons being used for reward but not for navigation i.e. mud sampling. These craft are referred to as “Ultra light” hovercraft.

3.1.2 In addition this Code is recommended for application to Ultra-Light and Light Hovercraft not engaged in commercial activities.

3.1.3 If a vessel is not a “pleasure vessel” it is considered to be in commercial use for the purposes of this Code.

3.1.4 This Code applies to Light and Small hovercraft which are United Kingdom craft wherever they may be, and to Hovercraft operating from United Kingdom ports whilst in United Kingdom waters.

3.1.5 It is the responsibility of the owner/managing agent to ensure that a craft is properly maintained, examined and manned in accordance with the Code. The Code applies whether the owner/managing agent is corporate, private or of a charitable nature.

At the date of application of the Code, any craft which is in possession of an existing certificate may continue to be certificated provided they comply with the standards under which they were examined. Where new equipment is installed, or the Hovercraft undergoes modification, the standards of the Hovercraft Code relevant to the change, are to be applied as far as is practicable.

3.2 Definition of craft sizes and areas of Operation

3.2.1 The various groups of Hovercraft are authorised to operate in the following areas as identified below:

Ultra-Light Hovercraft – these craft are exempt from MCA Control.
Under 500 kg, unladen weight up to 4 persons on board.

Area Category 6 (Restricted) – operating up to half a mile from the shore (beyond categorised waters) from the line of the coast or within 1 mile of a support boat, in favourable weather.

Maximum significant wave height 0.3 metre.

Or over private land

Light Hovercraft, under 1000kg unladen, upto 8 persons onboard.

Area Category 3 – Up to 20 miles from a safe haven or as defined on the Certificate.

Small Hovercraft over 1000kg unladen weight upto and including 12 passengers (less than 24 metres long).

Area Category 2 – Up to 60 miles from a safe haven or as defined on the Certificate.

3.2.2 Depending on the nature of the craft and its use, it may be restricted to less than the above specified limits. Such a restriction should be recorded on the Light/Small Hovercraft Certificate for the craft and should be limited to operations within Area Categories 2, 3, 4, 5 and 6 only.

3.3 Certification

3.3.1 To be issued with a certificate for a particular area of operation, a craft must comply with all of the requirements of the Code for that operating area to the satisfaction of the Certifying Authority.

3.3.2 A certificate is to be valid for not more than five years.

Manufacturers of recreational craft can self-certify stating that their craft is built according to the Hovercraft Code.

3.4 Water Based Commercial Activities

The Code deals with safety of the craft and its occupants but the commercial activities other than normal seamanship duties are not considered under the Code e.g. commercial diving.

3.5 Interpretation

Where a question of application of the Code or an interpretation of a part of the Code arises, the owner/managing agent of the craft concerned should in the first instance seek clarification from the Certifying Authority. In situations where it is not possible to resolve an issue of interpretation a decision may be obtained on written application to the Director of Maritime Services of the MCA, who may consult with others as deemed appropriate.

3.6 Updating of the Code

The Merchant Shipping (Small Workboats) Regulations 1998 (SI 1998 No. 1609), as amended, and the Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 1998, (SI 1998 No. 2771, as amended, provide for, from time to time, any document amending the Code which is considered relevant to be specified by the Secretary of State in a Merchant Shipping Notice.

3.7 Equivalent Standards

3.7.1 When the Code requires that a particular piece of equipment or machinery should be provided or carried in a craft or that any particular provision should be made, to a specified standard, the MCA may permit any other piece of equipment or machinery to be provided or carried, or any other provision to be made, provided that the MCA is satisfied by trials or otherwise that the alternative is at least as effective as that required by the Code.

3.7.2 For the purpose of the Code, the results of verification and tests carried out by bodies and laboratories of other Member States of the European Economic Area (EEA) Agreement, and Turkey, offering suitable and satisfactory guarantees of technical and professional competence and independence should be accepted.

3.8 Carriage of Additional Equipment

3.8.1 Equipment on board which is expected to be relied on in situations affecting safety or pollution prevention must be in an operating condition. If such equipment is inoperative and is in excess of the equipment required by this Code it should either be repaired, removed or if removal is not practical, clearly marked as inoperative and secured.

4 Construction and Structural Strength

4.1 Structural Strength

4.1.1 General

The design of hull structure and construction should provide strength and service life for the safe operation of the craft, within its group at the maximum service speed, to withstand the sea and weather conditions likely to be encountered in the intended area of operation.

4.1.1.1 The design of the craft should take into consideration all reasonable combinations of loading cases where these are likely to result in critical loadings of the craft.

4.1.1.2 The design assessment of the structure should consider the following loading cases and have Proof and Ultimate Factors of 1.0 and 1.5 respectively under the maximum loads which can arise within the Design Environmental Conditions and Craft limitations for which certification is sought.

Ultra-light and Light Craft
Manoeuvring loads
Water impact loads
Towing loads
Machinery loads
Floor loads

Small Craft:
Manoeuvring loads
Water Impact loads
Floating loads
Transitional loads
Wind loads
Gust loads
Parking and Mooring loads
Slinging and Jacking loads
Towing loads
Machinery loads
Floor loads

4.1.2 Construction Materials

4.1.2.1 A craft may be constructed of wood, fibre reinforced plastic (FRP), aluminium alloy, high-density polyethylene or combinations of such materials including such materials as used in the construction of inflatable and rigid inflatable boats.

4.1.2.2 Proposals to use any other material should be submitted to the Certifying Authority for consideration and approval. When a Certifying Authority considers it does not have the necessary expertise to deal with craft of the hull material proposed, the Administration should be consulted with regard to the procedures to be adopted.

4.1.2.3 A craft will be considered to be of adequate strength after a design appraisal and a satisfactory examination by an authorised person and if it has been built:

.1 in general accord with the standard of a craft which has a record of at least five years' history of safe operation in an area where the sea and weather conditions are no less severe than those likely to be encountered in the intended area of operation. This statement applies for a transitional period only and is valid from the date of entry into force of this code of practice. New Hovercraft of existing construction have up until 2019 to comply.

.2 By plan approval or practical demonstration provided that full information (including calculations, drawings, details of materials and construction where applicable) is available in the form of a technical file and is approved by an authorised person to meet any one of the following:

4.1.3 Ultralight and Light Hovercraft

ISO 12215-5 simplified scantling assessment. Refer to tables below for typical scantlings based on craft length (Tr = Fibre Reinforced Plastic single skin/Al = Aluminium)
Drop test from ISO 12215-5 Annex B
Hovercraft Club requirements
1st principle methodologies which demonstrate acceptable scantling dimensions.

Craft Particulars		
Length	4000	mm
Mass	1.25	t
b	2000	mm
Kc	1.100000000000000	
Kloc	1	
Kr	0.77	
c	0	mm
Panel L	2000	mm
Tr	2.279311718	mm
Alu	1.527138851	mm

Craft Particulars		
Length	6000	mm
Mass	1.875	t
b	2000	mm
Kc	1.100000000000000	
Kloc	1	
Kr	0.77	
c	0	mm
Panel L	2000	mm
Tr	2.605636557	mm
Alu	1.745776493	mm

Craft Particulars		
Length	8000	mm
Mass	2.5	t
b	2000	mm
Kc	1.100000000000000	
Kloc	1	
Kr	1	
c	0	mm
Panel L	4000	mm
Tr	3.720941967	mm
Alu	2.493031118	mm

4.1.4 Small Hovercraft

Section B4 - Strength and Stiffness of Structure of the British Hovercraft Safety Regulations
ISO 12215 scantling rules for small craft
Relevant Class Rules as applicable to Air Cushion Vehicles
1st principle methodologies which demonstrate acceptable scantling dimensions.

4.1.4.1 Watertight Bulkheads

4.1.4.1.1 The strength of a watertight bulkhead and the effectiveness of any alternative means should be adequate for the intended purpose and to the satisfaction of the Certifying Authority.

4.1.4.1.2 When pipes, cables, etc. penetrate watertight bulkheads, they should be provided with valves and/or watertight glands, as appropriate.

5 Weathertight Integrity

5.1.1 A Hovercraft should be designed and constructed in a manner which will prevent the ready ingress of sea water and in particular comply with the following requirements. For strength and water tightness purposes only, the requirements of ISO 12216 are considered acceptable.

5.1.2 Ultra-Light and Light Hovercraft can be considered as open craft and so any form of cabin structure will be regarded as non weathertight.

5.1.3 Small Hovercraft when fitted with an enclosed superstructure should comply as far a reasonably practical with the requirements described in 5.2 to 5.4.

5.2 Weathertight Integrity

5.2.1 Ultra-Light and Light Hovercraft are generally considered to be open craft without weather decks.

5.2.2 Small Hovercraft are generally weathertight with side body attachments that act as the weather deck. Some versions have an open well deck area which should be taken into consideration when assessing weathertight integrity and stability requirements.

5.2.3 Proposals for Hovercraft with deck arrangements other than those described in 5.2.1 and 5.2.3 will be specially considered in terms of weathertight integrity and stability on a case by case basis.

5.3 Hatchways and Hatches

5.3.1 A hatchway which gives access to spaces inside the craft should be of efficient construction and be provided with efficient means of weathertight closure.

5.3.2 A cover to a hatchway should be hinged, sliding, or permanently secured by other equivalent means to the structure of the craft and be provided with sufficient locking devices to enable it to be positively secured in the closed position.

5.3.3 A hatchway with a hinged cover which is located in the forward half of the craft should have the hinges fitted to the forward side of the hatch, as protection of the opening from boarding seas, except where it is not possible to do so, due to the shape of the hatch or the moulding it is in. A hatch with the hinges on the after side of the hatch should be secured closed at sea, and be provided with a suitable blank. This is not intended to apply to small technical spaces drained directly overboard, e.g. access hatches in side bodies.

5.3.4 Hatches which are used for escape purposes should be capable of being opened from both sides.

5.3 Doorways

5.3.1 Doorways Located Above the Deck

5.3.1.1 A doorway located above the deck which gives access to spaces inside the craft should be provided with a weathertight door. The door should be of efficient construction, permanently attached to the bulkhead, not open inwards, and sized such that the door overlaps the clear opening on all sides, and has efficient means of closure which can be operated from either side.

5.3.1.2 A doorway should be located as close as practicable to the centre line of the vessel. However, if hinged and located in the side of a house, the door should be hinged on the forward edge. Doors using articulated systems should be specially considered, in order to provide an equivalent arrangement.

5.3.1.3 A doorway which is either forward or side facing should be provided with a coaming, the top of which is at least 100mm above the deck. A coaming may be portable provided it can be permanently secured to the structure of the vessel and can be locked in position whilst at sea.

5.4 Windows

5.4.1 A window serving an enclosed space that in the event of failure could let water enter the craft should be of efficient construction ISO 2216 or equivalent, which provides

weathertight integrity (and be of strength compatible with size) for the intended area of operation of the craft.

5.4.2 Windows or screens which do not form part of the enclosed weathertight boundary must not be made of materials that could cause danger to persons on-board if broken.

6 Machinery

6.1 General Requirement

6.1.1 Generally, machinery installations should comply with the requirements given below. Other installations proposed may be specially considered, provided that full information is presented to and approved by the Certifying Authority.

6.1.2 The main propulsion machinery and all auxiliary machinery essential to the propulsion and the safety of the vessel should be designed to operate when the vessel is upright and when inclined at any angle of heel and trim up to and including 15 degrees and 7.5 degrees respectively either way under static conditions.

6.2 Diesel Engines

6.2.1 A Hovercraft fitted with a diesel engine should be provided with an engine suitable for Hovercraft use and with sufficient fuel tankage for its area of operation. It should be noted that due to the requirement of cooling by radiators that marine diesel engines are unlikely to be suitable.

6.3 Petrol Engines – Ultra-Light and Light only

6.3.1 A petrol engine may be accepted provided that the engine is a suitable type and meets the requirements of 6.3.2. The total maximum power of petrol engines installed in a Hovercraft is to be less than 175hp (130kW). Only fuel injected petrol engines should be fitted when the machinery compartment is fully enclosed.

6.3.2 Craft should supply fuel to the engine from either;

6.3.2.1 a permanently installed fuel tank constructed to an appropriate standard (see Standards Appendix 1) and shall have arrangements such that spillage during fuel handling will drain into a suitable receptacle to prevent it draining overboard; or

6.3.2.2 a portable tank or tanks of 30 litres or less in capacity complying with an appropriate standard (see Standards Appendix 1).

6.3.3 A vessel should be provided with sufficient fuel tankage for its area of operation, spare portable petrol containers must not be carried on board unless it is judged to be essential to assure the safe completion of a voyage or excursion (see Section 6.6).

6.3.4 Attention is drawn to the electrical arrangement requirements (Section 7).

6.3.5 Ultra-Light and Light Hovercraft, may use inboard petrol engines provided that the engine, fuel system and tanks, ventilation arrangements, fire protection and electrical arrangements are compliant with the ISO standards listed in Appendix 1.

6.4 Installation

6.4.1 The machinery, fuel tank(s) and associated piping systems and fittings should be of a design and construction adequate for the service for which they are intended. These should be installed and protected so as to reduce to a minimum danger to persons during normal movement about the vessel, with due regard being paid to moving parts, hot surfaces and other hazards.

6.4.2 Means should be provided to isolate a source of fuel which may feed a fire in an engine space. A valve or cock, which is capable of being closed from a position outside the engine space, should be fitted in the fuel feed pipe as close as possible to the fuel tank or a spill proof fuel pipe connector which allows rapid disconnection of the fuel supply.

6.4.3 Fuel filling and venting pipes should be constructed of fuel compatible non-kinking material, adequately supported and of sufficient dimensions to prevent spillage during filling.

6.4.4 A venting pipe should be led to the open atmosphere, terminating in a position level with or higher than the fuel filling mouth and its open end should be protected against:-

6.4.4.1 water ingress - by a goose neck or other efficient means; and

6.4.4.2 for petrol engines or where there is a risk from flame ingress - by a suitable gauze diaphragm (which can be detached for cleaning).

6.4.5 The majority of the fuel piping system should be manufactured from metal piping; However, In a fuel supply system unit, where a flexible section of piping is introduced, the flexible pipes should be fire resistant/metal reinforced or otherwise protected from fire (see applicable Standards in Appendix 1). The flexible pipes shall be secured by either metal hose clamps or permanently attached end fittings (e.g. swaged sleeve or sleeve and threaded insert). Where hose clamps are used, the fitting to which the flexible pipe attaches should have a bead, flare, annular grooves or other means of preventing slippage, the anti-slippage arrangement shall not provide a path for fuel leakage.

6.4.6 When the main engine(s) oil fuel system is provided with water separator filter(s) of a type which has plastic or glass bowl(s), it should be located so that it can be easily seen and protected against heat and accidental damage.

6.5 Engine Starting and Stopping

6.5.1 An engine should be provided with either mechanical, hand starting or electric starting with independent batteries, or other means of starting acceptable to the Certifying Authority.

6.5.2 When the sole means of starting is by battery, the battery should be in duplicate and connected to the starter motor via a ‘change over switch’ so that either battery can be used for starting the engine. Charging facilities for the batteries should be available. Under normal circumstances it is not recommended to discharge both batteries in parallel. An Ultra-Light Hovercraft can be built with a single battery.

6.5.3 All internal combustion machinery should have a secure means of remote stopping from outside the engine space.

6.5.4 An open craft when fitted with remote throttle controls should be fitted with a kill-cord, or fly back throttle to be used at all times during navigation.

6.6 Stowage of Petrol

6.6.1 When spare petrol is carried on-board in portable containers, for any purpose, the quantity should be kept to a minimum, the containers should be clearly marked and should normally be stowed where they can be readily jettisoned and where spillage will drain directly overboard.

6.6.2 In craft where Section 7.6 is not practicable, a 5 litre container of petrol may be stowed in a deck locker which meets the following requirements:

6.6.2.1 vapour tight to the crafts interior

6.6.2.2 not openable from the crafts interior

6.6.2.3 adequately drained overboard and ventilated to atmosphere

6.7 Propeller and Fan Systems

6.7.1 Fans and propellers for Hovercraft

Hovercraft require fans and / or propellers to move air for use in lift and thrust systems. Suitable fans or propellers must meet one of the following:-

(a) Be selected from the approved fan list as published by the Hovercraft Clubs and deemed suitable for Cruising Hovercraft. The maximum speeds of selected fans must at all times be kept within the maximum approved speeds. All fans shall be located so that a wave strike is an unlikely occurrence.

(b) Hovercraft propeller design requirements - refer to Appendix 4

6.8 Fan/Propeller guarding

Ultra-Light and Light Hovercraft

All fans/propellers shall be protected by suitable means upstream to prevent the ingress of objects greater than 50 mm diameter, which are caught in the airstream.

All fans/propellers shall be protected from the front and sides such that it is not possible to place a finger, arm or other part of the body into the path of the fans/propellers. It shall not be possible to reach the path of the rotating assembly with a 12mm diameter rod of 100mm length when approached from outside the fans/propellers guard applying a load no greater than 450N.

The exit area shall be protected to ensure that any person standing behind the craft cannot place a hand into the path of a rotating assembly.

All guards shall be capable of resisting a force of 450N placed on an area 100mm x 100mm without deflecting into the path of the rotating assembly.

Small Hovercraft

Small hovercraft should be guarded as above except where persons are unlikely to be near propulsion fans full intake guarding is not required but a rail or similar should be installed to restrict personnel access to the propulsion components.

6.9 Fan/propeller containment (All Hovercraft)

Fans and propeller systems shall be designed to minimize the risk of failure. Consideration shall be given to containment of failed blade fragments all-round the circumference of rotating fans and propellers. This can take the form of a duct or guard.

A proposed containment shall be considered acceptable where evidence exists from similar systems. Similarity shall be defined as similar materials, construction, blades, maximum rotating speed.

A proposed containment may also be considered acceptable where it is shown analytically or by test that it is suitable for the purpose.

6.10 Transmissions

Failure of all belts and transmission shafts shall be considered. Arrangements shall be made to prevent shafts and belts flailing in the event of failure, by the use of suitable guards and anti-flail devices. Where multiple fans/propellers are driven from a single engine, the failure of any one component (e.g. drive belt) shall be considered in the fans/propellers speed and strength calculations. Also the overspeeding of any rotating component by any failure of any transmission components must be considered.

7 Electrical Arrangements

7.1 General

Electrical installations must be such that they will not suffer damage or corrosion as a result of the environment.

7.2 Systems

All hovercraft may use single conductor circuits but no hull earth returns are permitted.

7.3 Lighting

A yellow flashing hovercraft beacon must be fitted for use at all times.

7.3.1 Small Hovercraft
When general lighting within a vessel is provided by a centralised electrical system, an alternative source of lighting (which may be a suitable portable battery operated lamp(s) if practical, taking into consideration the size and complexity of the vessel) should be provided. This alternative source of lighting should be sufficient to:

7.3.1.1 illuminate survival craft launching and embarkation;
7.3.1.2 illuminate man-overboard rescue equipment and rescue areas;
7.3.1.3 permit work on essential machinery.

7.4 Batteries

7.4.1 Battery System Requirements

7.4.1.1 Batteries and battery systems should be provided as indicated in Section 7.4 and 7.5.

7.4.1.2 The battery terminals should be protected against accidental contact with metallic objects.

7.4.1.3 Battery charging systems should be fitted with circuitry to prevent overcharging.

7.4.1.4 A battery cut-out switch should be provided for all systems. It is preferred that this switch acts as an isolator, i.e. Double pole. However, single pole is acceptable on the positive conductor. If a battery change-over switch is fitted and is provided with an "off" position, this may serve as the cut-out switch also.

7.4.1.5 Small hovercraft only - Batteries supplying essential services (emergency lighting, steering systems, navigation and communications equipment) should be located in a position not likely to flood in normal operations or in the event of minor damage.

7.4.1.6 Batteries should be of the sealed type to prevent electrolyte loss.

7.5 Battery Stowage

7.5.1 All batteries should be secured firmly to avoid movement when the vessel is subjected to sudden acceleration or deceleration.

7.5.2 Where the maximum charging power output is less than 0.2 kilowatts (kW) the batteries may be located in any suitable space without any special container requirements.

7.5.3 Where the maximum charging power output is between 0.2 and 2.0 kW the batteries should be located in the machinery space or other well-ventilated space in a box or locker.

7.6 Ventilation

To ensure that any evolved hydrogen is expelled, battery compartments, lockers and containers should be exhausted from the highest point of the space and air supplied at a level below the top of the batteries.

7.7 Cables

7.7.1 It is recommended that electric cables should be constructed to a recognised standard for marine use in small craft.

7.7.2 Cables which are not provided with electrical protection should be kept as short as possible and should be “short circuit proofed” e.g. single core with an additional insulated sleeve over the insulation of each core. Normal marine cable, which is single core, will meet this requirement without an additional sleeve, since it has both conductor insulation and a sheath.

7.7.3 Note that when selecting cables, particular attention should be given to environmental factors such as temperature and contact with damaging substances, e.g. polystyrene, which degrades PVC insulation.

7.7.4 Adequate provision should be made for securing electrical connections e.g. by use of locking washers.

7.8 Hazardous Spaces

Where practicable, electrical equipment should not be installed in a space where petroleum vapour or other hydrocarbon gas is likely to accumulate. When equipment is installed in such a space it must comply with a recognised standard for prevention of ignition of a flammable atmosphere.

8 Steering Gear and Rudder Systems

8.1 Steering

8.1.1 A vessel should be provided with efficient means of steering.

8.1.2 The control position should be located so that the person conning the craft has a clear view for the safe navigation of the vessel.

8.1.3 When steering gear is fitted with remote control, arrangements should be made for emergency steering in the event of failure of the control. This could include, but is not limited to locking the steering amidships and using weight shift or skirt shift to control the direction of the craft.

8.2 Rudder System

8.2.1 As appropriate to the craft, the rudder and supporting structure construction materials, design in total (including actuating cylinders, connecting rods, attachments, bearings and pintles) and the supporting structures should be adequate for the operating conditions of the vessel.

9 Loose Water Removal

9.1 General System Requirements

9.1.1 A craft should have an efficient pumping system, with suction pipes so arranged that any compartment (other than a tank permanently used for the carriage of liquids which is provided with efficient means of pumping or drainage) can be drained.

9.1.2 When considered necessary to protect the suction line from obstruction, an efficient strum box should be provided.

9.1.3 When considered necessary, to prevent back flooding, non-return valves should be fitted.

9.1.4 Means of providing efficient pumping other than those described in this text may be considered provided that full information is submitted to and approved by the Certifying Authority or authorised person.

9.1.5 Craft of 6 metres in length and over, should carry a hand bailer or bucket in addition to a pump meeting the requirements in Section 9.1.6.

9.1.6 For craft of less than 6 metres in length and operating in Category 6, a minimum of one hand powered pump bailer or a bucket is to be provided.

10 Skirt design and attachment

10.1 Stability

10.1.1 The skirt system shall be such as to ensure adequate stability when hovering under all operating conditions. Adequate stability is defined as follows:

10.1.2 For the craft trimmed level in a static hovering condition, the skirt shall provide sufficient righting moments in the conditions of maximum design speed and maximum design environment of wind and waves or hard surface so as to prevent unpredictable or dangerous plough-in.

10.1.3 The righting moment generated by the skirt system in pitch and roll shall steadily increase at a linear or greater rate with rotation, up to the point when the hull contacts ground or water.

10.2 Hard Structure Clearance

Average Hard structure clearance (with the skirt hem trimmed level over a flat surface) should not exceed 12.5% of hard structure width (Hard Structure Width/8) unless it can be demonstrated that both dynamic and static stability characteristics are adequate, by calculation and/or trials in accordance with section 10.1.

10.3 Cushion Pressure Design

In order to avoid collapse of the skirt system at high speed, the pressure in the skirt or the cushion area itself is recommended not to be less than the dynamic air pressure at the maximum feasible speed.

10.4 Construction and Materials

10.4.1 Skirt materials should have high resistance to ripping.

10.4.2 Skirt construction by riveting, gluing and sewing shall be such that all connections, bonds and seams are stronger than the single thickness base material. Bonded joins should withstand long immersion in water without significant loss of strength.

10.4.3 Attachments of the skirt to the hull shall be of sufficient strength so that no damage is caused to the hull attachment if the skirt material is ripped or snagged with sufficient force to break the skirt connecting device.

10.4.4 Attention should be paid to the configuration of seams on a bag or loop so that rips will be stopped by the seams rather than guided by them.

10.4.5 Skirt attachments shall be designed to withstand the loading due to skid stops on land.

10.5 Operational Damage

10.5.1 The craft shall maintain stability sufficient to prevent capsize in the event that any part of the skirt should collapse and be dragged back by the water surface during operation at a maximum operational speed in any direction.

10.5.2 The skirt should be designed so that damage to any part or area of the skirt will not cause other parts or areas of the skirt to fail as a direct consequence.

In the design and construction of skirts, consideration should be given to the problems associated with:

10.5.2.1 Scooping that may induce excessive loads in skirt materials or attachments.

10.5.2.2 Drainage of water collected when floating off-cushion or in normal operation.

10.5.2.3 The need to avoid excessive skirt bounce.

10.5.2.4 Deterioration of material strength due to sunlight or ozone during the life of the craft.

11 Stability

11.1 Off Cushion - Intact

11.1.1 With the lift system not operating, a craft should be tested in its all up weight condition to ascertain the angle of heel and the position of the waterline which results when all persons which the craft is to be certificated to carry are assembled along one side of the normal passenger area (the skipper may be assumed to be at the craft control position). Each person may be substituted by a mass of 82.5kg for the purpose of the test.

11.1.2 The craft will be judged to have an acceptable standard of stability if the test shows that:

11.1.2.1 the angle of heel does not exceed 7 degrees and the freeboard to deck should not be less than 75mm at any point; or

11.1.2.2 if unable to meet the criteria in 11.1.2.1 the angle of heel may exceed 7 degrees, but should not exceed 10 degrees providing the conditions of Section 12 are met.

11.1.3 For craft carrying a combination of passengers and cargo, the test defined in Section 11.2 should be carried out with the full complement of passengers and cargo, and additionally with passengers only. For the purposes of these tests the cargo may be assumed to be retained at its normal stowage position.

11.1.4 In all cases, the all up weight of persons and/or cargo derived from the tests conducted shall be recorded on the certificate.

11.2 Person Recovery Stability Test – for craft of 4 seats or above

Two persons should recover a third person from the water into the craft. The third person should feign to be unconscious with their back facing the craft so as not to assist the rescuers. The third person should also wear suitable anti-exposure clothing (e.g. dry suit or immersion suit). Each person involved should wear an approved lifejacket. The craft should remain stable throughout the operation, and should not capsize. The craft maybe

on cushion or off cushion as deemed appropriate by the operator and in line with the intended operation of the craft.

11.3 Off Cushion – Open Craft Swamped

For open craft it should be demonstrated by test or by calculation that the craft, when fully swamped, is capable of supporting its full outfit of equipment, the total number of persons for which it is to be certificated and a mass equivalent to its engine and full tank of fuel. The craft should float sufficiently to provide a stable platform for the crew and passengers.

11.4 On Cushion

Hovercraft should be provided with information relating to the safe speed and yaw angle operational envelope for pitch and roll stability.

11.5 Pitch stability on cushion

11.5.1 The craft should demonstrate adequate pitch stability when operated up to the maximum design speed. In flat water conditions the hull should not enter the water unless commanded to do so e.g. as part of a braking manoeuvre.

11.5.2 The craft should not suffer excessive decelerations as a result of any uncommanded pitch down event ("plough-in"). Excessive is defined as great enough to unseat a passenger (0.3 g).

11.6 Roll stability on cushion

The craft should be stable when operated in yaw up to the maximum speed specified for the yaw angle with passengers located in their normal seating position.

11.7 Stability book

A stability book is required if more than 1000kg of cargo is to be carried.

12 Freeboard

12.1 Off cushion

12.1.1 Ultra-Light Hovercraft

It is recommended that an Ultra-Light Hovercraft has a minimum freeboard of 200mm. Note: if the craft has an integrated lift system with the fan on the craft centreline then the freeboard to the lowest edge of the fan intake may be 100mm.

12.1.2 Light and Small Hovercraft

12.1.2.1 When floating with the lift system not operating, the freeboard, for a Hovercraft should be not less than that determined by the following requirements:

Have a clear height of side (i.e. the distance between the waterline and the lowest point of the gunwale or any other lower point of water ingress such as into the craft, excluding wet plenums if used) of not less than 200mm for craft of 7 metres in length or under and

not less than 400mm for craft of 18 metres in length or over. For a craft of intermediate length the clear height should be determined by linear interpolation.

12.1.2.2 Hovercraft that incorporate a design intended to permit water to flow freely over a buoyant structure may be accepted based on a demonstration that essential systems are capable of operating in such conditions.

12.2 On cushion

12.2.1 Wavestrike

Encountering an isolated steep sided wave (eg. large vessel bow wave) within the operational limit of the craft and at a speed of 20 knots in a forward direction shall not cause water to damage any essential equipment.

13 Life-Saving Appliances

13.1 General

13.1.1 All life-saving equipment must be marked in accordance with the guidelines in Marine Guidance Note MGN 105 (M+F) – “Use and Fitting of Retro-reflective Material on Life-saving Appliances”.

13.1.2 The minimum required life-saving for the various groups equipment is indicated in the following Table 13.1.3.

Table 13.1.3 – Lifesaving Appliances

Craft Group	Ultra-Light	Light	Small
Area of Operation Category (m = nautical miles)	6 (Restricted operating up to 1 m from the shore)	3,4 & 5 (Up to 20 m or as on Certificate)	2 (Up to 60 m or as on Certificate)
Liferafts (to accommodate total number of persons onboard)	NA	Yes	Yes
Lifebuoys without light (marked with craft name and port)	1and a separate rescue line	NA	NA
Lifebuoys with light and buoyant line (marked with craft name and port)	NA	1	1
Lifejackets with whistle and retro-reflective material	100%lifejackets worn at all times	100% plus light lifejackets (worn at all times if craft is open)	100% plus light (if an inflatable type an additional 10% or 2, whichever is greater , should be provided
Thermal Protective Aids	2	100%	100%
Mud escape mats or protective clothing for mud escape	Yes	NA	NA
Parachute flares	NA	4	4
Red hand flares	2	2	6
Smoke signals	2 buoyant or hand held	2 buoyant or hand held	2 buoyant or hand held
Portable VHF	1	1	1
General Alarm > 750kW total installed power	NA	NA	Yes if > 750kW - Bell, Klaxon or the crafts Whistle or Siren audible in all parts of the craft
Life-saving signals table - 2 x SOLAS no.2 or 1x SOLAS no.1	Yes	Yes	Yes
Training/Safety Maintenance Instructions	Yes	Yes	Yes

13.2 Liferafts

13.2.1 Liferafts should be constructed to SOLAS standard, Wheelmarked or DfT approved and be equipped with a SOLAS B pack or

13.2.2 Built to the ISAF OSR Appendix A Part 2 requirements. Liferaft(s) should be equipped to a level equivalent to that of a "SOLAS B PACK" for Light and Small craft. This may, where necessary, include a "grab bag" to supplement the equipment integral to the liferaft.

13.2.3 Liferafts – All Hovercraft are permitted to use Valise type rafts if they can be stored in a protected area and are made ready for use when underway.

13.2.4 All liferafts, should be serviced at a service station approved by the manufacturer and at the manufacturer's recommended intervals, however where the liferaft(s) are stored in valises this should be at least annually.

13.2.5 Craft expected to operate over soft sand and mud shall have mud escape equipment to allow all persons to walk over soft mud without becoming trapped. This may be derived from standard craft equipment such as seats which are modified for the purpose.

13.3 Lifejackets

13.3.1 Lifejackets should be MCA (DfT) or MED approved ("Wheelmarked") or should comply with BS EN ISO 12402, Part 3 or Part 6, for lifejackets of 150 Newtons or BS EN ISO 12402, Part 2, for lifejackets of 275 Newtons or equivalent ISO/CEN standard.

13.3.2 Lifejackets that comply with BS 3595, BS EN 399 or BS EN 396 and with a current servicing certificate, where applicable, may continue to be used where already fitted on a vessel at the time of the Code coming into force.

13.3.3 All lifejackets should be fitted with a whistle, light and retro-reflective materials.

13.3.4 If the lifejackets are the inflatable type, an additional 10% or 2, whichever is the greater, should be provided. This does not apply to Light and Ultra-Light craft where the crew should be wearing lifejackets at all times.

13.3.5 Inflatable lifejackets for new craft and new inflatable lifejackets for existing craft are to be of the compressed gas inflation type, with either manual or automatic inflation, and fitted with oral top up valves. Lifejackets which are inflated orally only are not considered appropriate.

13.3.6 Compressed gas inflatable lifejackets should be serviced to manufacturers' recommendations within a maximum of one month either side of the Compliance, Renewal and Intermediate examination. In the intervening years they are to be examined annually to the manufacturer's recommendation. Certification or declaration of servicing must be available for inspection by the Certifying Authority/Administration. As far as is reasonable and practicable, visual examinations should be carried out weekly by the owner/managing agent to determine whether they are safe to use.

13.3.7 Where a lifejacket is serviced annually this is acceptable as an alternative to the servicing regime prescribed in 14.3.6.

13.3.8 A suitable lifejacket should be provided for each person on board under 32kg.

13.4 Portable VHF Radio

Each craft should carry a portable Very High Frequency (VHF) radio fitted with a Digital Selective Calling (DSC) facility, and charging facilities for the radio battery or batteries, or a spare battery or batteries. Arrangements should be made to protect the portable VHF and spare battery or batteries from water damage e.g. waterproof cover.

14 Fire Safety and Appliances

14.1 Ultra-Light and Light Hovercraft

14.1.1 In general Ultra-Light and Light Hovercraft are fitted with air cooled engines which are difficult to enclose fully in air tight boxes, therefore a minimum of two multi-purpose portable fire-extinguishers should be provided as the fire extinguishing medium.

14.1.2 At least one portable fire-extinguisher is to be located so that it can easily be reached from the main steering position of the craft and the other within close proximity of the machinery space.

14.1.3 Craft should be fitted with fire extinguishers to a recognised standard, each with minimum fire rating of 13A/113B, or smaller extinguishers giving the equivalent fire rating.

14.2 Small Hovercraft

14.2.1 On small hovercraft and as far reasonably practical the boundary or enclosure box of the machinery space should, with special consideration given to fire flaps, be arranged to contain the fire extinguishing medium, i.e. the machinery space should be capable of being closed down in order that the fire extinguishing medium cannot escape. Any ventilation fans located within, or feeding a machinery space, should be capable of being stopped from outside the space in the event of a fire.

14.2.2 Fire extinguishing, suitable for the capacity of the engine space, should be provided. A person should not be required to enter the machinery space in order to extinguish a fire.

14.2.3 Combustible materials and liquids should not be stowed in the machinery space. If non-combustible materials are stowed in the engine space, they should be adequately secured against falling on machinery, and cause no obstruction to access to or from the space.

14.2.4 Fibre Reinforced Plastic (FRP) Construction: Machinery space boundaries should prevent the passage of smoke and flame for 15 minutes, and be fitted with materials (as required) of an approved type that have been tested to an ISO or equivalent standard, as per annexe 5.

14.2.5 Fire resistance of FRP may be achieved with the use of fire resisting resins or Intumescent polyester, epoxy, vinylester or phenolic resin surface coatings; however, solvent borne intumescent paints are not acceptable.

14.2.6 Aluminium and Wood Construction: Machinery space boundaries should have an equivalent level of fire protection when compared to FRP construction.

14.2.7 Where insulation is fitted to provide an equivalent level of fire protection to that required in Section 14.2.1 or 14.2.3, insulation approved by the Administration as satisfying the requirements of an A or B Class division for the construction material, and division scantlings, will exceed these requirements.

14.3 Alternative Arrangements

Where it is not possible for the craft described in 14.2.1 and 14.2.3 to meet an equivalent level of fire protection, such craft may be fitted with insulation which provides an equivalent level of fire protection to the machinery space boundaries. Insulation that has been approved to meet A-15 standards [with steel] will be considered to meet this standard.

14.4 Insulation

14.4.1 Thermal or acoustic insulation fitted inside the machinery space should be of a non-combustible material.

14.4.2 The thermal or acoustic insulation will be considered as being a non-combustible material if it complies with BS EN ISO 4589 Part 3, and the material has an Oxygen Index greater than 21.

14.4.3 Insulation should be protected against impregnation by flammable vapours and liquids. Where insulation is cut, the edges should be protected against such impregnation, e.g. by the use of non-combustible tape. Where the insulation is vulnerable to damage it should be protected.

14.5 Fire Detection

14.5.1 Where the total installed power (propulsion and electrical generation) is greater than 750kW, efficient fire detectors should be fitted in the machinery space(s).

14.5.2 The fire detectors should be appropriate to the hazard identified and should give an audible warning that can be heard in the space concerned, and in the control position, when the craft is in operation.

14.6 Fire Extinguishing for craft with enclosed interior spaces

14.6.1 Enclosed interior spaces are to be provided with a sufficient number of portable fire-extinguishers to ensure that at least one extinguisher appropriate to fire risk will be readily available for use in every compartment.

14.6.2 Portable fire-extinguishers should be stowed in readily accessible positions.

14.6.3 Portable fire-extinguishers intended for use in the space are to be stowed near the entrance to that space.

14.6.4 At least one portable fire-extinguisher is to be located so that it can easily be reached from the main steering position of the craft.

14.6.5 Where cooking facilities are provided a portable fire-extinguisher of a type appropriate to the energy source used and a fire blanket is to be located in a position readily accessible for use in the event of a fire.

14.7 Fire Extinguisher Capacities for craft with enclosed interior spaces

Craft should be fitted with a minimum of two multi-purpose portable fire extinguishers to a recognised standard, each with minimum fire rating of 13A/113B, or smaller extinguishers giving the equivalent fire rating.

14.8 Furnishing Materials for craft with enclosed interior spaces

14.8.1 It is recommended that Combustion Modified High Resilient (CMHR) foams are used in upholstered furniture.

14.8.2 Upholstery covering fabrics should satisfy the cigarette and butane flame tests of a recognised standard.

15 Radio Equipment

15.1 Each craft should carry sufficient radio communications equipment to perform the following distress and safety communications functions throughout its' intended voyage.

15.1.1 transmitting ship to shore distress alerts;

15.1.2 receiving shore-to-ship distress alerts;

15.1.3 transmitting and receiving ship-to-ship distress alerts;

15.1.4 transmitting and receiving search and rescue co-ordinating communications;

15.1.5 transmitting and receiving on-scene communications;

15.1.6 transmitting and receiving maritime safety information; and

15.1.7 transmitting and receiving bridge-to-bridge communications if appropriate to the size of craft

15.2 Radio Installation

15.5.1 Craft should be fitted with the minimum radio equipment appropriate to its Area of Operation. Minimum and Recommended Radio Equipment is detailed in Table 15.2.5.

15.5.2 VHF transmission and reception ranges are reliable only within the line of sight ranges.

15.5.3 Aerials should be mounted as high as is practicable to maximise performance.

15.5.4 On craft with an enclosed superstructure a fixed radio installation should be installed and be clearly marked with the vessel's call sign, any other codes applicable to the use of the radio, and a Maritime Mobile Service Identity (MMSI) where applicable. A card or cards giving a clear summary of the radio distress, urgency and safety procedures should be displayed in full view of the radio operating position(s).

Table 15.2.5 – Minimum and Recommended Radio Equipment

Craft Group	Ultra-Light	Light	Small	Notes
Area of operation Category	6 (Restricted operating up to 1m from the shore)	3, 4 & 5 (Up to 20m or as on certificate)	2 (Up to 60 m or as on certificate)	
VHF Fixed radio installation with DSC	Not required	Not required	1 set	
Portable VHF	1 set	1 set	1 set	Recommended to provide 1 set per liferaft if more than one carried
Navtex Receiver	Not required	Recommended	recommended	
M/F Radio	Not required	Not required	Required if operating in sea area A2.	

15.3 Operational Performance

All radio communication equipment should be of a type which is approved by the relevant authority.

15.4 Installation

15.4.1 All radio installations should:

15.4.1.1 be so located to ensure the greatest possible degree of safety and operational availability;

15.4.1.2 protected against the harmful effects of water, extremes of temperature and other adverse environmental conditions;

15.4.1.3 marked with the call sign, the vessel station identity and any other codes applicable to the use of the radio installation.

15.5 Sources of Energy

15.5.1 When the electrical supply to radio equipment is from a battery, charging facilities (which are capable of recharging batteries to minimum capacity requirements within 10 hours) or a duplicate battery of capacity sufficient for the voyage should be provided.

15.5.2 The battery electrical supply to radio equipment should be protected against flooding/swamping as far as practicable and arranged so that radio communications are not interrupted in adverse conditions.

15.5.3 When fully charged, the batteries should provide at least the minimum required hours of operation to ensure effective use of the GMDSS installation.

15.6 Radio Watches

15.6.1 A craft, while at sea, should maintain a continuous radio watch:

15.6.1.1 where practicable, on VHF Channel 16;

15.6.1.2 where practicable, on VHF Channel 13;

15.6.1.3 .on VHF Digital Selective Calling (DSC), on Channel 70;

15.6.1.4 for broadcasts of Marine Safety Information on the appropriate frequency or frequencies, on which such information is broadcast for the area in which the craft is navigating; normally using the international NAVTEX service (if fitted) or a recognised Mobile Satellite Communications System enhanced group calling facility (if fitted). Further information may be obtained from the Admiralty List of Radio Signals, Volume 5.

15.7 Radio Personnel - Guidance

A craft should carry at least one person qualified for distress and safety radio communication purposes, who should hold a certificate of competence acceptable to the relevant authority.

15.8 Ships' Radio Licence - Guidance

Owners/managing agents should be aware that a craft with radio communications equipment on board is required to have a Ships' Radio Licence issued by the relevant authority.

16 Navigation Lights, Shapes and Sound Signals

16.1 A craft should comply with the requirements of the Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996, (SI 1996 No. 75), as amended. A craft which operates only between sunrise and sunset, and in favourable weather, is not required to carry navigation lights where it can be demonstrated that the craft will not be caught in restricted visibility.

16.1.1 Sound signalling equipment should comply with the requirements of SI 1996 No. 75, as amended. A craft of less than 12 metres in length is not obliged to carry the sound signalling equipment required by SI 1996, No. 75, provided that some other means of making an efficient sound signal is provided.

16.1.2 If it can be demonstrated to the Certifying Authority that, for a particular craft, full compliance with the regulations is impracticable, then application should be made to the MCA via the Certifying Authority for consideration of equivalent arrangements, taking into account the nature of the operation of the craft concerned.

16.1.3 Table 16.1.4 is a summary table of navigation lights, shapes and sound signalling appliances for craft. This Table is for guidance only and does not cover all possible operations. Reference should be made to the regulations stated in Section 16.1 for all operations not covered.

Table 16.1.4 – Lights, Shapes and Sound Appliances

Overall Length (metres)	Craft when underway	At anchor	Not under command	Sound Appliances
Less than 7m	All round white + sidelights **OR** Combined Lantern **OR** White Light where the above are not practicable + all around flashing yellow light.	All round white where best seen when at Anchor in the water only at night. May be dual purpose all round white as used when underway.	Not required	Means to make an effective sound signal such as a portable gas fog horn
7m-12m	All round white + sidelights **OR** masthead (vis 2 miles) + sidelights + stern light **OR** (if lights have to be offset from centreline) combined lantern sidelights plus **either** all round white or masthead and sternlight + all round flashing yellow light	All round white where best seen at night when at Anchor in the **water only**. May be dual purpose all round white as used when underway. Anchor ball.	Not required	Means to make an efficient sound such as a portable gas fog horn
12m-20m	Masthead (vis 3 miles) +sidelights +stern light + all round flashing yellow light	All round white where best seen at night when at Anchor in the **water only**. May be dual purpose all round white as used when underway. Anchor ball	Not required	Whistle and bell
20m-24m	Masthead (vis 5 miles) + sidelights +stern light + all round yellow flashing light	All round white where best seen at night when at Anchor in the **water only**. May be dual purpose all round white as used when underway. Anchor ball	Not required	Whistle and bell

17 Navigational Equipment

17.1 Magnetic Compass - Small Hovercraft

17.1.1 Small hovercraft should be fitted with a properly adjusted magnetic compass or other means, independent of the vessels main power supply, to determine the ship's heading and display the reading at the main steering position.

17.1.2 Each magnetic compass required to be carried by this Code shall be properly adjusted and its table or curve of residual deviations available at all times. Magnetic compasses should be adjusted when:

17.1.2.1 they are first installed;
17.1.2.2 they become unreliable;
17.1.2.3 the craft undergoes structural repairs or alterations that could affect its permanent and induced magnetism; electrical or magnetic equipment close to the compass is added, removed or altered; or, a period of two years has elapsed since the last adjustment and a record of compass deviations has not been maintained, or the recorded deviations are excessive or when the compass shows physical defects.

17.2 Magnetic Compass – Light and Ultra-Light Hovercraft

18.2.1 Light and Ultra-Light Hovercraft should carry a suitable marine handheld compass on board.

17.3 Fluxgate Compass

17.3.1 Fluxgate compasses are acceptable under the Code, as an alternative to that required in 17.1, provided that a suitable back-up power supply is available to power the compass in the event of failure of the main electrical supply.

17.3.2 Where a fluxgate compass incorporates a capability to measure magnetic deviation by undertaking a calibration routine, and where the deviation figures are recorded within the device, a deviation card is not required.

17.3.3 The fluxgate compass or a repeater should be positioned so as to be clearly readable by the skipper at the main steering position.

17.4 Other Equipment – Small Hovercraft

Small Hovercraft should be provided with, and use whilst in navigation a receiver for global navigation satellite system or a terrestrial radio navigation system, or other suitable means to establish and update the crafts position at all times.

18 Miscellaneous Equipment

18.1 Nautical Publications

18.1.1 Charts and other nautical publications to plan and display the craft's route for the intended voyage and to plot and monitor positions throughout the voyage should be carried. The charts must be of such a scale and contain sufficient detail to show clearly all relevant navigational marks, known navigational hazards and, where appropriate, information concerning ship's routeing and ship reporting schemes. Nautical publications may be contained within a consolidated publication.

18.1.2 Ultra-Light and Light Hovercraft need not carry publications. An electronic chart plotting system, complying with the requirements detailed in Marine Guidance Note MGN 319 (M+F), may be accepted as meeting the chart carriage requirements of this sub-paragraph.

18.2 Signalling Lamp/Waterproof Torch

18.2.1 A craft should be provided with an efficient waterproof electric lamp/torch suitable for signalling.

18.3 Radar Reflector

18.3.1 A radar reflector should be mounted on the craft, this may be passive (including inflatable types) or active (powered), that meets the standards laid down in BS EN ISO 8729:1999.

18.3.2 For Ultra-Light and Light craft only, where it is not practicable for an efficient radar reflector to be fitted, they must not put to sea in fog, and if visibility starts to deteriorate they are to return to shore.

18.4 Searchlight

Light and small Hovercraft should be provided with an efficient fixed and/or portable searchlight suitable for use in man-overboard search and recovery operations.

19 Anchors

19.1 General

19.1.1 An anchor shall be carried, which shall be of sufficient mass for the size and type of hovercraft. The anchor warp provided may be also double as a towline.

19.1.2 The anchor shall be of suitable construction and holding power for the operating area under consideration.

19.2 Tow Line

19.2.1 A craft should be provided with a towline. Where practicable, the towline should be buoyant. As noted in 20.1.1 the anchor warp may be used as the towline.

19.2.2 A strong securing point or equivalent structure should be provided for attachment of the towing line.

20 Protection of Personnel

20.1 Health and Safety at Work

20.1.1 The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 (SI 1997 No. 2962), as amended, apply wherever “workers” are employed on ships. Further Guidance can be found in MGN 20 (M+F) and MGN 175 (M+F). This Code does not aim to provide definitive guidance on these Regulations, and it is the duty of the owner/manager and skipper to ensure that they are familiar with the requirements which include carrying out risk assessments, which are the basis for mitigating measures under all of the regulations.

20.2 Enclosed Superstructure(s)

Enclosed superstructure deckhouses must be constructed of adequate strength to withstand the forces of weather and sea to which it will be subjected in use.

20.3 Surface of Working Deck

The surface of a working deck should be non-slip.

21 Requirements Specific to the Use of the Vessel

21.1 Single Handed Operations

The MCA does not recommend single handed operations

21.1.1 Single handed operation is permitted under certain conditions. In all cases where single handed operations take place the owner/managing agent and the skipper should be satisfied that it is safe to do so. Where single handed operations are undertaken.

21.1.2 A single handed operation is considered to be taking place when either;

21.1.2.1 there is only one person onboard the vessel; or

21.1.2.2 there is a skipper onboard with passengers, and there is no one else on board capable of assisting the skipper in an emergency.

21.1.3 Where a watch system is necessary to maintain the safe navigation of the vessel due to extended periods at sea, single handed operations are not permitted.

21.1.4 Vessels operating under this Code, other than those engaged as Pilot Boats or in any other business which involves the transfer of personnel at sea may be operated single handed providing that the person operating the vessel complies fully with the minimum requirements for a skipper (appropriately qualified for the operating area) and the following conditions:

21.1.4.1 the area of operation is restricted to Area Category 3, 4, 5 or 6 in conditions of favourable weather and subject to favourable official weather forecasts for the area throughout the period of operation; and

21.1.4.2 the duration of the voyage should not exceed 8 hours; and

21.1.4.3 the vessel is not operated single handed in conditions of restricted visibility; and

21.1.4.4 an acceptable lifejacket is worn at all times by the skipper; and

21.1.4.5 no overside working takes place whilst the vessel is being operated single handed; and

21.1.4.6 details of the time and point of departure, voyage plan and the Expected Time of Arrival (ETA) of every single handed voyage are left with a suitable person ashore and that person is notified of the safe arrival on completion of each voyage; and

21.1.4.7 communication should be made with a person ashore or with a vessel in company at regular agreed intervals; and

21.1.4.8 Engine kill-cords or a fly back throttle should be fitted and used at all times.

21.1.4.9 Skippers are most strongly recommended to wear personal locator beacons.

22 Procedures, Examination, Certification and Qualification Requirements

22.1 Procedures for craft to be examined

22.1.1 The MCA is itself an active Certifying Authority. However, Hovercraft within the classes covered by this Code can be self-certified by the Hovercraft Manufacturer or other organisations that apply to the MCA for approval.

22.1.2 Plan approval must be carried out for the first of type.

22.1.3 Prior to entering into service, craft that are to be engaged in navigation and used for reward, or are providing a service in which neither cargo nor passengers are carried, should be in receipt of the appropriate Certification. Certification recommendations are detailed in Table 23.1.4 for Ultra-Light Hovercraft which operate beach or very close inshore operations and Table 23.1.6 for commercial Hovercraft operation requirements.

22.1.4 Hovercraft being used for recreational purposes as a Pleasure Vessel (as defined by the Merchant Shipping Regulations 1998 (SI 1998 No. 2771)) and Ultra-Light Hovercraft operating up to 1 mile from the shore are covered by Tables 23.1.4, 23.1.5.

22.1.5 The owner/managing agent should contact a Certifying Authority in order to obtain an Application for Examination (if appropriate) and arrange for the craft to be examined by an authorised person (as required).

22.1.6 The Certifying Authority should decide the extent of the examination based on the type, age and history of the craft and may give credit for any recent and detailed competent examination of a craft for which a report is available.

22.1.7 Forms typically provided as part of the application, examination and certification process are as follows:

- Record of Equipment for a Light/Small Commercial Hovercraft
- Record of Particulars for a Light/Small Commercial Hovercraft
- Light/Small Commercial Hovercraft Builders Certificate (Builder)
- Certificate of Compliance/Operating Permit for a Light/Small Commercial Hovercraft (MCA or Certifying Authority)

22.1.8 Tables 23.1.4, 23.1.5 and 23.1.6 detail the Recommended and Mandatory requirements for craft certification.

22.1.9 Manufacturers of recreational craft can self-certify stating that their craft is built according to the Hovercraft Code.

Table 23.1.4 - Ultra-Light Hovercraft recommendations when operated for reward.

These craft are not regulated by the MCA.

UK Hovercraft Certification Requirements Matrix			R = Recommended M =Mandatory	
Operated as Healthy and Safety Executive Work Equipment				
Craft Operation	Corporate Trips etc (Private Land)	Beach and very close inshore (Half mile of 1 mile from support vessel)		
Craft Group	Ultra-light	Ultra-light		
Craft Construction Group	Hovercraft Code of Practice **R**	Hovercraft Code of Practice **R**		
Craft Certificate	Hovercraft Manufacturers Builders Certificate **R**	Hovercraft Manufacturers Builders Certificate **R**		
Craft Certificate issued by	Manufacturer or Operator	Manufacturer or Operator		
Operating Permit Required	No	No		
	However, all skippers must ensure that they are not operating in areas with restrictions.			
Skipper Certification (marine qualification)	None Required **R**	Commercially Endorsed RYA Powerboat Level 2 and 25 hours instruction. **R**		
Skipper Type Rating on Craft	**R**	**R**		

Definitions	
Racing Hovercraft	Hovercraft only to be used for racing
Ultra-Light Hovercraft	Hovercraft less than 500kg up to 4 persons
Light Hovercraft	Hovercraft having an unladen weight of greater than 1000kg up to 8 persons.
Small Hovercraft	Hovercraft having an unladen weight of greater than 1000kg less than 24 metres hard structure carrying less than 12 passengers
Large Hovercraft	Hovercraft over 24 metres length hard structure or carrying more than 12 passengers.

Table 23.1.5 – Pleasure Vessel/Craft Certification Requirements

UK Hovercraft Certification Requirements Matrix R = Recommended M = Mandatory				
Pleasure Vessel (Pleasure Craft) as defined by Merchant Shipping Regulations (SI 1998 No. 2771)				
Craft Operation	Racing	Cruising (Homebuilt)	Cruising (Professional Manufacturer)	Cruising Craft over 1 tonne unladen weight
Craft Group	Racing	Light	Light	Small
Craft Construction	Hoverclub Great Britain Racing Hovercraft Construction Rules **R**	Hovercraft code of practice **R**	**R**	**R**
Craft Certificate	Hoverclub Great Britain Racing log book **M**	Hoverclub Great Britain or Cruising Club log book **R**	Hovercraft manufacturers Builders Certificate **R**	Hovercraft manufacturers Builders Certificate **R**
Craft certificate issued by	Hoverclub Great Britain	Hoverclub Great Britain/Cruising Club	Manufacturer	Manufacturer
Operating Permit Required	No	No	No	No
	However, all skippers must ensure that they are not operating in area with restrictions			
Skipper Certification (marine qualification)	Hovercraft racing licence **M**	RYA Powerboat Level 2 **OR** 25 hours instruction under a Hoverclub scheme **R**	RYA Powerboat Level 2 **OR** 25 hours instruction under a Hoverclub scheme **R**	Commercially endorsed RYA Powerboat Level 2 **R**
Skipper Type Rating on a craft	No	**R**	**R**	**R**

Definitions	
Racing Hovercraft	Hovercraft only to be used for racing
Ultra-Light Hovercraft	Hovercraft less than 500kg up to 4 persons
Light Hovercraft	Hovercraft having an unladen weight of less than 1000kg up to 8 persons
Small Hovercraft	Hovercraft having an unladen weight of greater than 1000kg less than 24 metres length hard structure carrying less than 12 passengers
Large Hovercraft	Hovercraft over 24 metres length hard structure or carrying more than 12 passengers.

Table 23.1.6 – Commercial Vessel/Craft Certification Requirements

Craft Operation	Crew Training or Rescue Hovercraft	Commercial up to 12 passengers	Commercial over 24 metres with more than 12 passengers	
Craft Group	Ultra Light/Light and Small	Ultra Light/Light and Small	Large	
Craft construction group	Hovercraft code of Practice **R**	Hovercraft code of Practice **M**	High Speed Craft Code with formally agreed MCA exemptions **M**	
Craft certificate	Hovercraft Manufacturers Builders Certificate **OR** Commercial Hovercraft Safety Certificate **R**	Hovercraft Manufacturers Builders Certificate **OR** Commercial Hovercraft Safety Certificate **R**	High Speed Craft Safety Certificate **M**	
Craft certificate issued by	Manufacturer (approved by MCA) or Authorised person	Manufacturer (approved by MCA) or Authorised person	MCA	
Operating Permit Required	No	Yes	Yes	
Skipper Certification (marine qualification)	Commercially Endorsed RYA Powerboat Level 2	Commercially Endorsed RYA Powerboat Level 2	MCA Boatmaster Licence or STCW	
Skipper Type Rating on Craft	Yes	Yes	Yes	

Definitions	
Racing Hovercraft	Hovercraft only to be used for racing
Ultra-Light Hovercraft	Hovercraft less than 500kg up to 4 persons
Light Hovercraft	Hovercraft having an unladen weight of less than 1000kg or up to 8 persons.
Small Hovercraft	Hovercraft having an unladen weight of greater than 1000kg, less than 24 metres length hard structure carrying less than 12 passengers
Large Hovercraft	Hovercraft over 24 metres length hard structure or carrying more than 12 passengers.

22.2 Compliance Examination and Issue of an Operating Permit/Certificate of Compliance under the Code

22.2.1 An authorised person should undertake a compliance examination of the craft.

22.2.2 The arrangements, fittings and equipment provided on the craft are to be documented on the Record of Particulars and Record of Equipment report forms Number??. Upon satisfactory completion and documentation of the compliance examination, and the required declarations, a copy of the signed report Number?? forms should be forwarded to the Certifying Authority.

22.2.3 Sea Trials are to be carried out on all commercial Hovercraft by an authorised person. They should be carried out on the first of type by all manufacturers of recreational craft prior to them issuing a Manufacturers Build Certificate.

22.2.4 Sea trial results are to be completed and documented and should include:

- Plough in effect and boundary
- Yaw/Speed Curve
- Emergency stop
- Intact stability, if not proven by calculation
- Skirt drainage including start from stationary over water
- Manoeuvring trial at slow speed

22.2.5 The owner/managing agent should provide the Certifying Authority with information necessary to confirm that the stability of the craft meets the standard required by the Code for the permitted area of operation and/or intended use of the craft.

22.2.6 Upon satisfactory review of the documented arrangements, fittings and equipment provided in compliance with the Code, also the required declarations in the completed report forms Number?? and approval as appropriate of either the Stability Information Booklet or required stability information and fee payments, the Certifying Authority will issue the Certificate.

22.2.7 A Certificate should be valid for not more than five years from the date of examination of the craft out of the water by the authorised person. For a newly constructed craft, built under full construction survey for the purposes of this Code, the Certificate may begin from the final compliance survey. The Certificate may be valid for a lesser period of time as determined by the Certifying Authority.

22.3 Annual Examination by an Authorised Person

The owner/managing agent should arrange for an annual examination of a craft as defined in Table 23.5.3 to be carried out by an authorised person, on behalf of the Certifying Authority, within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months. On satisfactory completion of the annual examination, the authorised person should enter a record of the examination on the report Record of Particulars and Record of Equipment report forms Number?? and forward the results of the examination to the Certifying Authority.

22.4 Annual Examination by the Owner/Managing Agent

22.4.1 The owner/managing agent must carry out, or arrange for, an annual examination of a craft within 3 months either side of the anniversary date of the initial/renewal examination, at intervals not exceeding 15 months, to confirm that the arrangements, fittings and equipment provided on board are in a satisfactory condition and remain as documented in the report forms Number??. Also that the craft, its machinery, fittings and equipment are in a sound and well maintained condition, and where necessary serviced at the required period.

22.4.2 The owner/managing agent is to enter a record of a successful examination on the form Number?? and report the results of the examination to the Certifying Authority.

22.5 Examination Regime.

22.5.1 Table 23.5.3 provides details of the minimum examination regime applicable to the various craft groups.

22.5.2 Where it is deemed necessary by the authorised person or Certifying Authority, the craft may need to be examined more often than required by the survey regime Table 23.5.3. This may require additional examination out of the water at intervals of less than five years, paying special attention to the exterior hull condition and exterior steering and propulsion equipment.

Table 23.5.3 – Examination regime

Craft Group	Ultra-Light	Light	Small	Notes
Area of Operation Category	6 (Restricted operating up to 1m from the shore)	3, 4 & 5 (Up to 20m or as on certificate)	2 (Up to 60 m or as on Certificate)	
Self Examined by owner or managing agent	Not required (unless operating further than 1 mile from shore)	Annual	Annual	
Authorised Person	Not required (unless operating further than 1 mile from shore. If this is the case then every 3 years.	Every 3 years	Every 3 years	

APPENDIX 1

PETROL ENGINE STANDARDS

In accordance with 6.3 petrol engines may be accepted for craft which are less than 175hp(130kW). Craft with petrol engines should as far as reasonably practicable comply with the following standards:

1 Engine

ISO 7840 – Small craft – Fire resistant fuel hoses
ISO 8846 – Small craft – Electrical devices – Protection against ignition of surrounding flammable gases
ISO 9094 – Small craft – Fire protection
ISO 10088 – Small craft – Permanently installed fuel systems and fixed fuel tanks
ISO 10133 – Small craft – Electrical equipment – Extra low-voltage DC installations
ISO 11105 – Small craft – Ventilation of petrol engines and/or petrol tank compartments
ISO 15584 – Small craft – Inboard petrol engines – Engine mounted fuel and electrical components.

2 Ventilation, Engine and Tank Compartments

ISO 11105 - Small craft – Ventilation of petrol engines and/or petrol tank compartments.

3 Fuel System: General

ISO 7840 - Small craft – Fire resistant fuel hoses
[ISO 8469 – Small craft – Non-fire resistant fuel hoses]
ISO 9094 – Small craft – Fire protection
ISO 10088 – Small craft – Permanently installed fuel systems and fixed fuel tanks
ISO 11105 - Small craft – Ventilation of petrol engines and/or petrol tank compartments
ISO 13592 – Small craft – Backfire flame control for petrol engines

4 Fuel System: Tanks

ISO 10088 – Small craft – Permanently installed fuel systems and fixed fuel tanks
ISO 11105 - Small craft – Ventilation of petrol engines and/or petrol tank compartments

5 5. Fire protection

ISO 9094 – Small craft – Fire protection

APPENDIX 2

EXAMPLE CERTIFICATE

Name of Certifying Authority

LIGHT/SMALL COMMERCIAL HOVERCRAFT SAFETY CERTIFICATE

Issued under the authority of the Government of the United Kingdom of Great Britain and Northern Ireland's Maritime and Coastguard Agency, an executive agency of the Department for Transport

Name of Craft…
Official Number…
Port of Registry/Base Port…

Date of Build…
Craft/Hull ID No…

Overall Length (m)…
Hard Structure Length (m)…
Hovercraft Group [Ultra-Light, Light, Small]
Craft Use [Work Equipment/Cruising/Crew Training/Commercial/Pleasure]

Name and address of owner…

This is to certify that the above named craft was examined by [Name of authorised person] of [Certifying Authority] at [Place of Survey] on [Date of Survey] and found to be in compliance with the requirements of the Code of Practice for the construction, machinery, stability, operation, manning and examination of Hovercraft up to 24 metres length that do not carry more than 12 passengers.

Anniversary Date of the Certificate: [Anniversary date]

The permitted area of operation is [Area Category]

The permitted GMDSS Sea Area of operation is [GMDSS Sea Area]

Maximum No. of persons to be carried [No.]

Maximum all up weight including persons and equipment [kg]

Maximum cargo weight [kg]

Maritime Labour Convention Compliance standard [UK Domestic voyages/International voyages]

This certificate will remain in force until [Expiry date] subject to the vessel, its machinery and equipment being efficiently maintained, annual examinations and manning complying with the Code of Practice, and to the following conditions [Conditions].

Issued at [Place of issue] On [Date of issue]
For and on behalf of [Name of Certifying Authority]

Name [Name of person issuing Certificate on behalf of the Certifying Authority]

Signature [Signature of person issuing Certificate on behalf of the Certifying Authority]

Date [Date of Issue of the Certificate]

APPENDIX 3

EXAMPLE HOVERCRAFT BUILDERS CERTIFICATE

HOVERCRAFT MANUFACTURERS BUILDERS CERTIFICATE

Company logo

This Certificate is issued as a Declaration of Conformity under sole responsibility of the manufacturer. I declare on behalf of the craft manufacturer that the craft mentioned below complies with and has been designed and build in accordance with the applicable requirements of the Hovercraft Code of Practice for the operational area recorded on this certificate.

Name/Address of Craft Manufacturer…

Name & Position of Manufacturer Authorised Person…

Date of Build…

Operational Area [Ultra-Light, (Category 6 (Restricted)), Small (Category 2), Light (Category 3)]
Maximum Significant wave height…
Hovercraft Group [Ultra-Light, Light, Small]
Craft Use [Work Equipment/Cruising/Crew Training/Commercial/Pleasure]

DESCRIPTION OF CRAFT

Manufacturers Model…..
Craft ID/Hull No….

All up Weight…… (Kg)
Overall Length (m)…
Hard Structure Beam (m)…
Maximum Persons on board…..
Maximum speed….(knots)

Maximum payload…(Kg)
Hard Structure Length (m)…
Moulded Depth… (m)
Hover Height….(m)

Construction Material

Aluminium	☐	Other (specify)	☐
Plastic, Fibre Reinforced Plastic	☐		
Wood	☐	……...	

Type of Main Propulsion

Petrol (up to 130kW)	☐	Other (specify)	☐
Diesel	☐		
		……...	

Type of Engine and Power

Total Installed Engine power ..…… kW Number of Engines ……..

Inboard (radiator cooled)	☐	Other (specify)	☐
Outboard (air cooled)	☐	……...	

Thrust Equipment

Fan	☐	Material (specify)
Airscrew propeller	☐	……...

Directional Control

Hydraulic	☐	Other (specify)
Electric	☐	……...

Lift System

Independent of main propulsion engine	☐	Other (specify)
Integrated with main propulsion engine	☐	……...

Deck

Open craft	☐	Other (specify)	☐
Enclosed superstructure	☐	……...	

Issued at [Place of issue] On [Date of issue]

For and on behalf of [Name of Manufacturer]

Signature [Signature of authorised person issuing Certificate]

Position [Position of authorised person issuing Certificate]

Date [Date of Issue of the Certificate]

APPENDIX 4

HOVERCRAFT PROPELLER REQUIREMENTS (STILL TO BE WRITTEN)

CIVIL AVIATION AUTHORITY — BRITISH HOVERCRAFT SAFETY REQUIREMENTS

SUB-SECTION B7 – MACHINERY

CHAPTER B7–5 FANS AND AIR PROPELLERS

Issued, 23rd April, 1979

1 GENERAL

1.1 **Applicability.** The requirements of this Chapter apply to fans and air propellers which form part of the lift and/or propulsion system of a hovercraft.

1.2 **Definitions.** For the purposes of this Chapter the following definitions apply.

1.2.1 **Axial Fan or Propeller.** A fan or propeller in which the air enters and exits in a direction substantially parallel to its axis.

1.2.2 **Centrifugal Fan.** A fan in which the air exits in a direction substantially at right angles to its axis.

1.2.3 **Metal Fan or Propeller.** A fan or propeller, the load carrying parts of which are manufactured wholly from homogenous metallic materials.

1.2.4 **Composite Fan or Propeller.** A fan or propeller, the load carrying parts of which are not manufactured wholly from metallic materials (e.g. reinforced plastic or wood, or mixed metal/plastic).

1.3 **Type Approval.** A fan or propeller can be type certificated when it has been shown to meet the requirements of this Chapter when operating within the conditions defined in the Applicant's Declaration (see B7–1, 4). Type certification may be associated with the conditions of installation on a particular craft in which case this is to be stated in the Applicant's Declaration.

NOTE: It is unlikely that axial flow fans over 1·5 m or propellers over 2 m diameter will be type certificated without reference to the craft types on which they may be installed.

2 FUNCTIONING The design and installation of fans and propellers together with their accessories shall be such that they:–

(a) fulfil the function for which they are installed and reduce to an acceptable minimum the hazards to occupants or third parties in failure conditions, and

(b) enable compliance to be shown with the applicable requirements of BHSR.

3 STRENGTH

3.1 **General**

3.1.1 The fan or propeller, when suitably mounted and operated in the manner defined in the Applicant's Declaration shall be of sufficient strength and stiffness to withstand the most adverse combination of the loads which can arise during its use without exceeding acceptable stress levels.

3.1.2 Since the maximum permissible stresses for fans and propellers will depend on the operating conditions, the materials and the particular form of construction, CAA approval of the values of the stresses chosen by the manufacturer shall be obtained for each design.

3.2 **Propellers and Fans of Metal Construction**

3.2 1 Unless otherwise agreed by CAA, metal fans and propellers shall have Proof and Ultimate Factors of not less than 1·33 and 2·0 respectively under loads arising from the maximum speed (including any overspeed case) quoted in the Applicant's Declaration.

3.2.2 In addition to complying with 3.2.1, the strength and fabrication of metal fans and propellers shall be such that the probability of hazardous fatigue failure under the action of the repeated loads of variable magnitude expected in service is extremely remote throughout their operational life.

3.3 **Propellers and Fans of Composite Construction**

3.3.1 Unless otherwise agreed by CAA, the non-metallic components of each composite fan or propeller shall have an Ultimate Factor of at least 3·0 under the loads arising from running the fan or propeller at the maximum speed (including any overspeed case) quoted in the Applicant's Declaration; for areas agreed to be critical with respect to fatigue the Ultimate Factor shall not be less than 4·0. Metallic components shall meet the requirements of 3.2.

3.3.2 The ultimate strength on which the factors of 3.3.1 are based shall be verified by test. (See also 6.2.3 and 6.2.4.)

4 ATMOSPHERIC CONDITIONS

4.1 The propeller or fan shall be capable of functioning satisfactorily without unacceptable damage when operated in the conditions of icing, spray, sand, salt, etc., likely to be met when operating the hovercraft.

4.2 Any limiting conditions of icing, etc. shall be included in the Applicant's Declaration (see B7–1, 4).

5 TESTS GENERAL

5.1 Propellers and fans of a type not previously used in hovercraft will normally be required to be submitted to a type test as set out in 6, as appropriate.

5.2 Each series fan and propeller will be submitted to a series test as defined in 7 unless otherwise agreed by the CAA.

6 TYPE TESTS

6.1 **General.** The following type test requirements represent those typically required for conventional items but suitable equivalent testing could be substituted with CAA agreement. For items of unconventional design, testing to show an equivalent level of safety will need to be agreed with the CAA.

6.2 **Centrifugal Load Tests**

6.2.1 All propellers and fans, except axial propellers and fans with detachable blades, shall be subjected to the centrifugal load test of 6.2.2 or 6.2.3 as appropriate. Suitable provision may be made to relieve aerodynamic loading of the propeller or fan during these tests, in agreement with the CAA.

6.2.2 Metal fans or propellers with non-detachable blades shall be subjected to a test for a period of at least 30 seconds at a speed equal to 120% of the maximum speed (including any overspeed case) quoted in the Applicant's Declaration. Where the Ultimate Factor has been set by fatigue considerations (see 3.2.2) the Applicant shall discuss with CAA his approach to testing which should confirm that stress levels are consistent with calculations.

6.2.3 Composite fans or propellers with non-detachable blades shall be subjected to a test for a period of at least 30 seconds at a speed equal to 140% of the maximum speed (including any overspeed case) quoted in the Applicant's Declaration. Subsequent to this test, a number of test pieces shall be prepared from the structure and their mechanical properties established. The position from which the test pieces are taken shall be agreed with the CAA. The lowest value of ultimate strength so obtained shall not be less than that used in the design of production fans (see 3.3.2).

6.2.4 Axial propellers and fans with detachable blades, and whether of metal or composite construction, shall be subjected to the tests of 6.2.5 to demonstrate the ability of the propeller assembly to withstand centrifugal forces. Where necessary ancillary assemblies used with the propeller shall be subject to equivalent tests.

6.2.5 The hub and blade retention arrangement of axial fans or propellers with detachable blades shall be subjected for a period of one hour to a load twice that of the centrifugal load occurring at the maximum speed (including any overspeed case) quoted in the Applicant's Declaration. This test may be effected either by whirl or static pull.

6.3 **Vibration Tests**

6.3.1 Fans or propellers shall be subjected to such tests as are necessary to demonstrate that the vibration characteristics do not endanger safe operation throughout the whole range of permissible rotational speeds.

6.3.2 Unless alternative satisfactory evidence is provided, measurements shall be made of the vibratory stresses in the propeller or fan during its operation on the hovercraft called up in the Applicant's Declaration. Such measurements shall confirm that the vibratory stresses in the propeller or fan do not exceed values which have been agreed by CAA.

6.4 **Endurance and Functional Tests.** The propeller or fan shall be subjected to endurance and functional tests to a schedule agreed with the CAA.

7 SERIES TESTS

7.1 **Overspeed Tests for Fans and Propellers**

7.1.1 **General.** Every series fan or propeller shall be subjected to a test by running at a speed as defined in 7.1.2 or 7.1.3 for a period of at least 30 seconds. At the conclusion of the test there shall be no permanent deformation or other signs of incipient failure.

7.1.2 **Metal Fans or Propellers.** The overspeed test shall be carried out at 110% of the maximum rotational speed for which approval is sought.

7.1.3 **Composite Fans or Propellers.** The overspeed test shall be carried out at at least 120% of the maximum rotational speed for which approval is sought.

7.2 **Strength Tests for Composite Fans and Propellers.** Test specimens shall be made at the same time, and using the same materials and processes, as each production fan or propeller. The test value of ultimate tensile stress shall not be less than the value obtained during the type test in accordance with 6.2.3.

NOTE: The CAA may accept evidence or procedures other than those given in this paragraph 7 for series fans and propellers.